



Archaeological Reconnaissance Survey
of Four Archaeological Sites
on the Upper Mill River/Cushman Brook,
Amherst, Massachusetts
Volume I: Text

by

Eric S. Johnson and Kathryn Curran

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Prepared for the District One Neighborhood Association
(DONA)

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ABSTRACT

This report presents the results of archival research and mapping and photographing of historic sites along the Upper Mill River, also known as Cushman Brook, in North Amherst, Massachusetts. The sites are a Canal and Dam located at the Mill River Recreation Area, the Upper and Lower Roberts Mill sites, and the site of the former Cushman Clam Club located in the Mill River Conservation Area. The information collected will be used to develop interpretive history trails through the recreation and conservation areas and to document the present condition of the sites. The overall goal of the project is to contribute to efforts to promote community stewardship of the historic and archaeological resources of the North Amherst area.

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MANAGEMENT SUMMARY

The authors completed a Phase 1A Reconnaissance Survey at four archaeological sites on town owned land in the Mill River Recreation Area and the Mill River Conservation Area in Amherst, Massachusetts. Johnson was retained by the District One Neighborhood Association (DONA) to research and document the sites. The four sites are: a dam and canal (along the north and east sides of Mill River Recreation Area), the Upper Roberts Mill (Mill River Conservation Area), the Lower Roberts Mill (Mill River Conservation Area), and the Cushman Clam Club (Mill River Conservation Area). The information collected during the reconnaissance will be used to develop interpretive history trails through the recreation and conservation areas. This survey serves as a starting point to inform the community about archaeological resources in these areas that can be used to expand the historic narrative of Amherst, North Amherst, and the village of Cushman.

INTRODUCTION

Scope of Survey

The Mill River Recreation and Mill River Conservation Areas are located in the Town of Amherst, Hampshire County, in western Massachusetts (Figure 1). Over the course of a decade (1960-1970), the Amherst Conservation Commission purchased undeveloped land along the Mill River and Puffer's Pond to be used for recreational purposes. This protected strip of land buffers the Mill River between Montague Road and Bridge Street (Figure 2). The District One Neighborhood Association (DONA) identified four archaeological sites of interest within these recreational zones, all located close to existing walking/hiking trails. One purpose of this project is to research background history to contextualize visible archaeological remains located along the trails. The goal is to provide information sufficient to create signage and/or digital data sets (QR codes and websites) to transform the walking paths into interpretive history trails. A second goal of the reconnaissance is to visually inspect and record existing conditions, so that archaeologists can offer recommendations regarding site preservation and protection in the years to come. DONA can use the data collected during this project to engage the community regarding additional areas of potential research while promoting stewardship of archaeological sites and finds in the study area.

The current scope of work involved the study of four areas with foundations and/or potential archaeological materials. The first is a canal/mill race/dam located in the Mill River Recreation Area, close to the west end of the Julius Lester and Jennifer Trails (Figure 3). The three other sites are located further east, in the Mill River Conservation Area. The remains of two mill foundations are situated close to the Robert Frost Trail, between State Street and Mill River (Cushman Brook). The Upper Roberts Mill (aka the Roberts Upper Mill) sits on a narrow strip of land south of the Mill River and north of the Robert Frost Trail, which runs parallel the river course. The Lower Roberts Mill (aka Roberts Lower Mill) sits on the north bank of the Mill River, just west of where the trail crosses the waterway. A fourth location, the Cushman Clam Club is located south of the Mill River, but a bit away from the main walking trails. The approximate location of this site was indicated by the presence of discarded clam shells and other artifacts on the forest floor in a location that corresponded to an earlier map of the former structure. The small trash middens are evidence of the location, which contains no evident structural remains.

Authority for Survey

The survey was undertaken to assist the District One Neighborhood Association (DONA) with preservation efforts and to promote future stewardship at the sites. Funding for the project was awarded via a grant from the Amherst Community Preservation Act (CPA) Committee. The authors, Eric S. Johnson and Kathryn Curran, conducted the archaeological survey under State Archaeologist permit #4234. This permit was issued pursuant to Section 27C of Chapter 9 of the Massachusetts General Laws, and according to the regulations outlined in 950 CMR 70.00. The Upper and Lower Roberts Mill sites were included as part of the Cushman Village Historic District, listed on the National Register of Historic Places in 1992.

Project Area Description

The four areas of interest are located within well-maintained recreation and conservation land owned by the Town of Amherst. The Mill River Recreation Area at 95 Montague Road, is a 12.81-acre property with numerous buildings, outbuildings, and playing fields; the facilities are open to the public for free. The Mill River runs along a portion of the south property boundary. The entrance, on Montague Road (Route 63), leads to parking areas that flank the main building. The activity areas are welcoming to various age groups and include tennis courts, basketball courts, a swimming pool, a wading pool, picnic tables and barbecues, an event pavilion, a toddler playground, swings and play equipment for older children, Little League playing fields, a fountain, and restrooms. Mill River Conservation trails can also be accessed from the east side of the property. The walking and hiking trails continue northeast from the recreation area, running adjacent to braided Mill River channels and smaller streams approximately 0.4 miles to Puffer's Pond and Mill Street.

The Roberts Mill foundations are listed as a contributing site for the Cushman Village Historic District, which was surveyed by the Massachusetts Historical Commission in 1990 and listed on the National Register of Historic Places in 1992 (Figure 4). The district extends west of the railroad bed into the Mill River Conservation Area, following the mapped boundary of parcel 5B-34. The mill foundations and sluice are included on the data sheet for the historic district and estimated to date to the 1890s. No additional formal reconnaissance or survey of the foundations is reported in MHC records.

RESULTS OF ARCHIVAL RESEARCH

Historic Contexts of Amherst, Massachusetts

Native American Site Potential

The project area is located between North Amherst and Cushman, near Puffer's Pond and along the Mill River. According to Massachusetts Historical Commission files, there are 9 Native American sites in Amherst, dating from the Late Archaic (6,000-3,000 BP) through the Early Woodland (3,000-2,000 BP) periods. Two sites (19-HS-166 and 19-HS-302) are located within a one-mile radius of the Mill River Recreation Area, both west of Route 116, near the Amherst/Hadley border. One of the sites (19-HS-166) dates to the Middle Woodland Period (2,000-1,000 BP), while the second (19-HS-302) is of undetermined age. Both of the sites were recorded based on small artifact collections; no formal archaeological investigations were carried out at either location. The potential that Native American sites are located along this section of the Mill River is moderate to high, given proximity to the river and the presence of well-drained soils on relatively level ground surface along associated river terraces. Native Americans may have traversed, hunted and fished on, and settled along this section of the Mill River. The "Great Falls" (Puffer's Falls) may have been a good place for fishing for anadromous fish swimming upstream to spawn. Nearby swamps and smaller drainages would have held varied plant resources and attracted game of all sizes and types. Native Americans could have easily subsisted in this environment. Since there have been no systematic archaeological investigations (including subsurface testing) along this segment of the Mill River, there is no physical data to support an interpretation of Native American land use or settlement. It is also unfortunate that later land development in the vicinity of Puffer's Falls and along the Mill River since the late 18th century likely displaced and destroyed much evidence of earlier Indigenous occupation.

Historic Context of Amherst

The town of Amherst is located in central Hampshire County in the Connecticut River Valley. It is bounded on the north by Sunderland and Leverett, on the east by Shutesbury, Pelham, and Belchertown, on the south by Granby and South Hadley, and on the west by Hadley. Geographically, Amherst is a long (north-south) and narrow town with the Holyoke Mountain Range at its southern end and the Pelham Hills to the east. Two moderate-sized rivers run through Amherst. The Fort River, originating in Pelham, flows through northern and central Amherst and eventually flows into the Connecticut River. The Mill River, originating in Shutesbury, extends through northern Amherst and also flows into the Connecticut River.

The area that is now Amherst was originally included as part of the Hadley Plantation in 1661. It became the East Hadley Precinct in 1734, was incorporated as Amherst District in 1759, and incorporated as the Town of Amherst in 1775. A section in the northwest part of town was annexed from Hadley in 1814 to finalize the town boundary.

Contact and Settlement

There are no reported Native American Contact Period settlement sites in Amherst. However, the Mill and Fort River drainages would have afforded good agricultural land and access to waterways and were likely used by the Hadley (Norwottuck) community as secondary agricultural areas and fishing spots rather than permanent settlement sites. Hunting likely

occurred in the Holyoke Range and in swampy areas in the northeast section of town as well (MHC 1982).

There were a number of Contact Period trails passing through the area of Amherst. Most noteworthy was a primary east-west trail along the base of Mount Holyoke (which is now Bay Road) and a north-south path (now Route 116) that passed through the Mount Holyoke Notch (Granby Bicentennial 1968; Judd 1863). Due to Amherst's location on a regional travel corridor (Bay Road to Boston), Native American presence decreased as the European population in the area increased. Considerable Colonial foot traffic passed through the Amherst area and the primary travel paths were further improved (Judd 1863; MHC 1982).

The Amherst area was sparsely populated until the eighteenth century. Hadley was established in 1659 as the second plantation north of Springfield and originally included the present towns of Hadley, Amherst, Hatfield, South Hadley, Granby, and parts of Sunderland. Hadley was expanded and additional grazing lands were added in the east after residents petitioned the Massachusetts General Court in 1673 and 1683 (Judd 1863). Early settlement was confined to the central Hadley and Hatfield areas, whose residents used the Amherst area as pastureland until the early eighteenth century. The area that is now Amherst was set off from Hadley as the Third Division in 1700, and in 1734 it became the Third Precinct of Hadley. This area became the District of Amherst in 1759 and was incorporated as the Town of Amherst in 1775 (Carpenter 1896).

Community Development

Local tradition holds that the first colonial settler in Amherst was a "Mr. Foote," who built a "shanty" in the east part of town in 1703. This shanty was just north of the junction of North East Street and Pelham Road (Holland 1855). Mr. Foote, however, remained only a short time. A permanent colonial settlement was established ca. 1728, and the population of Amherst increased throughout this period. The earliest population figures for the Colonial Period show 18 landholders in 1731. By 1765, Amherst consisted of 96 dwellings, 104 families, and a total of 645 residents. The population had increased to 916 residents by 1776. Most of the colonial settlers in Amherst came from the neighboring towns of Hadley, Northampton, and Hatfield (Holland 1855; MHC 1982).

The population of Amherst increased steadily throughout the Federal Period (1775-1830). In 1790 the population was 1,233 persons; in 1800 it was 1,358; in 1810 it was 1,469; in 1820 it was 1,917; and by 1830 the population of Amherst had increased to 2,631 persons (Commonwealth of Massachusetts 1909). The primary east-west travel corridor was relocated from Bay Road further north as civic and commercial growth commenced at the town center on Main Street. The meetinghouse was relocated near the central common around 1820. Amherst College was established in 1821 on the original meetinghouse hill site, creating a secondary focus of activity along Pleasant Street. Amherst College soon became, and remains, a dominant influence on the landscape, economy, and cultural life of the town (Holland 1855; MHC 1982).

During the American Revolution there was conflict between some citizens of Amherst concerning the issue of independence. The majority favored independence and passed a resolution stating so, despite the opposition of Amherst's more pro-British "elite." Some of the local Tories were incarcerated in Stockbridge House (now the University of Massachusetts Faculty Club), which became a detention center (Dunn and Rand 1964).

Amherst's population in the Early Industrial Period (1830-1870) increased overall but experienced two brief periods of decline: from 1830 to 1840 (due to the removal of industry to Belchertown), and from 1850 to 1855. In 1830 the population of Amherst was 2,631; by 1840 it had dropped to 2,550; in 1850 it rose to 3,057; in 1855 it declined to 2,937; it increased in 1860 to 3,206; and by 1870, the population had increased to 4,035 (Commonwealth of Massachusetts 1909; MHC 1982). A business district was formed during the Early Industrial Period along Pleasant Street, characterized by brick commercial blocks around the central common. An additional institutional center was created in Amherst with the establishment of the Massachusetts State Agricultural College in 1867 (Carpenter 1896; MHC 1982).

The population of Amherst fluctuated again during the Late Industrial Period (1870-1915) but tended to increase overall. In 1870 the population was 4,035; by 1875 it had dropped to 3,937; in 1880 it increased to 4,298; but by 1885 it had decreased to 4,199. By 1890, Amherst's population had grown to 4,512 and it increased steadily thereafter; in 1900 it was 5,028; in 1905 it was 5,313; and in 1915 it was 5,558 (Commonwealth of Massachusetts 1909; MHC 1982).

During the Late Industrial Period (1870-1915), the commercial and civic activity in the town of Amherst remained at the town center, anchored by the growing business district along Pleasant Street. Amherst College and the Massachusetts Agricultural College expanded, creating academic activity centers immediately north and south of the town center (MHC 1982).

As it had during the preceding periods, Amherst's population dropped occasionally, but increased overall during the twentieth century. Unlike some of the more industrialized towns in Hampshire County, Amherst's greatest population growth for the period occurred from 1930-1935, due to expansion of the State College. The Massachusetts State Agricultural College became the Massachusetts State College in 1931 and later the University of Massachusetts in 1947. In 1940, the population of Amherst was 6,410 (MHC 1982). The center of Amherst, with its business district along Pleasant Street, continued as the primary focus of commercial and civic activity in the town. Throughout the twentieth century both Amherst College and the State College (later the University of Massachusetts) continued to expand, and nearby residential neighborhoods grew with them. Suburban neighborhoods grew north of the town center along East Pleasant Street and south of the town center along South Pleasant Street (MHC 1982).

Increases in enrollment at both colleges led to a permanently larger student population in Amherst. The University of Massachusetts experienced a large increase in its size in the 1960s, and a third college, Hampshire College, was established at that time.

Roads and Transportation

Native American trails located in Amherst include an east-west route along the base of Mount Holyoke that is now Bay Road, and north-south routes following current Southeast, Shays, and Pleasant Streets as well as a portion of Route 116 that passes through the Mount Holyoke Notch (Granby Bicentennial 1968; MHC 1982). These trails were used and improved upon by European settlers and are still important routes today. In 1703, the principal north-south roads were established along two routes: one along present-day South and East Pleasant Streets, and the other along Middle, South East, and North East Streets (MHC 1982). The location of Amherst on a major east-west route (Bay Path) provided the town with easy access to markets in the Boston area. Though agriculture predominated, the town of Amherst did have enough mills to process grain and timber products for both local consumption and export. A good portion of the street grid from the Colonial Period remains intact, along with several pre-1775 structures in

the original town center area. As Amherst was primarily an agricultural town of clustered farms with academic institutions located near the town center, the road network established in the eighteenth century changed little until the development of suburban sprawl in the twentieth century.

A railroad built in 1853 improved the regional connections between Amherst, Boston, and Springfield, but it was not a financial success, and was taken over in 1866 by the New London & Northern Railroad (MHC 1982; MHC 1984). Railroad lines connecting Amherst to Hadley and Belchertown arrived in 1887 with the Massachusetts Central Railroad. The Amherst railroad complex is about two blocks southeast of the town center. The complex consisted of a passenger station, car house, turntable, freight house and engine house. Edward Dickinson helped bring the railroad to Amherst, as was noted in some of Emily Dickinson's poems and letters (Mitchell 2013).

Streetcar lines also provided transportation to Hadley and Northampton (along Route 9) starting in 1900. In 1905, an electric trolley route from Holyoke and South Hadley to Amherst (Route 116) further facilitated travel in the region. Suburban streetcar lines were also added to connect the town center with the East Village area and the Massachusetts State Agricultural College in the northern part of town (MHC 1982; Rand 1958). A public tram operated between 1897 and 1935 on Main Street in front of what is now the Emily Dickinson Museum and was the impetus behind lowering Main Street to its present level in front of the Dickinson's property (Gillen/Gray/O'Marah Architects 1993). Streetcar service was eventually replaced by bus transport. Automobile highways (Routes 9 and 116) were improved and expanded and remain the primary traffic routes for cars. Route 116 originally passed through the center of Amherst but was re-routed and now bypasses the town center to the west (MHC 1982).

Agriculture and Subsistence

Agriculture dominated the economy of Amherst during the eighteenth and nineteenth centuries. Major crops included hay, grains, and apples for cider.

Regular trade was carried on with Boston, and local products such as grains, meat, and potash were sent eastward in exchange for goods such as tea, coffee, rum, molasses, and ceramics (Carpenter 1896). As population rose during the Federal and Early Industrial Periods (1775-1870), so did the acres of improved grazing and tilled land; from 1,266 acres in 1771 to 13,529 acres in 1855 (Taylor 1978).

Agricultural production was boosted by the presence of the Massachusetts State Agricultural College in the closing third of the nineteenth century. Unlike many Massachusetts towns during the industrial period Amherst became a leading agricultural town in the county, producing hay, tobacco, rye, oats, milk, butter, eggs, Indian and broom corn, and potatoes, as well as a variety of garden produce. The work of the Massachusetts Agricultural College and its local experimental stations helped to promote Amherst's agricultural longevity. In 1908, two professors from the Agricultural College began planting apple trees and many of the apple orchards in South Amherst date from 1908 to 1920 (MHC 1982; Rand 1958). Over the course of the nineteenth century Amherst evolved from "a predominantly agrarian economy to a mixed one that included manufacturing on a small but notable scale" (Mitchell 2013:21).

Industry and Commerce

Industry was limited to serving the local community during the Colonial Period (1675-1775) and consisted of sawmills and gristmills on the Mill and Fort Rivers. By 1771, Amherst industry consisted of “2 gristmills, 3 sawmills, 2 potash-works, and 14 shops” (Carpenter 1896:74), along with 120 homes and 84 barns (Norton 1975). Though agriculture was the predominant economic activity in Amherst until the advent of academic institutions, during the Federal Period (1775-1830) several small enterprises were established on the Mill River in northern Amherst and on smaller waterways in the southern and eastern sections of town. A paper mill was built on the Mill River by Daniel Rowe in 1795, and a yarn mill was established in 1809 by Ebenezer Dickinson. Dickinson’s yarn mill was sold in 1814 and became the Amherst Cotton Factory Company. Turning mills were established in the south part of Amherst ca. 1827, and by 1837 there were 10 men employed making joiner’s tools in South Amherst (MHC 1982; Norton 1975).

A new economic opportunity was born with the opening of Amherst Academy in 1814. This school for both male and female students offered courses of instruction below the college level. Its success led to the establishment of Amherst College in 1821. Half of the students and faculty of Williams College followed their president from Williamstown to the more settled region of Amherst, forming the basis of the new school. The citizens of Amherst, seeing the benefits of a college in their part of Massachusetts and detesting the rising Unitarianism of Harvard, fought for a charter for their college founded on Orthodox Trinitarian Congregationalism. Eventually overcoming the intense opposition of Harvard to the incorporation of another college in the state, the supporters of Amherst won a charter from the General Court in 1825.

There were small industrial enterprises carried on in Amherst during the Early Industrial Period (1830-1870). Their manufactures products included paper, textiles, carriages, straw (palm-leaf) hats, and joiner’s tools. The papermaking industry expanded rapidly in Amherst, largely due to the Cushman Brothers who built mills in 1835, 1859, and 1863. Textile mills built by Thomas Jones in 1845, 1851, and 1852, were incorporated in 1853 as the Amherst Manufacturing Company. Two of the mills were destroyed by fire, however, and textile manufacturing in Amherst ceased by 1860 (Carpenter 1896).

Brickmaking was carried out after 1818 and continued throughout the nineteenth century. The bricks produced in Amherst were used for building material for Amherst College and other notable local buildings (MHC 1982; Norton 1975). Carriage manufacturing in Amherst peaked in 1837, headed by the Knowles & Thayer Carriage Works, which included shops for woodworking, iron working, upholstery, and painting. The business failed in the financial panic of 1837 and within a few years, carriage-manufacturing enterprises in Belchertown had surpassed those of Amherst. The remaining carriage-making industry in Amherst survived by producing baby carriages, a specialty product (MHC 1982).

Goods manufactured during the Late Industrial Period (1870-1915) included coaches, paper, books, shoes, corn brooms, cabinet ware, and palm-leaf hats. In this period Amherst produced more palm-leaf hats than any other town in America (Rand 1958). The factory employed as many as 600 men and women (MHC 1982). All the small paper mills in Amherst closed by the end of the Late Industrial Period. High-quality paper was being produced on a much larger scale in towns like Holyoke and Dalton, which left North Amherst mills producing items such as wrapping paper and paperboard. Due to competition, the paper mills of Amherst were closed by 1902 (Rand 1958).

Industrial activity in Amherst declined and petered out during this period. The only new industry in this period was the Knickerbocker Leather & Novelty Company, which was established in 1916. Palm-leaf hat production continued into the 1930s, but by then Amherst was mainly a town of farms and colleges rather than industry. Agricultural production declined through the later twentieth century as the local colleges expanded, with construction of housing impeding on prior agricultural lands (MHC 1982). The commercial center now is clustered around Main and Pleasant Streets and caters to the three academic institutions in town. Other developments that have affected Amherst in recent years are the increased commercialization of Route 9 in nearby Hadley, and the opening of Interstate 91 as the main north-south travel corridor in the region (MHC 1982).

Historic Context Summary of the Study Areas

The authors researched and evaluated four locations in North Amherst: a dam and canal (Mill River Recreation Area), the Cushman Clam Club (Mill River Conservation Area), the Lower Mill (Mill River Conservation Area), and the Upper Mill (Mill River Conservation Area) (Figures 2 and 3).

The Canal and Dam Sites (Mill River Recreation Area)

Remnants of a canal are visible along the north edge of the recreation area, running parallel to the hillslope at the property boundary. The dam and canal were first depicted on inset map views of North Amherst on two larger Hampshire County Maps drawn by H.F. Walling and dating to 1856 and 1860 respectively (Walling 1856, 1860) (Figures 5 and 6). A comparison between early (1794, 1830) and mid-nineteenth century historic maps of North Amherst (1856, 1860) reveal changes along the Mill River due to increased industrialization over time. The earliest map, dating to 1794/5, shows the Mill River crossing into Amherst from Leverett and continuing southwest to a gristmill just west of Leverett Road/Bridge Street. The river continues southwest to a gristmill at the “Great Falls” (Puffer’s Falls), crosses Sunderland Road, then turns south to cross Meadow/Pine Street (Figure 5).

A later 1830 map of Amherst reveals the addition of several roads in and around the Mill River including: Montague Road (Route 63), Pulpit Hill Road (connecting Montague Road and Leverett Road), and Mill Street/Sand Hill Road (at the south end of Puffer’s Pond, connecting Pulpit Hill Road and Pine Street) (Figure 5). Notably, there are five dams/dam ponds shown along this section of the Mill River ca. 1830. The mapmaker also details associated mills and workshops on the river: a gristmill (east of Bridge Street), a forge and papermill (west of Bridge Street), a sawmill and gristmill (at the south end of Puffer’s Pond, east of Mill Street), and the 3-story Amherst Cotton Factory (south of the pond and Mill Street).

It is interesting to note that the earliest historic maps (1794, 1830) show a relatively straight, southwest trending channel to the Mill River, with no meanders south of Puffer’s Pond to Montague Road. No dams, ponds, or canals are shown near the Recreation Area until the Walling map of North Amherst of 1856 (Figure 6). The Mill River flows out of Factory Hollow (Puffer’s) Pond, crossing Mill Street, then runs parallel to a section of Summer Street. Small mills, factories, and dwellings are situated between the Mill River and Summer Street. Further southwest, a dam and area of ponding is clearly visible south of Summer Street. Just above the dam, a north to south trending stream crosses Summer Street and flows into the pond. At the

dam, a second stream flows west and then southwest to a gristmill on Montague Road. The stream/canal empties into the Mill River just south of the gristmill (Figure 6).

Walling's 1860 map of North Amherst included additional details of homes, businesses, and their owners (Figure 6). The mapmaker also chose a solid line to show the waterway running west from the dam/pond on the Mill River to the gristmill on Montague Road. The solid line indicates a man-made feature, different from the wavy lines, used to depict smaller brooks and streams flowing into the Mill River. The 1860 map also shows a blacksmith shop (BShop) where the canal changes direction from west to southwest, just above the gristmill.

Also interesting is the deep meander in the Mill River near the Recreation Area the 1856 and 1860 views. Beyond the canal/dam, the river course trends south/southeast, then shifts direction to west/northwest towards Montague Road (Figure 6). The pond at the head of the canal and the meander are visible on the 1885 USGS topographic survey map of the area (Figure 7). The placement dams/mill races southwest of Factory Hollow Pond, and the dam/canal south of Summer Street, impacted the course of the Mill River, resulting in the meander seen in later views.

The early historic maps reveal that the dam/canal/mill race in the Recreation Area were constructed between 1830 and 1856. In their book *North Amherst and Cushman*, local historians Patricia G. Holland and William N. Robinson state that the "red gristmill" on Montague Road was built in 1838 and note that water from the Mill River powered the mill via a canal. The gristmill was in operation from 1844 to 1934 (Holland and Robinson 2012:25). Property deeds reveal additional information about the construction of the mill, dam, canal, and mill race.

In a document dated March 24, 1838, Eleazer Cows of Amherst sold a small parcel of land (16 rods) along with the right/privilege to cut a canal on his land running from the Mill River to a mill to be built on the lot. The deed is quite specific as to where the canal was to be constructed; and Cows also required the canal to be safely maintained (since it would be on his land). The lot, located on the east side of "the highway" (Montague Road) measured 4-x-4 rods (66-x-66 feet) squared, which is approximately 0.1 acres. The canal was to be "sufficient to carry a volume of water equal to four feet square and of carrying the water therein forever across" Cows' land from the Mill River to the mill. The path of the canal was also planned; starting near a maple tree on the west bank of the river, extending west 20 rods (330 feet) to the side of a hill, and then continuing west along the hillside to the lot where the mill would be built. Cows also gave the right/privilege for a raceway to be constructed from the mill, south to the Mill River (Hampshire District [HD] MA 1838. Deeds 83:100).

Sylvester Dickinson and Marquis F. Dickinson purchased the 0.1-acre mill parcel and canal construction rights for \$450. Given the specificity of the building location and canal route, it is clear that the gristmill and canal were planned prior to the land sale. Residents may have approached Eleazer Cows with a proposal for a mill on Montague Road and associated canal, or Cows set the plan in motion himself.

The terms of the deed specify that the new owners could not take more land than needed for the canal; and that a series of three "good and substantial bridges" were to be constructed over the canal (on Cows property). The bridge locations were to be decided by Eleazer Cows and were to be maintained so that Cows (and later landowners if he sold the property) could safely cross the canal with a "loaded team." Cows was also concerned about the potential damage to his property contemporaneous to canal construction and in the future. He included language in the

deed stating that any damage to the surrounding land caused by the canal was the responsibility of those maintaining the waterway; not Cowls or any future owners of the surrounding land. Two additional stipulations explained that the grantees (S. Dickinson and M.F. Dickinson) were not allowed to “break the turf of the hill” near existing buildings owned by Cowls, to keep from “undermining” them; and they had to fill in/repair the “side hill” during canal construction (HD MA 1838 Deeds 83:100).

The gristmill and canal were constructed soon after the land purchase by Sylvester and Marquis F. Dickinson in March 1838. In Amherst tax records from May 1840, the real estate owned by Sylvester Dickinson included “1 grist mill” (Amherst Massachusetts Tax Records 1840:27). Holland and Robinson state that the millstone came from France and was shipped overland from New London, Connecticut to North Amherst via ox teams (Holland and Robinson 2012:25). Walter Dickinson and Marquis F. Dickinson sold one half of the gristmill and canal privilege to Stephen Puffer on April 2, 1844, for \$1,400 HD MA 1844. Deeds 100:411-413). The description of the 0.1-acre lot and canal details match the earlier 1838 deed from Cowls to Dickinson (HD MA 1838 Deeds 83:100). I could not find a similar land transfer from Sylvester Dickinson to Stephen Puffer, nor could I find additional records that described mill, tail race, canal, and dam construction or the location of the canal “bridges” requested by Cowls.

The gristmill and canal are drawn to scale on the 1916 Sanborn Fire Insurance Map of Amherst, Massachusetts (Figure 8). The canal follows the line of the hillside southwest to Montague (Leverett) Road, then follows along the east road edge to a dam and the gristmill building. The mill structure measures 60-x-40 ft. A tail race runs from the back of the structure, south/southwest to the Mill River. The footprint of the building fits entirely within the 0.1-acre lot sold by Cowls, a square lot placed against the road edge and measuring 4 rods (66 feet) on each of the four sides. The owners were quite economical with their land use strategy, filling the lot completely, with little to no undeveloped land remaining once the gristmill was constructed.

Puffer’s gristmill is mentioned in a news story about a disastrous flood along the Mill River that occurred on August 11, 1863. A severe thunderstorm passed through the area, with torrential rain continuing for at least an hour. At around 8PM in the evening, the Mill River rapidly passed flood stage, and the resulting torrent carried away “ten feet of solid stone dam which extended across the river, flanked on both sides by high ledges of rock” (Springfield Republican [SR], August 15, 1863:4). The stone and water destroyed a bridge just south of the Factory Pond dam (Puffer’s Pond dam) and swept away two women, a female child, and one man who were on the bridge at the time. The three ladies were killed, but the man found his way to an island downstream and was lucky to survive (SR August 15, 1863:4; Hampshire Gazette [HG] August 18, 1863:2).

Hills and Son bleaching shop, visible on the 1860 map of North Amherst (Figure 6), was destroyed and the water carved a four-foot-deep “channel” into Factory (modern Summer) Street. In addition, the “bridge near Puffer’s grist mill, a quarter mile below, was carried away, and the one just below Sunderland Road rendered impassable” (SR August 15, 1863:4). The journalist from the Springfield Republican noted that this was the 4th time damage of this magnitude occurred in the vicinity within the past 20 years. I searched newspaper archives for similar reports of damage to the Factory Pond dam, mills below the dam, and the Montague and Sunderland bridges, but could not find additional articles. No damage to Puffer’s gristmill was reported in the newspaper accounts, but it is likely that the dam/canal were impacted by this

flood event. The paper noted damages that incurred financial consequences (loss of business, destruction of bridges), but the dam/canal may not have reached the threshold for reporting.

The historic maps indicate there is a dam and associated pond at the head of the canal, but I could find no details about construction methods or dam type. At the time of construction in 1838, it is quite likely that the dam was a combination of stone and wood. A concrete dam (Figure 9) is shown in a map entitled “Town of Amherst, Mass. Takings for Sewerage of North Amherst” dating to August 1946 (HD MA 1946 Plans 29:52; HD MA 1946 Deeds 1004:349). The map details the path of a new sewerage line extending from Summer Street, south and southwest to the concrete dam at the head of the canal and continuing southwest to a point where it passes under Montague Road, just south of the former gristmill (which closed in 1934).

The map shows the Mill River flowing south/southwest to an L-shaped concrete dam (Figure 9). The dam controls water movement into the “Old Canal” which continues westward, and the Mill River to the south. A second map entitled a “Map Showing Property to be Conveyed by Clarence A. Hobart to Stephen P. Puffer Jr.” (HD MA 1962 Plans 63:21; HD MA 1962 Deeds 1389:281), includes a small inset map and enlargement that details the “bulkhead” at the head of the canal. The former inflow from the river is described as an “Old Dry River Channel,” suggesting that this section of the northernmost Mill River stream/branch was abandoned between 1946 and 1962.

The recent concrete dam and bulkhead were likely associated with the 1946 sewage construction but placed along the footprint of the original canal path/canal wall. To look for hidden features on the landscape, I used Digital Elevation Model (DEM) images based on USGS Light Detection and Ranging (LiDAR) data collected in 2015. LiDAR is a type of remote sensing where light is used to determine ground elevations. The resulting data can be used to create maps that show the relative elevation of points on the ground and allows for the removal of trees and other “noise” to create a bare earth model. A LiDAR view of the North Amherst Recreation Area and surrounding landscape revealed the path of the old canal running parallel to the hillside at the north property boundary (Figure 10).

The full LiDAR view shows numerous active and relict branches of the Mill River, which migrated along the valley floor over time (Figure 10). Below the southeast corner of the hillside, at the head of the canal, the L-shaped bulkhead and concrete dam are clearly visible. What is interesting about the LiDAR is the northeast trending extension from the modern dam to the west bank of the Mill River channel. The line is straight and is of similar color as the stone canal on the LiDAR image, suggesting a man-made feature. The distance from the river edge to the bulkhead measures approximately 300 feet. This is suspiciously like the 20 rods (330 feet) described in the Cows/Dickinson deed, as the distance of the proposed canal from a maple tree on the riverbank to the hillside (HD MA 1838 Deeds 83:100). At present, this 300-foot-long feature is on the active floodplain of the Mill River, away from existing walking trails and thus it is not easily accessible. Later ground inspection might provide additional information regarding the placement of the original 1838 dam/dam pond, a lost segment of the original canal, and changes in this section of the Mill River over time.

Stephen Puffer owned the gristmill from 1844 on, with his ancestors running the mill and associated businesses in North Amherst for close to a century. Stephen P. Puffer (1822-1913) is listed as a gristmill owner in North Amherst in the *Massachusetts Register of 1867*. This statewide business directory was published annually, but not all copies have survived. The

gristmill owned by Stephen P. Puffer appears in versions of the register dating from 1867 to 1878. In later years, individual towns published their own business directories, including Amherst.

Stephen P. Puffer appears as a gristmill operator in numerous copies of the *Amherst Directory* dating from 1890 through 1913. The initial gristmill business expanded to include the sale of hay, grain, and fertilizer. Puffer's son Edward is listed as a miller in the 1898 copy of the directory, working at the family gristmill. By 1906, Puffer added additional services to the business, listed under "S.P. Puffer & Son." The original gristmill and store (S.P. Puffer) sold hay, grain, feed, meal, and fertilizer, while the S.P. Puffer & Son brand dealt in ice, coal, building stone, trucking, sand and gravel, and wood. Edward S. Puffer (E.S. Puffer) took control of the family businesses after Stephen P. Puffer died at age 90 in May of 1913. Directories published between 1913 and 1923 show the shift in ownership.

The only other business that used the canal was a blacksmith shop owned by Alexander Shattuck. The shop is marked on the 1860 and 1873 maps of North Amherst (Figures 6 and 11). In 1856, Chloe D. Evans sold one acre of land and the existing buildings to her niece Annie E. Shattuck; the south bound of the property runs along the Puffer canal (HD MA 1856 Deeds 168:484). The blacksmith shop was constructed soon after the property sale (1856), first appearing on the 1860 Walling map. The shop remained active until November 1886 when Alexander Shattuck died of pneumonia at 73. Annie E. Shattuck sells the property and buildings to Stephen P. Puffer in December 1886 for \$325 (HD MA 1886 Deeds 406:116). I could find no evidence of a blacksmith working at the location after the purchase by Puffer in 1886.

The Upper and Lower Roberts Mills (Mill River Conservation Area)

The remains of two stone foundations are visible along the Robert Frost Trail. The Upper Roberts Mill sits on the south bank of the Mill River, north of the trail, and west of the N/S trending railroad berm that traverses the conservation land. The Lower Roberts Mill lies on the north bank of the Mill River, south of the trail, and west of the bridge that fords the river. The paper mills appear on early maps of Amherst, with the Upper Mill visible on 1830 and 1833 plats. Both the Upper and Lower paper mills are drawn on 1856, 1860, and 1873 inset maps of North Amherst, as part of Hampshire County maps and Atlases (Walling 1856, 1860; Beers 1873) (Figures 5, 12, and 13). The town's historic maps show the development of industry along the Mill River section between Bridge Street and Puffer's Pond.

In his *Gazetteer of Hampshire County, Massachusetts 1654-1887*, William Burton Gay states that the "earliest manufacturing in Amherst was done in Rowe's paper mill at North Amherst" (Gay 1886:157; Carpenter 1896:287). Gay puts this fact under the heading of "Industries," drawing a clear distinction between earlier mills that produce everyday staples (flour, corn, meal, and lumber) with those that turn out specialty products to be sold for profit, such as paper. Earlier mills, like gristmills and sawmills, did exist on the Mill River and in other parts of Amherst in the 18th century; there are two gristmills on the 1794 map of Amherst (one at Bridge Street and the other on Puffer's Falls) (Figure 5). While Amherst never become a manufacturing center, the streams and rivers in the town did support several smaller industries that flourished until those larger centers developed elsewhere (Carpenter 1896:287). The Rowe (later Roberts Upper) mill in North Amherst marked the beginning of the manufacturing/industrial economy of Amherst for well over a century.

The first papermill on the Mill River was constructed between June 1794 and May 1796 by Daniel Rowe, who lived in Litchfield Connecticut before moving to Amherst, Massachusetts. Jacob Samson sold a half-acre of land to Daniel Rowe for 8 pounds. The small plot was contained within the former Andrew Kimball farm and measured 9 rods (148.5 feet) square. The Mill River served as the north boundary for this lot, which was carved out with specific intention to build a paper mill. The deed allowed for the new owner to traverse an existing path by foot or team to access the newly placed lot; and gave “a right of flooding our land above by erecting a dam on or about the premises” (HD MA 1795 Deeds 9:340).

Just under two years later, in May 1796, Daniel Rowe sold Friend Smith of Amherst one-quarter of his interest in the paper mill, associated land, and “all the tools used in the papermaking business in said mill” for \$666 (HD MA 1796 Deeds 11:235). The initial sale to Rowe was signed on June 13, 1794, while the sale from Rowe to Smith is dated May 20, 1796, suggesting that the mill was constructed, equipped for papermaking, and in business within one year and 11 months of the land sale. Friend Smith sold his quarter share of the paper mill to Elijah Kellogg in March 1805 (HD MA 1805 Deeds 23:238).

The Rowe mill dedicated a single vat to paper manufacture, which was produced entirely by hand, with individual sheets of paper made in a mould (Bidwell 2013:121; Hunter 1950:233). The Spanish first introduced papermaking to the Americas via Mexico (Culhuacán) in 1575; while a “German-born family” brought the European method of papermaking to Pennsylvania in 1690 (Hunter 1952:8). The earliest paper mills had three work areas, a beater room, a vat house, and a drying loft. The mills needed a reliable source of water to make linen/cotton pulp and to power machines used in paper production. Linen and cotton rags were collected from local communities and surrounding areas. The rags were sorted by fabric type and quality and later recombined in various blends to produce paper of varying levels of quality. The linen and cotton rags were reduced to fiber by pounding, stamping, and macerating by hand and later by machine (Bidwell 2013:xxiv; Hunter 1952:12). It is likely that the Rowe paper mill used some type of mechanical beating machine, but there is no known documentary evidence.

The rags were reduced to individual fibers and filaments in water, and stored in a “stuff chest, resembling a huge wine cask” (Hunter 1952:12). The mixture drained from an outlet at the bottom of the chest to a dipping vat. At least three men labored in the vat room, all of whom were skilled workers who had completed an apprenticeship to learn the paper trade. The “vatman” dipped a wooden mould into the vat and motioned the moist pulp to form a consistently thick sheet. The mould was set aside until the moist pulp firmed. The “coucher” then flipped the moist sheet of paper from the mould onto a piece of felt. The vatman and coucher worked in tandem, creating a stack of alternating layers of paper and felt. When the stack reached 144 sheets (a ream), pressure was applied to expel the excess water. The “layboy” then separated the sheets of paper and returned the felting to the coucher so the process could continue. The layboy took the paper to the drying room/drying loft. A skilled vatman and coucher could produce 2-4 reams of paper per day, depending on the size of the mould and the thickness of the paper being produced (Hunter 1952:12-16).

In his 2013 book “*American Paper Mills 1690-1832*” John Bidwell posits that the Rowe mill was “perhaps in association with William Lyman” (Bidwell 2013:120). Bidwell reviewed account books of N. & D. Sellers, a mould manufacturing firm in Pennsylvania. In the book dating from 1788-1825, he found a reference to William Lyman of “Northampton County, Massachusetts,” and the purchase or of moulds made between September 2 and September 20, 1794. The paper

moulds were of various sizes: demy, double, crown wrapping, and double cap. Bidwell knew the Rowe mill dated to 1794/1795 and given the proximity between Amherst and Northampton he assumed the clerks were in error when they reported the client address; he cited other instances of “geographical guesswork” on the part of the clerks working at N. & D. Sellers (Bidwell 2013:120-122). I could find no direct connection between Lyman and Rowe.

Daniel Rowe sold his three-quarters interest in the paper mill to Benjamin Cox and Reuben Roberts on August 4, 1806. The deed included a half an acre of land, the mill building, “the utensils belonging to said mill which are now improved in common with Elijah Kellogg,” the privilege of erecting a dam, and access to the “bridle road from the County road that is now travelled.” Rowe sold Cox and Roberts a 10-acre plot land contemporaneously and both properties are listed on the same deed (HD MA 1806 Deeds:25:211). I could find no additional information regarding how the mill “utensils” were “improved” in land records or other available sources.

Elijah Kellogg later sold his one-quarter share of the paper mill to Benjamin Cox and Reuben Roberts for \$700 on May 13, 1809 (HD MA 1809 Deeds:28:347), which meant the mill was wholly owned by Cox and Roberts. A month and a half later (July 1, 1809), Benjamin Cox sold his half interest in the paper mill to Ephraim Roberts (Reuben Roberts’ older brother) (HD MA 1811 Deeds 31:420). Reuben (1774-1864) and Ephraim Roberts (1769-1853) came to Amherst from East Hartford, Connecticut (Carpenter 1896:287; Gay 1886:157), two of the 11 children of Joseph and Thankful Roberts. Reuben Roberts learned the paper trade in East Hartford at the Hudson & Goodwin mill (later the East Hartford Manufacturing Company) (Paper Trade Journal 1932:Volume 15:Issue 6:15).

After the purchase, the paper mill began operating under the name E. & R. Roberts, with each brother owning a half interest in the business. The Roberts mill produced a “fair grade of writing paper that was sold in Albany, New York; the brothers transported the finished paper by team and wagon” (Hunter 1950:233). Dard Hunter reproduced the Roberts label in his book *Papermaking by Hand in America* (Figure 14), noting similarities in the border design on labels of other Massachusetts papermakers. The labels, produced by Denfo & Clark printers (Greenfield, MA), are earlier than the “1822” on the example, as Hunter notes that John Denfo worked in Greenfield between 1802 and 1820 (Hunter 1950:233).

The mill continued under the ownership of E. & R. Roberts for several decades; and the brothers each retained half ownership, as evidenced in 1810, 1820, and 1830 Amherst Property Tax Records. In his summary of the Roberts mill in Amherst, John Bidwell cites *Records of the 1820 Census of Manufactures*, to give some idea as to the size of the business (Bidwell 2013:122). As part of the 1820 census, manufacturers were asked a series of 14 questions regarding: the raw materials used, the number of people the business employed, the machinery, expenditures, and production. There was only one paper mill responded to the census of manufactures in Amherst in 1820, but no name appeared on the question sheet. I crosschecked data with 1820 property tax records and found that Amherst had one paper mill in 1820, and it was owned by Ephraim and Reuben Roberts (Figure 15).

The Roberts paper mill employed 11 people, six men and five boys and girls and paid \$2,100 per year in annual salaries (Figure 15). They used approximately 20 tons of cotton and linen rags per year, costing \$2,000. The mill machinery included one engine, a water wheel, one glazer (glazing machine), and two iron screws and presses; all of the machinery was in operation at the

time of the survey. The Roberts mill invested \$4,000 in capital per year, with wages totaling \$2,100, and additional expenditures of \$350 per year. E. & R. Roberts produced four types (sizes) of paper stock: fools cap, medium, demi (demy), and royal, which had a market value of \$5,000 (Bidwell 2013:122).

Bidwell also reviewed the *McLean Report on Manufactures*, an 1832 survey published by the U.S. Government in 1833 and found additional information on the Roberts mill. Seven men and seven women worked at the mill in 1832, which reported output/stock valued at \$6,000. The McLane Report also noted that the mill was founded in 1810, leaving Bidwell to wonder whether the mill had been rebuilt at that time (Bidwell 2013:122). The Roberts brothers took full control of the business in July 1809, and they may have rebuilt the mill in 1810; but it is also possible that they updated machinery and expanded the existing building as they began their operation in earnest. Either scenario fits the available evidence.

Between 1829 and 1835, Ephraim and Reuben Roberts twice mortgaged and amortized landholdings including the mill. On December 15, 1829, they took a \$4,500 mortgage from Peter Ingram (a clothier) and Charles Roberts (Reuben's eldest son). The transaction included the paper mill (0.5 acres) with all associated accoutrements; various tenements occupied by Reuben Roberts (10 acres), Ephraim Roberts (30 acres), and Charles Roberts (2.5 acres); and one-third of an iron forge, associated dwelling, and the land under and around the forge (1 acre). The terms of the mortgage required payment within 2 years, but there was no mention of interest (HD MA 1829 Deeds:62:615). The return of title was recorded in a separate deed, where Ephraim and Reuben paid Peter Ingram and Charles Roberts a token \$5 (HD MA 1832 Deeds:78:383). The deed was signed on April 21, 1832, and the Roberts paid installments over the two-year mortgage term.

Several months later, in July 1832, Ephraim and Reuben Roberts mortgaged the three same family land parcels as in the 1829 mortgage (10 acres of Reuben, 30 acres of Ephraim, and 2.5 acres of Charles) to Luther Henry of Shutesbury for \$800. The mill property and the interest in the forge were not included in this transaction. The Roberts had three years to repay the mortgage, and a side note recorded on April 11, 1840, said the payment had been made on time (HD MA 1832 Deeds:69:131).

The Upper Roberts Mill and the nearby forge are visible just west of Bridge Street on the 1830 and 1833 maps of Amherst (Figures 5 and 12). The 1830 map shows the forge and paper mill locations, with small dam ponds in tandem with their locations on the Mill River. In 1829, the Commonwealth of Massachusetts required all towns to complete a survey to compile an accurate map of the state. All towns had to draw the maps to the same scale (100 rods to an inch), and specific geographic, infrastructure, and industrial elements. The woodlands drawn on either side of the Mill River near the Roberts Mill represent what the surveyor saw then; they are not decorative.

During the period that Ephraim and Reuben purchased the paper mill (1809) through 1840, both men married and had sons who apprenticed in the mills and later took over the paper business. Ephraim Roberts had 8 children, two sons born to his first wife Susan (Eastman), Orrin (1797) and Ephraim Jr. (1798); and six children with his second wife Jerusha (Mann): Susan Eaton (1800), Clarissa M. (1802), Maria (1804), Emery (1806), Wells W. (1808), and Avery (1813). Ephraim Jr. was the only one of the boys to succeed his father in the business. Three of his

brothers died before the lower paper mill was constructed (Emery in 1835, Wells W. in 1836, and Avery in 1832); I could find no other record of Orrin beyond his birth in 1797.

Reuben Roberts and his wife Esther (Risley) had seven children: Esther (1797), Charles (1799), Sally (1802), Reuben Jr. (1805), Sylvester (1808), George R. (1811), and Catherine. All four of Reuben's sons (Charles, Reuben Jr., Sylvester, and George R.) become papermakers and all four are listed in land records related to the upper and lower paper mills.

As Ephraim and Reuben got older, each man passed on his interest in the paper mill to his sons. The earliest reference to a change in ownership is from a deed dated February 23, 1841. Sylvester Roberts mortgages the paper mill (including all the buildings, water privileges, machinery and the 0.5 acres of land) as well as the tenements where Reuben Roberts Jr. (10 acres), and Charles Roberts (2 acres) lived. The mill is described as "formerly owned and occupied by E. & R. Roberts" (HD MA 1841 Deeds:90:155). Lewis L. Draper held the \$1,500 mortgage which was paid back with interest over four years. The name "Roberts & Company Paper Mill" is applied to the upper mill in October 1842, in a deed related to water rights. Peter Ingram sells Roberts & Co. "the privilege of overflowing so much of the land adjoining the river on the north side" between their paper mill and the nearby Alan Barnard & Company forge. The Roberts were also allowed to flood the north side from the forge up to the foundation of the former Ingram grist mill (near Bridge Street) (HD MA 1842 Deeds:97:169).

The second Roberts mill, the lower mill, was constructed on property purchased on July 13, 1847. Joseph E. Marshall and Ansel C. Marshall sold a small parcel of land (3 acres and 43 rods) to Reuben Roberts' four sons (Charles, Reuben Jr., Sylvester, and George R.) for \$182.87. The land was in "the north part of Amherst near the mill of the aforesaid Roberts" (HD MA 1849 Deeds:120:302). A series of compass bearings and ground measurements reveal the footprint of the lot. A portion of the south boundary runs for 7 rods and 7 links (approximately 120 feet) along the center of the Mill River.

Both the Upper and Lower Roberts Mills are depicted on an 1856 map of Hampshire County, Massachusetts drawn by H.F. Walling (Figure 13). An inset map of North Amherst includes the section of the Mill River that runs from Cushman to North Amherst center. West of Bridge Street, the Mill River flows southwest to a forge, then continues downstream to the R. & G. Roberts Paper Mill (Reuben Jr. and George R.), where there are two buildings on the south bank of the river. The river is slightly wider above the buildings, suggesting some type of dam, with a mill race extending from the westernmost building to the main channel. The 1860 Walling map of Hampshire County, MA includes additional detail, including the dam associated with the upper mill property (Figure 13).

The 1856 and 1860 Walling maps also show an access road/path running from Bridge Street northwest to the Upper Mill. The road continues southwest to a bridge over the Mill River, where it passes by a second paper mill (the Lower Roberts Mill) then shifts west and northeast where it intersects with State Street (Figure 13).

The Lower Roberts Mill sits on land within a shallow meander on the north bank of the Mill River (Figure 13). Two buildings are depicted, one larger oriented north to south, and one smaller oriented east to west. The buildings lie between the Mill River to the south and the access road/path to the north. A mill race extends from the river, west to the mill buildings, continuing to where it emptied into the Mill River. The 1860 version shows a dam north of the path/bridge over the river, and the mill race branching off the dam before heading into the lower

mill. An examination of related deeds, historic documents, newspaper databases, or local histories produced no descriptions related to mill construction on the former Marshall property.

There was a brief mention of the Roberts paper mill in the *New England Mercantile Business Directory* for 1849. The listing is under the heading “Paper Manufacturers” and reads: “Roberts, S. & Co. (straw board, and wrapping paper, 20,000 reams)” (New England Mercantile Union 1849:174). The summary reveals that by 1849, at least one of the paper mills was using straw mixed with linen and cotton rags to produce stock. There is no mention of writing or printing paper in the 1849 directory, suggesting that the Roberts operation moved away from high quality paper products to cheaper produced functional styles. Given the available information, the Lower Roberts Mill was constructed between July 1847 (when the land was purchased from the Marshalls) and 1849 (the published business directory listing).

The shift from a cotton/linen (writing paper) to a straw/rag (straw board and wrapping paper) product required manufacturing methods and newly developed machines that were not needed to craft single sheets of writing paper. The second mill likely incorporated technological advancements as the paper trade was forced to find additional raw materials to produce fiber pulp. As early as the 1790s linen and cotton rags became scarce, with individual States publishing requests in local and regional newspapers to save rags. People experimented with many materials including leather, corn husks, rope, canvas, basswood, potato vines, seaweed, and straw (ca. 1827-1828) (Bidwell 2013:xxxv).

The Roberts Mills were actively using straw in paper product manufacture by 1849, as seen in newspaper articles describing the unfortunate deaths of Sylvester Roberts and his son William. A death notice appeared in the September 4, 1849, edition of the *Hampshire Gazette*. It read “Also, William S., an infant child of Mr. Sylvester Roberts aged 1 year, 5 months and 19 days” (HG September 4, 1849:3); no cause of death was listed in the notice, but the official cause of death is described as “scalded” in Massachusetts death records. Less than three months later, local newspapers reported the accidental death of Sylvester Roberts. The horrific workplace accident occurred on November 13, 1849.

Sylvester Roberts was standing on a plank over a “cauldron” of boiling liquid, trying to hoist a bundle or block of straw out of the bleach solution. He was pulling on a rope attached to hooks secured above the vat. As he pulled, the rope broke; Sylvester tried to grab hold of the “rope above the fracture,” but this too snapped and he “was precipitated into the boiling liquid below.” The article continues to explain the horrible injuries suffered by Sylvester noting that the “flesh was literally scalded from his body, and he lingered in great agony till Tuesday Morning. His age was 41, and he leaves a wife, his only child having met death by a similar accident, not long since” (Boston Daily Bee [BDB] November 19, 1849:1). Like the boy William, the official cause of death for Sylvester Roberts is described as “scalded” in Massachusetts death records.

This tragic story first appeared locally in the *Amherst Express* but began to spread via newspapers locally and regionally in November and December 1849. In various newspaper databases and archives, the same story is subsequently published in newspapers across Massachusetts, and in Vermont, Connecticut, Maine, New York, Pennsylvania, New Jersey, Virginia, and Maryland. The story took an almost viral quality given the sad and upsetting circumstances.

Sylvester Roberts died intestate in November 1849, but the matter of his probate took an unexpected turn as his wife Fanny (Hobart) was pregnant at the time of his death. Fanny gave

birth to a girl, Fanny Sylvester Roberts, on July 8, 1850. The probate process was not initiated until after the baby was born, since it changed the number of heirs who could inherit from the estate. Fanny petitioned the Probate Court to serve as the guardian of Fanny S. and helped to create an inventory of property. As part of the process, some of Sylvester Roberts real estate was sold off to provide for the minor child in the form of future investment.

The estate inventory was split into two sections, the private real estate and individual property of Sylvester Roberts, and the real estate and property of Sylvester Roberts & Co. (Figure 16). At the time of the death, Sylvester personally owned one house and lot; but also held a one-fourth interest of the land, buildings, and property owned by the company. The real estate owned by Sylvester Roberts & Co. in 1850 included: 2 water powered paper mills on 4 acres of land; a house on 1.75 acres of land (occupied by Charles Roberts); a homestead with a house and 2 barns on 6 acres of land; the 10-acre Ingram Lot; and the forge lot and buildings. The real estate owned by the company was assessed at \$2,169.75.

The inventory of the “personal” property of the company lists all the tools, livestock, vehicles, and existing raw material stock in use by the mills at the time of Sylvester Roberts death. The value of these items was estimated to be \$27.58 (Figure 16). Unfortunately, there are no descriptions of any engines or machines associated with the mills. Fanny Roberts, in her role as guardian, placed a public notice in the newspaper to tell of the impending sale at auction of certain of Sylvester Roberts land holdings. Charles Roberts, Reuben Roberts Jr., and George R. Roberts purchased their late brother’s one-quarter interest in the 4-acre paper mill property (lower mill), the former E. & R. Roberts mill (the upper mill) on February 5, 1851, for \$1,500. The sale included all buildings, machinery, and water privileges (HD MA 1851 Deeds:137:383).

A second premature death, that of Charles Roberts on December 15, 1852, produced a flurry of real estate sales and company restructuring. Charles died of “paralysis” which could indicate a stroke in the parlance of the day. Charles and his wife Lydia had seven children ranging in age from 7 to 29 years old at the time of his death. As he also died intestate, the probate included sale of his real estate to provide for the minor children. A public real estate auction was set for July 26, 1853, and a notice was published in local newspapers. The sale included four undivided sixths of one-third of the upper paper mill (with water privilege and a half acre of land) and four undivided sixths of one-third of the lower paper mill (with water privilege and 3.5 acres of land) (HG August 2, 1853:4).

Charles Roberts’ probate includes two adult children and four minor children, with the proceeds from the sale being saved or invested for their futures. The inventory account is again sorted into personal and company property and is similar in content to company holdings as that of Sylvester Roberts. The children of Charles Roberts (minor and adult) and their mother Lydia sold their interest in the paper mills to Reuben Roberts Jr. in a blizzard of deeds (including prior mortgages) dating to August 1853.

Reuben Roberts Jr. and George R. Roberts continued working at their paper mills on the Mill River. The Roberts mill was listed in the *Illustrated Catalogue and Price List of Leffel’s American Double Turbine Water Wheels* in 1867 and again in 1868. The notation reads “Paper mill – R. Roberts & Co., Amherst, 23-inch wheel drives paper mill, head and fall 20 ft” (Leffel & Company 1867:47). The Roberts mill used a 23-inch double turbine water wheel at one of their two mills in 1867 and 1868. The catalog describes in detail how to set up wheels, including how to measure the water flow in the related river/stream to choose the proper wheel for the

circumstances (Leffel & Company 1867:47, 1868:71). It is possible that R. Roberts & Co. appeared in earlier or later copies of the Leffel catalog, but no other years were available for examination.

R. Roberts & Co. also appears in the *Massachusetts Register and Business Directory of 1867* under the heading “Paper Manufacturers.” R. Roberts & Co. of North Amherst producing straw wrapping paper. Massachusetts published yearly almanacs, registers and business directories from the late 18th century through the late 19th century, but not all volumes are available for inspection. The content of each volume varies by publication date, with some limited to Boston and others including all of Massachusetts. R. Roberts & Company is first listed in 1867 and consistently through 1878 (*Massachusetts Register and Business Directory* 1867:308; 1869:323; 1872:490; 1874:520; 1878:584). Additional volumes could exist.

On November 10, 1862, 57-year-old Reuben Roberts Jr. (b. 1805) sold one third of his interest in the upper and lower mill properties to his sons William L. Roberts (b. 1835) and Manning Roberts (b. 1837) (HD MA 1865 Deeds:231:199). Reuben Jr. sold a second one third interest in the mill properties to William L. and Manning on May 24, 1875, about two years before his death in November 1877. The 1875 deed cites all the regular accoutrements, the buildings, land, water privilege; but also includes “one-third of the scales and one-third of the bridge and the right of way through the entire length of the paper mill road” (HD MA 1875 Deeds 318:116). A similar deed from the estate of George R. Roberts transferred one-third interest in the upper mill to William L. and Manning Roberts on May 28, 1875 (HD MA 1875 Deeds 318:187).

The Roberts mills, each under the label of “R. Robert & Sons Paper Mill” are depicted on an 1873 map of North Amherst and North Amherst City in the *County Atlas of Hampshire Massachusetts* by F.W. Beers (Figure 17). The 1873 view has several mistakes including the misspelling of the owner’s name (Robert instead of Roberts), the incorrect placement of the upper mill, the misalignment of the path/road between Bridge and State Streets, and the representation of the mill buildings.

On the 1856 and 1860 views, the upper mill has two buildings, while the lower mill is drawn as one large T-shaped structure; these are reversed on the 1873 map (Figures 13 and 17). The mills are also shown adjacent to one another, on either side of the fording place across the Mill River, with one upstream of the dam. Further east, near the railroad tracks is a dam and dam pond with no accompanying mill structure; this is where the Upper Roberts Mill should be. The road/path to the mills begins at the proper place on State Street but it should turn northwest towards the dam just west of the railroad tracks, before shifting southwest to the river crossing and the lower mill. It is likely that the individual who drafted the 1873 view used the earlier Walling maps (given the two buildings and T-shaped structure) but may have modified placement and the road path due to the newly constructed railroad line as well as a streamlining of the Mill River between Bridge and State Streets.

A glimpse into the later workings of the mill is seen in *The Paper Mill Directory of the World*, a trade journal devoted to paper makers and paper supply. Under the heading of North Amherst is a listing for W.L. Roberts & Co. stating there are two mills that produce 1,200 lbs. of straw wrapping and leather board. The mill runs for 10 hours a day, but one mill is idle (*Paper Mill Directory of the World* 1883:27). An expanded entry in 1884 describes more about the operation. Roberts & Co. includes two mills and was established about 90 years ago. They have four 200-lb engines, one 42-inch cylinder, and one 62-inch cylinder. The mill runs on water and has four

wheels (80-H.P.). In 1884 the mill employed 4 and produced 1,000 lbs. of straw board, straw wrapping, and leather board. The mill runs 24 hours, and one mill remains idle (Paper Mill Directory of the World 1884:45).

By the time William L. and Manning Roberts took over the business they were only selling straw and leather based and products. The “cylinders” mentioned in directory entries refers to a specific type of papermaking machine (cylinder machine). A rotating cylinder covered with a wire belt passes into a tank holding pulp slurry and moves wet paper to a series of felt belts which dry and form the product. The never-ending mesh produces rolls of paper (including straw and leather-based products) on varying width cylinders. The Roberts mill used 42 and 62-inch cylinders for manufacture. Roberts & Co. appear in comparable listings in *Lockwood’s Directory of the Paper and Allied Trades* between 1881 and 1890 (Lockwood 1881:48; 1887/8:54; 1889/90:53).

The trade journals note “one mill idle” in directories dating to 1881, 1883, and 1884 (Paper Mill Directory of the World 1883:27; Paper Mill Directory of the World 1884:45; Lockwood 1881:48). Later entries through 1890 only describe the machines in use and paper goods produced, no mention is made of multiple mills operated by Roberts & Co. Based on the shift from linen/cotton rags to straw and the later construction of the lower mill, it seems likely that the older upper mill went idle sometime after newer technologies were implemented by 1849.

An act of arson destroyed the working Roberts mill (likely the lower mill) on August 3, 1894. The *Springfield Republican* reported a fire at the Robert Brothers leather board factory two days prior at 8PM. As there was no fire department in North Amherst, the mill burned to the ground in one hour. The mill valued at \$4,000 was a total loss and there was no insurance. The newspaper described the fire as “incendiary” and noted that the same building had been set on fire a week prior; there were additional episodes of arson in North Amherst as well. At the time of the fire, the mill was producing one ton of product per day (Carpenter 1896:287; Springfield Republican [SR] August 5, 1894).

The Roberts mills were not drawn on United States Geological Services (USGS) topographic quadrangles dating from 1886, 1891, 1893, or 1895. There is also no representation of either mill on Sanborn Fire Insurance Maps of Amherst dated 1887, 1892, or 1896; an indication that the Roberts properties were not insured for fire damage. Both mills do appear on a 1963 map titled “Land in Amherst, Mass. Surveyed for the Inhabitants of Amherst Being a Resurvey of the Reuben Roberts Mill Rights” (HD MA 1963 Plans 64:81) from the Hampshire District Registry of Deeds (Figure 18).

The survey map shows a section of the Mill River from the railroad tracks to where the river crosses under State Street (Figure 18). Existing property boundaries and owner information is recorded along with the foundations of the “upper” and “lower” mills, the access road/path from Bridge to State Street, mill races for both mills, and additional access road from State Street to the “lower” mill, and an access road running southwest to a small “camp” building east of the Mill River. The access road from Bridge Street follows a similar path as seen on the 1856 and 1860 Walling maps (Figure 13), running to the upper mill, then across the river to the lower mill, then northwest to State Street. Existing hiking trails in the Mill River Conservation Area (the Robert Frost Trail and a portion of the Hilda and Morris Golden Trail) follow the route of the road/path to the Roberts Mills.

The Roberts Mills are also visible on LiDAR images based on DEM data collected and processed in 2015 (Figure 19). The mill foundations, mill races, and access road (Robert Frost Trail) are easily identified on LiDAR images and align nicely with the 1963 survey map of the Roberts mills. The Mill River channel has narrowed and widened over time, but there is little substantive change in the course, since it is topographically constrained by earlier abandoned terraces as well as coarser delta outwash plain deposits just south of the study area.

The Cushman Clam Club (Mill River Conservation Area)

The Cushman Clam Club was the most difficult research topic for this project, since the history is based more on oral tradition rather than documentary sources. The only published reference is a figure caption from the 2012 book *Images of America: North Amherst and Cushman* by Patricia G. Holland and William N. Robinson. A photograph on page 56 shows a section of the Mill River south of the fording place/bridge, with camera facing north (Figure 20).

Two boys are playing on the north (or west) bank of the river (Figure 20). In the upper right corner of the photograph is the northwest corner and west wall of a small building located on the south (or east) bank of the river. The building is surrounded by woods. There is no substantive foundation, and the small shack or shanty may have been built on small piers or rocks to keep the building level. In the distance, a row of laid stone is visible across the water; this is the bridge or fording place of the road/path over the Mill River. It is this structure that Robinson identifies as the Cushman Clam Club. The accompanying caption reads:

“Upstream from Puffer’s Pond by the Mill River there used to be the Cushman Clam club, a place for local parties. In the photograph above, the club is above the stream on the right. After nearly all the mills closed in the 1920s, the blacksmith Clifton Ashley hauled lumber from the Red Mill to build the cabin and fashion the boiler and steamer pots plus the wire baskets. The menu was clams, crackers, cheese, coffee, and a keg of beer. The members of the club were men only, and sometimes things got rowdy. Sometimes, a wedding party took place there. The place stayed active for at least 15 years and left behind a lot of clamshells” (Holland and Robinson 2012:56).

This small building appears on the aforementioned “Reuben Roberts Mill Rights” 1963 survey map, labeled “camp” (Figure 18). The shanty/shack is oriented parallel to the south (east) bank of the Mill River and is in similar positioned as the building seen in the photo from the Robinson book (Figure 20). Just west of the upper mill, an unimproved access road splits from the Robert Frost Trail and heads southwest to the east wall of the cabin. In the 2015 LiDAR view, the “camp” sits on a small terrace above the current Mill River floodplain and aligns with north to south trending scarp lines carved as the river entrenched to its current level (Figure 19).

The shanty/shack is also drawn on 1:24,000 and 1:25,000 scale topographic quadrangles published between 1932 and 1978 (Figure 21). According to Holland and Robinson, the Cushman owned Red Mill was sold in 1909 and a new mill was constructed at the site in 1912. Thus, Clifton Ashley scrounged materials to build the Cushman Clam Club between 1909 and 1912 (Holland and Robinson 2012:58-59). The camp did not appear on USGS topographic maps dating to the time of construction since they were drawn at a larger 1:62,500 scale and were not updated until the 1932 series was compiled. The “Reuben Roberts Mill Rights” survey map proves the camp was still standing ca. 1963, but successive USGS topographic quadrangles may have relied on earlier views and repeated without field check for standing structures through

1978. A broad timeline for the Cushman Clam Club is from 1909 through 1978. It is unclear if the club remained active for the entire time period.

There was scant evidence beyond the Holland and Robinson book, the 1963 survey map, and USGS topographic quadrangles. No mention of the Cushman Clam Club is found in newspaper databases or local histories. As for Joseph Clifton Ashley, he was born on August 22, 1886, in Amherst to Frank S. and Lillie S. (Barnard) Ashley. His father Frank worked as a blacksmith and horse shoer in 1890 and was listed in the 1898 *Amherst Directory* as a machinist (*Amherst Directory* 1890:10,46; 1893:10,78; 1898:60). As an adult, J. Clifton Ashley worked as a toolmaker in 1917, and was later employed as a blacksmith (1920-1950) on North East Street in Amherst. According to various editions of the *Amherst Directory* (1921, 1923), Ashley worked as a constable and as a volunteer member of the forest fire company in Cushman. (*Amherst Directory* 1921:46-47; 1923:44, 47).

J. Clifton Ashley is mentioned in a newspaper notice published in the *Springfield Union* on May 28, 1958. The paragraph describes a meeting of the Men's Club of Leverett. The men met at "camp Anderson" where J. Clifton Ashley served as head chef. After dinner, club members decided on officers, with Ashley to serve as treasurer. Ashley was 72 at the time of this meeting in 1958 and might have been reliving his days at the Cushman Clam Club. Since William Robinson grew up in North Amherst, he likely knew J. Clifton Ashley well. There is an oral tradition of the club, passed on by Robinson, but little documentary evidence (besides the 1963 survey map). Archaeological survey of the area located piers that likely stood as the impromptu foundation of the Cushman Clam Club, as well as remnants of a deteriorating shell midden. If the shack/shanty served as a men's social club, or an informal party/wedding venue, people in the community may have related stories and/or photographs from that time; but unfortunately, there is nothing published.

FIELD DOCUMENTATION STUDY

Objectives and Methods

The objective of the field documentation part of the reconnaissance survey is to create a visual record and narrative description of each of the present components and current conditions of each of the four sites: Upper Roberts Mill, Lower Roberts Mill, Clam Club, and Dam and Canal. This objective was to be achieved using mapping and photography. Maps of the present visible components of each of the sites were prepared using tapes and compass. English system units (inches and feet) were recorded since they were the units used to design and build the structures. Although measured elevation drawings were contemplated, the decision was made to use photography to record the present conditions of the stone walls. Photographs were taken of all visible elements of the sites and were keyed to the site maps by graphically indicating the location and direction of the camera for each photograph. All efforts were made to disturb the sites as little as possible during the mapping and photography. Therefore, leaves and surface debris were not cleared.

These descriptions and photographs serve as detailed documentation for the present condition of each of the sites and may be useful for interpreting the sites as well as for monitoring and recording changes in the sites that may result from floods, tree falls, or vandalism. The report also includes assessments of the relative level of threat each of these processes poses to the integrity of the sites.

The Mill River Canal and Dam Sites

Location and Setting

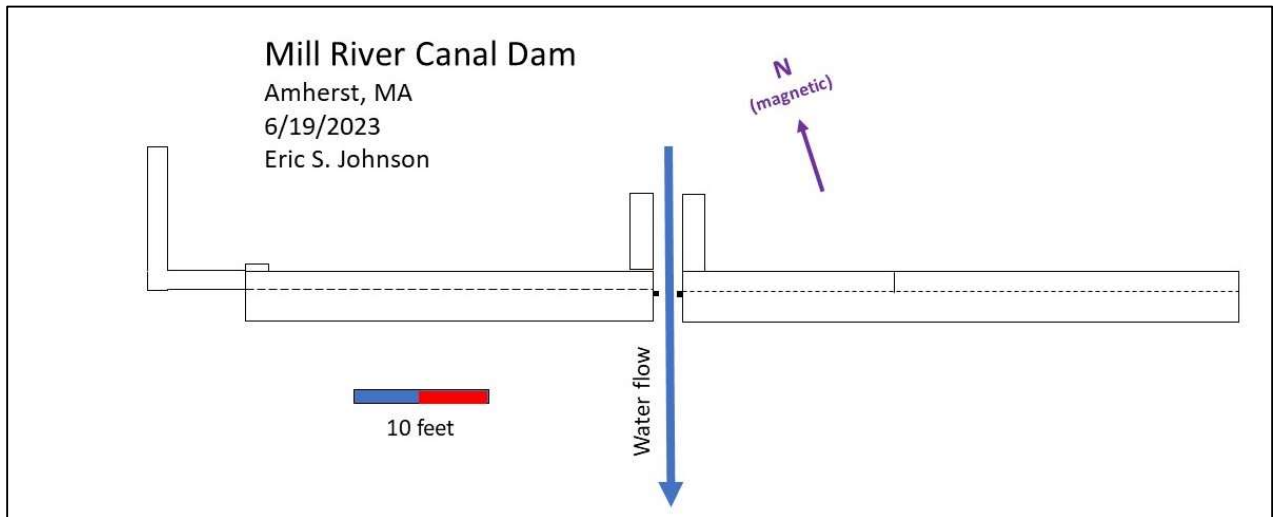
The Mill River canal is located along the northern boundary of the Mill River Recreation Area at 95 Montague Road (Route 63). The site of the dam that once regulated the flow of water into the canal is located in a wooded area a short distance from the northeast corner of the open fields of the recreation area (Figures 22-25). The original dam has been replaced by a concrete and steel structure. Its approximate UTM coordinates are Zone 18 E703648 N4698555. The environment of the canal site today is transition between a forested area to the north and an open field with recreational facilities to the south. Several large trees grow along this edge. The Dam site is in a thickly wooded area with dense undergrowth including abundant thorns, slowly flowing water, and swampy areas.

Site Structure and Components

There are two components to the site: the canal and the dam. The canal no longer contains water and consists of an earthen berm that varies in height but is no more than up to approximately 6 feet high. The base of the berm marks the northern boundary of the open field of the Mill River Recreation Area (Figures 26-36). The berm has been disturbed or removed in some areas (Figures 30 and 36), and possibly added to in at least one area (Figures 29 and 31)

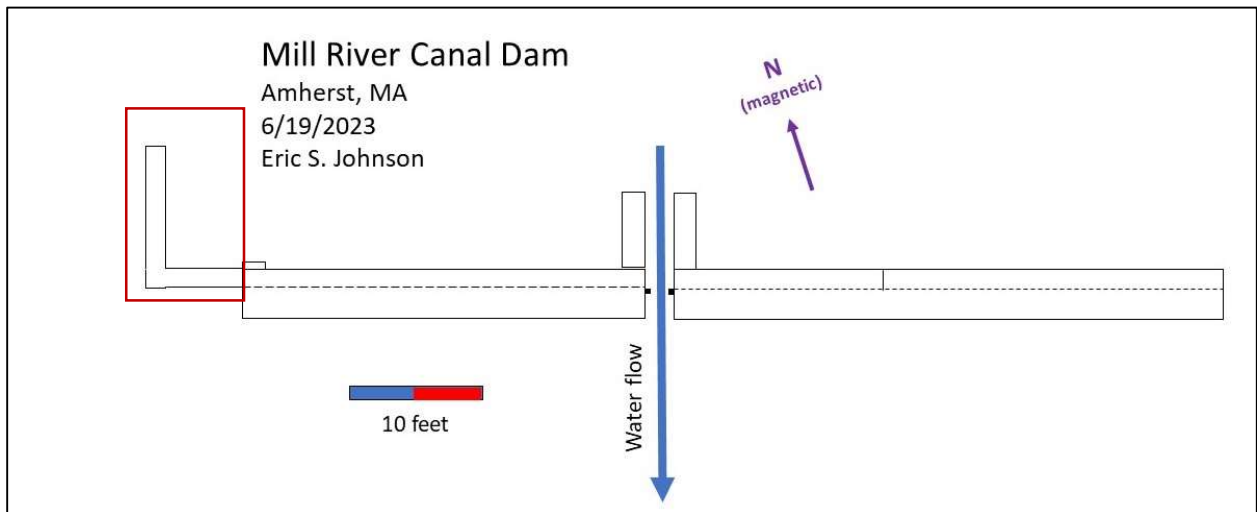
To the north of this berm is a wooded slope, steep in parts, that rises well above the berm. Between the berm and the slope is the canal itself, a low area that contains an accumulation of leaves, mud, and litter (Figure 33).

The Dam is a concrete and steel structure oriented approximately east-west (108°). It measures approximately 83 feet long. The west end of the dam is a pair of simple concrete walls that form a right angle measuring 18-20 inches in thickness. The west-central and east sections are dominated by concrete east-west walls with aprons extending to the south, which is the downstream side. These widen from 1½ feet along their tops to approximately 2 feet 3 inches thick at their bases. Their cross sections are essentially truncated isosceles triangles. In the map below they are indicated by the rectangles with dotted lines representing the south edges of their tops.



The following paragraphs describe the components of the dam. Descriptions will proceed from west to east across the structure and refer to relevant photographs.

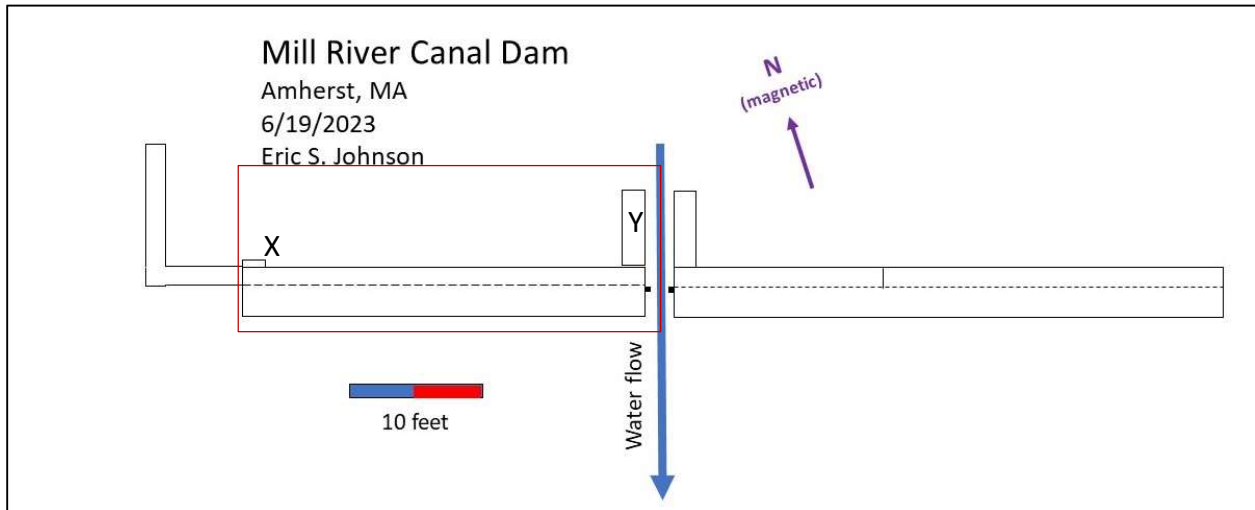
The West End of the dam is a right-angled concrete wall. At its northern end it is flush with the ground surface (Figure 37). Its north-south dimension as shown in the map below is a minimum length; it may extend farther to the north but is buried beneath leaves and soil.



At its outside southeast corner, the wall is 28 inches high, while the inside of the corner is flush with the ground level (Figure 38). At the end of the wall, it meets the west-center section. Here

the south side of the wall is approximately 4 feet high, reflecting the slope of the ground down toward the center of the dam.

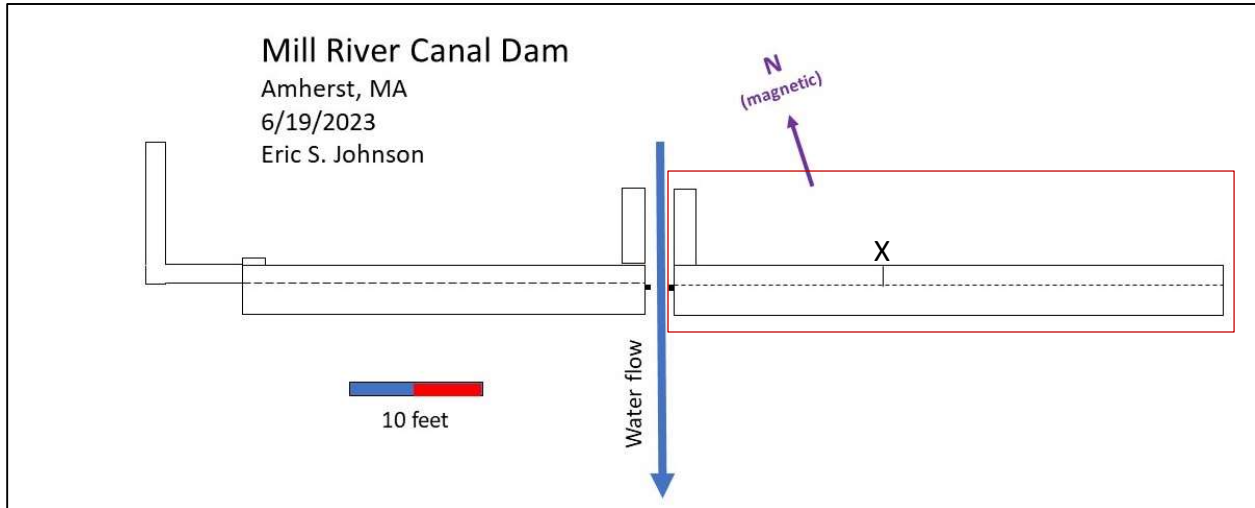
The West-Center Section extends from the east end of the West Section to the gap through which the small stream presently flows. The prominent feature of this section is a 30 feet 6 inches long, east-west wall. The wall is 17 inches thick along its top and has an apron extending south, so that it is 3½ feet thick along its base (Figures 38 and 39). At its western end, the wall is aligned with the wall of the west end but is lower by 14 inches (Figures 38 and 39). At this point a small wall, 21 inches thick (marked X in the map below), extends 7½ inches to the north.



The eastern end of the West-Center Section is the 4-foot-8-inch gap through which the stream flows. Here there is a 19-inch-thick wall (labeled Y in the above map) extending 5 feet 9 inches to the north. At its south end, where it meets the east-west wall, it is 3 feet 11 inches high. From here it slopes down until at its north end it is at ground level (Figure 40). This angle is similar to the angle of the south side of the main east-west wall.

Attached to the east face of the walls at the water gap is a vertical steel post, which is 5 inches thick north-south and 3½ inches east-west and 6 feet high. This extends approximately 3 feet above the wall. Directly across the water gap is a similar steel post. These would have been components of a sluice or sluice gate, an adjustable gate to control the water level in the canal by means of a barrier or barriers that would slide into place along a groove formed by and/or supported by the steel posts (Figure 40 and 41).

The East Section is nearly a mirror image of the West Center Section (Figures 42-44). It includes an east-west wall with a narrow top (18 inches) and a wide base, as well as a short wall extending to the north at the water gap and sloping down to the ground. The east-west wall is longer than its western counterpart (41 feet 8 inches as opposed to 30 feet 6 inches). It is also approximately 8-10 inches higher at the water gap. The point marked X in the map below marks a change in the height of the wall. To the west, the wall is 10 inches lower.



Site Integrity

Natural Disturbances: Deposition and Erosion

The Canal has undoubtedly seen a gradual infilling of the channel by leaf and soil deposition, some of which is from the berm and some from the northern side. The berm is slowly through the effects of erosion by water, tree growth and tree falls. The canal is sizeable and natural processes alone will require many more years to obliterate it.

The Dam, in its present form, appears essentially intact. Its stout concrete and steel are resistant to natural disturbances, and the present flow of streams and rivers has left it on a small stream that does not appear to threaten it with catastrophic floods.

Human Impacts

The Canal is located at the edge of a recreation area and many people walk, play, and relax very near to it. Clearly, some people do enter the canal through footpaths paths or open breaks in the berm and leave traces of their activity there for future archaeologists or contemporary litter removers to find. The nature of the site, it is essentially an earthwork, makes it resistant to casual vandalism. Deliberate removal or alteration by machinery is a more serious threat. At least two examples of this were easily observed (Figures 31, 31, and 36).

The Dam is not nearly as visible as the berm but is easily accessible. The thick, thorny undergrowth (e.g., Figure 43) and muddy footing (Figure 41) must serve as somewhat of a deterrent. There is only one obvious example of graffiti (Figure 39). Damage to the concrete or the steel posts seems highly unlikely but not inconceivable.

Site Protection

Since the major recent impacts to the Canal site have been disturbances associated with construction and maintenance of the Recreation Area, it is logical to pursue an agreement with the Recreation Department to protect the berm from further damage. Since it does not appear that the department is actively disturbing the canal, it would be reasonable to expect that such an agreement could be reached with little difficulty.

The sediments and debris that are gradually accumulating at the bottom of the canal are not harming it, and it does not seem necessary to try to reverse or mitigate that process. As stated above, the nature of the canal site makes it resistant to casual destruction. As with the other sites, regular visits to assess the site's condition are recommended.

The Dam site is also unlikely to require protection from casual destruction. Graffiti may become a problem, and the site should be monitored to make sure this does not become a problem. If graffiti does increase, it may be necessary to consider removing it.

Recommendations

At these, and the other sites, the best protective strategy to minimize human impacts, including graffiti, is community stewardship, the encouragement of which is a major goal of the Mill River Committee and this report. The proposed interpretive trail can encourage people's interest in learning about the history of the canal and the dam, and in protecting these resources. Although segments of the berm have been removed or altered, enough remains as a tangible link to the past and basis for interpretation. The dam, although it is likely not the earliest water control installation at this site, also has interpretive value. It may be a place to illustrate and promote contemplation of hydrology, water control technologies and strategies, and consequent environmental changes. In addition to telling the story of the canal and dam, mills, the interpretive trail should promote care for the sites and discourage graffiti, littering, and the removal of artifacts.

The dam site is potentially treacherous. Visitors may be tempted to walk out on the narrow walls. It may be prudent to include a warning about this danger in any signage that is developed.

The Upper Roberts Mill Site

Location and Setting

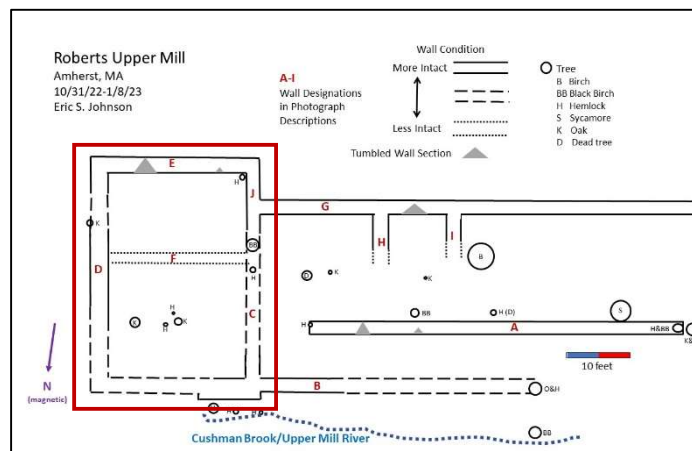
The Upper Roberts Mill site is located on the south bank of the Upper Mill River/Cushman Brook, a short distance downstream of the railroad bridge (Figures 45-48). At this location (UTM coordinates Zone 18 E704834 N4699028), the land on the south bank of the river is low (barely above stream level in the dry fall of 2022) and flat. There is another flat terrace approximately 10 feet higher behind (south of) it. The mill ruins cover the lower terrace and the slope up to the south, ending at the edge of the higher terrace (Figure 49). The opposite bank of the river is steeply sloping, approximately 30 feet higher, and very rocky. Just upstream, the flat southern terraces disappear and both banks of the river are high, steep and rocky. Here, the railroad bridge crosses 40-50 feet above the river (Figure 50). Immediately downstream, the low terraces disappear, and the river is once again surrounded by steep, high banks (Figure 51). This small stretch of flat to gently sloping land, immediately downstream from a narrow, swift part of

the river, is well-suited for a water-powered mill. A dam can be constructed across the narrow, steep-sided section and the mill built on the flatter location just downstream.

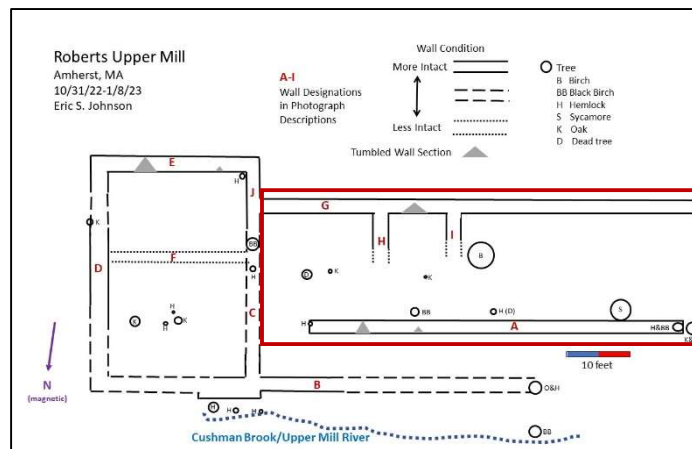
The environment of the site today is forest: thickly wooded along the riverbanks to the east and west, with a more open woodland on the site itself and on the broad, flat terrace to the south of the site (Figures 50 and 51).

Site Structure and Components

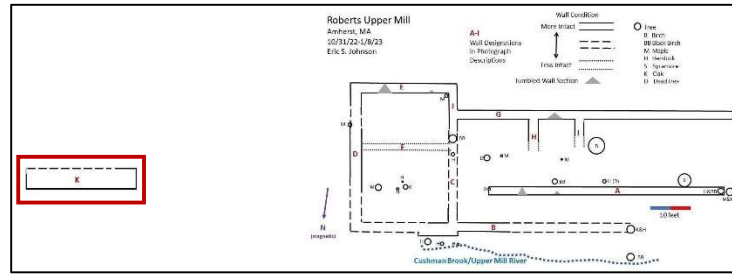
The site consists of a complex of dry-laid stone walls in varying conditions measuring approximately 47 feet north to south and approximately 100 feet east to west (Figure 48). The site actually extends farther to the west in the form of a ditch with remnants of stone structure visible in some places along the northern side (Figure 52). The larger area enclosed by Walls B, D, E, J, and C would have housed the wheel and/or turbines that powered the mill's machinery.



Walls A, C, G, H, and I would have enclosed additional work and/or office space.

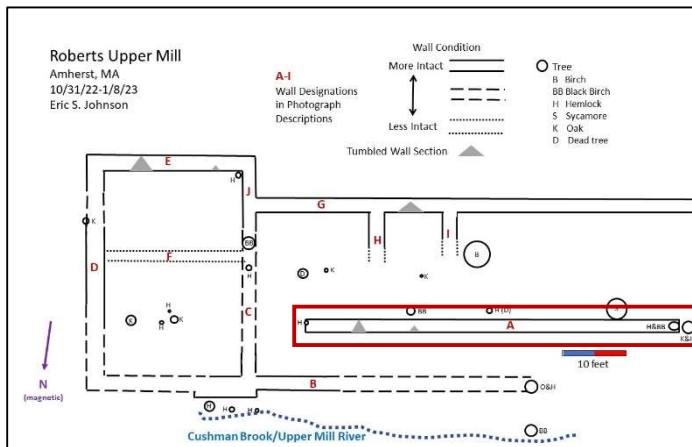


Wall K, located approximately 50 feet east of the main part of the site, probably functioned as part of a water control gate that regulated the flow of water from the river into the mill.



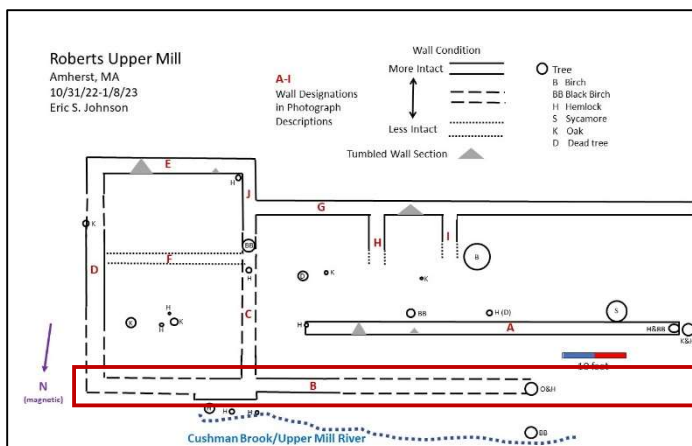
It is likely that the mill was at least two stories high, the second floor being supported by Walls E, J, G, H, and I. Brick walls may have also supported wooden walls. There are scattered bricks around the site. It is likely that many bricks have been removed for reuse elsewhere. The following paragraphs describe and illustrate each of the walls (A-I) shown in the site map (Figure 48).

Wall A is the south side of the mill’s tailrace, through which water exited the structure after turning the mill wheel(s) and returned to the brook/river. It extends from the central portion of the site to the west a distance of 60 feet and its south side is built into the slope of the land. By that I mean that the wall is buried on its south side and exposed along its north side. Wall A is



generally well preserved, with only two small tumbled areas, one of which is a single fallen stone. Wall A is roughly two feet high along its 60-foot length. At its eastern end four courses of stone are visible. The top of the wall is partially to completely covered with vegetation and/or leaf litter along its entire length (Figures 53-57). Beyond the wall, to the west, there is a ditch, now filled with water to varying degrees, that is the continuation of the tailrace (Figure 52).

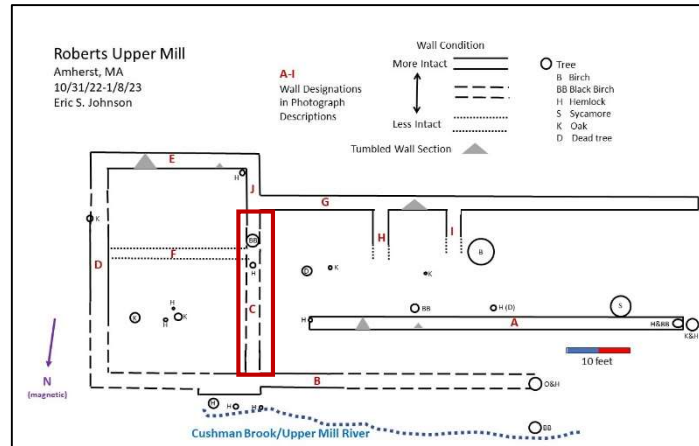
Wall B is the northern edge of the tailrace and, at its eastern end, may have supported a part of the mill’s structure. It forms the northern edge of the site and extends west from its junction with Wall D along the edge of the river/brook to the ditch to the west through which water exited the tailrace.



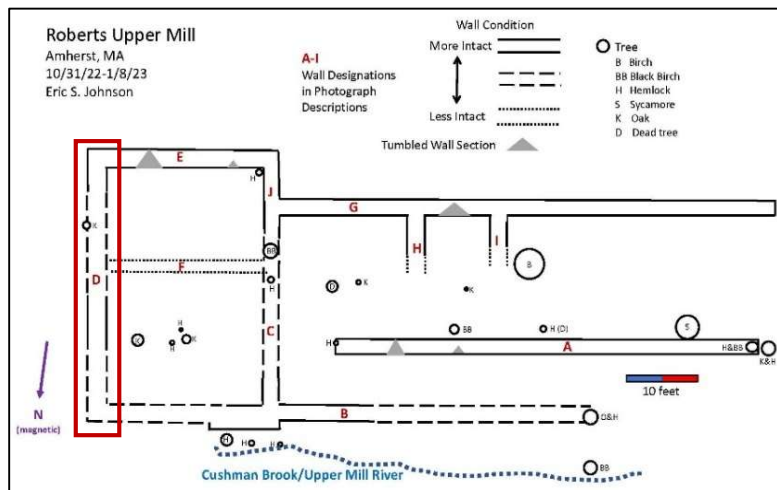
The structural support function of part of the wall is suggested by the large size of the stones at the eastern end of the wall (Figure 58), between its junctions with walls C and D. Most, if not all of Wall B to the west of its junction with Wall C has been damaged or obliterated (Figure

59). This is not surprising given that this is the wall closest to the river/brook and therefore most likely subjected to the stream’s erosive forces. The best-preserved portion of Wall B is the section at the junction with Wall C and to the east, where some of the larger stones are still in place. Some of the stones have been pushed off the wall (Figure 59). This can happen during extreme weather events such as a deep freeze followed by a sudden warming and heavy rain, which can push large blocks of ice out from the river channel. It is also possible that a large tree, now gone, once grew here and fell into the river tumbling the large stone in the process.

Wall C is a north-south oriented wall that runs approximately 26 feet between Wall B at its northern end and Wall J at its southern end spanning most of the north-south dimension of the site (Figure 60). Wall J may actually be part of Wall C; the two are aligned. But Wall J is distinguished by its markedly better preservation and greater height. Figure 60 shows both Wall C and Wall J and illustrates the differences between the two. Much of Wall C is poorly defined. Some of this may be attributed to disturbance from the action of tree roots (a form of what archaeologists call “bioturbation”: the disturbance of context and structure by the actions of living organisms). At present, two trees are growing from the wall. It is possible that Wall C originally supported an internal wall bearing less weight than the walls that form the perimeter of the site. It may therefore have been a less substantial wall to begin with. It is considerably less thick (2 feet 9 inches) than Wall D.

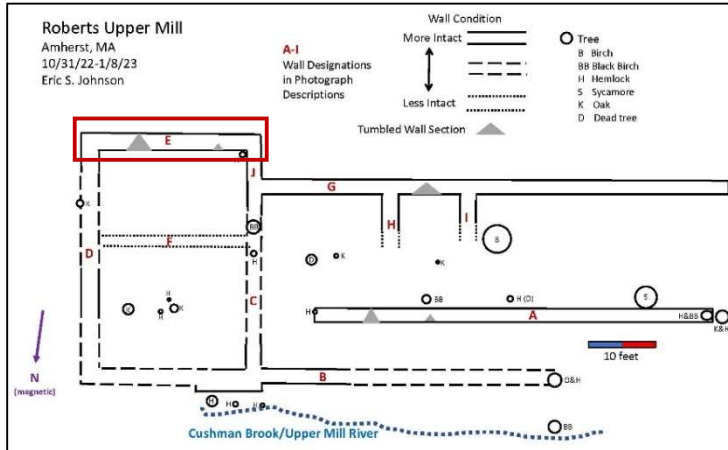


Wall D forms the eastern side of the site. The wall’s north end is a junction with Wall B and runs approximately 38 feet to its south end where it meets Wall E. It is a thick wall (4½ feet in places) that presumably supported the east side of the mill’s main structure. The present top of the wall follows the topography of the site, sloping down from south to north. (Figure 61). Wall D is fairly intact at its southern end where it meets Wall E (Figure 62). It also has a fairly intact central segment (Figure 63). The northern end (Figure 64) and a large part of the southern section (Figure 63 upper right) of the wall are disturbed or destroyed.

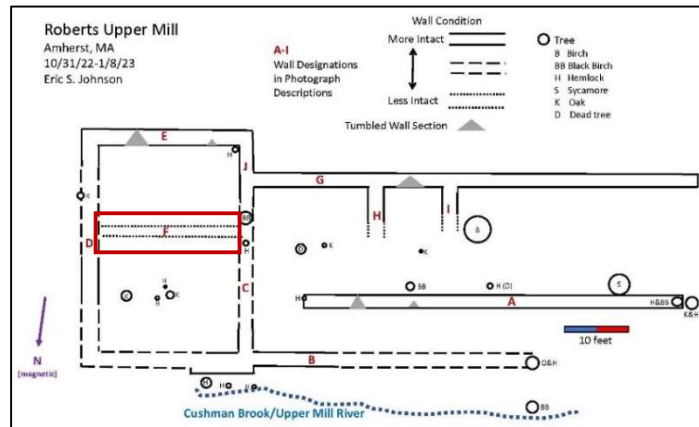


Wall E forms the southern side of the eastern part of the site. It spans 28 feet 8 inches from the west side of Wall D to the East side of Wall J (Figure 65). The length of the wall is noticeably bowed to the north (Figures 62, 66, and 67). It includes two tumbled areas where trees, erosion, or vandalism have dislodged stones from the wall. The eastern of these is located 5 feet 5 inches from the east end of the wall and is approximately 3½ feet wide. Here, stones have been

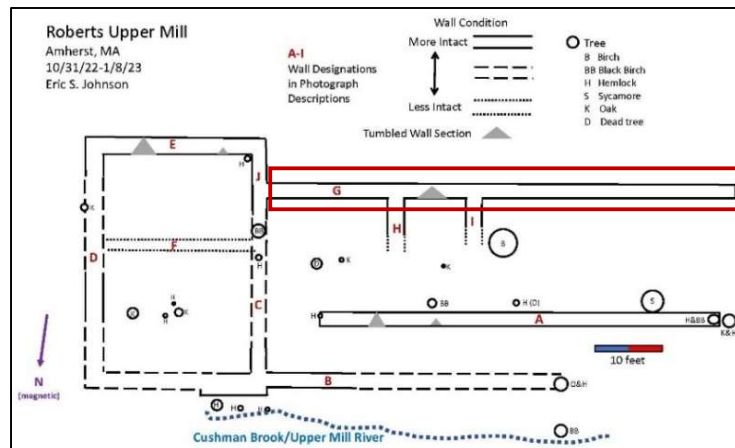
dislodged from the top to the bottom of the wall. A smaller disturbed area is situated 17 feet from the east edge and is about 16 inches wide. At this spot, stones have been removed either purposefully or by natural processes, forming a niche 16 inches wide and 18 feet high. Wall E is the highest wall at the site, standing as much as 5 feet 8 inches high on its north side. At its top, the wall is flush with or slightly elevated above the ground surface to the south (Figures 62, 65-67).



Wall F is a barely discernable wall of stones at the ground surface inside the main rectangular area of the eastern portion of the site. It runs roughly east-west between Walls C and D, a distance of approximately 28 feet. It may have supported an interior wall or series of posts (Figure 63).

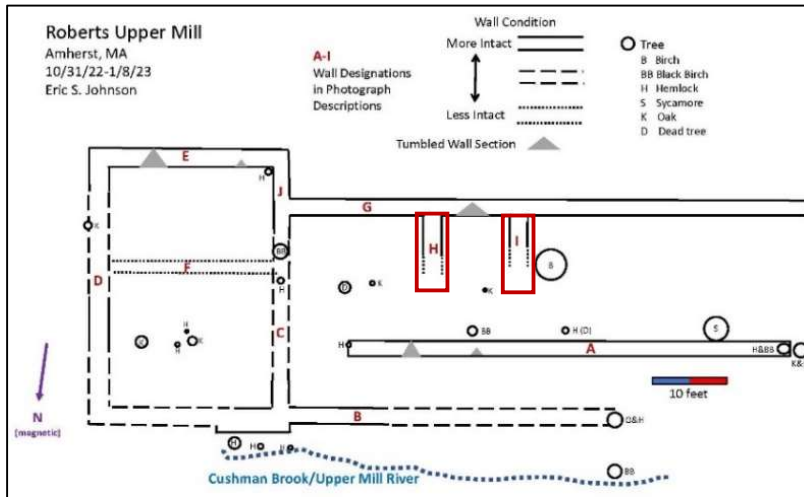


Wall G runs for 70 feet 3 inches along the southern edge of the western part of the site, parallel to Walls A and B, but higher in elevation. Wall G, and Wall E mark the transition between the flat topography to the south and the slope downward to the north and the Upper Mill River/Cushman Brook. Wall G can be seen in Figures 49, 55-57, 65, and 69.

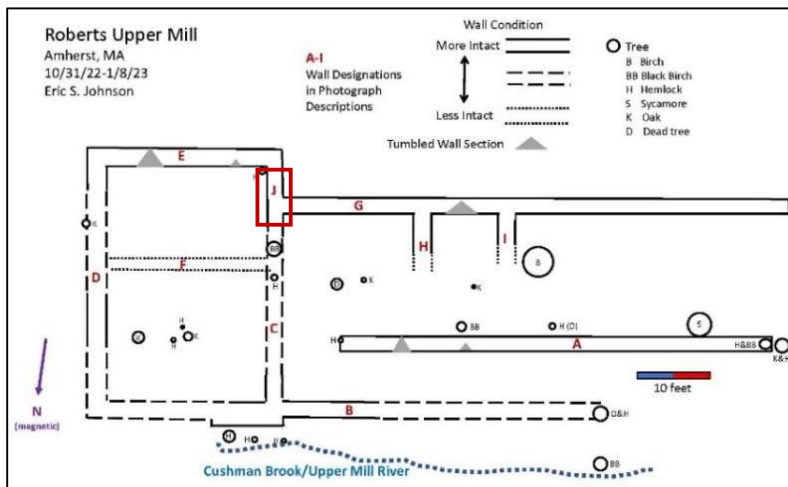


Wall H and **Wall I** are short walls that extend north from Wall G (Figure 69). Their northern ends are tumbled, and it is not clear how much farther they may have extended down the slope to the north. Wall H is

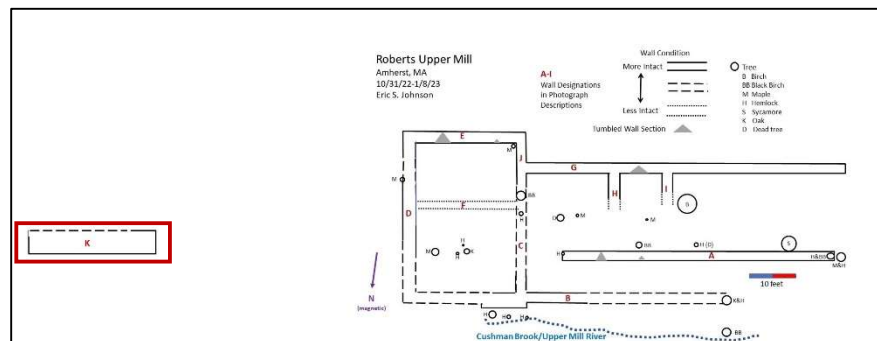
approximately 28 inches thick and extends 66 feet north as a recognizable wall. Its east side is 17 feet 8 inches from the eastern end of Wall G. Wall I's eastern edge is 29½ feet from the eastern end of Wall G. It is approximately 30 inches thick and extends north 51 inches as a recognizable wall.



Wall J is a short (approximately 6 feet) wall that links Walls E, G, and C in the southern part of the site. It is a mostly intact wall that slopes down to the north. Views of Wall J can be seen in Figures 60 and 65-68.



Wall K is an outlying structure located approximately 50 feet east of the east side of the main complex (Wall D) and much higher above the present level of the river (Figure 70). The wall is built into the side of a steep slope. Given its



upstream location, it seems likely that Wall K was part of a water control device such as a sluice, that was used to regulate the flow of water through the mill's power source.

It measures 28 feet long, roughly east-west (Figure 71). The walls height varies; its maximum height is 75 inches, at a point 80 inches east of its western end. The thickness of Wall K is difficult to determine precisely owing to the thick cover of leaves and soil that obscures much of its south side. At its northwest corner (closest to the mill) the wall is presently 49 inches high, and the wall is 62 inches wide here. The stones of this corner are dressed (Figures 72 and 73). The eastern end of the wall is partially buried and only its north side is visible. It is lower and appears less-carefully constructed, or else it has been disturbed (Figure 74).

Site Integrity

Natural Disturbances

The Upper Roberts Mill Site has been badly disturbed in several areas and by different processes. The disturbance is most evident in the walls or portions of walls that have clearly fallen or tumbled. Wall B, which runs close to the south bank of the river, has suffered from the erosive effects of water and ice. These impacts are easily seen in Figures 49-51, 53, 58, 59, and 64. Other parts of the sites appear to have been disturbed by the growth of trees. As tree roots lengthen and thicken, they widen the gaps between the dry-laid stones and may eventually dislodge them. When a tree falls, its roots may dislodge entire sections of walls and its trunk may fall across walls causing further damage. Large branches that fall may also damage walls. Several trees, large and small, are presently growing at the site (e.g., Figures 49 and 61). Several others have recently fallen across the site (e.g., Figures 55-57, 63, 65, and 69). Smaller plants growing between individual stones (e.g., Figure 56) may have similar effects at a smaller scale. It is also plausible that the large, displaced stone of Wall B may have been pushed off by falling riverbank trees rather than by ice blocks.

Frost action (freezing and thawing of moisture) may also be responsible for breaking up portions of stone walls. When water collects in between stones and then freezes, it expands and pushes the stones apart.

Natural Burial

Much of the site is presently covered with leaf litter that is thick in places, which makes precise and complete mapping of its walls difficult but does not in itself damage the site. Other processes that may cover parts of the site are soil deposition from flooding or from tree throws. When a tree falls, if its roots come up, the roots and the soil that clings to them eventually slump and decay, forming low linear mounds of soil. Such deposits tend to accumulate inside walled enclosures. For example, it is possible that Wall F may be a more significant wall than it seems because it has been covered by a thick deposit of soil and leaves.

Human Impacts

Spending a few days mapping the site, even in the winter, makes it clear that many people walk past the site on a daily basis. It is also apparent that people have worn a clear path along the east side of the site from the trail that passes by the site's south side to the edge of the river. The site is clearly visible from the trail, as well as from State Street on the north side of the river, which overlooks the site. Collections of artifacts from the site have been documented, and it is certain that items have been removed that have not been recorded. The extent of collecting and its overall impact on the archaeological integrity of the site are not known.

There is no record that people have been taking stones from the site. “Stone robbing” can be a problem in some areas, where walls and foundations have been stripped of their stones for other construction. It is possible that the condition of Wall D, which has alternating intact and destroyed sections (Figures 61-63) is a result of stone robbing.

Site Protection

There is little that can be done to protect the site from river erosion or frost action. It is possible that trees that are particularly vulnerable to falling (e.g., large dead branches, trees that are leaning, or that show an increase in leaning over a period of time, could be removed before they fall, but the removal itself must be done with care so that it does not itself damage the site. The best strategy is to observe the site regularly, using this report as a baseline, to monitor changes and identify particularly fragile parts of the site. As an example, a site visit on May 13, 2023, revealed that a branch from the large birch tree near Wall I had fallen across Wall A and smashed a section of it near its eastern end (Figure 75).

The best protective strategy to minimize human impacts is community stewardship, the encouragement of which is a major goal of the Mill River Committee and this report. The proposed interpretive trail can encourage people’s interest in learning about the history of the site and in protecting it. In addition to telling the story of the mills, the interpretive trail should promote care for the sites and discourage the removal of stones or other artifacts.

Recommendations

The Upper Roberts Mill Site is the most accessible, visible, and vulnerable of the archaeological sites discussed in this report. This report should be used as a baseline against which changes in the condition of site can be identified, and measures to minimize or prevent further deterioration can be evaluated. For example, after a flooding event, the condition of the site can be compared with the photographs in this report to assess and record damage. Keeping track of changes in the site in this way may identify particularly endangered elements and suggest effective protective measures. The Upper Mill’s accessibility and visibility also make it an ideal location for interpretation and for promoting the appreciation of tangible remains of the past and the values of protection and stewardship of this site and of others.

The site can be slippery, especially where it is covered in leaves, which is a large part of the site and the approach down the sloping ground. It may be prudent to include a warning about this in any signage that is developed.

The Lower Roberts Mill Site

Location and Setting

The Lower Roberts Mill site is located on the north bank of the Upper Mill River/Cushman Brook, a short distance downstream of the foot bridge (Figures 76-78). At this location (UTM coordinates Zone 18 E704627 N4698932), the land on the north bank of the river slopes steeply to the south from the Robert Frost Trail, which runs roughly east west overlooking the site (Figure 79). The site is located at the base of the slope in a flat area that extends south to the bank of the Upper Mill River/Cushman Brook. It contains three distinct rectangular enclosures oriented approximately east-west (Figure 80). Visible ditches extend beyond the stone foundations to the east and west. These are the former headrace (east) (Figure 81) and tailrace

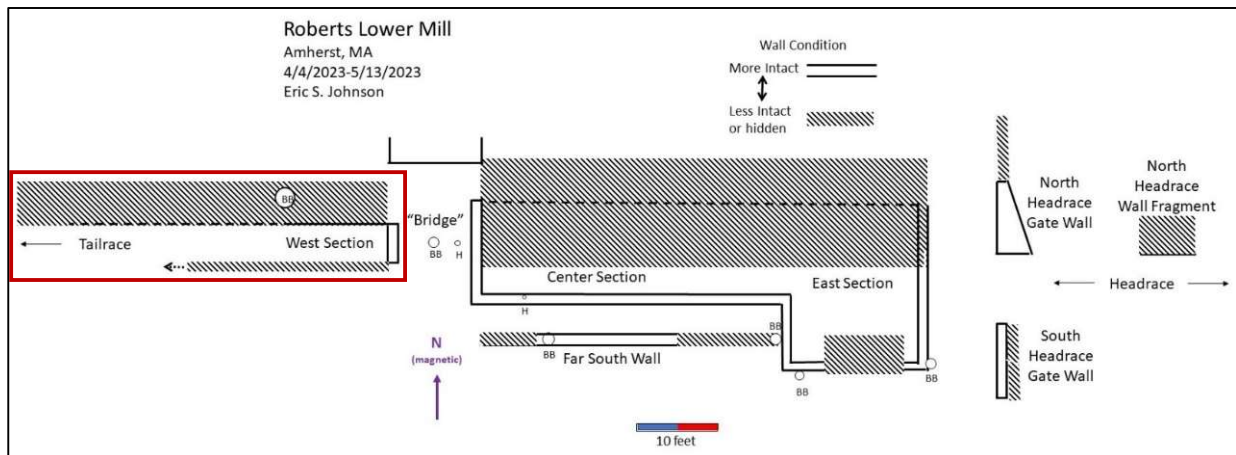
(west) (Figure 82). The site is often wet and muddy, and the tailrace, West Section, and Center Section in particular hold standing water/ice year-round (Figures 82 and 83).

The environment of the site today is thick forest. The forest thins slightly to the south near the bank of the stream.

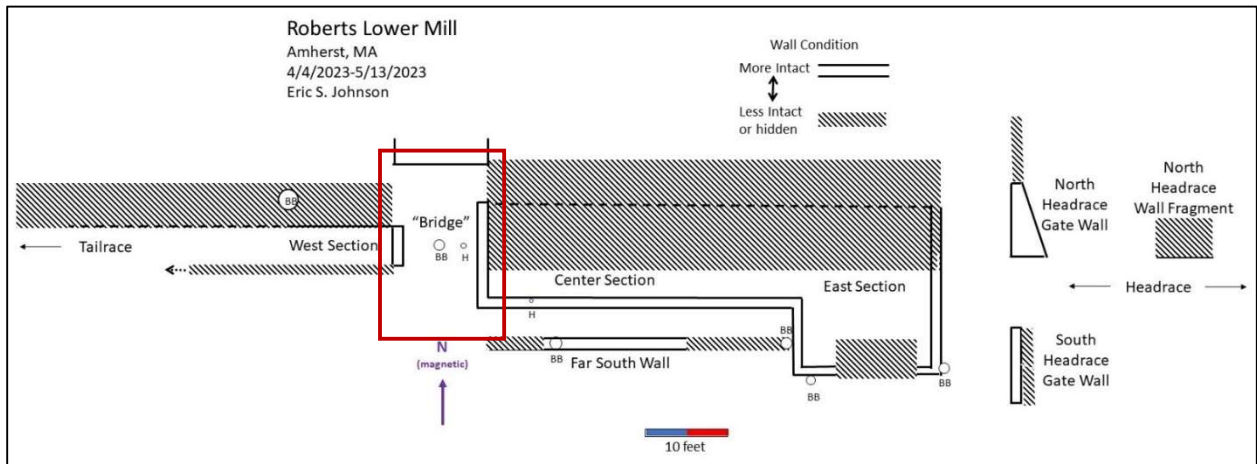
Site Structure and Components

The site consists of a complex of dry-laid stone walls in varying conditions measuring a maximum of approximately 34 feet north to south and approximately 125 feet east to west (Figure 80). These and other measurements are approximate owing to the degree of disturbance at the site. In particular, the northern parts of all three sections of the site are at the base of a steep slope and have been disturbed and/or covered by rocks and soil. Some of this may have occurred when the Robert Frost Trail was improved, or possibly earlier. As a result, any north-south measurements should be considered as approximations. The site extends farther to the east and west if one includes the headrace and tailrace. The following paragraphs describe and illustrate each of the sections and features shown in the site map (Figure 80).

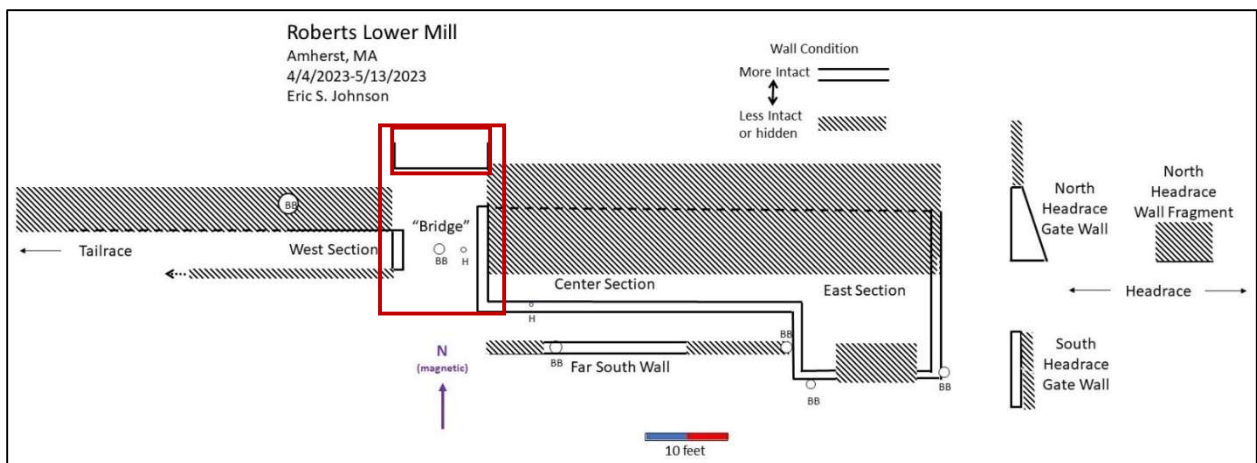
West Section The West Section is a narrow rectangle that measures approximately 5 feet wide (north-south) and at least 12 feet east-west, not including the tailrace. More precise dimensions are not possible owing to the deteriorated condition of much of the north side (Figures 79 and 84) and all but the eastern corner of the south side (Figure 85). The least disturbed part of the West Section is its eastern end (Figure 85 and 86). Here the stonework appears mostly intact. Its narrow width, its disturbed and/or less robustly constructed walls, and its downstream location indicate that the West Section represents the tailrace of the Lower Mill.



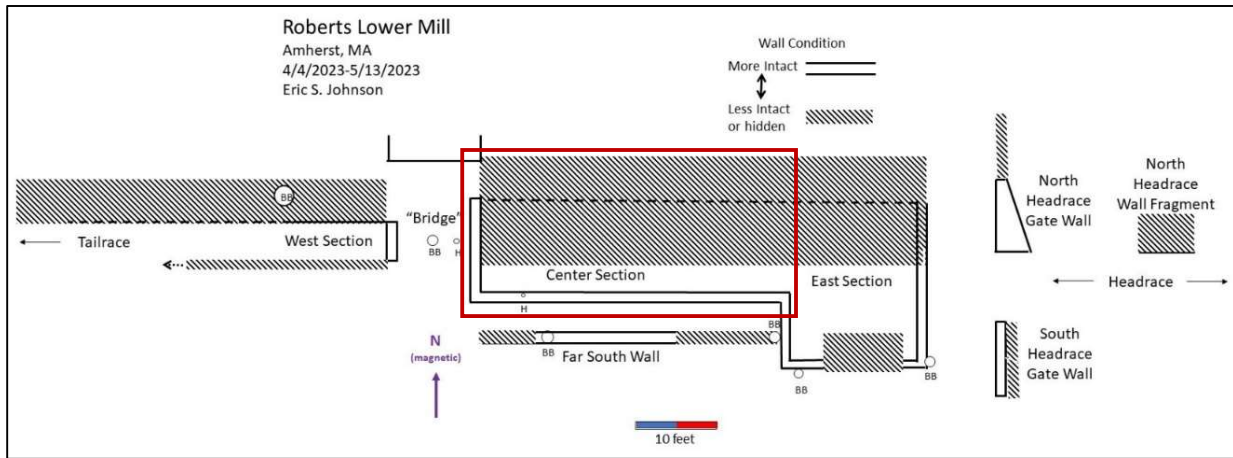
“**Bridge**” Between the West Section and the Center Section is a 12-foot-wide area that resembles a bridge running north-south (Figure 86). The stonework is robust and visible on both sides of this bridge (Figures 85-87). At present, there is no clear opening at the base of the bridge through which water can flow (Figures 86 and 88). Given that the West Section appears to be the upstream end of the tailrace, such an opening would be expected. It seems likely that an opening once existed but has since closed through sediment accumulation and/or deterioration of the stonework. Figure 88 shows that the center of the bridge appears to be slumped, suggesting that the opening has collapsed.



Above and a short distance north of the bridge is what appears to be a fragment of a wall, footing, or platform (Figure 89). It is well made with a flat south face (Figure 90) and is approximately the same width as the bridge (12 feet). Its placement above the bridge suggests that this may have been a support for a wooden bridge that connected the former road (present Robert Frost Trail) to a north entrance to the second story of the building.

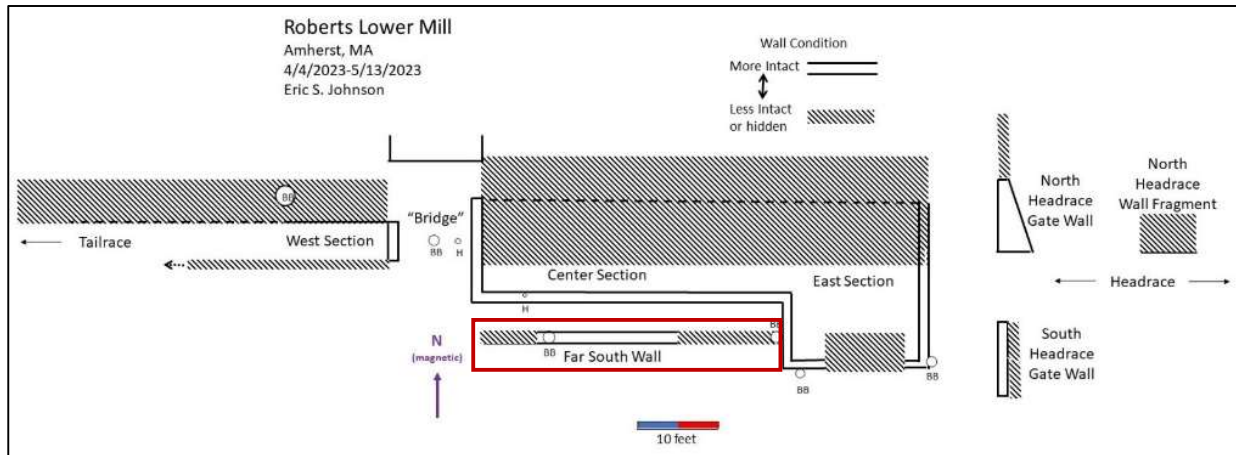


Center Section The Center Section, like the West Section, is a rectangle oriented roughly east-west (Figure 91). But the Center Section is more than twice as wide (12± feet), and its length (36 feet) is better defined. This section's south wall is fairly well-preserved (Figure 92). In its southwest corner (the right side of Figure 92) it measures approximately 2 feet 11 inches high. Its highest point, marked by a red X in Figure 92, is 3 feet 6 inches. The south wall is lowest (2 feet 1 inch) at its eastern end, where it meets the west wall of the East Section. The north wall shows some partially intact stonework as well as many tumbled and scattered stones (Figure 93). One possible explanation for this condition is that earth and stones dislodged in construction of or improvements to the Robert Frost Trail covered and/or dislodged parts of the north wall, making it impossible to measure the height of the north wall with reliable accuracy or precision.

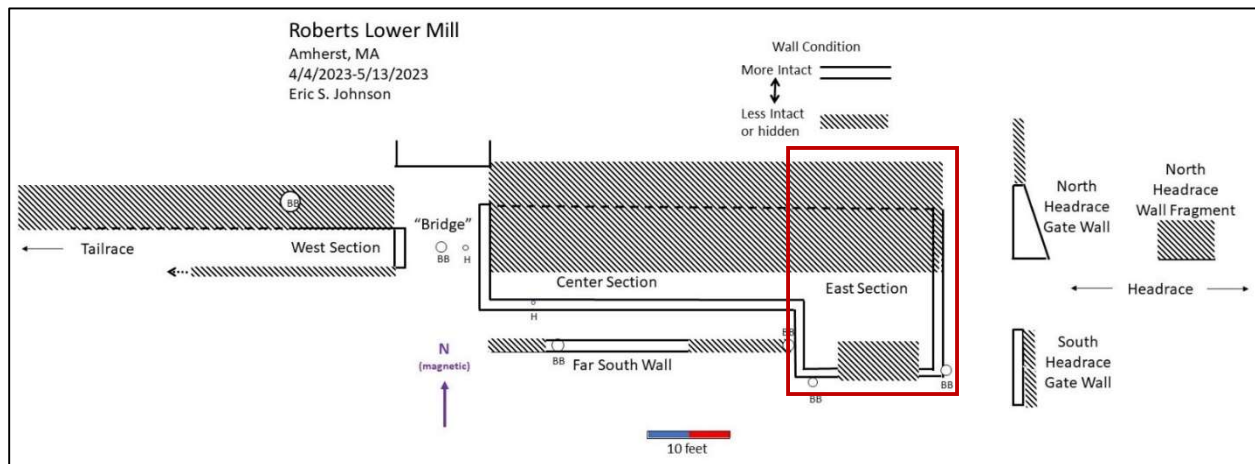


The Center Section's west wall is the east side of the Bridge that separates it from the West Section. The stonework here is not destroyed but may have slumped enough to have closed what was once an opening for water flowing through the structure (Figure 88). Its east side is the opening to the East Section. The width of this opening cannot be determined because of the amount of disturbance on the north side of the section (Figure 93). The Center Section likely supported at least two stories in which manufacturing tasks and maintenance would have been performed.

Far South Wall Approximately 4½ feet south of and parallel to the south wall of the Center Section is a low wall (present maximum height 1½ feet) (Figure 94). It appears to run the entire length of the center section but is mostly covered by leaf litter and/or has deteriorated so that only the central part is visible. The visible part of the Far South Wall runs for 17 feet between a large black birch and a point 12½ feet west of the west wall of the East Section. At present, the specific function of this wall is uncertain.



East Section The East Section is a 16-foot (east-west) by 18-foot (north-south) rectangular enclosure. It is the widest north to south of the three sections and is upstream of the two others (Figure 95). This is where water from the headrace would have entered the mill to turn a wheel and/or a turbine. A second or third floor above would have supported machines for shredding and processing rags, straw, or leather, for mixing the shreds with a liquid and/or pressing the sheets of paper product. As with the other sections, the degree of integrity of the walls of the East Section are variable. The floor is filled with leaves, fallen branches, a few large stones, and mud (Figure 96). Vertical measurements from the present surface of the floor must therefore be approximate. On March 10, 2023, a large rat snake and a wriggling ball of garter snakes were observed on the floor (Figure 97). The floor slopes upward to the north, again indicating the likelihood that stones and earth have fallen or been pushed down the slope from the Robert Frost Trail. The north side of the East section is a tumble of rocks (Figure 98).

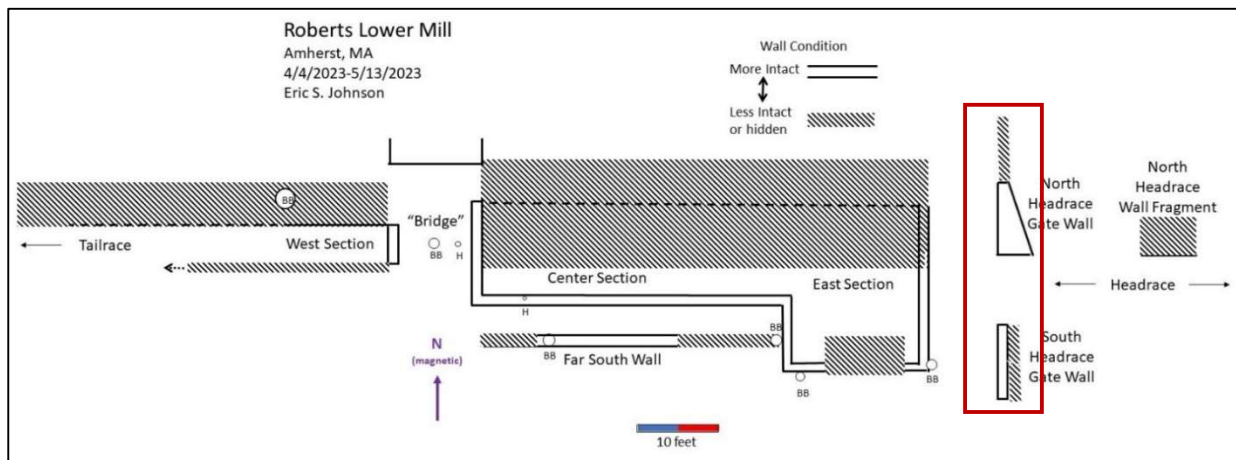


The East Section’s west wall and southwest corner are fairly well preserved (Figure 96). The west wall at its greatest height stands 4 feet 6 inches above the floor of the section. At its north

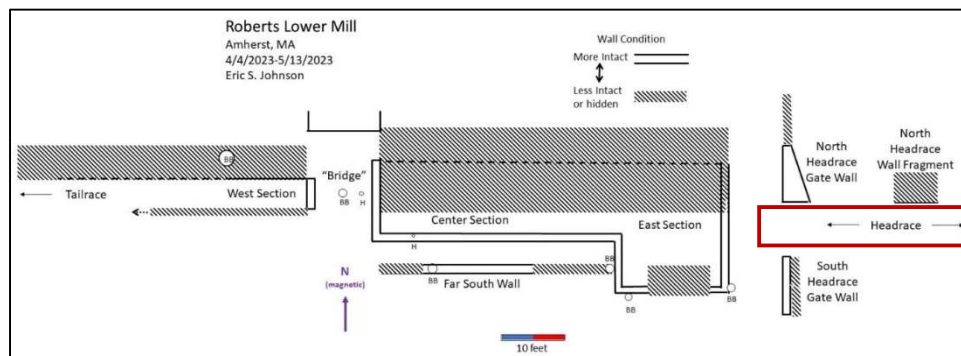
end, at the opening to the Center Section, the wall is only 22 inches high. The south wall has mostly crumbled; only its east and west corners retain some integrity (Figure 99). At its eastern corner, the south wall stands 5 feet 3 inches high. The south wall is curious in that it appears very thick with a lower wall facing the interior of the Section and a higher wall immediately behind (south) the lower wall (Figure 99). In early May of 2023, poison ivy was observed growing along the top of the southeast corner of the East Section.

The east wall of the East Section appears well preserved (Figure 100). At its center, the wall is 4 feet 3 inches high. The north wall is similar to the north walls of the other sections in that it is disturbed and appears to have been impacted by falling stones and soil from the steep slope above (Figure 98).

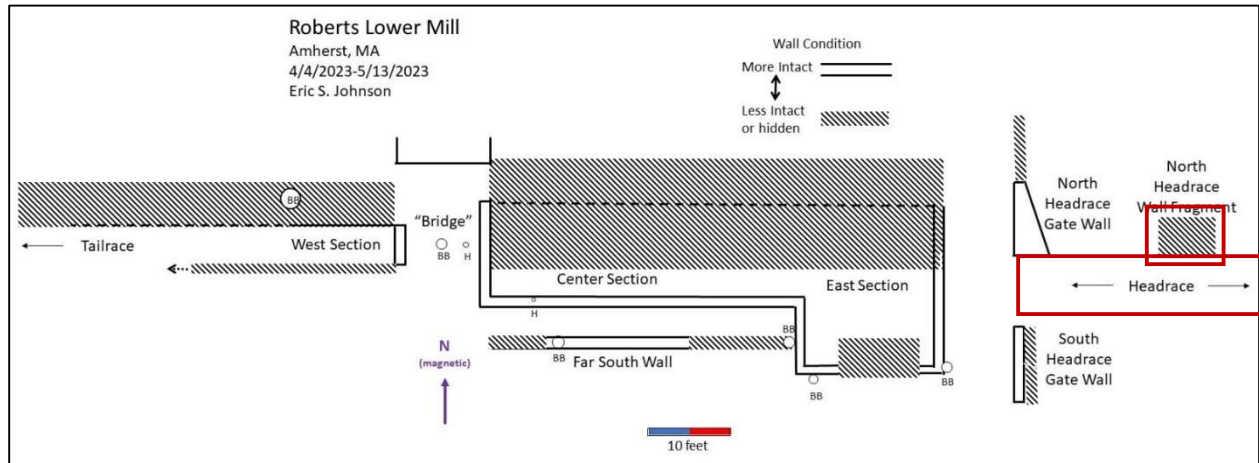
Headrace Gate Walls East of the East Section are two small, sturdy walls, separated by a gap of 9 feet (Figure 100). These likely are parts of an adjustable gate that regulated the flow of water from the headrace into the mill proper. The north gate wall (Figure 101) extends some distance (approximately 8 feet) to the north beyond where its stones are visible. At its southern end it is approximately 7 feet wide and stands approximately 2 feet 6 inches high. The southern Headrace Gate Wall (Figure 102) emerges from a large mound of earth to its east and south so its true dimensions cannot be determined.



Headrace The headrace extends in an easterly direction from the Headrace Gate Walls to the bank of the river just south of the footbridge. Figure 103 is a view looking upstream at the headrace from between the Headrace Gate Walls. Most of the headrace does not show visible stonework, with one exception.



North Headrace Wall Fragment Approximately 17 feet east of the North Headrace Gate Wall is a stone wall fragment measuring approximately 7 feet wide (east-west) and 2½ feet tall (Figure 104).



Site Integrity

The Lower Roberts Mill Site has been badly disturbed in several areas and by different processes. The disturbance is most evident in the north side of the site and portions of the south walls, where walls have deteriorated or been buried by rockfall and the buildup of earth.

The north walls of all three sections run along the base of a steep slope and treefalls, rockslides, and downslope erosion have both covered and dislodged most of these walls. There may be portions of wall buried beneath these deposits but at present they are not identifiable with any certainty. Figure 105 shows a tree at the edge of the Robert Frost Trail that is leaning south over the site and will dislodge earth and stones over the site when it finally falls.

Erosion from floods is less of a threat to the site because at present it is not adjacent to the river, and the upstream end of the river is well above the present water level.

Frost action (freezing and thawing of moisture) may also be responsible for breaking up portions of stone walls. When water collects in between stones and then freezes, it expands and pushes the stones apart. There is standing water in the West and Center Sections and the East Section is wet and soggy. The freezing and thawing of these waters will continue to undermine the walls.

Natural Burial

Much of the site is presently covered with deposits of leaf litter, soil, branches, and dislodged stones that are thick in places, which makes precise and complete mapping of its walls difficult but does not in itself damage the site.

Human Impacts

The Lower Mill site is easily visible from the Robert Frost Trail but is not easily accessible. The standing water is certainly a deterrent to casual exploration. It can be more easily accessed from the south or along the headrace. As with the upper mill, the extent of collecting and its overall impact on the archaeological integrity of the site are not known.

There is no record that people have been taking stones from the site. The site's difficulty of access suggests that this is not likely a serious threat to the site.

Site Protection

There is little that can be done to protect the site from frost action. It is possible that trees that are particularly vulnerable to falling (e.g., large dead branches, trees that are leaning, or that show an increase in leaning over a period of time, could be removed before they fall, but the removal itself must be done with care so that it does not itself damage the site. The best strategy is to observe the site regularly, using this report as a baseline, to monitor changes and identify particularly fragile parts of the site.

The best protective strategy to minimize human impacts is community stewardship, the encouragement of which is a major goal of the Mill River Committee and this report. The proposed interpretive trail can encourage people's interest in learning about the history of the site and in protecting it. In addition to telling the story of the mills, the interpretive trail should promote care for the sites and discourage the removal of stones or other artifacts.

Recommendations

The Lower Roberts Mill Site is less accessible and therefore slightly less vulnerable to further human-caused damages than the Upper Mill site. This report should be used as a baseline against which changes in the condition of site can be identified, and measures to minimize or prevent further deterioration can be evaluated. For example, after a storm with high winds, or after a spring thaw, the condition of the site can be compared with the photographs in this report to assess and record damage. Keeping track of changes in the site in this way may identify particularly endangered elements and suggest effective protective measures. The Upper Mill's visibility also makes it an ideal location for interpretation and for promoting the appreciation of tangible remains of the past and the values of protection and stewardship of this site and of others.

The site is much more dangerous to visitors than the Upper Mill site. The steep slope, many loose rocks, leaf covering, and wet conditions make for unstable and dangerous footing. In addition, the snakes that were observed on every visit to the site are not dangerous in themselves but may panic some visitors. The snakes themselves should be left alone for their own sake. Interpretive signage should include a warning about these hazards.

On a walk past the site on June 12, 2023, beer cans were observed in the East Section. The committee should consider including a request to leave no trace and take only pictures as part of the signage.

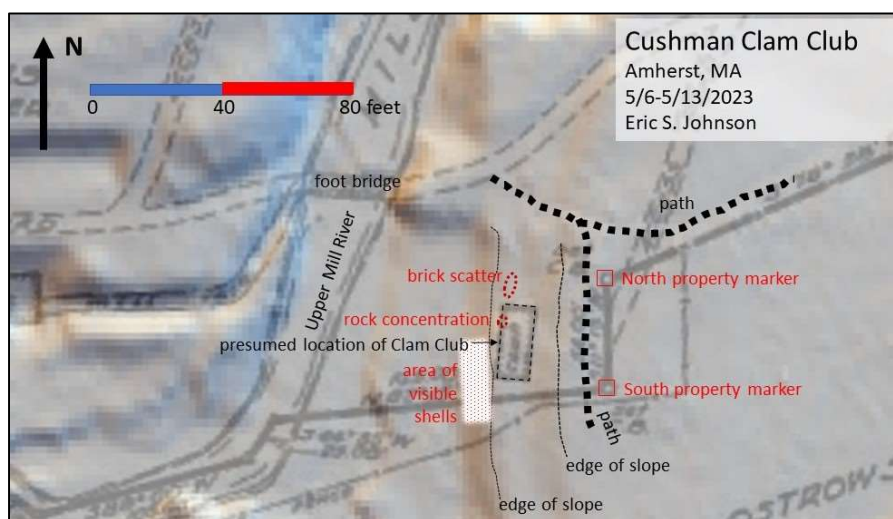
The Cushman Clam Club Site

Location and Setting

The Cushman Clam Club site is located to the south and east of the Upper Mill River/Cushman Brook just downstream and within view of the footbridge. The site is between a footpath to the east and a slope that leads down to the west to the floodplain of the south bank of the river (Figures 106-109). The Clam Club area, between the path and the edge of the slope, has approximate UTM coordinates of Zone 18 E704718 N4698923. The environment of the site today is an open forest with sparse undergrowth. From the site one has a view to the west of

Cushman Brook, which flows south at this point, then turns west towards Factory Hollow Pond. The streambank here is flat and gravelly. On the opposite side, a short distance farther, is the Lower Roberts Mill (Figure 108).

The precise location and footprint of the Cushman Clam Club building cannot be determined since no remains of the structure can be identified with certainty. However, abundant clamshell fragments found along the forementioned slope between the Clam Club site and the floodplain (Figures 110 and 111)



are certainly associated with the Clam Club as is the thin scatter of broken bottles, plates, rusted cans, and clam shells in the immediate area, some examples of which are shown in Figures 112 and 113. In addition, a scatter of bricks and a cluster of rocks are visible near the top of the slope (Figures 114 and 115). It is possible that one or both of these may be the remains of footings or piers that once supported the Clam Club structure.

In determining and mapping the approximate location of the Club, the 1963 map was superimposed on a modern LIDAR map (Figure 109). The map shows property boundaries to the east of the site. Once the boundaries were found, distances and bearings from them to the Clam Club outline were determined, the area was thoroughly searched, and the features and artifacts noted above were recorded. None of the artifacts were removed.

The two property makers are short squared concrete posts. They are set 58 feet 8 inches apart at a bearing of 195°. The North property marker (Figure 116) stands 7½ inches above the forest floor and is approximately 4½ inches on a side. It can easily be found using Figure 58. The South property marker is shorter, only rising 3½ inches, and its sides measure between 4 and 4½ inches. It is also covered with moss (Figure 117) and is more difficult to find.

Site Integrity

There does not appear to be a foundation for the building that once stood at the Cushman Clam Club site, so there is no structural integrity. The building has left no visible intact traces; the scatter of bricks and cluster of rocks may or may not be associated with the building. The deposits of clams and artifacts are clearly associated with the activities of the Club and constitute a midden or trash deposit, but there is no visible evidence of intact features within it.

Erosion may impact the site's integrity by washing away the parts of the midden that are closest to the Upper Mill River. Artifact collecting by human visitors is likely to remove a few of the larger artifacts and any complete pieces would be more vulnerable to this. The leaf litter, poison ivy, and thorny shrubs that are abundant across the site will hide artifacts and discourage exploration. The slope between the site of the building and the lower terrace is subject to erosion, and the washing down of the leaf litter, which exposes parts of the shell deposits. Walking

around the area, one can feel and hear the crunch of shells beneath the leaves. The collection of some of the shells by curious visitors is not likely to diminish the quantity of shells significantly.

Site Protection

There is little that needs to be done to protect the site. It does not contain vulnerable structural elements or artifacts that are likely to interest collectors. If there is a major flooding event, the site should be walked over to assess whether the shell deposits have been damaged.

Recommendations

In a sense, the Cushman Clam Club site is the most interesting archaeologically of the sites discussed in this report because there is much less documentary evidence concerning the specific activities that took place here. Also, unlike the mill sites, the existence of the Cushman Clam Club is not evident to the casual visitor. Since interpretive signage will draw attention to the site, the signage should focus on the story of the club (as far as is known), mention the fact that no traces of the structure remain, and perhaps note the existence of the shell deposits. The shells provide the only visible and tangible link to the story, which in turn explains the presence of the shells, which would otherwise be a mystery. It is unlikely that drawing attention to the shell deposits would cause them to be severely depleted. The site contains abundant poison ivy (Figure 113), the mention of which in a sign may deter potential collectors and diggers.

REFERENCES CITED

Amherst Directory

1898 The Amherst Directory. H.M. McCloud, Amherst, Massachusetts.

1893 The Amherst Directory. H.M. McCloud, Amherst, Massachusetts.

1890 The Amherst Directory. H.M. McCloud, Amherst, Massachusetts.

Amherst, Hadley, Hatfield, Massachusetts Directory

1923 The Amherst, Hadley, Hatfield, Massachusetts Directory. H.A. Manning Co., Amherst, Massachusetts.

1921 The Amherst, Hadley, Hatfield, Massachusetts Directory. H.A. Manning Co., Amherst, Massachusetts.

Beers, Frederick W.

1873 *County Atlas of Hampshire, Massachusetts*. F.W. Beers & Co., New York.

Bidwell, John

2013 *American Paper Mills 1690-1832: A Directory of the Paper Trade with Notes on Products, Watermarks, Distribution Methods, and Manufacturing Techniques*. Dartmouth College Press, Hanover, New Hampshire.

Boston Daily bee (BDB)

1849 "Accident" 19 November:1. Boston, Massachusetts.

Carpenter, Edward W.

1896 *The History of the Town of Amherst, Massachusetts*. Press of Carpenter and Morehouse, Amherst, Massachusetts.

Commonwealth of Massachusetts

1909 *Census of the Commonwealth of Massachusetts: 1905*. Wright and Potter Printing Co., State Printers, Boston.

Dunn, E. and F. Rand

1964 "Amherst" in *The Hampshire History*, edited by Lawrence Wikander, Helen Terry, and Mark Kiley. Hampshire County Commissioners, Northampton.

Gay, William B.

1886 *Gazetteer of Hampshire County, Massachusetts 1654-1887*. W.B. Gay & Co., Syracuse, New York.

Gillen/Gray/O'Marah Architects

1993 *The Evergreens, Amherst, Massachusetts*. Market Research document submitted to the Martha Dickinson Bianchi Trust Historic Massachusetts, Inc. Manuscript on file at the Emily Dickinson Museum, Amherst, Massachusetts.

Granby Bicentennial Commission

1968 *Granby Bicentennial, 1768-1968*. Granby Bicentennial Commission, Granby, Massachusetts.

Hampshire Gazette (HG)

1863 "Hampshire County, Amherst, Accident and Loss of Life" 18 August:2. Northampton, Massachusetts.

1853 "Real Estate at Auction" 2 August:4. Northampton, Massachusetts.

1849 "William S. Roberts death" 4 September:3. Northampton, Massachusetts.

Holland, Josiah G.

1855 *History of Western Massachusetts, 2 Volumes*. Samuel Bowles, Springfield, Massachusetts.

Holland, Patricia G. and William N. Robinson

2012 *Images of America: North Amherst and Cushman*. Arcadia Publishing, Charleston, South Carolina.

Hunter, Dard

1952 *Papermaking in Pioneer America*. University of Pennsylvania Press, Philadelphia, Pennsylvania.

1950 *Papermaking by Hand in America*. United States of America Mountain House Press, Chillicothe, Ohio.

Judd, Sylvester

1863 *History of Hadley, Massachusetts*. H.R. Hunting, Springfield, Massachusetts.

Leffel & Company

1868 *Illustrated Catalogue and Price List of Leffel's American Double Turbine Water Wheel*. Republic Printing Company, Springfield, Ohio.

1867 *Illustrated Catalogue and Price List of Leffel's American Double Turbine Water Wheel*. Republic Printing Company, Springfield, Ohio.

Lockwood, Howard

1889/90 *Lockwood's Directory of the Paper and Stationary Trades*. Howard Lockwood Publisher, New York.

1887/88 *Lockwood's Directory of the Paper and Stationary Trades*. Howard Lockwood Publisher, New York.

1881 *Lockwood's Directory of the Paper and Stationary Trades*. Howard Lockwood Publisher, New York.

Massachusetts Business Directory

1878 The Massachusetts Register, Containing a record of State and County Officers, and a Directory of Merchants, Manufacturers, etc. Arranged Alphabetically by Business. Sampson, Davenport and Company, Boston, Massachusetts.

1872 The Massachusetts Register, Containing a record of State and County Officers, and a Directory of Merchants, Manufacturers, etc. Arranged Alphabetically by Business. Sampson, Davenport and Company, Boston, Massachusetts.

1874 The Massachusetts Register, Containing a record of State and County Officers, and a Directory of Merchants, Manufacturers, etc. Arranged Alphabetically by Business. Sampson, Davenport and Company, Boston, Massachusetts.

1869 The Massachusetts Register, Containing a record of State and County Officers, and a Directory of Merchants, Manufacturers, etc. Arranged Alphabetically by Business. Sampson, Davenport and Company, Boston, Massachusetts.

1867 The Massachusetts Register, Containing a record of State and County Officers, and a Directory of Merchants, Manufacturers, etc. Arranged Alphabetically by Business. Sampson, Davenport and Company, Boston, Massachusetts.

Massachusetts Historical Commission (MHC)

1982 *Reconnaissance Survey Report: Amherst*. Manuscript on file at the Massachusetts Historical Commission, Boston, Massachusetts.

1984 *Historic and Archaeological Resources of the Connecticut River Valley*. Office of the Secretary of State, Boston.

Mitchell, Domhnall

2013 Amherst. In *Emily Dickinson in Context*, pp. 13-24. Edited by Eliza Richards. Cambridge University Press, New York.

New England Mercantile Union

1849 New England Mercantile Union Business Directory, Six Parts in One. L.C. & H.L. Pratt, Boston, Ma.

Norton, Paul

1975 *Amherst: A Guide to its Architecture*. Amherst Historical Society, Amherst, Massachusetts.

Paper Mill Directory of the World

1884 *The Paper Mill Directory of the World. A Complete Catalogue of All the Paper and Pulp Mills on the Globe*. Clark W. Bryan & Co., Publishers. Holyoke, Massachusetts.

1883 *The Paper Mill Directory of the World. A Complete Catalogue of All the Paper and Pulp Mills on the Globe*. Clark W. Bryan & Co., Publishers. Holyoke, Massachusetts.

Paper Trade Journal

1932 TAPPI to Inspect Holyoke Paper Mills. In *Paper Trade Journal*, Volume 95, No.6, pp.15-17.

Rand, Frank Prentice

1958 *The Village of Amherst: A Landmark of Light*. Amherst Historical Society, Amherst, Massachusetts.

Springfield Republican (SR)

1863 "The Thunder Storm of Tuesday" 15 August:4. Springfield, Massachusetts.

1894 "Incendiary Fire at Amherst" 5 August. Springfield, Massachusetts

Taylor, George R.

1978 The Rise and Death of Manufacturers and Other Matters, in *Essays on Amherst History*, Theodore P Greene, editor, Amherst, Massachusetts.

Walling, Henry F.

1856 *A Topographical Map of Hampshire County Massachusetts*. Sarony & Co., New York.

1860 *Map of the County of Hampshire, Massachusetts*. H. & C.T. Smith & Co., Publishers New York.

MHC SITE FORMS

| | |
|--|--|
| <p>FORM D - HISTORIC RESOURCES SURVEY HISTORIC ARCHEOLOGIC SITES Massachusetts Historical Commission Office of the Secretary State House, Boston</p> | <p>FOR MHC OFFICE USE ONLY</p> <p>Town _____ MHC NO. _____ UTM / _ / _ / _ / _ / _ / _ / _ / _ / _ / _ / _ / _ / _ / _ / _ ZONE EASTING NORTHING QUAD NR []ACT []ELIG. []NO DISTRICT []YES []NO</p> |
|--|--|

| | | |
|--|---------|-----------|
| 1. SITE NAME(S) Upper Mill River Canal and Dam | MAS NO. | OTHER NO. |
|--|---------|-----------|

| | |
|----------------------|------------------|
| 2. TOWN/CITY Amherst | COUNTY Hampshire |
|----------------------|------------------|

3. STREET & NUMBER (IF NOT AVAILABLE, GIVE DETAILED DESCRIPTION OF HOW TO REACH SITE)
 Mill River Recreation Area, 54 Montague Road, Amherst, Massachusetts

| | |
|--|----------------------|
| 4. OWNER(S) AND ADDRESS(ES) Town of Amherst, MA | [X]Public []Private |
|--|----------------------|

5. SITE LOCATED BY []CRM Survey []Avocational Collector []Field School [X]Other (Specify)
 The location and identity of the site is widely known.

6a. PERIOD(S) (Check all applicable boxes) []17th C. []18th C. [X]19th C. []20th C. []Unknown

6b. ESTIMATED OCCUPATION RANGE originally built between 1830-1836. The present concrete dam is a replacement of the original

| | | | |
|------------------|--|---------------------------|---|
| 7. DATING METHOD | MAPS Walling 1856, 1860 Others in report | TITLE SEARCH [X]yes []no | ADDITIONAL DOCUMENTS see Report referenced on page 2 |
| | COMPARATIVE MATERIALS | | OTHER |

8a. SITE TYPE []Agrarian []Residential [X]Industrial []Commercial []Military []Unknown []Other (Specify)
 8b. DESCRIBE Earthen Berm (Canal) and Concrete and Steel Dam

| | |
|--|---|
| <p>9. DESCRIBE SIZE, HORIZONTAL AND VERTICAL BOUNDARIES</p> <p>The canal extends approximately 800 feet along the northern edge of the cleared land in the Mill River Conservation Area. The Dam is located a short distance east from the northeast corner of the cleared land.</p> | <p>10. STRATIGRAPHY</p> <p>Surface Indicators: [X]Standing ruins []Surface finds []Markers []Cellar Hole</p> <p style="margin-left: 20px;">Stratigraphy: []Stratified [X]NOT Stratified</p> |
|--|---|

| | | | | |
|----------|---|-------------------------------|---|--|
| 11. SOIL | USDA Soil Series Sudbury fine sandy loam | Contour Elevation 250' asl | % Slope of Ground [X]0-5 []5-15 []15-25 []over 25 | |
| | very strongly acid through slightly acid in the substratum 1 _____ 7 _____ 14 (Acid) (Base) | | 12. TOPOGRAPHY [X]Flat []Gentle undulation []Rolling Hills []Mountains | |

| | | | | |
|-----------|--|--|--------------------------------|-------------------------------------|
| 13. WATER | NEAREST WATER SOURCE Upper Mill River/ Cushman Brook | SIZE AND SPEED Small, moderately fast | DISTANCE FROM SITE adjacent | SEASONAL AVAILABILITY Year-round |
|-----------|--|--|--------------------------------|-------------------------------------|

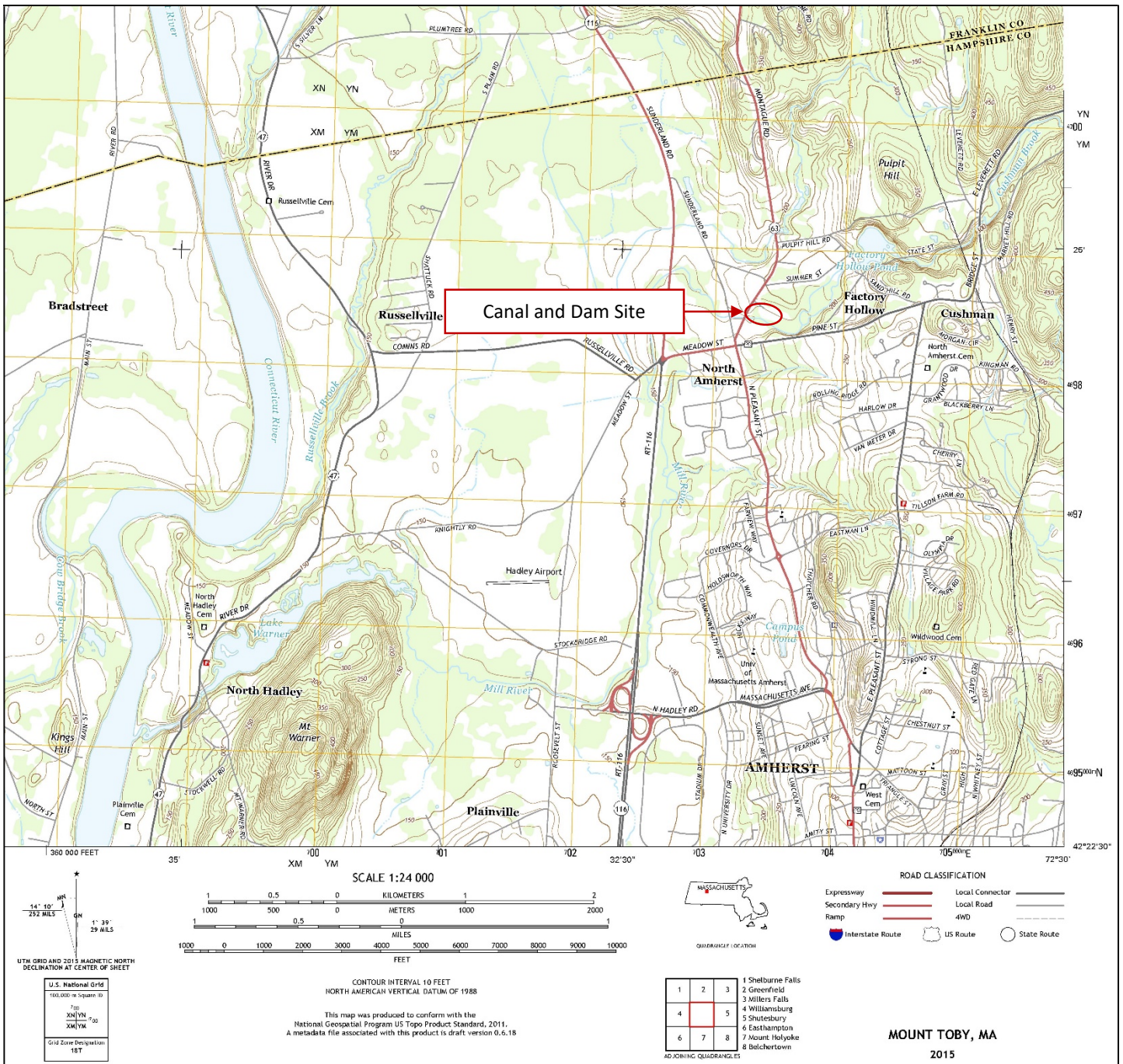
| | | |
|----------------|--|----------------|
| 14. VEGETATION | PRESENT forested edge of open field (Canal), thick forest with dense undergrowth (Dam) | PAST open land |
|----------------|--|----------------|

| | |
|--|---|
| 15. SITE INTEGRITY []Undisturbed []Good [x]Fair []Destroyed | IF DISTURBED, DESCRIBE DISTURBANCE removal of small portions of the earthen berm |
|--|---|

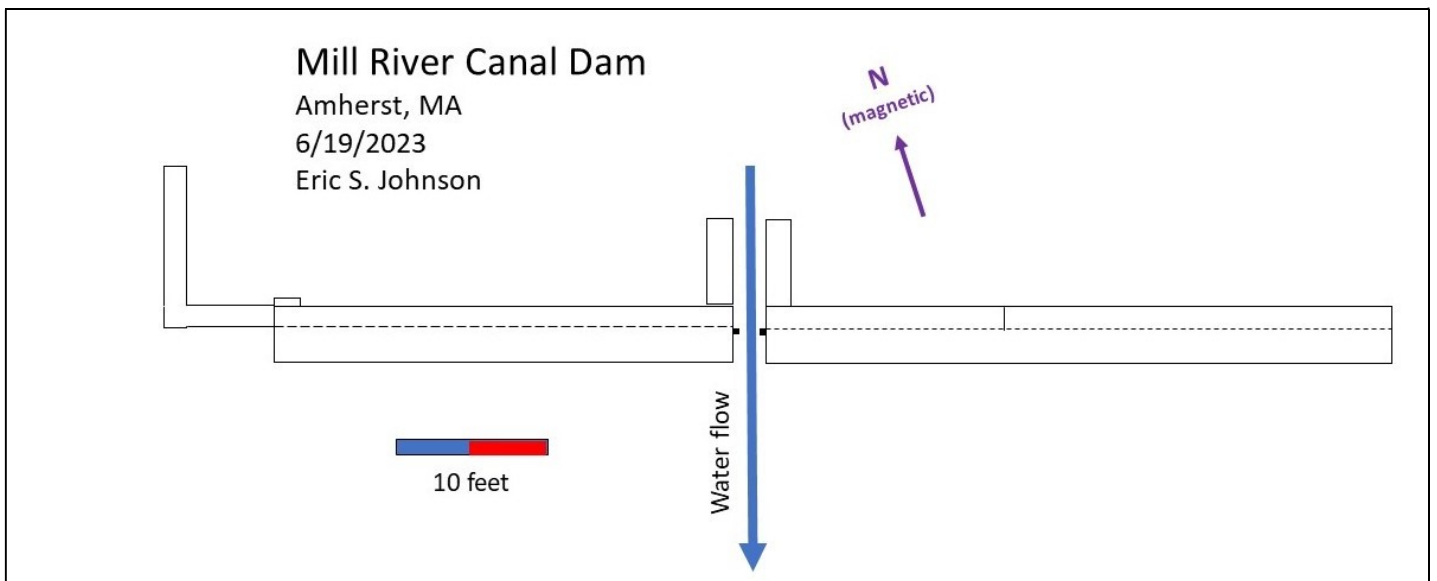
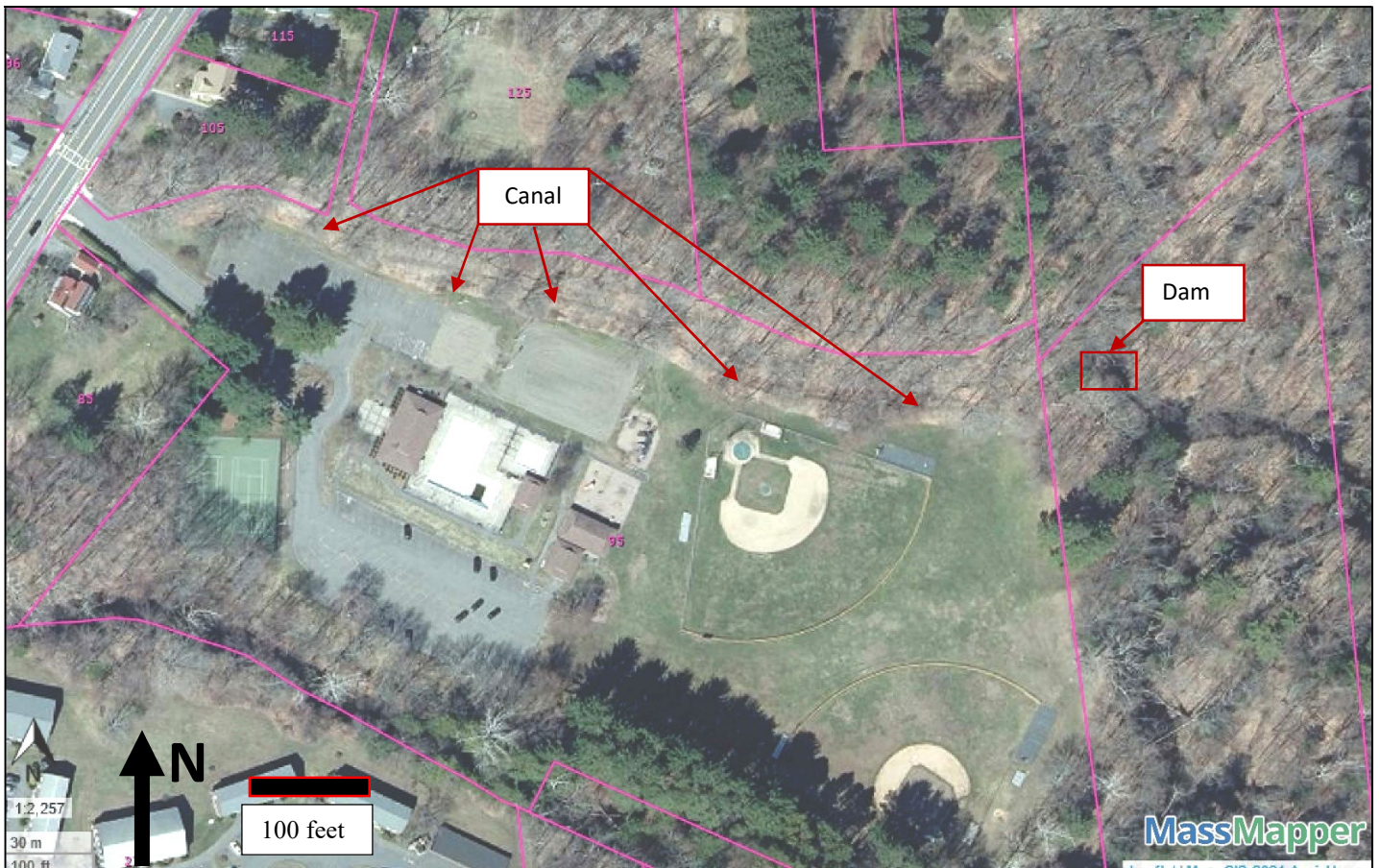
16. SURROUNDING ENVIRONMENT

[X]Open Land [X]Woodland []Eroded Soils []Residential [X]Scattered Buildings Visible from Site (Canal)
 []Commercial []Industrial [X]Rural

| | | |
|--|---|---|
| <input type="checkbox"/> Coastal <input type="checkbox"/> Isolated | | |
| 17. ANY THREATS TO SITE <input checked="" type="checkbox"/> yes <input type="checkbox"/> no DESCRIBE POTENTIAL THREATS: erosion, bioturbation, expansion of recreation area (Canal), vandalism (Dam) | | |
| 18. ACCESSIBILITY TO PUBLIC <input checked="" type="checkbox"/> Free Access <input type="checkbox"/> Need Owner Permission <input type="checkbox"/> Restricted <input type="checkbox"/> No Access | | |
| 19. PREVIOUS WORK <input type="checkbox"/> Surface Collected | BY WHOM/AFFILIATION | DATE |
| <input type="checkbox"/> "Pot hunted" | BY WHOM/AFFILIATION | DATE |
| <input type="checkbox"/> Tested Walkover, mapping, photography | BY WHOM/AFFILIATION Eric S. Johnson | DATE June 2023 |
| <input type="checkbox"/> Excavation | BY WHOM/AFFILIATION | DATE |
| 20. PRESENT LOCATION OF MATERIALS (INCLUDE ADDRESSES) NA | | |
| 21. REFERENCES/REPORTS Johnson, Eric S. and Kathryn Curran 2023 Archaeological Reconnaissance Survey of Four Archaeological Sites on the Upper Mill River/Cushman Brook, Amherst, Massachusetts | | |
| 22. RECOVERED DATA Map, photographs, and narrative description. Documentary research on ownership, dates of operation, and activities | | |
| 23. ARCHAEOLOGICAL OR HISTORICAL SIGNIFICANCE Association with nineteenth-century industry on the Upper Mill River/Cushman Brook | | |
| 24. ATTACH TO THIS FORM PORTION OF USGS QUAD WITH SITE AREA MARKED | | |
| 25. SKETCH PLAN OF SITE See attached Scale: | 26. PHOTOS: Attach if available. Label each with date of photo, photographer, view shown, name of site 4 photos attached, additional photos in report referenced above | |
| REPORTED BY: | NAME Eric S. Johnson | ADDRESS 44 Boyden Road, Pelham, MA 01002 |
| | ORGANIZATION | DATE June 2023 |
| FOR OFFICE USE ONLY | | |
| FIELD EVALUATION | | |
| COMMENTS | | |



Location of the Upper Mill River Canal and Dam site on the 2015 Mt. Toby Quadrangle (USGS 2015).



Amended Aerial Photo and Sketch Map of Upper Mill River Canal and Dam



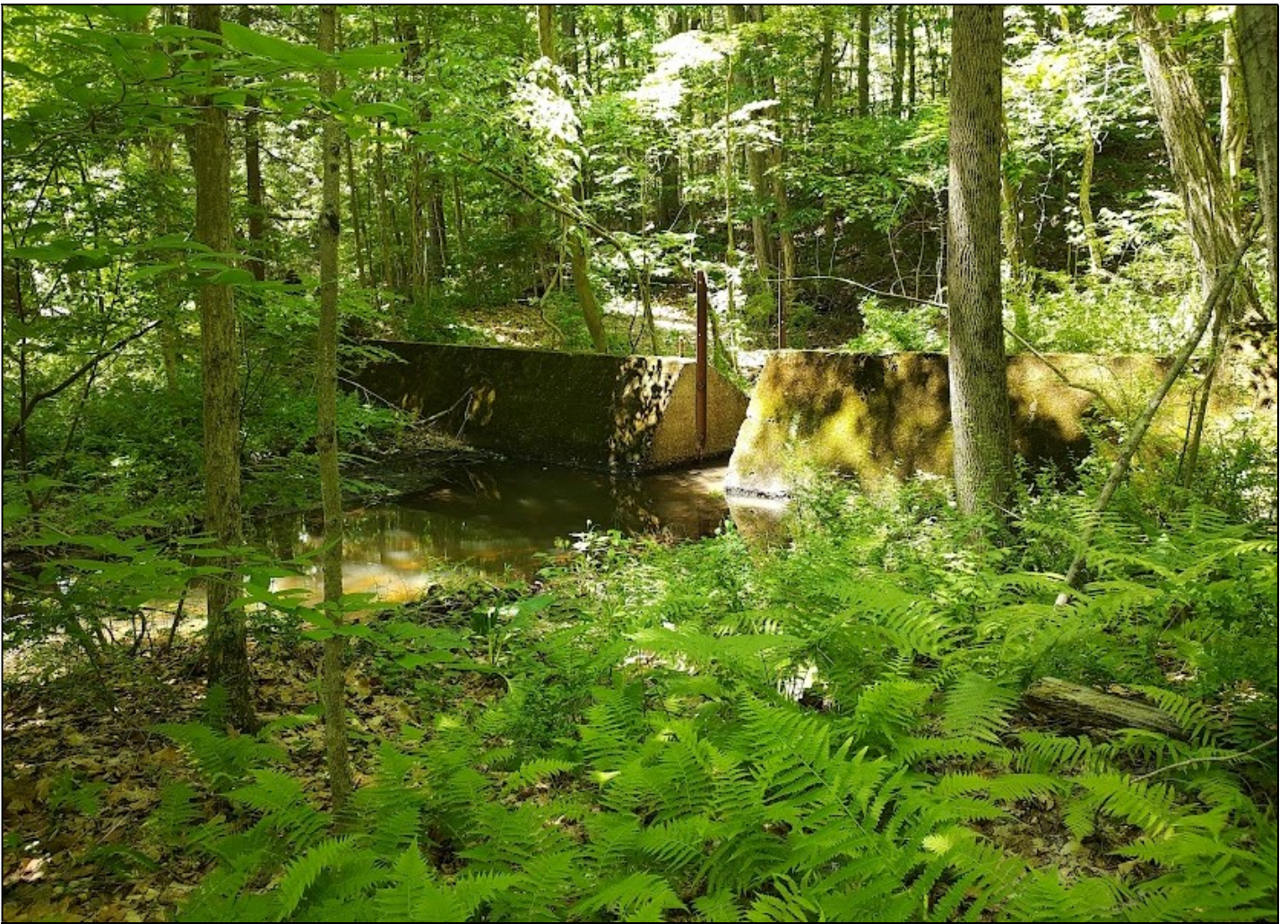
Upper Mill River Canal and Dam Site

Looking east (95°) at the berm that forms the south side of the canal from the northwest corner of the fence surrounding the baseball field. From the fence corner to the edge of the berm measures $12\frac{1}{2}$ feet at a bearing of 40° . The 1-meter measuring stick is placed against the fence on the right. Eric Johnson, June 19, 2023.



Upper Mill River Canal and Dam Site

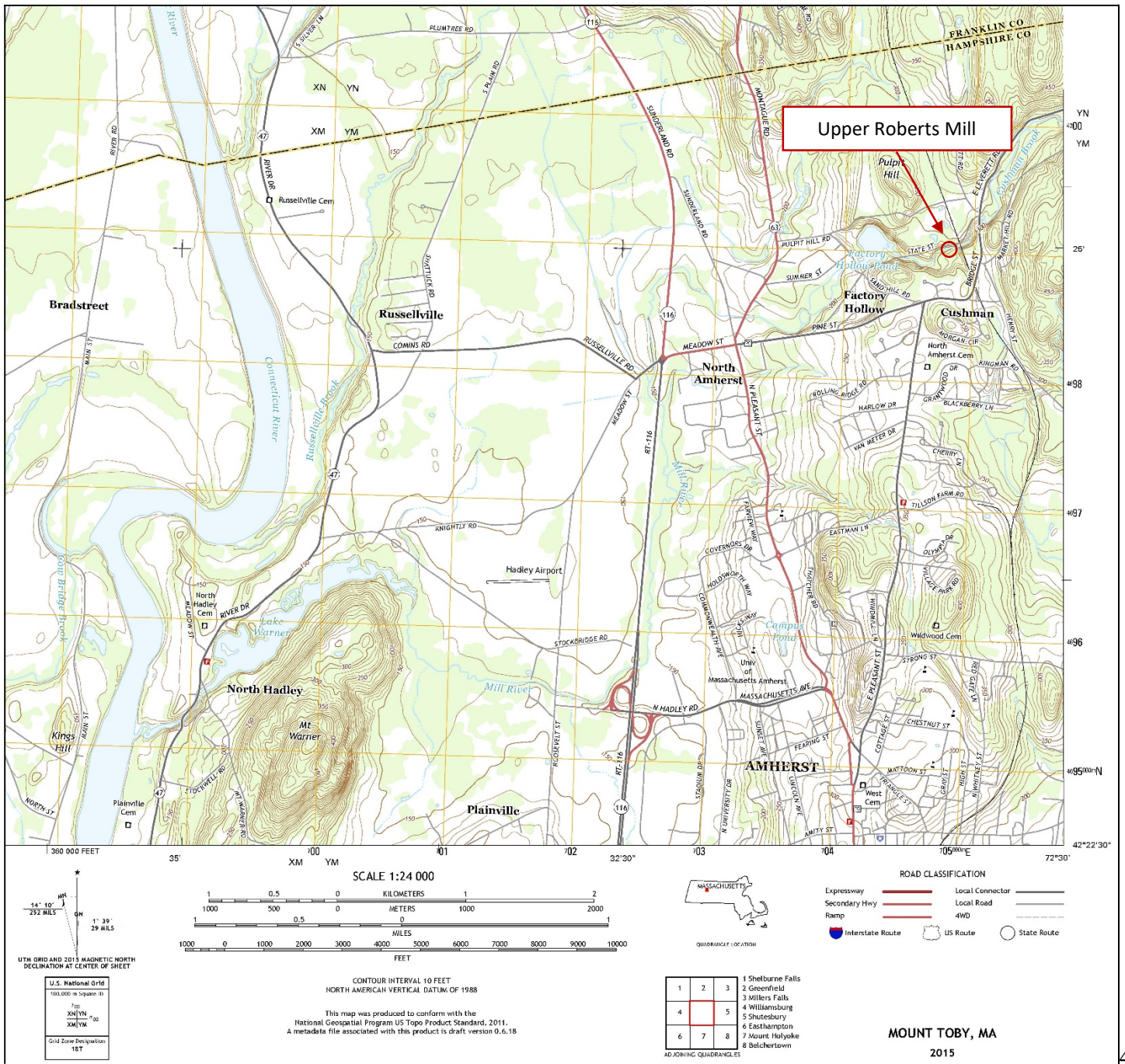
Views from inside the canal at a point northeast of the pavilion building. Left: looking west-northwest (325°). Right: looking southeast (146°). These photographs illustrate the typical mud and leaf litter inside the canal. At this point the canal measures 24 feet in width from the top of the berm straight across to the northern slope. Eric Johnson June 19, 2023.



Upper Mill River Canal and Dam Site

Looking northwest (305°) at the central part of the dam. The two vertical steel posts are visible on either side of the water gap. Eric Johnson June 19, 2023. The water gap is 4 feet 8 inches wide.

| | | |
|--|--|--|
| 19. PREVIOUS WORK <input type="checkbox"/> Surface Collected | BY WHOM/AFFILIATION | DATE |
| <input type="checkbox"/> "Pot hunted" | BY WHOM/AFFILIATION | DATE |
| <input type="checkbox"/> Tested Walkover, mapping, photography | BY WHOM/AFFILIATION Eric S. Johnson | DATE October 2022-June 2023 |
| <input type="checkbox"/> Excavation | BY WHOM/AFFILIATION | DATE |
| 20. PRESENT LOCATION OF MATERIALS (INCLUDE ADDRESSES) NA | | |
| 21. REFERENCES/REPORTS Johnson, Eric S. and Kathryn Curran 2023 2023 Archaeological Reconnaissance Survey of Four Archaeological Sites on the Upper Mill River/Cushman Brook, Amherst, Massachusetts. | | |
| 22. RECOVERED DATA Map, photographs, and narrative description. Documentary research on ownership, dates of operation, and activities | | |
| 23. ARCHAEOLOGICAL OR HISTORICAL SIGNIFICANCE The Upper Roberts Mill is significant as an example of the now-vanished industrial center that once existed on the Upper Mill River/Cushman Brook. It has interpretive value for the Cushman community and visitors to the Amherst Conservation trail network | | |
| 24. ATTACH TO THIS FORM PORTION OF USGS QUAD WITH SITE AREA MARKED | | |
| 25. SKETCH PLAN OF SITE See attached Scale: | 26. PHOTOS: Attach if available. Label each with date of photo, photographer, view shown, name of site 1 photo attached, additional photos in report referenced above | |
| REPORTED BY: | NAME Eric S. Johnson | ADDRESS 44 Boyden Road, Pelham, MA 01002 |
| | ORGANIZATION | DATE June 2023 |
| FOR OFFICE USE ONLY | | |
| FIELD EVALUATION | | |
| COMMENTS | | |

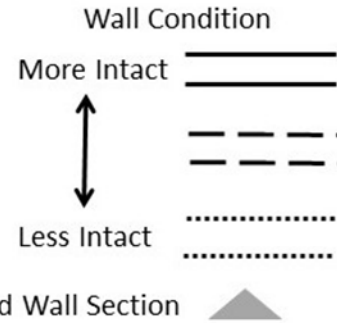


Location of the Upper Roberts Mill site on the 2015 Mt. Toby Quadrangle (USGS 2015).

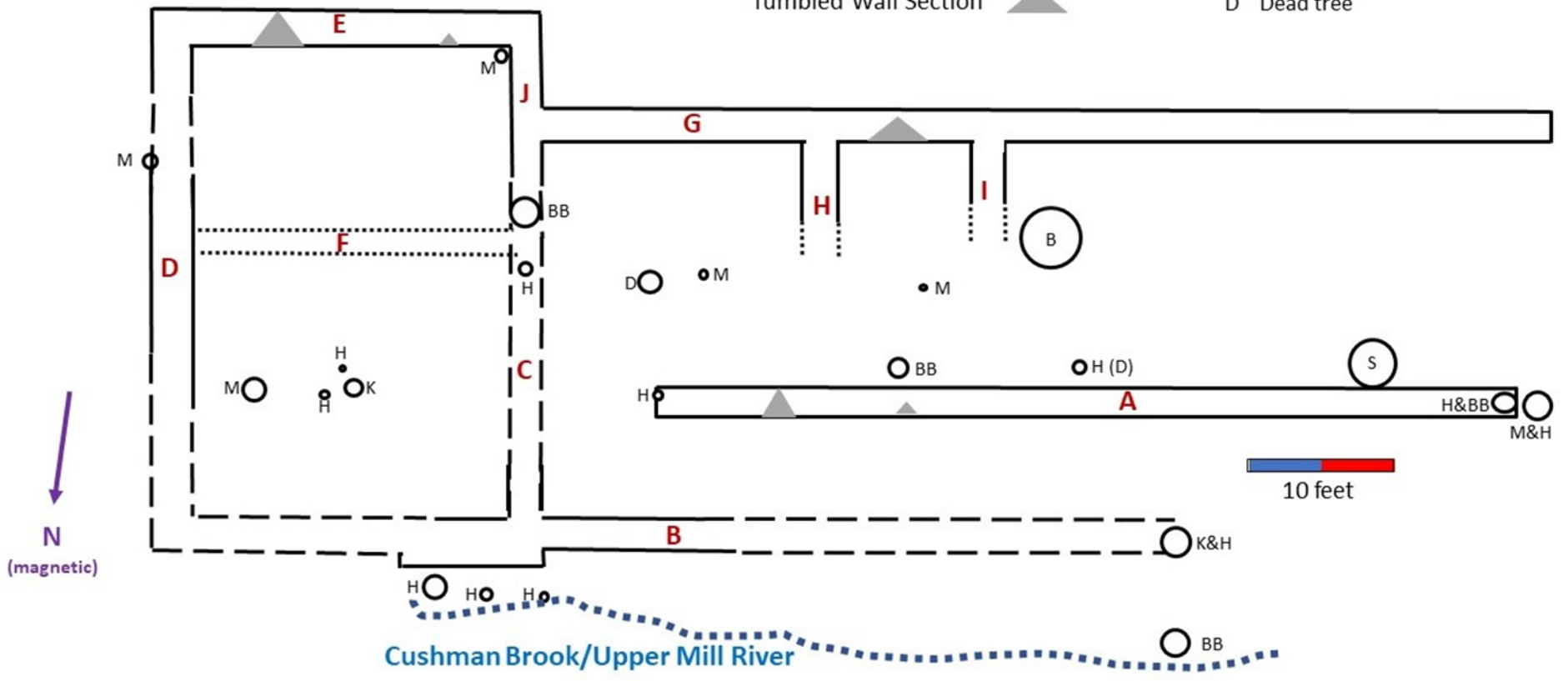
Roberts Upper Mill

Amherst, MA
 10/31/22-1/8/23
 Eric S. Johnson

A-I
 Wall Designations
 in Photograph
 Descriptions



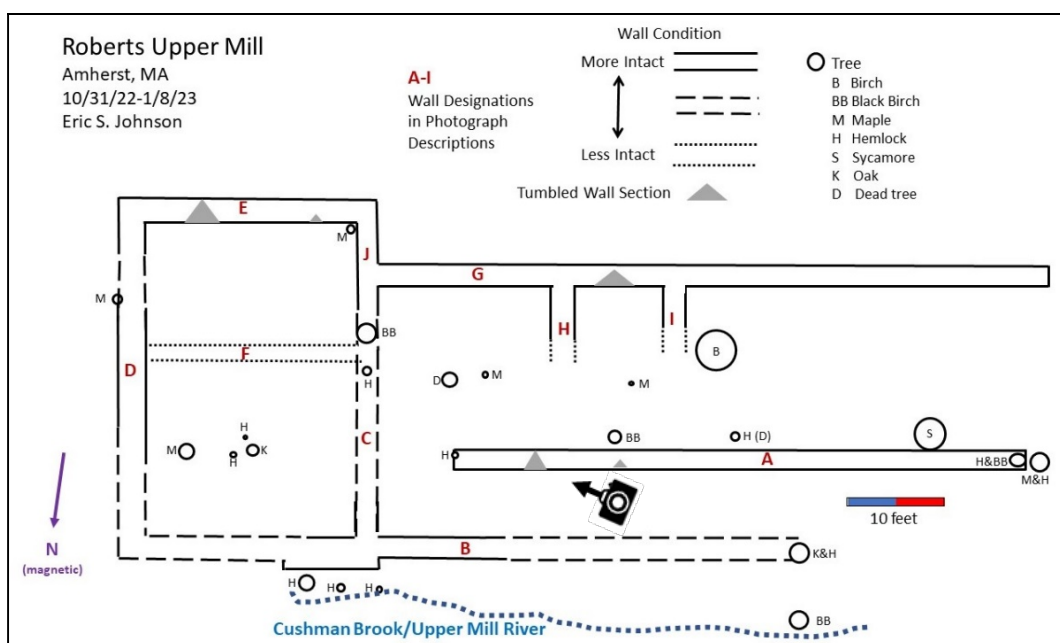
-  Tree
- B Birch
- BB Black Birch
- M Maple
- H Hemlock
- S Sycamore
- K Oak
- D Dead tree



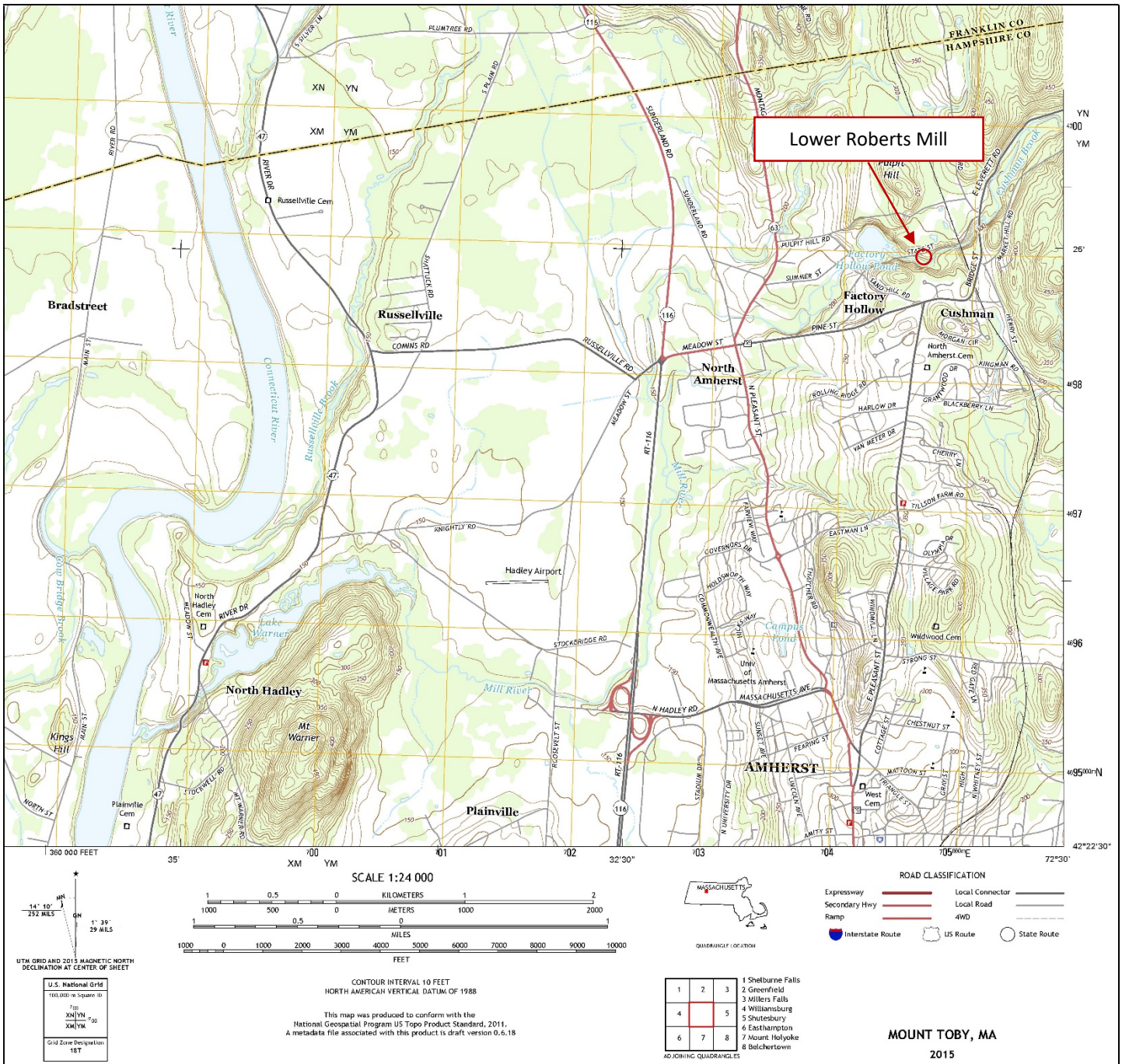
Map of the Upper Roberts Mill site showing visible walls and trees.



Looking east at the eastern part of the Upper Roberts Mill site. This photograph illustrates the flat terrain of the northern part of the site, the slope up to the south of the southern part of the site, and the flat area at the top, where pedestrians can be seen. Eric Johnson, November 19, 2022



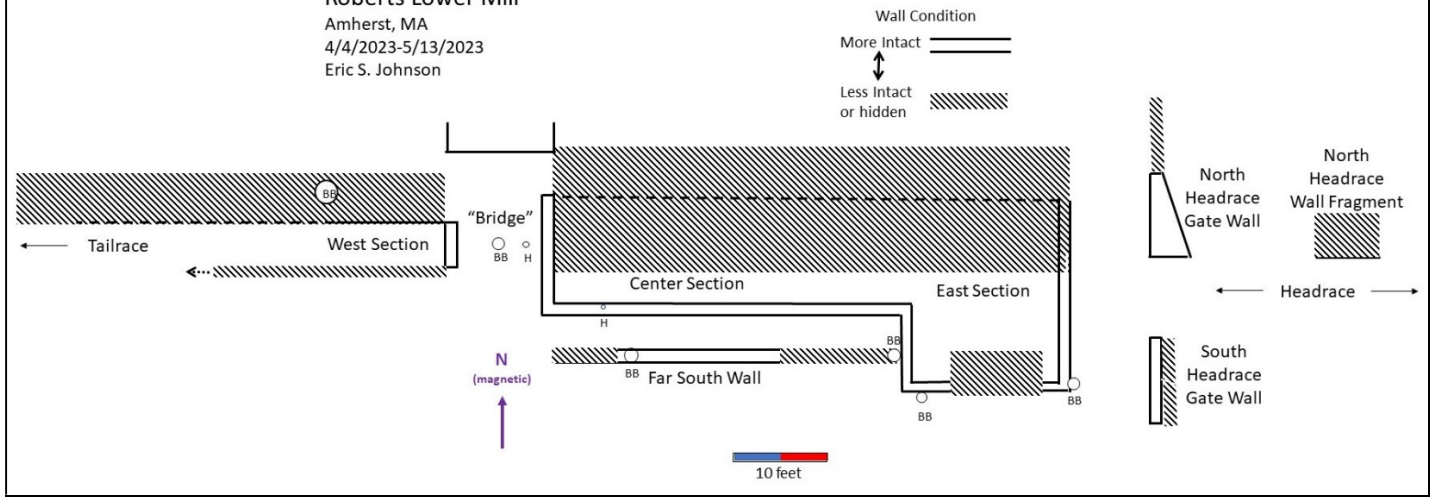
| | | |
|--|--|--|
| 17. ANY THREATS TO SITE <input checked="" type="checkbox"/> yes <input type="checkbox"/> no DESCRIBE POTENTIAL THREATS: erosion, bioturbation, surface collecting, neglect | | |
| 18. ACCESSIBILITY TO PUBLIC <input checked="" type="checkbox"/> Free Access <input type="checkbox"/> Need Owner Permission <input type="checkbox"/> Restricted <input type="checkbox"/> No Access | | |
| 19. PREVIOUS WORK <input type="checkbox"/> Surface Collected | BY WHOM/AFFILIATION | DATE |
| <input type="checkbox"/> "Pot hunted" | BY WHOM/AFFILIATION | DATE |
| <input checked="" type="checkbox"/> Tested Walkover, mapping, photography | BY WHOM/AFFILIATION Eric S. Johnson | DATE October 2022-June 2023 |
| <input type="checkbox"/> Excavation | BY WHOM/AFFILIATION | DATE |
| 20. PRESENT LOCATION OF MATERIALS (INCLUDE ADDRESSES) NA | | |
| 21. REFERENCES/REPORTS Johnson, Eric S. and Kathryn Curran 2023 Archaeological Reconnaissance Survey of Four Archaeological Sites on the Upper Mill River/Cushman Brook, Amherst, Massachusetts. | | |
| 22. RECOVERED DATA Map, photographs, and narrative description. Documentary research on ownership, dates of operation, and activities | | |
| 23. ARCHAEOLOGICAL OR HISTORICAL SIGNIFICANCE The Lower Roberts Mill is significant as an example of the now-vanished industrial center that once existed on the Upper Mill River/Cushman Brook. It has interpretive value for the Cushman community and visitors to the Amherst Conservation trail network | | |
| 24. ATTACH TO THIS FORM PORTION OF USGS QUAD WITH SITE AREA MARKED | | |
| 25. SKETCH PLAN OF SITE See attached Scale: | 26. PHOTOS: Attach if available. Label each with date of photo, photographer, view shown, name of site photo attached, additional photos in report referenced above | |
| REPORTED BY: | NAME Eric S. Johnson | ADDRESS 44 Boyden Road, Pelham, MA 01002 |
| | ORGANIZATION | DATE June 2023 |
| FOR OFFICE USE ONLY | | |
| FIELD EVALUATION | | |
| COMMENTS | | |



Location of the Lower Roberts Mill site on the 2015 Mt. Toby Quadrangle (USGS 2015).

Roberts Lower Mill

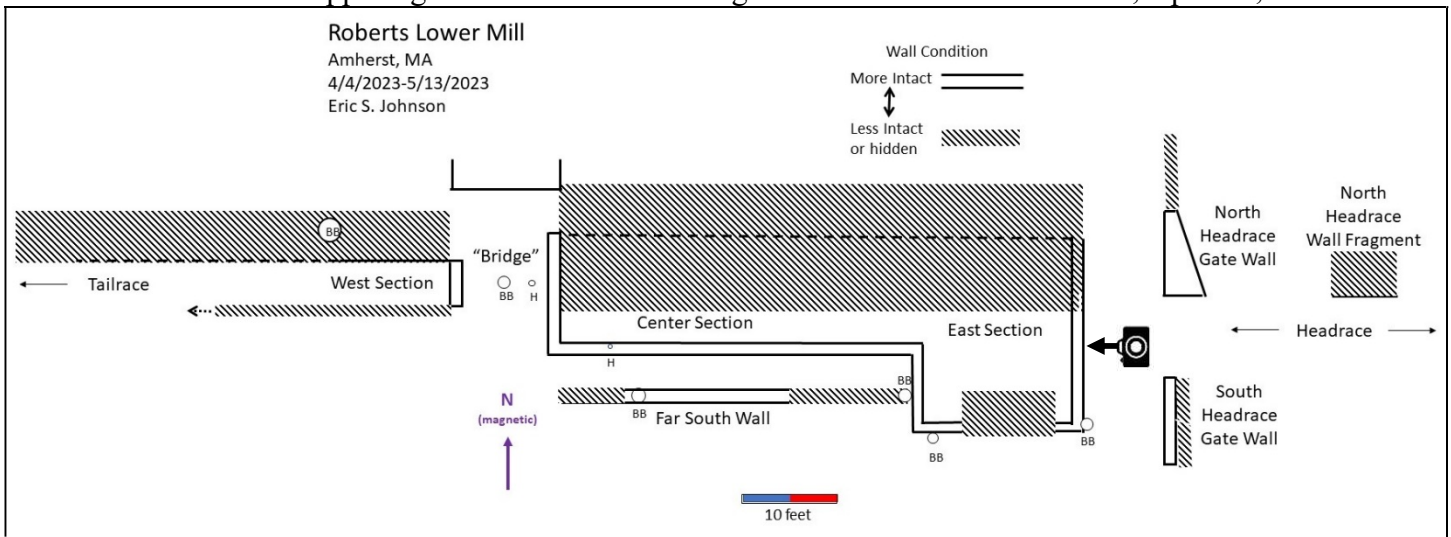
Amherst, MA
4/4/2023-5/13/2023
Eric S. Johnson



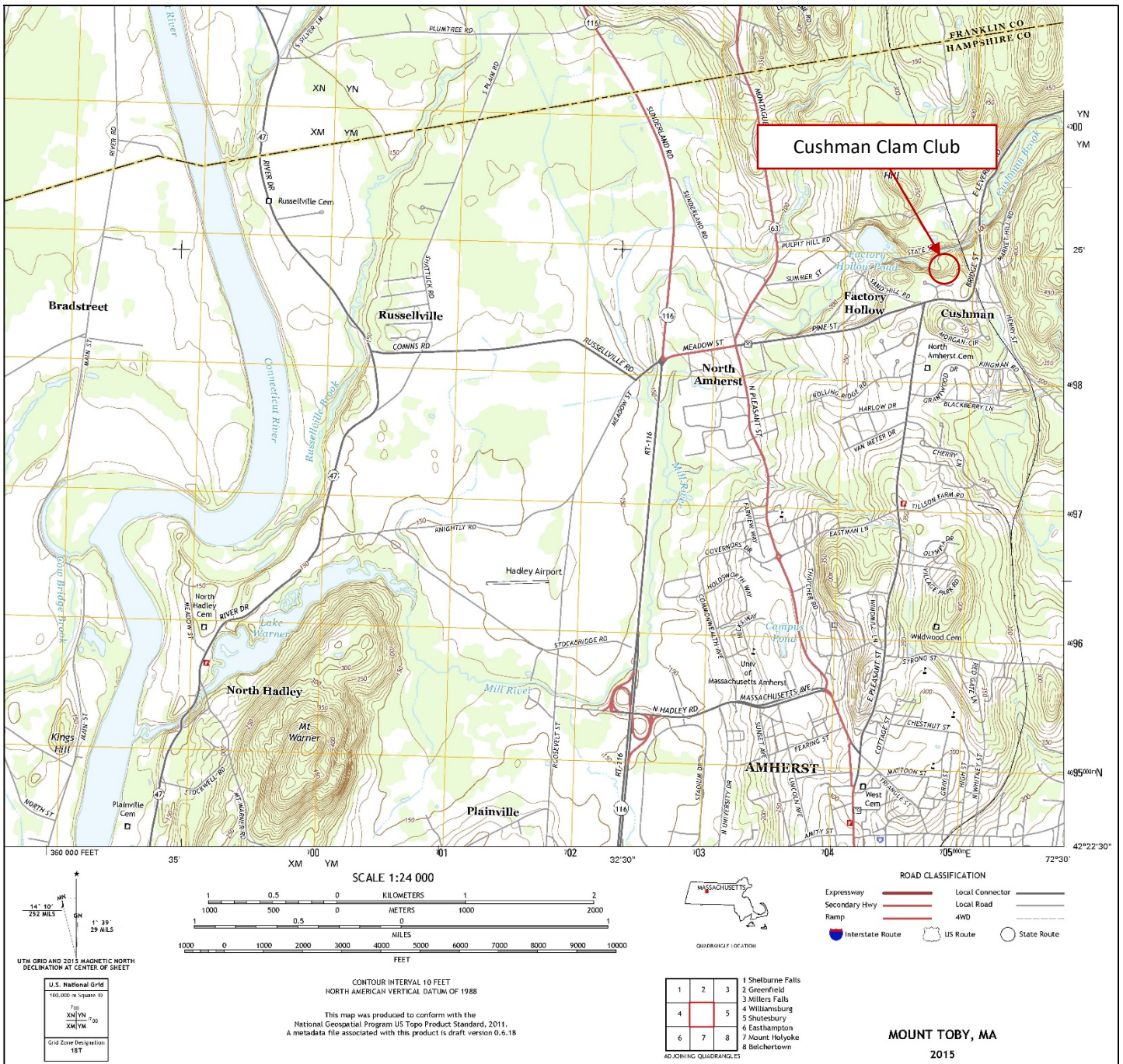
Map of the Lower Roberts Mill site showing visible walls and trees



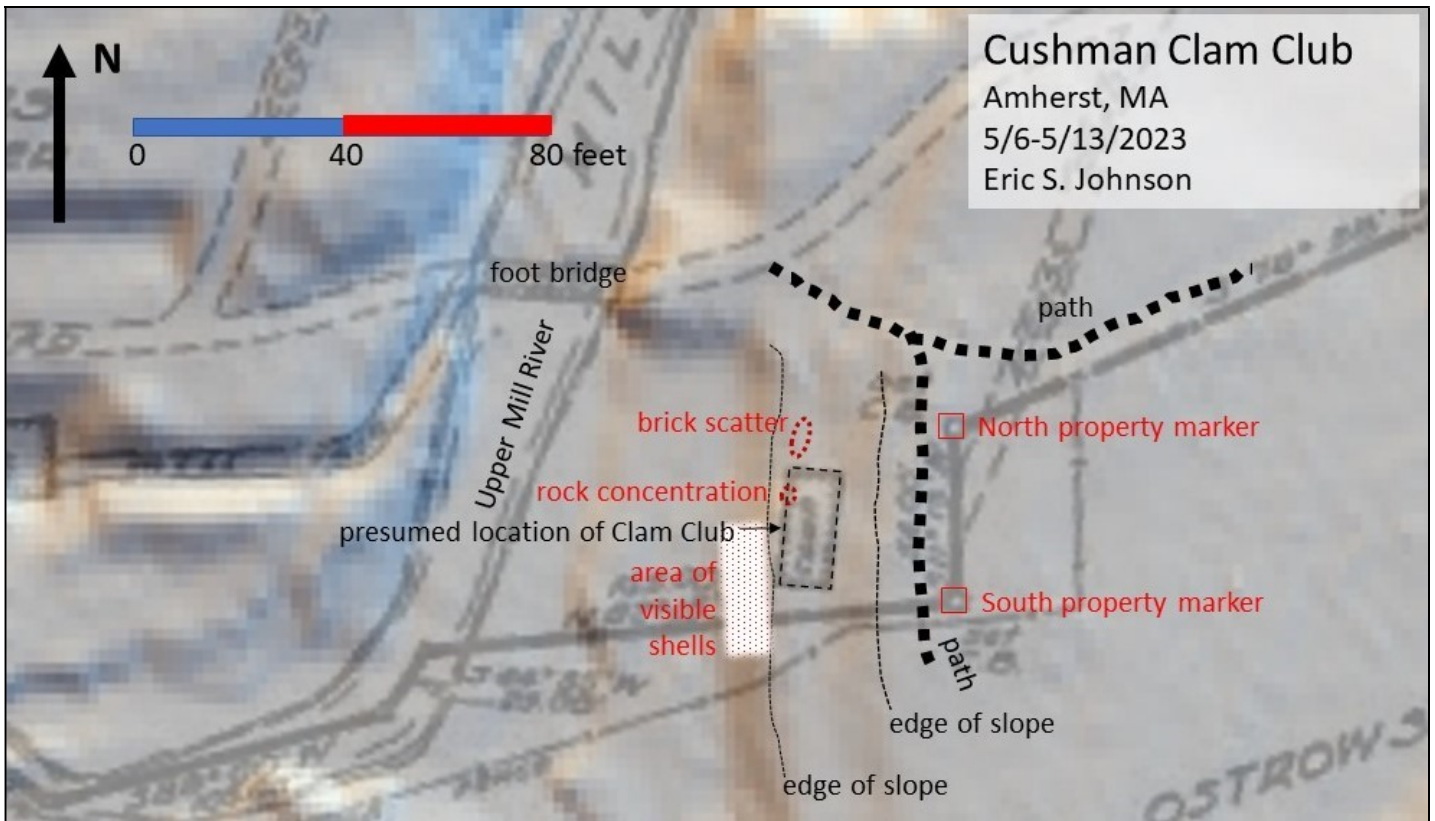
Looking west at the west wall and southwest corner of the East Section. Note the standing wall to the south (left), the disturbed wall to the north (right), and the accumulation of leaves, stones, and branches in the center. The Center Section is visible in the upper right corner. The measuring stick is 1 meter. Eric Johnson, April 10, 2023



| | | |
|---|--|--|
| 17. ANY THREATS TO SITE <input checked="" type="checkbox"/> yes <input type="checkbox"/> no DESCRIBE POTENTIAL THREATS: possible digging for bottles | | |
| 18. ACCESSIBILITY TO PUBLIC <input checked="" type="checkbox"/> Free Access <input type="checkbox"/> Need Owner Permission <input type="checkbox"/> Restricted <input type="checkbox"/> No Access | | |
| 19. PREVIOUS WORK <input type="checkbox"/> Surface Collected | BY WHOM/AFFILIATION | DATE |
| <input type="checkbox"/> "Pot hunted" | BY WHOM/AFFILIATION | DATE |
| <input checked="" type="checkbox"/> Tested Walkover, mapping, photography | BY WHOM/AFFILIATION Eric S. Johnson | DATE October 2022 - June 2023 |
| <input type="checkbox"/> Excavation | BY WHOM/AFFILIATION | DATE |
| 20. PRESENT LOCATION OF MATERIALS (INCLUDE ADDRESSES) NA | | |
| 21. REFERENCES/REPORTS Johnson, Eric S. and Kathryn Curran 2023 Archaeological Reconnaissance Survey of Four Archaeological Sites on the Upper Mill River/Cushman Brook, Amherst, Massachusetts. | | |
| 22. RECOVERED DATA Map, photographs, and narrative description. Documentary research on dates of operation and activities | | |
| 23. ARCHAEOLOGICAL OR HISTORICAL SIGNIFICANCE Association with twentieth-century recreation, male-centered social organizations | | |
| 24. ATTACH TO THIS FORM PORTION OF USGS QUAD WITH SITE AREA MARKED | | |
| 25. SKETCH PLAN OF SITE See attached Scale: | 26. PHOTOS: Attach if available. Label each with date of photo, photographer, view shown, name of site 1 photo attached, additional photos in report referenced above | |
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| COMMENTS | | |



Location of the Upper Mill River Canal and Dam site on the 2015 Mt. Toby Quadrangle (USGS 2015).



Cushman Clam Club site mapped on to LIDAR and 1963 map overlay.



Looking east at an extensive deposit of clamshells on the slope to the west of and below the site of the former Cushman Clam Club building. Measuring stick is one meter. Inset, upper right: close up of a dense part of the deposit.
 Eric Johnson, June 13, 2023.

