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Massachusetts Historical Commission

220 Morrissey Boulevard

Boston, Ma 02125-3314

January 21, 2003

Dear Mr. Lapardo

Enclosed you will find what has been done thus far in relation to the proposed nomination of the New Haven and Northampton Canal to the National Register of Historic Places. We, the nomination committee representing the participating communities, would appreciate your review and suggestions.

The listing of the participating communities on the cover page is incorrect in that Easthampton was omitted. Easthampton is a participating member.

Thank you for your attention to this matter.

Sincerely,

Barbara MacEwan

Barbara MacEwan

Chair New Haven Northampton Canal National Register Nominating Committee

RABER ASSOCIATES
CONSULTANTS IN THE HISTORICAL AND SOCIAL SCIENCES

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SURVEY AND INVENTORY OF THE HAMPSHIRE AND HAMPDEN CANAL

(NEW HAVEN AND NORTHAMPTON CANAL)

FOR A PROPOSED NATIONAL REGISTER OF HISTORIC PLACES NOMINATION

Michael S. Raber

with the participation of
Carl E. Walter

Prepared for:

The Towns of Southwick, Westfield, and Southampton, Massachusetts

November 2002

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INTRODUCTION

Remains of the former Hampshire and Hampden Canal, also known at the New Haven and Northampton Canal, survive in the towns of Southwick, Westfield, Southampton, Easthampton, Northampton, and Russell, Massachusetts. Historical commissions in at least three of these towns— Southwick, Westfield, and Southampton— hope to identify surviving canal sections and associated resources eligible for the National Register of Historic Places, and to list these sections and resources on the National Register as a discontinuous district. Funding for the entire nomination project is not presently in place, but representatives of these three historical commissions agreed to divide nomination-related costs, and to secure sufficient funds to begin the nomination process. At the request of a committee formed by the three societies, Raber Associates considered strategies for using available funds effectively, and proposed to complete the largest and most critical part of the nomination process: identifying and documenting surviving eligible resources in a framework which can be directly incorporated into a future, complete nomination package. Through their respective towns, the committee retained Raber Associates to identify and inventory canal-related resources which appeared eligible, and to provide a written context outlining original design features and the criteria used for selection of eligible resources.

This study is based primarily on two prior projects:

- Extensive collection, organization, and digital presentation of graphic, documentary, and field data on the New Haven and Northampton Canal by Carl E. Walter. Mr. Walter's work, which has included review of almost all available sources on the canal, has been underway for over a decade and is highly organized. His sources include all photographs taken of the canal in Massachusetts by Charles Rufus Harte ca.1914-1934, which he has scanned and organized by location. He participated in all field inspections conducted for the current study.

- The successful nomination to the National Register of the Farmington Canal in Connecticut by Raber Associates (Raber and Clouette 1984). The Farmington Canal Historic District, entered on the National Register in 1985, covered the approximate southern two thirds of the New Haven and Northampton Canal. The framework for identifying and documenting eligible canal sections, as well as the nomination format, have been applied to nominations of other contemporary American canals.

Study procedures are described below. To limit inventory costs, the participating historical societies took responsibility for providing Raber Associates with local information on the canal and possible related historic resources in published and unpublished sources. Some descriptive information on related resources may be enhanced in the future if the remaining towns participate in the project, or if sufficient funding emerges to allow for additional consultant research.

This study presents a description of original canal construction and surviving resources which appear eligible for the National Register, in a format designed as a draft Section 7 of an eventual National Register nomination. Based on review of the results by the Massachusetts Historical Commission, the complete nomination can be completed at a future date. The format below closely follows that used for the Farmington Canal (Raber and Clouette 1984). It is not presented as a complete summary of the canal's history, and it does not include most of the discussions of resource significance which would appear in Section 8 of a nomination. Completion of the nomination will also require identification of up to 123 Universal Transverse Mercator coordinates, and the addition of these coordinates to Table 1 and to the maps prepared for this study.

SUMMARY OF ORIGINAL CONSTRUCTION

Planning for a canal from New Haven to Northampton began in 1822. Two closely-connected companies built the canal between 1825 and 1834, with the entire waterway opened in 1835. In Connecticut, the Farmington Canal Company was incorporated by the Connecticut legislature in 1822, and completed the 56-mile-long section in that state between 1825 and 1829. In 1823, the Massachusetts legislature chartered the Hampshire and Hampden Canal Company, which built the section from the state line to Northampton and several feeder canals in between 1826 and 1834. After an 1836 corporate reorganization, the New Haven and Northampton Company operated both parts of the route, giving a single name to a canal until then known by the names of the original companies. The original companies used common engineering personnel and methods, although there were some distinct differences in the completed canals due to differences in terrain and funding. Benjamin Wright, chief engineer on the Erie Canal, and his son Henry made preliminary surveys in 1822 and 1823. Davis Hurd, a former resident engineer on the Erie Canal who served both companies as chief engineer from 1825 to about 1829, surveyed the entire route as built, and prepared or approved all engineering details. In Connecticut, Hurd was assisted by state-appointed canal commissioners charged with route approval and by some Farmington Canal Company directors (Harte 1933, 1938; Raber and Clouette 1984). There were no comparable commissioners in Massachusetts, where a joint committee from both companies worked with Hurd. Southwick surveyor Amasa Holcomb may have been involved in some final route survey (Harte 1933; Davis 1951: 225). After Hurd's departure, his relative Henry Farnum served as chief engineer for all the canal companies from about 1830 until the New Haven and Northampton Company's replacement of the canal with a railroad beginning in 1847, the last year the entire canal was open. Farnam oversaw completion of most Massachusetts canal sections north of the Westfield River, as well as the numerous repairs and modifications needed throughout the waterway. The New Haven and Northampton Railroad, also known as the Canal Railroad, was completed to Northampton in stages between 1848 and 1856, and was absorbed by the New York, New Haven, and Hartford in 1887 (Harte 1938; Turner and Jacobus 1986: 60-64).

There is very little surviving original documentation on the Hampshire and Hampden Canal. Based on a detailed but largely pre-construction written description (Hurd 1827), on documentary and field investigations made by Charles R. Harte in the early 20th century (1933, 1938), and on documentary and field investigations made by the authors of this report, it is possible to summarize much of the canal's basic design. The canal as built ran almost exactly 30 miles from a guard lock at the state line south of the Congamond Ponds in Southwick to the Connecticut River in Northampton (Key Map). Thirty-two lift locks, each 80 by 12 feet in the clear and associated with unknown number of lockkeepers' houses, raised or lowered boats approximately 298 feet to span a net change of about 122 vertical feet between the level of the ponds and the Connecticut River. The river elevation at the north end of the canal is approximately 100 feet above sea level. Located entirely within the Connecticut River drainage basin, the canal had two summit levels with the first located at the south end. Including a section of earthen ditch running north of the guard lock, the upper summit ran about 3 miles across or between the three Congamond Ponds. North of the ponds, nine locks dropped the canal approximately 76 feet over about 3.7 miles into the valley of the Westfield River, running along or over the Great Brook tributary of the Westfield. From Lock 9 in Westfield, the canal ran across the Westfield River valley at a single level for about 5.5 miles to Lock 10, crossing the Little River and the Westfield River. North of the Westfield River, the canal absorbed the flow of Sackett (Powdermill) Brook, and beginning at Lock 10 rose approximately 88 feet over 1.2 miles in a nine-lock series to the second, so-called Timber Swamp Summit, this one between the basins of the Westfield and Manhan rivers. Timber Swamp Summit level ran about 3 miles to Lock 19 in Southampton, primarily along the upper reaches of the South Branch of the Manhan River. The canal then ran along or over branches of the Manhan almost to Northampton, where the waterway traversed the Mill River valley and areas draining directly into the Connecticut River. From Timber Swamp Summit, the canal dropped approximately 134 feet over nearly 14 miles to the Connecticut River, using three series of locks: locks 19-22 dropping 40 feet in a half mile in Southampton; 2 miles northeast, locks 23-27 dropping 46 feet over 3 miles in Southampton; and 8 miles northeast in Northampton, locks 28-32 dropping the final 48 feet in about a third of a mile.

The canal had an earthen, gene...y unlined, and ideally prismatic cross secti... designed to hold water 4 feet deep and about 35 feet wide at the surface. There were two feeder canals of similar but narrower cross section. The 6.6-mile-long Westfield River Feeder started at a dam in the Woronoco section of Russell, at an elevation the same as the Timber Swamp Summit, which this feeder met just north of Lock 18. The Westfield River Feeder dam failed twice, in 1833 and 1836, and was replaced with a much larger structure approximately half a mile downstream. Westfield River was intended as the primary source of canal water from Timber Swamp Summit to the Connecticut River. Congamond Ponds, engineered for both canal traffic and water supply, was originally intended as the primary water source for the sections between Lock 1 and the Westfield River, as well as the upper 4 miles of the Farmington Canal in Connecticut. After an 1830 drought lowered the ponds, Henry Farnum oversaw construction of a second, 0.4-mile-long Massachusetts feeder in Westfield from the Little River to the main line, and a 3.4-mile-long feeder from Salmon Brook in Connecticut to the upper end of the Farmington Canal just south of the guard lock in Southwick. Approximately 1.3 miles of the latter feeder was in Massachusetts, with most of this distance flooded when the lower part of the feeder canal became a reservoir c1837 (Hummel and Walter 2000).

Below the Congamond Ponds, the main canal crossed rivers, brooks, and small tributaries at thirty places. Because of limited original documentation, the disappearance of many canal sections, and reconstruction of canal drainage structures for later railroad or road crossings, it is not possible to determine whether sixteen of these crossings involved running the canal over a stream with an aqueduct, masonry culvert, or smaller masonry drain, or capturing the stream into the canal for water supply or boat basin purposes. Of the remaining crossings on the main canal, seven were probably aqueducts ranging in length from approximately 30 to 300 feet, and at least three were single-arch masonry culverts with likely spans of under 10 feet. There were two other culverts on the Westfield River Feeder, spanning 6 and 12 feet (Figure 1; Harte 1933: 47-9).[1] There was at least one single-arch masonry drain running under a wide embankment over Potash Brook in Southampton; this feature has not survived (Figure 2). The main line of the canal evidently incorporated at least one stream for water supply, in the upper reaches of Great Brook in Southwick (see proposed district Section 5 below). At least two other small streams in Southampton and Northampton were evidently incorporated into boat basins, in sections which have not survived. One large stream, Sackett Brook in Westfield, was run into the canal in 1829 as a water source south of Lock 10, in a vanished pond-like section which probably included a waste wier. Anxious about water supply, Hampshire and Hampden Canal builders evidently included few waste wiers to drain excess water, but probably included at least one per level between major series of locks. More waste wiers may have been added after initial construction as floods demonstrated the vulnerability of the porous embankments.

Winding along contours at or near the edges of eroded glacial lakebed deposits above active floodplains, the canal took a sinuous course through town or village centers in Westfield, Southampton, Easthampton, and Northampton. Although earlier route study in Southwick proposed an alignment west of the Congamond Ponds which would have run closer to the center of that town, the final route selected in 1826 went through the ponds, involving construction of a 700-foot-long floating towpath in Middle Pond. The route through an agrarian landscape required an undocumented number of road and farm bridges, as well as several bridges at points where the towpath changed sides. There were at least five basins (in Westfield, Southampton, and Northampton) for freight transhipment, travel or commercial facilities, or boat building. Canal travel involved horse-drawn freight or passenger boats about 74 by 11 feet in area with 25 ton capacities, and the use of undocumented basins near locks or aqueducts to await turns for passage through these narrow points.

[1]Harte's research on the canal included field investigations and photography as well as documentary studies. His list of aqueducts is incomplete, however, in omitting two crossings of Great Brook in Southwick on such structures, one of which retains some fragmentary masonry (cf. 1933: 47).

Short sections of the canal are included within the Lockville National Register Historic District in Southampton (Roberts and Friedberg 2000). Other than the Lockville nomination, sterile soil boring tests made at an aqueduct site in Northampton (Raber *et al.* 1981), and description of a disturbed canal section in Southampton (Strauss 1989), there appear to be no detailed written studies of current canal conditions.[2] Selection of the discontinuous proposed district sections presented below was based on a detailed field study of the entire route of the Hampshire and Hampden Canal, the Westfield River Feeder, and the Little River Feeder. Although no detailed original maps of the canal survive, Carl E. Walter identified virtually the entire main route and Westfield River Feeder by plotting original route descriptions (Hurd 1827) on U.S. Geological Survey quadrangle sheets and inspecting the route in the early 1990s. Of the original alignments, only a short section of demolished canal in Northampton — not described in detail by Hurd— could not be plotted. Walter and author Raber conducted additional walkover survey of all routes in the spring and fall of 2002, including photography, and measurement of selected prism profiles (Figure 3) and remains of visible masonry structures. Subsequent compilation of information on original and existing canal components incorporated limited original design data, primary and secondary information on the Farmington Canal (summarized in Harte 1933 and 1938, Raber and Clouette 1984 and Hummel and Walter 2000) and summary geological data on the Hampshire and Hampden Canal vicinity (Hartshorn 1969).

These methods allowed for detailed assessments of integrity for all surviving canal prism segments, and for assessment of the apparent or potential integrity of other classes of engineering features. Documentary and field data suggest subsurface information within prism sections will be limited to variable but often redundant evidence of vernacular variations in re-depositing local soils during canal construction.[3] Field survey indicated that some partially intact masonry lock walls, and perhaps fragments of other canal structures, are now buried by debris, silt, or— at the guard lock— water. Limited information was also collected on two canal-side buildings used during the canal era. Discussions of original canal design and construction methods appear below.

SUMMARY OF PROPOSED DISTRICT EXTENT AND CONTENTS

The proposed Hampshire and Hampden Canal district includes remains of canal prism and other features built by the Hampshire and Hampden Canal Company, and two privately-owned closely-related buildings. Except for a half dozen remains of engineering features which are now removed from visible prism sections, the condition and extent of canal prism defines most proposed district boundaries. Following the criteria implemented for identification of Farmington Canal District components in Connecticut (Raber and Clouette 1984), there are two principal criteria for inclusion of canal remains within the proposed district: both sides of the prism are substantially intact, visually indicating the full profile as well as the course of the canal; and no later intrusions significantly detract from this visual indication. These criteria exclude visible segments of canal route with only one or no original prism sides, or with modern structures inserted into the prism. As discussed below, the Massachusetts section of the New Haven and Northampton Canal is distinctive for having many surviving sections in which original slopes were left unmodified to serve as the berm (non-

[2]Carl E. Walter's research on the New Haven and Northampton Canal has included collection of much primary material, comparison of Charles. R. Harte's unpublished photographs of the canal with present conditions, and preparation of an electronic audio-visual presentation on the canal. Present availability of his results is limited almost entirely to his private collection.

[3]In Connecticut, a number of archaeological investigations of the Farmington Canal revealed almost no canal-era artifacts, and indicated the creation of prism sections almost entirely from excavated material, with no sealing substance such as clay or mortared masonry, and a minimal use of stone to ballast or protect the banks (Raber 1981a, 1981b; Connecticut Archaeological Survey 1893; Cook *et al.* 1990). A full National Register nomination would include more detailed discussion of Hampshire and Hampden Canal archaeological significance.

towpath) side of the prism. Sections of this latter type with unmodified slopes and intact towpaths are included in the proposed district. Very short intervals of demolished canal along otherwise intact sections become, within these criteria, minor non-contributing elements. There are also very short sections of intact prism within long stretches of demolished sections which are excluded from the proposed district; the detailed description of proposed district section identifies such short sections. At the northern terminus of the canal, a short, very deep cut through a riparian terrace is included as a well-defined route of the canal below Lock 32.

Proposed district prism segments generally include other reported features, such as remains of locks or aqueducts, within prism limits. In the absence of intact features extending beyond prism limits, such as basins or lockkeepers' houses, proposed segments correspond in width to approximate prism limits.[4] Additional title and archaeological research may in the future reveal the foundations of lockkeepers' houses beyond these limits. With an emphasis on canal design, construction and maintenance, the proposed district does not attempt to include most other private residential, commercial, or industrial structures which might date to the canal era and have histories related to canal use. The local historical societies participating in this study provided no information on such structures, which appear to lie at some distance from the canal and lack sufficient visual linkage to the canal to warrant inclusion in a canal district. The two exceptions to this exclusion— the Lockville Canal Storehouse in Southampton and the Clapp Tavern in Easthampton— are structures immediately adjacent to the canal route which were directly linked to canal travel or operations.

The Salmon Brook Feeder built to serve the Farmington Canal in 1832 is not included in the proposed district. Most of this feeder is in Connecticut, and most of the section in Massachusetts is now a marsh with no visible definition of the former engineering structure.

There are 51 discontinuous canal sections in the proposed district, totaling 9.41 miles in length and encompassing over 97 acres if an average district section width of 85 feet is assumed. Sections range in length from approximately .05 to .70 miles. Forty sections totaling just over 7 miles are on the main canal line, with the remainder on the Westfield River Feeder. These figures indicate survival with some integrity of approximately 23% of the original main line of Hampshire and Hampden Canal prism, about 35% of the Westfield River Feeder, and about 26% of the main line and feeder together. Although generally altered by erosion and sedimentation, these canal sections attest to the durability of this enormous landscape feature despite the vulnerability of its largely earthen structure to modern development.

In percentage terms, less of the Massachusetts part of the New Haven-Northampton route survives than does the Connecticut section, about 40% of which was listed on the National Register in 1985 (Raber and Clouette 1984). Canal Railroad construction accounts for part of this difference, since the Massachusetts sections of the railroad removed or filled the canal to various degrees where the routes coincided in parts of Westfield, Southampton, and Northampton. In Connecticut, the railroad was sometimes built on the canal towpath, leaving long sections of canal largely intact in Cheshire and Hamden; similar treatment in Massachusetts is only found in part of proposed district Section 1 at the state line. The Hampshire and Hampden Canal may have also been more vulnerable to erosion than the Farmington Canal due to accidents of geomorphology. Much of the Farmington Canal was built along gradually sloping edges of glacial ground moraine, drift deposits, or outwash terraces above relatively level drift deposits or Holocene alluvial floodplains. The

[4]On the 1:24,000-scale maps attached to this report, proposed district section lines generally follow the center of intact sections of canal prism. Width and placement of proposed district boundaries will vary with original construction techniques. Comparing original design specifications with observed conditions, a width of 42.5 feet on either side of the prism centerline will typically encompass sections built by cutting into a natural slope and creating an artificial bank with excavated material, creating two artificial banks on level surfaces away from large streams, and excavating into a level surface with some banking on one or both sides. In the numerous sections where steep original slopes were left largely unmodified and a high towpath was built facing the slopes, proposed district section widths will vary greatly. Final boundary description and justification would appear as a separate item in a full draft nomination.

sloping landforms often have significant sand and gravel components which readily eroded into steep slopes during post-glacial stream formation. By contrast, all of the Massachusetts canal north of the Congamond Ponds was built in deposits associated with glacial Lake Hitchcock (Hartshorn 1969), deposits which were often finer-grained, very deep, and more subject to erosion. Post-glacial stream formation in the Westfield and Manhan river drainages created steep slopes along the valleys chosen for main line canal construction. These slopes, often left unmodified by the Massachusetts canal builders, affected prism construction as discussed below and were subject to continuing post-canal erosion. Deltaic deposits in the glacial lake have more sand and gravel, and have retained shallower slopes at their edges. Most of the Westfield River Feeder was built along the upper edge of a delta, which may explain in part the relatively greater survival of this section of the canal system. More detailed comparison of canal routing, prism design, and surficial geological deposits would be required to confirm these impressions.

Survival of canal features other than prism sections has been extremely variable (Table 1). Of thirty-three locks built in Massachusetts (including the stateline guard lock), eight retain at least some stonework with the east wall of Lock 22 in the best condition (Photographs 2-4, 7-8). At six other lock sites, all stone has been removed but remaining earthworks indicate lock positions, providing information on as-built locations and approximate elevations. Statistics on original canal engineering at stream crossings are incomplete, but it appears there were at least five stone-arch culverts built on the main line and feeder, of which only one survives in very fragmentary condition on Moose Meadow Brook along the feeder route. At least one culvert has been heavily rebuilt in Easthampton, in proposed district Section 32, and railroad construction and maintenance probably included reconstruction of other culverts (cf. Harte 1933: 49). The main line probably included seven aqueducts, for three of which there are fragments of abutments or piers (Photographs 5-6). Of an unknown number of road, farm, and towpath changeover bridges, the only possible remnant is what appears to be one partial embankment of a changeover bridge just south of Lock 7 in Southwick. No waste wiers have been documented or observed, and there is no apparent survival of the basins or of the dams installed at the Westfield River and Little River feeders. No small masonry drains are confirmed, either, but the presence of a possible buried one is suggested where proposed Section 5 crosses Great Brook in Southwick. A small masonry fragment at the headworks of the earlier Westfield River Feeder intake completes the array of visible surviving canal engineering resources (Photograph 11).

Two former canal stores survive (Photographs 7, 10). In the Lockville section of Southampton, the c1832 storehouse at Lock 22 is a 2-story wood-framed, gable-roofed structure originally 31 by 50 feet, with numerous 20th-century modifications and additions which have not prevented inclusion of the structure in the Lockville National Register Historic District. The store evidently served as a residence for lockkeeper Gaius Lyman, as a storehouse for transhipment of goods on the canal, and as a collection point for canal tolls or tariffs by Lyman, who also acted as an agent for the canal company (Roberts and Friedberg 2000). The later history of the structure as the Lyman and Elder Store has not been documented. In Easthampton, the Clapp Tavern on Northampton Street is a structure comparable in scale and construction for which we have no documentation at present. It pre-dated the canal (cf. Hurd 1827), and probably served similar storehouse and toll collection functions during the canal era (Figures 4 and 5). No other canal-side, canal-era structures appear to survive above ground with sufficient integrity to warrant inclusion in a National Register district. A residence near the former site of Lock 18 in Westfield is reported to be the lockkeeper's house which stood for many years after the closing of the canal, but it has been enlarged and modified to an extent which has removed its original character. Additional research would be required to confirm the identify of this structure (Figure 6; Anonymous 1926: 219; personal communication, Carl E. Walter).

Routing, Prism, and Embankments

Engineers and planners of this canal maximized use of existing topography to minimize construction costs. There were four basic means of meeting ideal canal dimensions, one of which appears limited only to the Massachusetts sections. The three methods common in both states were: cutting into a natural slope and creating one artificial bank with the excavated material (cut and fill); excavating into a level surface (Figure 2; Photograph 1) and, depending on desired prism bottom elevation, sometimes banking up one or both sides with excavated material; and building the entire profile above an existing surface. Cut-and-fill construction generally allowed for the least excavation and bank building, and often the narrowest total canal width with the lowest damage awards to abutting landowners. The towpath was invariably placed on the artificial embankment in cut-and-fill construction, built away from the original slope. Canal planners used side hills and cut-and-fill construction wherever possible. The third method was the least desirable within these same criteria, but was unavoidable in crossing large streams or low-lying, often swampy areas; examples appear in proposed district sections 4, 5, 17, 41, and 48.

None of these methods could accommodate the steep slopes found along much of the Massachusetts route, leading to a fourth method: building large artificial embankments to serve as towpath opposite unmodified steep slopes (Figure 2; Photograph 9). This method created some extremely wide prism sections, and would have required far more water to provide a 4-foot water depth than the cross section originally specified by canal engineers.

The cash-poor canal companies contracted for construction in half-mile-long sections, with local men and Irish immigrants using only immediately available material.[5] There were no initial provisions for layered rolling of prism slopes, or for any lining to increase prism water retention, although some repairs to breached or overly porous section included largely undocumented lining efforts. Unlike parts of the Farmington Canal (Raber and Clouette 1984), no evidence has yet emerged from the Massachusetts sections for any use of rubble to reinforce banks.

The northern half mile of the main canal route Northampton followed the channel of a small creek, Slough Brook, into the Connecticut River. Much of this channel survives as a deep depression through a riverside terrace (proposed district Section 40). There is no documentation on how this section was built, but it is possible that vertical— perhaps timber— walls were required to control any erosion of the original stream banks.

Locks

With few exceptions, all the original locks on the New Haven-Northampton canal had chestnut and oak chambers 12 feet wide in the clear, approximately 15 feet high, and 90 feet long with mitered wooden gates leaving clear length of 80 feet. The lower gates included pairs of wooden balance or paddle valves which pivoted vertically, operated by hand-turned iron posts from atop each gate; upper gate water controls may have involved horizontal valves in the gate sill floors (Walkly n.d.)[6] Lock lifts varied from about 7 to 10

[5]While Farmington Canal contracts were let to a large number of contractors, with separate contracts for lock and prism work, initial work on the Hampshire and Hampden Canal was divided into two large contracts divided at the Westfield-Southampton boundary. Work south of the Westfield River was completed by 1830, but the northern contractor failed by c1832, leaving completion of the work to a larger number of contractors under the general direction of Henry Farnum (Harte 1933, 1938; Davis 1951: 226-34; Anonymous 1926: 212).

[6]One lever bar, with an eye designed to fit over a vertical gate operator, survives in collections of the Southampton Historical Society (personal communication, Carl E. Walter).

feet, with the higher ones generally built north of the Westfield River in the last stages of construction. Dry-laid masonry walls about 12 feet high and 3 feet separated the timber chambers from earthen canal banks, with stone headers arrayed vertically at horizontal intervals of about 8 to 13 feet (e.g., Raber 1981). These composite wood-stone locks avoided then-high costs of hydraulic cement needed in all- stone locks, but many leaked and rooted to a degree requiring much later replacement with all-stone designs. Today, remains of locks 6 and 7 retain the walls with headers reflecting timber chambers, while Lock 22 is the best example of a lock rebuilt entirely in stone (Photographs 2, 4, 7-8). The lowest locks on the Hampshire and Hampden Canal, numbers 31 and 32 at the Connecticut River, were apparently the only ones built initially with all-stone designs (Farnum n.d.; personal communication, Carl E. Walter). Field inspection suggested locks 31 and 32 were also the only ones between New Haven and Northampton built as a combined flight with a single gate separating the upper and lower chambers.

Aqueducts

The aqueducts on the New Haven-Northampton canal typically included at least four major components: two angled, three-sided stone abutments wrapped around the ends of adjacent earthen prism (Photograph 6); stone piers, each about 16 by 6 feet at the base, carrying the aqueduct trunk between the abutments at approximately 40-foot spans; the timber aqueduct trunk, at least 12 feet wide and 5 or 6 feet deep, seated on an unknown truss system; and a wooden towpath bridge connected to one side of the trunk (e.g., Harte 1933: 37-8; Raber and Clouette 1984: Section 7, page 5). Piers were seated on bedrock if possible, but repairs to the Farmington River Aqueduct— the only one on the Connecticut section— indicate that timber cribwork footings were installed in cases where bedrock was too far below the surface (Farnum n.d.; personal communication, Carl E. Walter). Harte's studies and present visible evidence of some Hampshire and Hampden Canal aqueducts indicate several of these structures had total spans under 40 feet, probably precluding the need for any pier. Comparable short spans on the Farmington Canal were crossed with masonry aqueducts, of which there were relatively few on the Massachusetts canal sections. Further study of relative costs and topographic issues would be required to explain the preference for aqueduct crossings on the Hampshire and Hampden Canal.

Culverts and Drains

The culverts were essentially single-arch rubble masonry bridges with cut ringstones. Most of the Hampshire and Hampden Canal examples were probably dry laid, though material evidence for these structures is very limited. Given the short spans involved, the culverts were much narrower than the normal canal cross section. Intact examples in Connecticut suggested typical widths of 15 to 25 feet for all but the largest streams (Raber and Clouette 1984), and one of the few surviving views of a Massachusetts example indicates a similar scale (Figure 1). Spandrel walls at least 2 feet high above the arches helped retain the earthen prism and banks laid on the arches, while end or wing walls curved away from arch corners to meet the wider canal banks at either end of the span.

Smaller streams not tapped by canal builders passed under the prism in undocumented drains. Prism elevation and stream channel topography probably determined whether small streams entered or passed under the canal. The only surviving one on the entire system, in Simsbury, Connecticut, is an arched rubble channel about 2 feet wide at the bottom (Raber and Clouette 1984: Table 1, Feature 12). On the Hampshire and Hampden Canal, there was a similar but more finished drain at Potash Brook in Southampton under a wide embankment, but railroad construction and flooding have removed this structure and obscured original canal construction (Figure 2). Railroad construction evidently re-built a number of similar structures as small box culverts (cf. Harte 1933: 49).

DESCRIPTION OF PROPOSED CANAL DISTRICT SECTIONS

The numbered sections of the proposed canal district begin at the Connecticut border, with sections 1 through 40 running along the main line of the canal to Northampton, and sections 41 through 51 encompassing parts of the Westfield feeder canal beginning at the feeder headworks. Numbers in parentheses after each section heading are mileage points along the original routes for section end points, as measured on U.S. Geological Survey 7.5-minute quadrangle sheets. Table 1 summarizes the features noted briefly below.

Main Line

Section 1 (0.00 - 0.49)

This entire section is watered, and consists primarily of a cut in original surfaces with slightly raised banks. The south end of the Massachusetts canal was a guard lock which remains at least partially intact (Feature 1). The former Canal Line Railroad ran on the canal towpath, west of the waterway, for about 720 feet; the towpath may have been widened in this section. Where the canal diverges from the railroad to run northeast, there is a recent double-box concrete culvert serving as a farm bridge over the waterway. This section continues through a wetland to the South Pond of the Congamond Lakes (Photograph 1).

North of Section 1, the next 1.23 miles ran along the banks of South and Middle ponds, through a small partly-demolished cut between these ponds, and on a vanished 700-foot-long floating towpath across the south end of Middle Pond.

Section 2 (1.73 - 1.78)

This short section is a well-preserved, watered cut through a small peninsula on Middle Pond, at the west end of Island Pond Road. Original bank levels are not determined, but the path of the canal is very distinct as a channel about 50 feet wide.

There is no evidence of the remaining route through or between the Congamond Lakes. The 1955 flood removed the outlet from North Pond, including the site of Lock 1.

Section 3 (3.48 - 3.68)

Beginning about 400 feet north of Longyard Road, this wooded section was built as a cut-and-fill design, and includes the earthen outlines of locks 2, 3, and 4 (Features 2-4).

East of Section 3, approximately 500 feet of canal has been removed.

Section 4 (3.77 - 4.12)

Most of this wooded section, which begins at the demolished site of Lock 5, has an artificial towpath on the west side facing original unmodified berm slopes to the east. Lock 6 retains some masonry sidewalls (Feature 5). At the north end of the section, the canal survives with two artificial banks built on the floodplain of Great Brook. Abutment fragments from a probable changeover bridge (Feature 6) lie about 200 feet south of the relatively well-preserved site of Lock 7 (Feature 7).

A short section of canal north of Lock 7 is washed out.

Section 5 (4.13 - 4.25)

Two artificial banks, with the towpath on the east side, continue over Great Brook at a low-lying swampy crossing with no visible masonry structure. It is possible the brook was incorporated into the canal here with an undocumented small dam.

Pipeline construction has removed about 120 feet of canal north of Section 8.

Section 6 (4.27 - 4.76)

Most of this wooded section is watered, and runs just west of Great Brook at the bottom of a unmodified terrace slope which served as the berm side of the canal. There is a high towpath embankment on the east side. This is one of the best-preserved sections of the surviving canal.

Dirt road construction removed about 250 feet of canal north of Section 6.

Section 7 (4.81 - 5.03)

This wooded section, which ends just south of Feeding Hills Road (Route 57), is similar to Section 6. The towpath has been widened to about 25 feet to serve as a dirt road. Most of the west side of the canal is unmodified terrace slope, except perhaps about 500 feet where a berm may have been built across a slightly wider portion of the Great Brook floodplain.

The canal has been removed or filled in for the next 0.3 miles, immediately east of residential development north of Route 57.

Section 8 (5.36 - 5.80)

This wooded section begins about 600 feet south of Great Brook as a deep cut through a knoll, a stretch which probably a vanished changeover bridge. Approximately 400 feet upstream of the confluence with Slab Brook, the canal crossed Great Brook on an aqueduct with limited abutment or pier remains (Feature 8) and continued east of the Great Brook floodplain at the bottom of a long slope. Section 8 north of Great Brook consists of a very high towpath embankment on the west side of the canal, with a dirt road in the canal bed. There was probably no built berm.

Except for the poorly-defined location of Lock 8 (Feature 9), the next 1100 feet has been washed out or removed near the confluence of Great Brook and an unnamed tributary from the east.

Section 9 (6.01 - 6.25)

Similar to Section 8 north of Great Brook, Section 9 has some wide canal bed areas which may have been accentuated by a dirt road. The high towpath to the west is well defined.

Approximately 300 feet of the canal has been removed north of Section 9.

Section 10 (6.31 - 6.47)

This section is similar in appearance to sections 8 and 9, and ends just south of the Westfield city limit.

More than a half mile of canal north of Section 10, including the sites of Lock 9 and the northern Great Brook aqueduct, has been washed out along Great Brook or removed by residential construction along

Shaker Road in Westfield. The towpath shifted to the east side of the canal in this demolished section, probably just south of Great Brook.

Section 11 (7.01 - 7.26)

Section 11 runs between Shaker Road and Great Brook, at the edge of the brook's floodplain. The southern 350 feet is a cut in original surfaces, with the remainder built with cut-and-fill methods near the base of a terrace.

Approximately 350 feet north of Section 11 has been removed.

Section 12 (7.33 - 7.42)

The towpath is on the east side of this short, wooded, well-preserved section of cut-and-fill construction, about 600 feet east of Shaker Road.

Construction of the underground Springfield Aqueduct removed the next 300 feet of canal.

Section 13 (7.48 - 7.67)

This is the northernmost section of intact canal in the Great Brook drainage, with cut-and-fill design. The top of the towpath in this wooded area has been eroded by use of all-terrain vehicles (ATVs).

Residential development along the west side of Little River Road removed most of the next 0.75 miles of canal, which crossed into the drainages of the Westfield River and its Little River tributary.

Section 14 (8.43 - 8.56)

Section 14 cuts through the northeast corner of a large glacio-lacustrine terrace which drains into Great Brook, the Westfield River, and the Little River. The terrace has steep wooded sides in the Westfield and Little river drainages, dropping over 100 feet. Section 14 is cut into the surface of a level tongue of land below the steeper slope (Profile 1), and is bounded to the north by residential lots on Little River Road and Towpath Lane. The towpath was on the north side.

The next 300 feet of canal is largely filled on the north side.

Section 15 (8.62 - 8.67)

This short section has a 10-foot-high towpath built above the Westfield River floodplain and a berm side consisting of the unmodified slope of the large terrace noted above. Along with sections 14 and 16, the canal along the base of the terrace is a good example of landscape-based transitions between different methods of construction.

The next 450 of canal has not survived.

Section 16 (8.76 - 8.89)

Section 16 is similar to Section 15 (Profile 2).

From the west end of Section 16 the Little River, about 800 feet of canal similar to sections 15 and 16 has succumbed to floods and to a drainage structure for a subdivision which now covers most of the terrace top south of the canal. Part of the east abutment of the Little River Aqueduct survives with little associated canal prism (Feature 10).

Beyond the Little River crossing, 4 miles of canal which once crossed the Westfield River valley have been removed, filled, or eroded in tobacco fields, urban sections of Westfield, the alignment of the former Canal Line railroad, and the floodplains of the Sackett (Powermill) Brook and Arm Brook tributaries of the Westfield River. Demolished features in this stretch include the Westfield canal basin, the 300-foot-long Westfield River Aqueduct, and most of the series of locks which reached the Timber Swamp summit between the Westfield and Manhan river drainages. There are no signs of locks 10-13. Off the main canal route south of downtown Westfield, floods and landfilling have removed virtually all traces of the Little River Feeder, which once entered the canal south of East Silver Street.

Section 17 (13.07 - 13.18)

Beginning east of Lockhouse Road in Westfield, on the west side of Arm Brook Reservoir, Section 17 begins as two visible embankments extending into the water, and ends just east of an overhead electric transmission line. This last surviving section below the summit level was evidently built along a small Arm Brook tributary, possibly with two artificial embankments. The sites of locks 14 and 15 are visible (Feature 11).

Severe streambed erosion and railroad construction have removed most or all canal remains for the next 1.89 miles, including the sites of locks 16-18 and the confluence with the Westfield River Feeder, which met the summit level just above Lock 18 at mile 13.56. Narrow traces of the waterway, 5-6 feet wide, are visible along the railroad. A lockhouse on Lockhouse Road, located at the head of the flight of locks south of the feeder confluence, has been radically enlarged and rebuilt in the 20th century to the extent that it has insufficient integrity for inclusion in the National Register district.

Section 18 (15.07 - 15.15)

Running east of the Brickyard Brook and diverging from the line of the railroad, this is the first section in the Manhan River drainage basin. Beginning just north of Summit Lock Road, Section 18 is a cut in the original level surface with minimal embankments. The towpath was on the west, towards the brook.

The next 600 feet of canal is poorly preserved.

Section 19 (15.26 - 15.51)

Similar to Section 18, this section has a narrow breach where washed out by a west-flowing Brickyard Brook tributary.

Railroad construction removed most canal traces for over a mile north of Section 19, a stretch in which the canal ran east of the South Branch of the Manhan River and crossed into Southampton, Hampshire County. Where the railroad crosses Brickyard Road, the canal diverged to the northeast. The first 800 feet beyond the railroad survives only as a very low remnant mounds in an open field.

Section 20 (16.68 - 16.96)

The south end of this section has cut-and-fill construction with the towpath on the west side. Most of Section 20 has a high towpath embankment and an unmodified hillside toe as a berm. The section ends immediately north of Buchanan Circle.

Except for very short sections amidst residential development along Madison Avenue, the next 1900 feet of canal are gone. The canal turned northwest and crossed the later path of the railroad. Apparent surviving sections are watered and 80-100 feet wide, with no constructed berm and towpath fragments on the west side. It is not clear if these short sections retain integrity of cross-section.

Section 21 (17.32 - 17.57)

Beginning immediately west of the railroad along the Manhan River floodplain, Section 21 turns northeast and exhibits three types of canal construction in close proximity. The first 500-600 feet has cut-and-fill construction in a steep terrace edge, with the towpath remaining on the west side. As the slope flattened, canal builders left the berm slope unmodified for about 300 feet and constructed an artificial towpath, which is breached for short distance at a possible culvert site where a small tributary flows into the Manhan. The last 400 feet west of the railroad is a cut into a more level terrace surface.

The railroad removed about 200 feet of canal east of Section 21.

Section 22 (17.61 - 17.86)

This section runs northeast with cut-and-fill construction. There are no obvious remains of Lock 19.

Entering the Lockville National Register District, the next half mile of canal including Lock 20 has been almost entirely removed by railroad construction and residential development east of Brickyard Road. Surviving canal-era structures between sections 22 and 23 include fragments of Lock 21 (Feature 12), and the well-preserved east wall of Lock 22 (Feature 13) and the adjacent Canal Storehouse (Feature 14) just south of College Highway (Route 10). Lock 22 and the storehouse are part of the historic district (Photographs 7-8).

Section 23 (18.36 - 18.41)

This short section, also included in the Lockville Historic District, diverges from the railroad as a cut in the terrace surface on the south side of the Manhan River crossing. The towpath crossed to the east side of the canal in this vicinity, but there are no signs of a changeover bridge.

Where the railroad crosses the river immediately northwest of Section 23, fragments of the Manhan River Aqueduct survive at the water's edge between the south abutment and central pier of the rail crossing (Feature 15). These fragments, included in the Lockville Historic District, indicate that the canal crossed the river on a different alignment than the railroad. North of the river, the canal turned to the northwest along the west side of the Manhan River floodplain, and was later almost entirely removed by railroad construction for approximately 7000 feet. Features which no longer survive include a possible culvert site, a basin south of East Street, and the Potash Brook Culvert.

Section 24 (19.75 - 19.87)

This section is about 100 feet east of the railroad, and consists of a towpath built on the floodplain and a hillside berm unmodified during canal construction. The railroad cuts into this hillside, and has removed the next approximately 550 feet of canal where the canal ran northwest across the railroad alignment.

Section 25 (19.97 - 20.11)

Section 25 runs across a slightly steeper slope than Section 24, with cut-and-fill construction and a high towpath which remains on the east side of the canal.

The next 900 feet of canal was a cut in the surface north and south of Gunn Road, and has been largely filled in and plowed.

Section 26 (20.28 - 20.40)

This section begins about 300 feet north of Gunn Road, and runs across a level terrace top as a cut in the surface. Some low banking on the east side for the towpath is still visible.

The next 200 feet of canal has been filled in.

Section 27 (20.44 - 20.52)

Section 27 is similar to Section 26, with the canal turning to the northwest. Although there is a visible drop in level, there are no signs of Lock 23.

The next 300 feet of canal is washed out.

Section 28 (20.58 - 20.74)

This section, which ends at College Highway and parallels a small unnamed Manhan River tributary, has a very wide bed with a towpath built above the surface on the north/east side. The berm is an unmodified gradual slope (Photograph 9)

The canal between College Highway and Glendale Road was a cut in the surface which has been filled in.

Section 29 (20.91 - 21.11)

North of Glendale Road, the canal survives as a cut in open fields for over 1000 feet, with the next 800 feet filled in.

Section 30 (21.26 - 21.49)

Section 30 is a fragment of what was probably a very vulnerable stretch of canal which ran close to the South Branch of the Manhan River for over a mile past Pomeroy Meadow Road, usually with high towpaths on the floodplain facing steep, unmodified sides of eroded terraces along the west side of the waterway. No trace of Lock 24 survives in Section 30, where the southwestern 350 feet has the cross section just noted and the remaining 750 feet is a cut in the surface of the terrace edge.

Fragmentary sections of high towpath survive along the next 4400 feet of former canal, but these embankments are now isolated edges of ravines created by considerable erosion in and across the canal bed. Recent residential development along Duggan Lane and Meadow Lane and some filling have also impacted the canal.

Section 31 (22.32 - 22.44)

Most of Section 31 is similar in construction to Section 30, with a high towpath and no constructed berm except at the sites of locks 25 and 26, which survive without apparent stonework as narrower sections of prism with defined berms (Features 16-17). There is no sign of Pomeroy's Basin near Lock 26 (cf. Figure 4).

Section 31 ends about 300 feet south of Pomeroy Meadow Road. The site of Lock 27, which completed the three-lock flight, has been filled in for a residential lot on the south side of the road. There are no remains of the aqueduct across the North Branch of the Manhan River, which is here the boundary between Southampton and Easthampton. Beyond the former river crossing, about 3000 feet of canal built just above the floodplain has been filled. The canal crossed Hannum Brook, a Manhan River tributary, in an unknown manner.

Section 32 (23.20 - 23.30)

The west half of this short section has a high towpath on the south side and an unmodified terrace edge to the north. To the east, canal builders cut into the surface of a small knoll south of the main terrace edge.

Beyond Section 32, nearly a mile of canal north of the center of Easthampton has been filled or built over for residential construction. At Bassett or Sawmill Brook, there is an arched culvert just south of West Street about 5 feet high and 6 feet wide with a rubble downstream face and a close-fitting ashlar upstream face. A street drain enters the downstream end of the culvert. Although there was a canal culvert at this location, the present structure appears to represent several post-canal construction episodes. Where the canal crossed Northampton Street (Route 10), the former Clapp Tavern survives on the east side of the street immediately south of the now-filled canal (Feature 18).

Section 33 (24.21 - 24.38)

Beginning approximately 900 feet east of Northampton Street, Section 33 is the first of three short sections of canal which survive with cut-and-fill design along terrace edges north of the Manhan River. A small tributary stream has washed out about 600 feet of canal east of this section.

Section 34 (24.48 - 24.58)

Section 34 is similar to Section 33, and is followed by about 300 feet of former canal washed out at a ravine eroded into the edge of the terrace.

Section 35 (24.64 - 24.75)

Similar to sections 33 and 34, Section 35 ends about 200 feet southwest of Highland Avenue. Another Manhan River tributary has washed out approximately 1800 feet of canal northeast of Section 35.

Section 36 (25.09 - 25.19)

Beginning approximately 1000 feet south of O'Neill Street, this section is a cut in a terrace with an eroding bed but visible sides built up above the original surface.

A similar 250-foot-long section of canal is visible north of Section 36, but has lost its berm side to earthmoving activities.

Section 37 (25.24 - 25.56)

Section 37 is a well-preserved cut in the original surface which begins just south of O'Neill Street and proceeds north across the Northampton city limit, almost to the drainage boundary between the Manhan and Mill rivers. There is no trace of a culvert over a small Manhan River tributary, just north of the corporate boundary, which Harte observed in the early 20th century (1933: 49).

Approximately 1000 feet of canal north of Section 37 has been filled in.

Section 38 (25.75 - 25.82)

This short section, immediately southwest of the railroad, is a watered cut in the original surface.

Beyond Section 38, most of the remaining 4.2 miles of original main line canal in Northampton has not survived with sufficient integrity to warrant inclusion in a National Register district. Railroad construction, road construction, the 1940 creation of the Mill River Diversion south of that stream's original channel, and residential development have removed most canal traces for over 3.5 miles north and east of Section 38. Demolished features include two canal basins and the Mill River Aqueduct.

A series of borings made to locate possible remains of an aqueduct pier, under the former railbed along the north side of the original river channel, yielded no such evidence (Raber *et al.* 1981). Current topography suggests the south and north abutments, locations for which can be estimated from post-canal 19th-century maps and Harte's research, have been removed (Hampshire and Hampden Railroad 1854; Harte 1933: 47; Raber *et al.* 1981). Just south of the aqueduct site, a high terraced lawn on the south side of Clark Avenue appears to correspond to the filled earthen canal approach to the aqueduct, but canal earthworks at this approach were removed over a century ago (Gere 1902: 32). In the filled, former Mill River channel at this crossing, and in a parking lot south of the channel, the aqueduct included other piers for which there is no visible evidence (e.g., Hampshire and Hampden Railroad 1854). Bedrock at the aqueduct site was probably too far below the surface to support pier masonry, possibly requiring timber cribwork (e.g., Raber *et al.* 1981; Farnum n.d.) Most canal stonework was removed in Northampton soon after the waterway closed. Timber pier bases would likely have survived in waterlogged conditions, but the Mill River channel has been diverted from this area for over sixty years. It is not likely that timber pier bases survive in the former channel or on former stream banks with sufficient integrity to warrant inclusion in the National Register district, even as potential resources.

Section 39 (29.38 - 29.47)

The canal route between State and King streets is not well-documented. North of Denise Court and west of King Street, there is a 450-foot-long remnant cut in the surface which is probably the northernmost surviving section of main line canal earthwork, nestled between commercial and residential lots.

North of Section 39, the canal was built along a small brook which cut through a terrace to reach the Connecticut River. Much of the canal alignment north of Bridge Road/Damon Road is visible as a rocky, eroded, and partly filled channel. There is no sign of locks 28-30, the uppermost of the five-lock flight to the Connecticut River.

Section 40 (29.94-30.01)

Masonry remnants of locks 31 and 32 (Feature 19) suggest this was a single structure with three gates. Below Lock 32, a well-defined 15-foot-wide channel, with steep banks about 30 feet high, runs about 215 feet to the Connecticut River. The channel represents a modification of a stream outlet, and may originally have included vertical walls to inhibit erosion of the steep sides. If so, such walls may have been timber as no stone remains downstream of the relatively well-defined lock sites. Although the original channel has lost some integrity, it was clearly atypical of other canal sections and is included in the proposed district as a strong visual indicator of the canal's northern terminus. At the top of the terrace on the west side of this channel, several piles of large granite rubble or partly-cut stones around one of several shallow depressions may be remains of an undocumented structure associated with the canal.

Westfield River Feeder

A mortared rubble fragment survives on the east side of the Westfield River at the site of the original headworks, at an elevation corresponding to that of the feeder confluence with the main canal (Feature 21). The masonry may be part of a former guard gate, or a support for a wooden flume at the upper end of the feeder (personal communication, Carl E. Walter). The feeder ran south along the edge of the river. There is no sign of any earthworks for about 700 feet below the headworks.

Section 41 (0.14 - 0.27)

Two parallel earthwork banks survive for approximately 700 feet on the riverbank, below the high embankment built for the Boston & Albany Railroad. This section and Feature 21 are the only intact canal remains in Russell.

South of Section 40, over two miles of feeder has been removed by floods, construction along the Boston & Albany Railroad, gravel extraction in Westfield, and industrial, residential, and dam construction in the Woronoco section of Russell. The second feeder dam and headworks at Woronoco has not survived.

Section 42 (2.39 - 2.71)

North of Pochassic Road, this section has well-defined cut-and-fill construction with a 5-foot-high embankment on the south side of the channel, and a bed 9 to 13 feet across. Like most of the surviving feeder sections in Westfield, Section 41 is built at or just above the topographic break between almost level Lake Hitchcock deltaic deposits to the south or east and steeper terrain to the north or west.

East of Section 41, the crossing of Moose Meadow Brook has been largely washed away or removed. A fragment of the east Moose Meadow Brook Culvert wing wall survives (Feature 22).

Section 43 (2.74 - 2.87)

Section 42 was built with cut-and-fill methods on the side of a terrace eroded by Moose Meadow Brook.

The feeder is filled for a short distance east of this section.

Section 44 (2.90 - 2.99)

Section 43 is structurally similar to Section 41, and runs above farm buildings along Pochassic Road.

The next 2500 feet of feeder canal has been filled, including the possible site of an undocumented small culvert, marked only by a few large stones where a small stream cuts through the edge of a terrace west of the Pochassic Hills.

Section 45 (3.46 - 3.54)

This is a short cut-and-fill section built along the south slope of the Pochassic Hills, north of Pochassic Road.

The next 300 feet of feeder has been filled.

Section 46 (3.60 - 3.85)

Section 45 is similar to Section 44. A short break to the east may mark the former site of small culvert for a seasonal drainage running off the Pochassic Hills.

Section 47 (3.89 - 3.95)

Section 46 is similar to section 44 and 45. To the east, about 1300 feet has been largely filled or entirely removed by residential development.

Section 48 (4.20 - 4.90)

This is the longest surviving section of the Westfield River Feeder, and defines a long turn to the northeast around the edge of the deltaic deposits. The first 200 and the northernmost 700 feet are cut-and-fill sections along steeper slopes, with the remainder built along a more level surface as a cut or as two artificial banks.

Overhead electric transmission line construction removed about 150 feet of feeder north of Section 47.

Section 49 (4.93 - 5.14)

Built along an unmodified slope of a small hill, Section 48 has a single embankment corresponding to the towpath on the east side.

The next 1400 feet of feeder has been filled, or destroyed by residential development along Furrowtown Road, dam construction at Fuller Reservation Pond, or the access road to the dam from Furrowtown Road.

Section 50 (5.41 - 5.69)

Extending west from Montgomery Road, this section has an embankment on the south side and possibly unmodified original shallow slopes to the north.

The feeder has been filled between Montgomery Road and the Massachusetts Turnpike. Turnpike construction also removed the Sackett Brook Culvert.

Section 51 (5.94 - 6.00)

Beginning about 200 feet from the Turnpike, this short section is distinguished by two artificial embankments 20-30 feet high built as the eastern approach to the Sackett Brook Culvert.

The remaining 0.62 miles of feeder has been filled, or is poorly preserved east of Turnpike Industrial Road and between Lockhouse Road and the former Canal Line Railroad.

Table 1. PROPOSED H 'PSHIRE AND HAMPDEN CANAL D' 'RICT FEATURES

No.	Name	Mile	Description
1	Guard Lock	0.00	masonry walls underwater, unknown dimensions; probably wood lined originally
2	Lock 2	3.51	narrowed earthen prism, no visible masonry
3	Lock 3	3.57	narrowed earthen prism, no visible masonry
4	Lock 4	3.68	narrowed earthen prism, no visible masonry
5	Lock 6	3.86	partially intact unmortared rubble masonry walls with possible stone headers; wood-lined design; Photographs 2-3
6	Towpath Changeover Bridge	4.05	high vertical earthen embankments with some rubble
7	Lock 7	4.09	largely intact unmortared rubble masonry walls with at least 1 stone header; wood-lined design; Photograph 4
8	Great Brook Aqueduct (South)	5.47	abutment fragments about 60 feet long on south bank, plus a few stones from pier or north abutment; Photograph 5
9	Lock 8	5.85	drop in terrain along poorly-defined canal alignment
10	Little River Aqueduct	9.04	8-foot-high, 50-foot-long rubble-faced earthen fragment of east abutment; Photograph 6
11	Locks 14-15	13.11	scattered stones along canal bed
12	Lock 21	18.13	a few stones visible; more possibly buried
13	Lock 22	18.23	well-preserved mortared rubble east wall 95 feet long, about 8 feet high; south gate recess & 18-inch-wide quoin with remnant hinge iron; all-stone original design; north end possibly modified to retain road crossing fill; Photographs 7-8
14	Canal Store/Lyman & Elder Store	18.23	wood-framed 2-story gable-roofed structure originally 31x50 feet; Photograph 7 (Roberts and Friedberg 2000)
15	Manhan River Aqueduct	18.41	60-foot-long loose rubble abutment fragments along both banks, about 30 feet apart
16	Lock 25	22.35	narrowed earthen prism, no visible masonry
17	Lock 26	22.41	narrowed earthen prism, no visible masonry
18	Clapp Tavern	24.04	wood-framed 2-story gable-roofed structure approximately 25x50 feet; Photograph 10
19	Locks 31-32	29.96	visible low walls of unmortared granite blocks & rubble, both sides of Lock 31 & east side Lock 32; all-stone design, probably as flight with total of 3 gates; upper sill remains at Lock 31 suggest potential for deep intact wall foundations; later iron culvert installed near upper end Lock 31
20	Westfield River Feeder Headworks	feeder 0.00	mortared rubble corner on bedrock, partly buried by fill for Boston & Albany Railroad embankment; probably part of gate structure or possible flume support; Photograph 11
21	Moose Meadow Brook Culvert	feeder 2.87	unmortared rubble fragment of southeast wing wall face, about 8 feet long, 2-5 feet high, 4-5 feet thick against high earth embankment

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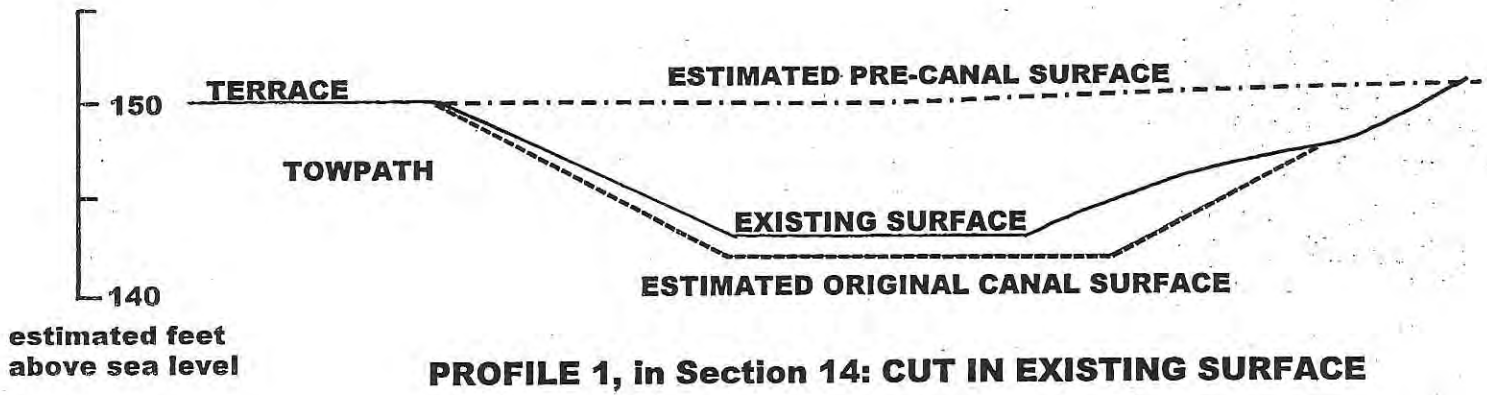
Figure 1. 1932 VIEW NORTHWEST OF MOOSE MEADOW BROOK CULVERT ON WESTFIELD RIVER FEEDER
(Charles R. Harte photograph; copy courtesy of Carl E. Walter)

Figure 2. 1940 VIEW WEST OF DRAIN AT POTASH BROOK WITH HIGH RAILROAD EMBANKMENT BUILT OVER CANAL IN BACKGROUND
(Arthur Sweeton photograph; copy courtesy of Carl E. Walter)



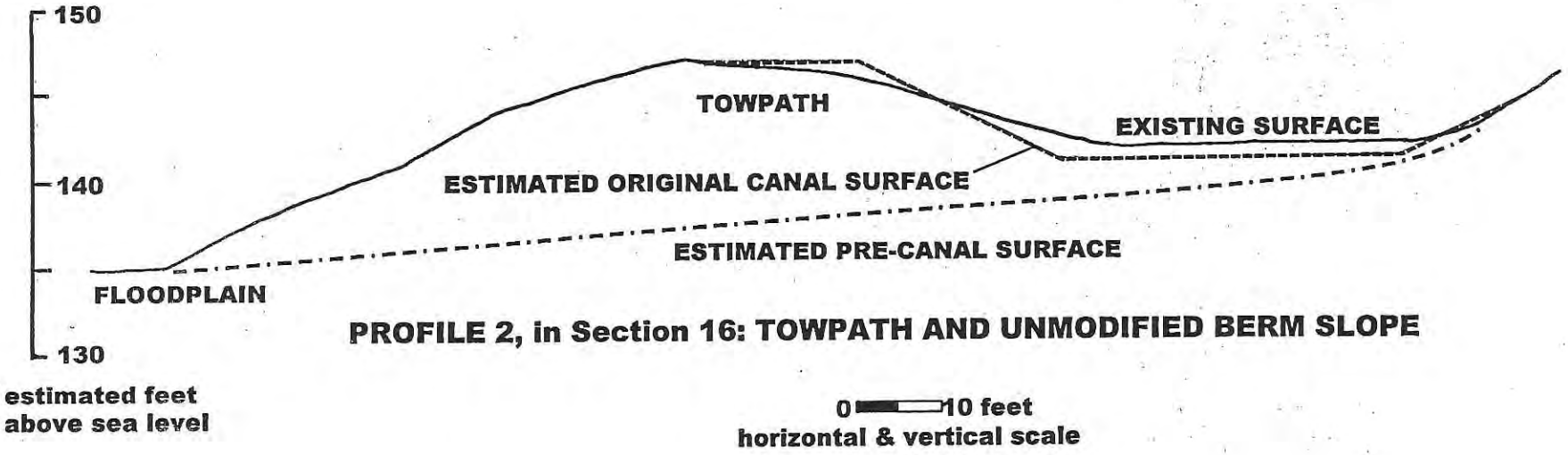


Figure 3. TYPICAL PROFILES
See Map 3 for profile locations. Both profiles face east.

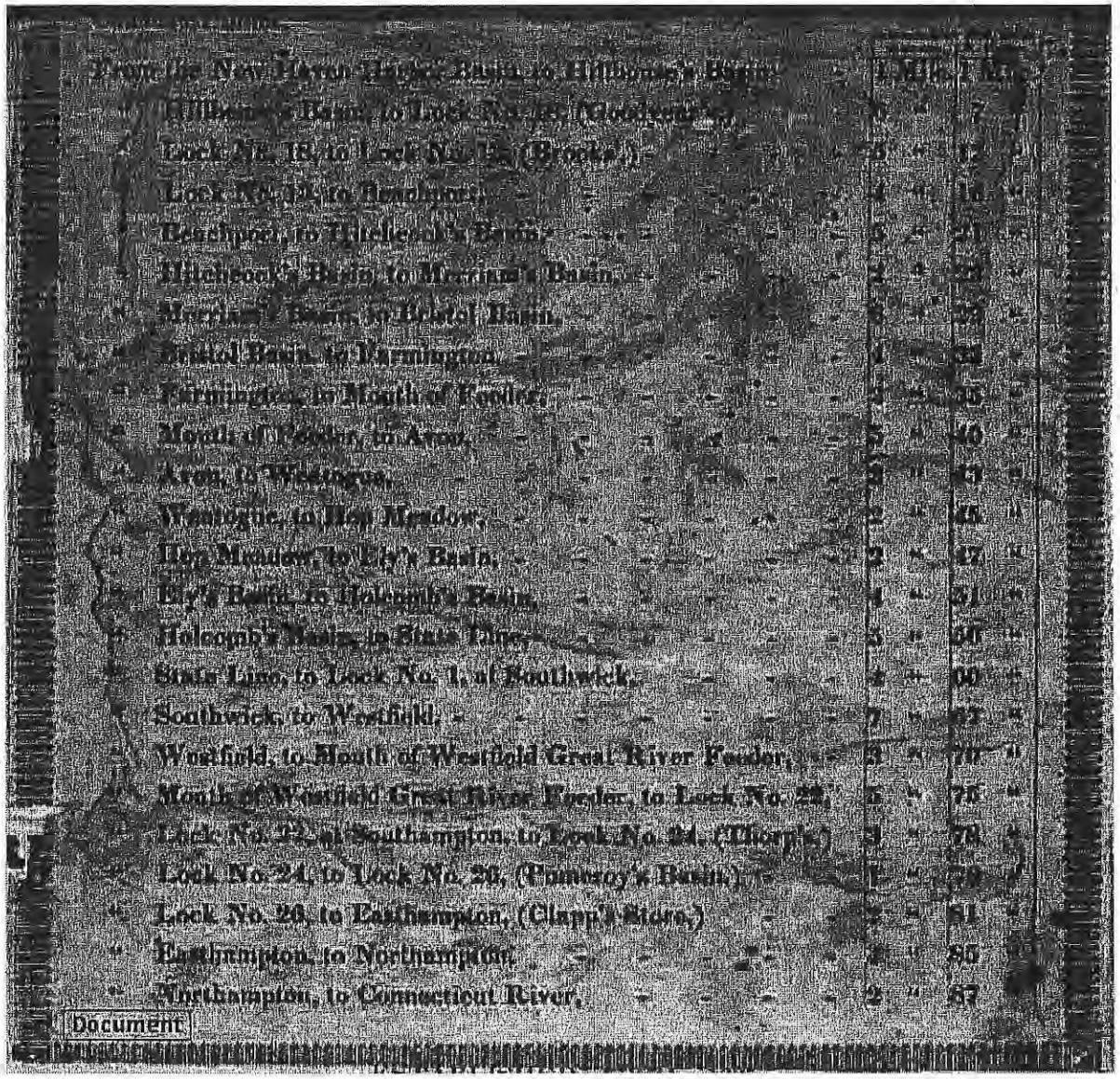


Figure 4. MILEAGE CHART OF NEW HAVEN AND NORTHAMPTON CANAL
(undated; courtesy of Carl E. Walter)

This chart shows Clapp's Store, also a pre-canal tavern, as a prominent point on the route. The total mileage shown is off by approximately one mile. Based on detailed measurement of the entire route on U.S. Geological Survey quadrangle sheets, the discrepancy appears to occur between Lock 26 and Clapp's Store.

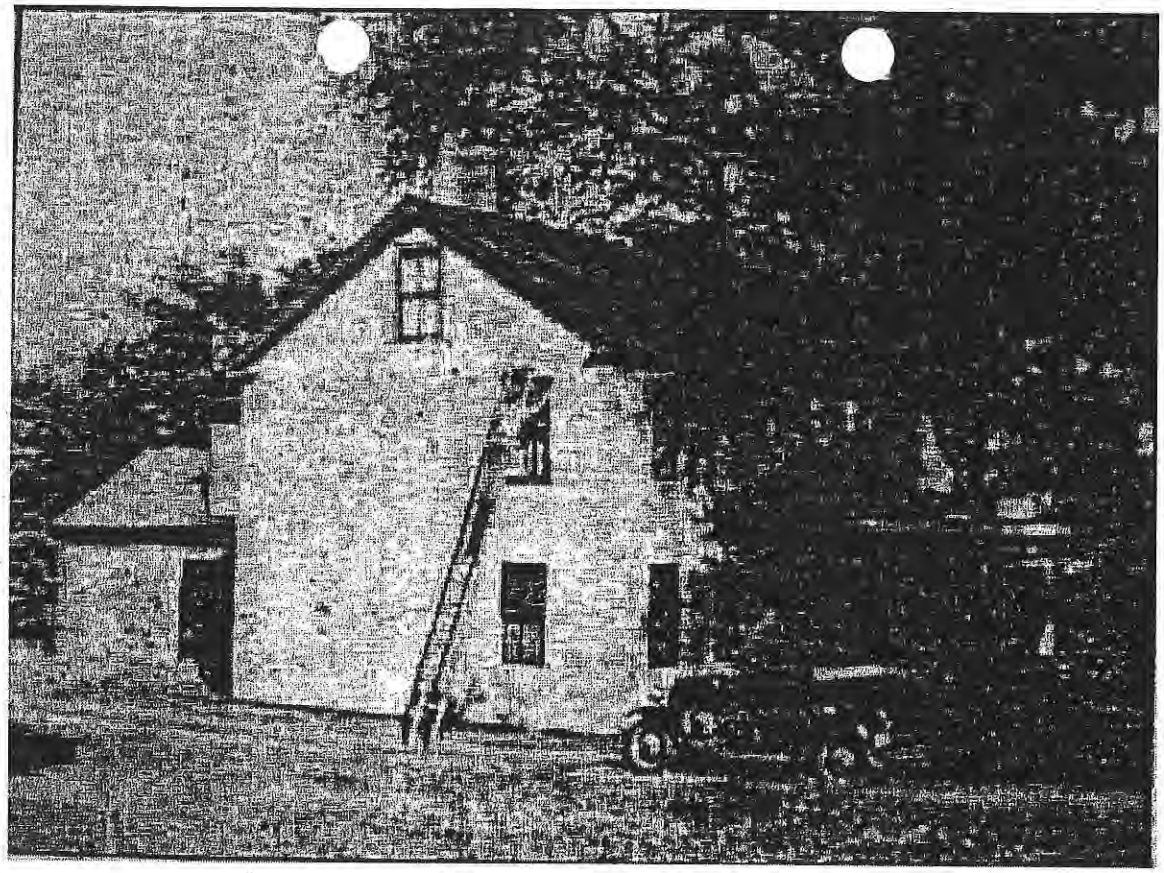


Figure 5. UNDATED EARLY 20TH-CENTURY VIEW OF CLAPP'S STORE, EASTHAMPTON
(newspaper photograph, unknown provenience; copy courtesy of Carl E. Walter)

View is to the southeast. The Hampshire and Hampden Canal, by then filled, ran through the open space in the foreground adjacent to the store. Aside from the addition of storm windows and siding, the building today appears much the same (cf. Photograph 10).

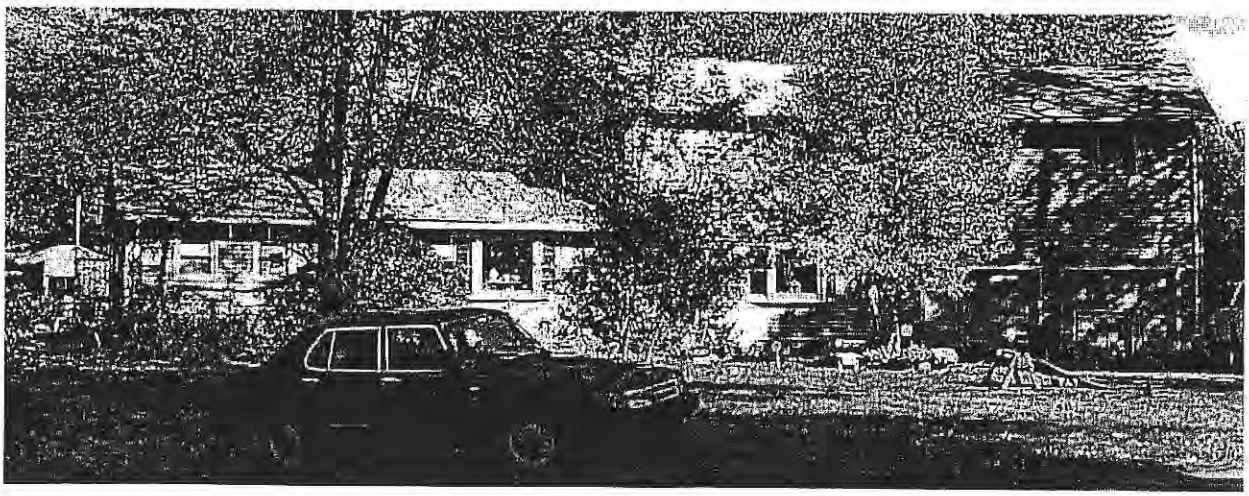
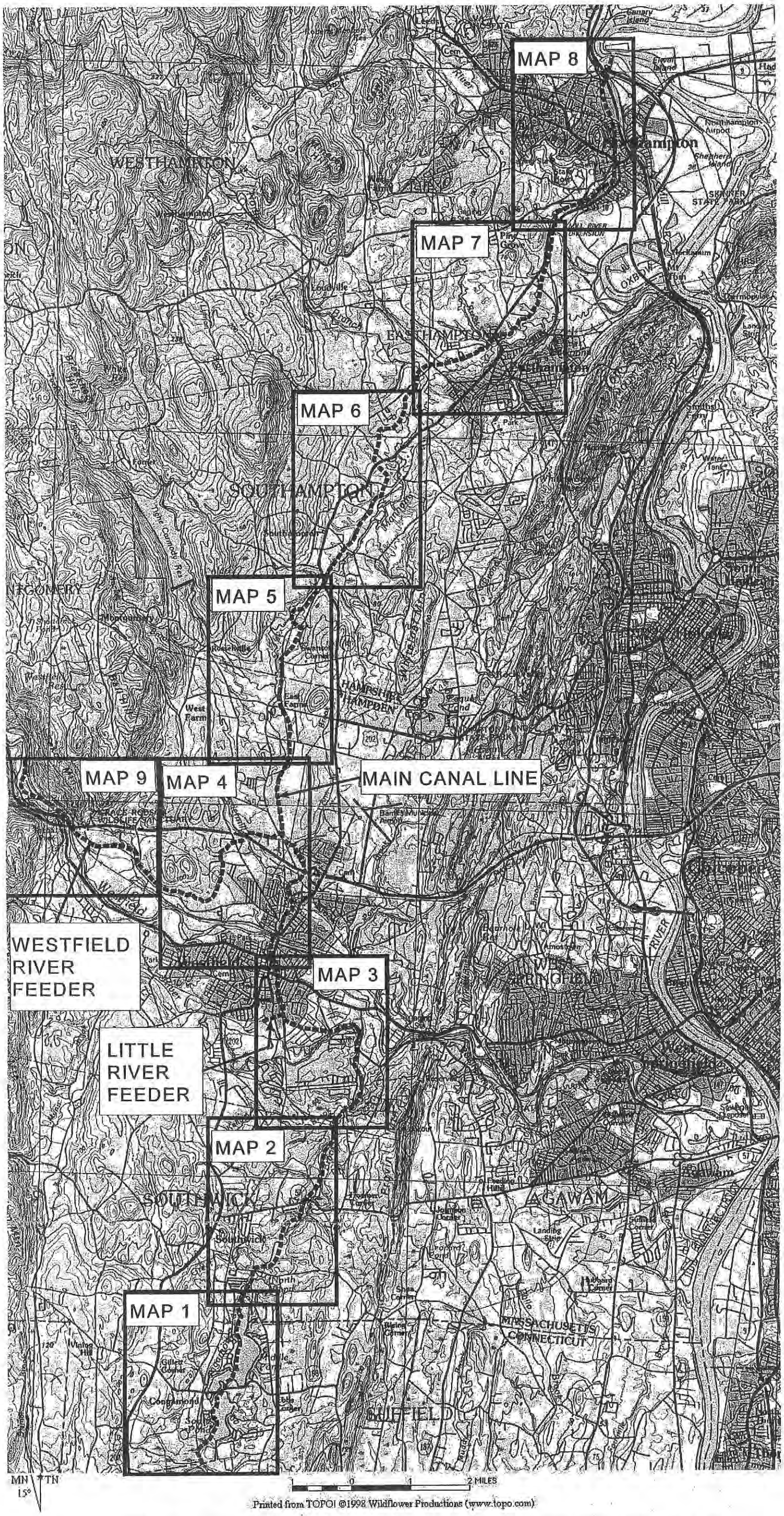


Figure 6. OCTOBER 2002 VIEW OF REPORTED LOCKHOUSE STRUCTURE
(Carl E. Walter photograph)

A lockhouse stood for many years near the top of the flight of locks north of the Westfield River. An owner of the house in this image informed Carl Walter, c1993, that this was the lockhouse. If so, extensive modifications have removed its integrity as a contributing component of a potential National Register district.



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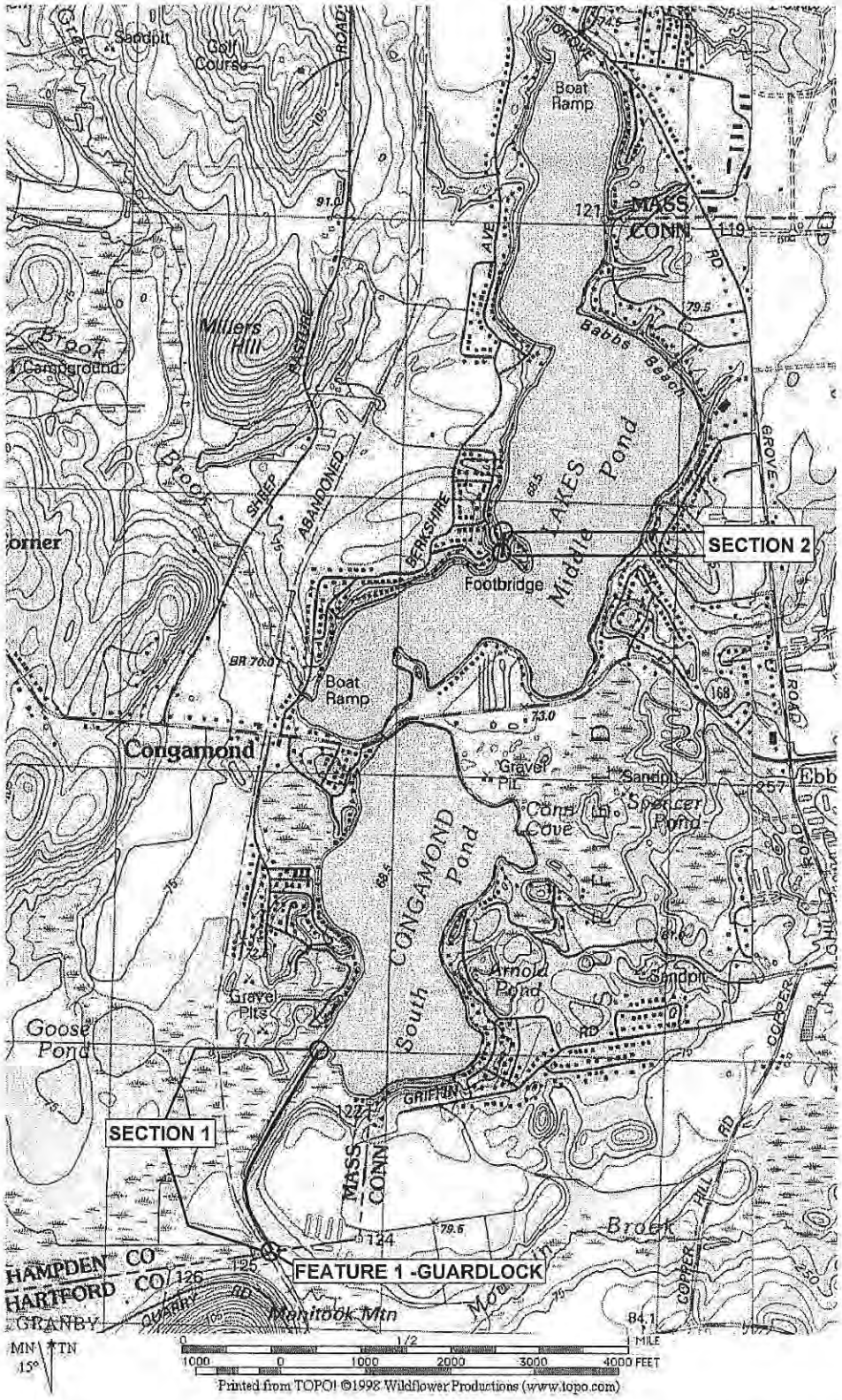
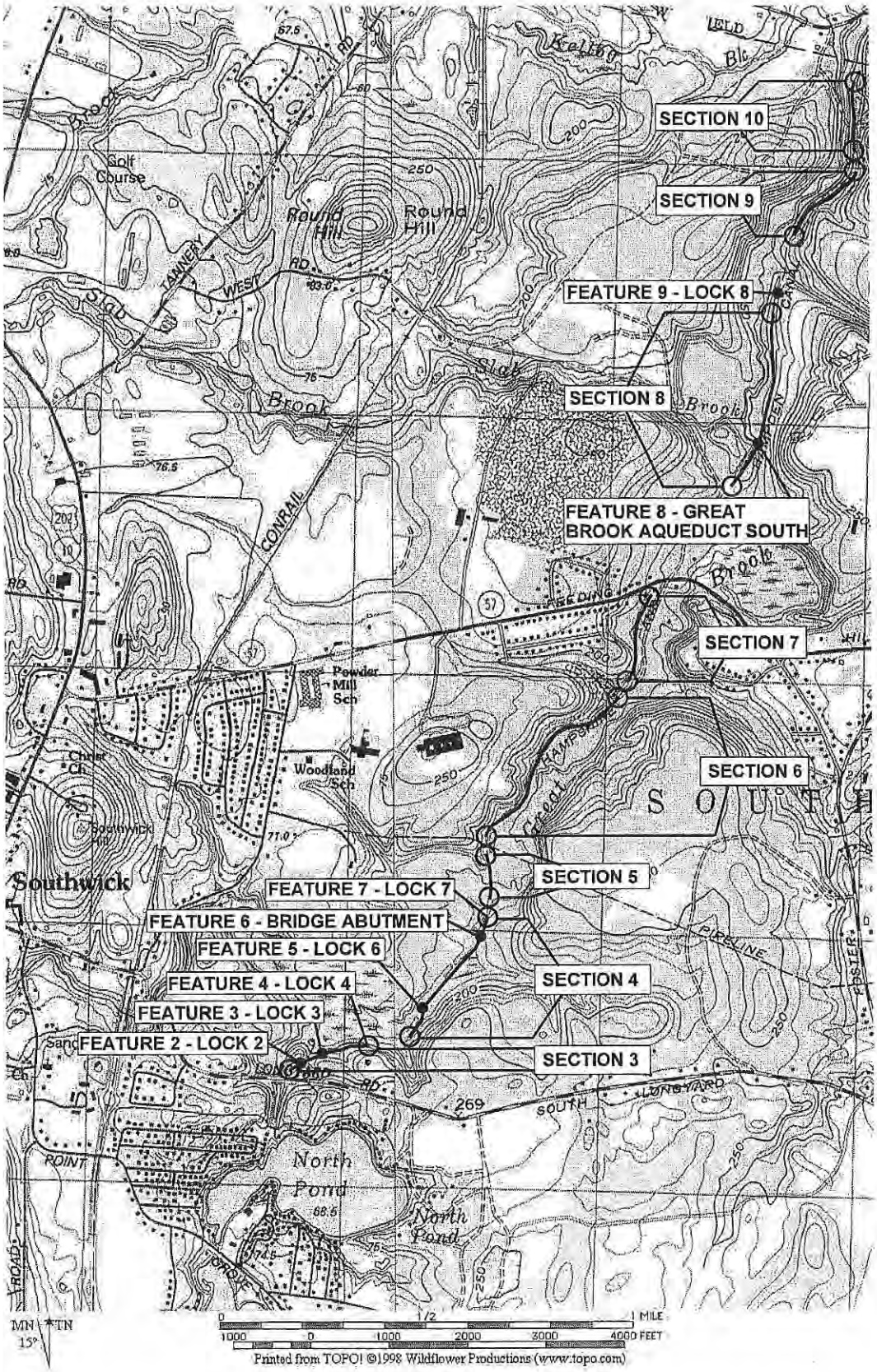
PROPOSED HAMPSHIRE AND HAMPDEN CANAL NATIONAL REGISTER DISTRICT - KEY MAP

Dashed lines show original routes



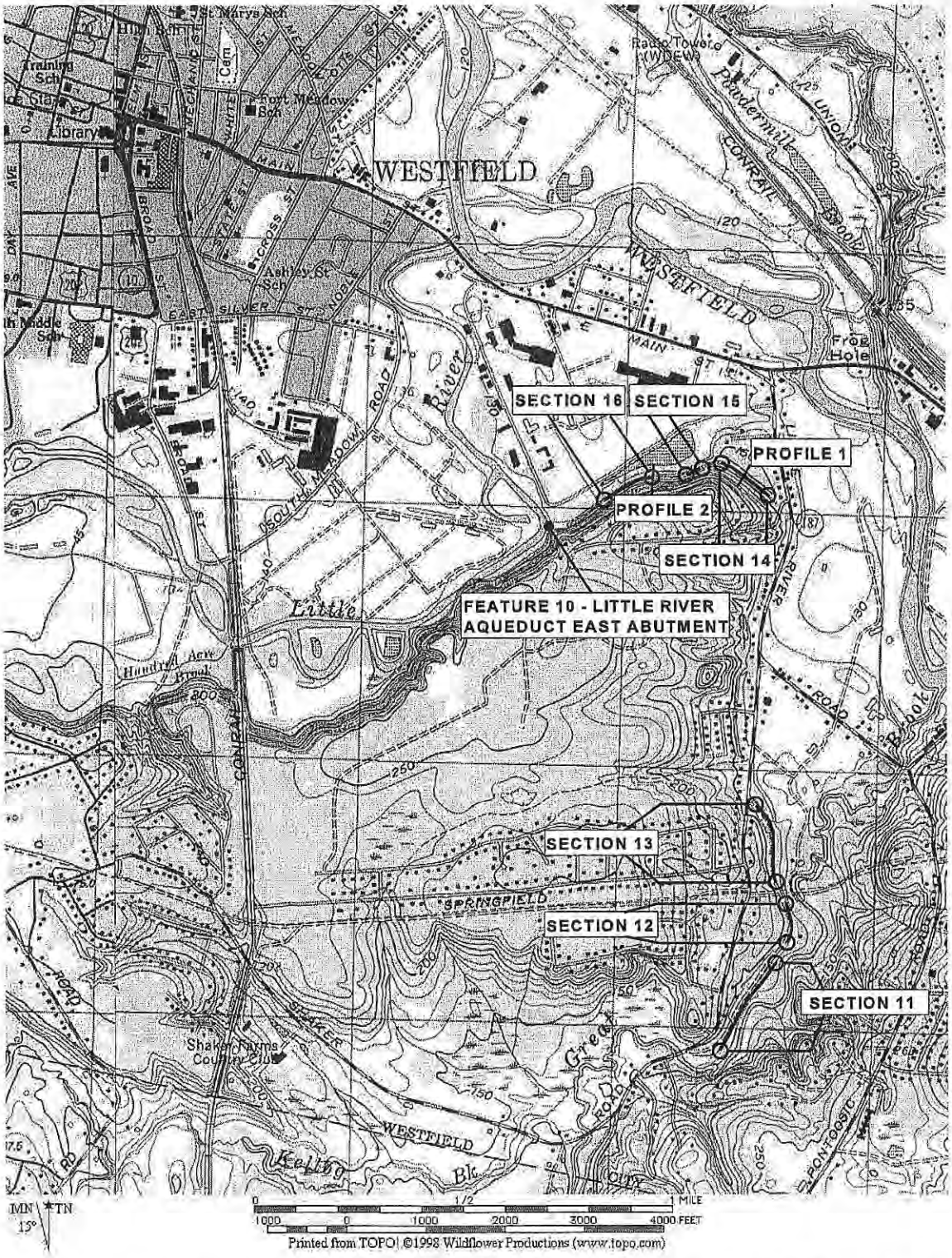
PROPOSED HAMPSHIRE AND HAMPDEN CANAL NATIONAL REGISTER DISTRICT - MAP 1

Southwick, Mass. - Conn. Quadrangle



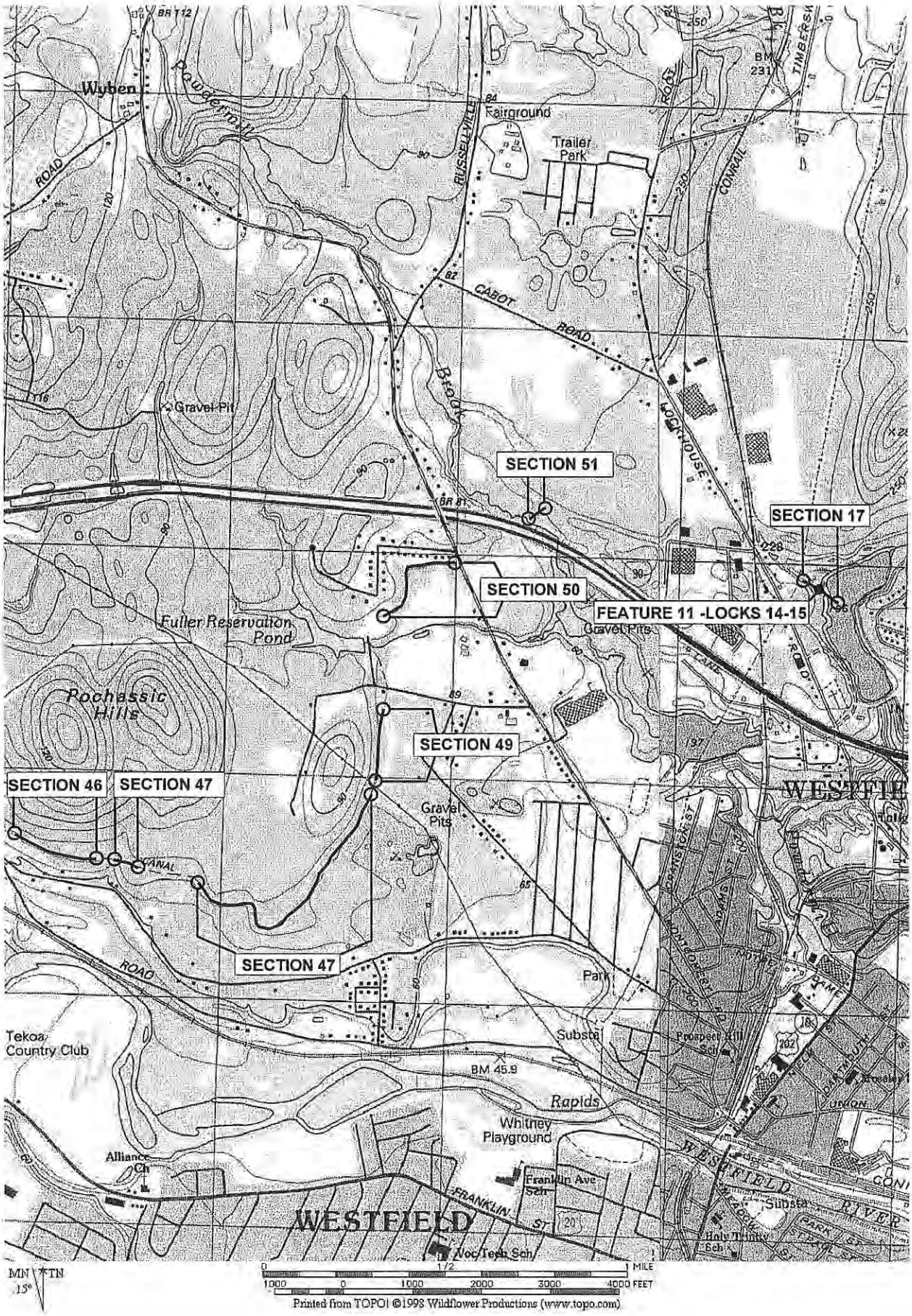
PROPOSED HAMPSHIRE AND HAMPDEN CANAL NATIONAL REGISTER DISTRICT - MAP 2

Southwick and West Springfield, Mass. - Conn. Quadrangles



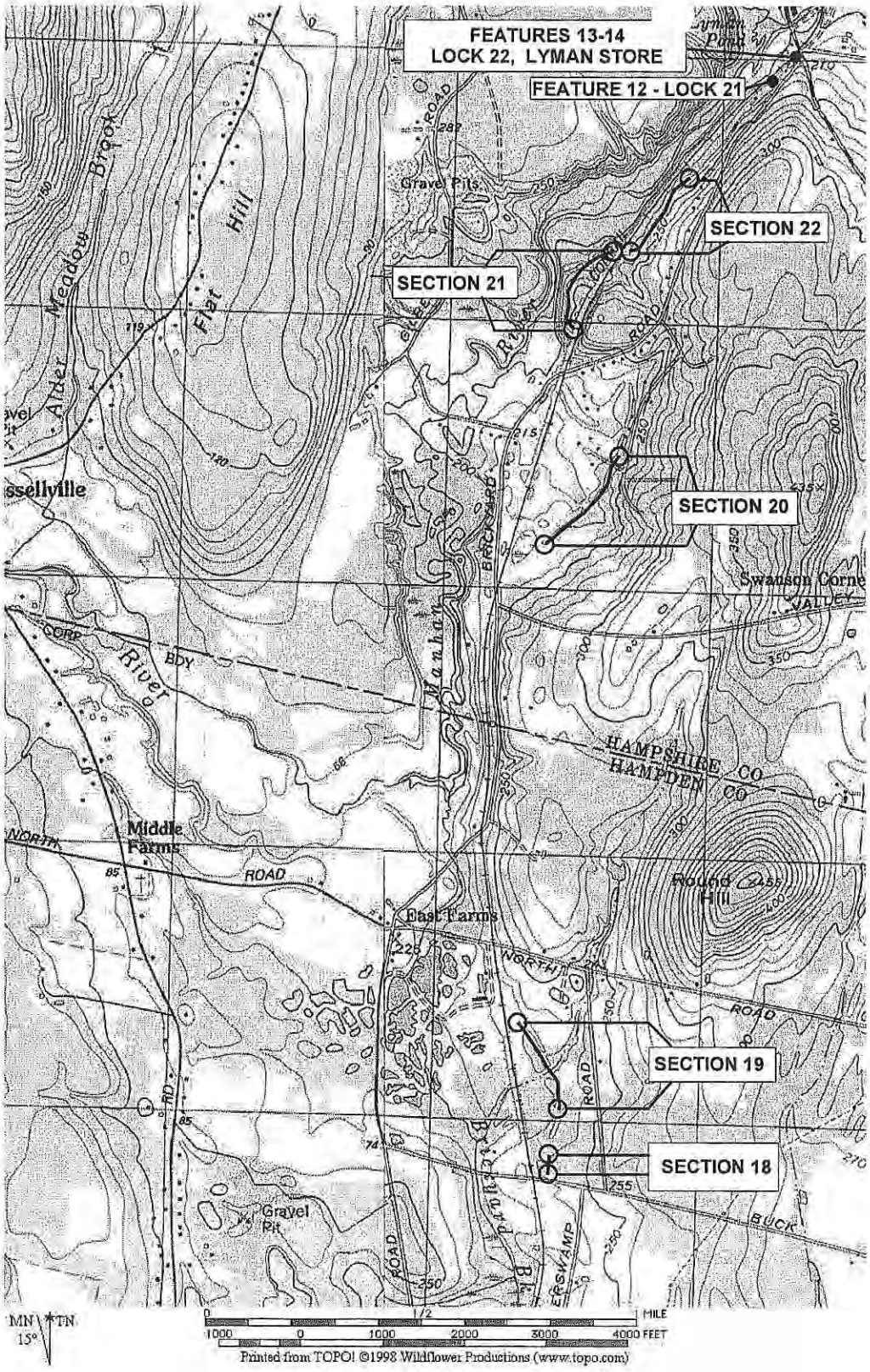
PROPOSED HAMPSHIRE AND HAMPDEN CANAL NATIONAL REGISTER DISTRICT - MAP 3

Southwick and West Springfield, Mass. - Conn. Quadrangles



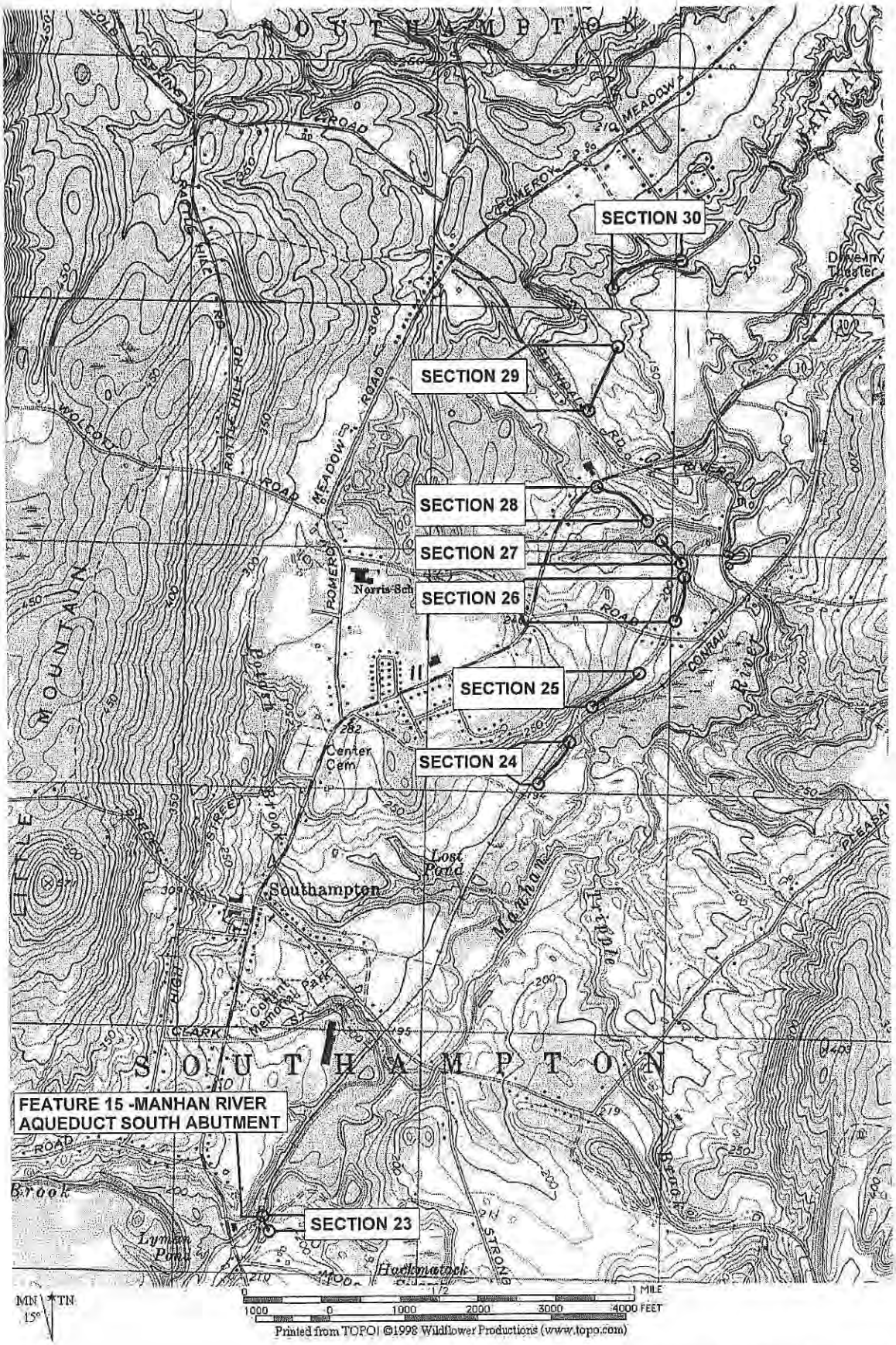
PROPOSED HAMPSHIRE AND HAMPDEN CANAL NATIONAL REGISTER DISTRICT - MAP 4

Woronoco and Mt. Tom, Mass. Quadrangles



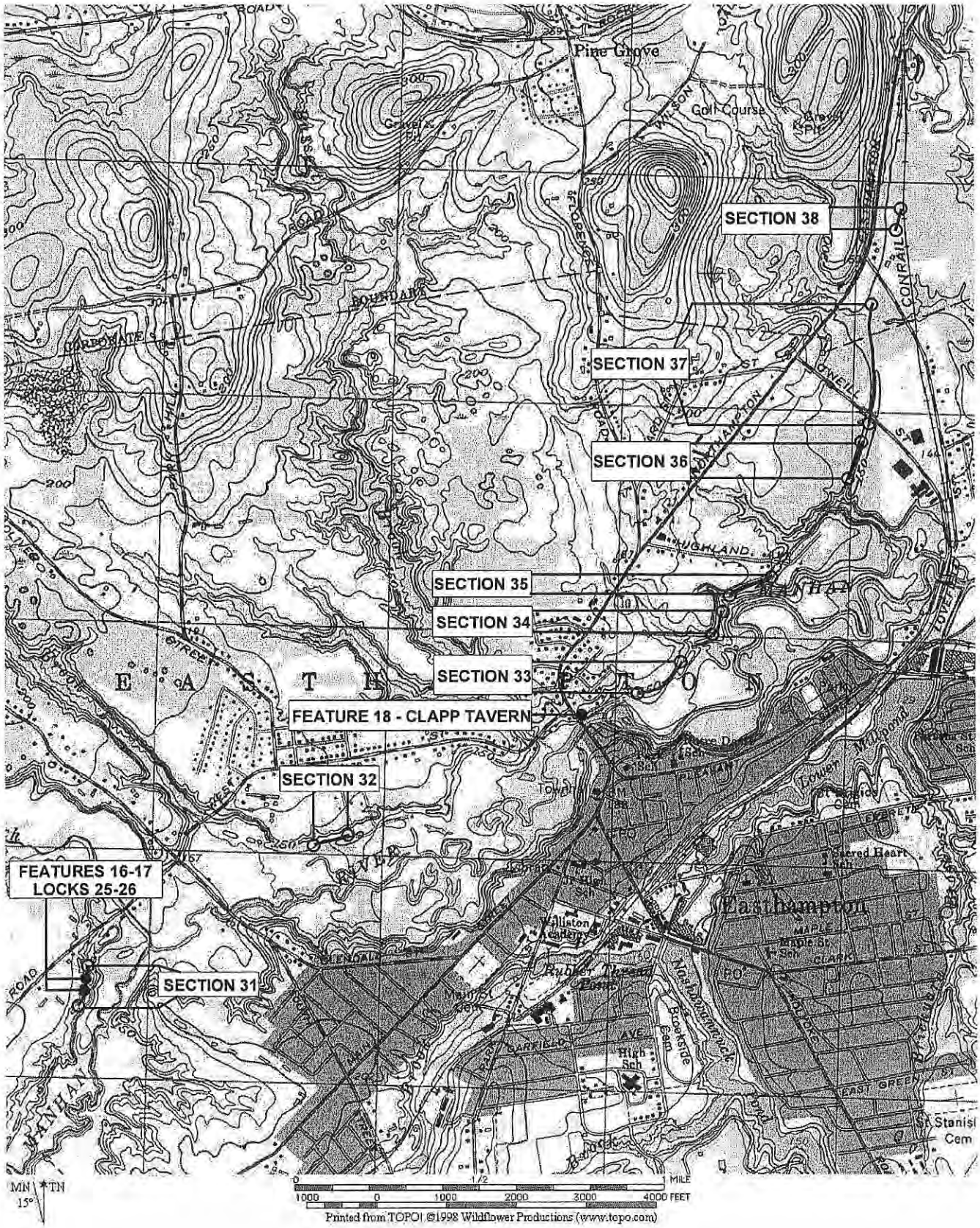
PROPOSED HAMPSHIRE AND HAMPDEN CANAL CANAL NATIONAL REGISTER DISTRICT - MAP 5

Woronoco and Mt. Tom, Mass. Quadrangles



PROPOSED HAMPSHIRE AND HAMPDEN CANAL NATIONAL REGISTER DISTRICT - MAP 6

Mt. Tom and Easthampton, Mass. Quadrangles

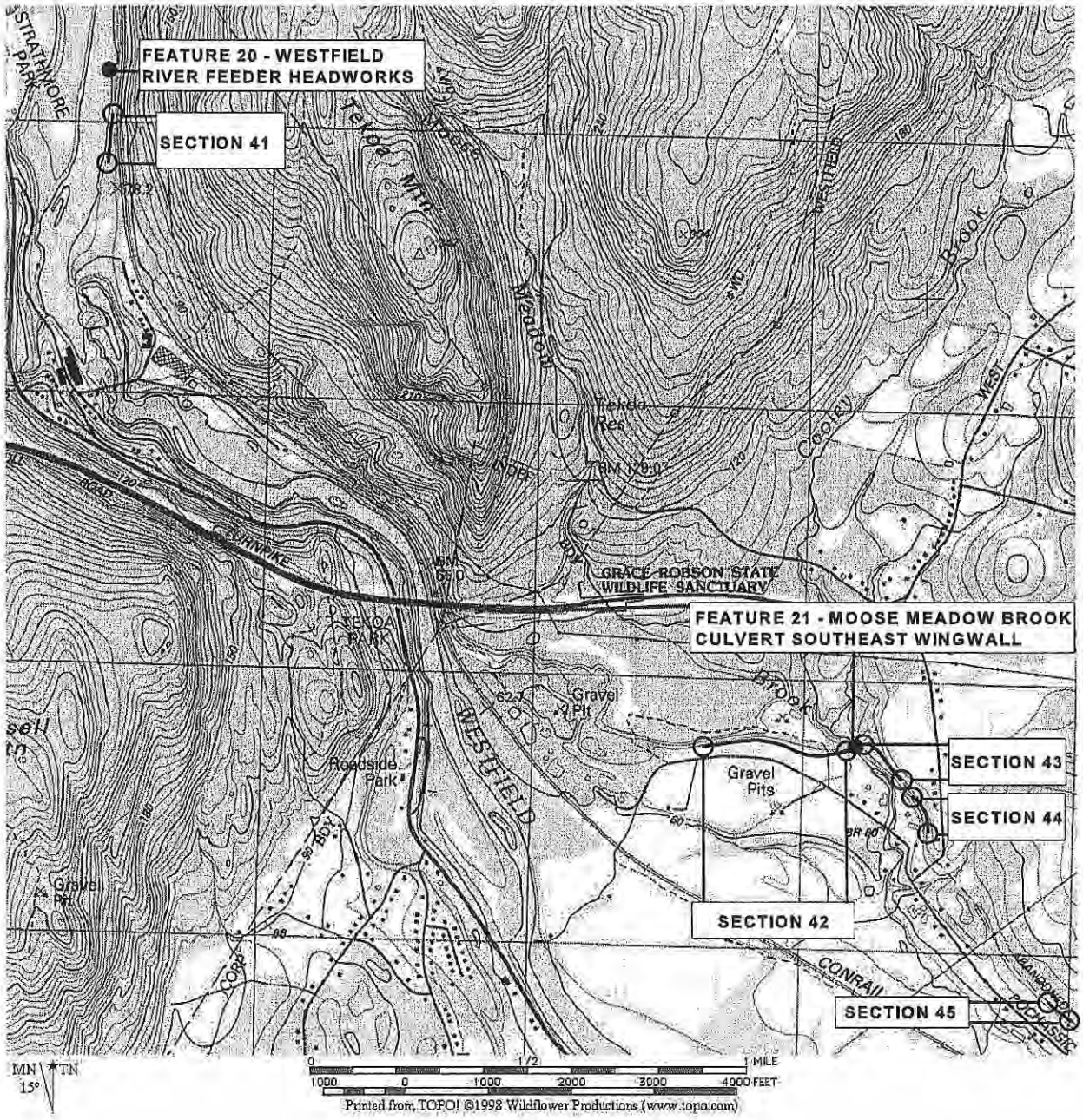


PROPOSED HAMPSHIRE AND HAMPDEN CANAL NATIONAL REGISTER DISTRICT - MAP 7

Easthampton, Mass. Quadrangle

PROPOSED HAMPSHIRE AND HAMPDEN CANAL NATIONAL REGISTER DISTRICT - MAP 8

Easthampton, Mass. Quadrangle



PROPOSED HAMPSHIRE AND HAMPDEN CANAL NATIONAL REGISTER DISTRICT - MAP 9

Woronoco, Mass. Quadrangle

INDEX TO PHOTOGRAPHS

Photographer: Michael S. Raber April 2002

1 View northeast of canal prism southwest of Congamond Ponds (Section 1); prism is cut into original surface

2 View southeast of Lock 6 wall detail, with possible header stone for vanished wooden lock chamber (Feature 5 in Section 4)

3 View west of Lock 6 wall detail (Feature 5 in Section 4)

4 View southeast of Lock 7 wall remnant, with header stone for vanished wooden lock chamber (Feature 7 in Section 4)

5 View southwest of Great Brook Aqueduct (south) abutment base fragments (Feature 8 in Section 8)

6 View southeast of Little River Aqueduct east abutment (Feature 10)

7 View south of Lyman Canal Store (left) and Lock 22 east wall (along railroad track at center) (Features 13 and 14); part of Lockville Historic District

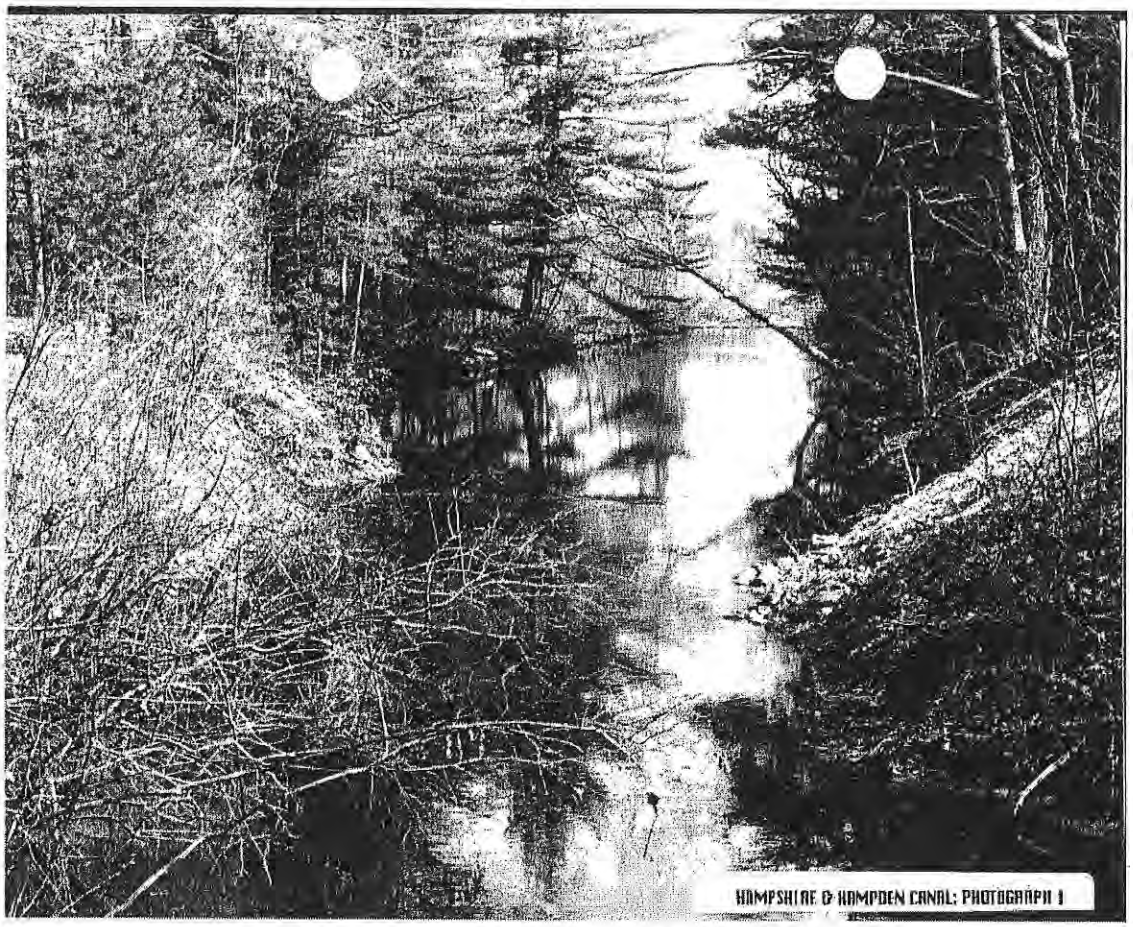
8 View northeast of Lock 22 east wall, with Lyman Canal Store beyond (Features 13 and 14); quoin for lock gate at center

9 View east of canal towpath south of Route 10 in Southampton (Section 28); towpath built below unmodified original slope, leaving wide prism bed visible at center

10 View southeast of Clapp Tavern (Feature 16)

11 View northeast of masonry fragment at original Westfield River Feeder headworks (Feature 20), with former Boston & Albany Railroad on embankment above

12 View northeast of truncated Westfield River Feeder prism (Section 42), built as cut-and-fill construction at north edge of glacial Lake Hitchcock deltaic deposits in foreground


HAMPSHIRE & HAMPDEN CANAL: PHOTOGRAPH 1

HAMPSHIRE & HAMPDEN CANAL: PHOTOGRAPH 2

HAMPSHIRE & HAMPDEN CANAL: PHOTOGRAPH 3

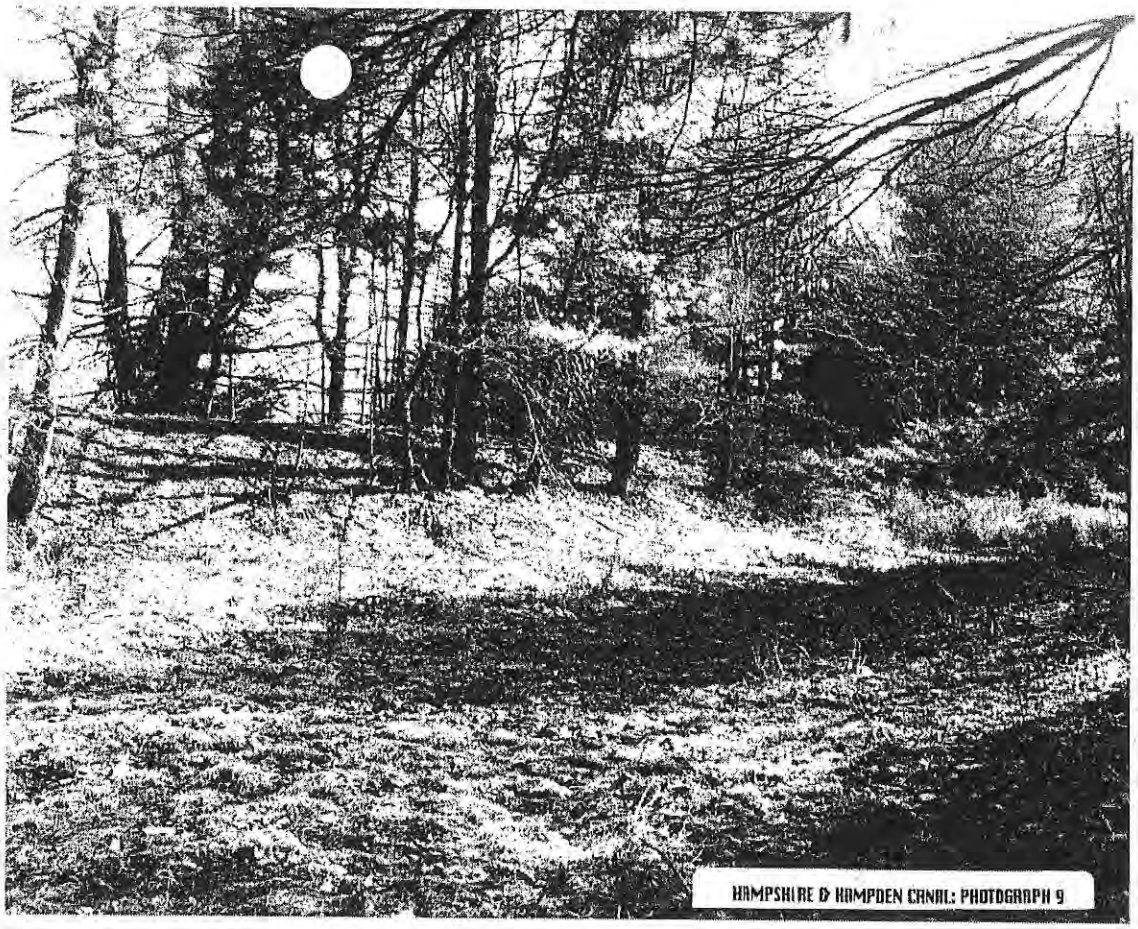
HAMPSHIRE & HAMPDEN CANAL: PHOTOGRAPH 4

HAMPSHIRE & HAMPDEN CANAL: PHOTOGRAPH 5

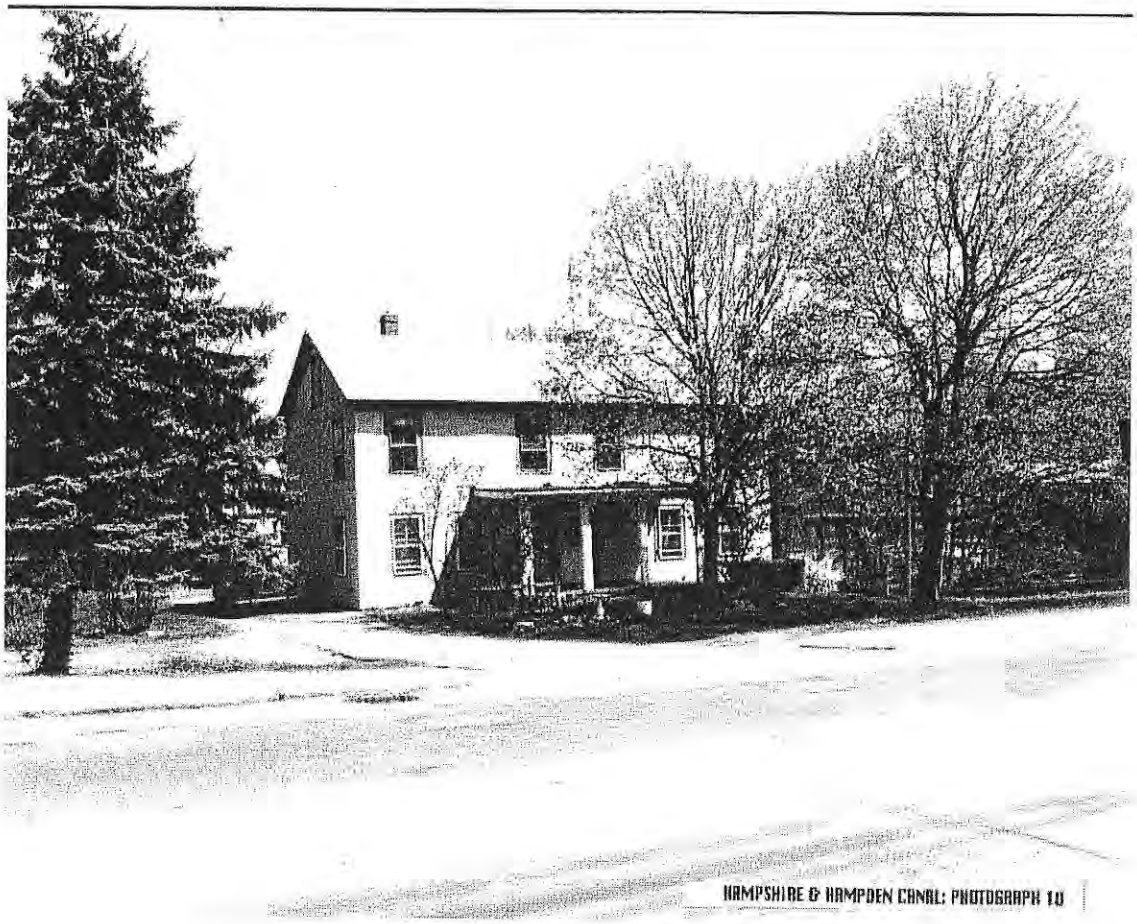
HAMPSHIRE & HAMPDEN CANAL: PHOTOGRAPH 6

HAMPSHIRE & HAMPDEN CANAL: PHOTOGRAPH 7

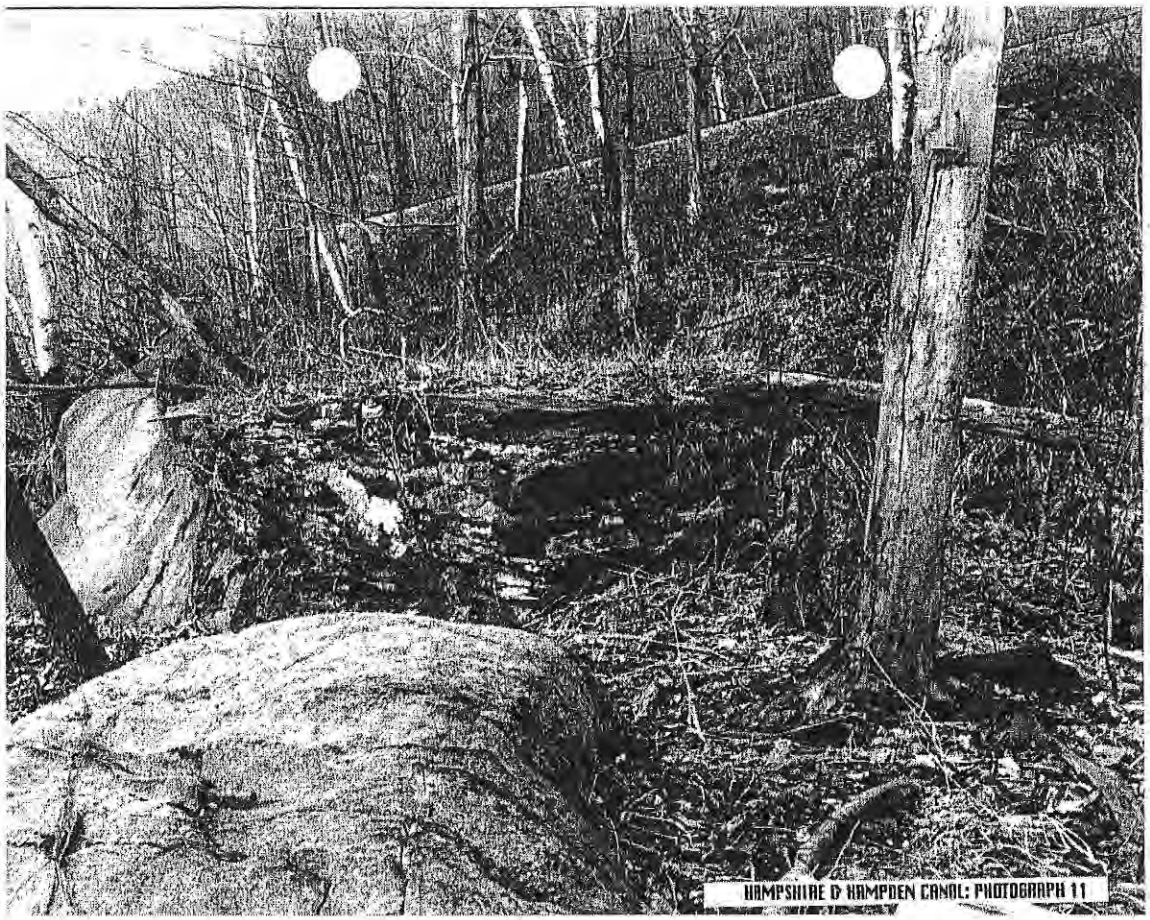
HAMPSHIRE & HAMPDEN CANAL: PHOTOGRAPH 8



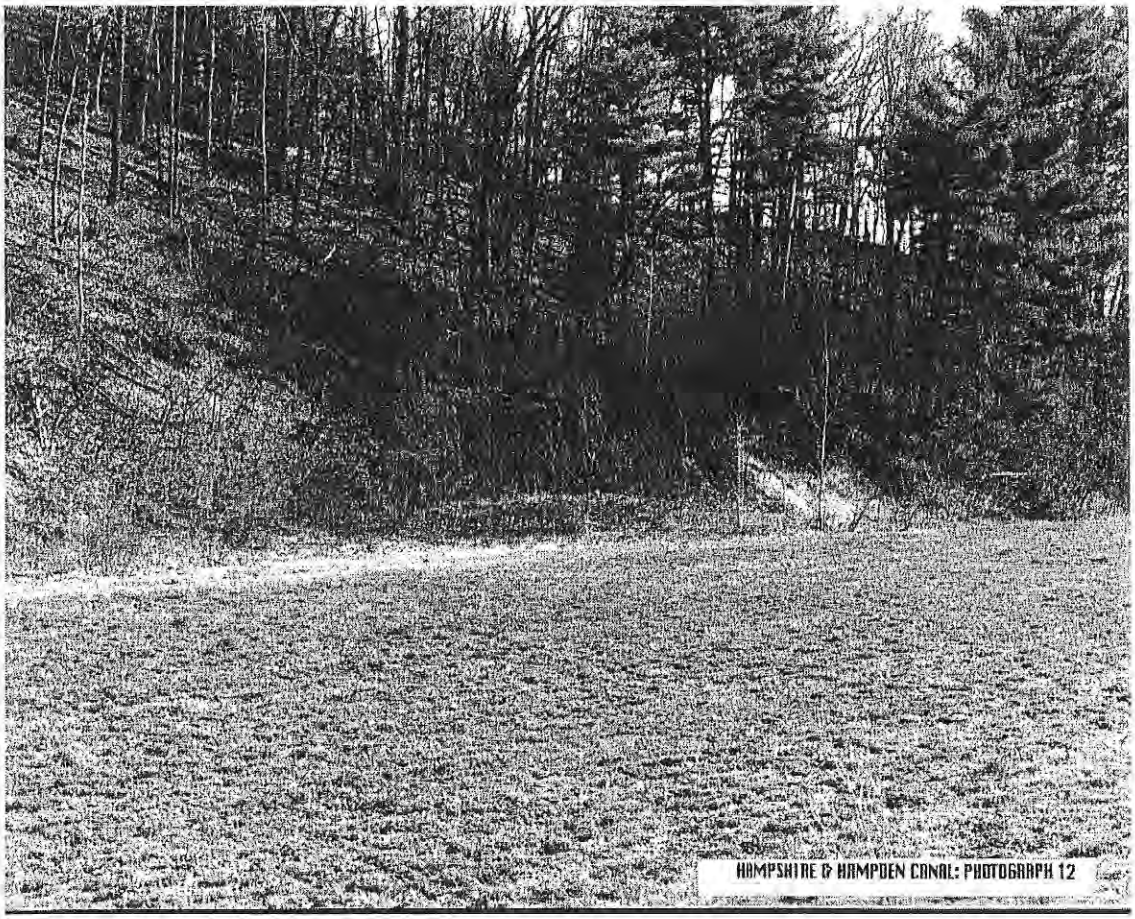
HAMPSHIRE & HAMPDEN CANAL: PHOTOGRAPH 9



HAMPSHIRE & HAMPDEN CANAL: PHOTOGRAPH 10



HAMPSHIRE & HAMPDEN CANAL: PHOTOGRAPH 11



HAMPSHIRE & HAMPDEN CANAL: PHOTOGRAPH 12

Original yellow form: Eligibility file
Copies: Inventory form
Town file(w/corresp.)
Macris
NR director ____

Community: Easthampton, Northampton, Russel, Southampton, Southwick, Westfield

MHC OPINION: ELIGIBILITY FOR NATIONAL REGISTER

Date Received: 5/7/03 Date Due: Date Reviewed: 6/18/03

Type: __Individual __X District (Attach map indicating Boundaries).

Name:New Haven and Northampton Canal Inventory Form: Form D, SOU-HA-5, Form F, Area B, No. 907, Other forms Also.

Address:Canal route passes through the towns of Easthampton, Northampton, Russel, Southampton,Southwick and Westfield.

Requested by: A committee formed by representatives from the towns of Easthampton, Southampton, Southwick and Westfield.

Action: __X Honor __ITC __Grant __R & C __Other:

Agency: Staff in charge of Review: Leonard W. Loparto

INDIVIDUAL PROPERTIES

__ Eligible
__ Eligible, also in district
__ Eligible only in district
__ Ineligible
__ More information needed

DISTRICTS

__ Eligible
__ Ineligible
__X More information needed

CRITERIA: __X A __B __X C __X D

LEVEL: __X Local __X State __X National

STATEMENT OF SIGNIFICANCE

The Massachusetts segment of the New Haven and Northampton Canal, also known as the Hampshire and Hampden Canal, follows a route through the towns of Easthampton, Northampton, Russel, Southampton, Southwick and Westfield. Canal design began in 1822 with construction between 1825 and 1834. The entire length of the nearly 30 mile Massachusetts section of the waterway opened in 1835. The

canal was gradually absorbed by the railroad beginning in 1847, the last year the entire canal was open.

The New Haven-Northampton Canal is significant at the local, state, and national level for its role within the broad fabric of our nation's history and its building during the latter stage of the Canal Era as the greatest undertaking of its kind in New England, covering the eighty miles from New Haven, CT to Northampton, MA. Construction of the Canal was a major engineering feat for the region incorporating a wide variety of structures and construction techniques along its route. A system of 32 locks raised or lowered boats approximately 298 feet for a net change of 122 vertical feet between the Congamond Ponds in Southwick to the Connecticut River in Northampton. Along its 30 mile route the canal system infrastructure included components of the canal prism, dams, feeder canals, boat basins, aqueducts, masonry culverts, smaller masonry drains, a 700 foot floating towpath, Locktenders houses, stores, warehouses, hotels, and an unknown number of additional architectural resources. A number of unidentified sites associated with canal construction should also exist including but not limited to quarries, sand pits and facilities to house construction workers.

MHC staff clearly felt that the New Haven and Northampton Canal is eligible for listing in the National Register of Historic Places. However, before a nomination can be completed to realize the goal of the Canal communities and the MHC for the listing of the Canal in its entirety, more information is needed on the location of the canal route and its major infrastructural features. The MHC has advocated the nomination of canals in their entirety since the nomination of the South Hadley Canal in 1992. Since then, the Massachusetts section of the Blackstone Canal(1995) has also been nominated in its entirety. MHC staff are also working closely with the Middlesex Canal Commission and Association to nominate that canal in its entirety. Research conducted as part of the Middlesex Canal nomination has shown the importance of parcel and/or deed level research in identifying the exact route of the canal. Mapping the canal route on tax assessors maps is necessary for a precise location of the route and the identification of all landowners included in the proposed district. The entire route of the New Haven and Northampton Canal will need to be identified on tax assessors maps for each community before the nomination can proceed further.

It is unfortunate that the consultant hired by the Towns of Southwick, Westfield and Southampton did not consult with MHC staff prior to developing the scope for the survey and subsequent research. In May, 2002, MHC received a copy of the survey scope and cover letter from the archaeological consultant that stated the fieldwork segment of the project

was already completed and completion of written inventory tasks including resource descriptions and historic context material was not scheduled due to the lack of funding. Available funding would limit the survey to a graphic compilation of sections(canal) which appear National Register eligible on U.S. Geological Survey quadrangle sheet sections. After the fact MHC input at that time was not appropriate. MHC staff would have preferred to contribute technical assistance during the preparation of a survey scope prior to commencement of the work. MHC staff did discuss the proposed nomination of the canal in its entirety with interested community members in 2000 and sent a consultant list at that time. MHC had no further involvement in the project for nearly two years when MHC staff discovered a consultant had been hired and the survey was underway. The consultant hired by the Canal communities has compiled a considerable amount of useful information on the canal route, current conditions and relevant source materials. Unfortunately, the consultant's report and methodology did not conform to standards and requirements usually used by the MHC for archaeological reconnaissance surveys and the National Register nomination of canals in their entirety. The following comments are offered as an assessment of efforts to date towards an eligibility opinion and eventual nomination of the New Haven to Northampton Canal in its entirety.

1. The consultants survey amounted to an archaeological reconnaissance survey that should have been conducted under a State Archaeologists permit. Conducting the survey under permit would have ensured that an acceptable research design was in place prior to commencement of the work. A report would have also been completed that met National Park Service Standards.

2. The survey should have focused on the entire canal route, not solely canal related resources that appeared eligible. The nomination should include the entire canal route and, as a result, should include an accurate description of the entire route and its canal related resources whether eligible or not.

3. The consultant's use of the term eligible is confusing. Does eligible refer to individual eligibility of canal segments and resources, eligibility as part of a district, or both? Fragments of canal related resources that are not individually eligible may be eligible as part of a larger canal district.

4. The consultant's use of term's and phrases such as

removed, filled, demolished, appear eliminated, has not survived, are gone, and poorly preserved in describing sections of the canal route is confusing, especially when their use results in sections of the canal route being eliminated from the proposed district. Unless conclusive evidence can be produced to document the destruction of the canal route, that portion of the route should be included in the nominated area. Filling or the lack of surface indications of canal related features should not be interpreted as the lack of integrity.

5. Fragmentary sections of the canal should be included in the proposed district including partial prisms and short sections of the canal. The fact that little surviving documentation exists for the canal may make a case for the importance of archaeological resources related to the canal and fragmentary resources.

6. Canal route sections currently overlaid with structures should be included unless it can be demonstrated that canal features at that location were destroyed prior to construction of the existing buildings or structures.

7. While the canal and many of its related resources are clearly significant, the extent of that significance is difficult to determine. The canal's design and construction should be placed in a context with other canals in northeastern United States. How did the New Haven and Northampton Canal benefit from lessons learned on canals built before it? Were there any design or construction innovations unique to the New Haven and Northampton Canal?

8. What was the effect of the canal to regional and local economies and markets? Did construction of the canal influence local agricultural production and cottage industries?

9. How did the canal influence the social history of the region? Were particular ethnic groups employed in canal construction? Where did canal workers live during canal construction? Did construction workers for the canal continue to live in local communities after the canal was completed?

10. How did the relationships between the Erie Canal and the New Haven to Northampton Canal develop? Further research into the role of Benjamin Wright, chief engineer for the Erie Canal and his son on the New Haven to Northampton Canal might prove useful. Further research into the role of David Hurd, former engineer on the Erie Canal and chief engineer for the

New Haven to Northampton Canal from 1825 to 1829 would also be useful especially if evidence of his as built survey of the canal are located. Any canal related documentary evidence that survives associated with Henry Farnum who served as chief engineer for the New Haven to Northampton Canal from 1829 to its closing in 1847 may also be important

In summary, the information presented above provides some specific and general recommendations needed before a National Register nomination for the entire route of the New Haven to Northampton Canal can proceed. A precise parcel level location of the canal corridor containing the canal prism and other related features is needed. MHC staff can provide technical assistance to the canal communities in selecting a research scope, methodology and consultants to achieve this goal. Preferably, local tax assessors maps should be used as a base map. The exact route of the canal, its features, and current landowners cannot be determined from U.S. Geological Survey maps with any degree of accuracy. Once the above materials are completed, a re-evaluation of the New Haven to Northampton Canal's National Register eligibility can be requested.

The Commonwealth of Massachusetts
William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

July 30, 2003

Ms. Barbara MacEwan, Chair
Southwick Historical Commission
New Haven – Northampton Canal National Register Nominating Committee
454 College Highway
Southwick, Massachusetts 01077

Dear Ms. MacEwan:

Thank you for your request for an evaluation of the eligibility of the Massachusetts portion, New Haven – Northampton Canal in its entirety to the National Register of Historic Places. Thank you also for sending a copy of the report entitled Survey and Inventory of the Hampshire and Hampden Canal (New Haven and Northampton Canal) For a Proposed National Register of Historic Places Nomination written by Michael S. Raber (2002). Massachusetts Historical Commission (MHC) staff evaluated the NR eligibility of the canal at the June 18, 2003 evaluation Meeting. The staff's opinion was based on the report submitted by your consultant (Raber 2002), National Register files and the Inventory of Historic and Archaeological Assets of the Commonwealth at the MHC.

MHC staff clearly felt that the New Haven – Northampton Canal is eligible for listing in the National Register of Historic Places. However, before a nomination can be completed to realize the Nominating Committee's goal of the listing of the Canal in its entirety, more information is needed on the location of the entire canal's route and its major infrastructural features. MHC shares the canal comunities' goal of nominating the canal in its entirety. Canal nominations in their entirety have been an MHC goal since the nomination of the South Hadley Canal in 1992. At present, fragmented segments of the canal route are mapped on U.S. Geological Survey (USGA) quadrangle maps. These routes cannot be transferred to tax assessors maps or other more detailed maps with any reliable degree of accuracy. The canal prism and all canal-related features should be identified on tax assessors maps. Tax assessors maps are usually required with an NR nomination in order to provide a detailed location of the property and/or structure being nominated and a list of property owners. USGS maps are fine for overall location and UTM calculation. MHC has found that parcel-level deed research is often required to achieve the degree of accuracy needed for an NR nomination. Recent research conducted for the NR nomination of the Middlesex Canal in its entirety has corroborated the

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www.state.ma.us/sec/mhc

usefulness of this methodology. Once the exact route of the entire canal and the location of its infrastructural features is determined, a re-evaluation of the New Haven – Northampton Canal's eligibility can be requested.

I would be very happy to discuss the nomination and directions your committee should proceed in to realize the goal of listing the New Haven – Northampton Canal in its entirety on the National Register of Historic Places. The staff of the Massachusetts Historical Commission encourages your committee to continue working toward this goal.

Please contact Betsy Friedberg or myself if you have any questions relating to the above materials or other matters pertaining to the New Haven – Northampton Canal nomination.

Sincerely,

Leonard W. Loparto

Leonard W. Loparto
Archaeologist/Preservation Planner
Massachusetts Historical Commission

Enclosure

cc: Richard Ahart, Southampton Historical Commission
Roma I. Donais, Easthampton Historical Commission
Hugh A. Lamb Jr., Westfield Historical Commission

1.

Barbara MacEwan

From: Loparto, Leonard W. @ SEC [Leonard.W.Loparto@state.ma.us]
Sent: Wednesday, May 12, 2004 9:22 AM
To: 'historicalcommission@southwickma.net'
Cc: Friedberg, Betsy @ SEC; Steinitz, Michael @ SEC
Subject: Hampshire-Hampden Canal

- Betsy Friedberg
- Michael Steinholtz

Bonnie Parsons P.V.P.C.

2004 Survey Scope.doc (46 KB)

Hi Barbara,

Attached, as promised, is a draft scope for the Hampshire-Hampden Canal Survey. This is the type of scope MHC would have recommended some years ago when I first began discussing the canal survey with Sue Kozub and Norene Roberts. The scope is geared towards a solid piece of documentation that can be taken to the next step or the National Register nomination of the canal in its entirety. Similar survey efforts were completed for the Blackstone Canal and Middlesex Canal. The Blackstone Canal in Massachusetts is listed in its entirety and the Middlesex Canal will likely be listed in the near future.

Since the canal includes extensive known and potential archaeological resources the survey effort essentially amounts to an archaeological reconnaissance survey. Given that, any potential consultants or consultant teams should include an archaelogist and obtain a survey permit from the State Archaeologist prior to commencing the survey.

As you can see, the scope is ambitious, as is the goal of nominating the nearly 30 mile canal in its entirety. A survey like this could easily cost $25,000.00 or more. Costs could be spread out by completing a survey in phases or by town etc. (Consultants can also mitigate the costs by the extent they can integrate the earlier work of Raber and Carl Walter.)

In terms of a time frame, a hired consultant would obviously complete the survey in the shortest amount of time. A phased approach and/or one that relies on volunteer help would take a long time to complete.

The scope I've attached would provide a solid piece of documentation that can be used to achieve the next steps in the process or, re-evaluation of of the Nationbal Register eligibility of the Hampshire-Hampden Canal and writing of the actual nomination.

Please look this draft over and perhaps we can discuss some ideas and/or revisions in the near future by telephone.

Call or email me if you have any questions.

Leonard W. Loparto <<2004 Survey Scope.doc>>

Attachment A

NEW HAVEN AND NORTHAMPTON CANAL CORRIDOR MULTI-COMMUNITY SURVEY PROJECT

SCOPE OF WORK

A. Project Objectives

The purpose of the project will be to conduct a multi-community reconnaissance survey to produce a comprehensive inventory, description and interpretative context of cultural resources associated with the Massachusetts segment of the New Haven – Northampton Canal, also known as the Hampshire and Hampden Canal. The project will be structured to provide professional cultural resource survey expertise to the New Haven-Northampton Canal National Register Nominating Committee to undertake a comprehensive survey project. The Committee is comprised of representatives from the Easthampton, Southampton, Westfield, and Southwick Historical Commissions. The ultimate goal of the Committee is the National Register listing of the Massachusetts portion of the New Haven-Northampton Canal in its entirety. The canal follows a route through the towns of Easthampton, Northampton, Russell, Southampton, Southwick, and Westfield.

Specific project goals will include the following:

1. To conduct a comprehensive survey of cultural resources, including archaeological sites, of the New Haven-Northampton Canal, using the Massachusetts Historical Commission (MHC) survey methodology and inventory forms;

2. To write a brief narrative overview of the New Haven-Northampton Canal relating the surveyed cultural resources to significant themes of historical, architectural, and engineering development;

3. To apply the National Register criteria to all resources identified in the survey;

4. To develop a multi-town map to be depicted on town tax assessor's maps for parcel level location of the Canal prism route, land owners, associated archaeological sites and extant above-ground resources.

5. To prepare a professional archaeological reconnaissance survey report meeting the standards of 950 CMR 70.14 and the Secretary of Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 190).

B. Methodology

The Analytical Framework:

The comprehensive survey project must use MHC criteria and methodology, to current standards. See MHC's *Historic Properties Survey Manual: Guidelines for the Identification of Historic and Archaeological Resources in Massachusetts* (1992) and *Survey Technical Bulletin #1* (1993). Both MHC survey guidelines and the tasks and products of the survey Scope of Work meet the Secretary of the Interior's *Standards and Guidelines for Identification* (1983, copies available from the MHC). The identification of archaeological resources and reporting must use MHC criteria and methodology to current standards. See MHC's *Public Planning and Environmental Review: Archaeology and Historic Preservation, State Archaeologists Permit Regulations* (950CMR 70.00), *The Protection of Properties Included in the State Register of Historic Places* (950 CMR 71.00), *Historic Properties Survey Manual: Guidelines for the Identification of Historic and Archaeological Resources in Massachusetts* (1992), and *Guide to Prehistoric Site Files and Artifact Classification Systems* (1984). These publications are all incorporated into this contract by reference.

The MHC criteria for conducting a comprehensive survey are designed to identify the full range of cultural and archaeological resources. There are many components of the Canal's historical development that are associated with the location and type of surviving cultural and archaeological resources. A comprehensive survey should therefore relate cultural and archaeological resources to historic patterns of Canal construction, usage, and related economic development.

The *MHC Reconnaissance Survey Town Reports* for the towns along the New Haven-Northampton Canal route, a recently produced Survey and Inventory of the Hampshire and Hampden Canal (Raber 2002), the extensive canal related resources of Carl E. Walter, a 6/18/03 MHC National Register Eligibility opinion and related correspondence, National Register nomination forms for segments of the New Haven-Northampton Canal in Massachusetts currently listed, and National Register nominations of portions of the Hampshire and Hampden Canal in Connecticut, will provide a preliminary framework and base of information for this analysis. The Blackstone Canal NR nomination and the Middlesex Canal Survey should also be reviewed as recent canal documentation projects that incorporated a successful methodological approach in their study. MHC's *Inventory of Historic and Archaeological Assets of the Commonwealth* and *National Register of Historic Places Nominations* for Canal corridor communities may also provide additional contextual and predictive information on the potential for surviving resources.

Individual archaeological, building, structure, object and/or landscape forms, area forms and the narrative history will expand upon the information in the studies referenced above and will relate inventoried properties to the significant themes in the historical development of the New Haven-Northampton Canal.

This study is designed to evaluate and supplement the 2002 Raber study of the canal that incorporates the earlier work of Carl E. Walter who also participated in the Raber study. This study should include a parcel level inventory of all contributing and non-contributing resources within the entire canal corridor, detailed descriptions and significance information necessary for editing into a National Register Nomination.

Phase Meetings:

The project consists of four phases. Project personnel, both the consultant and the Canal Committee, will meet with MHC to review project progress and products at the end of each phase. Work to be carried out during each phase, and products due at the end of each phase are described below.

The Inventory:

The comprehensive survey will consider the full range of cultural and archaeological resources in the New Haven-Northampton Canal corridor that relate to the Canal's history. These resources will be considered in terms of period, theme, property type, architectural form and style and geographic distribution The survey will identify all areas, objects, archaeological sites, structures and landscapes that are historically significant in the history and development of the Canal. Although the survey methodology is not specifically designed to identify all archaeological sites along the route of the Canal, some sites are expected to be found as a result of the study. The survey will address all periods of historic development from the period of first colonial European presence to circa 1960. The period of study for the survey should specifically reference the period of design (1822-1825), construction (1825-1834), and use (1835-1847) of the canal as the primary focus of the project. The study should also investigate the extent that post-canal era historic uses of canal related resources extend the period of significance for the canal. Significant themes of historical development will be identified, and resources will be related to these themes. It is anticipated that some resources that predate or postdate the Canal's period of construction and operation may be identified for their historical associations with the Canal or its related features.

The comprehensive survey will identify all areas, buildings, objects, sites, burial grounds, structures, and parks/landscapes that are structurally and historically significant to the New Haven-Northampton Canal. MHC individual property and area inventory forms, maps, narrative history and National Register recommendations will be completed and submitted to the Canal Committee and MHC in accordance with the survey guidelines set forth in the MHC's *Historic Properties Survey Manual: Guidelines for the Identification of Historic and Archaeological Resources in Massachusetts* (1992) and *Survey Technical Bulletin #1* (1993), as well as the Secretary of the Interior's Standards and Guidelines for Identification (1983, copies available from the MHC). These publications are all incorporated into this contract by reference. The work to be carried out during each phase and products due at the end of each phase are described on the following pages.

I.

PHASE I (5 weeks)

TASKS:

* meet with the Canal Committee, MHC staff, and other interested community members to discuss the scope of the project and to assess the available documentary materials (maps, local records, histories, etc.);

* File a permit application (950 CMR 70) with the State Archaeologist and receive permit before starting work;

* select maps, including a working maps and a large-scale base maps to identify inventoried areas and properties;

* review the work of Carl E. Walter, the 2002 Raber study and existing completed inventory forms on file with the MHC for completeness and adherence to current survey standards;

* review and evaluate local historical sources and other pertinent information such as surficial and bedrock geology, USDA soil maps, historic period maps, USGS maps (current and past editions), aerial photographs, and publications available at local and state repositories, as well as available information from the Inventory of Historic and Archaeological Assets of the Commonwealth at the MHC (including archaeological reports of professional surveys).

* Interview local historians (including the local historical commission in each community), "canal buffs", and other knowledgeable persons, including members of the New Haven-Northampton Canal National Register Nominating Committee for information relating to the Canal route, known and potential sites and important issues.

* conduct initial research and reconnaissance survey to verify the types and geographical distribution of cultural and archaeological resources in the Canal corridor, and to develop criteria for selecting properties to be included in the survey.

PRODUCTS:

* Application for State Archaeologist's permit.

* working map(s) of the Canal corridor to be surveyed, and large scale base map(s) to be used to identify inventoried properties:

* methodology statement incorporating:

1. summary of survey objectives, including a brief description of the boundaries of the study area, and assessment of existing documentation

2. criteria for selecting properties for survey;

3. procedures to be followed in the survey and form of products to be created;

4. expectations about the kind, number, location, character, and condition of historic

properties to be recorded; and

5. bibliography

Phase I will be completed by _____.

II

PHASE II (13 weeks)

Tasks:

* conduct documentary research to identify important historic themes, events, sites and persons for the New Haven-Northampton Canal corridor;

* apply selection criteria and prepare a list of specific resources to be surveyed (organized by town and canal segment, with street address where appropriate), identifying any State Register of Historic Places properties to be included in the survey;

* prepare narrative history outline, with particular attention to substantially augmenting the information already available in the 2002 Raber study, and with reference to specific properties and sites subject to the survey;

* complete representative draft inventory forms for different resource types and archaeological sites;

* meet with the Canal Committee and MHC staff to review resource lists, draft forms, and narrative history outline.

PRODUCTS:

* list of all areas, properties and sites to be surveyed, arranged alphabetically by town and by street address;

* outline of narrative history;

* Outline of reconnaissance archaeological report, including a brief summary of research results;

* representative draft inventory forms.

Phase II will be completed by _____.

III.

PHASE III (16 weeks)

TASKS:

* conduct intensive research of properties selected for inventory;

* complete draft narrative history for the New Haven-Northampton Canal that establishes a context for the resources being surveyed;

* prepare MHC inventory forms with photographs and sketch maps (forms for any surveyed properties listed in the State Register of Historic Places must be marked at the top front with the appropriate designation code and date);

* Prepare draft reconnaissance archaeological report;

* apply National Register criteria to inventoried areas, properties and archaeological sites;

* prepare a draft list of all contributing areas, properties and archaeological sites potentially eligible for National Register nomination;

* submit draft narrative history, inventory forms, and National Register recommendations to the Canal Committee and MHC for review and comment(comments to be incorporated during Phase IV).

* Submit a draft map of the New Haven and Northampton Canal corridor identifying the known or potential location of the Canal prism components and related archaeological sites, extant buildings, structures, objects, landscape features and/or areas.

PRODUCTS:

* draft narrative history.

* Draft reconnaissance archaeological survey report.

* unnumbered inventory forms with photos and sketch maps for areas, objects, sites, burial grounds, structures, and parks/landscapes.

* draft list of all potentially contributing areas, properties and sites for National Register nomination.

* draft map of New Haven and Northampton Canal Resources.

Phase III will be completed by _____.

PHASE IV (6 weeks)

TASKS:

* in consultation with MHC survey and MACRIS staff, develop lettering and numbering system for inventoried properties and add inventory letters/numbers to forms;

* complete narrative history, incorporating review comments and inventory numbers of surveyed properties where appropriate;

* prepare final archaeological reconnaissance report and management recommendations, incorporating comments on draft report. The report must also include a copy of the project base map;

* prepare final list of all areas, properties and archaeological sites recommended as contributing members of a potential National Register New Haven and Northampton Canal District, incorporating review comments where appropriate;

* complete National Register Criteria Statement forms to be attached to appropriate inventory forms;

* prepare base map(s) identifying inventoried areas, properties and archaeological sites;

* prepare street index of inventoried areas and properties;

* prepare lists of further study recommendations.

PRODUCTS:

* Numbered MHC inventory forms for areas, buildings, objects, sites, burial grounds, structures and parks/landscapes(two sets with original black and white photographs: one for the Canal Committee, one for MHC). Sets for the MHC and Canal Committee must be on 24 lb. Bond paper of at least 25% cotton fiber content.

* Large-scale base map(s) with all inventoried areas, properties and archaeological sites identified by inventory number (two sets: one for the Canal Committee and one for MHC).

* Survey Final Report (four *paginated,* copies: two for the Canal Committee and two for MHC, four additional copies may be desired so that each of the towns/historic commissions along the canal route can receive a copy), which includes all components of the final archaeological reconnaissance report and the following sections:

  1. Methodology statement, including survey objectives, assessment of previous research, selection criteria, procedures followed in the survey, description of products and accomplishments, and an

explanation of how results of the survey differed from expectations developed during Phase I;

2. Narrative history;

3. Street index of inventoried areas and properties, organized by town. Areas for each town will be listed separately at the beginning of each town list, arranged alphabetically by area name. Individual inventoried properties follow, arranged alphabetically by street name. Property name (if any) and inventoried number also will be included in this list;

4. Final list of recommendations for areas, properties and sites to be included as contributing members of a New Haven and Northampton Canal District to be nominated to the National Register of Historic Places;

5. Further study recommendations; and

6. Bibliography.

*** The Survey Final Report must identify the repository/office where completed survey documentation (inventory forms, base maps, and final report) will be made available to the public. The repository must also ensure the confidentiality of archaeological site forms and maps depicting the locations of archaeological sites.

Phase IV (final phase) will be completed and submitted to Canal Committee and MHC by _____.

Check out "Heritage Landscape (Florence Fields past Lilly)

Barbara McEwan

From: Leonard W. Loparto [lwloparto@comcast.net]
Sent: Monday, April 18, 2005 8:12 AM
To: Barbara McEwan
Subject: Re: New Haven/Northampton Canal

Hi Barbara,

Attached at long last is a scope for the New Haven and Northampton Canal. The scope builds on MHC's experience with other canals in Massachusetts, especially the Blackstone and Middlesex Canals. Look this over and perhaps we can talk next week. I'll be at the MHC on tues. and wed. You can also email me. My email in Boston is transferred to my home in Orleans.

If the goals in this scope were met, we could then have the canal re-evaluated and then hopefully go on to actually write the nomination. To hire someone to complete the survey described in this scope could easily cost in the $30,000-$40,000.00 range. There are, however, other options. We could do a pilot study in which the methodology proposed in the scope and prior survey (Raber and Walter) is evaluated by the new consultant. Raber's report does not meet the goals of this scope. The report does not include a complete description of the canal's route, it's significance, or what information was derrived from the work of Walter. A pilot study would tell us exactly where we're at and whether parcel level deed research would contribute the detailed information about the canal's route we need. In the end, however, a larger, more comprehensive survey would still be needed. We also discussed a collaborative effort between researchers, possibly Pioneer Valley and Umass/Amherst. There are several options.

NNCC

Bonnie — Split Time w/ea community's allotted Time allowance.

Let's discuss this.

Lenny Loparto

---- Original Message ----
From: Barbara McEwan
To: Loparto, Leonard W (SEC)
Sent: Friday, April 15, 2005 1:31 PM
Subject: New Haven/Northampton Canal

Dear Mr. Loparto,
The e-mail for the Historical Commission is: historicalcommission@southwickma.net
Looking forward to the scope of tasks to be accomplished as the committee is anxious to move the project forward.
Thank you for your assistance.
Barbara MacEwan
Chair New Haven/Northampton Canal Committee NNCC

Attachment A

NEW HAVEN AND NORTHAMPTON CANAL CORRIDOR MULTI-COMMUNITY SURVEY PROJECT

SCOPE OF WORK

A. Project Objectives

The purpose of the project will be to conduct a multi-community intensive survey to produce a comprehensive inventory of cultural resources associated with the New Haven and Northampton Canal (Hampshire and Hampden Canal). The project will be structured to provide professional cultural resource survey expertise to the New Haven and Northampton Canal National Register Nominating Committee to undertake a comprehensive survey project. The Committee is composed of the six towns (Southwick, Westfield, Southampton, Easthampton, Northampton, and Russell) located along the route of the canal in Massachusetts. Specific project goals will include the following:

1. To conduct a comprehensive survey of cultural resources, including archaeological sites, of the New Haven and Northampton Canal, using the Massachusetts Historical Commission (MHC) survey methodology and inventory forms;

2. To write a narrative overview of the New Haven and Northampton Canal relating the surveyed cultural resources to significant themes of historical and architectural development;

3. To apply the National Register criteria to all resources identified in the survey;

4. To develop a multi-town map to be depicted on town assessor's maps for the Canal prism route, associated archaeological sites and extant above-ground resources.

5. To prepare a professional archaeological reconnaissance survey report meeting the standards of 950 CMR 70.14 and the Secretary of Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 190).

B. Methodology

The Analytical Framework:

The comprehensive survey project must use MHC criteria and methodology, to current standards. See MHC's *Historic Properties Survey Manual: Guidelines for the Identification of Historic and Archaeological Resources in Massachusetts* (1992) and *Survey Technical Bulletin #1* (1993). Both MHC survey guidelines and the tasks and products of the survey Scope of Work meet the Secretary of the Interior's *Standards and Guidelines for Identification* (1983, copies available from the MHC). The identification of archaeological resources and reporting must use MHC criteria and methodology to current standards. See MHC's *Public Planning and Environmental Review: Archaeology and Historic Preservation, State Archaeologists Permit Regulations* (950CMR 70.00), *The Protection of Properties Included in the State Register of Historic Places* (950 CMR 71.00), *Historic Properties Survey Manual: Guidelines for the Identification of Historic and Archaeological Resources in Massachusetts* (1992), and *Guide to Prehistoric Site Files and Artifact Classification Systems* (1984). These publications are all incorporated into this contract by reference.

The MHC criteria for conducting a comprehensive survey are designed to identify the full range of cultural and archaeological resources. There are many components of the Canal's historical development

that are associated with the location and type of surviving cultural and archaeological resources. A comprehensive survey should therefore relate cultural and archaeological resources to historic patterns of Canal construction, usage, and related economic development.

The *MHC Reconnaissance Survey Town Reports* for the towns along the New Haven and Northampton Canal route, unpublished research materials compiled by Carl E. Walters, the 2002 *Survey and Inventory of the Hampshire and Hampden Canal (New Haven and Northampton Canal) for a Proposed National Register of Historic Places Nomination*, and past National Register nominations of scattered New Haven and Northampton Canal sites, will provide a preliminary framework and base of information for this analysis. MHC's *Historic and ArchaeologicalResources of the ConnecticutValley(1984), Inventory of Historic and Archaeological Assets of the Commonwealth* and *National Register of Historic Places Nominations* for Canal corridor communities may also provide additional contextual and predictive information on the potential for surviving resources.

Individual archaeological, building, structure, object and/or landscape forms, area forms and the narrative history will expand upon the information in the studies referenced above and will relate inventoried properties to the significant themes in the historical development of the New Haven and Northampton Canal.

The survey will incorporate the results of earlier survey efforts whenever appropriate. Specifically, the study will incorporate field survey, cartographic, interview, and historical results contained in *Survey And Inventory Of The Hampshire And Hampden Canal (New Haven And Northampton Canal) For A Proposed National Register Of Historic Places Nomination* (2002). The present study will build on the results of the earlier research identified above incorporating parcel-level deed research whenever necessary to delineate an accurate route of the canal on tax assessors maps. The survey will produce all historic, cartographic, and survey results necessary to complete a National Register Nomination for the New Haven and Northampton Canal in its entirety. The National Register Nomination will be completed as a separate task subsequent to the completion of the present survey.

Phase Meetings:

The project consists of four phases. Project personnel, both the consultant and the project coordinator, will meet with The New Haven and Northampton Canal National Register Nominating Committee and MHC staff to review project progress and products at the end of each phase. Work to be carried out during each phase, and products due at the end of each phase are described below.

The Inventory:

The comprehensive survey will consider the full range of cultural and archaeological resources in the New Haven and Northampton Canal corridor that relate to the Canal's history. These resources will be considered in terms of period, theme, property type, architectural form and style and geographic distribution The survey will identify all areas, objects, archaeological sites, structures and landscapes that are historically significant in the history and development of the Canal. Although the survey methodology is not specifically designed to identify all archaeological sites along the route of the Canal, some sites may be found as a result of the study. The survey will address all periods of historic development from the period of first colonial European presence to circa 1960. Significant themes of historical development will be identified, and resources will be related to these themes. It is anticipated that some resources that predate or postdate the Canal's period of construction and operation may be identified for their historical associations with the Canal or its related features.

The comprehensive survey will identify all areas, buildings, objects, sites, burial grounds, structures, and parks/landscapes along the entire 30 mile route of the Canal in Massachusetts that are structurally and historically significant to the New Haven and Northampton Canal. The survey will include a corridor width of 85 feet (Raber 2002:5) centered on the Canal prism that will typically include most sections of

the Canal prism as constructed. The corridor width will increase when necessary as indicated by the Canal resources. The route of the Canal will also include feeder streams and other hydraulic resources when necessary. MHC individual property and area inventory forms, maps, narrative history and National Register recommendations will be completed and submitted to the New Haven and Northampton Canal National Register Nominating Committee and MHC in accordance with the survey guidelines set forth in the MHC's *Historic Properties Survey Manual: Guidelines for the Identification of Historic and Archaeological Resources in Massachusetts* (1992) and *Survey Technical Bulletin #1* (1993), as well as the Secretary of the Interior's Standards and Guidelines for Identification (1983, copies available from the MHC). These publications are all incorporated into this contract by reference. The works to be carried out during each phase and products due at the end of each phase are described on the following pages.

1.) PHASE I (5 weeks)

NNCNR NHNCNRNC NNCN

TASKS:

* meet with the Project Coordinator, the project committee, including representatives of the new Haven and Northampton Canal National Register Nominating Committee and the MHC staff to discuss the scope of the project and to assess the available documentary materials (maps, local records, histories, etc.);

* File a permit application (950 CMR 70) with the State Archaeologist and receive permit before starting work;

* Select maps, including a working maps and a large-scale base maps to identify inventoried areas and properties;

* Review the 2002 Survey and Inventory study and research materials compiled by Carl E. Walter for content, geographical coverage of the entire canal route, and applicability to the present scope as a means to prevent re-duplication of research effort. Existing completed inventory forms of canal sites and structures on file with the towns along the Canal corridor and the MHC should also be reviewed for completeness and adherence to current survey standards;

* Review and evaluate local historical sources and other pertinent information such as surficial and bedrock geology, USDA soil maps, historic period maps, USGS maps (current and past editions), aerial photographs, and publications available at local and state repositories, as well as available information from the Inventory of Historic and Archaeological Assets of the Commonwealth at the MHC (including archaeological reports of professional surveys).

* Interview local historians (including the local historical commission in each community), "canal buffs", and other knowledgeable persons, including members of the New Haven and Northampton Canal National Register Nominating Committee for information relating to the Canal route, known and potential sites and important issues.

- conduct initial research and reconnaissance survey to verify the types and geographical distribution of cultural and archaeological resources in the Canal corridor, and to develop criteria for selecting properties to be included in the survey.
- Identify areas where the location of the canal route and associated resources cannot be identified with certainty on tax assessors maps and begin parcel-level deed research of these locations.

PRODUCTS:

* Application for State Archaeologist's permit.

* working map(s) of the Canal corridor to be surveyed, and large scale base map(s) to be used to identify inventoried properties:

* methodology statement incorporating:

1. summary of survey objectives, including a brief description of the boundaries of the study area, and assessment of existing documentation
2. criteria for selecting properties for survey;
3. procedures to be followed in the survey and form of products to be created;
4. expectations about the kind, number, location, character, and condition of historic properties to be recorded; and
5. bibliography

Phase I will be completed by _____.

PHASE II (13 weeks)

Tasks:

* Conduct documentary research to identify important historic themes, events, sites and persons for the Middlesex Canal corridor;

* Continue parcel level deed research to accurately locate the route of the canal and associated resources on tax assessor's maps in all towns along the canal corridor.

* Apply selection criteria and prepare a list of specific resources to be surveyed (organized by town and canal segment, with street address where appropriate), identifying any State Register of Historic Places properties to be included in the survey;

* Prepare narrative history outline, with particular attention to substantially augmenting the information already available in the 1980 feasibility study, and with reference to specific properties and sites subject to the survey;

* Complete representative draft inventory forms for different resource types and archaeological sites;

* Meet with MHC staff, project coordinator and the project committee to review resource lists, draft forms, and narrative history outline.

PRODUCTS:

* List of all areas, properties and sites to be surveyed, arranged alphabetically by town

and by street address;

* Outline of narrative history;

* Outline of reconnaissance archaeological report, including a brief summary of research results;

* Representative draft inventory forms.

Phase II will be completed by _____.

PHASE III (16 weeks)

TASKS:

* Conduct intensive research of properties selected for inventory;

* Complete draft narrative history for the New Haven and Northampton Canal that establishes a context for the resources being surveyed;

* Prepare MHC inventory forms with photographs and sketch maps (forms for any surveyed properties listed in the State Register of Historic Places must be marked at the top front with the appropriate designation code and date);

* Prepare draft reconnaissance archaeological report;

* Apply National Register criteria to inventoried areas, properties and archaeological sites;

* Prepare a draft list of all contributing areas, properties and archaeological sites potentially eligible for National Register nomination;

* Submit draft narrative history, inventory forms, and National Register recommendations to MHC, local project coordinator, and the project committee for review and comment(comments to be incorporated during Phase IV).

* Submit a draft map of the New Haven and Northampton Canal corridor identifying the known or potential location of the Canal prism components and related archaeological sites, extant buildings, structures, objects, landscape features and/or areas.

PRODUCTS:

* Draft narrative history.

* Draft reconnaissance archaeological survey report.

* Unnumbered inventory forms with photos and sketch maps for areas, buildings, objects, sites, burial grounds, structures, and parks/landscapes.

* Draft list of all potentially contributing areas, properties and sites for National Register

nomination.

* Draft map of New Haven and Northampton Canal Resources.

Phase III will be completed by _____.

PHASE IV (6 weeks)

TASKS:

* In consultation with MHC survey and MACRIS staff, develop lettering and numbering system for inventoried properties and add inventory letters/numbers to forms;

* Complete narrative history, incorporating review comments and inventory numbers of surveyed properties where appropriate;

* Prepare final archaeological reconnaissance report and management recommendations, incorporating comments on draft report. The report must also include a copy of the project base map;

* Prepare final list of all areas, properties and archaeological sites recommended as contributing members of a potential National Register New Haven and Northampton Canal District, incorporating review comments where appropriate;

* Complete National Register Criteria Statement forms to be attached to appropriate inventory forms;

* Prepare base map(s) identifying inventoried areas, properties and archaeological sites;

* Prepare street index of inventoried areas and properties;

* Prepare lists of further study recommendations.

PRODUCTS:

* Numbered MHC inventory forms for areas, buildings, objects, sites, burial grounds, structures and parks/landscapes(two sets with original black and white photographs: one for MHC, one for the New Haven and Northampton Canal Association). Sets for the New Haven and Northampton Canal National Register Nominating Committee and MHC must be on 24 lb. Bond paper of at least 25% cotton fiber content.

* Large-scale base map(s) with all inventoried areas, properties and archaeological sites identified by inventory number (two sets: one for the New Haven and Northampton Canal National Register Nominating Committee, one for the MHC).

* Survey Final Report (four *paginated, unbound* copies: six for New Haven and Northampton Canal National Register Nominating Committee, two for the MHC) which includes all components of the final archaeological reconnaissance report and the following sections:

1. Methodology statement, including survey objectives, assessment of previous research, selection criteria, procedures followed in the survey, description of products and accomplishments, and an explanation of how results of the survey differed from expectations developed during Phase I;

2. Narrative history;

3. Street index of inventoried areas and properties, organized by town. Areas for each town will be listed separately at the beginning of each town list, arranged alphabetically by area name. Individual inventoried properties follow, arranged alphabetically by street name. Property name (if any) and inventoried number also will be included in this list;

4. Final list of recommendations for areas, properties and sites to be included as contributing members of a New Haven and Northampton Canal District to be nominated to the National Register of Historic Places;

5. Further study recommendations; and

6. Bibliography.

*** The Survey Final Report must identify the repository/office where completed survey documentation (inventory forms, base maps, and final report) will be made available to the public. The repository must also ensure the confidentiality of archaeological site forms and maps depicting the locations of archaeological sites.

Phase IV (final phase) will be completed and submitted to the New Haven and Northampton Canal National Register Nominating Committee and MHC by _____.

Northampton-New Haven Canal, National Registration Committee

Senator John F. Kerry
One Bowdoin Square, 10th floor
Boston, MA 02114

May 24, 2005

Dear Senator Kerry:

A committee, comprised of representatives from the Northampton, Easthampton, Southampton, Westfield, and Southwick Historical Commissions has formed, with its goals being:

1. The placement of the Massachusetts section of the New Haven - Northampton Canal on the National Register of Historic Places,

2. The preservation of what currently remains of the canal's original footprint, and

3. The establishment of an awareness of the historical significance of the canal to New England in terms of economy, technology, and transportation.

The Committee undertook this task since it felt the canal was significant for the following:

* The New Haven-Northampton Canal holds a place of significance, not only locally and regionally, but also in the broad fabric of our nation's history. The building of the canal, during our nation's Canal Era was the single greatest undertaking of its kind in New England, covering 80 miles from New Haven, CT to Northampton, MA.

* The Connecticut segment of the canal is already listed on the National Register; therefore, the committee feels that the listing of the Massachusetts segment would make the National Register listing more complete as it is felt that the entire canal route is a significant national historic resource.

* The committee understands that this canal played a role in the Underground Railroad System. Sites known through oral history as stations are located in close proximity to the canal.

* The construction of the canal was a major engineering feat for the region. For example, there were 28 Connecticut and 32 Massachusetts locks constructed along the eighty miles, lifting a

northbound boat a total of 292 feet, and lowering it 213 feet before completing the journey into the river at Northampton. Also, at the Congamond Ponds, a floating bridge, 700 feet long, was constructed which served as the towpath.

* Since there are several sites still visible of the original canal in each of the communities, the committee feels that inclusion on the National Register would be a means to preserve these sites for future appreciation of the canal's contribution to commerce in New England. Already on the National Register are: The Lyman Mill, Canal Storehouse and Inn in Southampton, and the Clapp Tavern in Easthampton.

The New Haven - Northampton Canal Committee brings this to your attention in the hopes that you would assist favorably, future endeavors that this committee undertakes in working toward achievement of the aforementioned goals.

Sincerely,

Representing the Northampton Historical Commission
Christopher A. Kennedy

Representing the Easthampton Historical Commission
Roma T. Donais

Representing the Southampton Historical Commission
Richard W. Ahart

Representing the Westfield Historical Commission
John M. Knapik

Representing the Southwick Historical Commission
Barbara MacEwan

For further clarification or information, feel free to contact Barbara MacEwan in Southwick at Historical Commission, Town Hall, 454 College Highway, Southwick, MA 01077 or John Knapik at Historical Commission, City Hall, 59 Court St., Westfield, MA 01085.

PLEASE READ:

Northampton-New Haven Canal, National Registration Committee

Nice work John! OK

May 24, 2005

Dear Fellow Committee Members:

Enclosed are ten copies of the letter that we are sending to our common legislators, state and federal. On page two of each is a section for our collective signatures. Please locate the line above your name and sign. Upon signing 10 times, package the 10 letters inside the large 9X12 clasp envelope with the name of the next person on the list. Enclose in the envelope, the signed letters, the remaining addressed 9X12 envelopes, and this letter. The envelope in which <u>you</u> received the letters may be discarded.

The list of members to sign:

1. John Knapik, Westfield ✓
2. Christopher Kennedy, Northampton ✓
3. Roma Donais, Easthampton
4. Richard Ahart, Southampton
5. Barbara MacEwan, Southwick

For example, I signed the letters first. I am sending the package to Chris Kennedy, and he will send them to Roma...and so on. Barbara will receive the letters last and will affix her signature on each, thus completing the signing process. Barbara will have received the package from Richard Ahart.

It is hoped that our respective Commissions will be able to provide the postage at each step.

Any questions or comments along the way....contact me at 568-3011. Please try to move these letters along in a prompt manner.

Sincerely,

John Knapik

Technical Memorandum

New Haven and Northampton Canal
Southwick, Westfield, Southampton, Easthampton, Northampton, and Russell, Massachusetts
Preliminary Scoping for Pilot Study

PAL NO. 2017

February 23, 2006

Submitted to:
Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, MA 02125-3314

Introduction

This Technical Memorandum, which was prepared for the Massachusetts Historical Commission (MHC), presents the results of PAL's preliminary scoping for a pilot study of the New Haven and Northampton Canal to support the future goal of listing the canal in the National Register of Historic Places (National Register). This memo identifies a pilot study area and proposes a survey methodology that will be tested in the subsequent pilot study phase for the future documentation of canal resources. The purpose of the pilot study is to complete data collection, analysis and reporting of historic and archaeological resources within the selected pilot study area as a test of methodologies for future canal surveys and National Register nomination efforts.

The New Haven and North Hampton Canal was constructed between 1826 and 1834 and operated until 1847. The canal is almost exactly 30 miles long between its southern point in Southwick and its northern terminus in Northampton. The New Haven and North Hampton Canal route passes through the communities of Southwick, Westfield, Southampton, Easthampton, Northampton, and Russell, Massachusetts.

Project Information

In 2002, consultants Raber Associates (Raber), at the request of the New Haven and Northampton Canal National Register Nominating Committee (NRNC) produced the *Survey and Inventory of the Hampshire and Hampden Canal (New Haven and Northampton Canal) for A Proposed National Register of Historic Places Nomination* (Raber 2002). The intent of this document was to provide the NRNC with a list of National Register-eligible resources, criteria for their selection, and a written narrative context in a format compatible with the Section 7 description of a National Register nomination (Raber 2002:1).

After review of the Raber study, the MHC made suggestions for the revision of boundary establishment procedures based on updated survey methodologies. In July 2005, the NRNC met with representatives of the MHC and interested parties from the Pioneer Valley region. The revised scope that was prepared by the MHC and provided to the NRNC addressed the overall goal of nominating the entire Massachusetts portion of the canal to the National Register. NRNC members were concerned that a one-time survey was financially impossible and that elements of the Raber report should be reused to avoid duplication of

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effort. They also wanted to ensure that any National Register methodology could allow for volunteer contributions.

In light of NRNC concerns, the MHC decided that a small pilot area would be selected for an initial survey so that new areas for research might be identified, revisions to the scope and survey methodology be made, and potential for volunteer involvement assessed. Consultants would be engaged for this portion of the project to evaluate what parts of the scope provided by the MHC had been completed and what remained. This initial pilot project and the selection of the consultants would be funded and overseen by the MHC.

This preliminary scoping is the first step in the pilot study. It includes a review and assessment of existing information and research reports, a discussion of criteria used in the selection process for the pilot area, the selection of a pilot area, a description and map of the pilot area with a justification for the choice, and recommendations for methodologies to be used in the pilot study as a test for subsequent survey efforts that will develop National Register-level documentation of the canal. It is anticipated that the remainder of the pilot study will be undertaken following completion of the preliminary scoping.

Review of Existing Information

Summary of Raber Associates Report

The report prepared by Raber Associates in 2002 (Raber 2002) contains a brief engineering and construction history, an overview of the New Haven and Northampton Canal route and features, study procedures, a summary of the proposed district boundary and content, and supporting materials that include USGS quadrangle maps of the proposed National Register district, selected photographs, a table of identified canal-related features, and a description of intact canal-related features organized by mileage points beginning at the Connecticut-Massachusetts border.

The Raber report, which was intended to be used for Section 7, Description of a future National Register nomination, utilized the previously successful methodology and criteria of the Farmington Canal National Register nomination (Raber 1984). Because of NRNC budget limitations, only the Section 7 material was produced. A canal history narrative and a significance statement were not provided for the Section 8, Significance required in a National Register nomination. No Universal Transverse Mercator (UTM) coordinates based on the USGS maps were provided.

In applying the methodology of the Farmington Canal National Register nomination, Raber Associates defined the boundary of the proposed New Haven and Northampton district as a series of discontiguous sections that conformed to the footprint of the canal prism or other engineering features. The two criteria employed for the district bounds were that "both sides of the prism are substantially intact, visually indicating the full profile as well as the course of the canal; and no later intrusions significantly detract from this visual indication" (Raber 2002:4).

The Raber report was produced with the assistance of independent scholar Carl E. Walter, who has reviewed "almost all available sources on the canal" (Raber 2002:1). A review of the Raber bibliography and an interview with Carl Walter reveals that Walter's primary role was as field guide for Raber as he documented and mapped the canal route (C.E. Walter interview with J. Daly and M. Kierstead, 12 December 2006). Raber's brief bibliography is chiefly composed of previously reported research for the National Register nomination of the Farmington Canal (the Connecticut portion of the New Haven and

Northampton Canal), other cultural resource surveys, local historical society materials, and secondary resources documenting Hampshire County history, the canal, and the railway that supplanted it.

Raber also called upon members of the NRNC to identify and make available materials from town historical societies along the canal route. An interview with Barbara MacEwan, Southwick Historical Commission chairperson and NRNC coordinator, indicates that few of these resources were used by Raber at the time of their compilation due to budget constraints and that they were stored by each town in anticipation of future efforts to complete a National Register nomination (MacEwan 2006). This material will need to be evaluated for its usefulness in the completion of MHC or National Register forms during the pilot study.

Summary of Carl E. Walter Research

Canal enthusiast and independent scholar Carl E. Walter has made an exhaustive 14-year study of the New Haven and Northampton Canal using state and local archives. This research resulted in three major products. 1) Walter used narrative information about the canal's course from a newspaper article to create hand-drafted technical drawings that show the trajectory of the canal, 2) owners at the time of canal construction, and 3) speculative property bounds (Hampshire Gazette 23 May 1827: Supplement; Walter 2006). These drawings are not available to the public. Walter also employed the takings lines to plot the canal route onto the earliest available United States Geological Survey quadrangles (Walter 2006). These maps have been professionally printed and are available for purchase at various local historical societies. The canal route is color-coded to indicate where the canal and associated structures are still visible. A brief historical overview of the canal and various images of the canal accompany the map, but there are no bibliographical references. Walter's final research product, currently in draft form, is a multi-media computer presentation that links a canal map with thousands of documentary items, including historic and contemporary views of the canal, technical drawings, correspondence, and various ephemera. Within the program, citations associated with particular documents are provided but there is no comprehensive bibliography contained within one file. This presentation is accessible only by Walter, is not shared with the general public or other researchers without Walter present, and is not available as a digital file.

Walter has not written a comprehensive history of the canal, nor has he compiled any historiography or bibliography for his research. His willingness and capacity to either identify bibliographical resources for other researchers or to freely share resources from his own collection will impact both the pilot survey and future efforts to nominate the New Haven and Northampton Canal to the National Register.

Other Resources Consulted

PAL also consulted other National Register and planning documents in the region to evaluate various methodologies employed to map and record canals. These included the *Blackstone Canal Historic District National Register of Historic Places Nomination, Massachusetts* (Adams 1995), the *Middlesex Canal Comprehensive Survey Phase IV Survey Report* (Adams and Kierstead 1999), and the *Farmington Canal National Register of Historic Places Inventory-Nomination Form* (Raber 1984).

Additionally, the *Blackstone Canal Preservation Study* (Vanasse Hangen Brustlin, Inc. [VHB] 2005) and involved staff were consulted. VHB was contracted to provide the study as a part of the Blackstone River Valley National Heritage Corridor Commission's (BRVNHCC) mission to promote the preservation and interpretation of historic resources in the River Valley. As a part of this study, VHB used the 1995 *Blackstone Canal National Register Nomination* assessor maps in conjunction with aerial photography

and interviews to map the Blackstone Canal onto aerial photographs within a Geographic Information System (GIS) format. These maps were broken out on a town-by-town basis and canal path was color-coded according to the canal's integrity. A part of the planning study, smaller areas of special interest were mapped onto enlarged aerial photos and publicly-owned parcels were identified and delineated.

Assessment of Existing Mapping

Mapping the New Haven and Northampton Canal route and features to the level of ownership and boundary specificity required for National Register nomination, i.e., on assessor's parcel maps, will be a key to the successful outcome of the pilot study and future National Register nomination efforts. Previous instances of canal parcel mapping for preservation purposes were facilitated through the use of historic resources that showed the as-built location of their respective canals. The 1995 *Blackstone Canal National Register Nomination* utilized the Phelps 1829 Map of the Canal, while the *Middlesex Canal Survey* made use of canal boundaries that had fortuitously persisted onto contemporary assessor parcel maps.

No such map exists for the New Haven and North Hampton Canal, and neither Walter's nor Raber maps has generated lists of current town assessor map parcels that could be used in any future National Register nomination. However, the town of Southwick's Cultural Inventory Map, prepared as part of its Community Development Plan, does utilize parcel based mapping of the canal. This map, which was prepared by landscape architecture and planning firm Dodson Associates, Ltd., of Ashfield, MA with mapping assistance from University of Massachusetts students and in cooperation with the Pioneer Valley Planning Commission (PVPC) and the Commonwealth of Massachusetts Office of Geographic and Environmental Information (MassGIS) locates the approximate canal route on assessor parcels within the town of Southwick (Dodson Associates, Ltd. 2003). The source for this map was a 1:24,000 USGS map of the canal provided in Michael Raber's report, which was scanned and imported into a GIS format by Dodson Associates. Dodson Associates then made corrections to the course of the canal using MassGIS orthophoto data where possible. PAL's review of the parcel level information indicates that it is well documented, appears reasonably accurate for the purposes of the pilot study, and is suitable for future GIS mapping of the canal. However, the accuracy of the canal route as shown is questionable because of problems of scale width of the canal and because the USGS maps used as a source were approximations of the canal's center line as made by Michael Raber (Flinker 2007; Raber 2002:5).

Using parcel information from Southwick's Cultural Inventory Map NRNC undertook an experimental sample deed history for one parcel and found that it took two days to document New Haven and Northampton Canal ownership or occupancy. Because of the time-intensive nature of this process, it is not recommended except as a last resort for parcel-level mapping of the canal.

Pilot Study Area

Selection Criteria

The purpose of the pilot study area is twofold. First, the area selected should test the survey methodology as recommended by PAL and concurred in by the MHC for its applicability to the New Haven and Northampton Canal. Second, the pilot area should provide an opportunity to trouble-shoot and fine tune the suggested methodology so that future work may be completed by the NRNC or an independent consultant. The following criteria have been developed to guide the selection of the pilot study area:

- Integrity of resource
  - Integrity may fall into one of two categories: there should be a significant quantity and density of identified features and canal prism, or the area should be urban and developed with little expected visibility of canal features. Parcel research and data collection methods need to be tested in both types of sections.
  - Where features are visible, they should exist at various levels of integrity so that issues pertaining to boundary definition and identification of potential archaeological sites may be addressed.
- Serviceability of pilot study area for testing research methodology
  - Local archival resources for the pilot study area should be available so that completeness of the current bibliographical record may be tested against local historical society and/or town archive holdings.
  - Boundaries of the pilot study area should be contained within one town to simplify assessor record access.
  - The pilot study area should allow for testing of both parcel mapping strategies outlined in the Methodology section below.

Selected Pilot Study Area

The New Haven and North Hampton Canal route includes rural and urban environments and visible and non-visible sections. This range of field conditions and visibility requires two distinct field survey and mapping methodologies for locating the canal at the parcel level. Therefore, two pilot study areas, one rural and one urban, are proposed so that both methodologies may be adequately tested and evaluated.

The boundaries of both pilot study areas are defined as corridors aligned on the centerline of the canal and extending out 50 feet to either side, which encompasses the minimum width of the typical canal trench, berm, and tow path. The study area will be wider where there are canal-related features such as basins, cross over bridges, etc., as well as at the location of mills that used the canal for industrial purposes after it closed. Although the expanded study area will follow the boundaries of properties through which the route traverses, lines of convenience will be used that are no wider than 100 feet (Raber 2002:3, 5).

Pilot Study Area One is a 1,300 foot-long section of the New Haven and Northampton Canal spanning the distance from Lock No. 2 to Lock No. 6 within the town of Southwick (Figure 1). It begins about 200 ft in from the north side of Long Yard Road and runs behind (north of) houses that front Long Yard Road in a rural, residential area. It possesses a good overall level of integrity and contains a high density and variety of visible canal features at the southern end of the canal route where the density of canal features and of identifiable prism sections is generally highest. GIS mapping exists for the canal route area in Southwick, and the community is deeply engaged in the efforts to nominate the canal.

South Long Yard Rd.

Pilot Study Area Two is a 2,100 foot-long section of the New Haven and Northampton Canal located in the city of Westfield (Figure 2). It extends from the south shore of the Westfield River to the western abutment of the Conrail Line over Route 20. This is an urban, built up area where the canal is not visible. Westfield has a complete range of GIS map datasets available, including assessor's parcels. Additionally, historic maps of the area have been identified which can be used in conjunction with documentary information to locate the canal on contemporary parcel maps.

Pilot Study Recommended Methodology

PAL has developed a recommended methodology for the New Haven and Northampton Canal Pilot Study based on the project objectives, existing documentation of the canal, and successful methodologies used for other canals. The level of documentation proposed in this methodology for canal-related features will include an archaeological assessment, MHC Area forms, and assessor parcel-level mapping for each of the two pilot study areas. Where the tasks involve bibliographical research, the amount of work required will be contingent on Walter's and the NRNC's levels of participation.

The pilot study methodology will focus on researching and field recording visible historic and archaeological canal-related features that fall into one of the following categories:

- canal route,
- canal prism (trench, berm, and tow path),
- locks and cross over bridges,
- engineered and natural features that were integral to the canal's design and function (such as feeder streams),
- mills that specifically used the canal for industrial purposes,
- toll keepers houses and any buildings related to the period of canal operation as a transportation route.

This methodology builds on existing documentation of the canal in the following ways:

- Expands the canal bibliography with sources provided by Walter and local historical societies or identified by the consultant;
- Aligns nominated canal area boundaries with assessor's parcel bounds;
- Identifies, researches, and records canal-related archaeological sites and sensitive areas;
- Identifies, researches, and records canal sections and other resources not recorded by Raber Associates because they did not match the stated criteria for inclusion; and
- Identifies, researches, and records historic resources that are not strictly elements of the canal structure but that used the canal for industrial or other purposes.

Phase 1 Data Collection

Phase 1 will include research and field work data collection for each of the two pilot study areas.

Research

The research data collection tasks will include:

- Review of MHC inventory, site, and National Register files to collect information on previously recorded resources;
- An effort to coordinate with Carl Walter for use of his research materials;
- Collection of information already assembled by the local historical society;
- Identification of additional documentary resources or repositories;
- Collection of pertinent geological and environmental information;
- Collection of historic maps, USGS maps, and aerial photographs;

- Organization by community of existing narrative and location information about canal sections and features;
- Receipt of Assessor's maps from the community (digital GIS files and one set of 11x17"hard copies);
- Development of a preliminary list of themes, events, and persons important to the history of the canal.

Field Work

Prior to conducting fieldwork, NRNC will need to obtain landowner permission for PAL staff to access private properties included in the pilot study areas. PAL will provide NRNC with a brief description of the fieldwork that will be undertaken on the specific private property/street address. This description will need to be provided to the property owner in writing by NRNC on committee letterhead or local historical commission letterhead in the context of the overall project. Landowner permission must be obtained in writing before PAL will enter onto any private property included in the study area.

The fieldwork data collection tasks will include:

- A field visit by a multi-disciplinary technical team to map the canal route and related features, including landscape elements (ponds, basins, feeder streams, etc.), standing buildings, and any visible structural remains and artifact scatters/concentrations that would indicate the presence of archaeological sites/sensitivity areas) onto assessor's parcel maps.

- The appearance, dimensions, and features of the canal and canal-related features will be recorded, in mapping, narrative notes and tabular format, and digital photographs will be taken. It is expected that most known or visible engineering features pertaining specifically to the canal have been identified by Walter or Raber; however additional canal–related resources that are visible in the parcel/study area boundaries will be identified and included in the survey. No archaeological subsurface testing will be conducted as part of the pilot study fieldwork.

- Any historic (50 years old or greater) above-ground resources that fall within a study area parcel but are not canal-related will be noted in the field and photographed. Construction date will be estimated based on visual analysis.

- Mapping of the New Haven and Northampton Canal on a parcel basis presents a special challenge because boundaries of the canal are not consistently preserved on contemporary assessor's maps and no historic maps of the as-built canal route exist. PAL recommends an approach that tests two mapping strategies developed for the difference in selected study area conditions.

  Pilot Study Area One, Southwick. The canal prism is open and visible in this selected study area. Field mapping of the canal route and related infrastructure and features will be recorded using a handheld Global Positioning System (GPS) unit o The GPS resource points including the visible centerline of the canal prism will then be plotted onto the town assessor's maps using the available GIS database by the PAL GIS technical specialist. This information will be used to define the study area for the MHC Area Form that will be produced by PAL. It can also then be used to develop parcel-level boundaries for the future NR nomination of the canal.

CT Archives
photos
1930s
? Photographer

Figure 1. New Haven and Northampton Canal Pilot Study Area One, Southwick, MA.

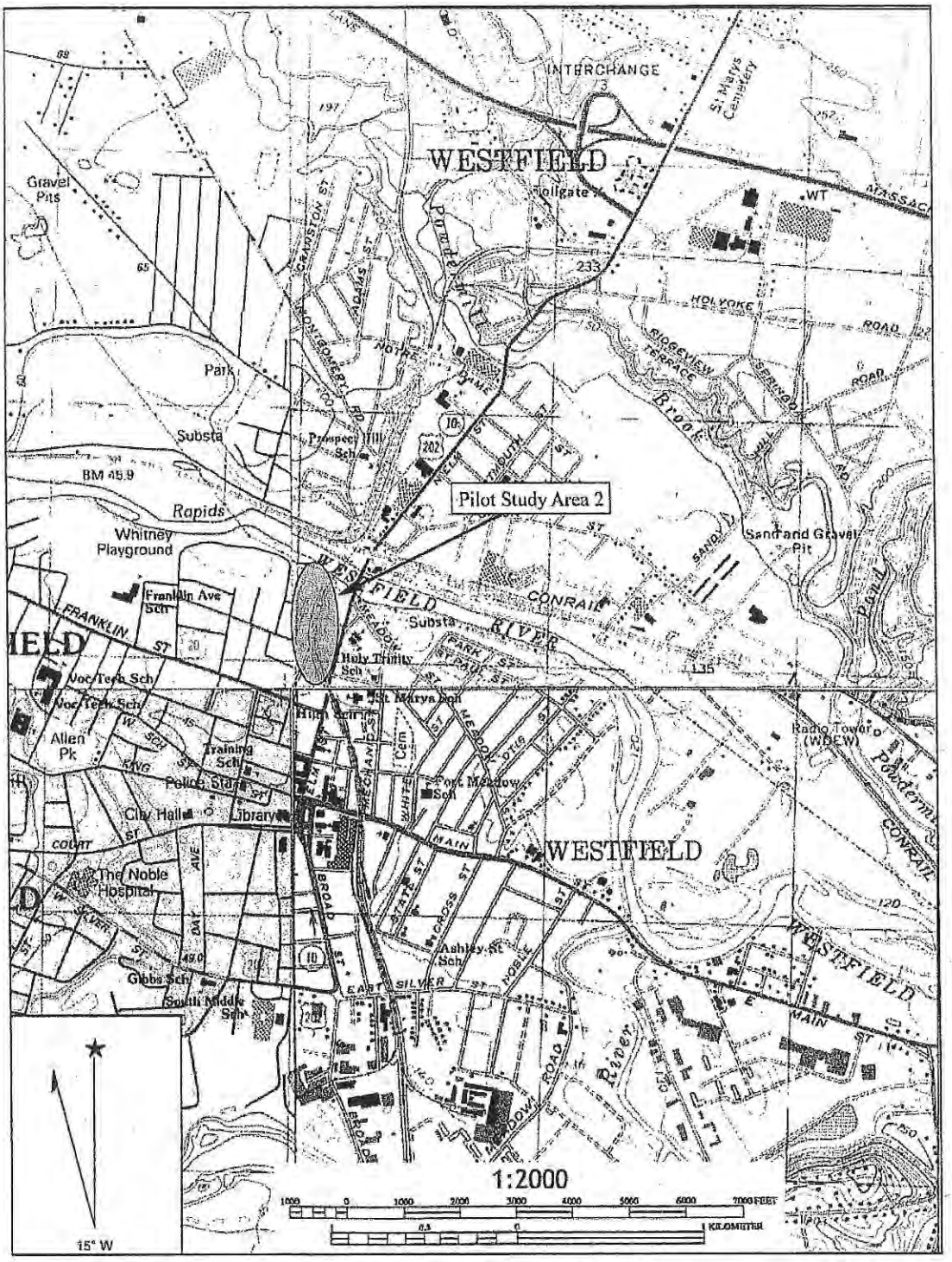

Figure 2. New Haven and Northampton Canal Pilot Study Area Two, Westfield, MA.

Pilot Study Area Two, Westfield. This selected study area does not have any known or visible remains of the canal and related features. Prior to conducting fieldwork, available historical and contemporary documentary sources will be georeferenced with the town's GIS assessor's maps to determine the historic canal centerline in relation to the parcel-level boundaries. The documentary material will include where possible the original surveyor's takings line, Walter's research, any relevant historical maps of the canal route through the town, and aerial or satellite photography. The study area corridor will be plotted onto the assessor's maps to facilitate the location and recordation of visible canal-related resources in the field. GPS points will be taken of all visible indicators of canal-related resources, and these points will be plotted onto the town's GIS assessor maps and the information used in the same manner described above for Pilot Study Area One.

In addition to the above-described research and fieldwork, one property from Pilot Study Area Two will be chosen for parcel-level deed research to confirm ownership by the New Haven and Northampton Canal company and to ascertain the validity of the Pilot Study methodology. The deed research will be conducted at the Hampden County Registry of Deeds in Springfield, MA.

Phase 2 Draft Summary Report

Phase 2 of the pilot study will result in the production of one Draft Summary Report for both pilot study areas with accompanying maps and supporting information. Tasks that will be conducted during this phase include:

- Limited additional documentary research as needed for specific canal-related features;
- A methodology statement that presents the original approach and a summary of lessons learned;
- An outline for a future comprehensive historical narrative and significance statement for the canal connecting the New Haven and Northampton Canal to larger themes of historical and architectural development;
- Two MHC Area "A" Forms including a description and a history and chronology, one for each of the two pilot study areas;
- A description and assessment narrative of visible canal-related archaeological sites and sensitivity areas for each of the two pilot study areas, and preparation of archaeological site forms as needed;
- Any historic (50 years old or greater) above-ground resources that fall within a Study Area property parcel but are not canal related will be included in the Area Form with street address and building designation noted;
- A bibliography;
- A GIS and parcel map of the canal route and associated features within each of the two pilot study areas;
- Digital photographs of the pilot study area and individual resources;
- A data sheet for each pilot study area including map number, MHC number, name, community, location, date of construction, visibility, National Register status, photograph number, and UTM coordinates;
- An assessment of the pilot study and recommendations for implementing the methodology, including the CAD/GIS geoferencing and mapping techniques, the multi-disciplinary

approach, and the use of volunteers for future nomination of the canal to the National Register by the NRNC or other organizations.

Phase 3 – Final Summary Report

Phase 3 of the pilot study will involve developing an MHC and MACRIS-approved lettering and numbering system for inventoried properties, finalizing MHC forms, data sheets, and maps; and preparing the Final Summary Report.

List of Figures

1. New Haven and Northampton Canal Pilot Study Area One, Southwick, MA.
2. New Haven and Northampton Canal Pilot Study Area Two, Westfield, MA.

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Walter, Charles E., phone interview with John Daly, industrial projects assistant, PAL, 20 February 2007.

ATTACHMENT A: PROJECT SCOPE OF WORK

PILOT STUDY FOR NEW HAVEN AND NORTHAMPTON CANAL CORRIDOR MULTI-COMMUNITY SURVEY PROJECT

This Pilot Project is designed to support ongoing efforts of the New Haven and Northampton Canal National Register Nominating Committee to survey the New Haven and Northampton Canal and related resources in their entirety in Massachusetts and to list the Massachusetts components of the Canal on the National Register of Historic Places. The Pilot Project follows the findings and recommendations of a Preliminary Scoping Project, which was designed in part to identify the Pilot Project survey area(s). The Pilot Project is designed to survey a segment of the canal to a) identify and evaluate existing canal related research on the survey area; b) identify visible extant and expected canal related resources in the survey area; and c) based on the survey findings, develop a methodology for accurate identification and significance evaluation of the canal and canal-related resources in all the remaining Massachusetts segments. Findings of the Pilot Project are expected to provide the Committee and the MHC with a basis for phasing, scoping, and budgeting remaining work necessary to meet the Committee's goals, and to evaluate the role and potential of contributed effort to achieving these goals.
Specifically, the Pilot Project is designed to examine survey area(s) defined by town boundaries or other criteria to establish and test a methodology for determining the location of the canal and canal-related features to a parcel level of accuracy that will meet the requirements of a National Register nomination.

The preliminary scoping project (PAL, 2007) was designed to identify the pilot project area(s). To accomplish that goal, existing information about the canal was reviewed, including information contained in the Raber report (2002) and research assembled by Carl Walters, to determine how to use and extract relevant canal information to select the pilot area. The preliminary study also included interviews with Carl Walters and members of the New Haven and Northampton Canal National Register Nominating Committee. Limited fieldwork was also performed to provide a basis for selecting the pilot area(s). The results of the preliminary scoping project are summarized in a technical memorandum that includes the following:

1. A preliminary assessment, including bibliography, of existing information about the canal including the Raber report (2002) and canal related work of Carl Walter.
2. A discussion of criteria used in the selection process for the pilot area(s).
3. Selection of two pilot project areas, one in Southwick with visible canal resources, and the other an urban, built-up area in Westfield where the canal is not visible. A description and discussion why these were chosen is also included.
4. Maps of the pilot project areas.
5. Recommendations for the pilot study.

MHC has previously prepared a comprehensive scope for a survey aimed at collecting the information necessary to locate, describe, and evaluate the National Register eligibility of the canal and prepare the National Register nomination. The New Haven-Northampton Canal National Register Nominating Committee intends to complete the general format of tasks and products outlined in that scope in a phased approach following a time frame and budget as its resources allow. Scopes for this pilot study and the preliminary scoping project were developed with reference to the original comprehensive survey scope.

The Committee should identify a project coordinator prior to commencement of the pilot project, and a start-up meeting should be held at the beginning of the pilot project.

Pilot Project Objectives

The purpose of the project will be to conduct a pilot study that includes a comprehensive descriptive inventory of canal related cultural resources and their significance in two Pilot Study areas; one in Southwick, the other in Westfield. The pilot study will test the scope and methodology designed for the entire canal on these smaller, pilot areas of the canal identified in the Preliminary Scoping Project Technical Memorandum. The pilot study will incorporate recommendations made for the scope and methodology in the technical memorandum for the preliminary scoping project. The project will be structured to provide the planning information and research methodology needed to enable the New Haven and Northampton Canal National Register Nominating Committee to undertake a future comprehensive survey project of the canal in its entirety. The Committee is composed of representatives from six towns (Southwick, Westfield, Southampton, Easthampton, Northampton, and Russell) located along the route of the canal in Massachusetts. The Massachusetts Historical Commission will act as contractor for this pilot study survey. Specific project goals include the following:

1. To incorporate the results and recommendations of the preliminary scoping project and conduct a comprehensive survey of cultural resources, including archaeological sites, of two segments of the New Haven and Northampton Canal, using the Massachusetts Historical Commission (MHC) survey methodology and inventory forms;

2 To follow an organizational framework that divides the canal route and resources into segments by town

3. To write an outline for a future comprehensive historical narrative and significance statement for the canal connecting the New Haven and Northampton Canal to larger themes of historical and architectural development;

4. To apply the National Register criteria to all resources identified in the survey;

5. To develop a multi-town map to be depicted on town assessor's maps that identifies the Canal prism, feeder system, associated archaeological sites, and extant above-ground resources at the parcel level.

6. To prepare a professional archaeological reconnaissance survey report meeting the standards of 950 CMR 70.14 and the Secretary of Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 190).

B. Methodology

The Analytical Framework:

The pilot study will incorporate the results and recommendations of the preliminary scoping project (PAL, 2007).

The pilot study must use MHC criteria and methodology, to current standards. See MHC's *Historic Properties Survey Manual: Guidelines for the Identification of Historic and Archaeological Resources in Massachusetts* (1992) and *Survey Technical Bulletin #1* (1993). Both MHC survey guidelines and the tasks and products of the survey Scope of Work meet the Secretary of the Interior's *Standards and Guidelines for Identification* (1983, copies available from the MHC). The identification of archaeological resources and reporting must use MHC criteria and methodology to current standards. See MHC's *Public Planning and Environmental Review: Archaeology and Historic Preservation, State Archaeologists Permit Regulations* (950CMR 70.00), *The Protection of Properties Included in the State Register of Historic Places* (950 CMR 71.00), *Historic Properties Survey Manual: Guidelines for the Identification of Historic and Archaeological Resources in Massachusetts* (1992), and *Guide to Prehistoric Site Files and Artifact Classification Systems* (1984). These publications are all incorporated into this scope by reference.

The MHC criteria for conducting a comprehensive survey are designed to identify the full range of cultural and archaeological resources. There are many components of the Canal's historical development that are associated with the location and type of surviving cultural and archaeological resources. A survey should therefore relate cultural and archaeological resources to historic patterns of canal construction, usage, and related economic development.

The *MHC Reconnaissance Survey Town Reports* for the towns along the New Haven and Northampton Canal route, unpublished research materials compiled by Carl E. Walters, the 2002 *Survey and Inventory of the Hampshire and Hampden Canal (New Haven and Northampton Canal) for a Proposed National Register of Historic Places Nomination*, the *Technical Memorandum, New Haven and Northampton Canal Preliminary Scoping for Pilot Study*, and past National Register nominations of scattered New Haven and Northampton Canal sites, will provide a preliminary framework and base of information for this analysis. MHC's *Historic and ArchaeologicalResources of the Connecticut Valley (1984),* existing information in the *Inventory of Historic and Archaeological Assets of the Commonwealth* and *National Register of Historic Places Nominations* for Canal corridor communities may also provide additional contextual and predictive information on the potential for surviving resources.

Individual archaeological, building, structure, object and/or landscape forms, area forms and the narrative history will expand upon the information in the studies referenced above and will relate inventoried properties to the significant themes in the historical development of the New Haven and Northampton Canal.

The survey will incorporate the results of earlier survey efforts whenever appropriate. Specifically, the study will incorporate field survey, cartographic, interview, and historical results contained in *Survey and Inventory of the Hampshire and Hampden Canal (New Haven and Northampton Canal) for a Proposed National Register of Historic Places Nomination* (2002) and preliminary scoping project. The present study will build on the results of the earlier research identified above incorporating parcel-level deed research when necessary to delineate an accurate route of the canal on tax assessors maps. The geographical focus of the pilot study will be two segments of the canal in the towns of Southwick and Westfield identified by the preliminary scoping project. The survey will produce all historic, cartographic, and survey results necessary in each Pilot Study area to complete a National Register Nomination for the New Haven and Northampton Canal. The pilot study will develop an appropriate methodology that will attain parcel level identification of the canal route suitable to support a National Register nomination of the canal in its entirety. The New Haven and Northampton Canal Nominating Committee will

complete the survey of the remaining canal route and a National Register Nomination as separate tasks subsequent to the completion of this pilot study.

Project Overview:

The pilot study survey project will consist of four phases that will begin **July 1, 2007** and be completed by **September 14, 2007**. Project consultant(s) will work closely with the MHC and New Haven and Northampton Canal National Register Nominating Committee.

Phase Meetings:

The project consists of four phases. Project personnel, both the consultant and the project coordinator, will meet with MHC staff to review project progress and products at the end of each phase. Work to be carried out during each phase, and products due at the end of each phase are described below.

The Inventory:

The pilot study will consider the full range of cultural and archaeological resources in the New Haven and Northampton Canal corridor that relate to the Canal's history. These resources will be considered in terms of period, theme, property type, architectural form and style and geographic distribution. The survey will identify all areas, objects, archaeological sites, structures and landscapes in each Pilot Study area that are historically significant in the history and development of the Canal. Although the survey methodology is not specifically designed to identify all archaeological sites along the route of the Canal, some sites may be found as a result of the study. The survey will address all periods of historic development from the period of first colonial European presence to circa 1960. Significant themes of historical development will be identified, and resources will be related to these themes. It is anticipated that some resources that predate or postdate the Canal's period of construction and operation may be identified for their historical associations with the Canal or its related features.

The survey will identify all areas, buildings, objects, sites, burial grounds, structures, and landscapes along the route of two test segments of the Canal that are structurally and historically significant to the New Haven and Northampton Canal. The survey will include a corridor width of 100 feet (Raber 2002:5) centered on the Canal prism that will typically include most sections of the Canal prism as constructed. The corridor width will increase when necessary as indicated by the Canal resources. The route of the Canal will also include feeder streams and other hydraulic resources when necessary. MHC individual property, site and area inventory forms, maps, narrative history and National Register recommendations will be completed and submitted to the New Haven and Northampton Canal National Register Nominating Committee and MHC in accordance with the survey guidelines set forth in the MHC's *Historic Properties Survey Manual: Guidelines for the Identification of Historic and Archaeological Resources in Massachusetts* (1992) and *Survey Technical Bulletin #1* (1993), MHC *Interim Guidelines for Inventory Form Photographs* (2007), MHC *Interim Guidelines for Inventory Form Locational Information* (2007) as well as the Secretary of the Interior's Standards and Guidelines for Identification (1983, copies available from the MHC). The pilot study will also incorporate all results and recommendations made in the *Technical Memorandum, New Haven and Northampton Canal Preliminary Scoping for Pilot Study (PAL, 2007).* These publications are all incorporated into this contract by reference. The works to be carried out during each phase and products due at the end of each phase are described on the following pages.

PHASE I (4 weeks)

TASKS:

* meet with the Project Coordinator and MHC staff to discuss the scope of the project, timetable and, if necessary, the results and recommendations of the preliminary scoping project;

* File a permit application (950 CMR 70) with the State Archaeologist and receive permit before starting work;

* Collect and select maps, including tax assessor's maps, working maps and large-scale base maps to identify inventoried areas, properties, and property owners;

* Review the 2002 Survey and Inventory study and research materials compiled by Carl E. Walter for content, geographical coverage of the entire canal route, and applicability to the present scope as a means to prevent duplication of previous research efforts. Existing completed inventory forms of canal sites and structures on file with the towns along the Canal corridor and the MHC should also be reviewed for completeness and adherence to current survey standards;

* Review and evaluate local historical sources and other pertinent information such as surficial and bedrock geology, USDA soil maps, historic period maps, USGS maps (current and past editions), town and state GIS resources, aerial photographs, and publications available at local and state repositories, as well as available information from the Inventory of Historic and Archaeological Assets of the Commonwealth at the MHC (including archaeological reports of professional surveys).

* Interview local historians (including the local historical commission in each community of the pilot study areas), "canal buffs", and other knowledgeable persons, including members of the New Haven and Northampton Canal National Register Nominating Committee for information relating to the Canal route, known and potential sites and important issues.

- conduct initial research and reconnaissance survey to verify the types and geographical distribution of cultural and archaeological resources in the Canal corridor pilot study areas, and to develop criteria for selecting properties to be included in the survey.
- Identify one property from Pilot Study Area Two in Westfield for parcel level deed research to confirm ownership by the New Haven and Northampton Canal Company and to ascertain the validity of the Pilot Study methodology.

PRODUCTS:

- Application for State Archaeologist's permit

* Working map(s) of the Canal corridor to be surveyed, and large scale base map(s) to be used to identify inventoried properties. A canal base map should include at a minimum, parcel level boundaries from town assessor's maps, natural features, roadways, and all inventoried canal related properties. Visual indications of the canal's integrity would also be useful. If possible, GIS base maps incorporating aerial photographs should be considered (see Middlesex Canal and Blackstone Canal sources).

* methodology statement incorporating:

    1. summary of survey objectives, including a brief description of the boundaries of the study areas, and assessment of existing documentation

    2. criteria for selecting properties for survey including the methodology used for parcel level location of the canal prism and related resources;

    3. procedures to be followed in the survey and form of products to be created;

    4. expectations about the kind, number, location, character, and condition of historic properties to be recorded; and

    5. bibliography

Phase I will be completed by _____ **2007**.

PHASE II (6 weeks)

Tasks:

* Conduct documentary research to identify important historic themes, events, sites and persons for the New Haven and Northampton Canal corridor;

* Continue parcel level deed research to accurately locate the route of the canal and associated resources on tax assessor's maps in the pilot study area.

* Begin a list of landowners of all canal related properties.

* Apply selection criteria and prepare a list of specific resources to be surveyed (organized by town and canal segment, with street address where appropriate), identifying any State Register of Historic Places properties to be included in the survey;

* Prepare narrative history outline, with particular attention to substantially augmenting the descriptive and significance information already available in the 2002 Survey and Inventory study, with reference to specific properties, sites, and events subject to the survey;

* Complete inventory forms for all canal related resources in the pilot study area;

* Meet with MHC staff, project coordinator and the project committee to review resource lists, draft forms, and narrative history outline.

PRODUCTS:

* List of all areas, properties and sites to be surveyed, arranged alphabetically by town and by street address;

* Outline of narrative history;

* Outline of reconnaissance archaeological report, including a brief summary of research results;

* Completed inventory forms for Pilot Study areas;

* Draft list of property owners for inventoried properties in each Pilot Study area.

Phase II will be completed by _____ **2007**.

PHASE III (8 weeks)

TASKS:

* Conduct intensive research of properties selected for inventory;

* Complete draft narrative history outline for the New Haven and Northampton Canal that establishes a descriptive and significance context for the resources being surveyed;

* Prepare MHC inventory forms with photographs and sketch maps (forms for any surveyed properties listed in the State Register of Historic Places must be marked at the top front with the appropriate designation code and date);

* Prepare draft reconnaissance archaeological report;

* Apply National Register criteria to inventoried areas, properties and archaeological sites;

* Prepare a draft list of all contributing areas, properties and archaeological sites potentially eligible for National Register nomination;

* Submit draft narrative history outline, inventory forms, and National Register recommendations to MHC, local project coordinator, and the project committee for review and comment (comments to be incorporated during Phase IV).

* Submit draft maps of the New Haven and Northampton Canal Pilot Study areas identifying the known or potential location of the Canal prism components and

related archaeological sites, extant buildings, structures, objects, landscape features and/or areas.

- Prepare and submit a draft evaluation of the pilot study methodology specifically evaluating its usefulness as a methodology in a study of the entire New Haven and Northampton Canal and recommending potential revisions if necessary.

PRODUCTS:

* Draft narrative history outline.

* Draft reconnaissance archaeological survey report.

* Unnumbered inventory forms with photos and sketch maps for areas, buildings, objects, sites, burial grounds, structures, and parks/landscapes.

- Draft list of all potentially contributing areas, properties and sites with property owners in the Pilot Study areas proposed for National Register nomination.

- Draft Pilot Study maps of New Haven and Northampton Canal Resources.

- Draft evaluation of the survey methodology.

Phase III will be completed by _____ **2007**.

PHASE IV (4 weeks)

TASKS:

* In consultation with MHC survey and MACRIS staff, develop lettering and numbering system for inventoried properties and add inventory letters/numbers to forms;

* Complete narrative history outline incorporating review comments and inventory numbers of surveyed properties where appropriate;

* Prepare final archaeological reconnaissance report and management recommendations, incorporating comments on draft report. The report must also include a copy of the project base maps;

* Prepare final list of all areas, properties and archaeological sites in the Pilot Study areas recommended as contributing members of a potential National Register New Haven and Northampton Canal District, incorporating review comments where appropriate;

* Complete National Register Criteria Statement forms to be attached to appropriate inventory forms;

- Prepare base map(s) identifying inventoried areas, properties and archaeological sites at the parcel level;

* Prepare street index of inventoried areas and properties;

- Prepare lists of further study recommendations

PRODUCTS:

- Numbered MHC inventory forms for areas, buildings, objects, sites, burial grounds, structures and parks/landscapes (two sets with original photographs: one for MHC, one for the New Haven and Northampton Canal Nominating Committee). Sets for the New Haven and Northampton Canal National Register Nominating Committee and MHC must be on 24 lb. Bond paper of at least 25% cotton fiber content. Photographs must be 3-1/2" X 5-1/2"or 4" by 6" digitally produced ink jet prints using MHC approved printer/paper/ink combinations that produce prints with a minimum 75-year permanence rating. (The paper inventory forms may incorporate the electronic version photograph in addition to the attached photographic print.)

* Large-scale base map(s) with all inventoried areas, properties and archaeological sites identified in each Pilot Study area by inventory number at the parcel level (two sets: one for the New Haven and Northampton Canal National Register Nominating Committee, one for the MHC).

* Survey Final Report (Six copies: Four for the MHC and two for New Haven and Northampton Canal National Register Nominating Committee) that includes all components of the final pilot study and the following sections:

1. Methodology statement, including survey objectives, assessment of previous research, selection criteria, procedures followed in the survey, description of products and accomplishments, and an evaluation of the pilot study methodology for the survey of the entire New Haven and Northampton Canal;

2. Narrative history outline;

3. Street index of inventoried areas and properties, organized by town. Areas for each town will be listed separately at the beginning of each town list, arranged alphabetically by area name. Individual inventoried properties follow, arranged alphabetically by street name. Property name (if any) and inventoried number also will be included in this list;

4. Final list of recommendations for areas, properties and sites within each Pilot Study area to be included as contributing members of a New Haven and Northampton Canal District to be nominated to the National Register of Historic Places;

5. Further study recommendations; and

6. Bibliography.

*** The Survey Final Report must identify the repository/office where completed survey documentation (inventory forms, base maps, and final report) will be made available to the public. The repository must also ensure the confidentiality of archaeological site forms and maps depicting the locations of archaeological sites.

Phase IV (final phase) will be completed and submitted to the MHC and the New Haven and Northampton Canal Nominating Committee by **September 14, 2007**.

New Haven and North Hampton Canal: Pilot Study Project – Phases 1 & 2

1. Project Goals
    a. Test means to map the Hampshire and Hampden Canal to National Park Service standards (parcel-level) without exhaustive parcel-level research.
    b. Provide evaluation of means tested for future use by Canal Nomination Committee.
    c. Provide outline for Historical Narrative and Statement of Significance.

2. Project Methodology
    a. Collect historical materials from the Nominating Committee, Carl Walters, and others.
    b. Pilot Area One: Southwick, MA:
        i. Use GPS recording equipment in the field to record the path of the canal and canal-associated features.
        ii. Bring GPS data back to lab and overlay field data onto digitized Southwick Assessor's maps.
    c. Pilot Area Two: Westfield, MA:
        i. Conduct fieldwork to identify and record any canal-associated features.
        ii. Use historic and contemporary sources, along with geographic data recorded, to overlay potential canal route onto Westfield Assessor's maps.
        iii. Test canal route hypothesis by selecting one parcel for deed research to confirm New Haven canal ownership.

3. Project Products
    a. Maps of canal in each town.
    b. Massachusetts Historical Commission Area forms, Archaeological Site forms, and National Register Eligibility forms for each Pilot Area.
    c. A PAL Technical Memorandum containing:
        i. Written recommendations and observations regarding project methodologies employed in each Pilot Area.
        ii. Town historical contexts for canal-related development
        iii. An outline for a Historical Narrative and Statement of Significance for future National Register of Historic Places Nomination Form development.

Meeting update:

Enclosed you will find the summary of the pilot study which John Daly of PAL shared with us. He went into detail explaining how the mapping methodology would work. This will be done the week of the 15th. In the next phase, he would like the committee members to list whatever documents/materials are in their respective town/city archives and forward this to him. This is in preparation for the narrative portion of the register application. John's address is below. (in relation to the canal)

Barbara MacEwan

John Daly
Industrial Projects Assistant
210 Lonsdale Avenue
Pawtucket, RI 02860
401-728-8780
Fax 401-728-8784
jdaly@palinc.com

PAL
The Public Archaeology Laboratory, Inc.

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Phase I and II Work Products - Pilot Study Areas

New Haven and Northampton Canal
Southwick and Westfield, Massachusetts

June 23, 2008

Submitted to:
Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, MA 02125-3314

In February 2007 PAL undertook a preliminary scoping for a pilot study of the New Haven and Northampton Canal (a/k/a the Hampshire and Hampden Canal) to support the New Haven and Northampton Canal National Register Nominating Committee's (NRNC) future goal of listing the canal in the National Register of Historic Places (National Register). A technical memorandum that reviewed previous canal studies, proposed a survey methodology, and identified a pilot study area for testing the survey methodology in a subsequent pilot study phase for the future documentation of canal resources was presented to the Massachusetts Historical Commission (MHC) (PAL 2007).

A particular goal of the proposed pilot study methodology was to provide a reliable means for generating parcel-level mapping of the canal, which is a requirement for National Register nomination. As noted in the scoping document, such mapping presents a special challenge because boundaries of the canal are not consistently preserved on contemporary assessor's maps and no historic maps of the as-built canal route exist. The memorandum recommended that two survey areas, Pilot Study Area One in Southwick, Massachusetts and Pilot Study Area Two in Westfield, Massachusetts, be included in the pilot study to test alternate survey and mapping methodologies developed to account for the absence or presence of canal-related resources in the field.

The MHC subsequently requested that PAL conduct the pilot study for the New Haven and Northampton Canal Corridor Multi-Community Survey Project. The pilot study was divided into four phases of work (Phases 1-IV) and was limited to historic canal-associated resources identified within the pilot study areas. The pilot study areas included: 1) an approximately 1,300 ft-long section of the canal in the town of Southwick (Figure 1); and 2) an approximately 2,100-ft long section of the canal in the city of Westfield (Figure 2). This submittal presents the scoped work products for currently funded Phase I and Phase II of the pilot study. The scoped work products for Phases III and IV (essentially the draft and final reports with accompanying technical appendices) will be prepared as part of a separate, future funded effort.

The Phase I work products included in this submittal consist of: 1) the state archaeologist's permit application and copy of permit number 2988 issued on September 25, 2008 (Attachment 1); 2) working maps of the two Canal corridor pilot study areas that depict identified historic and archaeological resources (Attachment 2); 3) a methodology statement (see below) that presents a summary of the survey objectives, criteria for selecting the properties for survey, procedures followed in the survey, and expectations about they types of resources identified, and a

bibliography (Attachment 3).

The Phase II work products included in this submittal consist of: 1) a tabular list of all property areas, properties, and sites surveyed with property owners (Attachment 4); 2) an outline of the narrative history of the canal (Attachment 5), suitable for use in a National Register Nomination Statement of Significance (Section 8); and 4) an outline of the reconnaissance archaeological report, including a brief summary of the research results (Attachment 6).

Methodology Statement

Field Survey

The two pilot study areas were chosen in order to support the primary goal of the Survey project, which was to provide a reliable means for generating parcel-level mapping of the canal (see Figures 1-4). The following criteria for pilot study area selection were developed in the course of PAL's 2007 preliminary scoping project:

- Integrity of resource
  - Integrity may fall into one of two categories: there should be a significant quantity and density of identified features and canal prism, or the area should be urban and developed with little expected visibility of canal features. Parcel research and data collection methods need to be tested in both types of sections.
  - Where features are visible, they should exist at various levels of integrity so that issues pertaining to boundary definition and identification of potential archaeological sites may be addressed.
- Serviceability of pilot study area for testing research methodology
  - Local archival resources for the pilot study area should be available so that completeness of the current bibliographical record may be tested against local historical society and/or town archive holdings.
  - Boundaries of the pilot study area should be contained within one town to simplify assessor record access.
  - The pilot study area should allow for testing of both parcel mapping strategies outlined in the Methodology section below" (PAL 2007:5).

It was expected that Pilot Study Area One would retain intact canal features including the prism, towpath, berms, and the remains of Locks Nos. 2, 3, 4, and 6, as indicated by Carl Walter's *Map of the Hampshire & Hampden Canal* (2006) and confirmed in the course of a PAL walkover in 2007. It was expected that Pilot Study Area Two would retain no visible intact canal features, as indicated by the *Map of the Hampshire & Hampden Canal.*

The field survey of the two pilot study areas was conducted by an industrial historian and a project archaeologist on December 13, 2007, under an MHC archaeological reconnaissance survey permit. Prior to survey work, historic maps were consulted to identify possible canal related resources in each area. Permission to enter select private properties believed to hold canal-related resources was obtained by the NRNC on behalf of PAL. Photographs were taken of all canal-related resources within each area and measurements were taken of any canal-related resources identified in the field.

Historic resources not specifically related to the canal were also noted and photographed. The northeast corner of the Westfield lot in the Westfield Pilot Study Area was not accessible because of ongoing environmental remediation.

Field mapping methodologies differed in each study area and were specifically designed with the goal of locating the canal on assessor's maps (see Figures 2 and 4). In Pilot Study Area One in Southwick, the canal prism is open and visible. The canal route and related infrastructure and features were recorded using a handheld Global Positioning System (GPS) unit. The GPS resource points, including the visible centerline of the canal prism, were then plotted onto the town assessor's maps using the available GIS database by the PAL GIS technical specialist. Because Pilot Study Area Two in Westfield does not retain any known or visible remains of the canal or related features, available historical and contemporary maps of the canal and aerial photographs were geo-referenced with the town's GIS assessor's maps to locate the historic canal centerline in relation to contemporary the parcel-level boundaries prior to conducting fieldwork. These data layers were loaded into the GPS unit for use in locating the canal route in the field. Had visible indicators of canal-related resources been identified, and these features would have been plotted onto the town's GIS assessor maps and the information used in the same manner described above for Pilot Study Area One.

Research

PAL completed background research for the two pilot study areas between October 2007 and February 2008. Research included a review of readily available primary and secondary documents and historical maps available at local repositories. Members of the NRNC provided supplemental bibliographical reference materials, which were incorporated into the bibliography. Assessor's maps for each community were collected to assist with field mapping. Using the assistance of the NRNC, PAL also consulted with Canal historian Carl Walter regarding the use of his personal canal collection and his technical drawings extrapolated from canal surveyor's data. He provided historical photographs of the Southwick project area vicinity and agreed to review the draft bibliography and provide recommendations for additional sources. Mr. Walter's ability to provide reproduction of the technical drawings was limited by their large size, and no response has been received to date regarding these items. Any comments that Walter provides regarding the draft bibliography will be incorporated into the Phase III and IV work products. The Commonwealth of Massachusetts' *State Register of Historic Places;* MHC inventory, site, and National Register files; and the Southwick and Westfield *MHC Reconnaissance Survey Reports* were consulted (MHC 1982a; MHC 1982b; MHC 2007).

One property from Pilot Study Area Two was chosen for parcel-level deed research to confirm ownership by the New Haven and Northampton Canal company and to ascertain the validity of PAL's Pilot Study methodology. The deed research will be conducted as part of the Phase III preparation of the draft technical report for the pilot study. It will be undertaken at the Hampden County Registry of Deeds in Springfield, MA.

In order to prepare an outline for a future National Register nomination Section 8 – Statement of Significance, National Register nominations and survey reports for other canals were reviewed, including the *Farmington Canal National Register if Historic Places Inventory-Nomination Form* (Raber 1984), the *Blackstone Canal Historic District National Register of Historic Places Nomination, Blackstone, Millville, Uxbridge, Northbridge, Worcester, Massachusetts* (Adams

1995), and the *Middlesex Canal Intensive Survey Phase IV Survey Report* (Adams and Kierstead 1999). This outline is attached as Attachment 4 - of this Interim Report, and will be included in the final report as an appendix.

Accompanying the outline is a preliminary bibliography, included as Attachment 3. This bibliography represents a compilation sources identified by individual NRNC members and additional primary and secondary sources identified by PAL.

Attachment 1

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September 20, 2007

Brona Simon
Executive Director
State Archaeologist
Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, Massachusetts 02125

Re: New Haven and Northampton Canal Corridor, Pilot Study
Cultural Resources Reconnaissance Survey
PAL #2134

Dear Ms. Simon:

Enclosed please find an application for a permit to conduct a cultural resources reconnaissance survey for a Pilot Study of the New Haven and Northampton Canal, which will include an archaeological reconnaissance of historic canal-related resources identified in the two pilot study areas: one in Southwick and the other in Westfield. The pilot study areas are located on the Southwick, Blandford, and Mount Tom, Massachusetts topographic quadrangles. We would like to begin investigations as soon as possible. Thank you in advance for your time and attention to this matter.

If you have any questions or concerns, please do not hesitate to contact Suzanne Cherau, Principal Investigator, or me at your convenience.

Sincerely,

Deborah C. Cox, RPA
President

/dg

Enclosure

PAL
PRESERVATION PLANNING
ARCHAEOLOGY
ARCHITECTURAL HISTORY
EDUCATION

Public Archaeology Laboratory

210 Lonsdale Avenue
Pawtucket, RI 02860
TEL 401.728.8780
FAX 401.728.8784

950 CMR: DEPARTMENT OF THE STATE SECRETARY

APPENDIX B
COMMONWEALTH OF MASSACHUSETTS

SECRETARY OF STATE: MASSACHUSETTS HISTORICAL COMMISSION

PERMIT APPLICATION: ARCHAEOLOGICAL FIELD INVESTIGATION

A. General Information

Pursuant to Section 27C of Chapter 9 of the General Laws and according to the regulations outlined in 950 CMR 70.00, a permit to conduct a field investigation is hereby requested.

1. Name(s): Suzanne Cherau

2. Institution: The Public Archaeology Laboratory, Inc.

   Address: 210 Lonsdale Avenue
   Pawtucket, Rhode Island 02860

3. Project Location: New Haven and Northampton Canal
   see attached proposal

4. Town(s): Southwick and Westfield

5. Attach a copy of a USGS quadrangle with the project area clearly marked.

   see attached

6. Property Owner(s): Private landowners (Southwick Pilot Area); Public and Private landowners (Westfield)

7. The applicant affirms that the owner has been notified and has agreed that the applicant may perform the proposed field investigation.

8. The proposed field investigation is for a(n):

   a. Reconnaissance Survey
   b. Intensive Survey
   c. Site Examination
   d. Data Recovery

B. Professional Qualifications

1. Attach a personnel chart and project schedule as described in 950 CMR 70.11 (b).

a. Personnel

Principal Investigator(s):	Suzanne Cherau
Project Archaeologist:	Jennifer Banister

b. Schedule

Fieldwork:	October 2007
Report:	November 2007

2. Include copies of curriculum vitae of key personnel (unless already on file with the State Archaeologist).

C. Research Design

1. Attach a narrative description of the proposed Research Design according to the requirements of 950 CMR 70.11.

2. The Applicant agrees to perform the field investigations according to the standards outlined in 950 CMR 70.13.

3. The Applicant agrees to submit a Summary Report, prepared according to the standards outlined in 950 CMR 70.14 by: February 28, 2008

4. The specimens recovered during performance of the proposed field investigation will be curated at:

The Public Archaeology Laboratory, Inc.
210 Lonsdale Avenue
Pawtucket, Rhode Island 02860

SIGNATURE Suzane J. Chera DATE September 20, 2007
APPLICANT (S)

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

PERMIT TO CONDUCT ARCHAEOLOGICAL FIELD INVESTIGATION

Permit Number 2988 Date of Issue September 25, 2007

Expiration Date September 25, 2008

PAL is hereby authorized to conduct an archaeological field investigation pursuant to Section 27C of Chapter 9 of General Laws and according to the regulations outlined in 950 CMR 70.00.

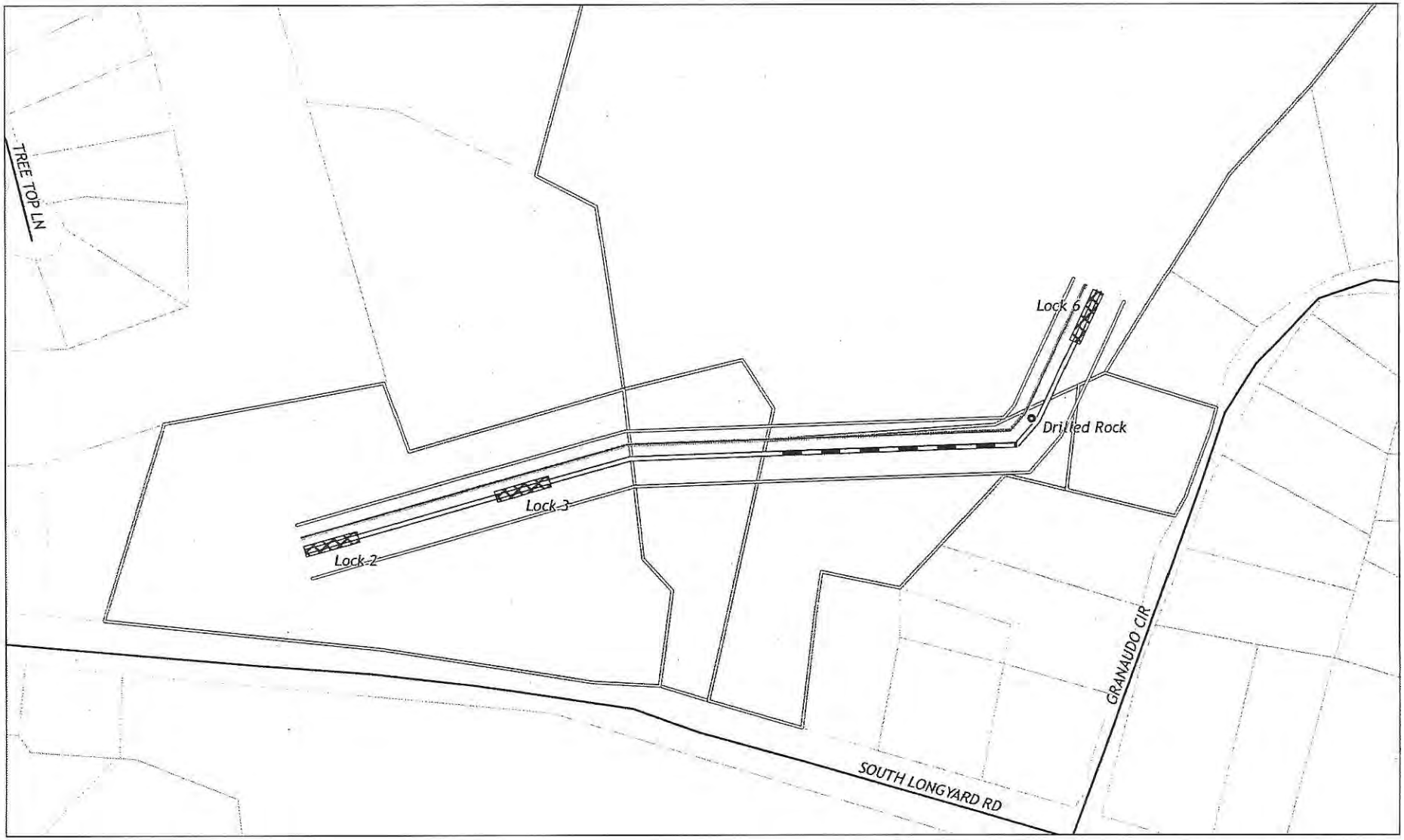
New Haven & Northampton Canal Corridor Pilot Study, Southwick & Westfield

Project Location

Brona Simon

Brona Simon, State Archaeologist
Massachusetts Historical Commission

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.state.ma.us/sec/mhc



PAL

Legend

- Prism Center Line
- Area of Disturbance
- Tow Path
- Extrapolated 100 FT Corridor
- Approximate Lock Area
- Canal-sensitive Parcels

N

0 50 100 200 Feet

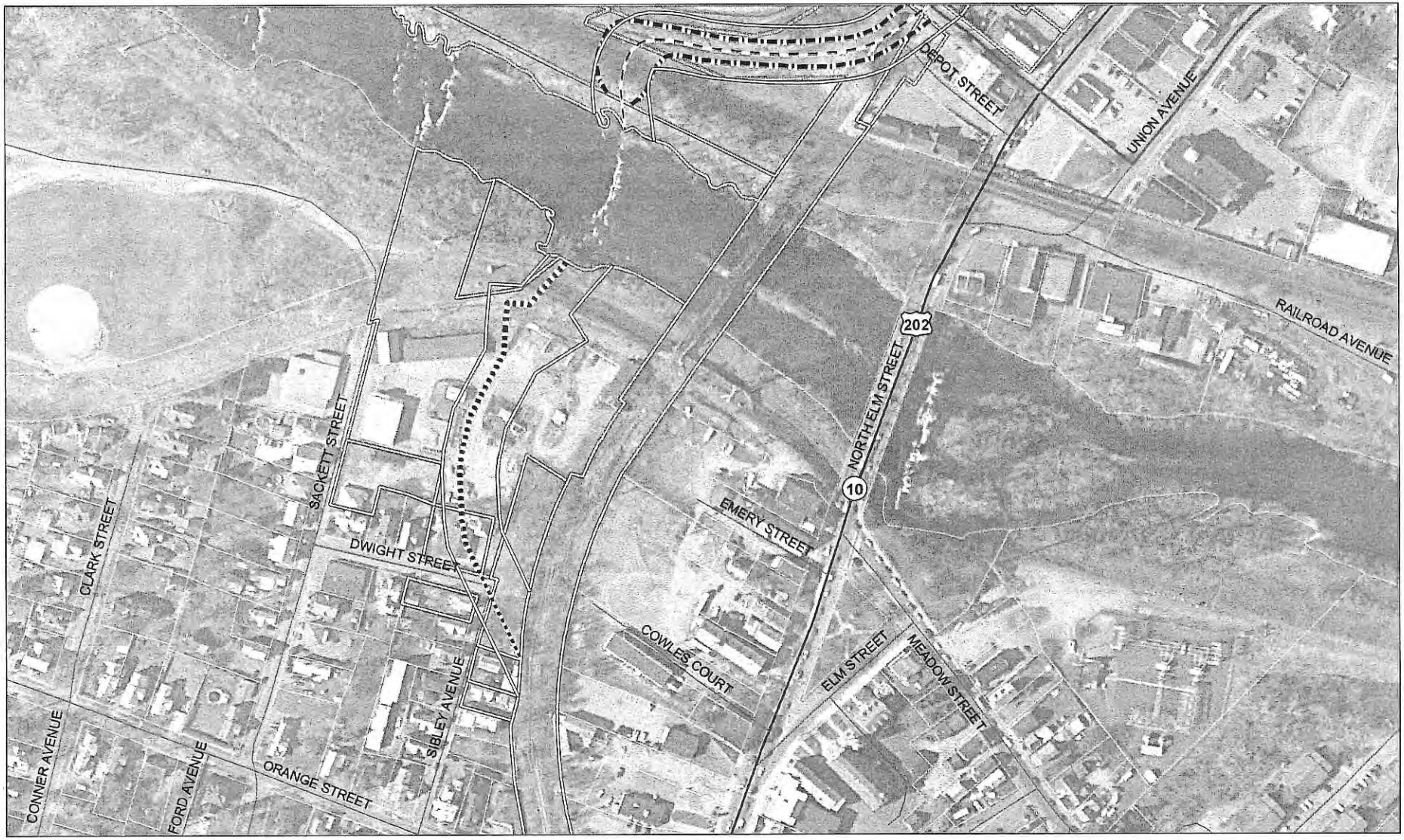
New Haven & Northampton Canal

Southwick Historic Resources - Pilot Study Area 1

The base information contained in this map was supplied to PAL as a professional courtesy for informational and illustrative purposes only. PAL makes no warranties, either expressed or implied, regarding the fitness or suitability of this map for any other purpose than to depict the location and/or results of cultural resource investigations conducted by PAL.

June 20, 2008.

Attachment 2 - Figure A. Visible Resources.



PAL

Legend

- *Extrapolated Center Line*
- *Extrapolated 100 FT Corridor*
- *Canal, Anon, ND*
- *Canal, Sanborn, 1924*
- *Canal, Walker, 1884*
- *Canal-sensitive Parcels*

N

0 50 100 200 Feet

New Haven & Northampton Canal

Westfield Projected Canal Route - Pilot Study Area 2

The base information contained in this map was supplied to PAL as a professional courtesy for informational and illustrative purposes only. PAL makes no warranties, either expressed or implied, regarding the fitness or suitability of this map for any other purpose than to depict the location and/or results of cultural resource investigations conducted by PAL.

June 20, 2008.

Attachment 2 - Figure B. Projected Canal Route.

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ATTACHMENT 3

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Anonymous

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1854b Plan of Location of the Hampshire and Hampden R.R. through Westfield Village. Collection of the City of Westfield GIS Office.

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ATTACHMENT 4.

Table 1, Pilot Study Area One, Southwick, list of property areas, properties, and sites surveyed, with property owners.

Street #	Street Name	Parcel No.	Owner	Canal-Related Resource [Y/N]	Resource Name	Date Built
50 Rear	South Longyard Road	90-31	Bank of America Trust	Y	New Haven & North Hampton Canal prism and Locks 2 and 3	1834
80	South Longyard Road	99-33	Joseph & Christine Nero	Y	New Haven & North Hampton Canal prism	1834
82	South Longyard Road	99-34	Michael & Rose Granaudo	Y	New Haven & North Hampton Canal prism	1834
42	Powder Mill Road	90-14	Regal Home Development	Y	New Haven & North Hampton Canal prism and lock 6	1834

Table 2, Pilot Study Area Two, Westfield, list of property areas, properties, and sites surveyed. Property owners listed where property access permission obtained and/or canal-related archaeological potential identified.

Street #	Street Name	Parcel No.	Owner	Potential for Archaeological Canal Structures [Y/N]	Resource Name	Date Built
-	-	59-89	City of Westfield	**Y**	NH & NH Canal prism	1834
3	Dwight St	57-39	Lousie M. Bonyeau	N	-	-
4	Dwight St	57-43		N		
7	Dwight St	57-38	Jeffrey R. Connaughton	N	-	-
11	Dwight St	57-37	Bruce C. Neumann	**Y**	NH & NH Canal prism	1834
30	Maple St	56-59		N		
0	Orange St (rear)	57-82		N		
23	Orange St	57-81		N		
26	Orange St	56-58		N		
27	Orange St	57-83		N		
28	Orange St	56-99		N		
29	Orange St	57-84		N		
30	Orange St	56-57		N		
33	Orange St	57-50		N		
34	Orange St	56-56		N		
35	Orange St	57-51		N		
35	Orange St (rear)	57-52		N		
36	Orange St	56-55		N		
37	Orange St	57-53		N		
38	Orange St	56-54		N		
40	Orange St	56-53		N		
41	Orange St	57-54		N		
45	Orange St	57-26		N		
4	Sackett St	57-25		N		
5	Sackett St	57-55		N		
7	Sackett St	57-56		N		
8	Sackett St	57-24		N		
10	Sackett St	57-23		N		
12	Sackett St	57-22		N		
13	Sackett St	57-57		N		
16	Sackett St	57-21		N		
17	Sackett St	57-42		N		
19	Sackett St	57-40	Scott J. Viets	N	-	-
20	Sackett St	57-20		N		
22	Sackett St	57-19		N		
25	Sackett St	57-36	City of Westfield	**Y**	NH & NH Canal prism	1834
26	Sackett St	57-18		N		
27	Sackett St	57-35	City of Westfield	**Y**	NH & NH Canal prism	1834
30	Sackett St	57-17	City of Westfield	N		

Street #	Street Name	Parcel No.	Owner	Potential for Archaeological Canal Structures [Y/N]	Resource Name	Date Built
0	Sibley Ave	57-58	City of Westfield	**Y**	NH & NH Canal prism	1834
3	Sibley Ave	57-85		N		
4	Sibley Ave	57-49	David Luna	N	-	-
5	Sibley Ave	57-86		N		
6	Sibley Ave	57-48	Kevin J. Barry	N	-	-
7	Sibley Ave	57-87	Margaret Spitzer Pelaquin	**Y**	NH & NH Canal prism	1834
8	Sibley Ave	57-47	Mariano C. Cruz	N	-	-
9	Sibley Ave	57-88	Michael W. & Patricia Bagg	**Y**	NH & NH Canal prism	1834
10	Sibley Ave	57-46	Viktor Malevanny	N	-	-
12	Sibley Ave	57-45	David Perez	N	-	-
14	Sibley Ave	57-44	Richared O. Bonyeau	**Y**	NH & NH Canal prism	1834

ATTACHMENT 5

Draft Technical Report Outline

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Title Page
Management Abstract
List of Figures
List of Tables
List of Appendices

I. Introduction

A. Background

1. Michael Raber's preparation of Section 7 of National Register Nomination for canal for the NRNC.
2. Carl Walter's canal research and mapping.
3. Request by MHC for PAL to prepare pilot study scoping and methodology reviewing past canal-related research and mapping and proposing future mapping techniques.
4. Design of two mapping methodologies to account for presence or absence of canal resources.

B. Scope

1. MHC request that PAL conduct the Pilot Study for Canal Corridor Multi-Community Survey Project.
2. Four-phase project limited to historic canal-associated resources identified within the pilot study areas chosen in Westfield and Southwick.
    a. Phase 1.
        i. State archaeologist's permit application.
        ii. Working maps of the two Canal corridor pilot study areas.
        iii. Methodology statement.
        iv. Bibliography.
    b. Phase II
        i. Tabular list of all property areas, properties, and sites surveyed with property owners.
        ii. An outline of the narrative history of the canal, suitable for use in a National Register Nomination Statement of Significance (Section 8).
        iii. Outline of the reconnaissance archaeological report.
        iv. Phases III Draft report.
        v. Phase IV final reports with accompanying technical appendices.

II. Methodology

A. Field Survey

1. Two pilot study areas chosen to support goal of the Survey project, which was to provide a reliable means for generating parcel-level mapping of the canal.
2. Criteria for study area selection
    a. Areas with both high and low levels of canal resource integrity.
    b. Availability of local archival resources for the pilot study area.
    c. Contained within one town to simplify assessor record access.
    d. Allow for testing of both parcel mapping strategies outlined below.
3. Expectations
    a. Pilot Study Area One would retain intact canal features.
    b. Pilot Study Area Two would retain no visible intact canal features.

4. Field survey conducted by industrial historian and project archaeologist December 13, 2007, under MHC permit.
5. Historic maps were consulted to identify possible canal related resources in each area.
6. Permission to enter private properties obtained by the NRNC on behalf of PAL.
7. Photographs and measurements taken canal-related resources identified.
8. Historic resources not canal-related noted and photographed.
9. Field mapping differed in each study area and was specifically designed to meet overarching project goal.

B. Research
1. Background research completed between October 2007 and February 2008.
   a. Local repositories.
   b. Town-specific materials provided by NRNC.
   c. Carl Walter consultations.
   d. The Commonwealth of Massachusetts' State Register of Historic Places; MHC inventory, site, and National Register files; and the Southwick and Westfield MHC Reconnaissance Survey Reports were consulted (MHC 1982a; MHC 1982b; MHC 2007).
   e. Other CRM Reports.
   f. Deed research for one parcel in Pilot Study Area Two to confirm ownership by the New Haven and Northampton Canal company and test Pilot Study methodology.

III. Town Contexts

A. Southwick land use and settlement patterns by temporal period.
B. Westfield land use and settlement patterns by temporal period.

IV. Results

A. Study Area 1 – Southwick
1. Approximately 1100 ft of visible canal prism and locks in two discontiguous segments.
   a. Located in heavily wooded area north of South Longyard Road.
2. Visible Resources (see Attachment 2, Figure A)
   a. Overgrown canal prism and tow path.
   b. Remains of former wood and masonry locks: Lock #2, Lock #3, and Lock #6 – dimensions approximately 100 ft long by 20 ft wide.
   c. Locks #2 and #3 detectable by visible drop in canal prism floor and steepening of prism walls to near vertical.
   d. Lock #6 contains scattered sections of drylaid stone lock wall.
   e. Drilled rock – out of context; could be related to canal lock.
   f. Area of Disturbance – approximately 400 ft long between Locks 3 and 6.
      i. Obliterated visible canal prism and tow path.
      ii. Resulting from private landowner landscaping efforts.

B. Study Area 2 – Westfield
1. No visible resources – all built over section in urban residential neighborhood.
2. Projected canal route shown on Attachment 2, Figure B.
   a. Based on georeferenced historic maps to modern assessor's maps and aerial photography.
   b. Parcels having potential to contain buried remains of the canal prism, tow path, and other elements including the lock have been determined.

V. Conclusions and Recommendations

A. Review of Pilot Study methodology and recommendations for future canal-related survey work.

1. Methodology 1.
   -to be determined
2. Methodology 2.
   -to be determined
3. Conclusions.

B. Recommendations for Further Research.
   -to be determined.

VI. References Cited

VII. Technical Appendices

A. MHC Area "A" Forms : one for each Pilot Study Area (no individual building or structure forms).

B. MHC Archaeological Site Forms – for any identified historic archaeological resources.

C. Project Maps (GIS and parcels with mapped canal route and associated features) – for each study area.

D. Digital photographs of the pilot study areas and individual resources.

E. Data sheet (tables) for each Pilot Study Area – identified historic and archaeological resources.

F. Data sheet (tables) for each Pilot Study Area – list of property owners for areas surveyed.

G. Project Correspondence.

H. A list of all areas, properties and sites and property owners for the pilot study area properties containing identified resources (combination of 2 tables that were scoped).

I. Outline for a Statement of Significance for the canal.

Loparto, Leonard W. @ SEC

From: David McCormic [outrbox@gmail.com]
Sent: Friday, October 28, 2011 11:47 AM
To: Loparto, Leonard W. @ SEC
Subject: Re: Northampton and New Haven Canal Inquiry

Hi Leonard,

Thanks again for getting back to me with information about the status of the Canal Register project. Sorry for the delayed, response wanted to talk it over with superiors and decide what to do next. The information you provided certainly sets a concrete scope for what must be done in the future to preserve the historic Canal.If you could please, send us Wayne Feiden (the Northampton Planner) the "eligibility opinion and the Phase I and II Pilot Study draft(s)", we would be most appreciative, additionally if you have any of these documents in electronic form that would be most valuable. I have attached his information below, thank you again for your assistance.

Wayne Feiden
Director of Planning and Development, Northampton, MA
210 Main Street, Room 11
Northampton, MA 01060
413-587-1265
413-587-1264 (fax)
wfeiden@northamptonma.gov

Best wishes and Happy Halloween,
Dave McCormic
OPD Intern

On Wed, Oct 19, 2011 at 9:56 AM, Loparto, Leonard W. (SEC) <leonard.w.loparto@state.ma.us> wrote:

> Hi David,
>
> I have been asked to respond to your inquiry by Michael Steinitz.
>
> As far as I know, any work on the National Register nomination for the New Haven and Northampton Canal is on hold. MHC has advocated the nomination of canals in their entirety since the successful nomination of the South Hadley Canal to the National Register of Historic Places in 1992. That being said, in 2003 the MHC staff wrote a national Register eligibility opinion for the New Haven and Northampton Canal in its entirety. While staff felt the canal was probably eligible under criteria A, C, and D at the local, state, and National levels, more information was needed before a nomination could be written. Specifically, more information was needed on the location of the canal route and the canal's major infrastructural features. The canal's route needed to be mapped on tax assessor's maps as determined through parcel level deed research. To achieve these results MHC funded a Pilot Study to develop a methodology primarily to develop parcel level mapping of the entire canal route based in two communities, Southwick and Westfield. The pilot study was divided into 4 phases, however, it was never completed. A report is available o Phases I and II. Phases III and IV, which included the final report, was never completed due to a loss of funding.

MHC would not support a National Register Nomination for the New Haven and Northampton Canal unless it was nominated in its entirety. To achieve that goal more survey work needs to be completed. I could send you a copy of the eligibility opinion and the Phase I and II Pilot Study draft. These documents spell out what is needed prior to an actual nomination.

Please send me your contact information including your name, address, telephone number. Should you decide to proceed with this project, I would also consider a visit to the MHC in Boston to discuss these matters further and research our files.

Thank you,

Leonard W. Loparto

Archaeologist/Preservation Planner

917-568-8354

THE CANAL IN WESTFIELD

1822 - Farmington Canal incorporated from Long Island Sound to Massachusetts line

1822 – Hampshire and Hampden Canal incorporated from Massachusetts southern border to Northampton

1825 – Excavation of canal begins in Granby, CT.

1826 – Two canal companies consolidated

1829 – The *General Sheldon*, first Westfield canal boat, launched in Westfield

1835 – Canal opened to Northampton

1840 – Western Railroad (Boston and Albany) reached Westfield

1841-42 – Height of Canal Traffic

1845 – Canal company authorized to construct a railroad

1848 – New Haven and Northampton Railroad reached Plainville, CT

1850 – Railroad reached Simsbury

1855 – Railroad reached Westfield; 1856 Northampton

1889 – Last of Canal in Westfield filled in

- I'M ....
- SPEAKING ABOUT
- WE'LL TAKE A LITTLE WALK.
- ANYTIME YOU HAVE Q'S OR COMMENTS...

NORTHAMPTON – NEW HAVEN CANAL

INTRO.

SEE: Old photo of canal, from late 800's (- PASS AROUND -- COULD ONE PERSON AT END COLLECT.-)

-- Canal functioned here only 12 years (1835 – 1847)

-- but about 10 years before that in Connecticut

-- Canal 87 miles long, Northampton to New Haven

SEE: Map [mine] New Haven to N'ton/Greenfield

-- Avoided Hartford, to counter Hartford's dominance as a port (early canal planning was kept secret so Hartford wouldn't torpedo it)

SEE: Map [mine] Canal Downtown

-- Went behind schools to south; up State St.(Canal St.) to Conn. River (there were 5 locks there); Canal was about 8' lower than State St. is now (windows below ground in building at Trumbull and State St.)

-- Turning pool where we stand now (maybe)

SEE: Mansion House with turning pool

~~SEE: Map [make?] Northampton – Easthampton~~

-- Carried passengers and freight

-- Trip took from 24 hours to a week ... SEE: BROADSIDE AD (24 HRS, $3.75)

-- "WHY a canal??" [.... Only stagecoach, rough, mud; River—poling, rapids]

-- "WHY not Conn. River?" [rapids; bypass Hartford .... Also, I think they just wanted to build a canal] (& CT. RIVER DOESN'T GO TO NEW HAVEN)

STEAMBOAT

-- From Northampton to Cheapside in Greenfield, via the Franklin

-- Steamboat could go as far north as Bellows Falls

"WHAT WAS IT LIKE"

SEE: Photos, Lehigh Canal, Nat'l Canal Museum, Easton, PA

-- "How fast...??" [limit 4 mph]

-- Both horses and mules were used; mostly horses around N'ton; horses were changed every 10 miles or so

-- Horses or mules were pulling on just one side

-- "WHY didn't it hit the bank?" [rudder]

-- Boats passed each other in opposite directions, with single towpath.....How did they keep from tangling?...

SEE: "Boats Pass" diagram

-- One boat lowered its rope, the other boat (and mules) went over it.

WALK?

- THE Route?

~~SEE: Broadside (24 hrs, $3.75)~~

SEE: Map, re: N'ton — CANAL IN BLACK, RT 10 IN PURPLE

SEE: Map, re: E'ton

CANAL SIZE

SEE: "Specifications" Diagram [by Eric Sloane]

-- Canal: 20' wide, bottom; 36' wide, top; 4' deep

-- Towpath: 10' wide; 2 'to 5' above water

-- Dug by hand & probably w/oxen; lined with special clay ....

~~The canal was dug by hand and probably oxen; it was lined with special clay.~~

LOCKS

SEE: Lock Illustrations

SEE: Lock diagram

-- 60 locks total; 13 locks between Ct. River and Westfield

-- 5 locks at Ct. River; nearest south was ~~probably Southampton~~ the other end of East hampton

-- Lifts 7' to 10'

-- 90' long; 12' wide

HISTORY

-- Finished to N'ton July 29, 1935 (first boat late because someone had let water out of part of canal)

-- Big Celebration; Many toasts were drunk; This upset Gazette editor ("an ardent dry") so he gave the event only a few lines (Gazette, 5/12/41)

-- It took 10 years to build the Mass. portion of the canal, from Southwick to here

-- Cost was about $1 million for the total canal

-- Blueprints were lost in a fire ... at the completion of the canal, so details on the exact route and construction are sketchy

-- There were separate companies & canal names in Ct. & Mass – Farmington Canal in Ct. and the Hampshire and Hampden Canal here – merged in 1836 when both were insolvent

-- Stopped operating end of 1847 season (i.e., after only 12 years operation to N'ton)

-- Its demise is commonly blamed on the railroads coming in, but it was losing money from the start

-- Canal owners built RR on towpath; It became the New Haven RR

(a) BRIDGE:

-- "MILL RIVER ... WHERE WAS IT IN 1835?"

NORTHAMPTON AQUEDUCT

SEE: Aqueduct photo-montage STONE & WOOD ...

-- 246 feet long; "OVER THERE" ... TRUSS

~~Existing bridge = 99' long~~ NO SIGN OF IT IS LEFT.

-- Mill River was moved in 1938 (after 1936 flood)

SEE: Photo of South St. bridge & RR

-- The aqueduct was basically wood construction on stone piers

-- TRUSS CONSTRUCTION, LIKE COVERED BRIDGE.

FARMINGTON AQUEDUCT

-- The aqueduct over the Farmington River was slightly longer (280')

SEE: Drawing of Farmington Aqueduct

SEE: Photo of " "

-- One of piers removed, stones re-used for city hall

-- Other piers removed after causing floods (caught debris) in 1955

-- You can still see just the bases of a couple piers

IN N.Y., THE D&H(?) CANAL JOHN A ROEBLING BUILT AQUEDUCTS (~10 YRS AFTER OURS) – SUSPENSION

"WHO WAS?"

(BROOKLYN BRIDGE: 1869-83)

PROBLEMS:

-- Farmers angry at taking water, let water out at times

-- Muskrats dug holes in banks

-- Heavy rains sometimes caused washouts at (inadequate) spillways
-- Droughts and leachy soils in places caused low water
-- Canal couldn't operate in winter, so it was open only 7 or 8 months a year
-- Had to open gates to mostly drain in winter
-- Flooded Westfield when froze in 1830 (didn't get gates open before winter)

TOTAL PATH
-- 2 high points, Timber Swamp (220 ft., a few miles north of Westfield) and Congamond Lake (231 ft.)
-- Most water introduced at those; 7-mile canal fed at Timber Swamp [from the Westfield river]
-- Total rise & fall of 520 feet
-- At Ct. River, N'ton: 90' above SL

CONGAMOND LAKES
-- Total about 3 miles of canal was in the Lakes
-- Most of the way, the towpath was on the bank, but for 700 feet it crossed the Lake
-- "HOW did the mules pull boats across the Lake??
[700-ft.-long floating towpath]

OTHER CANALS
-- Erie Canal about 10 years older, revamped to NY State Barge Canal
-- South Hadley Falls Canal – completed 1794
-- Windsor Locks Canal – ~~when 1829?~~ BUILT ~ 1828 (1827-29)

CANAL REMNANTS CLOSE BY
SEE: Photo page of canal behind Wayside Auto Body
-- Wayside Auto Body – behind and just beyond it..... old railroad bed (now electric lines)....."WHAT do you think that was?" [towpath]
SEE: Photo page of culvert and concrete bridge on top of it
-- At West Street in Easthampton (past Cernak Buick, down hill, you cross river..... before that West St. on right) .... About a block off Rt. 10, there's a little concrete bridge....
-- BEHIND CANAL LANES... ###
-- JUST S. OF LYMAN SHEETMETAL & ICE CREAM SHOP ... WATER ...
... OLD RR TRACK ← IT'S IN THE CANAL BED
-- CAN SEE THE WALL OF OLD LOCK, W/ RECESS FOR DOOR

-- CT.: FARMINGTON CANAL TRAIL - e.g., CHESTER, CT. (LOCKS) - WEB