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Via Electronc Mail

October 24, 2022

Mr. Christopher Smith
Office of Site Remediation and Restoration
U.S. Environmental Protection Agency, Region I
5 Post Office Square - Suite 100
Boston, MA 02109-3912

Re: GE-Pittsfield/Housatonic River Site
Rest of River (GECD850)
Supplemental Phase IA Cultural Resources Assessment Report for the Housatonic Rest of River – Public Release Version

Dear Mr. Smith:

On October 20, 2022, GE submitted its *Supplemental Phase IA Cultural Resources Assessment Report for the Housatonic Rest of River*. That version of the report contained information on the specific locations of archaeological sites that is considered restricted information not for public distribution. Therefore, that version was not sent to the full distribution list and should not be made publicly available. GE is herewith submitting to EPA a separate version, marked "For Public Release," which replaces the maps showing the specific locations of archaeological sites with maps that do not show such information, and redacts similar restricted information in the text, as well as an appendix listing the previously recorded archaeological sites. This is the version that EPA can post on its website, and copies are being sent to the remainder of the distribution list.

Please let me know if you have any questions.

Very truly yours,

Kevin Mooney
Senior Project Manager – Environmental Remediation

Enclosure

Cc: (provided electronically via One Drive)
Dean Tagliaferro, EPA
Tim Conway, EPA (cover letter only)

John Kilborn, EPA (cover letter only)
Anni Loughlin, EPA (cover letter only)
Christopher Ferry, ASRC Primus
Scott Campbell, Taconic Ridge Environmental
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James McGrath, City of Pittsfield
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Michael Coakley, PEDA
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Andrew Silfer, GE (cover letter only)
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James Bieke, Sidley Austin (via e-mail)
Daniel Cassedy, AECOM
Public Information Repository at David M. Hunt Library in Falls Village, CT
GE Internal Repository

AECOM

Supplemental Phase IA Cultural Resources Assessment Report for the Housatonic Rest of River

October 2022

FOR PUBLIC RELEASE

Prepared for General Electric Company
Pittsfield, Massachusetts

October 2022

Supplemental Phase IA Cultural Resources Assessment Report for the Housatonic Rest of River

FOR PUBLIC RELEASE
(Specific Locations of Archaeological Sites Redacted To Protect Site Integrity)

Prepared for
General Electric Company
1 Plastics Avenue
Pittsfield, Massachusetts 01201

Prepared by
AECOM
500 Enterprise Drive
Rocky Hill, Connecticut 06067

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APPENDICES

LIST OF ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effects
ARARs	Applicable or Relevant and Appropriate Requirements
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CRA	Cultural Resources Assessment
EPA	U.S. Environmental Protection Agency
Final Revised SOW	Final Revised Rest of River Statement of Work
GE	General Electric Company
GIS	Geographic Information System
MACRIS	Massachusetts Cultural Resource Information System
MBUAR	Massachusetts Board of Underwater Archaeological Resources
MHC	Massachusetts Historical Commission
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
PAL	Public Archaeology Laboratory, Inc.
RCRA	Resource Conservation and Recovery Act
Revised Final Permit	Revised Final Resource Conservation and Recovery Act Permit Modification
ROR	Rest of River
RU	Remediation Unit
SHPO	State Historic Preservation Office
SRHP	State Register of Historic Places
TCP	Traditional Cultural Property
THPO	Tribal Historic Preservation Office
UDF	Upland Disposal Facility

1 Introduction and Overview of Research

1.1 Introduction

On December 16, 2020, the U.S. Environmental Protection Agency (EPA) issued to the General Electric Company (GE) a Revised Final Resource Conservation and Recovery Act (RCRA) Permit Modification (Revised Permit), which set forth the Remedial Action selected by EPA to address polychlorinated biphenyls (PCBs) in the Rest of River (ROR) area of the GE-Pittsfield/Housatonic River Site. The ROR area consists of the portion of the Housatonic River and its backwaters and floodplain (excluding portions of certain residential properties) downstream of the confluence of the East and West Branches of the Housatonic River, as shown on Figure 1. The Revised Final Permit required GE to develop and submit a Statement of Work (SOW) specifying the deliverables and activities that GE will conduct to design and implement the ROR Remedial Action. In accordance with that requirement, after receipt of EPA's comments on an earlier version, GE submitted a *Final Revised Rest of River Statement of Work* on September 14, 2021 (Final Revised SOW; Anchor QEA et al. 2021), and EPA approved it on September 16, 2021 (EPA 2021).

In accordance with the Revised Permit and Final Revised SOW, GE prepared and submitted on January 17, 2022, a Supplemental Phase IA Cultural Resources Assessment (CRA) Work Plan describing the process and activities that GE proposed to conduct to begin to identify potentially affected ROR areas that contain known cultural resources or have a high potential to contain such resources, as well as upland areas with known or suspected historic structures that might be indirectly affected by project activities. EPA conditionally approved that work plan on April 20, 2022.[1]

GE, through its consulting archaeologists at AECOM, subsequently carried out the supplemental Phase 1A CRA activities described in that work plan as conditionally approved by EPA. In accordance with that conditionally approved work plan and Section 4.2.1.7 of the Final Revised SOW, this Supplemental Phase 1A CRA Report has been prepared to describe those activities, present the results, and describe the next steps in the cultural resources investigation process for the ROR area.

[1] As discussed in Section 4.2.2 of the Final Revised SOW, the Upland Disposal Facility (UDF) site and UDF support area to be used in the Remedial Action for disposal of removed sediment and soils were subject to a separate CRA, which was described in GE's *Phase 1A Cultural Resources Assessment Report for Upland Disposal Facility Area*, submitted on July 8, 2022 (AECOM 2022) and conditionally approved by EPA on September 7, 2022. Some supplemental CRA investigations of portions of the UDF area are underway, with a report on them to be included in a UDF report to be submitted to EPA by December 6, 2022.

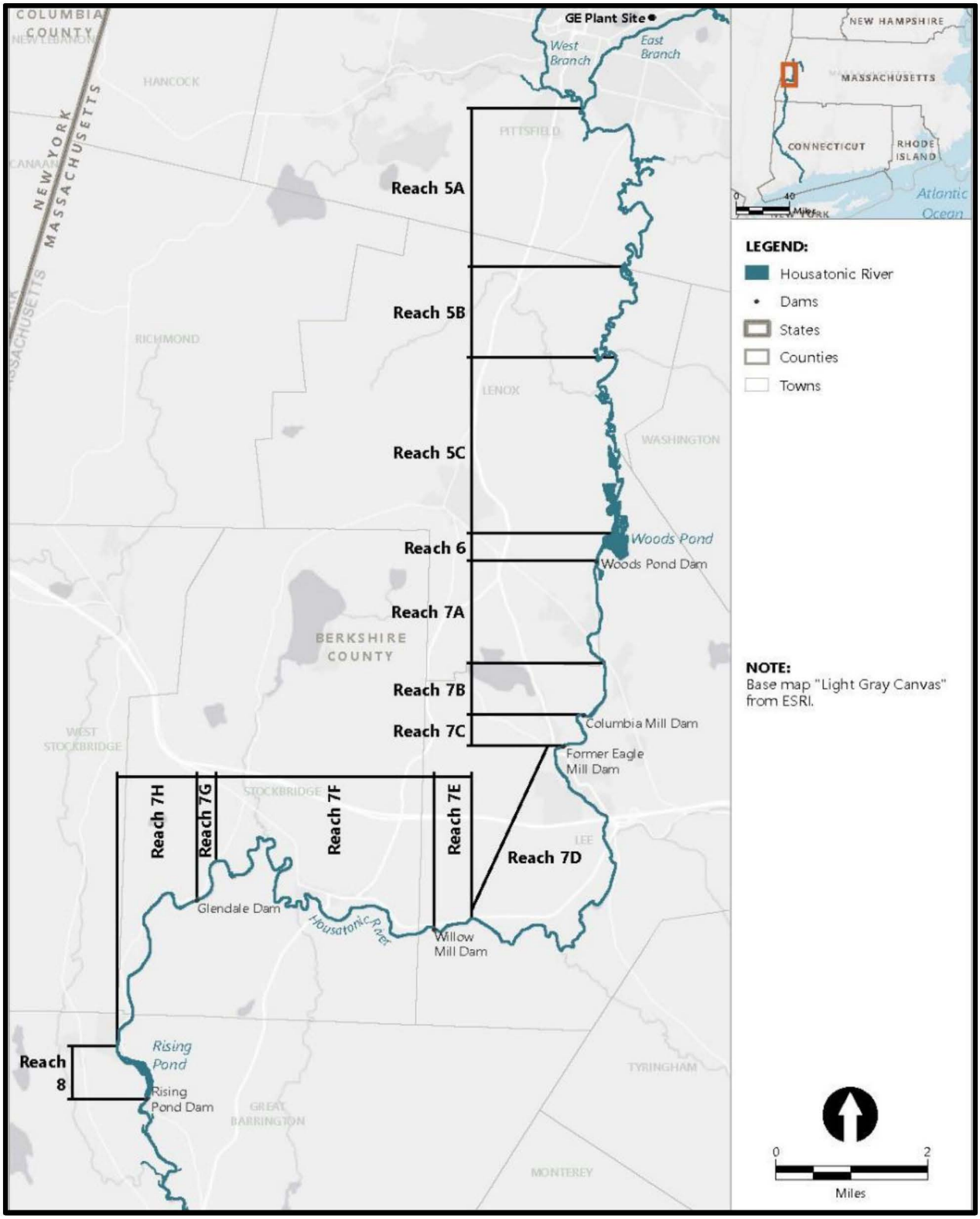


Figure 1. Location of Rest of River in Western Massachusetts.

1.2 Background

In 2008, GE submitted to EPA a report entitled *Initial Phase IA Cultural Resources Assessment for the Housatonic Rest of River Project* (Initial Phase 1A CRA Report; URS 2008). The Initial Phase IA CRA was conducted to assess the potential for archaeological and historical resources (jointly referred to herein as cultural resources) to exist in the portions of the Housatonic River and its floodplain that could potentially be affected by implementation of the remedial activities selected by EPA – namely, Reaches 5 through 8. That assessment was conducted consistent with Section 106 of the National Historic Preservation Act (NHPA) and federal and state regulations (36 CFR Part 800; 950 CMR 71.00). It preliminarily identified an Archaeological Area of Potential Effects (APE) as the potentially affected river, shoreline, and floodplain areas; and it also noted that a Historic Architectural APE would encompass historic properties that are located within the Archaeological APE or may be impacted by remedial activities.

The Initial Phase IA CRA Report included: (1) background information on the environmental setting, pre-history, and history of the project area and region; (2) description of previous cultural resource studies and types of known cultural resources within the Archaeological APE; (3) a preliminary assessment of the potential for each section of the Archaeological APE to contain as-yet unidentified cultural resources; and (4) an outline of future steps under the NHPA to evaluate potential impacts on cultural resources once the scope and extent of remedial action have been determined. On September 9, 2008, EPA provided comments on the Initial Phase IA CRA Report, and on March 5, 2009, GE provided a response to those comments.

In accordance with that report and Section 4.2.1.7 of the Final Revised SOW, the activities conducted under the Supplemental Phase 1A CRA Work Plan and described in this Supplemental Phase 1A Report were performed to provide an update to the Initial Phase 1A CRA following EPA's issuance of the Revised Permit.

1.3 Scope

As stated in the Final Revised SOW, the objective of the supplemental Phase IA CRA was to identify river, riverbank, and floodplain areas within the Archaeological APE with known cultural resources or high potential to contain such resources and upland areas within the Historic Architectural APE with known or suspected historic structures. These APEs will encompass ROR areas where active remediation could potentially occur,[2] as well as likely associated support areas (including access

[2] The ROR areas where remediation activities could potentially occur include the river channel in Reach 5, the riverbanks in Reaches 5A and 5B, the floodplain in Reaches 5 and 6, the backwaters in Reaches 5-8, the impoundments in Reaches 6, 7, and 8, and the designated Exposure Areas and vernal pools in the Reach 7 floodplain. They do not include the riverbanks downstream of Reach 5B (although these could be impacted by access roads or support facilities), the flowing portions of Reach 7, other portions of the Reach 7 floodplain, and reaches downstream of Reach 8 – in all of which no remediation is required.

roads and staging areas) in or close to to those areas. For purposes of this CRA, cultural resources include archaeological and historical resources that are subject to the Applicable or Relevant and Appropriate Requirements (ARARs) relating to such resources, as listed in Attachment C to the Revised Permit – namely, the NHPA and its regulations, the federal Archaeological and Historic Preservation Act, and the Massachusetts Historical Commission (MHC) Act and its regulations. These resources include resources that are listed or could potentially meet the criteria for listing on the National Register of Historic Places (NRHP), resources that are listed on the Massachusetts State Register of Historic Places (SRHP) and included on the State Inventory of Historic and Archaeological Assets, and potentially significant scientific, prehistorical, historical, or archaeological data subject to the Archaeological and Historic Preservation Act – collectively referred to herein as "potentially significant cultural resources."[3] These resources will include properties of traditional religious and cultural importance that fall into any of the above categories.

In accordance with the Final Revised SOW, this Supplemental Phase IA CRA Report describes the additional desktop reviews, literature searches, and consultations conducted under the Supplemental Phase 1A Work Plan to update the 2008 Initial Phase IA CRA. It also describes the updated archaeological sensitivity modeling conducted of the ROR areas to assess their potential to contain unidentified potentially significant cultural resources – i.e., whether they have "no," "low," or "high" potential to contain such resources. In addition, it identifies known or suspected historic structures that could be affected by remediation or support activities, to the extent known at this time.

For purposes of this report, the specific Remediation Units (RUs) to be evaluated (referred to as Remediation Areas in the Final Revised SOW) are those identified in the *Revised Final Overall Strategy and Schedule* document submitted in July 2022 (Anchor QEA 2022), as approved by EPA. However, much information relevant to evaluating the specific cultural impacts of the ROR Remedial Action is not known at this time – notably, the specific locations to be remediated within many areas (including the Reach 5B and 5C channel, Reach 5A and 5B riverbanks, backwaters, Wood Pond and Rising Pond, floodplain areas, and vernal pools), where the need for and extent of remediation depend on comparing sampling data to criteria in the Revised Permit, as well as the specific locations of support areas such as access roads and staging areas. To the extent that such areas are not covered by this Supplemental Phase IA CRA Report, they will be assessed for cultural resources at a later time. The procedures for and results of such additional assessments will be included in or attached to appropriate later submittals for the subject RUs – probably the Phase IB Cultural Resource Survey Work Plans for procedures and the Phase IB Cultural Resource Survey Reports for results – as described in Section 4.3.3.2 of the Final Revised SOW and Section 8 of this report.

[3] Section 3.7 of the approved Supplemental Phase 1A Work Plan, described how the CRA activities conducted under that Work Plan would comply with the substantive provisions of the listed ARARs. That discussion remains applicable.

1.4 APE Definitions

The Archaeological APE and Historic Architectural APE are based on the scope and extent of remediation as currently known, but these will need to be adjusted and refined as remediation plans are further refined and modified in the future. The current Archaeological APE, which is based on the ROR limits, encompasses those areas of the river channel, shoreline, impoundments, backwaters, and adjacent floodplain that may be experience disturbance as a result of remediation activities. This APE will also likely include the locations of some access roads and staging areas. The current Archaeological APE is shown on Figure 2 through Figure 5, which are presented and discussed in Section 4.2 of this report. Once the specific locations to be remediated and the locations of access roads and staging areas have been identified through design activities, the boundaries of the Archaeological APE will be revised to include those affected areas and exclude areas that will not be affected.

The Historic Architectural APE encompasses, at a minimum. the Archaeological APE as well as adjacent locations within sight of areas involved in remediation. This APE will also include areas which could be indirectly impacted by factors such as noise, vibration from equipment, or vehicle movements associated with the remediation. However, since, as noted above, the specific locations to be remediated within many ROR areas as well as the specific locations of support areas are not known at this time, and since there are numerous historic structures and properties in the general region from Pittsfield to Housatonic, this Supplemental Phase IA CRA Report does not further define the exact limits of the Historic Architectural APE or present a comprehensive inventory of all historic structures in the area. Rather, this report describes structural resources known to be directly associated with the Archaeological APE and summarizes the extent of known nearby historic structures. Once the specific locations to be remediated and the specific locations of support areas have been identified, this information can be used to refine the limits of the Historic Architectural APE and to identify the extent of any survey measures needed to further identify historic structures.

These revisions of the Archaeological APE and the Historic Architectural APE and any associated survey activities will be presented in the Phase 1B Cultural Resource Survey Work Plans for the specific RUs, as described in Section 8 of this report.

1.5 Research Design

The goal of the Supplemental Phase 1A CRA was to update the 2008 assessment of the potential for cultural resources to exist in the portions of the Housatonic River and its floodplain that could potentially be affected by implementation of the remedial activities selected by EPA – namely, Reaches 5 through 8. This research sought to identify the location and character of known archaeological sites, historic infrastructure, and historic structures, and to then use this information in combination with environmental data and historic background research to provide an assessment of

the likelihood of additional not-yet-identified cultural resources occurring within the subject ROR areas.

The anticipated results of the study were to summarize all the background information obtained and to provide mapping showing all known cultural resources as well as the results of the archaeological sensitivity modeling. It is recognized that additional data collection will be needed to complete the Phase I cultural resources investigations, such as systematic archaeological surveys, geomorphological analysis, and historic architectural surveys.

1.6 Research Conducted

This section describes the research conducted to achieve the research goals described in Section 1.5.

The 2008 Initial Phase 1 CRA Report presented all of the background data available as of that date, and this 2022 update focused on identifying additional information that became available in the intervening 14 years. To that end, on-line reviews were conducted of the MHC's report files and data bases, including the Massachusetts Cultural Resource Information System (MACRIS), Massachusetts State Historic Preservation Plan, and MHC State Reconnaissance Survey Reports, to identify any additional cultural resources within the APEs included in those data bases, and to gather data on known cultural resources in the region near the APEs to help refine assessments of the potential for as-yet-unidentified resources to be affected by the ROR remediation project. Desktop and on-line reviews were also conducted of local Historic District Commissions, Historical Societies, and libraries for the same purpose.

These sources were reviewed for updated information on the area's prehistory and history. Such sources included reports, articles, papers, reports, and volumes on archaeological and architectural history investigations within the region, as well as historic maps and atlases. Published works on the history of the area were examined. Other sources consulted included unpublished monographs and reports, historical architecture files, documentary photographs, county atlases, and fire insurance maps. The focus of this background historical research was to reconstruct historic and modern land use within the Archaeological APE, and identify the general locations of recorded historic structures, roads, rail lines, and districts. Various maps were examined, including historic topographic maps, current 7.5' USGS quadrangle maps, and geologic maps. Current and historic aerial photographs were reviewed to note natural and human-induced changes to river-associated landforms. In addition, mapping resulting from the aerial Light Detection and Ranging (LiDAR) survey conducted of Reaches 5 and 6 in December 2021 as part of the Pre-Design Investigation of Reach 5A was examined to help define the floodplain landforms in Reach 5.

In 2008, URS (now AECOM) archaeologist Dr. Daniel Cassedy conducted an initial reconnaissance of the Archaeological APE, including driving along all accessible roads adjacent to the river to visually

inspect the project corridor. That reconnaissance also included pedestrian inspection of the floodplain sections and examination of the river channel and banks from a small boat. On the river, the archaeologist slowly traversed along the riverbanks (where river conditions allowed), visually inspecting conditions and classifying the terrain. At frequent intervals, the team stopped the boat, and got out to conduct a limited pedestrian reconnaissance to obtain more detailed information on the terrain, soils, and vegetation adjacent to the river. In accordance with Condition 7 of EPA's April 20, 2022 conditional approval letter, this earlier reconnaissance was updated in August 2022 by Dr. Cassedy, who was accompanied by an EPA contractor and a representative of the Wampanoag Tribe of Gay Head (Aquinnah) (referred to herein as the Wampanoag). The 2022 field work followed a similar strategy as the previous reconnaissance, but the canoe inspection focused primarily on Reach 5, since Reach 5A will be the first RU to be remediated. The updated reconnaissance also involved a systematic vehicle inspection and pedestrian checks of the remaining sections of the ROR.

In addition, to further assess the potential for historic architectural resources in or near the Archaeological APE (which, as noted, will be included in the Historic Architectural APE), a reconnaissance (windshield) survey was conducted. Representative resources identified were photographed and mapped, but a comprehensive survey was not completed.

The information collected in the background research and supplemented by the visual reconnaissance was organized in a database of known cultural resources. This database systematically records information on the age, affiliation, location, and resource type for every known cultural resource located in the Archaeological APE. This database is linked to a master project GIS to facilitate later comparisons with the locations of remediation and support activities. In addition, following completion of the reconnaissance, the GIS-based archaeological sensitivity maps of the project's Archaeological APE were updated.

Section 106 of the NHPA requires federal agencies to engage in formal consultation with certain groups and individuals, known as consulting parties. Consulting parties may include other federal agencies with an involvement in the project, State Historic Preservation Offices (SHPOs), Tribal Historic Preservation Offices (THPOs), local governments, and individuals and organizations with demonstrated interest in the undertaking. This outreach is and will continue to be an ongoing aspect of the cultural resources compliance process for the ROR remediation project and will likely involve multiple episodes of correspondence and meetings as remediation plans are refined and topics of concern are identified.

Solicitation of information from the MHC and with Native American tribal representatives regarding the locations of cultural resources and traditional cultural properties in the vicinity of the project was conducted through EPA's outreach efforts to consulting parties as well as through AECOM's contacts with the Stockbridge Munsee Band of Mohican Indians (referred to as the Stockbridge-Munsee) and the Wampanoag. Both e-mail exchanges and telephone conversations took place with the

Stockbridge-Munsee THPO, and a representative of the Wampanoag participated in the two-day field reconnaissance trip conducted in August of 2022. Both tribes confirmed that the Housatonic Valley in this region contains many locations that are important to the indigenous communities, but did not identify additional specific resources of tribal concern beyond those already identified during the CRA research. They expressed interest in continuing to be consulted as the project progresses and additional research is conducted. AECOM also attempted to contact the Schaghticoke Tribal Nation and the Schaghticoke Indian Tribe in Connecticut via mail but did not receive a response.

2 Environmental Setting

The ROR study area is located in Berkshire County, Massachusetts, which is on the western edge of the State and is bordered by Connecticut (south), New York (west), and Vermont (north). The Housatonic River flows south through the Central Valley region, which lies between the Berkshire Plateau and the Taconic Mountains. The main stem of the river is formed by the confluence of the East and West Branches of the Housatonic River in Pittsfield (the Confluence), which is the northern boundary of the current project. The East Branch begins in Dalton and Hinsdale from headwater tributaries. The West Branch starts at Onota and Pontoosuc Lakes in Pittsfield and Lanesboro and is augmented by flows from the Southwest Branch. Below the Confluence, the river generally flows south through Berkshire County for approximately 10 miles to Woods Pond, the first significant impoundment. Downstream of Woods Pond, the river continues south through western Massachusetts and south/southeast through Connecticut before emptying into Long Island Sound at Stratford, Connecticut.

Woods Pond is an impoundment created in 1890. In 1989, a new dam was constructed approximately 200 feet downstream of the historic dam. Within the ROR area, the other current impoundments include those formed by the Columbia Mill Dam in Lee, the former Eagle Mille Dam in Lee, the Willow Mill Dam in South Lee, the Glendale Dam in Glendale, and Rising Pond Dam in Housatonic. Except for Rising Pond, the other impoundments are relatively small. Historically, there were several other dams in this portion of the Housatonic which have since been removed. These include a dam at Lenox Dale, two in Lee, two in Glendale, and a dam in Housatonic near the Stockbridge town line.

The ROR project area encompasses a wide variety of land use patterns. Although broad areas of floodplain forest, meadows, and agricultural fields predominate by acreage, the project corridor also traverses developed areas of urban and industrial land use, particularly in Lee and in Housatonic. Within Stockbridge, a large section of the river borders the manicured landscape of the Stockbridge Golf Club.

At least 17 soil series are represented within the ROR. The most common soils in the study area are sandy loams, silt loams, and organic-rich mucks. The drier soils are typically deep, well-drained loamy soils derived from glacial outwash or from calcareous glacial till. Overwash of silt and fine sand into the floodplain is apparent in much of the low floodplain. Heavier soil particles, such as medium to coarse sands, remain within the channel and are the dominant soils of the riverbanks and bars.

3 Cultural and Historical Contexts

A description of the cultural contexts provides a framework for discovering, investigating, evaluating, and managing all kinds of archeological sites and historic structures. It is designed to:

- Summarize the current state of knowledge about a type of resource or related categories of resources;
- Provide the basis for understanding expected resource types, their location, age, size, and their expected data classes within a given geographic area; and
- Provide the basis for evaluating the relative significance of resources of the same or similar type.

This section begins with a summary of previous research projects in the area, and this is followed by sections summarizing the pre-contact and historic period contexts of the general region around the project.

3.1 Previous Research in the Region

Most of the previous cultural resource research in the region has been associated with transportation and utility projects, and most of these were concentrated in two zones: in Pittsfield near the north end of the current project, and along a narrow corridor in South Lee and Stockbridge. This section provides brief summaries of known projects arranged in chronological sequence.

The Institute for Conservation Archaeology at Harvard prepared a Phase I Reconnaissance Study for proposed water pollution control projects in Lee (Mulholland et al. 1977). This study highlighted the potential for historic sites relating to the factories and mills along the Housatonic and its tributaries, but no field studies were conducted.

In 1983, Dunn Geoscience conducted a Stage 1B Archaeological Survey for the realignment of Route 7 (Upper North Street) in Pittsfield, including examination of prehistoric site 19BK99, which was identified as a small Late Archaic hunting camp.

UMass Archaeological Services conducted site examinations of six archaeological sites (four prehistoric and two historic) in Pittsfield in 1988 in association with the Route 7 Bypass project (Bernstein and Savulis 1988). That same year, the Boston University Office of Public Archaeology conducted a reconnaissance for six miles of corridor in Pittsfield for the Tennessee Gas Pipeline NOREX project (Jones and Seasholes 1988). This corridor crosses the current project APE near the south end of the Audubon Sanctuary, near the mouth of Sykes Brook. A subsequent survey in 1990 identified a prehistoric site (19BK185) east of the current APE near Court Hill, north of Sackett Brook.

In 1992, the Public Archaeology Laboratory, Inc. (PAL) surveyed a proposed GE/Altresco gas pipeline route in Pittsfield (Nassaney and Leveille 1992). This short pipeline route extended from the Altresco Plant on the northeast side of Pittsfield around the east and south sides of the city, crossing the Housatonic River alongside Holmes Road. Four prehistoric sites were identified. None is within the current Archaeological APE, but one is [redacted] near Morewood Lake (19BK181) and the other three (19BK183, 184, 185) are along Sackett Brook [redacted] Also in 1992, the State Archaeologist's office conducted a brief walkover survey of site 19BK154 at Melville's Arrowhead estate on Holmes Road (Simon 1992). This survey confirmed the presence of prehistoric artifacts on the property.

In 1991 and 1992, a series of survey and site examination projects were conducted for Tennessee Gas Pipeline Company's Northeast Settlement Expansion Project. The northern end of Segment 2 extended northwest along the valley of Hop Brook and crossed the Housatonic River (and the current APE) between Lee and South Lee. Surveys and site examinations for Segment 2 were done by the BU Office of Public Archaeology (Jones 1992; Jones and Berkland 1992; McDermott and Macomber 1991; Macomber 1992; Macomber et al. 1992). These studies resulted in the identification of six prehistoric sites [redacted] Housatonic River. Four of these sites are located within the mapped floodplain (19BK145, 19BK147, 19BK148, and 19BK156) and two more abut the south edge of the floodplain (19BK146 and 19BK157). These sites include multiple Late Archaic, Early Woodland, and Late Woodland components.

UMass Archaeological Services conducted the studies for Segment 7 of the Northeast Settlement pipeline project, which began at the end of Segment 2 north of the river near Church Street and extended northwest into New York (Holmes et al. 1992a, 1992b, 1992c). Relevant to the ROR, the Segment 7 studies identified six sites along the route just north of Stockbridge, including two significant prehistoric sites near Kampoosa Bog, which drains south into the Housatonic River. Phase 3 data recovery excavations were conducted at these two sites prior to construction (Johnson and Mulholland 1995). Those mitigation studies are the only extensive archaeological excavations that have taken place in the vicinity of the current ROR project. They documented that the margins of Kampoosa Bog have been occupied for over 6,000 years, with notable occupations relating to the Snook Kill/Atlantic tradition and the Late Woodland period (Johnson and Mulholland 1995:22).

PAL conducted an intensive archaeological survey of a portion of the Housatonic River in Pittsfield in 2005 in connection with EPA's performance of remediation in the portion of the river known as the 1½ Mile Reach. A report on that survey was submitted to the U.S. Army Corps of Engineers and EPA in January of 2006 (PAL 2006). The project area included both sides of the Housatonic River from the Pomeroy Avenue Bridge upstream of the Confluence of the East and West Branches to that Confluence. Field investigations included the excavation of 62 fifty-centimeter (cm) shovel test pits

at 10-meter intervals along the river floodplain. No evidence of any archaeological sites was identified or recovered during the survey.

As discussed in Section 1.2, in 2008, URS (now AECOM) prepared a Phase IA CRA Report for the Housatonic Rest of River Project (URS 2008) to assess the potential for archaeological and historical resources to exist in the portions of the Housatonic River and its floodplain that could potentially be affected by implementation of future remediation activities in the ROR. The Initial Phase IA CRA Report included background information on the environmental setting, pre-history, and history of the project area and region; a description of previous cultural resource studies and types of known cultural resources; and a preliminary assessment of the potential for each section of the project to contain as-yet unidentified cultural resources.

In 2011, the University of Massachusetts-Amherst Archaeological Services, conducted reconnaissance and intensive archaeological surveys for upgrades along the 1371 transmission line in Lee, which is crosses the Housatonic River near Woods Pond. No archaeological sites were reported within the ROR area by that survey (Donta, Blake and Barker 2011).

AECOM conducted survey and construction monitoring in 2018 and 2019 for a stormwater drainage improvement project that the Town of Stockbridge implemented on the north side of the Housatonic River behind the town offices in the former Stockbridge School building and in Bidwell Park (Campetti 2021). A scattering of both pre-contact and post-contact artifacts were recovered from disturbed topsoil and fill soils in Bidwell Park, but no intact archaeological sites were identified there. Construction monitoring within the Town Offices Parking revealed a highly disturbed area related to

[redacted]

PAL conducted an intensive archaeological survey for Phase I of the Lee Bikeway in 2019. The route of that project extended along the east bank of the Housatonic River from the I-90 interchange north to West Park Street, but no archaeological sites were reported.

Recent projects in Stockbridge conducted by the Stockbridge Munsee THPO included surveys of potential burial grounds and placing a headstone for Mohican ancestors in the Town Cemetery. In addition, in 2021, the THPO continued research for the Ox Roast/King Solomon Uhhaunnuhwaunnuhmut homesite excavation near Laurel Hill at the site of the 1783 Ox Roast presented by George Washington to thank the Mohican people for their service in the Revolutionary War. An archaeological survey at the location of the 1739 Meetinghouse, or today's chime tower, also took place in 2021.

3.2 Paleoindian Period

Human occupation of northeastern North America began soon after the continental ice sheet began to recede northward, once again exposing land. Current evidence suggests that approximately 13,000 years before the present (B.P.), humans began moving into what is now New England. This first period of prehistory lasted until approximately 9,500 B.P. Archaeological sites dating to this time period are most commonly recognized by the presence of distinctive biface stone tools called fluted points. Because of extreme age and low population densities, Paleoindian sites are relatively rare and have often been disturbed by more recent natural events and human activities.

Although relatively few Paleoindian sites have been excavated in the Northeast, there have been documented discoveries in the general region near the Housatonic drainage. In 1977, the American Indian Archaeological Institute (AIAI) excavated a site known as 6LF21 on the Shepaug River in northwestern Connecticut (Moeller 1980), and this site produced a radiocarbon date of 10,190 RCY B.P. More recently, the Hidden Creek site in Mashantucket, Connecticut (Jones & Forrest 2003) has yield evidence of Paleoindian occupations. Most of the evidence for Paleoindian occupations in the region comes from isolated finds of the distinctive fluted points from scattered locations. Many finds appear to be associated with former post-glacial lake basins (Lavin 1984). In particular, surveys by the AIAI near Robbins Swamp in northwestern Connecticut have identified a number of Paleoindian sites around the margins of this rich ecological zone (Nicholas 1988).

3.3 Early Archaic Period

Prior to 1970, there was virtually no evidence of any Northeastern sites dating to the Early or Middle Archaic periods. In the last three decades, considerable information has been obtained to fill in that gap, but the picture is still incomplete. There are still relatively few excavated, radiocarbon-dated Early Archaic sites in the Northeast. Most have been identified by the presence of projectile points analogous to dated types such as Palmer, Kirk, Charleston, MacCorkle, LeCroy, St. Albans, and Kanawha, which have been found in stratified Southeastern sites.

Archaeologists are beginning to be able to identify distinctive regional characteristics in the Early Archaic artifact forms and assemblage characteristics. Excavations in northwestern Connecticut around Robbins Swamp in the Upper Housatonic drainage just south of the Massachusetts border suggest that these early Holocene occupations tended to cluster in resource rich locales such as former glacial lake basins (Nicholas 1988). Approximately 35 Early Archaic components were identified along with a number of Paleoindian sites, suggesting early intensive exploitation of this extensive wetlands complex. Some of the Early Archaic sites were identified by the presence of diagnostic types such as Kirk, bifurcate, and Kanawha points, and others by the presence of distinctive scraper and graver forms. Early site/landform associations range from lake shoreline and

upper river terraces to wetland margins and upland springs, and include large, multiple, early component sites, and small, single-component, special-activity sites (Nicholas 1988:271).

Nicholas has been a frequent and vocal proponent of the idea that early Holocene occupations in the Northeast were much more abundant than previously thought, and that they operated within an environment that was much more productive than originally described. He has identified former glacial lake basins as locations that are likely to have been established as resource rich mosaics within a changing and somewhat unpredictable early Holocene landscape (Nicholas 1988).

3.4 Middle Archaic Period

The Middle Archaic is associated with warmer and drier climatic conditions. By this period, modern floral communities were established and characterized by mast-producing hardwoods. Rivers stabilized during this time and wetland and lake areas were reduced in size. Hunting continued to be important, and fish may have become a more predictable resource.

Clear identification of the chronological position of Middle Archaic artifacts in the Northeast was not established until Dincauze reported on the excavations at the stratified Neville site on the Merrimack River in New Hampshire (Dincauze 1976). These excavations documented the existence of the Neville stemmed point type dating to between 7,800 and 7,000 B.P., and the Stark stemmed point type dating between about 7,600 and 6,400 B.P. (Dincauze 1976). The Neville and Stark point types are similar in style and age to the Stanly and Morrow Mountain types that Coe (1964) defined earlier in the Southeast. In addition, the Merrimack point type was identified as dating to the end of the Middle Archaic period close to 6,000 B.P.

The Neville and Stark types have proved to be relatively common throughout New England. Dincauze and Mulholland (1977) have presented a synthetic model of Middle Archaic settlement for southern New England. They suggest that site types of this period involve large-group occupations that maximize proximity to a variety of seasonal resources, as evidenced by the tool assemblages and recovered faunal materials at these sites. An increase in the number of sites in aquatic resource environments is noted, and these sites are frequently located at falls or rapids where anadromous fish comprised an important seasonal resource (Dincauze 1976). The accumulated data for the Middle Archaic period in the Northeast suggest that, during this period, the prehistoric inhabitants were forming themselves into distinct bands and were settling into defined territories. These bands were establishing base camps and were occupying a greater variety of special-purpose sites in a carefully planned seasonal round (Snow 1980:183).

3.5 Late/Terminal Archaic Period

Archaeologists recognize the Late Archaic period as one in which the numbers and types of sites increase dramatically—what Snow (1980:187) describes as the Late Archaic "florescence." Based on

his early work in New York, Ritchie recognized two major Late Archaic trajectories, the Lamoka and the Laurentian, which overlap in both time and space. Both are also represented in New England, but in different distributions.

Following Tuck's (1978) definition of the Lamoka/Sylvan/Squibnocket complexes of central and southern New York and New England as the "Mast Forest Archaic," Snow (1980:226) proposed that the Laurentian complex and related assemblages in northern New England and the St. Lawrence drainage be designated as the "Lake Forest Archaic." As Snow describes them, these two complexes coexisted at times during which each was more common within a particular geographic region. This scheme supposes that there was a "marginal belt of tension between the two coeval zones that persisted throughout the Late Archaic" (Snow 1980:227).

Although Snow (1980) suggests that the Lake Forest Archaic sites are primarily a northern New England manifestation, and only appear in sparse numbers in western Massachusetts and Connecticut between 5,500 and 4,500 B.P., Pfeiffer (1984) has compiled evidence that the Lake Forest Archaic in southern New England is a widespread tradition firmly dated to the period between 5,000 and 4,200 B.P. Pfeiffer notes that "the Late Archaic period also witnessed an increase in the importance of gathering activities, the employment of storage, and an expanded duration of settlement" (1984:85).

In addition to the Lake Forest Archaic assemblages, southern New England also has widespread and long-term evidence of Snow's Mast Forest tradition—what other researchers have often called the "Narrow-Stemmed" or "Narrow-Point" traditions. Although some researchers have proposed that the Laurentian, or Lake Forest, tradition coexisted with the Narrow Point tradition (Ritchie 1969; Dincauze 1975; Snow 1980), others (McBride 1984a:247-248) consider the Lake Forest (Laurentian, Golet phase) as temporally distinct from the Mast Forest (Narrow Point, Tinkham phase).

Mast Forest Archaic sites are numerous and occur in a "wide variety of local settings" (Snow 1980:230). The settlement system likely consisted of "central based wandering" by highly territorial groups (Dincauze 1974:48, 1975:25; Snow 1980; McBride 1984a, 1984b:65). Population aggregations occurred along major drainages and interior wetlands, with movement between habitation sites prescribed by seasonal availability of resources (Dincauze 1974:48, 1975:25; McBride 1984a, 1984b:65; Snow 1980).

The end of the Archaic has also been commonly called "Transitional" in reference to its presumed transitional status between the Archaic and Woodland periods. Since research continues to indicate that there is actually a great deal of cultural and biological continuity between the Archaic and the Woodland periods, Snow (1980:235) has suggested that the label "Terminal Archaic" is more appropriate.

As Snow defines it, the hallmark of the early part of the Terminal Archaic in eastern and southern New York is the Susquehanna tradition of broad stemmed projectile points and their associated assemblages. These points include a number of regional varieties, including the Genesee, Perkiomen, Snook Kill, and Susquehanna Broad types in New York and Atlantic/Wayland points in Massachusetts. This Susquehanna tradition of broad stemmed projectile points is analogous to Coe's (1964) Savannah River type from the southeastern United States. Characteristics of the Susquehanna Tradition include a riverine adaptation and a predilection for the fine-grained lithic resources of the Piedmont province including rhyolite, felsite, argillite, and slate (Dincauze 1975:27; Turnbaugh 1975:54). The latter portion of the Terminal Archaic period is marked by the appearance of narrow, tapered Orient Fishtail projectile points.

3.6 Early and Middle Woodland Period

Early Woodland cultures in southern New England show considerable variation from the patterns seen in central and western New York. Sites in the latter region show much greater participation in widespread trade networks that extended from the Gulf of Mexico to the Great Lakes. Exotic seashells, distinctive types of stone, and native metals such as copper and lead moved between the far-flung reaches of the network. This trade network was also associated with an elaborate mortuary ceremonialism that included burying many of the exotic traded items in graves with the dead. The presumed core of this system was the Adena tradition of the Ohio River drainage, to which numerous elaborate sites with well stocked graves have been attributed.

Evidence of the Adena tradition is more limited in the Early Woodland Meadowood tradition of southern New England. In addition to Meadowood projectile points, Adena, Rossville, and Lagoon points and Vinette I ceramics are also associated with this time period. Rossville and Lagoon points are particularly common on Early Woodland sites in the coastal areas of southern New England and Long Island Sound.

Narrow points are commonly assigned to the Late Archaic period; however, Swigart (1974) has dated points of this type in the Housatonic drainage to 2,700-2,500 B.P., which would place them in the Early Woodland period. Furthermore, Lavin, McBride, and others have suggested that the Narrow Point technological tradition may have even continued into Contact and historic periods (McBride 1984a:105; Lavin 1984).

Just as the Early Woodland Meadowood phase is associated with the Ohio Valley Adena network, Middle Woodland sites appear to have been associated to some degree with the Middle Woodland Hopewell interaction sphere. However, exotic trade items from the Hopewell network are less common in southern New England and eastern New York than they are in the west (Snow 1980:287).

3.7 Late Woodland Period

Following the apparent decline in settlement activity during the Early Woodland and the early part of the Middle Woodland period in the Northeast, the next millennium witnessed an intensification of subsistence and settlement patterns that culminated in the relatively sedentary villages of agriculturalists encountered by the first European explorers. This span of time has been traditionally designated by archaeologists as the latter portion of the Middle Woodland period from 1,650 B.P. to 1,000 B.P. and the Late Woodland period from 1,000 B.P. to substantive contact with Europeans. This report will break from tradition somewhat and will end the Middle Woodland at about 1,200 B.P (A.D. 750).

A division between Middle and Late Woodland at this point in time correlates with the widespread appearance of maize in the archaeological record throughout much of the eastern United States. Snow (1980:261) has previously suggested that the Kipp Island and Hunters Home phases reflect the increasing isolation of the Northeast from the rest of the Eastern Woodlands. Interestingly, this is also a period in which the Hudson drainage shows increasing linkages with southern New England. These linkages include increasing amounts of chert moving into the Housatonic and Connecticut River drainages, as well as "New York" ceramic traditions extending east into the upper Housatonic drainage (e.g., see Cassedy and Lavin 2007).

By the Late Woodland period, the archaeological antecedents of historically recognized Native American groups can be recognized. North, central, and western New York were occupied by groups believed to be ancestral to the Iroquois; in these areas, large, nucleated, semipermanent sedentary villages developed. In contrast, eastern New York and western New England were occupied by smaller, somewhat less permanent settlements ancestral to the Algonkians (Late Woodland settlement patterns in both areas were still more sedentary than in previous periods).

Late Woodland sites are recognized by a series of distinctive incised and collared ceramic types and by triangular projectile points. The larger Levanna point type was most common early in the period and was later accompanied by the smaller Madison type.

3.8 Contact/Native American Historic Period

The chronological end of the Late Woodland period is about 350 B.P (A.D. 1600), but it varies by region, depending on the timing of European exploration and settlement. The next two centuries are often referred to as the Contact Period, and in southern New England the term "Final Woodland" is preferred by some. Both labels refer to the phase when Native lifestyles were radically changed by factors such as war, disease, trade, and acculturation.

Around the time of European contact, Wnahktukuk (later, Stockbridge) was a significant settlement for the Mohicans[4] who occupied the Housatonic and Hudson River Valleys when the Dutch, and later, English, entered their lands. Prior to establishment of the settlement at Stockbridge, the Mohicans occupied a pivotal position both culturally and geographically in the conflicts between the Iroquois Confederacy and the Algonkian tribes of New England (Brasser 1978). The Mohican lands extended from what is now Lake Champlain south nearly to Manhattan Island and on both sides of the Mahicannituck (Hudson River), west to Schoharie Creek and east into Massachusetts, Vermont and Connecticut. Control of the area on the west side of the Hudson was lost in 1628 as a result of warfare with the Mohawks of the Haudenosaunee Confederacy. In the 1660s, the Mohicans were forced to abandon almost all of the Hudson Valley, and many of them clustered with other related western New England Algonkians in settlements along the upper Housatonic River in western Massachusetts.

Some ethnohistoric data indicate that the Mohicans lived in stockaded hilltop villages containing three to 16 elongated wigwam longhouses (Snow 1980:88). In addition to these villages, "when at fishing or hunting stations, [they] probably lived in single-family wigwams" (Snow 1980:88).

The Euroamerican documentary record concerning the Native American communities and villages of the upper Housatonic Valley is sparse. During the seventeenth century, there was a somewhat persistent, though incorrect, Euroamerican perception that the upper portions of the Housatonic were a "hideous, howling wilderness" (Smith 1946). Though this misperception did not accurately characterize the settlements of ancestral Mohicans and others, a lack of English and Dutch administrative control over the lands east of the Berkshires escarpment was advantageous for Mohican sachems Konkapot and Umpachenee who established a new political center in the upper Housatonic that attracted Native people from the Mohican diaspora (Binzen 2004).

3.9 Settlement and Revolutionary War Era

The lower Housatonic was settled in the 1640s, but it took almost a hundred years for permanent settlements to expand north into what is now Berkshire County, Massachusetts. In 1733, Sheffield was the first town in the county to be incorporated, followed by Stockbridge in 1739, Great Barrington in 1742, and Pittsfield in 1753. Lee and Lenox incorporated a decade or two later.

The colonial government history of Stockbridge begins with the 1735 establishment of Wnahktukuk as an "Indian Praying Town," ostensibly for the benefit of Mohicans living there, primarily to encourage them to take up European religion and lifeways (Barber 1841). John Sergeant initiated a

[4] Dunn (1994:8) notes that many alternate spellings of "Mahican" have been used over the years, including Mohican, Mahikan, and Mahiecan, but they are not to be confused with the Mohegan of Connecticut. Mahican is the most common form used by the seventeenth century Dutch who were first in contact with the Hudson Valley group, but the current indigenous descendants use "Mohican".

mission amongst the Mohicans, who at the time were living in two communities along the Housatonic – one they called Skatehook (in Sheffield, Connecticut) and the other Wnahktukook (now Stockbridge). To consolidate the settlements, the Massachusetts legislature established a six-square-mile township for the natives; and as Field (1829:239) reports, "the design was to include the fine alluvial grounds at Wnahktukook, already cleared and cultivated to some extent, where a party of the Indians then lived . . . ."

In 1739, the first formal survey of the Stockbridge land granted 42 plots of the best land to fewer than ten Native American proprietors, and plots of less desirable land to only six English settlers, permitted to settle there to provide examples of proper "civilized" living (Labadia et al. 2009; Miles 1999). These unfair and hostile practices contributed to the Mohican population of Stockbridge dwindling throughout the eighteenth century. By 1774, roughly one-third of Stockbridge lands were still Native-owned, and in 1784, the majority of the remaining Stockbridge Native Americans established the settlement of New Stockbridge in New York. The last few Native Americans remaining in Stockbridge sold their remaining pieces of land in 1809 and 1818 (Miles 1999). This was despite the role that Mohican men played in fighting during the Revolutionary War, for which George Washington commended their efforts and bravery (Rindfleish 2016). Forty-two of the 332 Stockbridge men volunteering to fight were Mohican men (BCHC 1998). In the 19th century, the Mohican joined Munsee refugees on a jointly held reservation in Wisconsin, where the two tribes remain together today under the name "Stockbridge-Munsee Band of Mohican Indians."

By the Revolutionary War era in the late 18th century, Euroamerican settlements were well established in all towns of the ROR area. Forests were being cleared and small farms dotted both the valleys and the hillsides. Many of the suitable water power locations had small grist mills, saw mills, and furnaces established at them, such as at Lenox Furnace (Lenox Dale), Lee, and South Lee.

3.10 From the Revolution into the Nineteenth Century

After peace was established between the U.S. and England, settlement of the region expanded dramatically. Settlers took advantage of the agricultural potential of the valley and its transportation corridor, and industrial development at prime mill sites along the river and its tributaries soon followed.

For the first several decades of the nineteenth century, wagons and stages were the only effective means of transporting goods and people, as the shallow depths and multiple rapids along the upper Housatonic were not conducive to large-scale reliable boat transport both upstream and downstream along the river. This situation changed with the creation of railroad links with New York and New England in the 1840s.

Throughout the nineteenth century, the project area witnessed an intensification of industrial development along the river. The number, size, and variety of mills all increased, with woolen and cotton mills, paper mills, turning factories, and iron and glass furnaces being built in Lee, South Lee, Glendale, and Housatonic (additional industry was located in Pittsfield upstream from the ROR project area). By end of the century, paper mills came to dominate the industries along the river. As industry was expanding in the Berkshires, agriculture was declining throughout the nineteenth century due to soil exhaustion and western competition.

In addition to transporting industrial products to wide markets, the railroad also made the region easily accessible to New York City, and wealthy families from began vacationing in the Berkshires and eventually many built homes there. In 1845, Samuel Gray Ward came from Boston to Stockbridge to turn an older house into a relatively palatial structure, Highwood, which is recognized as the first of dozens of mansions, quaintly called "cottages," which were erected there and in Lenox and, to a lesser degree, in Great Barrington. In addition, artists began flocking here and by mid-century, the tradition of a Berkshire cultural center had taken hold.

3.11 Twentieth Century

Industrial development that had begun in the nineteenth century expanded even more in the twentieth century. Electronics plants were constructed in the region, and paper mills continued to flourish in Lee and Housatonic. Stanley Electric Manufacturing Company was acquired by General Electric in 1903, and the operation produced small-scale transformers, flat irons, electric fans, and small motors.

The era known as the Gilded Age continued up to World War I, and wealthy outsiders continued to vacation and build mansions in the Berkshires (by 1900, there were over 75 in Lenox), providing substantial employment opportunities for many local people. However, the imposition of the federal income tax in 1913 marked a turning point in the construction of new mansions (NPS 2002:73). Over the next few decades, many were converted to other uses such as seminaries, schools, offices, or museums. At the same time, the coming of the automobile opened up new opportunities for middle class tourism in the Berkshires that continue today.

For the better part of the twentieth century, Pittsfield was inextricably linked to GE, which at one point provided jobs for 75% of Pittsfield's workforce. Pittsfield's population in 1930 had grown to more than 50,000, and industrial expansion related to World War II swelled the population even further, as munitions and plastics were also produced. By the 1950s, GE was building the largest transformers in the world, but the transformer operation closed down in 1986.

4 Results of Background Research

4.1 Introduction

Most of the useful background information was already consolidated within the MHC's MACRIS database. The State Historic Preservation Plan, State Reconnaissance Survey Reports, and databases of local historical organizations did not provide additional details relevant to the ROR. Historic maps provided information on previous roads and structures in the area, and previous archaeological reports for nearby projects were also examined, as described in Section 3.

4.2 Recorded Archaeological and Historic Sites in and Near the Project Area

A series of four maps has been prepared [redacted]. These maps are presented below on Figure 2 through Figure 5.[5] [redacted] As discussed in Section 1.4, historic structures outside of but near that APE could be indirectly affected by alteration of visual setting, noise, vibrations, or vehicle movements associated with the remedial activities, and thus have been identified at this time to allow a later determination of whether they would be within the Historic Architectural APE and would in fact be affected by the remediation or support activities. If not, they would not require further study. Archaeological sites outside of but relatively near the Archaeological APE have been included to provide context and to assist in developing the archaeological sensitivity model discussed in Section 6 so as to help identify what kind of landforms might need further surveys. However, such archaeological site themselves that are outside the APE and would not be disturbed by remediation or support activities will not require further study or investigation as part of the ROR project.

It should be noted that the location of archaeological sites is considered restricted information to prevent unauthorized looting, and these maps are not for public distribution. As will be described later in this report, the site location data were incorporated into the archaeological sensitivity model, discussed in Section 6, and individual sites are discussed as appropriate in the Section 7 summaries of cultural resources in each or near ROR reach.

[5] These maps also show the boundary of the Archaeological APE (as noted in Section 1.4), and they depict the photo locations and angles of the photographs included in Section 7.

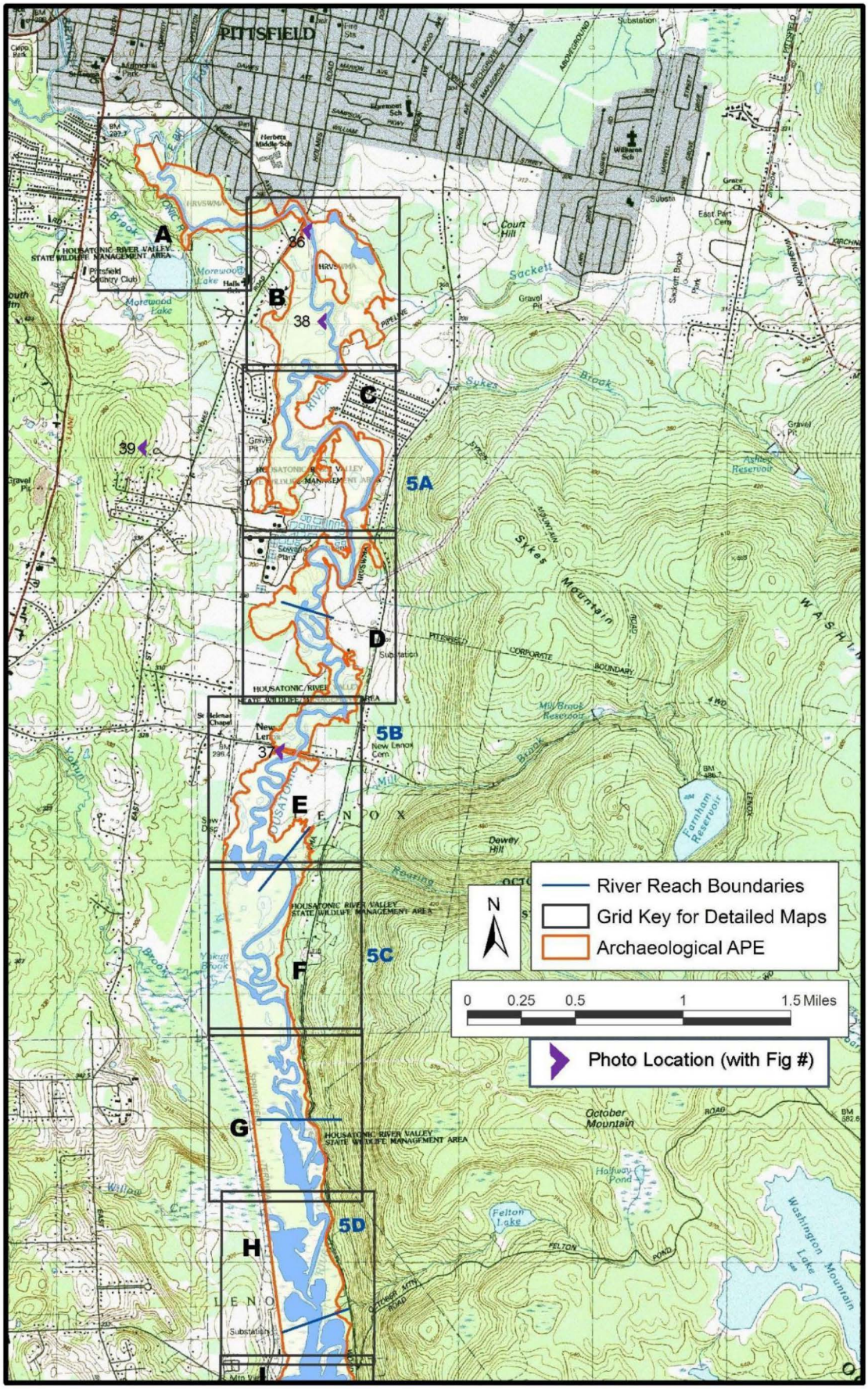


Figure 2. Archaeological Area of Potential Effects in the Housatonic Rest of River – Map 1.

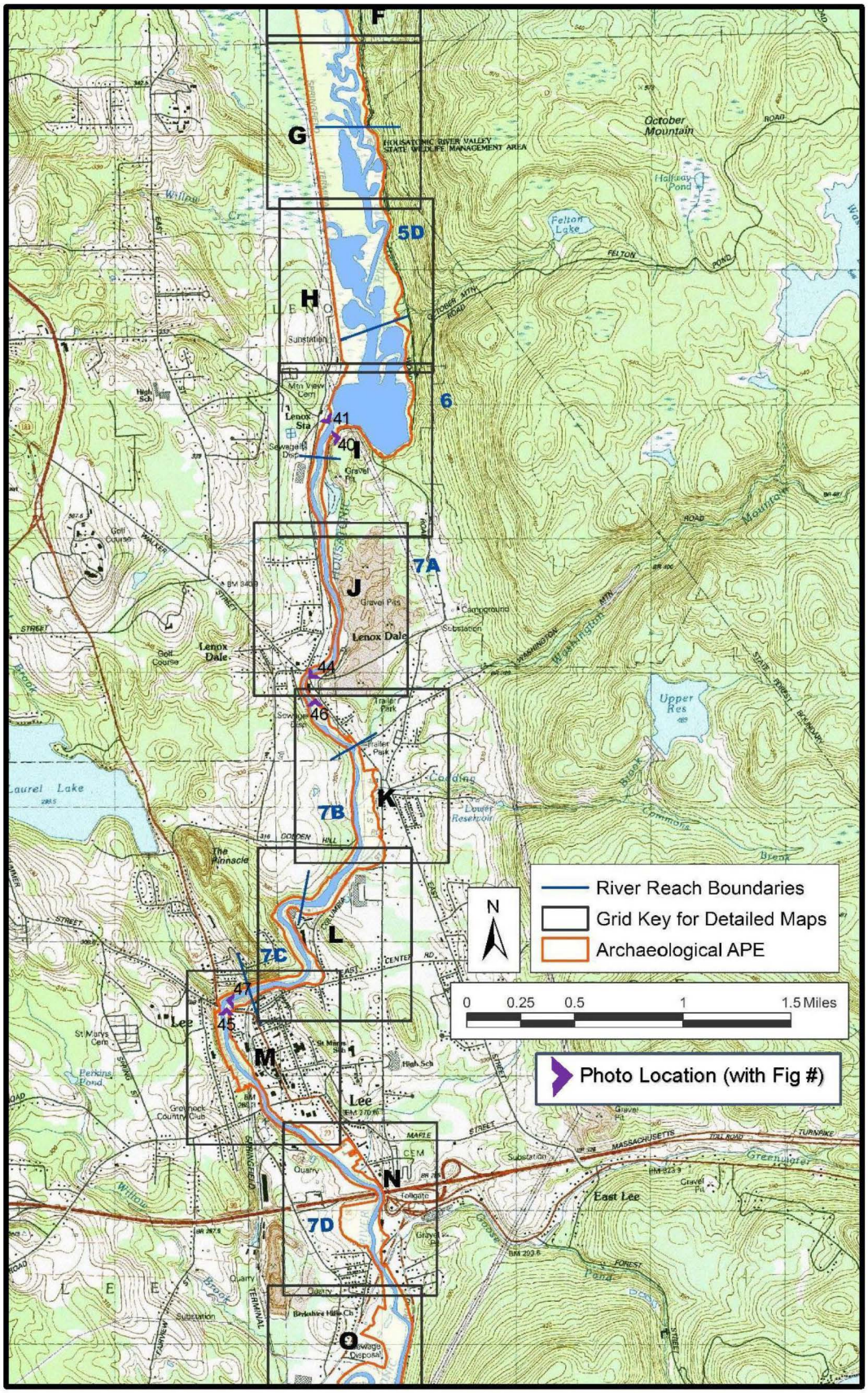


Figure 3. Archaeological Area of Potential Effects in the Housatonic Rest of River – Map 2.

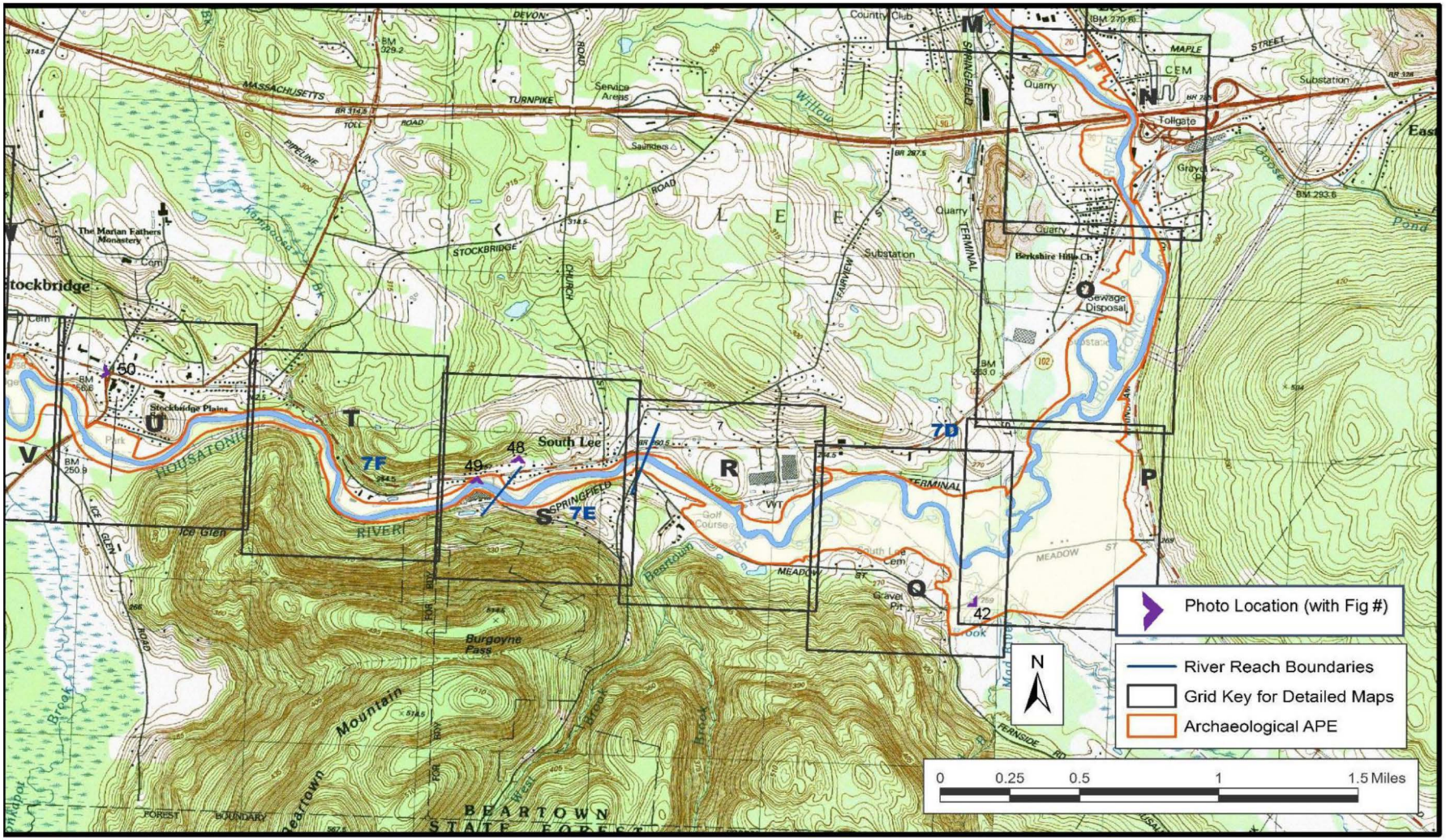


Figure 4. Archaeological Area of Potential Effects in the Housatonic Rest of River – Map 3.

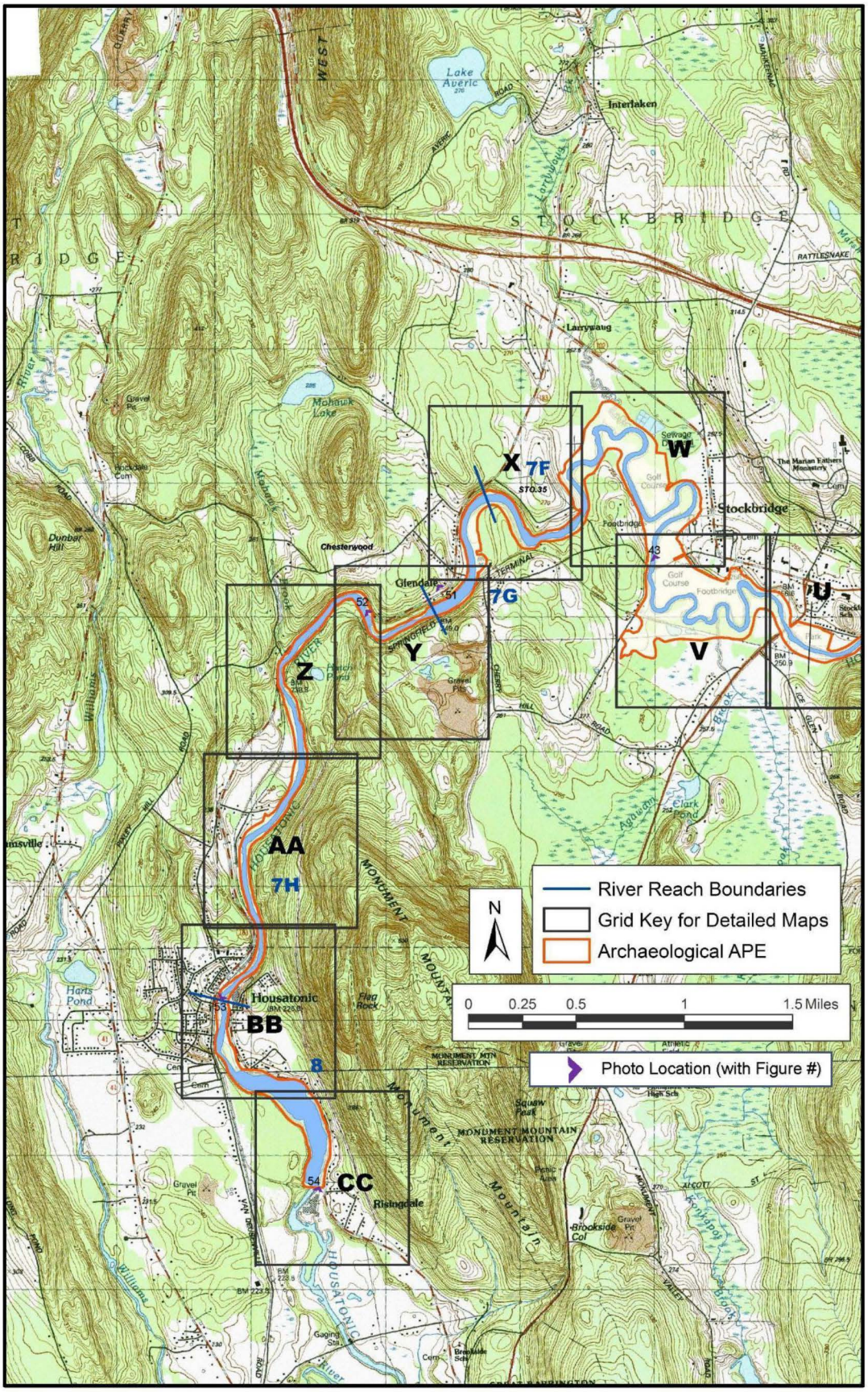


Figure 5. Archaeological Area of Potential Effects in the Housatonic Rest of River – Map 4

5 Analysis of River Channel Movements in Reaches 5 and 6

To further assist in assessing the potential of the Housatonic floodplain to contain prehistoric archaeological sites, and to identify potential future field research approaches that may be needed prior to implementing remediation measures, AECOM sought to better characterize the structure and age of the overall floodplain landforms within Reaches 5 and 6 of the ROR. This ROR stretch extends from the Confluence of the East and West Branches of the river in Pittsfield to Woods Pond Dam in Lenox and Lee, and the floodplain in this stretch will be most impacted by planned remediation activities.

The primary goals of this analysis were to:

- Compile a comprehensive set of nineteenth and twentieth century maps and aerial photographs that show the location and horizontal configuration of the Housatonic River channel in Reaches 5 and 6;
- Use GIS to geo-reference digital images of suitable maps and aerial photographs and then prepare data layers depicting a time series of channel changes against current aerial photographs;
- Briefly review readily available historic background data to seek information relevant to reported channel changes, floodplain modifications, and adjacent development activities; and
- Summarize the information compiled and present the maps accompanied by a discussion of the river channel and floodplain changes that have been identified.

Additional details concerning the sources used and the detailed mapping that was generated are provided in Appendix B, and the overall trends identified by the analysis are summarized in this section.

Several broad patterns of channel movement can be identified from the nineteenth century maps. Our review suggests that the upper portions of the ROR experienced larger and more abrupt shifts in the location of the Housatonic River channel during the period from 1854 to 1904. In comparison, examination of aerial photographs from 1942 to the present has documented slower, incremental channel migration of much lower magnitude. Although a detailed geomorphological study is beyond the scope of the current report, a few observations on possible causes and trends in settlement and development can be made. Those observations are discussed in more detail in Section 5 of Appendix B and are briefly summarized below.

Land clearing and cultivation of newly cleared lands in the nineteenth century increased the volume of runoff, and sediment incorporated into this runoff increased both erosional and depositional features in the floodplain. The increased runoff is also likely to have contributed to the higher

frequency of abrupt channel avulsions in the Housatonic study area in the nineteenth century. These types of river channel changes in response to historic land use patterns have been documented in other drainages in the Northeast, such as in eastern New York and northern Vermont; and the depths of historically deposited sediment resulting from this land clearing have been documented in the 1- to 2-meter range in many locations in the eastern United States (Cassedy et al 2007; Yan et al 2010).

While agriculture in the Housatonic region declined, industrial development expanded in the later part of the nineteenth century. Within or near the ROR, this expansion particularly included the construction of dams and impoundments to supply power for the many paper mills. This slowed the current; and as a result, the top several feet of floodplain in Reach 5C and lower Reach 5B consist of low-energy, finer-grained sediments than those found in Reach 5A (Weston Solutions 2004), and channel movements are more limited.

The results of this analysis indicate that any future Phase I archaeological field survey plans for Reach 5 will need to incorporate a detailed geomorphological analysis of the floodplain landforms to help determine their age and integrity.

6 Archaeological Sensitivity Model Results

During review of earlier phases of research for the ROR project, the MHC suggested that predictive modeling efforts prepared by the Public Archaeology Laboratory for the Deerfield River Valley (Glover et al. 1994) would provide a useful framework for the Housatonic ROR CRA when combined with analysis of regionally specific data sets.

For prehistoric sites, Glover et al. (1994:15) noted that a number of studies "have repeatedly shown that certain environmental and topographical settings are strongly associated with the presence of prehistoric sites." In summary, they state that "prehistoric sites are most frequently associated with well-drained soils in close proximity to zones of high natural resource potential such as wetlands and river valleys"; and they also note that "documented ground disturbances within a given area detract from the likelihood for prehistoric resources to remain" (1994:17). Glover et al. identified the following variables for their prehistoric sites sensitivity model:

High Potential

- water source within 150 m
- well drained sandy soils
- level to fairly level topography (0 – 3%)
- none to minimal disturbance
- known sites in the immediate area

Moderate Potential

- water source within 150 to 300 m
- well drained to fairly well drained, sandy to cobbley soils
- moderate slopes (3 – 8%)
- minimal to moderate disturbance
- known sites in the vicinity

Low Potential

- water source greater than 300 m
- poorly drained soils

- steep slopes (> 8%)
- moderate to extensive disturbance
- no known sites in the vicinity

To operationalize such a model for the ROR assessments, a GIS database was created to store and manipulate environmental and cultural data sources. Data layers for soil types, slope, land use, and the location of known archaeological sites were downloaded and/or created, and the parameters identified above were delineated and then reviewed. After analysis of the preliminary results of the modeling effort, it became clear that the environmental setting of the ROR is a distinctive subset of the range of environmental settings in Berkshire County. Specifically, almost all of the ROR consists of relatively level terrain in close proximity to a water source (which constitute two of the high potential factors identified by Glover et al.). As a result, the drainage characteristics of the soil, the level of disturbance, and the proximity to known sites were highlighted as the key distinguishing variables for this particular project. The results of this assessment are presented on Figure 6 through Figure 34 below, which depict the configuration of zones of high, medium, and low potential to contain archaeological sites as polygons shaded green, yellow, and red, respectively. These zones are depicted on a base layer of color aerial photographs of the project area.

For historic period archaeological sites, Glover et al (1994:19) suggest that such sites are most likely to be located in "areas within 150 m of freshwater, adjacent to waterpower sources, within 100 m of major transportation networks, and/or within 1000 m of a settlement concentration." For the ROR study area, most of these factors are redundant, since all areas that are within 150 m of water, adjacent to waterpower sources, or within 1000 m of a settlement are also within 100 m of a major transportation network. The model can therefore be operationalized most effectively for the ROR area by mapping those areas within 100 m of major historic transportation networks. To identify historic sensitivity zones, the configuration of the transportation network was derived primarily from the 1876 historic map series, which represent the most comprehensive historic maps that are also accurate enough to easily geo-reference with the modern landscape. The 1876 maps also encompass the vast majority of 18th and early 19th century transportation networks of both roads and railroads. Selected features from early 20th century USGS topographic maps were also added to the model to capture additional late 19th/early 20th century elements not represented by the 1876 maps. In addition, areas of river channel known or suspected to have a high intensity of historic activity (based on historic maps and background research) were highlighted. This includes areas such as the concentrations of mills and dams in Lenox Dale, Lee, South Lee, Glendale, and Housatonic). This historic information is presented on the same set of aerial photographs (Figures 8 through 36) as the prehistoric modeling results.

This sensitivity assessment is useful for evaluating the relative archaeological potential of large areas for early project planning purposes, but location-specific conditions and criteria will still need to be reviewed to make final determinations concerning the need for systematic field surveys in specific locations of remediation and support activities. For example, specific structure locations depicted on historic maps need to be reviewed, and visual evidence of past land use and disturbances need to be assessed. In addition, the sensitivity model will require validation through field sampling as the project progresses.

The sensitivity mapping is presented in the following map sequence, and the overall results are discussed in the summaries of each reach provided in Section 7.

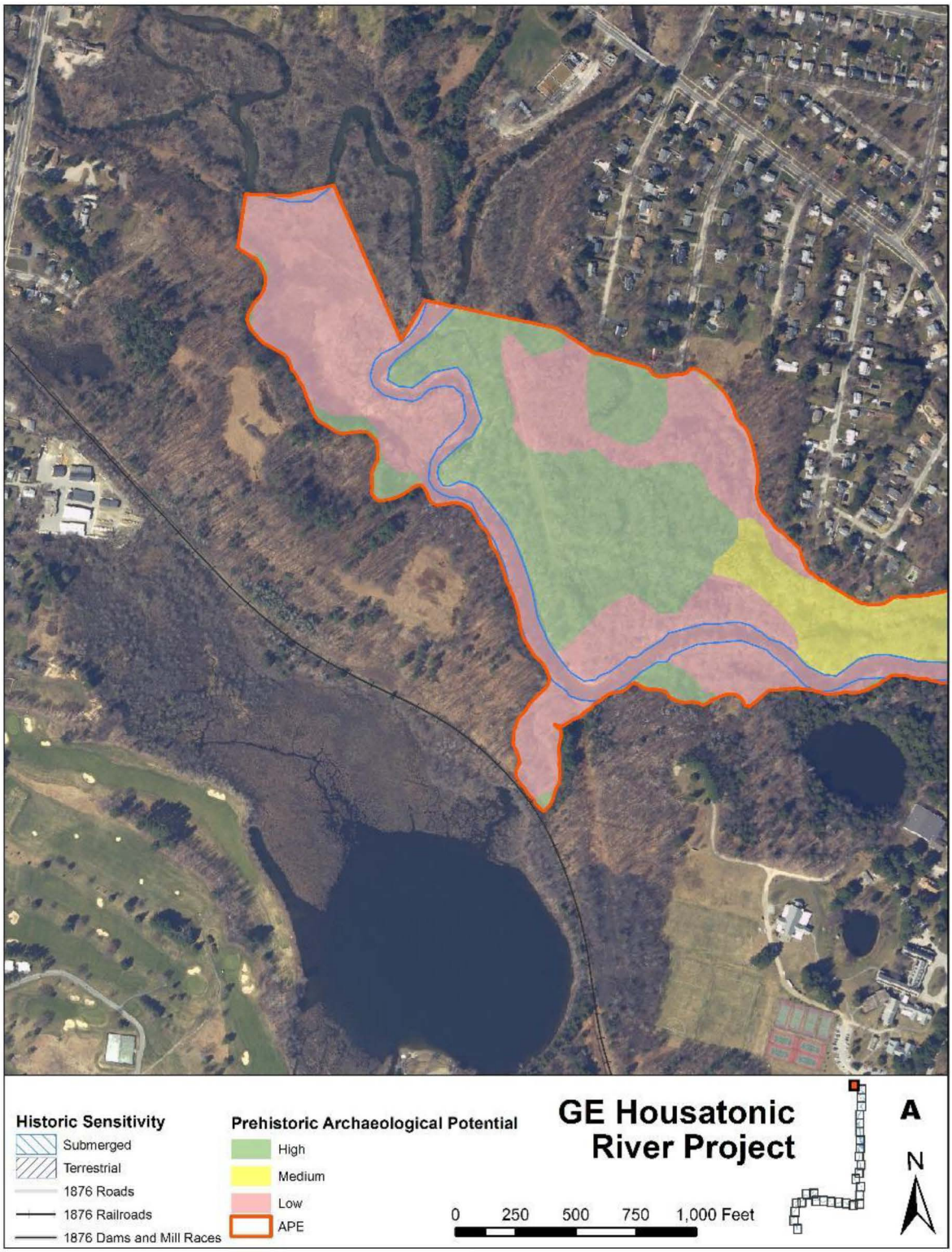


Figure 6. Archaeological Sensitivity Map, Sheet A.

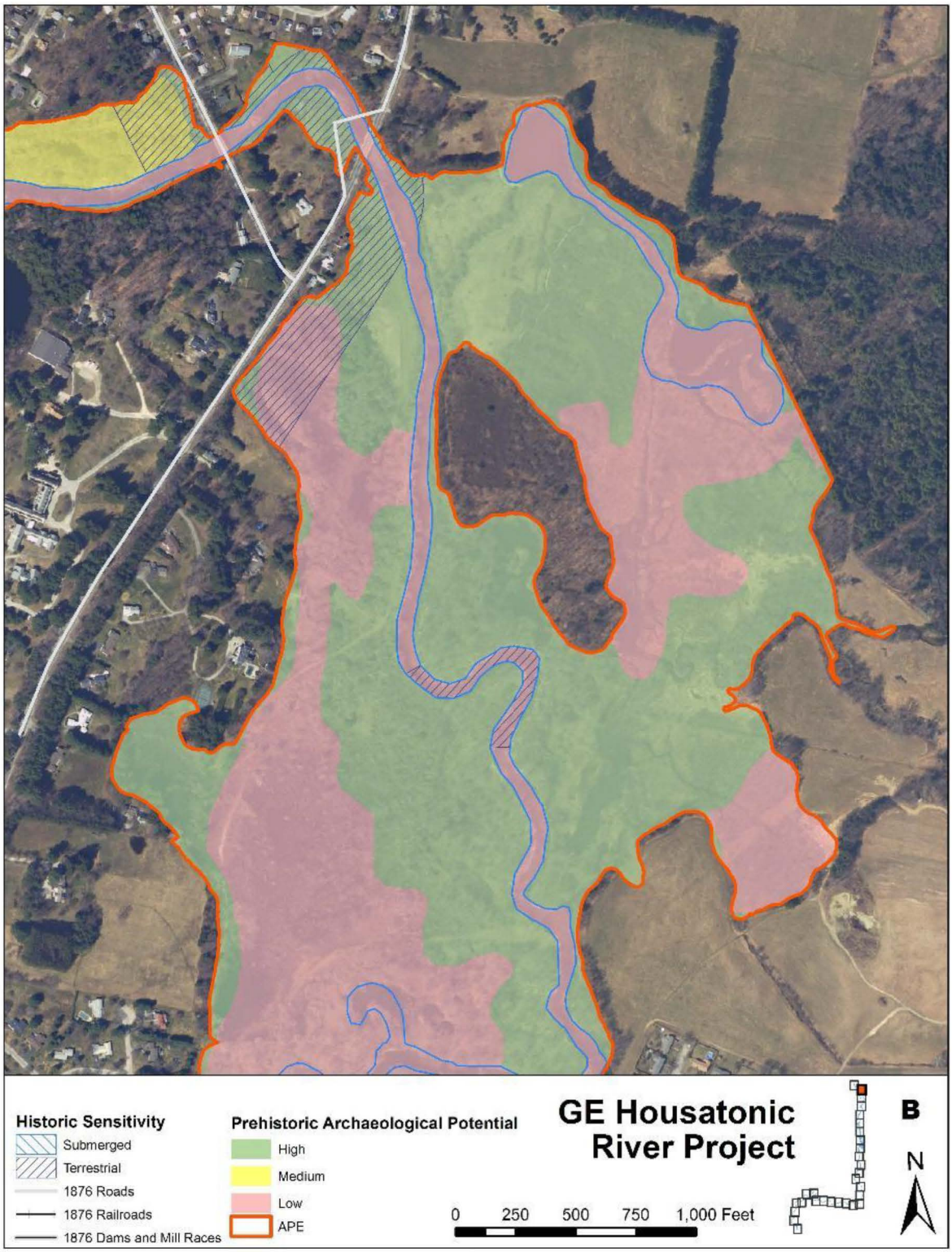


Figure 7. Archaeological Sensitivity Map, Sheet B.

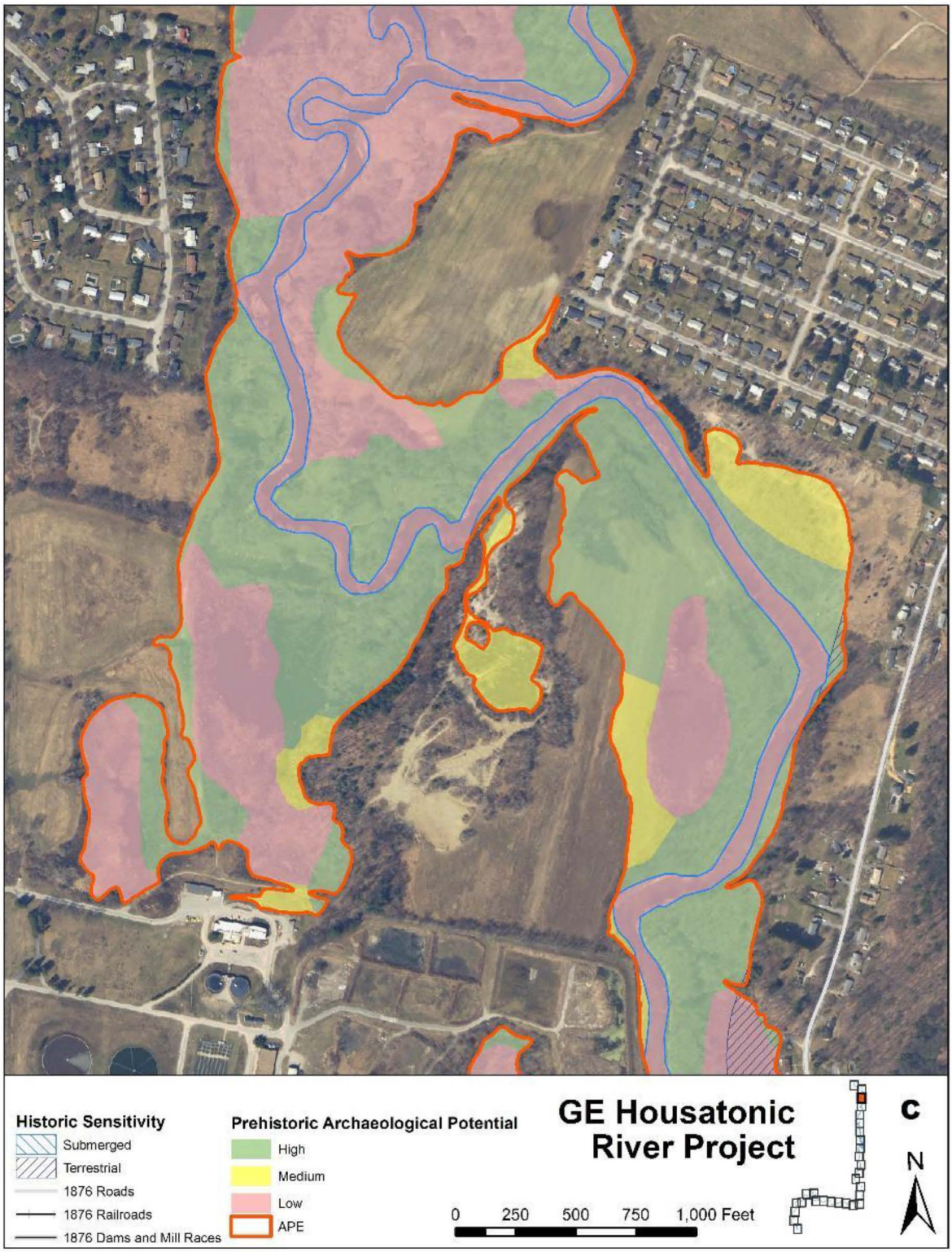


Figure 8. Archaeological Sensitivity Map, Sheet C.

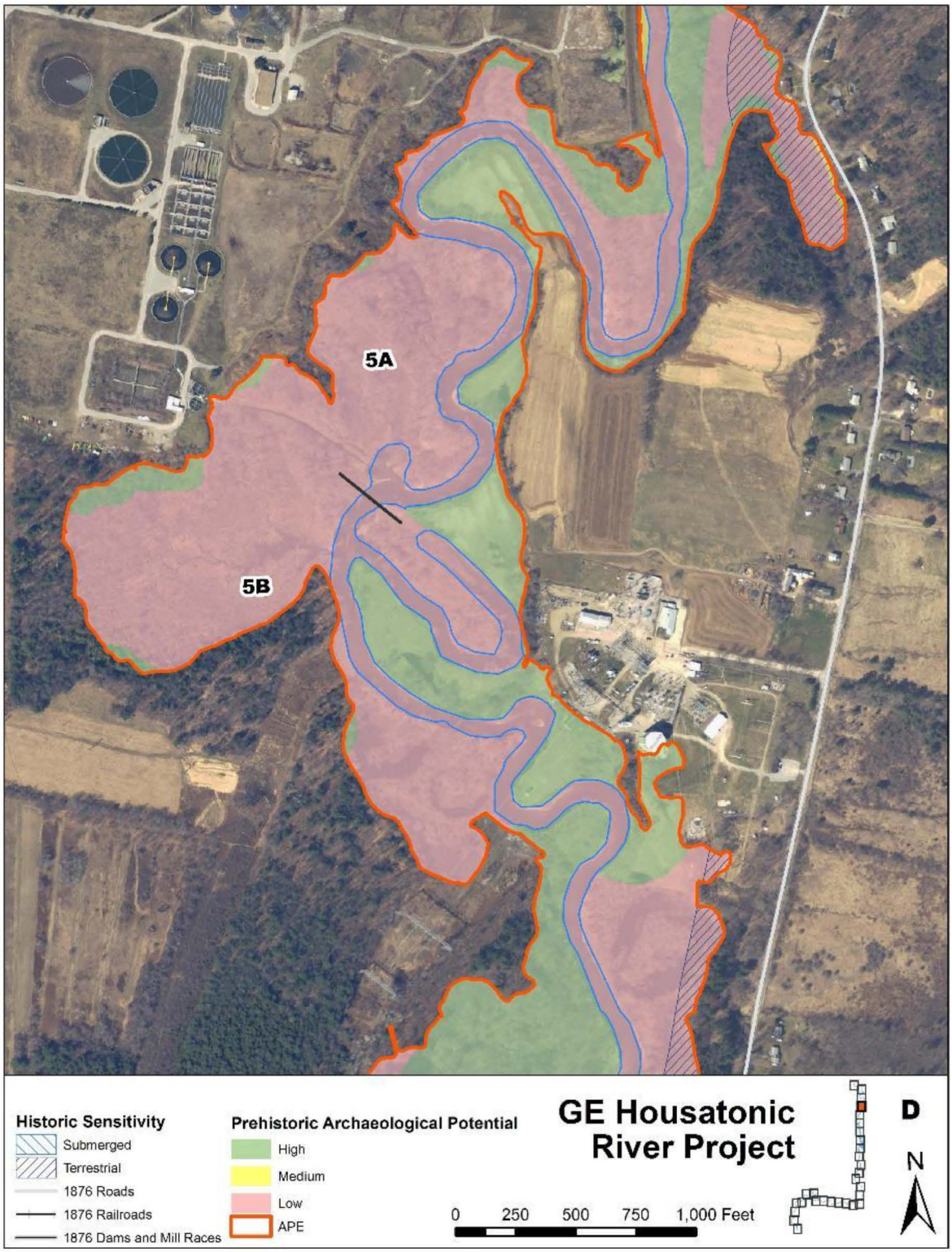
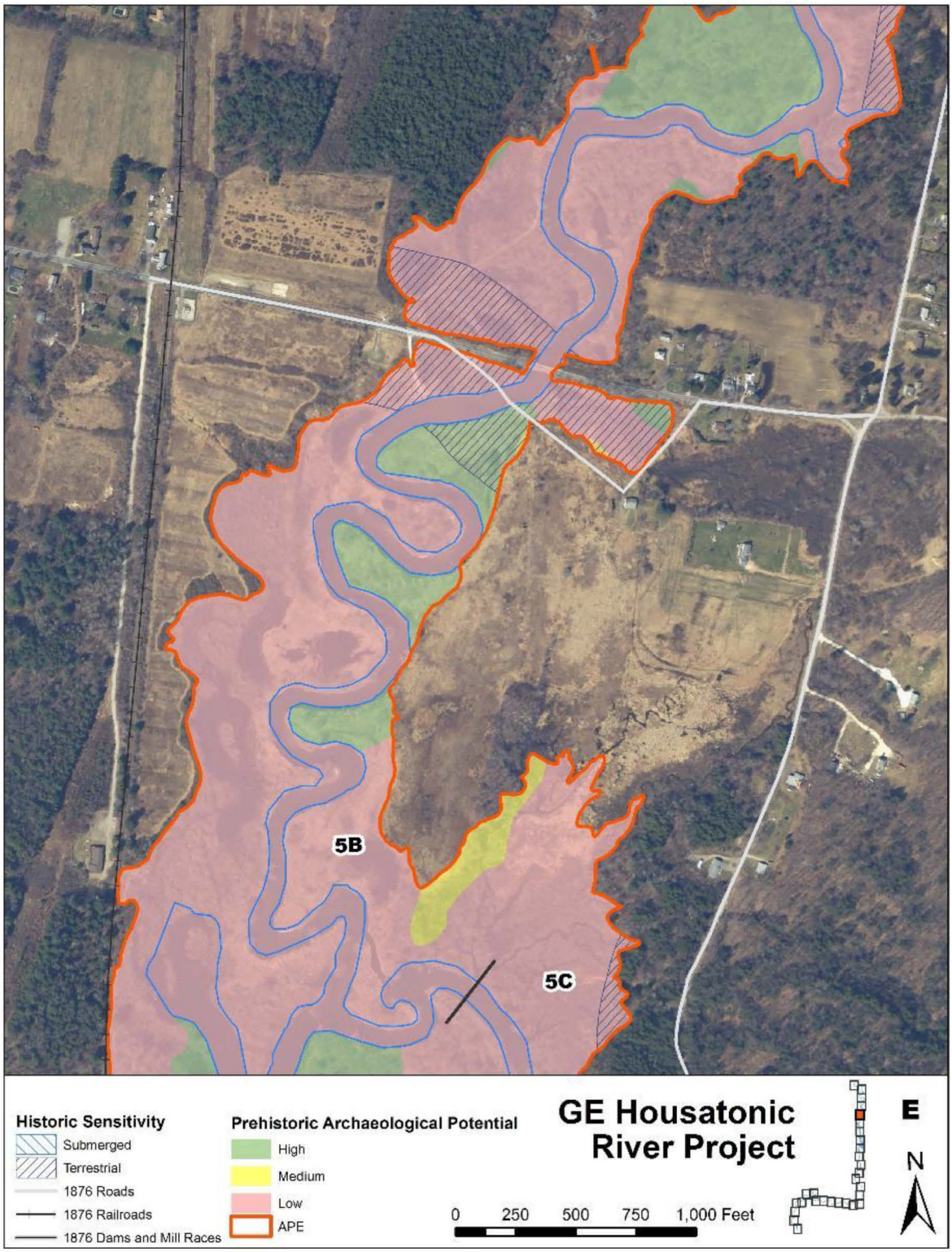


Figure 9. Archaeological Sensitivity Map, Sheet D.



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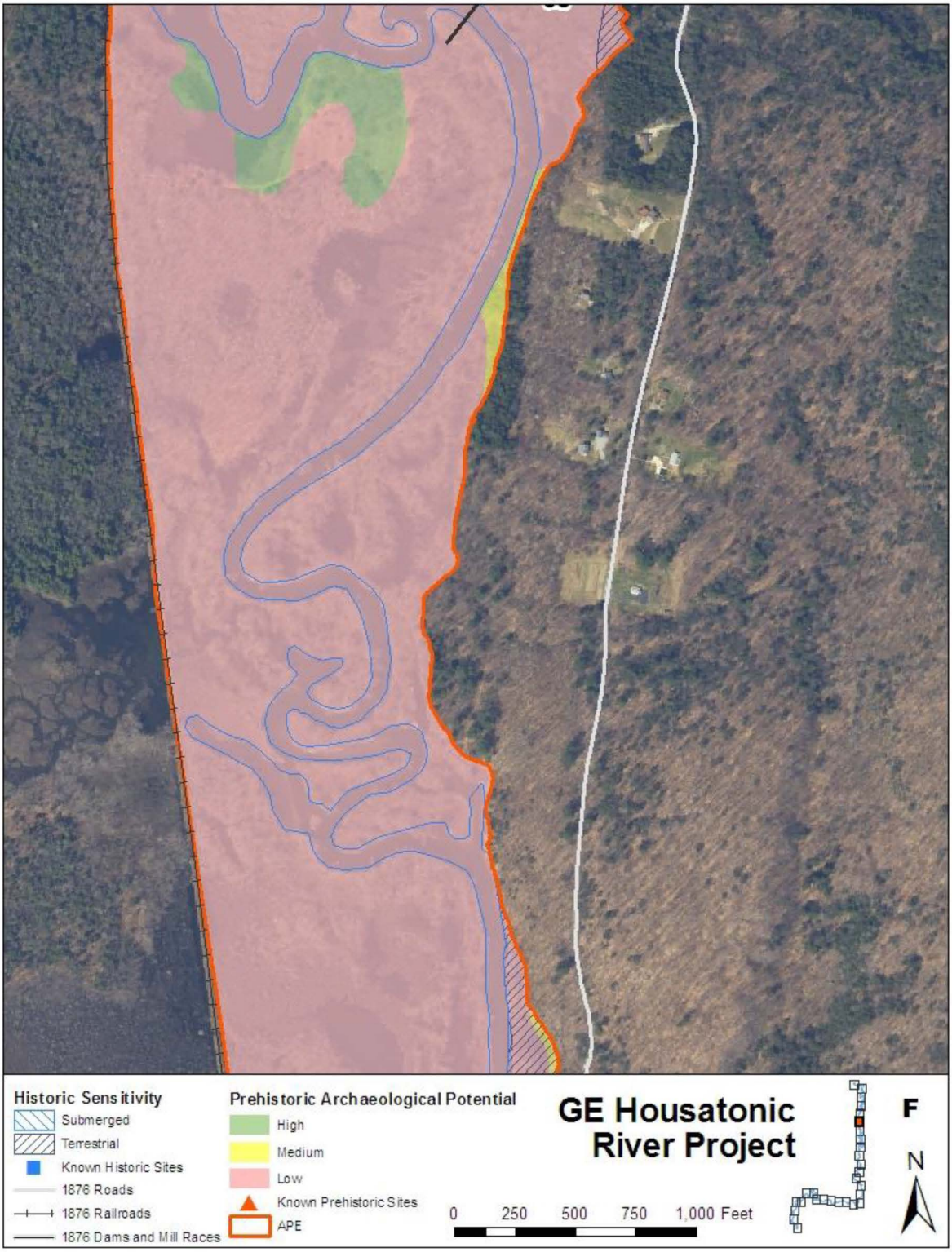

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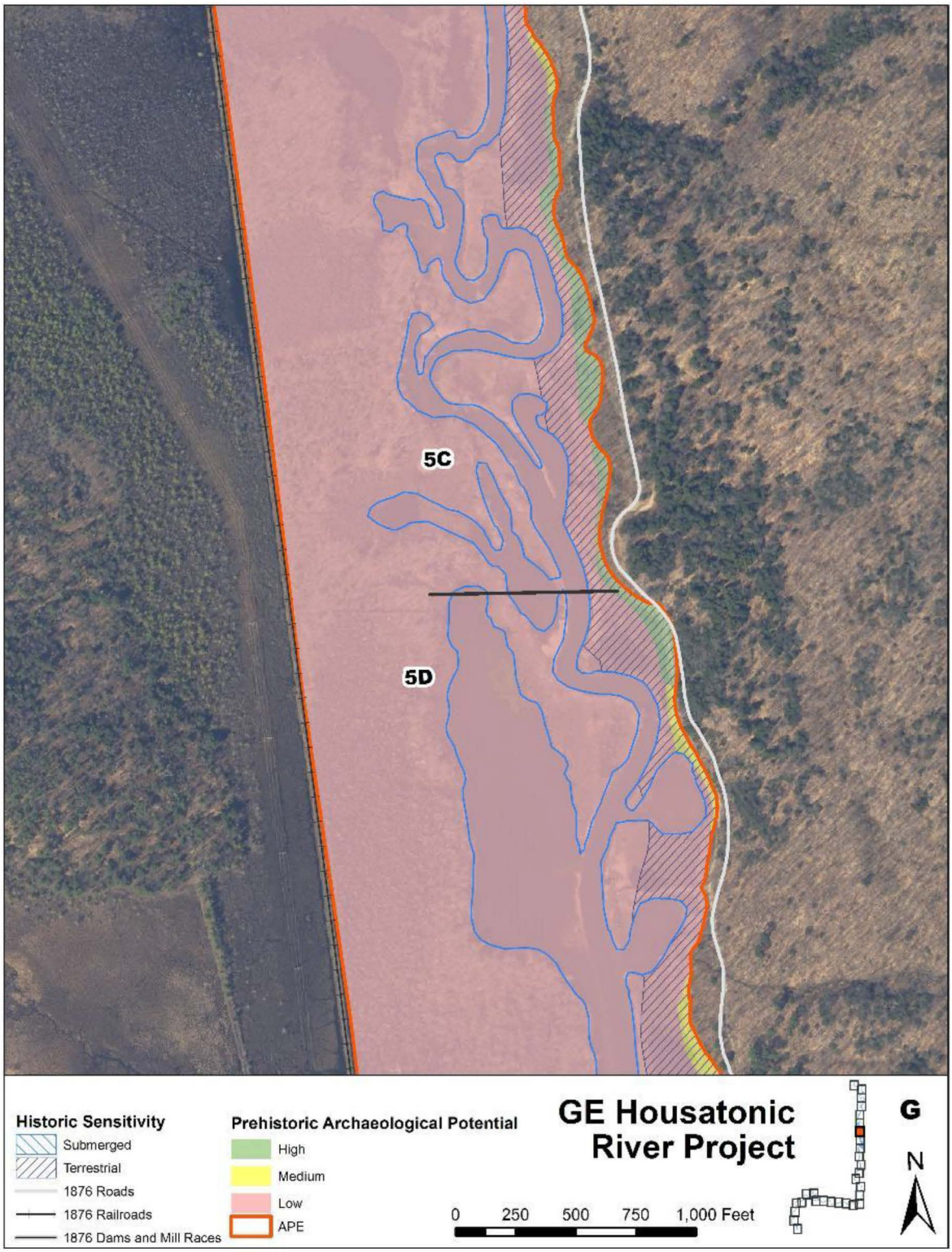

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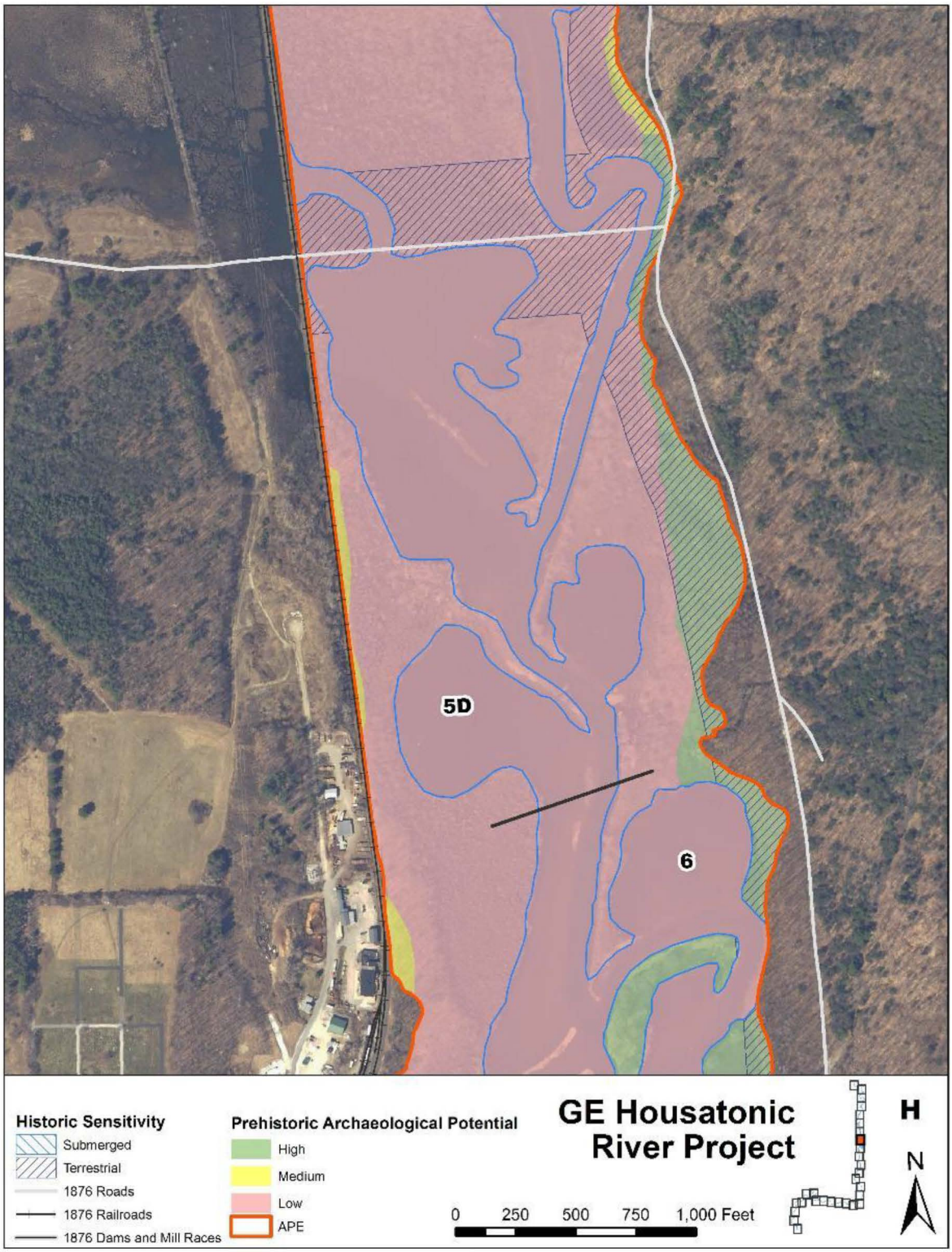

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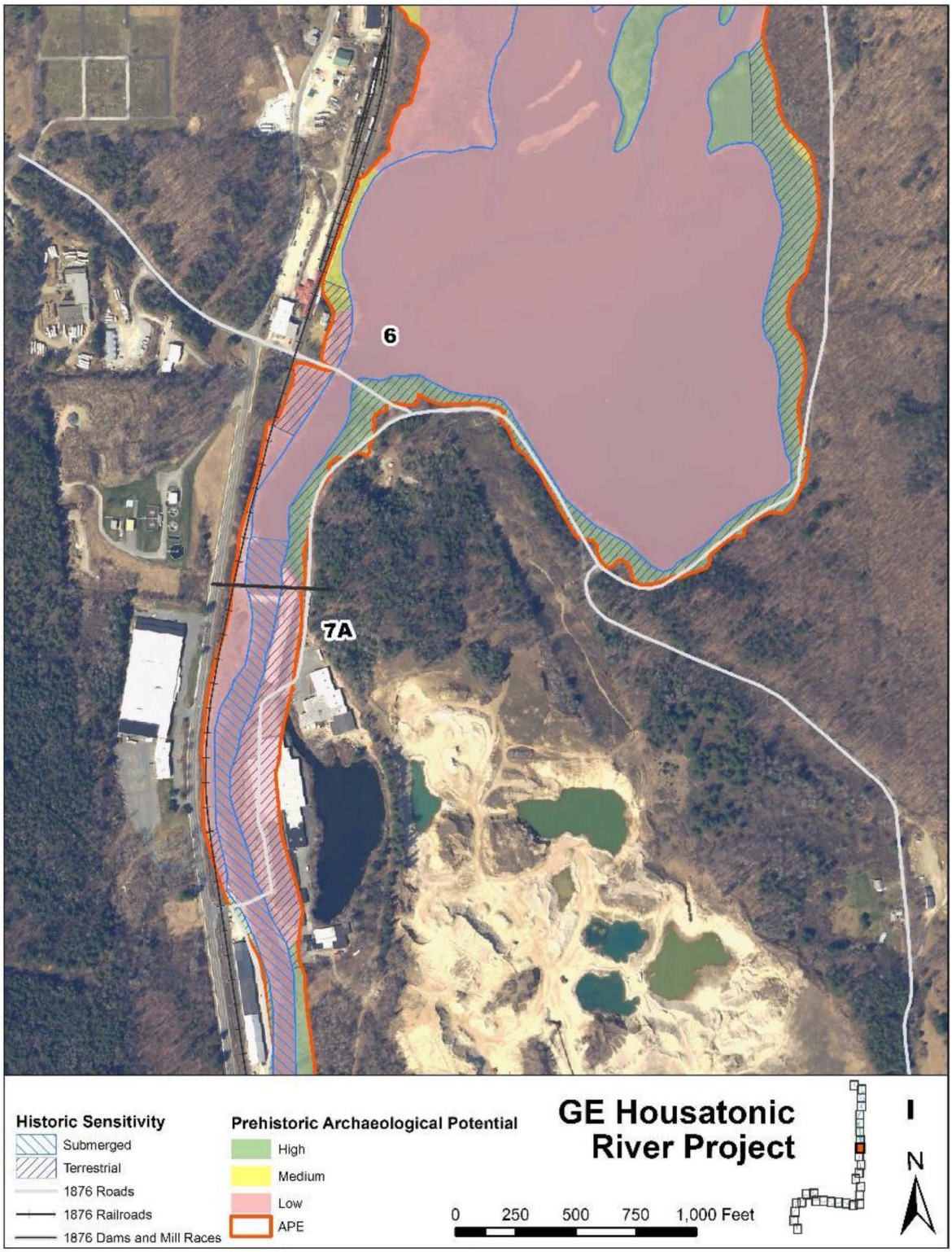
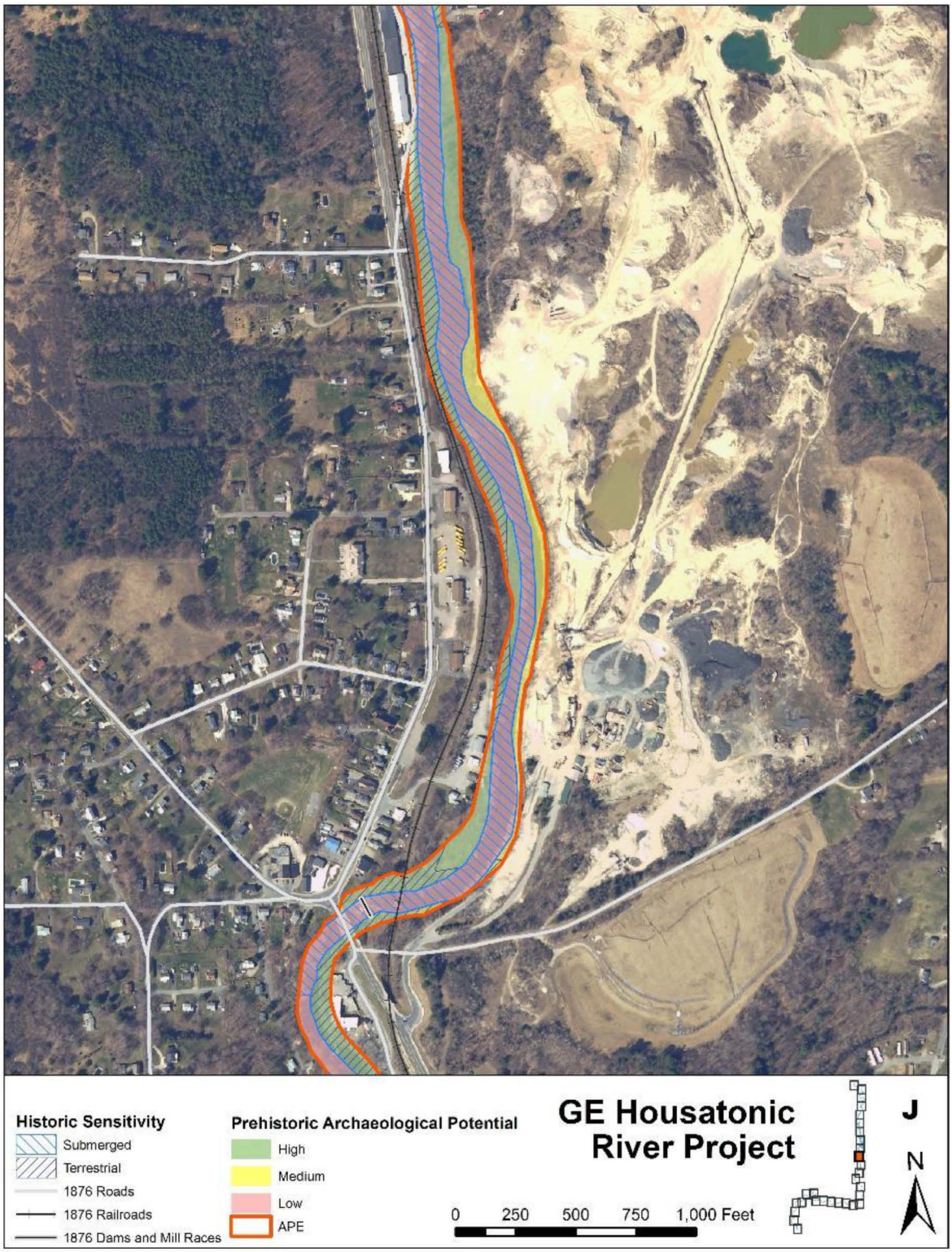


Figure 14. Archaeological Sensitivity Map, Sheet I.



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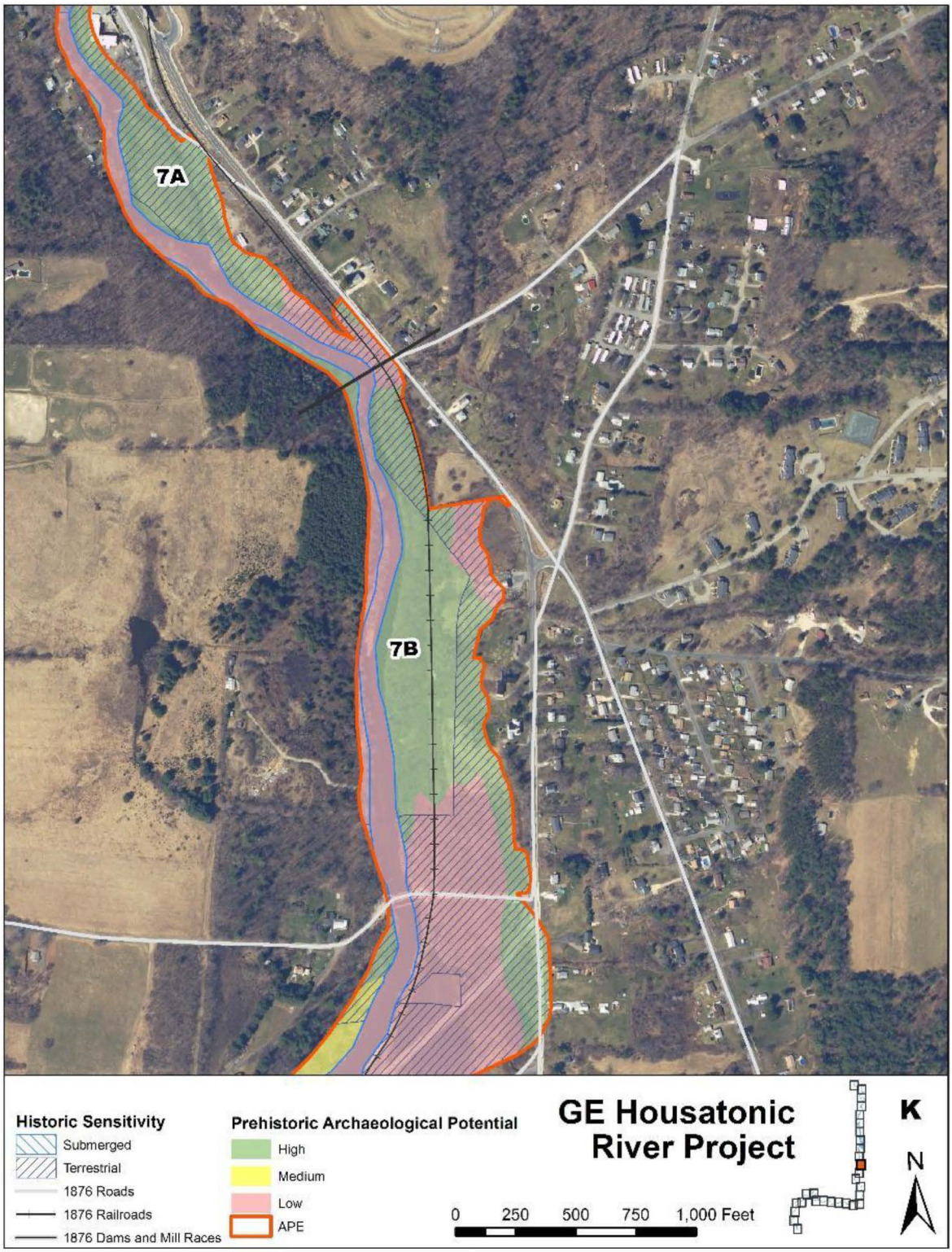

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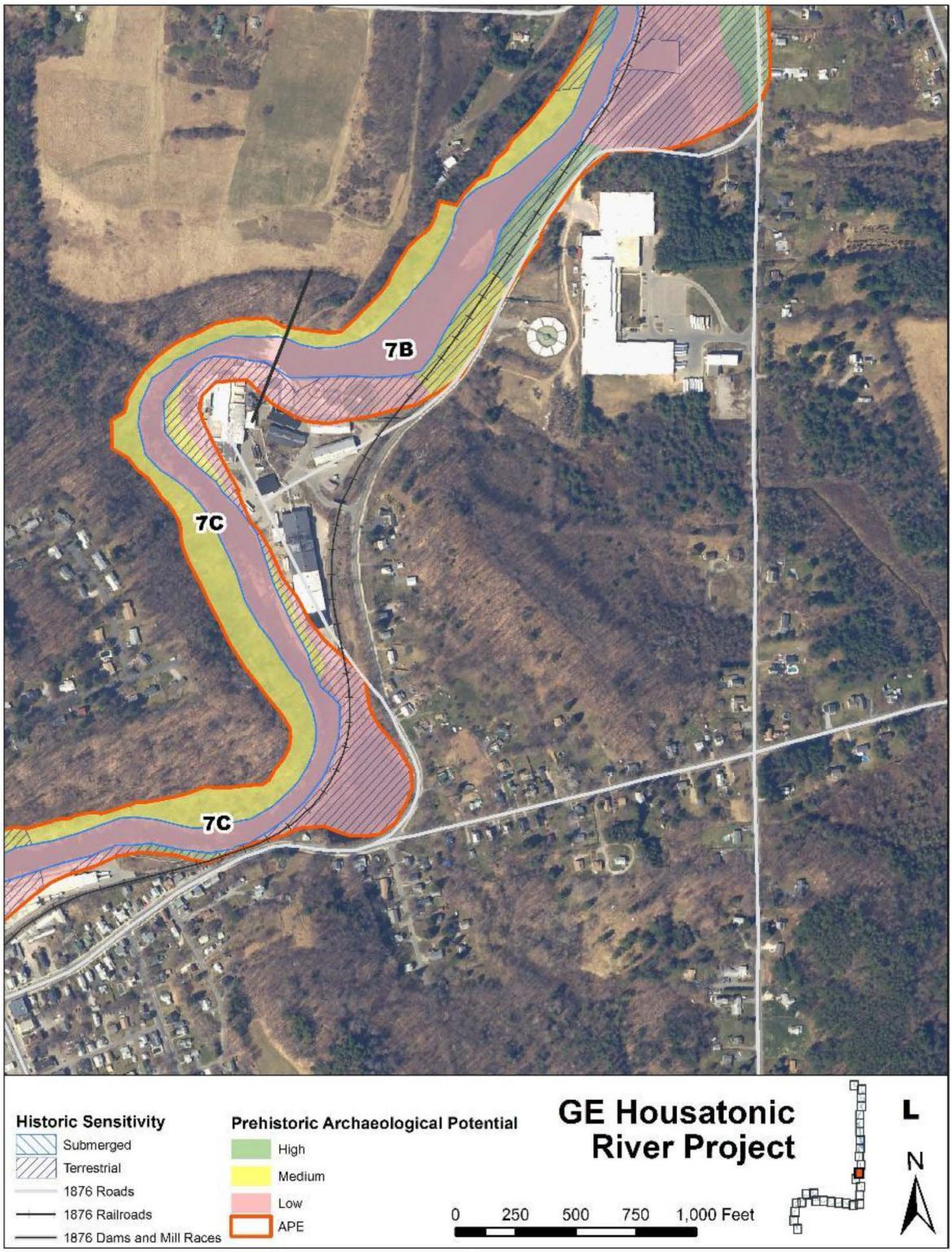

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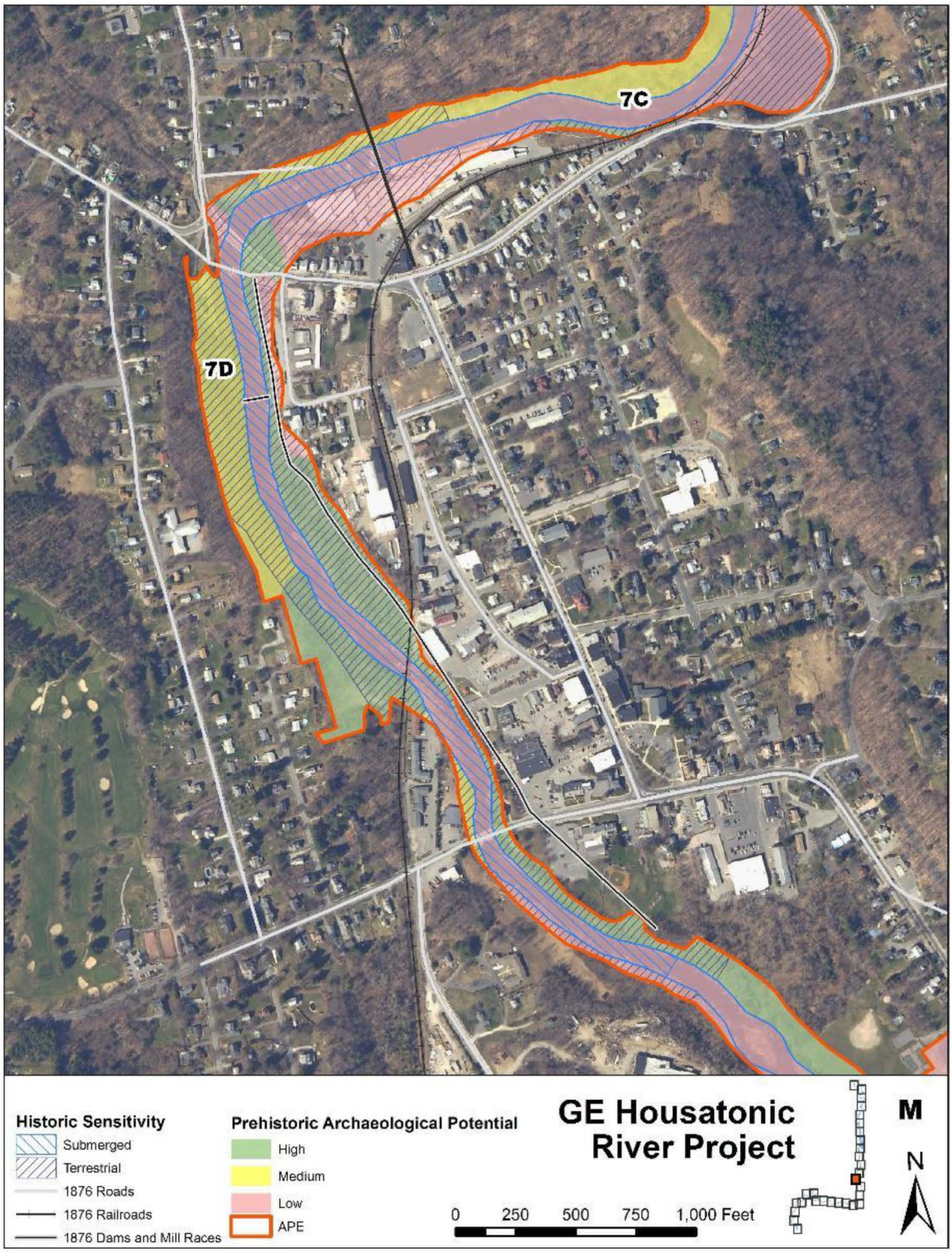

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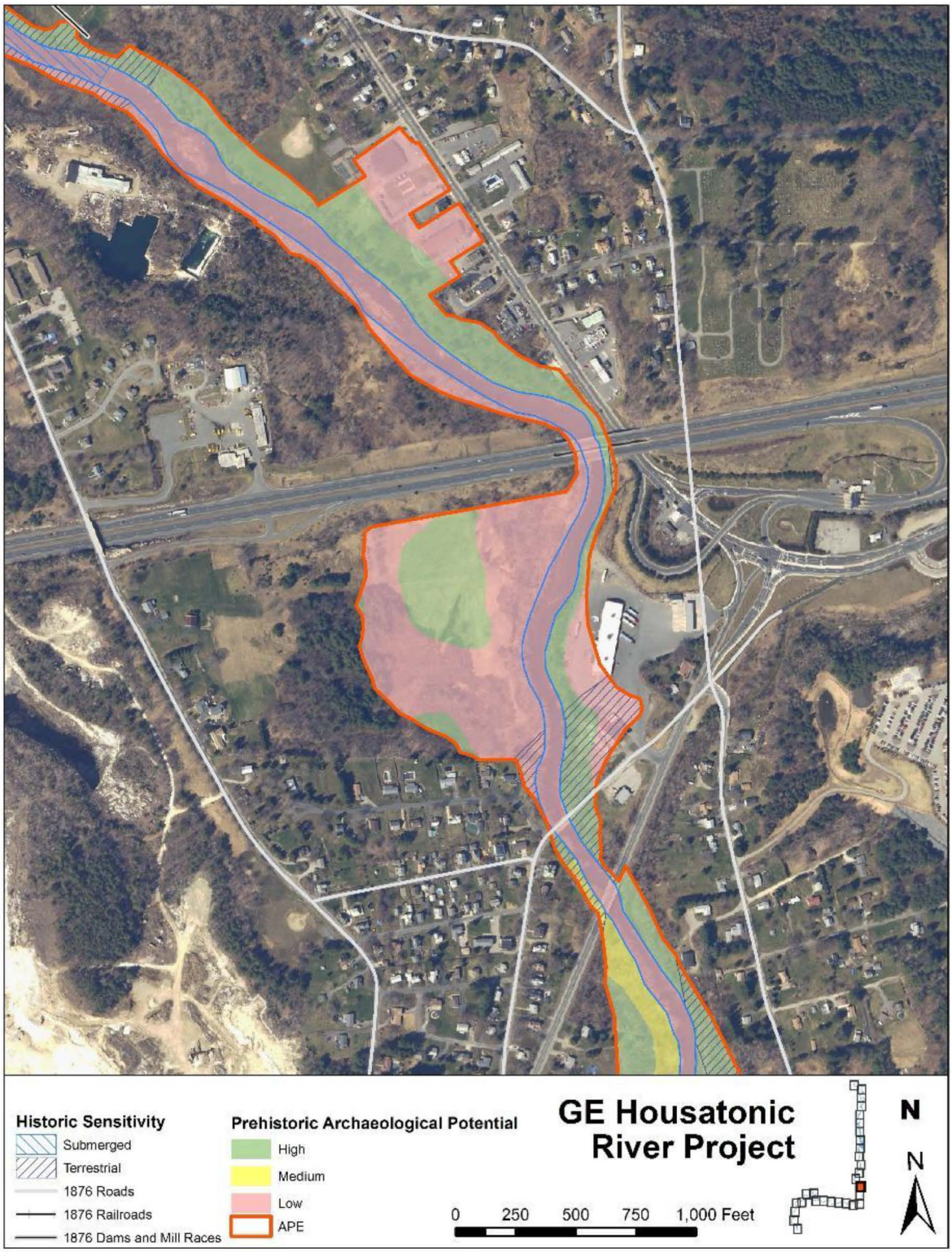

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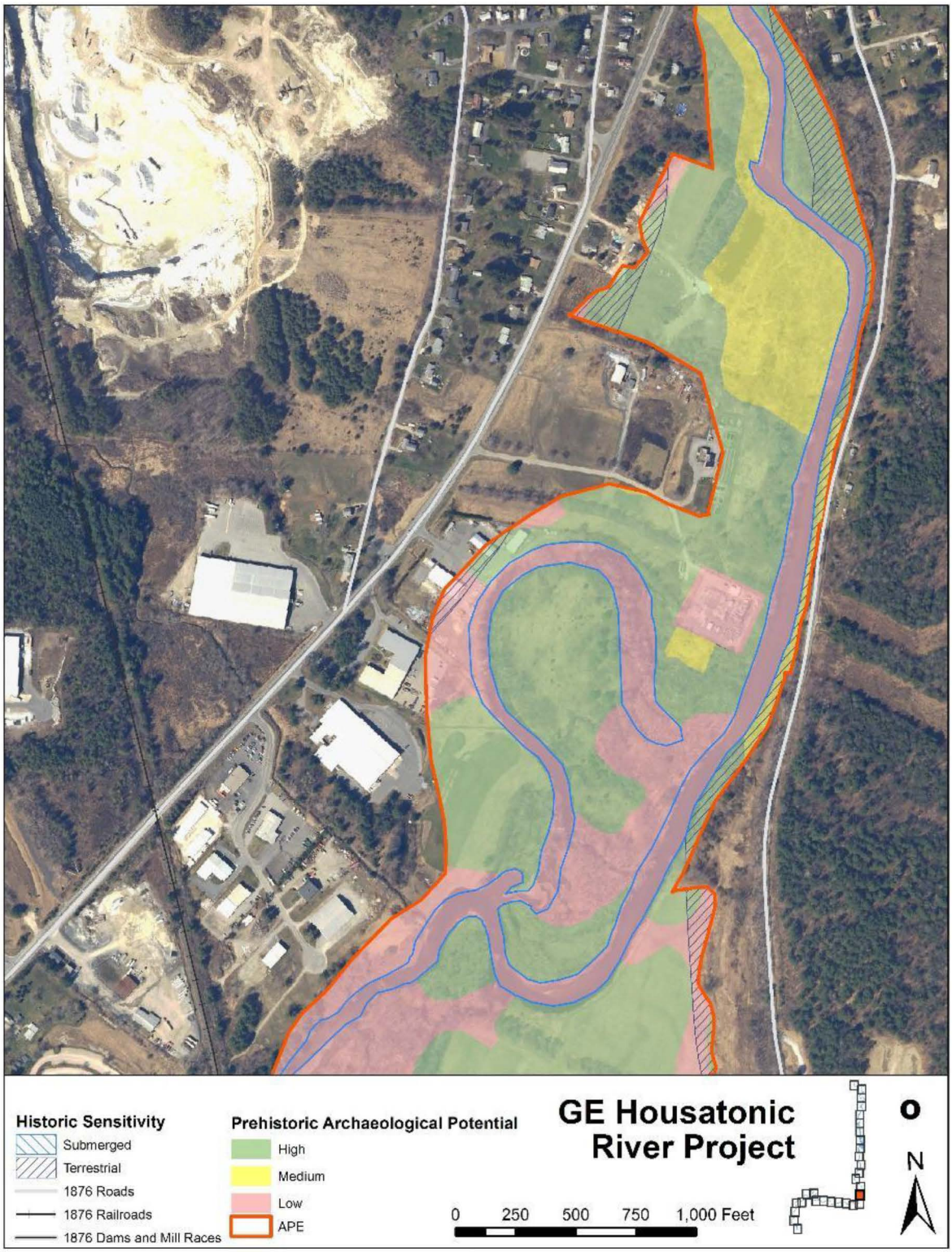

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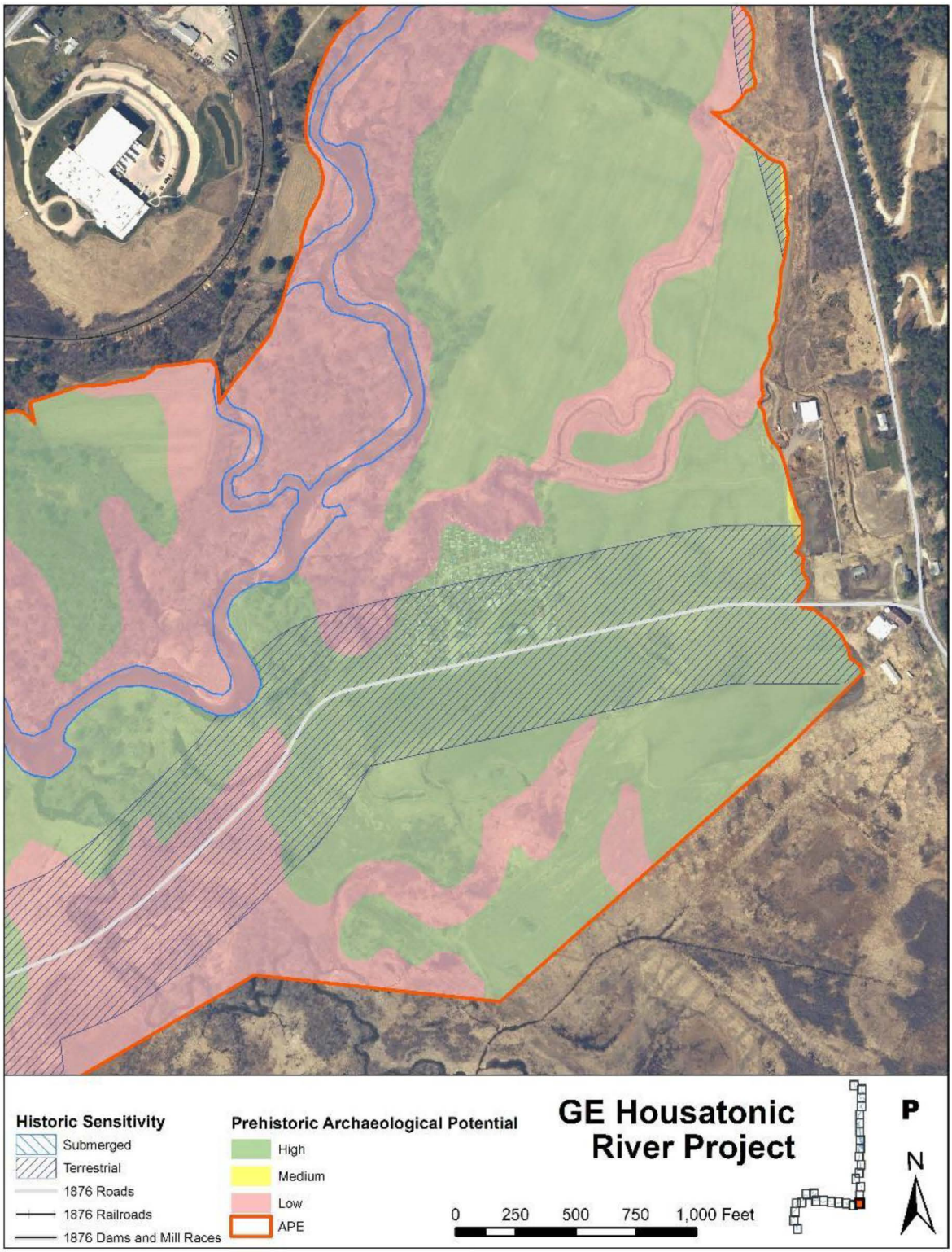

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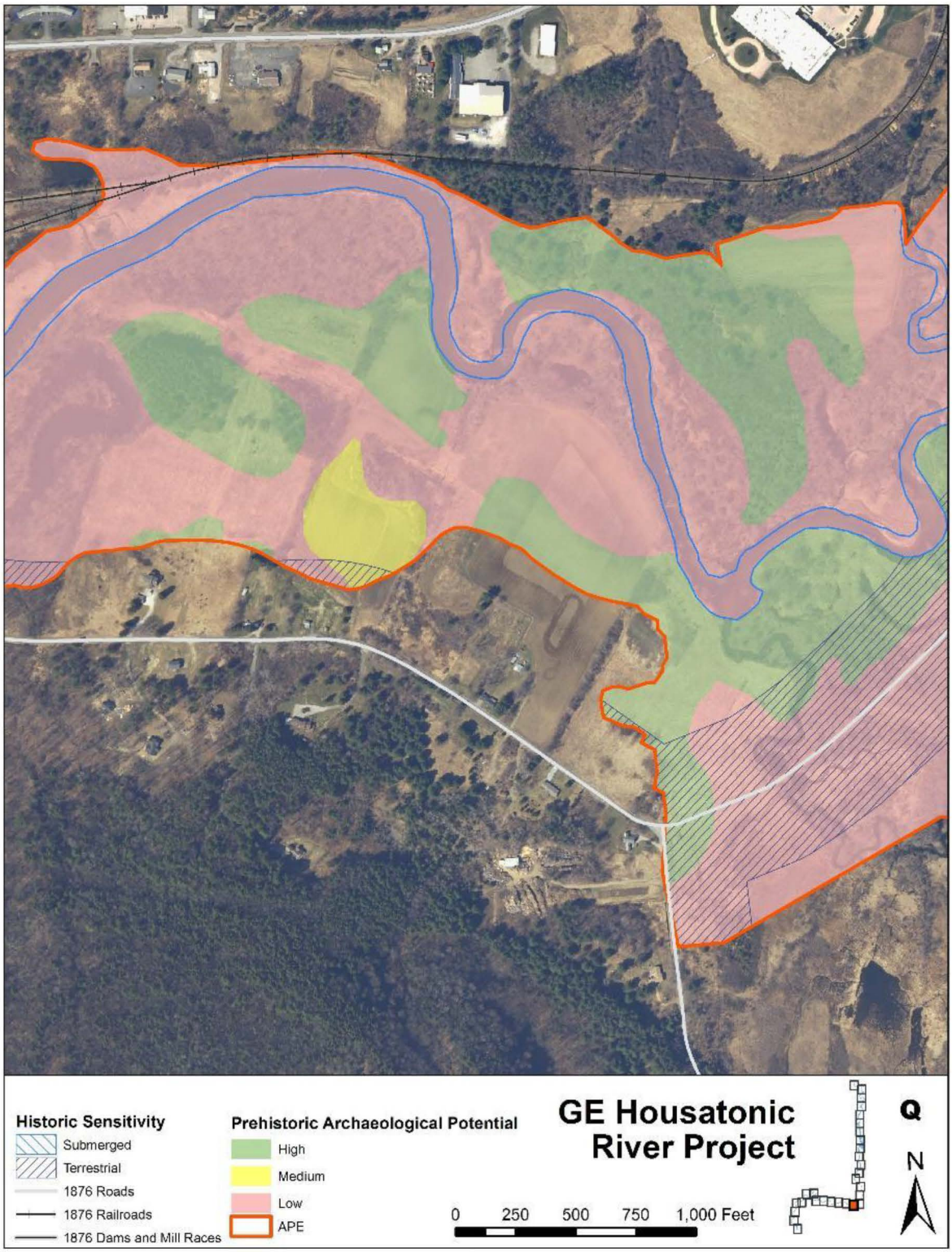

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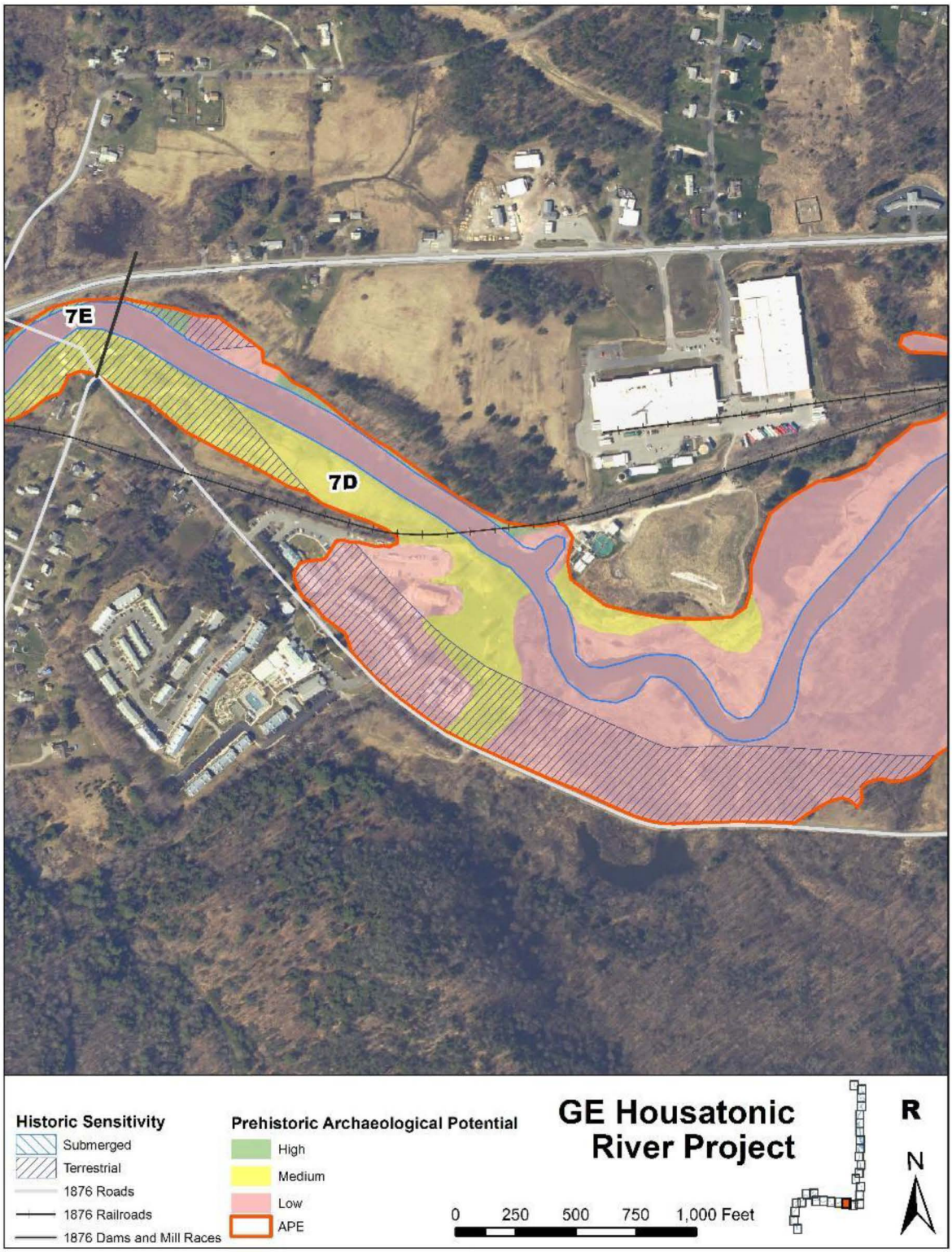

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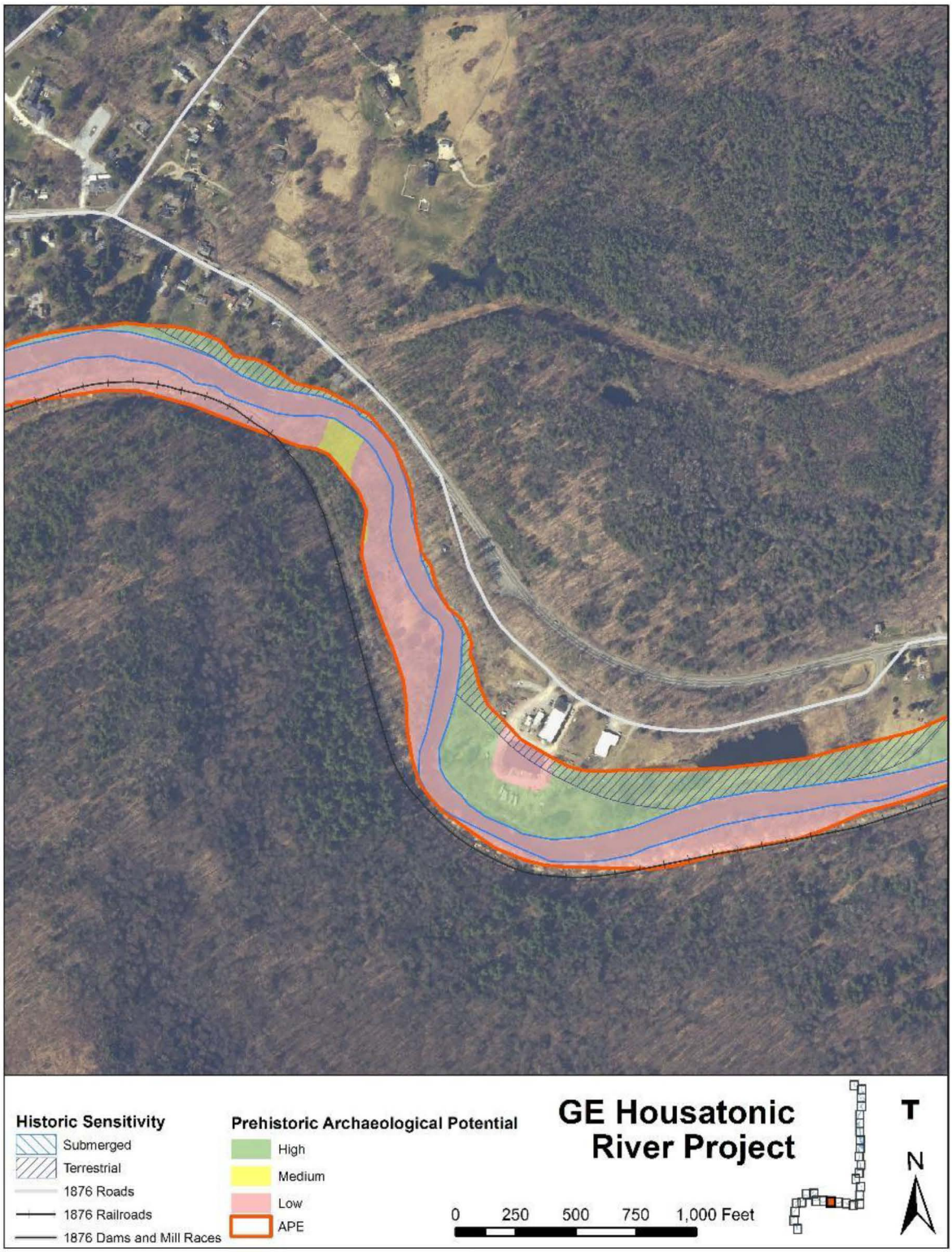
Figure 24. Archaeological Sensitivity Map, Sheet S.



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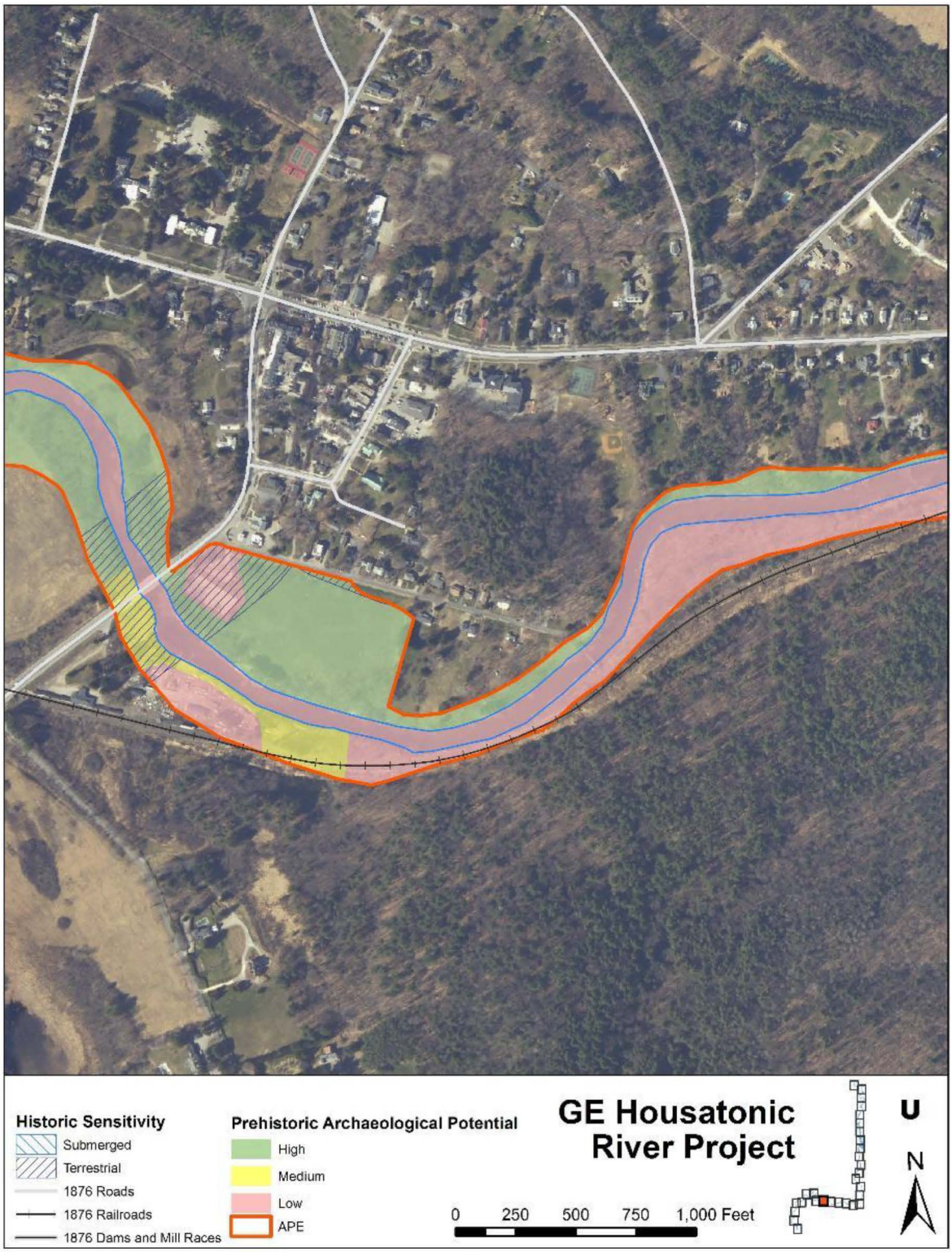

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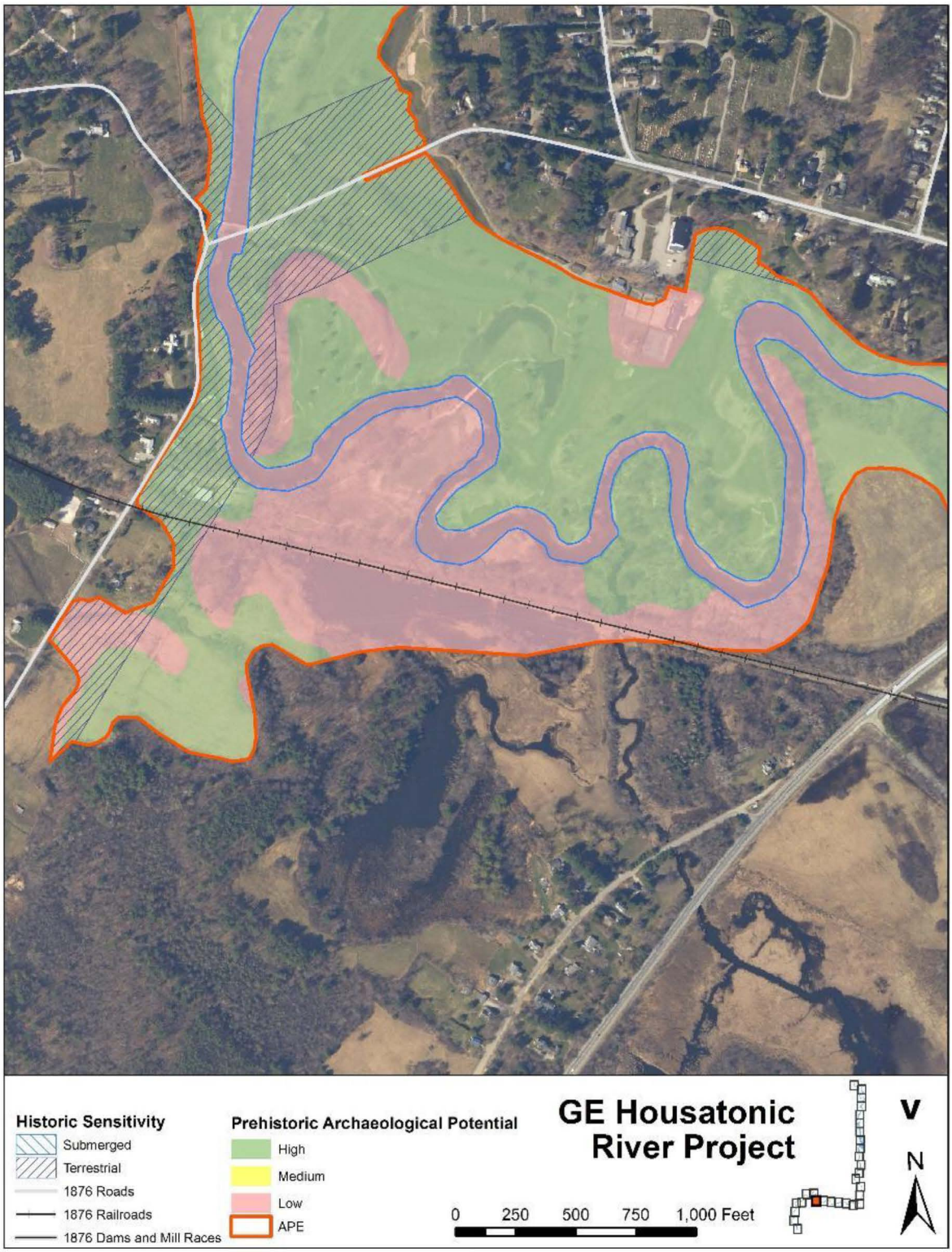

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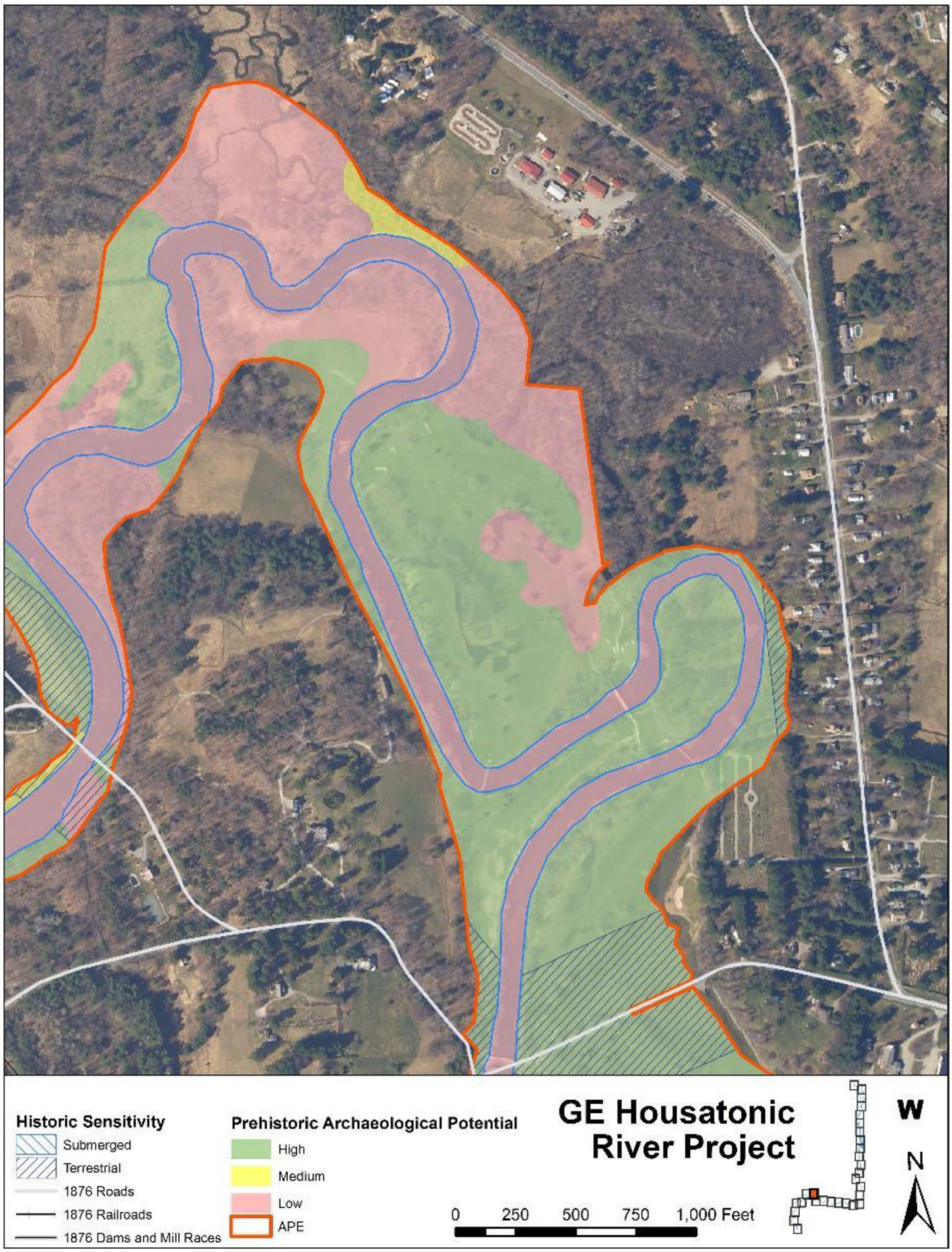


Figure 28. Archaeological Sensitivity Map, Sheet W.

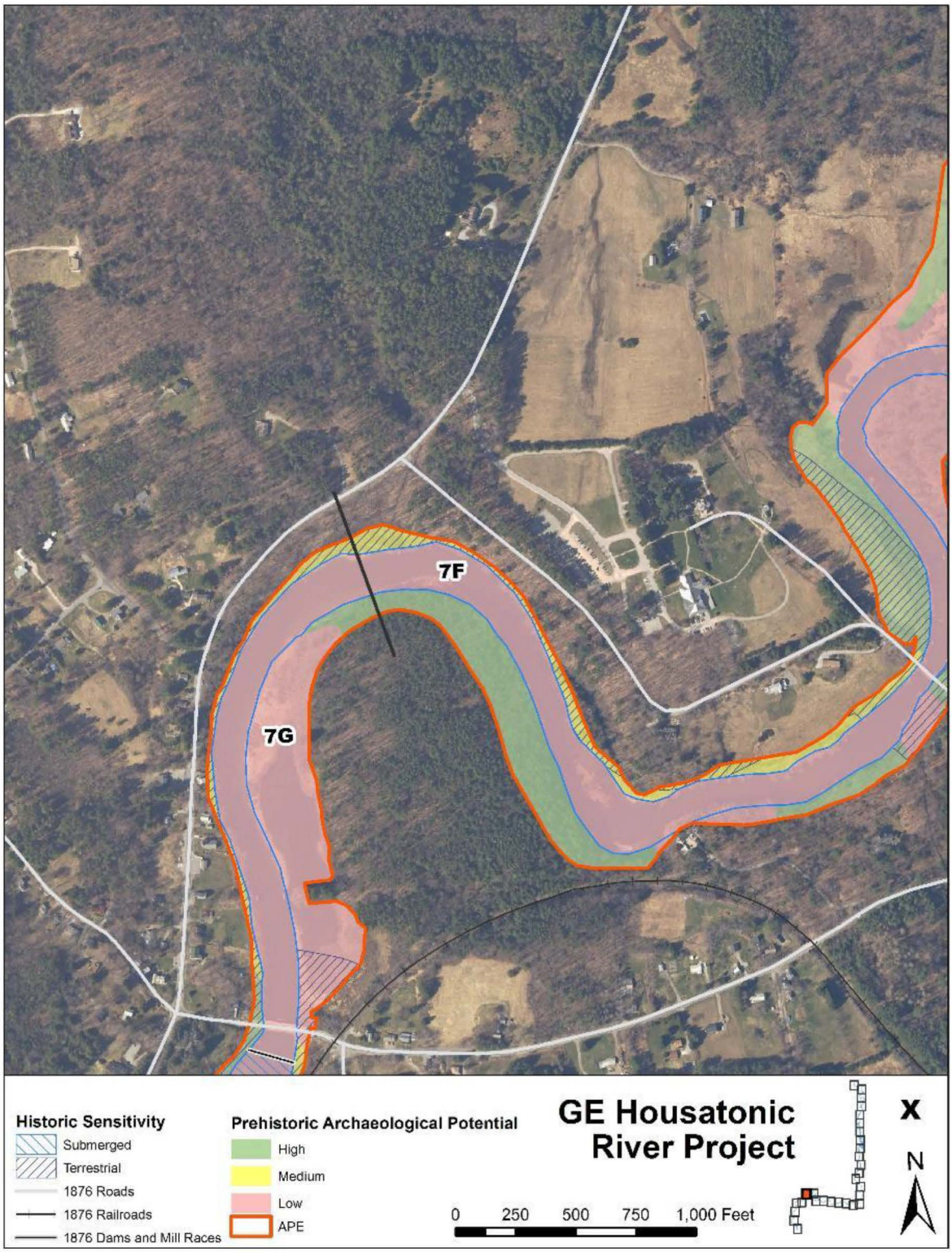
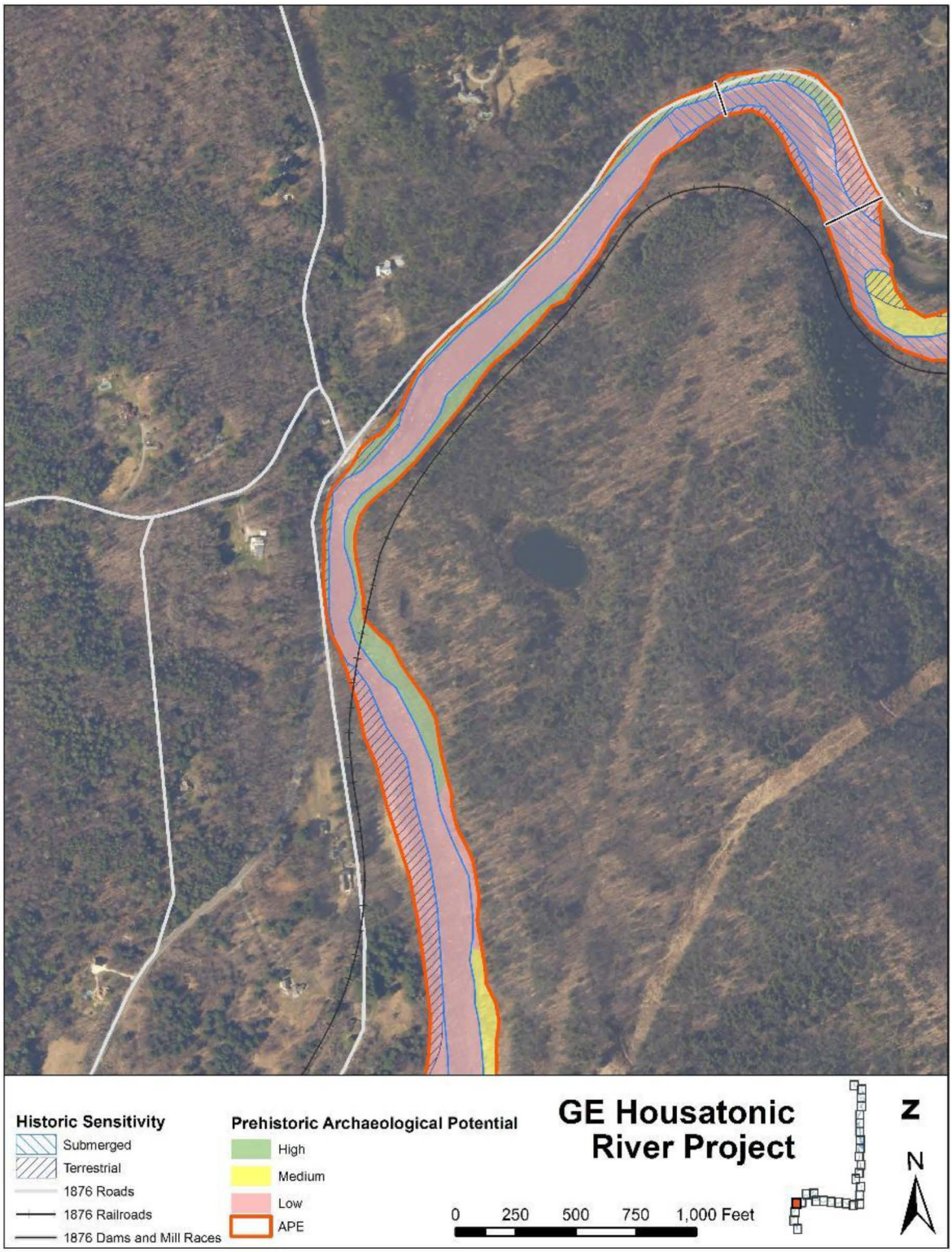


Figure 29. Archaeological Sensitivity Map, Sheet X.

Figure 30. Archaeological Sensitivity Map, Sheet Y.



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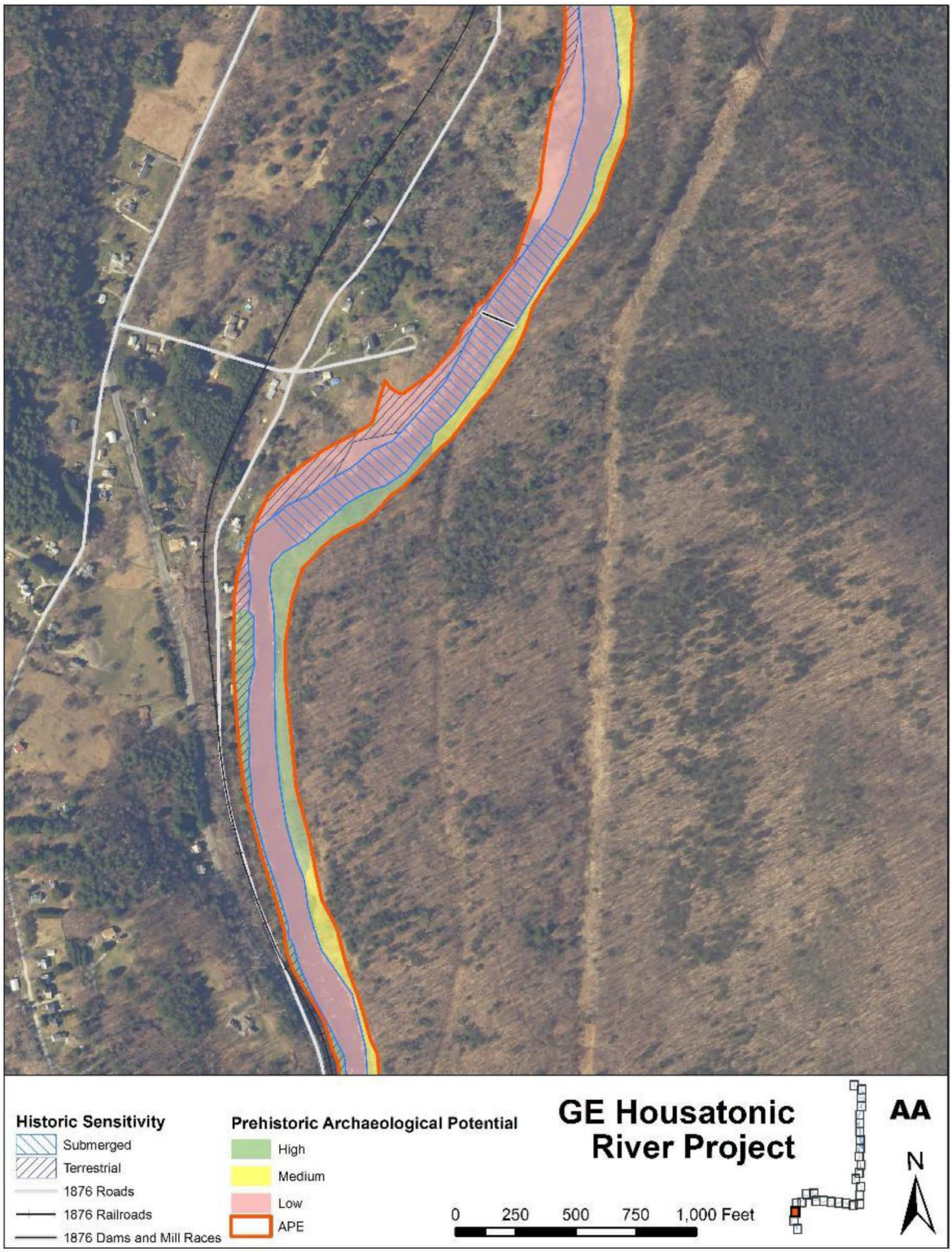
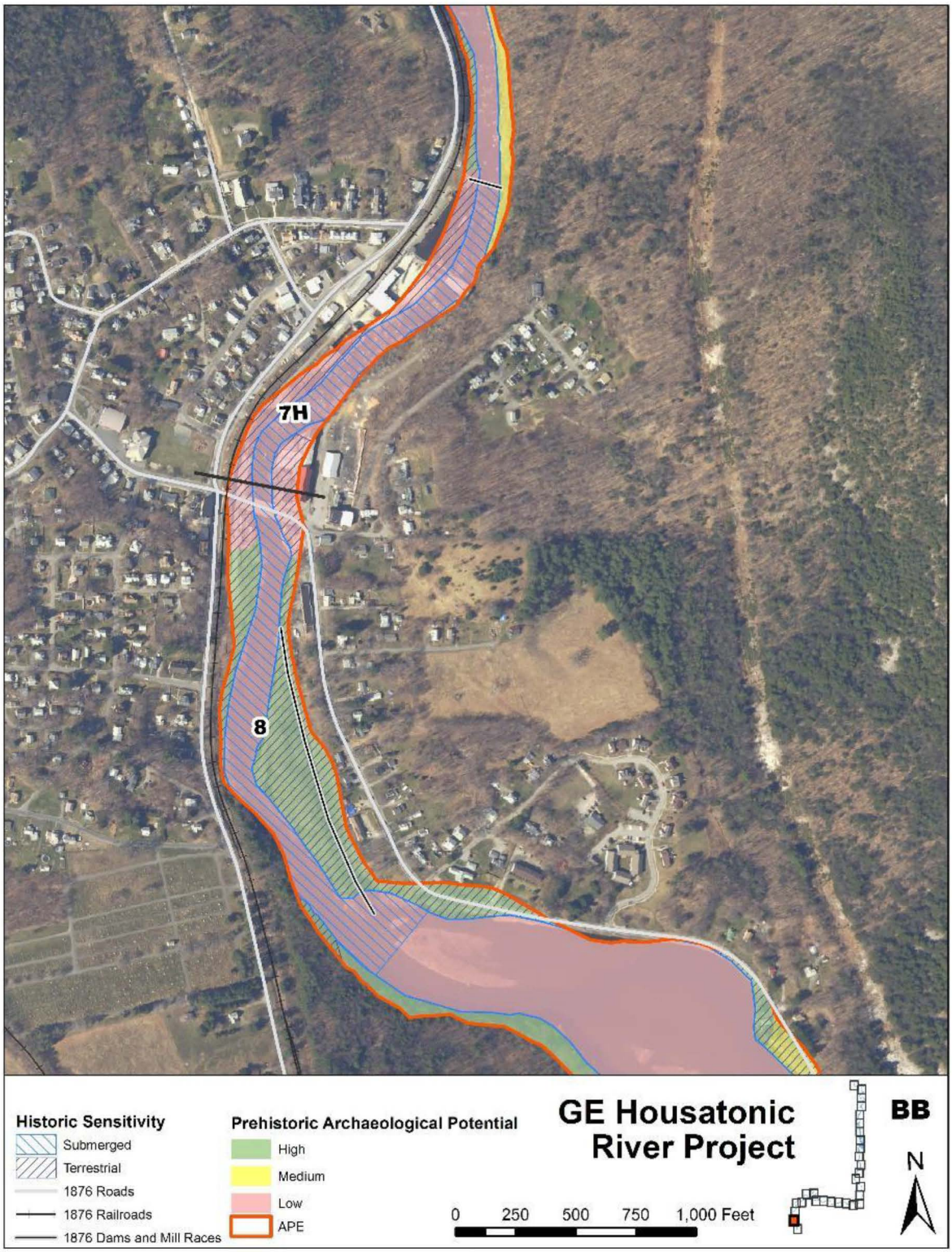


Figure 32. Archaeological Sensitivity Map, Sheet AA.



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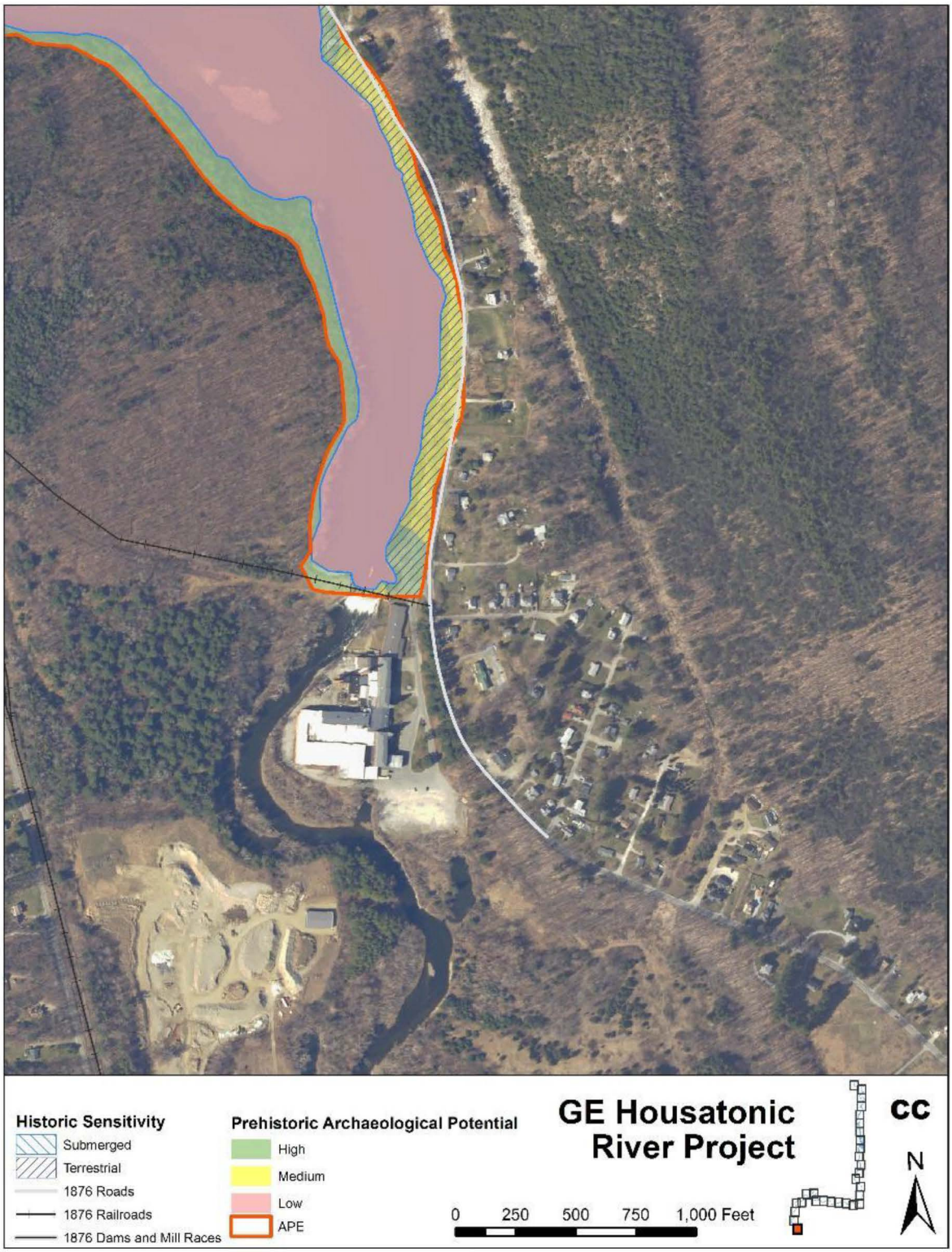

Figure 34. Archaeological Sensitivity Map, Sheet CC.

7 Summary of Cultural Resources by Reach

This section describes the cultural resources identified in or near each reach of the ROR project area, as well as areas with a high potential to contain such resources. As discussed in Section 4.2, the resources described in this section include some that are outside of but relatively near the ROR and Archaeological APE. As noted in that section, historic structures outside the APE that are determined to be unimpacted by remediation or support activities would not require further study, and archaeological site that are outside the APE and would not be disturbed by remediation or support activities will not require further study or investigation as part of the ROR project.

Resources that are listed on the NRHP or State SRHP are considered significant. At this time, the other resources discussed below are considered potentially significant since an evaluation has not been conducted as to whether each of them is actually significant (e.g., meets the criteria for listing on the NRHP). To the extent that such resources would be affected by the Remedial Action and that additional information is necessary to make the determination of significance, those issues will be addressed in later stages of this CRA process, as described in Section 4.3.3.2 of the Final Revised SOW and Section 8 of this report

7.1 Reach 5 (Confluence to Head of Woods Pond)

7.1.1 Reach 5 Terrestrial & Submerged Archaeological Resources

7.1.1.1 Reach 5 Prehistoric Sites

The floodplain from the north end of the RoR down to the New Lenox Road (Reaches 5A and 5B) has many areas of high potential for containing Native American archaeological sites (see Figure 6 through Figure 8). There are extensive well-drained floodplain terraces, and the background data document a number of previously recorded sites in the area. The preliminary analysis of chronological changes in river channel location (summarized in Section 5) indicate that major shifts have occurred in the past two centuries, and more detailed geomorphological studies will be needed to determine if these movements also occurred prior to Euroamerican settlement.

The area around the Confluence of the West and East Branches and the confluence of the Housatonic with Sackett Brook has one of the highest densities of previously recorded prehistoric sites in the region (see Figure 2). For example, within a mile upstream of the Confluence on the West Branch (but outside the ROR), there are six recorded prehistoric sites, and two sites are located near Morewood Lake just south of the Archaeological APE.

[redacted]

[redacted]

[6] The locations and direction of the photographs referenced in this section are shown on Figures 2 through 5.

Figure 35. 1783 Map of Pittsfield Showing Location of "Indian Burial" at Canoe Meadows.

Figure 36. Floodplain Fields at Audubon Canoe Meadows Sanctuary, View East from River.

From New Lenox Road down to the head of Woods Pond in Reach 5C (see Figure 10 through Figure 14), the project traverses a long section of low, wet, poorly drained floodplain where the channel has meandered extensively and there are no recorded sites. There are intermittent spots of higher, drier soils, but they are much more limited in extent than in Reaches 5A and 5B. In general, this stretch of floodplain has a low potential to contain prehistoric archaeological sites.

7.1.1.2 Reach 5 Historic Sites

There are no recorded historic period archaeological sites in the APE in Reach 5, and overall the areas of historic site sensitivity are limited due to the setting of Reach 5 on the margins of the main area of historic settlement in Pittsfield and Lenox. Exceptions to this include an area around the Holmes Road crossing, which is an old road that has been in this general alignment since the late 18th century, and a small area around the New Lenox Road crossing. The latter crossing is located near an historic settlement cluster, and bridge abutments from an older road crossing are located in the APE just south of the current bridge (Figure 37). Further south, in Reach 5C, the alignment of a 19th century road crosses the wetlands north of Woods Pond (see Figure 13). There is no road there now, but the roadbed is visible on aerial photos.

The river channel itself is of more limited concern in this stretch, but the field reconnaissance did observe two rock mounds at the edge of the channel [redacted] (Figure 38). These could be historic features or possibly remnants of Native American fish weirs and should be investigated further. However, Reach 5 does not have the concentration of dams and mills seen in areas further downstream in Reach 7.

Figure 37. Stone Abutments for Former New Lenox Road Crossing, View East.

Figure 38. Rockpiles in East Bank of River [redacted], View East.

7.1.1.3 Reach 5 Historic Structures

Much of Reach 5 traverses broad stretches of vegetated floodplain located at some distance from areas of historic settlement. However, one area of historic structures concentration is located along Holmes Road west of the floodplain and south of where Holmes Road crosses the river in Reach 5A. The estate of Oliver Wendell Holmes (PIT.321) (see Figure 7) is located on a hill overlooking the floodplain, and the campus of Miss Hall's School (PIT.320) is located across the road from the Holmes property. Both of these properties are included in the MHC inventory, as are three other nearby residential properties, but none of the five has yet been evaluated for NRHP eligibility. In addition, author Herman Melville's home, Arrowhead (PIT.309), is located a short distance south at 780 Holmes Road, situated outside the ROR on a hillside that overlooks the Housatonic River floodplain from the west (Figure 39). This property has been designated as a National Historic Landmark and is operated as a museum by the Berkshire County Historic Society.

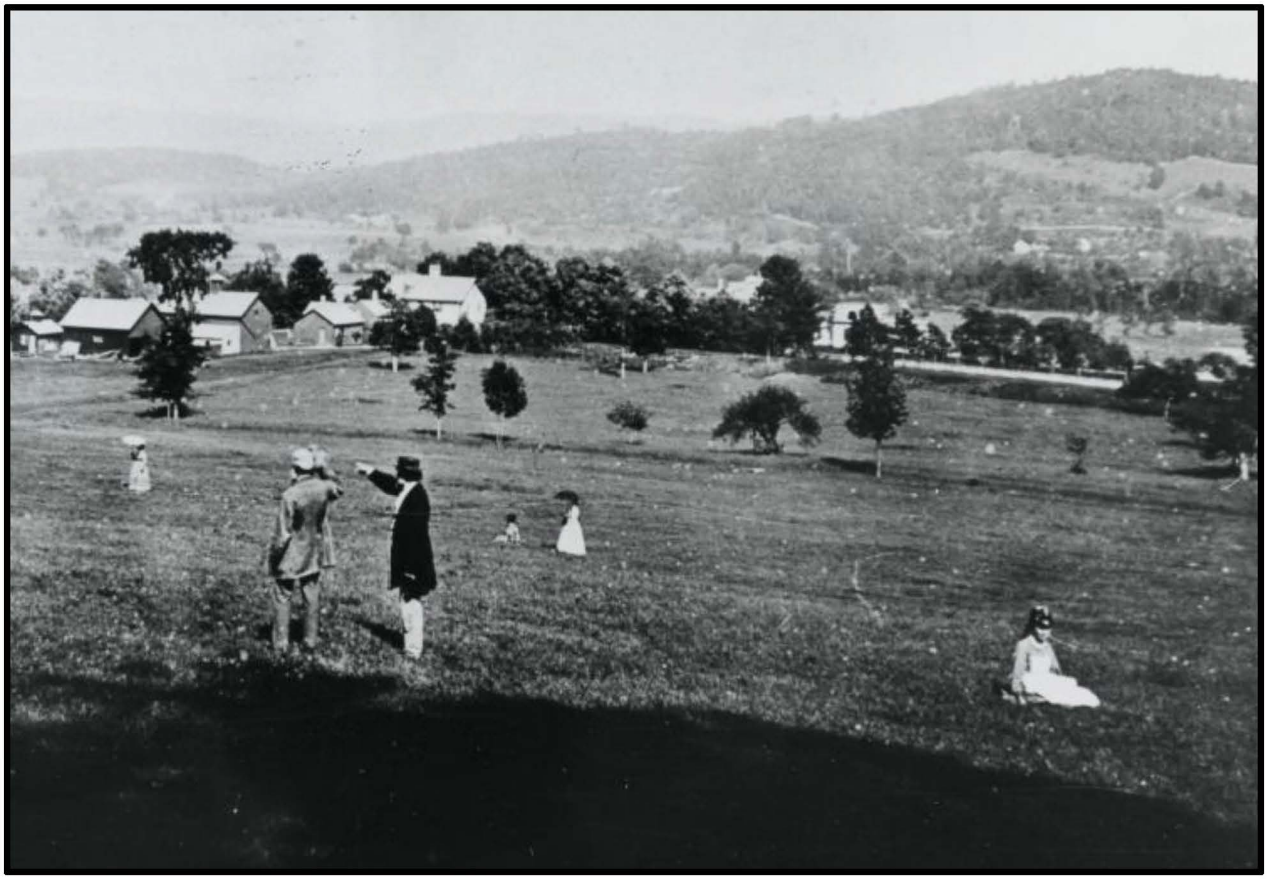

Figure 39. Herman Melville NHL, circa 1870, View East with Housatonic River floodplain in background (Berkshire County Historical Society).

Moving south into Reach 5B, a small cluster of un-inventoried older houses is situated east of the floodplain at the New Lenox Road crossing, but then the project continues south through a long stretch of Reaches 5C and 5D north of Woods Pond where there are very few residences or other structures, and none recorded as historic.

7.2 Reach 6 (Woods Pond)

7.2.1 Reach 6 Terrestrial & Submerged Archaeological Resources

7.2.1.1 Reach 6 Prehistoric Sites

There is only one recorded prehistoric site in or near the APE in Reach 6. [redacted]

However, the eastern and southern margins of Woods Pond are relatively level and well drained and have high potential for containing prehistoric archaeological sites. Woods Pond is a shallow, man-

made impoundment, and there may be submerged landforms with high potential for containing prehistoric sites adjacent to the course of the former river channels still visible in the pond.

7.2.1.2 Reach 6 Historic Sites

There are no recorded historic sites in or near Reach 6, but the eastern and southern margins of Woods Pond have some sensitivity for historic period sites due to the proximity of a 19th century road. The current pedestrian bridge over the river at the outlet of Woods Pond is located at a historic vehicle crossing, and the remnants of the late 19th century dam are located a short distance downstream (Figure 40). Both sides of the river from the bridge to the dam should be considered to have a high potential for historic sites.

7.2.1.3 Reach 6 Historic Structures

The crossroads of Lenox Station is situated just west of the south end of Woods Pond, and the NRHP-listed Lenox Train Station is located there just west of the railroad tracks (Figure 41).

Figure 40. Dam/Bridge Remnants Just North of Current Woods Pond Dam, View West.

Figure 41. Train Depot, Lenox Station, View North.

7.3 Reach 7 (Woods Pond Dam to Rising Pond)

This entire reach has conservatively been included in the area studied by the Supplemental Phase IA CRA. However, it should be kept in mind that, apart from the impoundments in this reach, the river channel will not be subject to active remediation. Accordingly, it is highly unlikely that the Rest of River remediation would affect any cultural resources within or adjacent to the sections of that channel outside the impoundments. Selected locations within the floodplains of Reaches 7 and 8 associated with designated Exposure Areas, vernal pools, and backwaters may be included in the remediation program, but the locations of these specific locations subject to remediation have not yet been determined.

7.3.1 Reach 7 Terrestrial & Submerged Archaeological Resources

7.3.1.1 Reach 7 Prehistoric Sites

From Woods Pond Dam to the Columbia Mill Dam in Lee, the river is situated in a narrower channel with limited floodplain. Reaches 7A and 7B have narrow strips of high potential terrain, primarily along the east side of the river (see Figure 14 through Figure 16). Reaches 7C and the upper end of Reach 7D through Lee to the Massachusetts Turnpike (see Figure 17 through Figure 19) also have

narrow strips of prehistoric high potential. Although these areas are small in extent, their location adjacent to former rapids in the river would have been prime spots for prehistoric fishing encampments. However, this is a free-flowing stretch where no remediation activities will be conducted.

In the rest of Reach 7D between the Turnpike and South Lee (see Figure 19 through Figure 23), the valley widens out again, and there are extensive stretches of elevated, well-drained floodplain terraces have high potential for containing sites. [redacted] All were identified during surveys of the pipeline corridors through this area (Figure 42) and include multiple Late Archaic, Early Woodland, and Late Woodland components (Jones and Berkland 1992; Macomber et al 1992). Site 19BK146 was recommended as eligible for the NRHP (Macomber 1992:32). Although the overall floodplain in all of Reach 7 is not being included in the remediation program, selected Exposure Areas vernal pools, and backwaters may require remediation.

Between South Lee and Stockbridge (Reach 7E and the upper part of Reach 7F – see Figure 24 and Figure 25), the valley narrows again, and the areas of high prehistoric potential are smaller. One location of particularly high potential is at the confluence with Kampoosa Brook, which enters the Housatonic on the north side just east of Stockbridge (see Figure 25). The brook drains an extensive upland wetland complex north of Stockbridge outside the ROR [redacted]

Starting from about Bidwell Park in Stockbridge and extending downstream to the Glendale North Road bridge (see Figure 26 through Figure 28), Reach 7F traverses an area of broad, well-drained floodplain with extensive areas of high potential for Native American sites of both the prehistoric and historic periods. The THPO of the Stockbridge-Munsee Mohican tribe has been actively conducting historic and archaeological research along this stretch of river for several years to better document the indigenous settlement and use of the area. [redacted] However, most of the floodplain in this area will likely not be subject to remedial activities.

Figure 42. Floodplain Terrace Near Hop Brook Confluence, West of Meadow Road, View West.

Figure 43. Stockbridge Country Club Near Glendale Road Bridge, View South.

From Glendale to Rising Pond (Reaches 7G and 7H), the river runs through a steep-sided narrow valley with almost no floodplain (see Figure 29 through Figure 33). As with the similar section in Lee, although these areas are small in extent, their location adjacent to former rapids in the river would have been prime spots for prehistoric fishing encampments. Recorded site 19BK-124 in Housatonic marks the general location of 19th century finds of ground stone tools. Again, however, no remediation activities will be conducted in this free-flowing stretch.

7.3.1.2 Reach 7 Historic Sites

From Woods Pond Dam to the Mass Turnpike, the river has numerous dam remnants and was the location of extensive 19th century industrial resources such as mills and iron and glass furnaces. In Reach 7A, the Valley Mill was located on the east bank of the river just downstream from Woods Pond Dam (see Figure 14), and an extensive complex of industrial facilities was located in Lenox Dale, which was earlier known as Lenox Furnace (see Figure 15). Iron smelting began here along the river in the late 18th century, and in 1853, glass works were built alongside the iron furnaces. After the furnaces declined in the late 19th century, Smith Paper Company bought one of the buildings on east bank of the river just below the Mill Street bridge and converted it into the Niagara Paper Mill in 1903, which is still standing. The Centennial Mill was located a short distance downstream on the east bank but has since been removed. A local history source reports that the dam at Lenox Dale was removed in 1969 (Cahalen 1993:2), but the remnants of this timber crib structure are still visible in the channel just north of the Mill Street Bridge (Figure 44). Another published local history source notes that, as of 1967, remnants of machinery from the glass works were sometimes still visible in the river at Lenox Dale (Corcoran 1967:4). Based on these multiple data sources, the river channel in this section should be considered to have a high potential for submerged historic resources.

Moving south into Reach 7C, the Columbia Paper Mill and associated dam (still existing) were built at a sharp bend in the river just north of the village of Lee. The village has had an extensive complex of industrial facilities along the river starting at the southern end of Reach 7C (see Figure 18) and continuing into the northern portion of Reach 7D through to the southern end of the village (see Figure 19). In the early 19th century, both sides of the river were lined with a variety of small mills and factories of various kind; and by the mid-19th century, ownership of many of these operations was consolidated and the sites were converted primarily to paper mills. This includes the Eagle Mill complex at the northern side of the village and the large Housatonic Mill, which was located on the east side of the river near the intersection of Railroad Street. At least two dams were located in this section of river, and a canal was dug along the east bank of the river that extended from the Center Street Bridge down past the Housatonic Mill and emptied back into the river just below Park Street. The banks of the river and the river channel itself (Figure 45) should be considered to have a high potential for buried and submerged historic resources in this section, but the free-flowing channel of Reach 7D will not be subject to remediation.

Figure 44. Remnants of Timber Crib Dam in River at Lenox Dale, View Northwest.

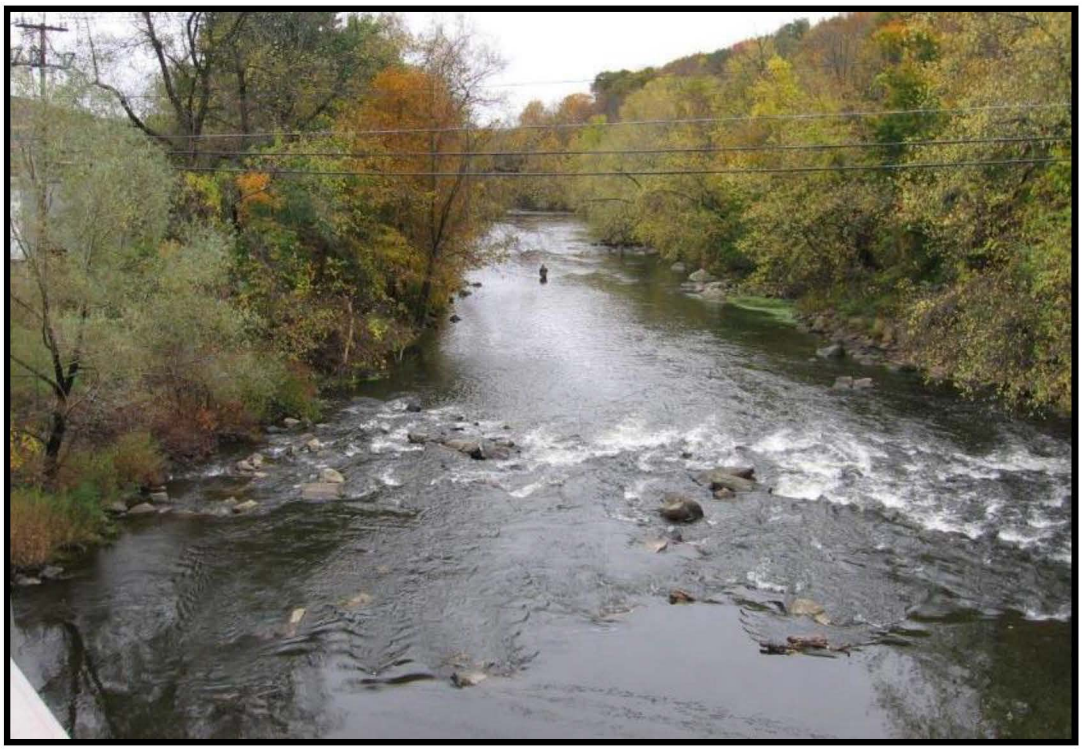

Figure 45. Location of Former Dam South of W. Center Street in Lee, View South.

The broad section of floodplain between Lee and South Lee in Reach 7D has more limited potential for historic sites as there was no water-powered industry and sparser settlement there. However, Reach 7E and the upper part of Reach 7F traverse an area of historic settlement and industry in South Lee (see Figure 24). A grist mill and a furnace were established here in the late 18th century, and in 1806, a paper mill was added to the complex along with a fulling mill (Smith 1978:7). Later in the 19th century, the complex of small mills was torn down and consolidated, and the large brick Willow Paper Mill that still stands was built in 1876. Except for the areas near historic road crossings, the rest of Reach 7E through Stockbridge has more limited areas of sensitivity for historic Euroamerican archaeological sites. However, as noted previously, this is an area of high sensitivity for Native American sites relating to the 18th century missionary village settlement.

In the lower part of Reach 7G and the upper part of Reach 7H, the community of Glendale has potential for historic sites along the banks and in the channel relating to 19th century mills and a hydroelectric facility (see Figure 30), but this free-flowing section is not being remediated. At the upper end of Reach 7G is the Glendale Dam, and in the mid to late 19th century, there was another dam located just downstream from the Glendale Middle Road Bridge. The Glendale Woolen Mills were located here on the west bank of the river, and the train depot was on the east bank. At the sharp bend in the river just below the current hydroelectric plant, the Callender Paper Mill was located on the east bank of the river, and a bridge connected it to what is today Route 183.

Further downstream in Reach 7H, but still in the Town of Stockbridge, another locus of industrial activity was situated on the river at what is today called Furnace Road and Apple Street, east of Route 183 (see Figure 32). In the early 19th century, an Iron Furnace was located here, and this was later replaced by mills associated with the Monument Mills downstream in Housatonic. A dam and small impoundment existed here into the early 20th century. Reach 7H continues downstream to the Park Street Bridge in Housatonic. This stretch of river from the Stockbridge line to the bridge is lined with the remnants of the Monument Mills complex, which was incorporated in 1850; and it contains three main mill buildings, two dam sites, and associated facilities (see Figure 33).

7.3.1.3 Reach 7 Historic Structures

In Reach 7, the river traverses an extensive section of historic paper mills from Lenox Dale to Housatonic. At Lenox Dale (see Figure 15) is the early 20th century Niagara Mill (Figure 46), and between Lenox Dale and Lee, there are a number of inventoried early 19th century houses along the east side of the river. The Golden Hill Bridge across the Housatonic is listed on the NRHP, but it has been modified with modern structural components. In Lee, some of the Eagle Mill complex still stands on the east side of the river (Figure 47), and this area is included in the Lee Center District recorded in the MHC state inventory. Subsumed within the Lee Center District about a block east of the river is the NRHP-listed Lower Main Street Historic District (see Figure 18).

Figure 46. Niagara Mill, Lenox Dale, View South.

Figure 47. Eagle Mills, Lee, View North/Northeast from Rte. 20 Bridge.

In South Lee in Reach 7E (see Figure 24), there is an extensive NRHP-listed historic district lining Pleasant Street (Rte 102) along the north side of the river (Figure 48), and that district also encompasses the historic Willow Mill located on the south side of the river (Figure 49). Moving west and south along the river in Reach 7F, the village of Stockbridge along the north side of the river (see Figure 26 and Figure 27) encompasses multiple MHC-inventoried historic districts and NRHP-listed historic districts of 18th, 19th, and early 20th century houses (Figure 50).[7] Historic estates are situated on the hillside south of the river, and two of the NRHP districts cross the Housatonic River.

At the southern end of Reach 7F, the large Linwood Estate (STO.35) complex, which now houses the Norman Rockwell Museum, is situated along the west side of the river near the Butler Bridge (STO.911). Moving into Reach 7G, the MHC-inventoried Glendale/Mill Hollow district is located along the west bank of the river (Figure 51) and encompasses the existing Glendale Hydroelectric Facility (Figure 52), which is listed on the NRHP (see Figure 30). At the beginning of Reach 7H, the NRHP-listed Chesterwood property is situated just west of the river outside the Archaeological APE. This is the former home of sculptor Daniel Chester French, creator of the Abraham Lincoln sculpture in the Lincoln Memorial among many others. It is currently owned by the National Trust for Historic Preservation.

Moving downstream toward the village of Housatonic, the Furnace historic district flanks the west side of the river, and the village itself has multiple historic mill buildings, including the NRHP-listed Monument Mills complex (GBR.B) flanking the river (Figure 53).

[7] NRHP districts in Stockbridge include Main Street (STO.B), Elm, Maple, and South Streets (STO.AA), South Village (STO.Q), and MHC Inventory districts include Yale Hill (STO.A) and East Main Street (STO.U). The capital letters in parentheses associated with these districts are the MHC ID codes.

Figure 48. Merrill Inn, South Lee, View South.

Figure 49. Willow Mill, South Lee, View South.

Figure 50. Streetscape, Main Street, Stockbridge, View West.

Figure 51. Frame House, Glendale, View Southeast.

Figure 52. Glendale Power Station, Glendale, View Southeast.

Figure 53. Monument Mills, Housatonic, View North from Route 183 Bridge.

7.4 Reach 8 (Rising Pond)

7.4.1 Reach 8 Terrestrial & Submerged Archaeological Resources

7.4.1.1 Reach 8 Prehistoric Sites

Reach 8, the Rising Pond impoundment, extends from the Park Street Bridge in Housatonic to the Rising Pond Dam. There are no recorded prehistoric sites in this section, but the sensitivity model indicates that the western shore of the pond has high potential for containing such sites. In addition, former river channels within the pond may have adjacent submerged landforms with archaeological sensitivity.

7.4.1.2 Reach 8 Historic Sites

In the upper section of Reach 8, within the village of Housatonic (see Figure 33), the Owen Paper Company had a complex of mill buildings and other structures along the river beginning as early as 1856. The Owen buildings were spread along a canal dug along the east bank of the river. South of the village, H.D. Cone built what is now the Rising Paper Mill in 1876.

7.4.1.3 Reach 8 Historic Structures

The Rising Paper Mill mentioned above has been listed on the NRHP since 1975 (Figure 54). It is located at the southern end of Rising Pond, just south of the end of Reach 8 (see Figure 34). In addition, a residential neighborhood associated with the mill is located along Park Street along the east side of Rising Pond. This is included in the MHC inventory as Resource GBR.0.

Figure 54. Rising Paper Mill, Housatonic, View South.

8 Next Steps

This Supplemental Phase IA CRA Report has summarized the background information obtained and sensitivity modeling completed to date. Additional data will be needed to complete the Phase I cultural resources investigations. Such data needs will depend on the specific locations of the remediation activities in areas where such locations are not yet known (the Reach 5B and 5C channel, Reach 5A and 5B riverbanks, backwaters, Wood Pond and Rising Pond, floodplain areas, and vernal pools), as well as the locations of access roads and staging areas, since additional Phase I investigations, particularly field investigations, will be focused on areas that will be subject to or affected by remediation or support activities. Such additional investigations may be necessary to:

- Refine and field test the sensitivity models;
- Determine whether archaeological or historic resources are actually present in areas of high potential that are targeted for remediation;
- Evaluate whether any archaeological or historic resources present are potentially significant (i.e., potentially eligible for inclusion on the NRHP); and
- Determine whether the remediation could have an adverse effect on any such potentially significant resources.

During the remedial design process, GE will submit, for each RU, a Work Plan for a Phase IB Cultural Resource Survey. As provided in Section 4.3.3.2 of the Final Revised SOW, that work plan will be submitted concurrently with the Conceptual Remedial Design/Remedial Action (RD/RA) Work Plan for the subject RU. Using the information in this Supplemental Phase 1A CRA Report along with the design information in the Conceptual RD/RA Work Plan, the Phase 1B Work Plan will propose additional activities, including field investigations, such as those listed above, to determine whether the remediation and support activities for that RU, as designed, will impact any potentially significant cultural resources. The proposed investigations may include visual reconnaissance, terrestrial surveys, underwater investigations, and architectural surveys, as appropriate. Areas that may require additional investigation, depending on the nature of potential impacts, include:

- Floodplain or riverbank areas with known cultural resources;
- Floodplain or riverbank areas with high potential but no recorded resources;
- River channel areas with high potential; and
- Areas of known or suspected historic structures within an Historic Architectural APE.

Ultimately, as provided in Section 4.3.3.2 of the Final Revised SOW, if such additional investigations and assessments indicate that the remediation or support activities would result in an adverse effect on potentially significant archaeological or historic resources, that such effects cannot be avoided, and that additional information is necessary to determine whether the resources to be affected are in fact significant (i.e., meet the criteria for eligibility for the NRHP), GE will prepare and submit a Phase II CRA Work Plan to evaluate the latter issue at the RU in question. The Phase II CRA Work Plan will be submitted on a schedule specified in the Phase IB Cultural Resources Survey Report for the subject RU and will describe the additional activities proposed to determine whether the resources identified are in fact significant. Following EPA approval, the proposed activities will be conducted and the results will be presented in a Phase II CRA Report, to be submitted no later than the date of submittal of Final RD/RD Work Plan for the subject RU.

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APPENDIX A - Previously Recorded Archaeological Sites

[REDACTED FROM PUBLIC DISTRIBUTION]

APPENDIX B - Analysis of River Channel Movements

APPENDIX B:

Analysis of Housatonic River Channel Movements for Reaches 5 and 6 of the Housatonic Rest of River

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1.0 INTRODUCTION

To further assist in assessing the potential of the Housatonic River floodplain in the Rest of River (ROR) area to contain prehistoric archaeological sites, and to identify potential future field research approaches that may be needed prior to implementing remediation measures, AECOM sought to better characterize the structure and age of the overall floodplain landforms within Reach 5 (including Reaches 5A, 5B, and 5C) and Reach 6 of the ROR, as designated by EPA. This ROR stretch extends from the confluence of the East and West Branches of the river in Pittsfield to Woods Pond Dam in Lenox and Lee (see Figure 1), and the floodplain in this stretch will be most impacted by planned remediation activities. The primary goals of this analysis were to:

- Compile a comprehensive set of nineteenth and twentieth century maps and aerial photographs that show the location and horizontal configuration of the Housatonic River channel in Reaches 5 and 6;

- Use GIS to geo-reference digital images of suitable maps and aerial photographs and then prepare data layers depicting a time series of channel changes against current aerial photographs;

- Briefly review readily available historic background data to seek information relevant to reported channel changes, floodplain modifications, and adjacent development activities; and

- Summarize the information compiled and present the maps accompanied by a discussion of the river channel and floodplain changes that have been identified.

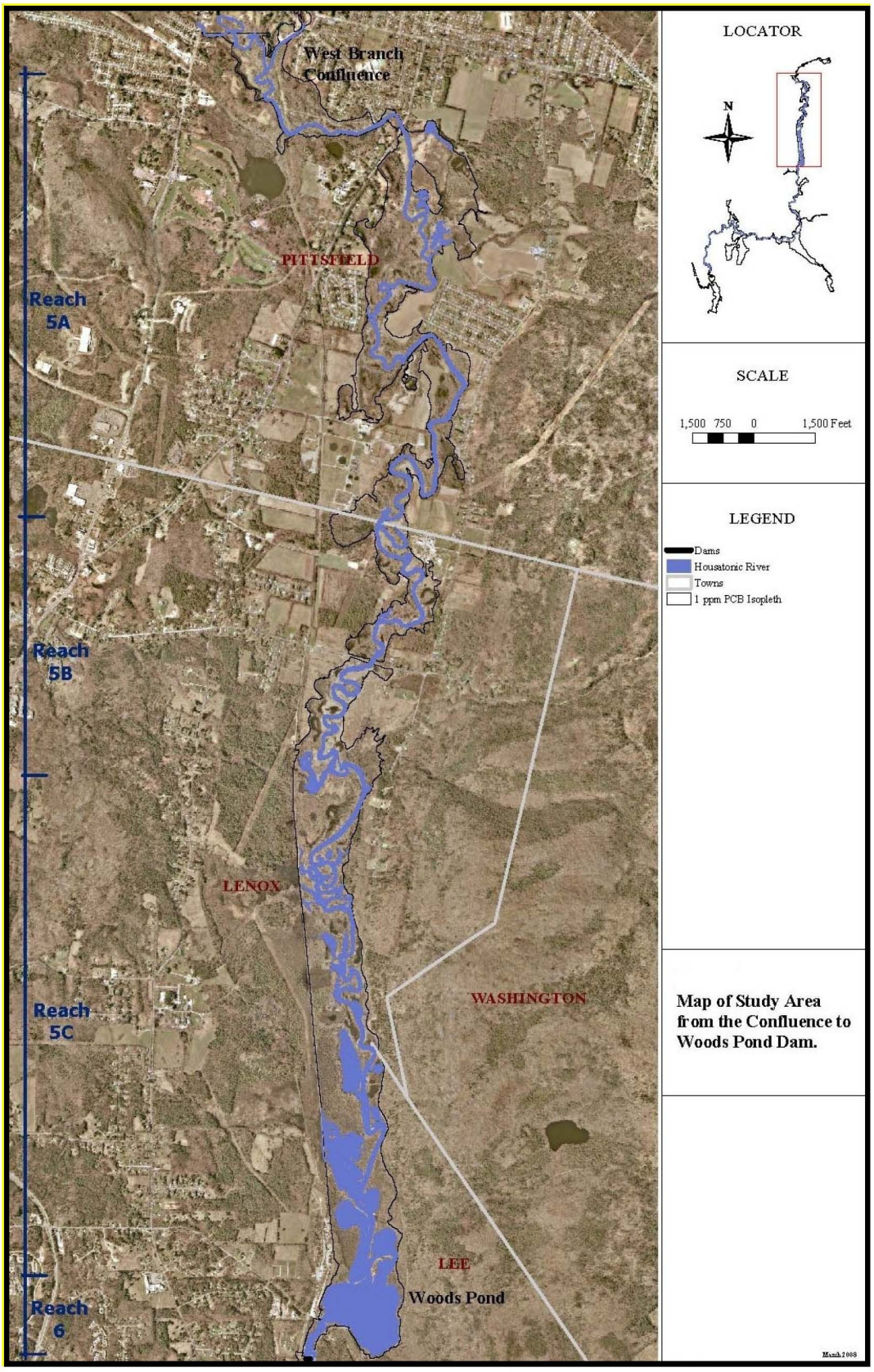

Figure 1. Location of Study Area in River Reaches 5 and 6.

2.0 SETTING

The Housatonic River flows south through the Central Valley region, which lies between the Berkshire Plateau and the Taconic Mountains. The main stem of the river is formed by the confluence of the East and West Branches of the Housatonic River in Pittsfield (the Confluence), which is the northern boundary of the ROR. The East Branch begins in Dalton and Hinsdale from headwater tributaries. The West Branch starts at Onota and Pontoosuc Lakes in Pittsfield and Lanesboro and is augmented by flows from the Southwest Branch. Below the Confluence, the river generally flows south through Berkshire County for approximately 10 miles to Woods Pond, the first significant impoundment. Downstream of Woods Pond, the river continues south through western Massachusetts and south/southeast through Connecticut before emptying into Long Island Sound at Stratford, Connecticut.

Reach 5 begins at the Confluence and extends downstream approximately 10 miles to the head of Woods Pond. This section of the river is bordered by extensive floodplains and has a meandering pattern with numerous oxbows. Reach 6 encompasses Woods Pond, a 60-acre impoundment that was created in the late nineteenth century. Reaches 7 and 8 and are not included in this study.

3.0 HISTORIC OVERVIEW

The following table presents a timeline of historic events for Reaches 5 and 6 of the ROR.

Late 18th century	First extensive Euroamerican settlement and land clearing in the valley between Pittsfield and Lee. First mill dam at Lenox Furnace, downstream from study area.
circa 1835	Valley Mill built just below what is now Woods Pond. Not clear if a dam was built at this time.
1850	Stockbridge to Pittsfield Railroad line was completed along west side of river.
Between 1834 and 1854	New Lenox Road, Housatonic Street, and a third unnamed road were built across the valley.
Between 1876 and 1882	Dam was built at the Valley Mill – or an existing dam was raised – creating what is now Woods Pond.
1894	New Lenox Road bridge moved slightly upstream.
1904	Pittsfield Sewage Treatment Plant facilities begun.
Between 1952 and 1972	Residential subdivision developed off East New Lenox Road.
1958	Electric Power Research Institute was begun off East New Lenox Road.

4.0 CHANNEL CHANGES

All readily available nineteenth and early twentieth century maps were scanned and saved as digital images, and then these map images were brought into ArcGIS and a Georeferencing tool was used to attempt a best-fit of the historic maps to the modern landscape. Successful georeferencing requires the availability of a number of key fixed landmarks common to both the historic map and the modern base map. For this project, these features were generally road and railroad intersections and bridges. After the maps were georeferenced, the configuration of the historic river channel on each map was digitized, and these shape files were then color coded and used to compile composite maps showing the locations of the mapped channel over time.

It should be noted that, in general, the nineteenth and early twentieth century mapping is not as accurate as later mapping. The scale and level of detail vary widely, and the amount and quality of information depicted vary within the map and between maps. In many of the early maps, the mapmakers focused on depicting the location of roads, houses, and settlements, and they clearly spent less effort depicting the location and configuration of the river channel, particularly in more remote sections away from settled areas. For many of these maps, the exact location of specific curves and bends should be taken as an approximation, and the map should be used to assess broad changes rather than point-specific changes.

All channel maps were then reviewed together, and a number of them were then eliminated from further use due to redundancy or obvious flaws. In the end, a half dozen maps were selected that span the half century from 1854 to 1904, and the 1942 channel was included to document the basic configuration of the current channel (channel movements since 1942 have occurred but they appear to be less dramatic and are not the focus of the current study). The channels from the selected maps are depicted on two different base maps; the first is a 1988 USGS topographic map, the second is a 2005 aerial photograph. This series of maps is presented in Figure 2 through Figure 11.

Maps and Photos Digitized and Georeferenced (maps in italics not included in final analysis)

1830 Anonymous Map of Berkshire County

1854 Woodford Map of Lenox

1858 Walling Map of Berkshire County

1876 Beers Maps of Pittsfield, Lenox, and Lee

1886 (1893 and 1897 USGS Becket and Pittsfield 15-minute quadrangle maps)

1891 Walker Map of Berkshire County

1893 Miller Map of Pittsfield

1894 Beirne Map of Lenox

1904 Barnes and Farnham Maps of Pittsfield, Lenox, and Lee

Discussion of Major Changes in River Channels

As can be seen in Figure 2, the position of the channel in Reach 5A from the Confluence downstream to the Pomeroy Avenue Bridge is widely divergent on the 1858 and 1904 maps. Examination of topographic constraints on channel movement in that area indicates that the divergent channel position of those two maps appears to be related to mapping discrepancies rather than actual river movement. In contrast, the temporal trends and current floodplain topography suggest that a major river channel shift did occur in the Canoe Meadows area just downstream from the Holmes Road Bridge (see Area A on Figure 2 and Figure 3). There is an area of higher ground in Canoe Meadows on the east side of the current channel, and it appears that in 1858 and 1876, the river flowed on the east side of that high ground, but by 1886 it had shifted to the west side of the high ground. More detailed geomorphological study would be needed to clarify whether this was a steady migration or an avulsion where the river abruptly shifted channels without migration, but the presence of the topographic high in the middle of the sequence suggests it was an avulsion.

The next major change visible in Reach 5A is in Area B, which is located in the area of the so-called Joseph Street residential subdivision (Figure 4 and Figure 5). In 1858 and 1876, the river channel appears to have been located toward the east side of the valley, through the middle of what is now the subdivision. By 1886, it had moved to just west of what is now the subdivision, and by 1904, it was on the west side of the valley near the present course. The shift from 1886 to 1904 was likely a major avulsion, given the eight-year time span. Given the presence of a topographic high between the 1858/1876 channels and the 1886 channel, that movement may have also been an avulsion. The 1886 channel occupied a low area that also contained the outlet of Sykes Brook. The lower portions of Sykes Brook were rechanneled to the north during development of the subdivision in the 1960s.

Near the south end of Reach 5A, in Area C near the Pittsfield Wastewater Treatment Facility, all of the historic channels appear to have run through the area now occupied by the easternmost settling ponds. After 1904 (which is when sewage plant development was first started), the channel shifted east and formed the current large oxbow bend.

In the northern section of Reach 5B, in Area D between the EPRI and New Lenox Road (Figure 6 and Figure 7), the historic maps suggest a great deal of east-west wandering over time, with no abrupt channel avulsions. South of New Lenox Road, through the rest of Reach 5B, the historic channels show fewer shifts, with the exception of the 1876 channel. This channel was taken from the 1876 Lenox map, which was published separately from the 1876 Pittsfield map, and a review of its overall course compared with topographic and other mapping data suggests that the mapmakers did not attempt a detailed depiction of the exact river channel. The Lenox 1876 map river channel appears to be more smoothed and idealized than both earlier and later maps.

In Reach 5C (Figure 8 and Figure 9), the historic channel locations show some movement, but there are fewer substantial shifts than seen upstream. However, review of aerial photography documents numerous cut-off oxbows and abandoned channels. There are also some areas of

clearly incorrect channel mapping, such as where the 1886 channel cuts impossibly into the steep hillside in the middle of the reach.

Finally, Area E is in the Woods Pond/Reach 6 section (Figure 10 and Figure 11). The historic maps indicate the lack of a large impoundment prior to the 1886 map. The differences in positioning of the extreme oxbow bend seen in the 1854 and 1858 maps are likely due to mapping and georeferencing issues rather than an actual channel shift. The railroad bed was built in 1849, so the west side of the 1854 channel cutting into it is not possible. The 1858 map also shows that an isolated natural pond (possible kettle hole) was situated east of the river, and twentieth century aerial photographs taken at times of lower water levels confirm the existence of this smaller pond, which became connected with the Housatonic River when the larger Woods Pond impoundment was created circa 1880. This smaller pond is also clearly visible on bathymetric maps of the bottom of Woods Pond.

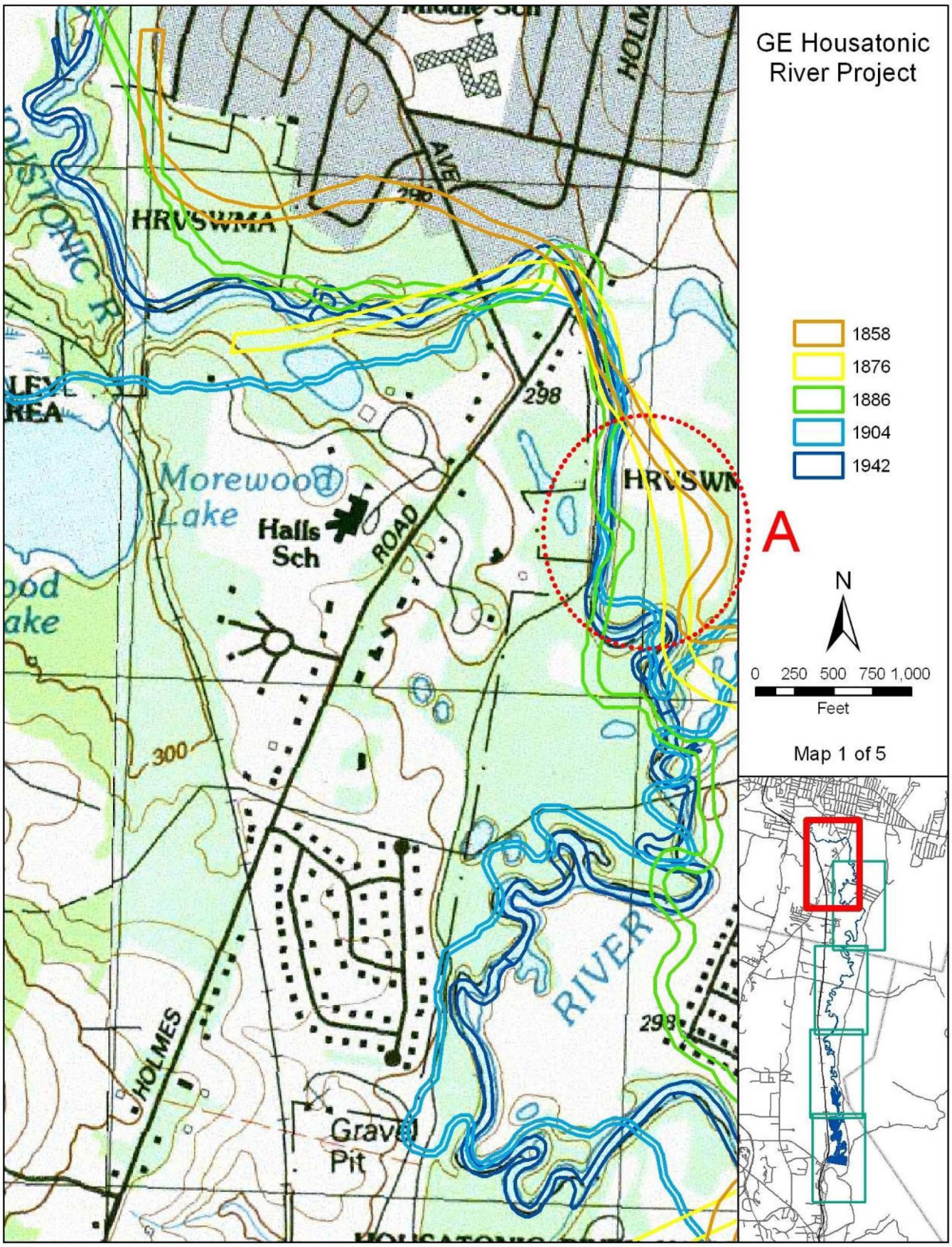

Figure 2. Channel Locations on 1988 USGS Map.

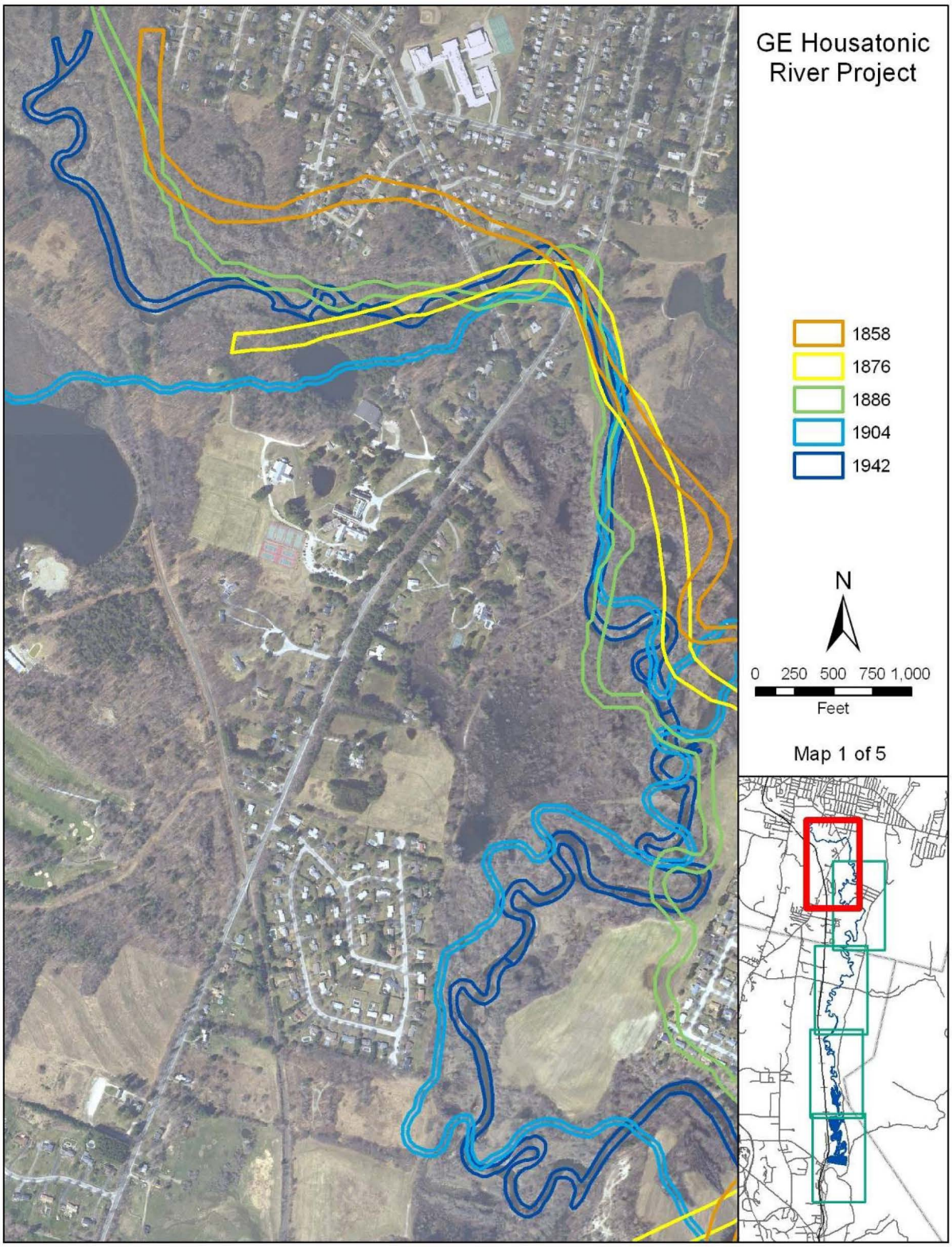

Figure 3. Channel Locations on 2005 Aerial Photograph.

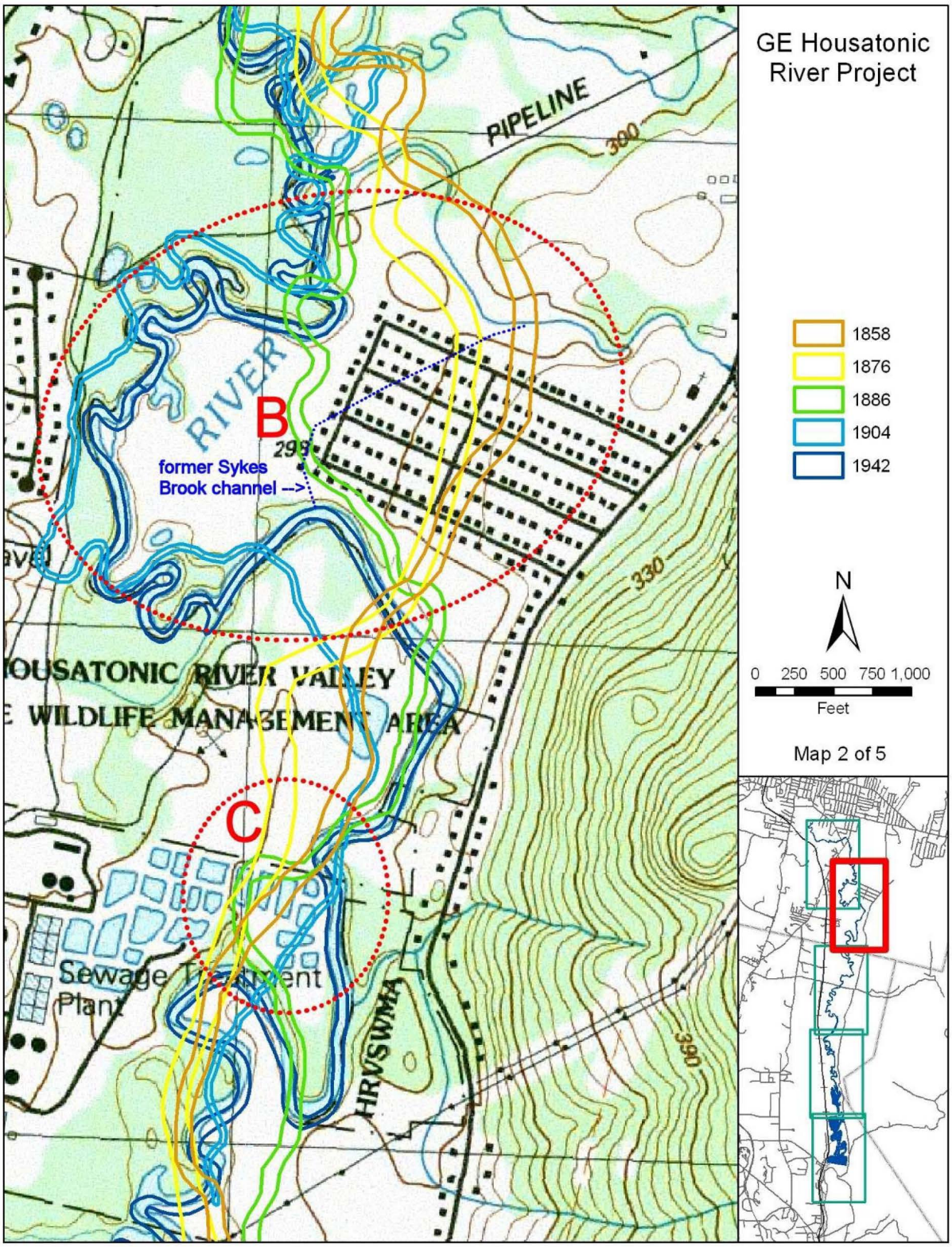

Figure 4. Channel Locations on 1988 USGS Map.

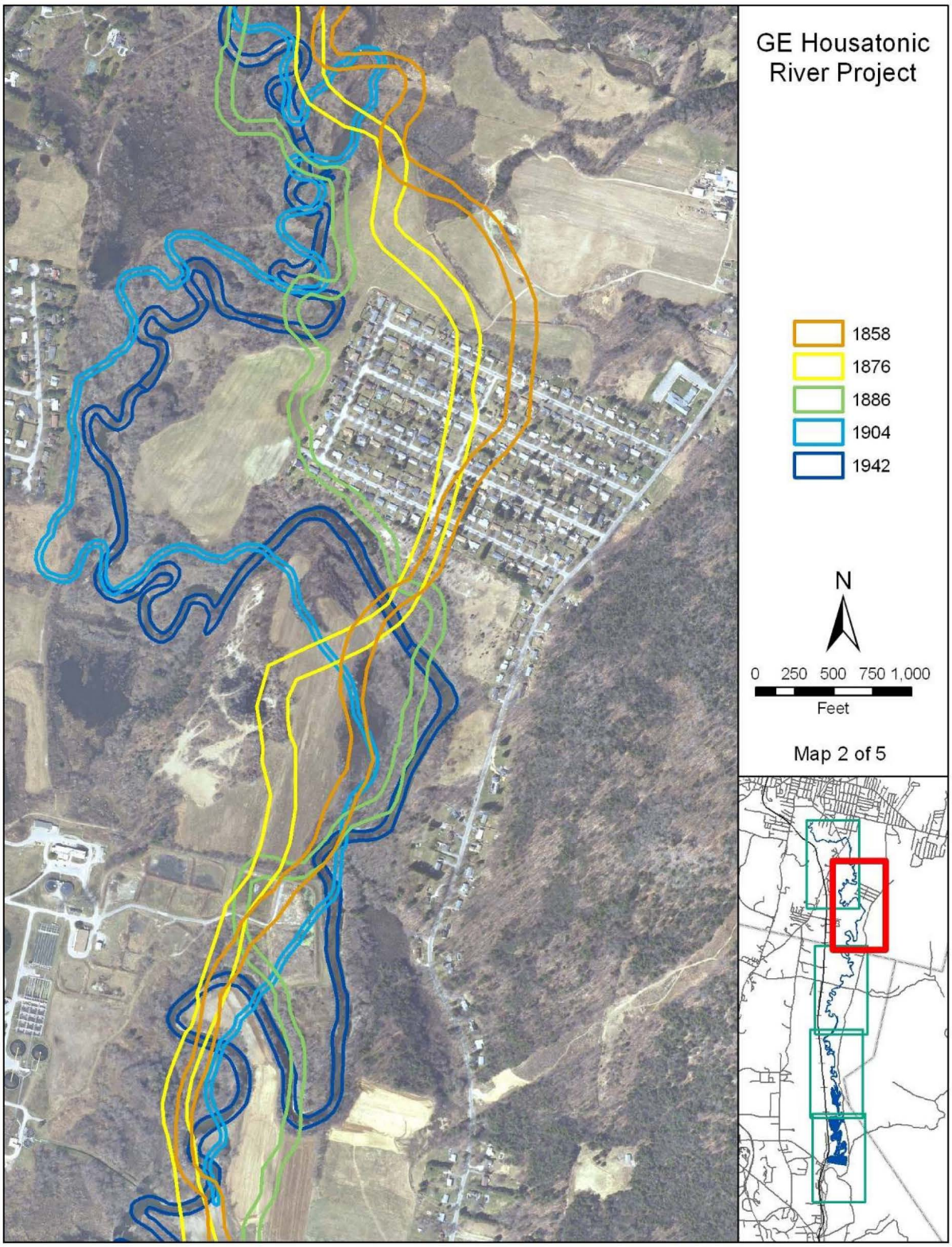

Figure 5. Channel Locations on 2005 Aerial Photograph.

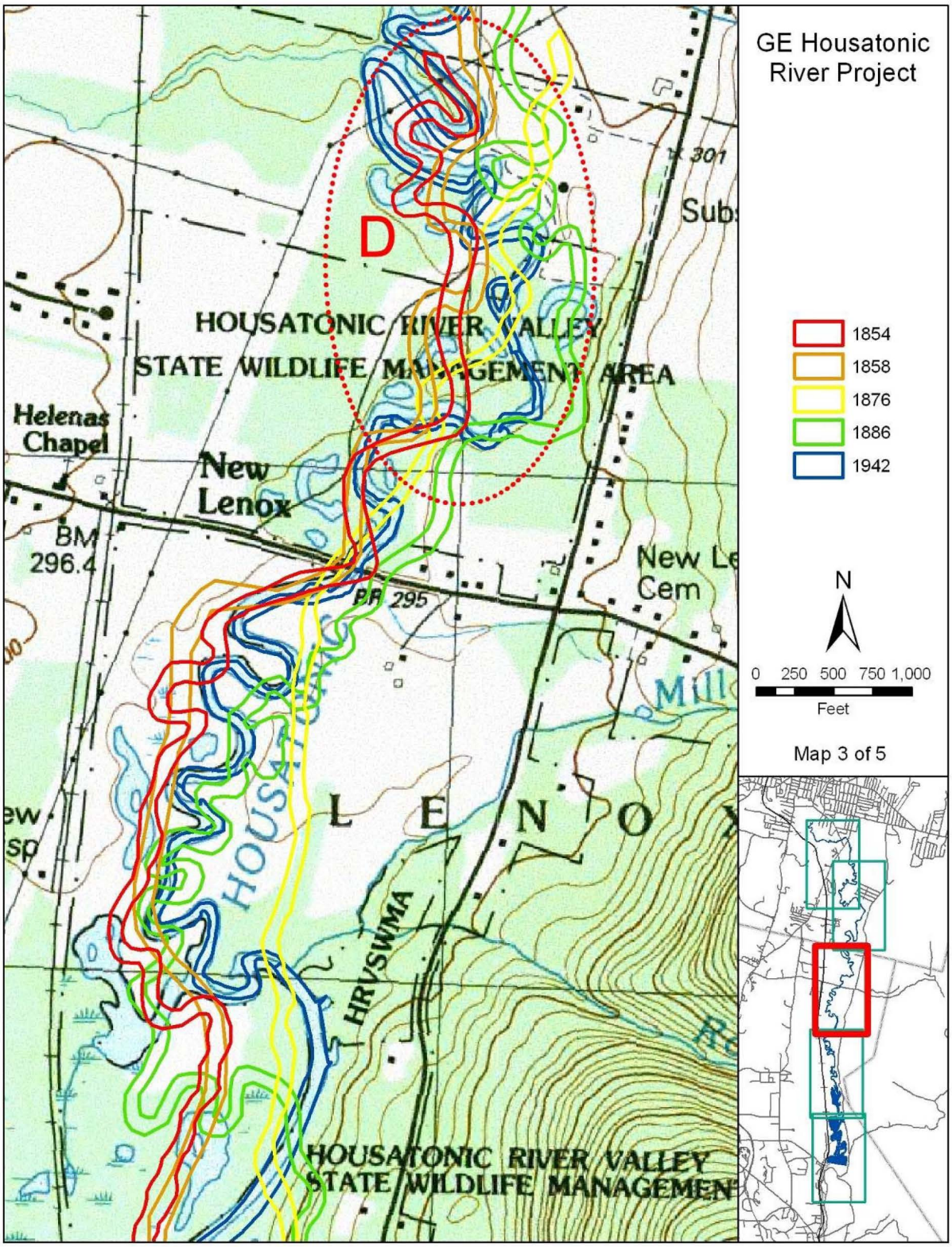

Figure 6. Channel Locations on 1988 USGS Map.

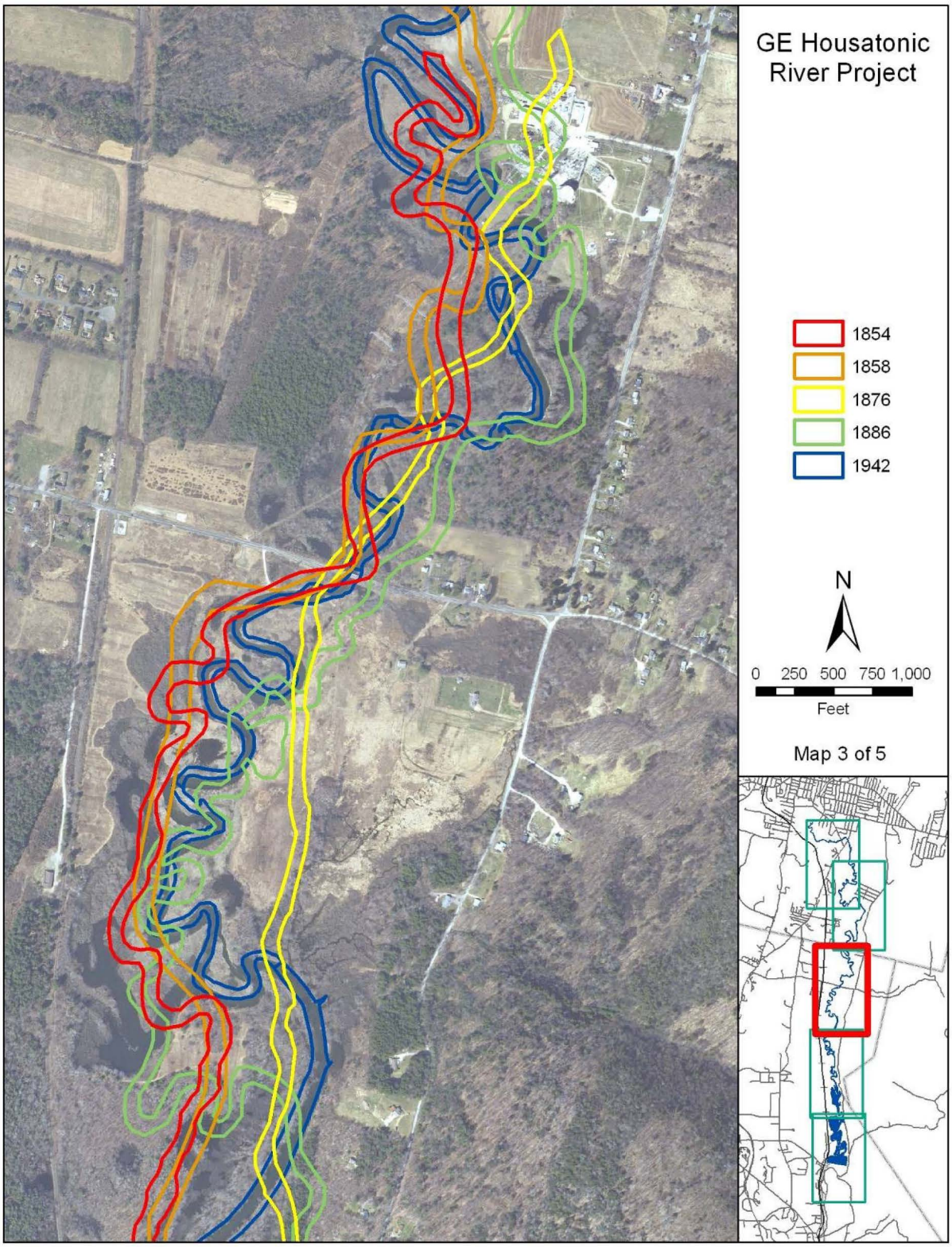

Figure 7. Channel Locations on 2005 Aerial Photograph.

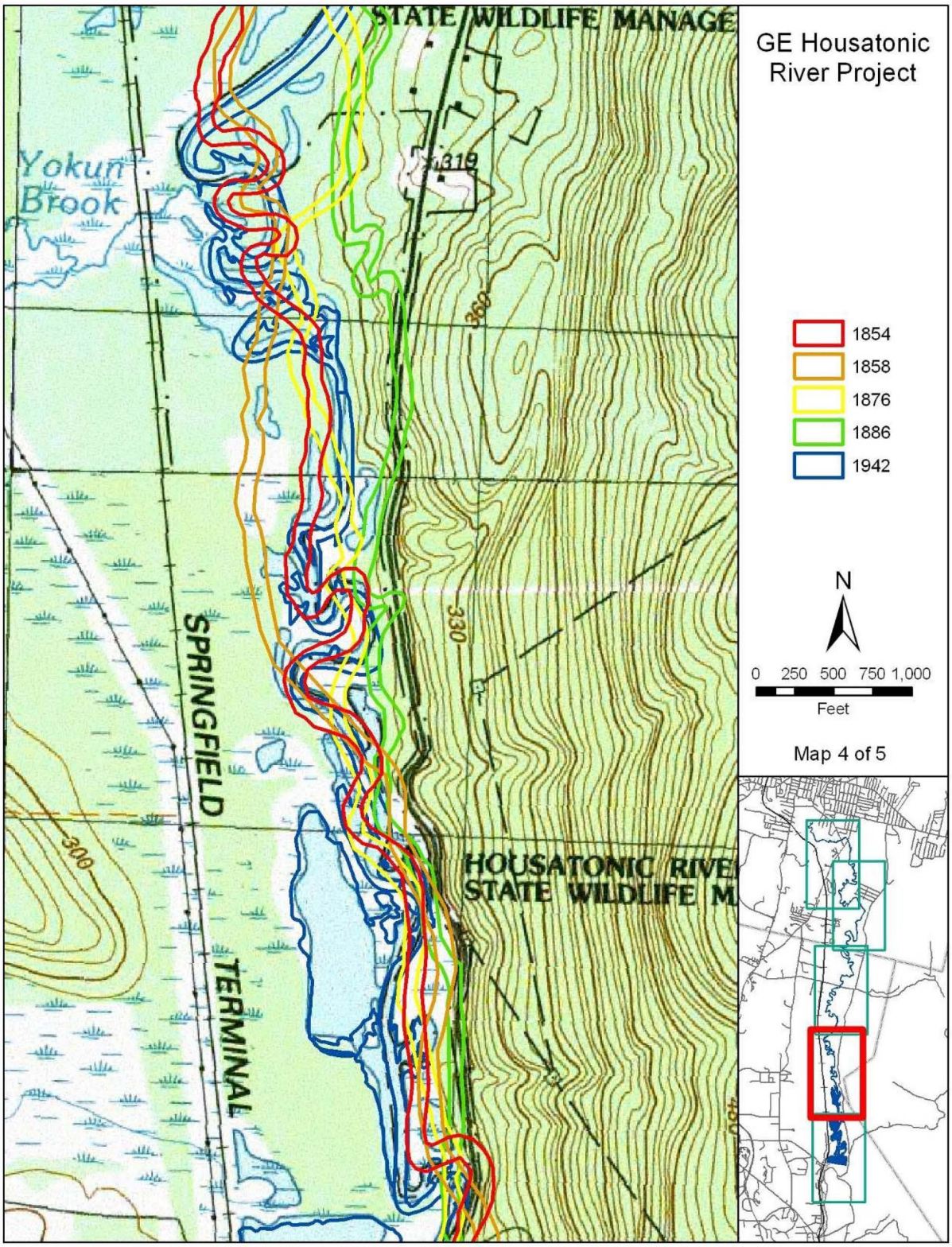

Figure 8. Channel Locations on 1988 USGS Map.

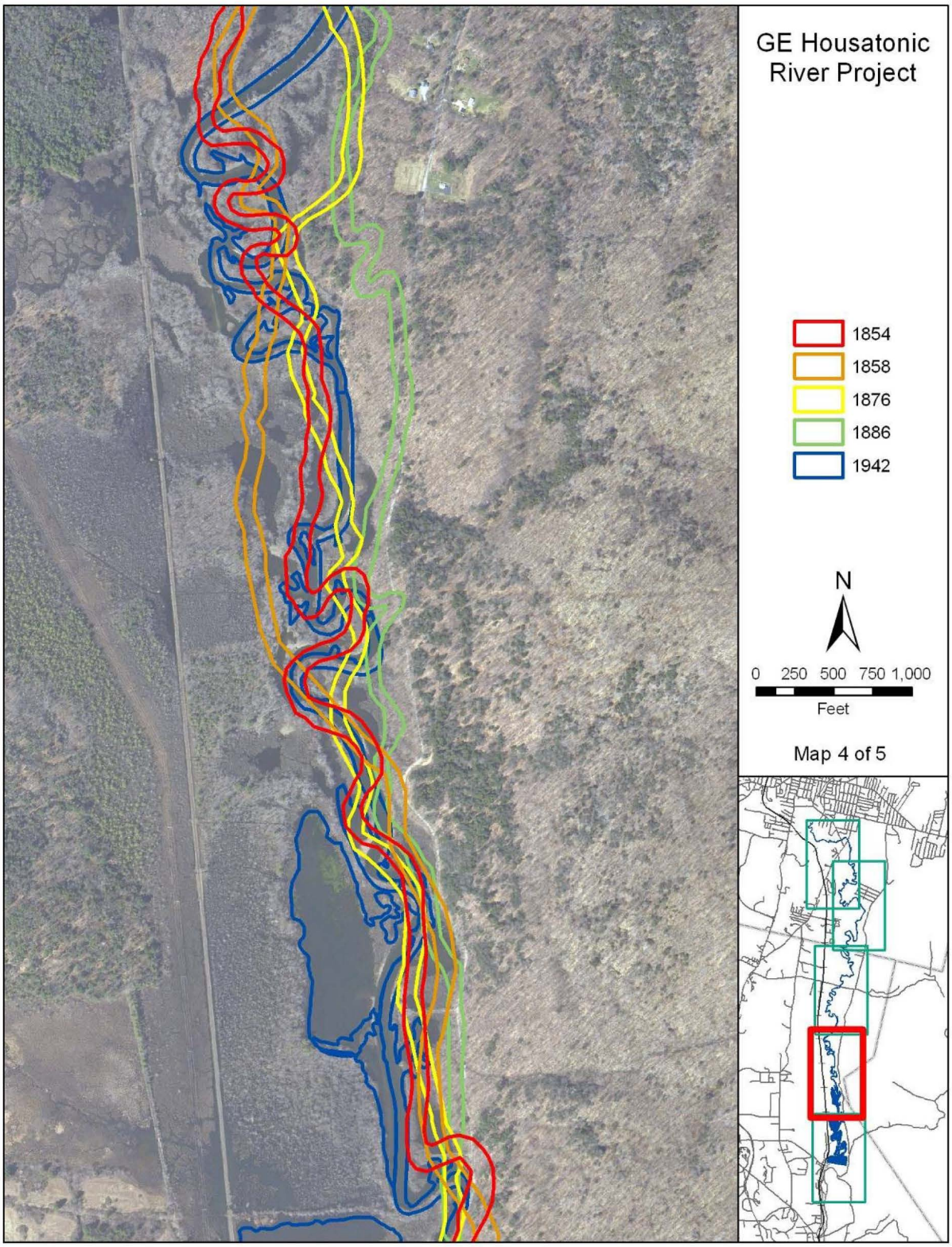

Figure 9. Channel Locations on 2005 Aerial Photograph.

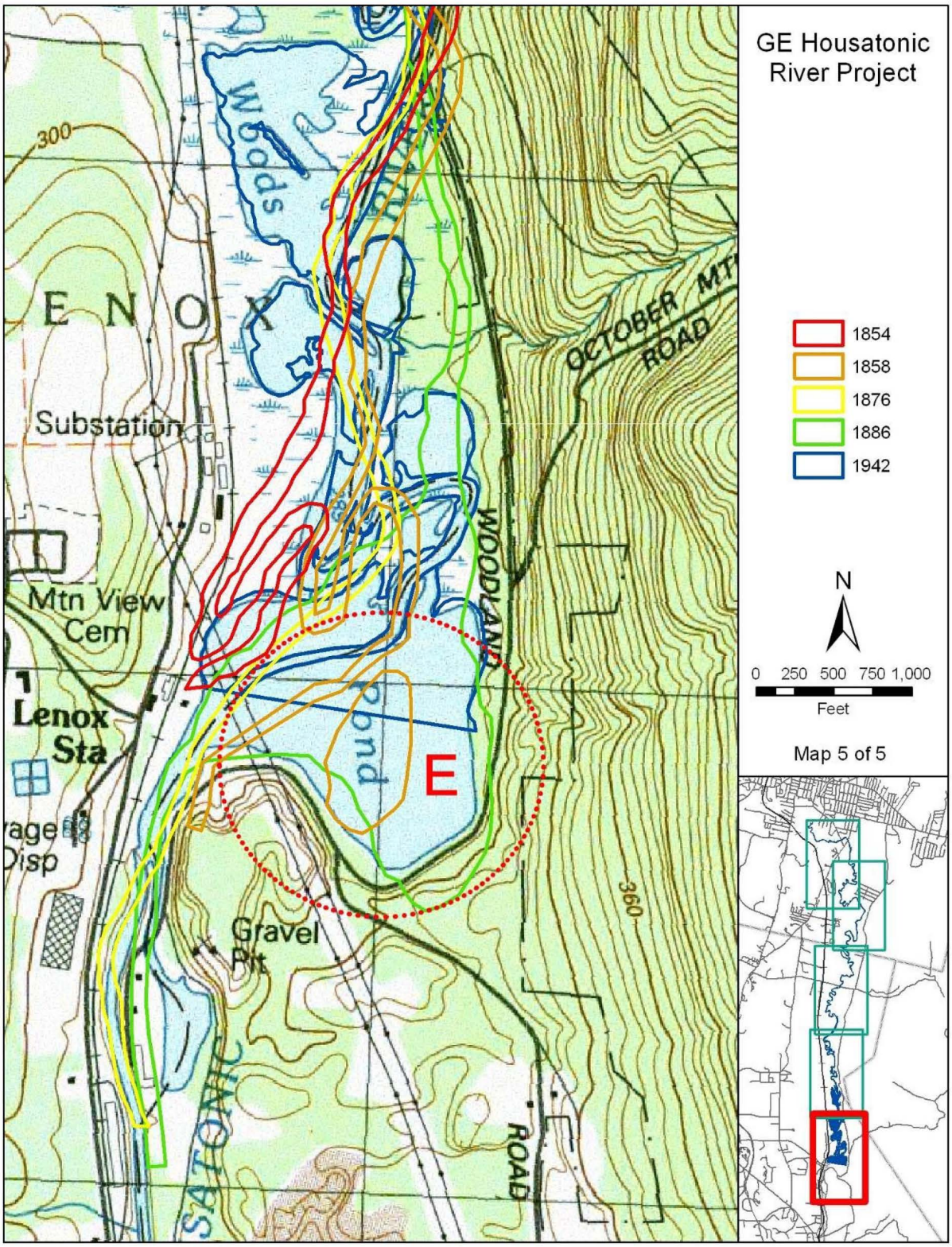

Figure 10. Channel Locations on 1988 USGS Map.

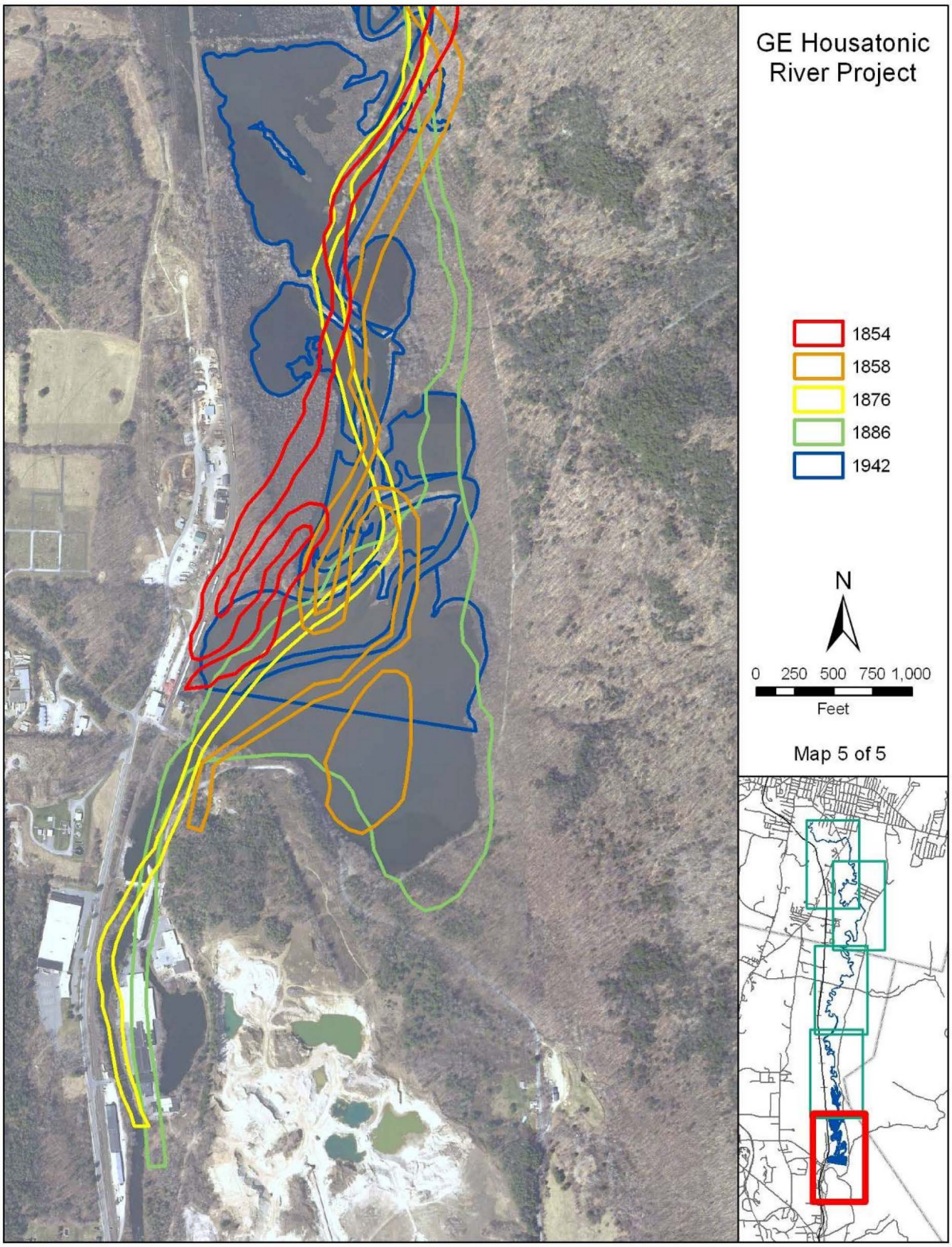

Figure 11. Channel Locations on 2005 Aerial Photograph.

5.0 DISCUSSION

Detailed analysis of georeferenced historic maps indicates that the accuracy of the depicted river channel locations varies both within maps and between maps. As noted in Section 4, the scale and level of detail vary, and the exact location of specific curves and bends should be taken as an approximation in the earlier maps. Despite these limitations, several broad patterns of channel movement can be identified from the nineteenth century maps. Our review suggests that the Housatonic River experienced larger and more abrupt shifts in the location of its channel during the period from 1854 to 1904. In comparison, examination of aerial photographs from 1942 to the present has documented slower, incremental channel migration of much lower magnitude. Although a detailed geomorphological study is beyond the scope of the current report, a few observations on possible causes and trends in settlement and development can be made.

A cycle of land clearing and expansion of agriculture began in the early nineteenth century and peaked about 1885, when fifty percent of the land in Massachusetts was unforested. Soil exhaustion and competition from western agriculture resulted in much of this land subsequently being dropped from cultivation, and reforestation steadily progressed throughout the twentieth century, to where open terrain now accounts for only approximately seven percent of all land (Hall et al 2002:1324). Land cover maps from the 1830s housed at the Massachusetts State Archives and digitized by researchers at the Harvard Forest document the general extent of open land along the Housatonic River in Pittsfield in the early nineteenth century (Figure 12).

Land clearing and cultivation of newly cleared lands generally increases the volume of runoff in a drainage, and sediment incorporated into this runoff can increase both erosional and depositional features in the floodplain, depending on the gradient, vegetation, and other factors at any given locale. Increased flooding likely altered the Housatonic floodplain by depositing substantial amounts of soils in some locations and by eroding older sediments in others. The increased runoff is also likely to have contributed to the higher frequency of channel avulsions in the Housatonic study area in the nineteenth century.

These types of river channel changes in response to historic land use patterns have been documented in other drainages in the Northeast. For example, in eastern New York, Lindner's research suggests that "nineteenth century cultivation disastrously upset the balance between soil development and erosion in the Schoharie watershed" (Lindner 1987:i), and in the Mississquoi Valley of northern Vermont, Brakenridge et al (1988:200) note that "the post-A.D. 1860 period of active floodplain sedimentation may have been a response to timber clear-cutting, row crop agriculture, and cattle and sheep grazing in the watershed". The depths of historically-deposited sediment resulting from this land clearing have been documented in the 1- to 2-meter range in many locations in the eastern United States (Cassedy et al 2007; Yan et al 2010), and geomorphologists have established the term "post-settlement alluvium" to designate this widespread phenomenon.

While agriculture in the Housatonic region declined, industrial development expanded in the later part of the nineteenth century. Within or near the ROR, this expansion particularly included the construction of dams and impoundments to supply power for the many paper mills. Historic data suggest that Woods Pond in its modern configuration was created sometime between 1876 and 1882. Before then, the pond was a separate, small pond east of the river (Figure 13). Between 1835 and circa 1880, it is possible that there was a dam in the river just south of Lenox Depot and adjacent to the Valley Mill; but if so, it does not appear to have raised the elevation of the river surface sufficiently to create a larger impoundment outside the existing river channel. In the ROR, the gradient of the river below New Lenox Road was already less than in the upper section, and after 1880, the presence of the Woods Pond Dam further slowed the current. As a result the top several feet of floodplain in this section of the river (Section 5C and the lower part of Reach 5B) consist of low-energy, finer-grained sediments than those found in Reach 5A (Weston Solutions 2004), and channel movements are more limited.

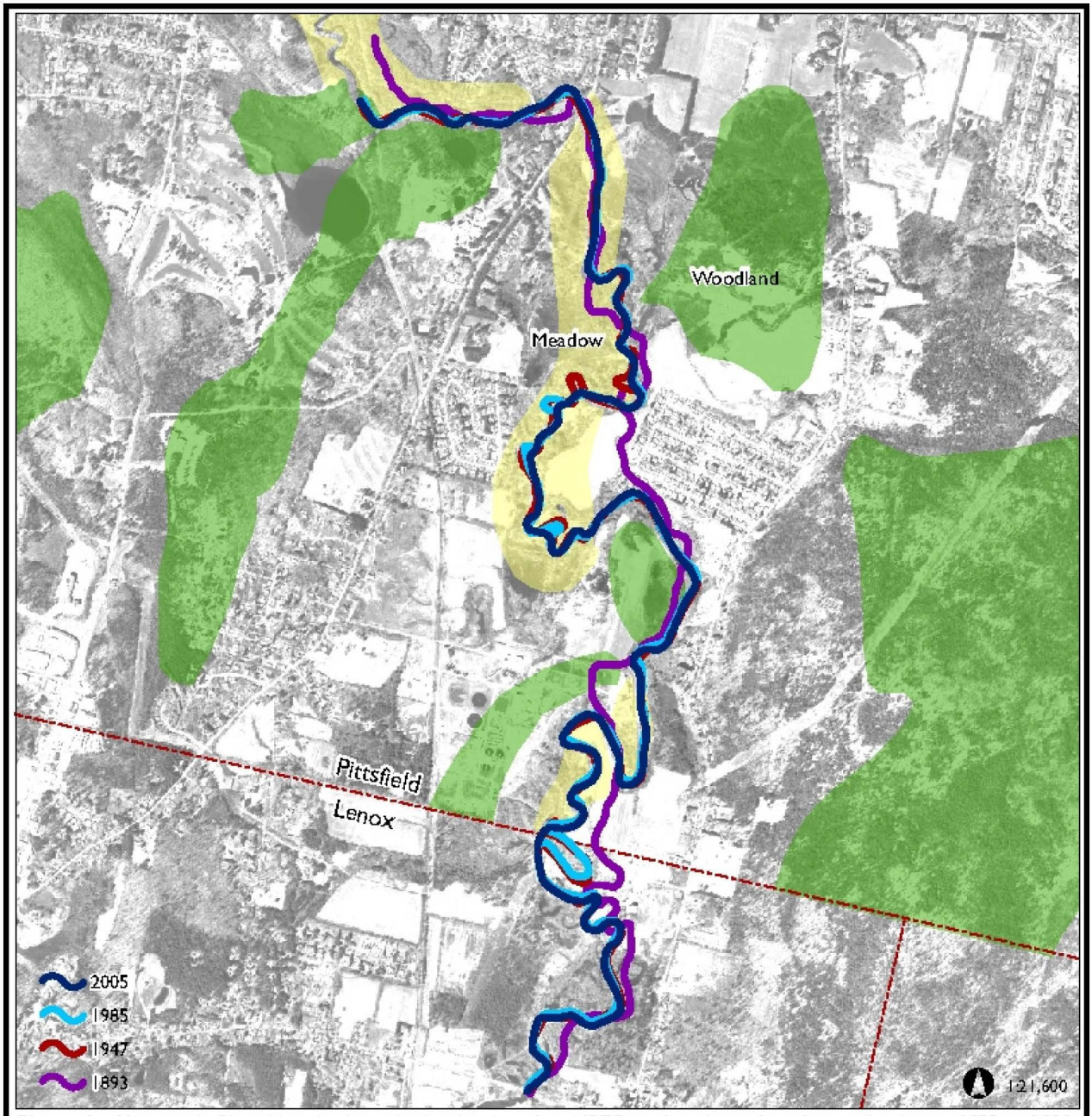

Figure 1. Housatonic River historic channel migration based on USGS quadrangles and modern orthophotos, 1893 to 2005, Pittsfield and Lenox, Massachusetts. 1893 and 1947 USGS quads from University of New Hampshire collection of historic USGS maps of New England and New York. 1988 USGS quads, 2005 half-meter orthophotos, and municipal boundaries from MassGIS. Historical quads were georeferenced by Mass Audubon to approximately 20 meter accuracy; stream centerlines heads-up digitized by Mass Audubon. Historic land cover from Harvard University 1830's Land Cover Project*; areas not shown as woodland were likely cleared; Lenox data missing.

Figure 12. Map of 1830s Land Cover and River Channel Changes prepared by the Massachusetts Audubon Society (their Figure 1 attached to October 23, 2009 comment letter to the EPA).

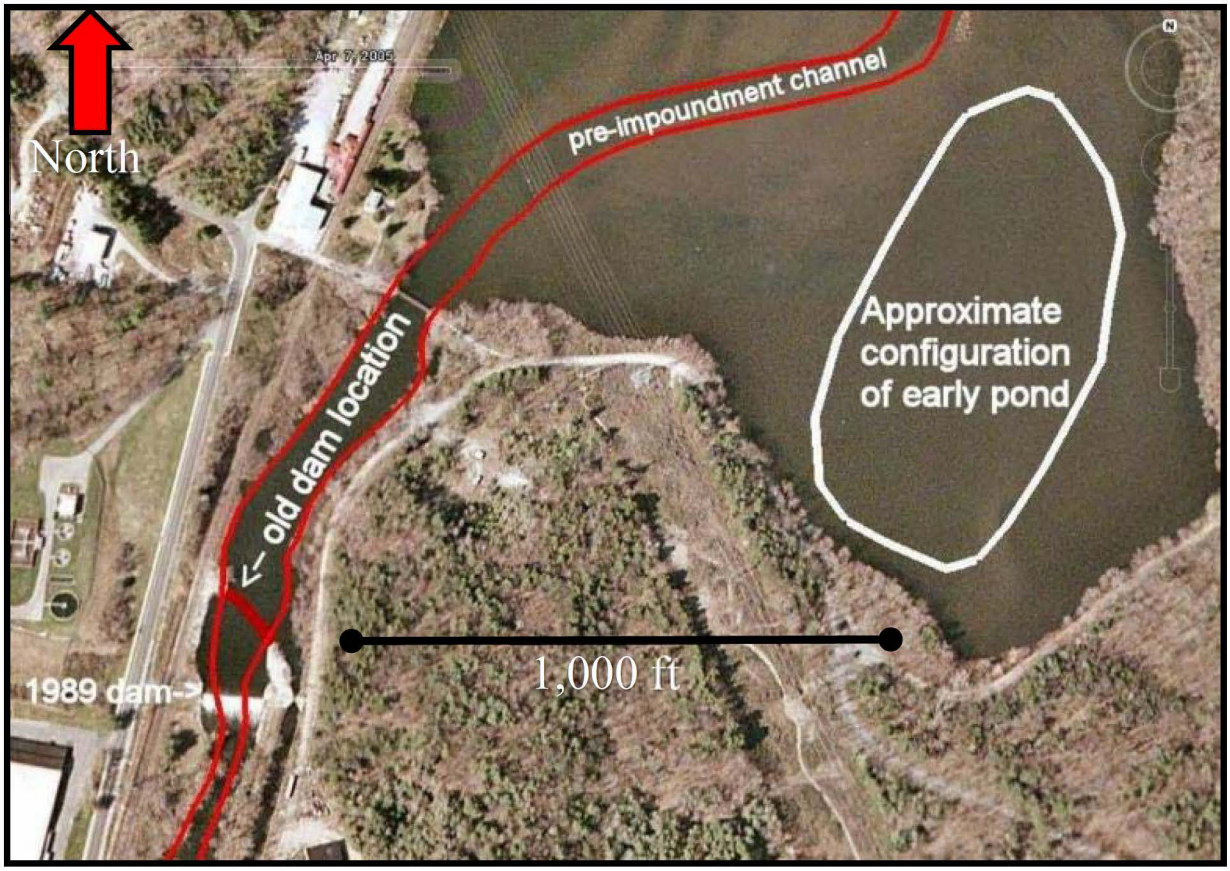

Figure 13. 2005 Aerial Photograph of Woods Pond Area Showing Location of Former Dam and Pre-impoundment Pond.

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