

Transportation Planning Study

I-293 Exits 6 and 7

(Manchester #16099)

Environmental Technical Appendix

Prepared for

New Hampshire Department of Transportation

In partnership with

City of Manchester

Town of Goffstown

Town of Hooksett

Prepared by

Vanasse Hangen Brustlin, Inc.

Bedford, New Hampshire

In association with

Southern New Hampshire Planning Commission

RKG Associates

November 2013



I-293 Transportation Planning Study - Traffic Appendix



-
1. New Hampshire Natural Heritage Bureau (NHNHB) Response Letter, June 28, 2012.
 2. New Hampshire Division of Historical Resources (NHDHR) Request for Project Review (RPR).



1.

NHNHB Response Letter

Memo



NH NATURAL HERITAGE BUREAU NHB DATACHECK RESULTS LETTER

To: Kristen Bean, Vanasse Hangen Brustlin
Six Bedford Farms Drive, Suite 607
Bedford, NH 03110

From: Melissa Coppola, NH Natural Heritage Bureau

Date: 6/28/2012 (valid for one year from this date)

Re: Review by NH Natural Heritage Bureau

NHB File ID: NHB12-1122

Town: Manchester

Location: F.E. Everette Turnpike

Description: Preparation of a Feasibility Study for the City of Manchester, NH. The Corridor Study will address the transportation needs along approximately 3 miles of the F.E. Everette Turnpike I-293 Exit 6-7, extending north from the Granite Street interchange (exit 5) to approximately 1 mile north of the NH Route 3A interchange (exit 7) in the City of Manchester, NH.

cc: Kim Tuttle

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments: This site is within an area flagged for possible impacts on the state-listed *Alasmidonta varicosa* (brook floater) in the Merrimack River.

Invertebrate Species	State ¹	Federal	Notes
Brook Floater (<i>Alasmidonta varicosa</i>)	E	--	Contact the NH Fish & Game Dept (see below).
Persius Dusky Wing (<i>Erynnis persius persius</i>)	E	--	Contact the NH Fish & Game Dept (see below).
Pine Barrens Zanclognatha Moth (<i>Zanclognatha martha</i>)	SC	--	Contact the NH Fish & Game Dept (see below).
Natural Community	State ¹	Federal	Notes
Acidic riverbank outcrop	--	--	Threats to these natural communities are changes in the river's hydrology and human disturbance of the riverbank (e.g., through recreational use).
Appalachian oak - pine rocky ridge	--	--	Threats would primarily be trampling by recreational hikers.
Atlantic white cedar - giant rhododendron swamp	--	--	Changes to the hydrology of the wetland are the greatest threat facing the cedar swamp. Damming which causes pooling for extended periods can flood and drown existing trees, and drainage that results in lower water levels can lead to invasion by other species that can out compete -- and eventually eliminate -- Atlantic white cedar trees. Increased nutrient input from stormwater runoff could also deleteriously impact this acidic, low-nutrient plant community.
Coastal conifer peat swamp system	--	--	Threats are primarily changes to the hydrology of the river, land conversion and fragmentation, introduction of invasive species, and increased input of nutrients and

Memo



NH NATURAL HERITAGE BUREAU NHB DATACHECK RESULTS LETTER

High-gradient rocky riverbank system	--	--	pollutants. Threats are primarily changes to the hydrology of the river, land conversion and fragmentation, introduction of invasive species, and increased input of nutrients and pollutants.
Rich red oak rocky woods	--	--	The primary threat to this natural community is logging and development.
Plant species	State¹	Federal	Notes
clasping milkweed (<i>Asclepias amplexicaulis</i>)	T	--	This species grows in sandplains and disturbed openings, and is sensitive to disturbances that eliminate its habitat.
clustered sedge (<i>Carex cumulata</i>)*	T	--	This species occurs on rocky ridges/woodlands (below subalpine), cliffs/ledges, and sandplains/disturbed openings. Threats would primarily be direct destruction of plants, e.g., from recreational activities.
Downy False Foxglove (<i>Aureolaria virginica</i>)	E	--	This species occurs in rocky ridges and woodlands, dry forests, and thin woods. Threats would include development of its habitat or recreational use that directly impacted the plants.
Golden Heather (<i>Hudsonia ericoides</i>)	E	--	Probably sensitive to trampling. Shade-intolerant.
licorice goldenrod (<i>Solidago odora</i>)	E	--	This species occurs in dry forests, thin woods, sandplains, and disturbed openings. Threats would include development of its habitat or recreational use that directly impacted the plants.
lion's-foot rattlesnake-root (<i>Nabalus serpentarius</i>)*	E	--	Threats to this understory species would be activities that impacted its habitat (dry forests and thin woods), such as logging and development.
long-spined sandbur (<i>Cenchrus longispinus</i>)	E	--	This species grows in sandplains and disturbed openings, and is sensitive to disturbances that eliminate its habitat.
lopsided rush (<i>Juncus secundus</i>)*	E	--	Occurs on talus slopes, cliffs/ledges, sandplains/disturbed openings, and dry forests/thin woods. Threats would include recreational or development activities that would trample the plants or disturb their habitat.
narrow-leaved white-topped-aster (<i>Sericocarpus linifolius</i>)	E	--	This species occurs in dry forests, thin woods, sandplains, and disturbed openings. Threats would include development of its habitat or recreational use that directly impacted the plants.
Sessile-fruited Arrowhead (<i>Sagittaria rigida</i>)*	E	--	Primarily vulnerable to changes to the hydrology of its habitat, especially alterations that change water levels. It may also be susceptible to increased pollutants and nutrients carried in stormwater runoff.
smooth slender crabgrass (<i>Digitaria filiformis</i> var.	E	--	This species occurs in peaty depressions on granitic ledges. Threats would primarily

Memo



NH NATURAL HERITAGE BUREAU NHB DATACHECK RESULTS LETTER

laeviglumis)*

Wild Lupine (*Lupinus perennis*)

T

--

be recreation or other activities that could trample the plants or disturb their habitat.

This wildflower grows in extremely dry, sandy openings and is easily identified in the field (see any wildflower guide) between early May and August. It is tolerant of surrounding disturbance and depends upon periodic mowing (or, historically, wildfire) to eliminate trees that would otherwise shade it out. It does not transplant well due to a tap root that can be more than three feet long.

Wright's spikesedge (*Eleocharis diandra*)*

E

--

Primarily vulnerable to changes to the hydrology of its wetland habitat, especially alterations that change water levels. It may also be susceptible to increased pollutants and nutrients carried in stormwater runoff.

Vertebrate species

Grasshopper Sparrow (*Ammodramus savannarum*)

State¹

Federal

Notes

T

--

Contact the NH Fish & Game Dept (see below).

Peregrine Falcon (*Falco peregrinus anatum*)

T

--

Contact the NH Fish & Game Dept (see below).

Pied-billed Grebe (*Podilymbus podiceps*)

T

--

Contact the NH Fish & Game Dept (see below).

Redfin Pickerel (*Esox americanus americanus*)

SC

--

Contact the NH Fish & Game Dept (see below).

¹Codes: "E" = Endangered, "T" = Threatened, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

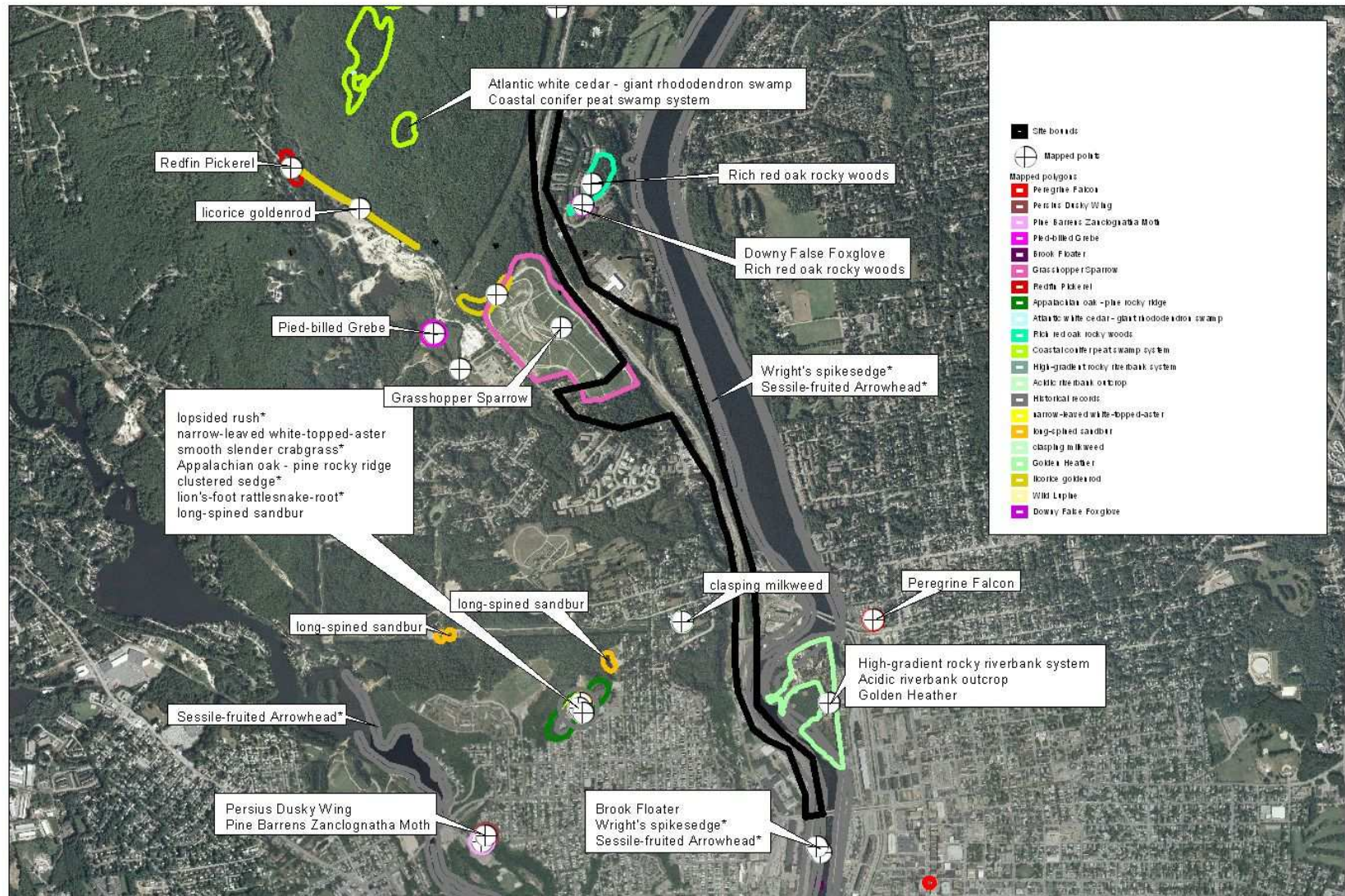
Contact for all animal reviews: Kim Tuttle, NH F&G, (603) 271-6544.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.



Known locations of rare species and exemplary natural communities

Note: Mapped locations are not always exact. Occurrences that are not in the vicinity of the project are not shown.



*Historical record

New Hampshire Natural Heritage Bureau - Animal Record

Brook Floater (*Alasmodonta varicosa*)**Legal Status**

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Rare or uncommon
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 2004: 1 adult (Obs_id 2118A). 2 adults (Obs_id 2118B). 1 adult gravid female, 1 adult male (Obs_id 2118C). 1 adult (Obs_id 2118D).

General Area: 2004: Freshwater - stream or river (Obs_id 2118).

General Comments:

Management

Comments:

Location

Survey Site Name: Granite Street Bridge
Managed By:

County: Hillsborough
Town(s): Manchester
Size: 1.9 acres

USGS quad(s): Manchester South (4207184)
Lat, Long: 425932N, 0712812W
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2004: West shore, 2/3 of the way from Granite St. to Bridge St. (Obs_id 2118A). West shore, just downstream from Bridge St. (Obs_id 2118B). East shore, under Granite St. Bridge (Obs_id 2118C). West shore, old railroad bridge site; release location (Obs_id 2118D).

Dates documented

First reported: 2004-05-27 Last reported: 2004-05-29

New Hampshire Natural Heritage Bureau - Animal Record

Persius Dusky Wing (*Erynnis persius persius*)

Legal Status

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Imperiled due to rarity or vulnerability
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Fair quality, condition and/or landscape context ('C' on a scale of A-D).
Comments on Rank: Population size unknown, but habitat area small.

Detailed Description: 1998: One female collected. Small Persius-like skippers observed in the area in early May but could not be positively identified in the field.
General Area: 1998: Pine barren remnant along an old railroad corridor. *Lupinus perennis* (wild lupine) occurs along a 600-foot strip of the former railroad.
General Comments: 1998: Identified by Tim McCabe and Dale Schweitzer. Dr. Schweitzer would prefer a male specimen for complete certainty.
Management Comments: 1998: Management plan for the pine barrens has been prepared by one of Dr. Barry Wicklow's classes at St. Anselms College.

Location

Survey Site Name: Nazaire-Biron Bridge
Managed By:

County: Hillsborough	USGS quad(s): Manchester South (4207184)
Town(s): Manchester	Lat, Long: 425935N, 0712931W
Size: 2.8 acres	Elevation: 190 feet

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: [From Rte 114A in west Manchester take right on Pinard Street and pass over the Nazaire-Biron Bridge. Follow signs to West Side Ice Arena. Site is south of the bridge along a railroad bed that has been converted to a trailway.]

Dates documented

First reported: 1998-05	Last reported: 1998-05-28
-------------------------	---------------------------

Wicklow, Barry. 1998. Phone conversation with Sara Cairns reporting *Erynnis persius persius* identification on July 22.

New Hampshire Natural Heritage Bureau - Animal Record

Pine Barrens Zanclognatha Moth (*Zanclognatha martha*)**Legal Status**

Federal: Not listed
State: SC

Conservation Status

Global: Apparently secure but with cause for concern
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 2001: Five individuals collected at a light trap.

General Area: 2001: Patches of mature pitch pine forest with an understory of scrub oak, intermixed with nearly barren disturbed areas where *Lupinus perennis* (wild lupine) occurs. *Erynnis persius* (Persius dusky wing) was collected at this site in the preceeding year.

General Comments: 2001: The "Universal Black Light Trap" produced by BioQuip, with a 12-watt UV light and a photoelectric switch, was used. It was either hung from tree limbs, or rested on the ground in grasslands, and was removed after each sampling night. Ethyl acetate was used as the killing agent. The trap was run once in July and once in August, and was set, when possible, on warm cloudy nights when it was unlikely that it would rain.

Management
Comments:

Location

Survey Site Name: Nazaire-Biron Bridge
Managed By:

County: Hillsborough
Town(s): Manchester
Size: 2.8 acres

USGS quad(s): Manchester South (4207184)
Lat, Long: 425934N, 0712932W
Elevation: 190 feet

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: [From westbound on Kelly Street, follow signs to West Side Ice Arena: right off Kelly onto Upland Street, first left to go down hill to Electric Street, left onto Electric Street to ice arena.] Piscataquog River. Park along old railroad bed.

Dates documented

First reported: 2001-07-18 Last reported: 2001-07-18

Chandler, Donald. 2001. NH Army National Guard Butterfly and Moth Survey, 2002. Final Report. Submitted to The Adjutant General of New Hampshire. Concord, NH.

New Hampshire Natural Heritage Bureau - Community Record

Acidic riverbank outcrop

Legal Status

Federal: Not listed
State: Not listed

Conservation Status

Global: Not ranked (need more information)
State: Rare or uncommon

Description at this Location

Conservation Rank: Good quality, condition and landscape context ('B' on a scale of A-D).
Comments on Rank: Large area, but not too interesting.

Detailed Description: 1992: Extensive flood-scoured bedrock outcrops. Interesting plants were *Scirpus pedicellatus* (stalked bulrush), *Populus balsamifera* (balsam poplar), *Andropogon gerardii* (big bluestem), *Ionactis linariifolius* (stiff-leaved aster), etc. Somewhat weedy. 1984: Characteristic species include stiff-leaved aster (*Ionactis linariifolius*), big bluestem (*Andropogon gerardii*), and stalked bulrush (*Scirpus pedicellatus*). Botanically, in addition to the stalked bulrush, some interesting species seen were balsam poplar (*Populus balsamifera*) and American mountain ash (*Sorbus americana*).

General Area:

General Comments:

Management

Comments: 1992?: The presence of the dam here probably contributes to the artificial nature of the outcrop community which was undoubtedly more prevalent before such major rivers were dammed. A study of the flood regime and seasonal river dynamics would be necessary to make further recommendations on these communities and others along the Merrimack River. It is uncertain what effect the abundant exotic species have on the degradation of the natural communities.

Location

Survey Site Name: Manchester Outcrops
Managed By:

County: Hillsborough
Town(s): Manchester
Size: 25.5 acres

USGS quad(s): Manchester North (4307114)
Lat, Long: 425958N, 0712810W
Elevation: 180 feet

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 1984: Outcrops, on island below Amoskeag Power Plant dam in Merrimack river. Near the sign for Eloquent Sytems Corp., proceed along the north edge of the building, through a break in the chain link fence, and onto the riverbank. At low to medium river flow one can cross the channel to gain access to the island.

Dates documented

First reported: 1984-09-19 Last reported: 1992

Harvey, Liz. 1992. Field survey to Manchester Outcrops.

New Hampshire Natural Heritage Inventory. 1993. An ecological inventory of Manchester, NH. Report submitted to the Norwin S. and Elizabeth Bean Foundation. 59 pp., 4 appendices.

New Hampshire Natural Heritage Bureau - Community Record

Appalachian oak - pine rocky ridge

Legal Status

Federal: Not listed
State: Not listed

Conservation Status

Global: Not ranked (need more information)
State: Rare or uncommon

Description at this Location

Conservation Rank: Fair quality, condition and/or landscape context ('C' on a scale of A-D).

Comments on Rank: Outcrop retains natural character in very disturbed area.

Detailed Description: 2006: Community observed and photographed along ledges and summit outcrops. Primarily a mix of *Pinus rigida* (pitch pine), *Quercus ilicifolia* (scrub oak), and various oak trees. 1983: Cliffs and outcrops. Dominants are *Pinus rigida* (pitch pine), *Quercus alba* (white oak), *Quercus ilicifolia* (scrub oak), *Vaccinium pallidum* (hillside blueberry), and *Gaylussacia baccata* (black huckleberry). Upland occurrence of *Nyssa sylvatica* (black gum) here on dry-xeric ledge. Plant community here very similar to adjacent forest.

General Area: 2006: Adjacent natural community to the northwest is a ***pitch pine - scrub oak barrens*** that contains similar species and has burned fairly recently. 1983: In (adjacent to) pitch pine - oak woods.

General Comments: 1983: Heavily used area reflected in amount of litter and broken glass. Despite this, the ledges are an interesting community.

Management Comments: 2006: Site is extremely trashed with broken glass and litter. A wide dirt trail runs along the axis of this community, alternately on and just below the summit ridge. A sandlot that is used by ATVs occurs immediately to the north. The pitch pine stand to the northwest appears to have burned fairly recently.

Location

Survey Site Name: Rock Rimmon

Managed By: Rock Rimmon Park - Undeveloped Area

County: Hillsborough

USGS quad(s): Manchester South (4207184)

Town(s): Manchester

Lat, Long: 425957N, 0712910W

Size: 10.9 acres

Elevation: 270 feet

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: Manchester. Rock Rimmon Hill. Series of steep rock outcrops in Rock Rimmon park. Park at playground below and ascend via any number of bootleg paths to the summit ridge and ledges.

Dates documented

First reported: 1983

Last reported: 2006-06-01

Kimball, Ben. 2006. Field visit to Rock Rimmon on June 1.

New Hampshire Natural Heritage Bureau - Community Record

Atlantic white cedar - giant rhododendron swamp

Legal Status

Federal: Not listed
State: Not listed

Conservation Status

Global: Not ranked (need more information)
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Excellent quality, condition and landscape context ('A' on a scale of A-D).
Comments on Rank: Disjunct northern occurrence of a southern plant association.

Detailed Description: 2010: Atlantic white cedar (*Chamaecyparis thyoides*) dominates in the canopy. Common to occasional associates include red maple (*Acer rubrum*), white pine (*Pinus strobus*), hemlock (*Tsuga canadensis*), and yellow birch (*Betula alleghaniensis*). Depending on the basin, giant rhododendron (*Rhododendron maximum*) is common to absent in the shrub layer. Other shrubs include highbush blueberry (*Vaccinium corymbosum*), male berry (*Lyonia ligustrina*), mountain holly (*Nemopanthus mucronatus*), sheep laurel (*Kalmia angustifolia*), winterberry (*Ilex verticillata*), and others. Cinnamon fern (*Osmunda cinnamomea*) is common in the herb layer. Also present are three-seeded sedge (*Carex trisperma*), skunk cabbage (*Symplocarpus foetidus*), Massachusetts fern (*Thelypteris simulata*), goldthread (*Coptis trifolia*), and others. Sphagnum moss is frequent. 2009: North Basin and NE Basin: typically dominated by Atlantic white cedar (*Chamaecyparis thyoides*) in the canopy and giant rhododendron (*Rhododendron maximum*) in the understory. Some basin areas may be lacking or have very little of one or the other species. Common associates are red maple (*Acer rubrum*), highbush blueberry (*Vaccinium corymbosum*), male berry (*Lyonia ligustrina*), cinnamon fern (*Osmunda cinnamomea*), three-seeded sedge (*Carex trisperma*), and *Sphagnum* moss. 2006: NE Basin and Central Basin: community observed and photographed. Giant rhododendron (*Rhododendron maximum*) and mountain laurel (*Kalmia latifolia*) flowering. 2002: NE Basin: visited. No changes to the swamp community noted. 1993: Only the two largest basins south of the powerline were sampled. Central Basin: Atlantic white cedar dominates the canopy, along with smaller amounts of red maple (*Acer rubrum*) and occasional white pine (*Pinus strobus*). The canopy is fairly closed, but with a number of large windthrow gaps. The heart of this area has an abundant shrub layer dominated by giant rhododendron (*Rhododendron maximum*). Mountain laurel (*Kalmia latifolia*) is also abundant in parts of the stand. Other common shrubs include highbush blueberry (*Vaccinium corymbosum*), sheep laurel (*Kalmia angustifolia*), mountain holly (*Nemopanthus mucronatus*), and male-berry (*Lyonia ligustrina*). The herb layer is somewhat sparse, and is lacking in richness. Cinnamon fern (*Osmunda cinnamomea*) is the most abundant of the herbs. Hill Basin: the smaller cedar stand (ca. 6 acres) has younger, more even-aged cedar than the larger stand. White pine (*Pinus strobus*), yellow birch (*Betula alleghaniensis*), and red maple (*Acer rubrum*) are lesser components. This area is characterized by infrequent and relatively depauperate shrubs and herbs, and abundant sphagnum. Swamp azalea (*Rhododendron viscosum*) is present, as a minor component of the shrub layer. 1991: A total of 9 discrete stands of Atlantic white cedar collectively total ca. 42 acres. The stands generally possess an uneven age structure; with the oldest cedars being ca. 90-100 years of age. Giant rhododendron (*Rhododendron maximum*) is found in the understory of the three largest basins. Greenwood mucky peat is the prevalent soil type in these basins. The water pH is fairly acidic, ranging from 4.2 to 5.1. Some of the areas are heavily beaver-impounded. Dominants include Atlantic white cedar (*Chamaecyparis thyoides*) and giant rhododendron (*Rhododendron maximum*). Lesser amounts of highbush blueberry (*Vaccinium corymbosum*) and cinnamon fern (*Osmunda cinnamomea*).

General Area: 2010: Undulating landscape supports several small to moderate-sized perched basins with various communities that are collectively part of a **coastal conifer peat swamp system**. Surrounding uplands are dominated by maturing **hemlock - beech - oak - pine forest**. 2009: This community is part of an exemplary **coastal conifer peat swamp system**. In this system, dominant canopy and understory species may vary within a basin and from basin to basin.

Other wetland communities include *red maple - Sphagnum basin swamp* and *black gum - red maple basin swamp*. Surrounding uplands are dominated by maturing *hemlock - beech - oak - pine forest*. 2002: Most of the land north of the swamp complex and north of Countryside Blvd. has been and is being developed for multi-unit housing. Great changes in topography have been brought about by extensive blasting of bedrock (7/24). NE Basin: a newly-completed trail leads to a boardwalk through the basin (11/14). 1993: A number of black gum (*Nyssa sylvatica*) are also found here in 3 of the swamp basins. Some are of impressive stature, as large as 38 inches DBH and as old as 450 years. The surrounding uplands are dry transitional oak and mesic transitional forests, on glacial till, near the Merrimack River, evidently logged at one time. A vernal pool was found to the northeast of the southernmost basin. 1991: Powerlines bisect the north part of the swamp complex from the southern part. Logging roads are found in the uplands of the southern portion. Some residential development has taken place to the north.

General Comments: 2002: Visiting NHs Biodiversity brochure created for the portion of this community traversed by TNC's newly-constructed trail system (northeast basin; note that this particular basin may not contain giant rhododendron). 1991: The cedar-*Rhododendron maximum* association found here is of state-wide and regional significance. It is the only known occurrence in New Hampshire, disjunct from southern swamps in CT and RI. This is also the largest occurrence of *Rhododendron maximum* in NH.

Management Comments: 2002: Recent and extensive development to the north, including future plans for more development may negatively impact the quality of the swamp complex (7/24). 1993: The swamp complex is at risk of negative impacts from development, particularly by alteration of hydrology and water quality. The proximity of several substantial cedar swamps at this site is significant and may be a factor in maintaining sufficient genetic variability necessary for long-term viability of the cedar here. Protection and management of the remaining surrounding land would be necessary to insure the continued quality and integrity of these communities.

Location

Survey Site Name: Manchester Cedar Swamp
 Managed By: UNH - Manchester (Hackett Hill)

County:	Hillsborough	USGS quad(s):	Manchester North (4307114)
Town(s):	Manchester	Lat, Long:	430217N, 0712940W
Size:	47.5 acres	Elevation:	375 feet

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2010, 2006, 2002: To reach the trails and boardwalk on the Nature Conservancy preserve (NE basin), take Exit 10 from I-93 and head south on West River Road (aka Front Street). After about one mile turn right onto Hackett Hill Road. After about 0.7 miles turn left onto Countryside Blvd. After about 0.5 mile the road curves right, and the preserve entrance/trailhead is on the left. Park on the left side of the road. Trails lead in to "Cedar Loop" boardwalks through basin. Unmarked trails lead southwest from here to powerline and other basins. 1993: Take maintenance road from SW end of the UNH Manchester Campus (gate unlocked by head of Maintenance) up the hill until it curves left (more gradually than first sharp left). Park at small truncated extension at north end of road. Proceed north about 700 ft. to first of two main cedar stands. For second cedar stand, from parking area backtrack south along the maintenance road to a loop going off to the left. Proceed downslope (west) for about 330 ft. 1991: Take Hackett Hill Road to powerline right-of-way just past the University of NH campus. Follow past Milestone Brook to swamp.

Dates documented

First reported:	1987-08-14	Last reported:	2010-06-25
-----------------	------------	----------------	------------

Bill Nichols. 2010. Field survey to Manchester Cedar Swamp - South on June 25.

Sperduto, D. & N. Ritter. 1994. Atlantic White Cedar Wetlands of New Hampshire. Environmental Protection Agency, Boston, MA.

New Hampshire Natural Heritage Bureau - System Record

Coastal conifer peat swamp system

Legal Status

Federal: Not listed
State: Not listed

Conservation Status

Global: Not ranked (need more information)
State: Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Good quality, condition and landscape context ('B' on a scale of A-D).
Comments on Rank: 2009 (B).

Detailed Description: 2010: Communities in the portion of the **coastal conifer peat swamp system** south of the power lines include *Atlantic white cedar - giant rhododendron swamp*, *black gum - red maple basin swamp*, *red maple - Sphagnum basin swamp*, *black spruce swamp (southern variant)*, and *Sphagnum rubellum - small cranberry moss carpet*. 2009: Dominant canopy and understory species may vary within a basin and from basin to basin. In one long, narrow basin, the understory in the southern two-thirds of the wetland is dominated by giant rhododendron (*Rhododendron maximum*). Dominant tree species here range from red maple (*Acer rubrum*) to Atlantic white cedar (*Chamaecyparis thyoides*) to red maple with lesser amounts of black gum (*Nyssa sylvatica*). Based on dbh and growth form, some of the gum appear to be between 400-600 years old. 2009-1991: Exemplary *Atlantic white cedar - giant rhododendron swamp* observed and described.

General Area: 2010, 2009: Undulating landscape supports several small to moderate-sized perched basins. Surrounding uplands are dominated by maturing *hemlock - beech - oak - pine forest*.

General Comments:
Management
Comments:

Location

Survey Site Name: Manchester Cedar Swamp
Managed By: UNH - Manchester (Hackett Hill)

County: Hillsborough USGS quad(s): Manchester North (4307114)
Town(s): Manchester Lat, Long: 430217N, 0712940W
Size: 67.6 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2009: To reach the trails and boardwalk on the Nature Conservancy preserve (NE basin), take Exit 10 from I-93 and head south on West River Road (aka Front Street). After about one mile turn right onto Hackett Hill Road. After about 0.7 miles turn left onto Countryside Blvd. After about 0.5 mile the road curves right, and the preserve entrance/trailhead is on the left. Park on the left side of the road. Trails lead in to "Cedar Loop" boardwalks through basin. Unmarked trails lead southwest from here to powerline and other basins.

Dates documented

First reported: 2009-10-02 Last reported: 2010-06-25

Bill Nichols. 2010. Field survey to Manchester Cedar Swamp - South on June 25.

Sperduto, D. & N. Ritter. 1994. Atlantic White Cedar Wetlands of New Hampshire. Environmental Protection Agency, Boston, MA.

New Hampshire Natural Heritage Bureau - System Record

High-gradient rocky riverbank system

Legal Status

Federal: Not listed
State: Not listed

Conservation Status

Global: Not ranked (need more information)
State: Rare or uncommon

Description at this Location

Conservation Rank: Fair quality, condition and/or landscape context ('C' on a scale of A-D).
Comments on Rank: Small occurrence, somewhat disturbed.

Detailed Description: 1992: Golden heather (*Hudsonia ericoides*) is associated with the sandy deposits here. 1984: Golden heather (*Hudsonia ericoides*) was found here.

General Area: 1992: Sandy, open alluvial deposits of river bank supports a diverse assemblage of species, including the rare golden heather (*Hudsonia ericoides*). Other species include: silver maple (*Acer saccharinum*), white ash (*Fraxinus americana*), basswood (*Tilia americana*), big bluestem (*Andropogon gerardii*), tumble grass (*Eragrostis spectabilis*), fall witchgrass (*Digitaria cognata*), silverrod (*Solidago bicolor*), and alder-buckthorn (*Frangula alnus*). 1984: Characteristic species include big bluestem (*Andropogon gerardii*), poison ivy (*Toxicodendron radicans*), round headed bush-clover (*Lespedeza capitata*), tumble grass (*Eragrostis spectabilis*), northern dewberry (*Rubus flagellaris*), and bulblet umbrella sedge (*Cyperus dentatus*). The rare species golden heather (*Hudsonia ericoides*) was present. Exotics observed were black locust (*Robinia pseudoacacia*) and asparagus (*Asparagus officinalis*).

General Comments:

Management

Comments: 1992?: The presence of the dam here probably contributes to the artificial nature of the outcrop community which was undoubtedly more prevalent before such major rivers were dammed. A study of the flood regime and seasonal river dynamics would be necessary to make further recommendations on these communities and others along the Merrimack River. It is uncertain what effect the abundant exotic species have on the degradation of the natural communities.

Location

Survey Site Name: Manchester Outcrops
Managed By:

County: Hillsborough
Town(s): Manchester
Size: 25.5 acres

USGS quad(s): Manchester North (4307114)
Lat, Long: 425958N, 0712810W
Elevation: 180 feet

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 1984: Outcrops, on island below Amoskeag Power Plant dam in Merrimack river. Near the sign for Eloquent Sytems Corp., proceed along the north edge of the building, through a break in the chain link fence, and onto the riverbank. At low to medium river flow one can cross the channel to gain access to the island.

Dates documented

First reported: 1984-09-19 Last reported: 1992

Harvey, Liz. 1992. Field survey to Manchester Outcrops.

New Hampshire Natural Heritage Inventory. 1993. An ecological inventory of Manchester, NH. Report submitted to the Norwin S. and Elizabeth Bean Foundation. 59 pp., 4 appendices.

New Hampshire Natural Heritage Bureau - Community Record

Rich red oak rocky woods

Legal Status

Federal: Not listed
State: Not listed

Conservation Status

Global: Not ranked (need more information)
State: Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 1993: Dominated by a mix of oak species including: *Quercus rubra* (red oak), *Quercus coccinea* (scarlet oak), *Quercus alba* (white oak), *Quercus velutina* (black oak). Common sapling species include: *Fraxinus americana* (white ash), *Acer rubrum* (red maple), and *Acer saccharum* (sugar maple). Herbaceous and shrub species include: *Sassafras albidum* (sassafras), *Cornus rugosa* (round-leaved dogwood), *Ceanothus americanus* (eastern New Jersey tea), *Vaccinium* spp. (blueberry), *Gaylussacia baccata* (black huckleberry), *Toxicodendron vernix* (poison sumac), *Solidago* spp. (goldenrod), *Aureolaria* spp. (foxglove), *Eupatorium sessilifolium* (upland boneset), *Dryopteris marginalis* (marginal wood fern), *Galium circaezans* (wild licorice), *Amphicarpaea bracteata* (hog-peanut), *Polystichum acrostichoides* (Christmas fern), *Panicum* sp. (panic grass), *Solidago odora* (sweet goldenrod), *Aureolaria virginica* (downy false foxglove), *Lespedeza virginica* (slender bush-clover) and *Anemone virginiana* (thimbleweed).

General Area: 1992: Steep, dry oak talus forest uphill from the banks of the Merrimack River. Half of the steep hill has been recently developed.

General Comments: 1992: Significant portion of western summit was blasted away for development. Steep drop off on west side of summit is not shown on new topographic maps. Natural drainage has been altered and erosion may be a factor is disrupting the future quality of this community.

Management
Comments:

Location

Survey Site Name: Intervale Country Club, south of
Managed By:

County: Hillsborough
Town(s): Manchester
Size: 6.7 acres

USGS quad(s): Manchester North (4307114)
Lat, Long: 430128N, 0712906W
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: [From I-93 in Manchester take Exit 10, Rte. 3A south to Country Club Drive, south (second) access. Drive uphill, park at building #4, and climb the hill across the street.]

Dates documented

First reported: 1992-10-14 Last reported: 1992-10-14 and 10-20

New Hampshire Natural Heritage Inventory. 1993. An ecological inventory of Manchester, NH. Report submitted to the Norwin S. and Elizabeth Bean Foundation. 59 pp., 4 appendices.

New Hampshire Natural Heritage Bureau - Plant Record

clasping milkweed (*Asclepias amplexicaulis*)**Legal Status**

Federal: Not listed
 State: Listed Threatened

Conservation Status

Global: Demonstrably widespread, abundant, and secure
 State: Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Fair quality, condition and/or landscape context ('C' on a scale of A-D).

Comments on Rank: 2006: Small young population, some reproduction evident, on powerline property.

Detailed Description: 2006: 22 plants in two groups separated by less than 10 feet. 10% mature, with flowers. Mostly scattered seedlings.

General Area: 2006: **Pitch pine - scrub oak woodland**. Associated species: pitch pine (*Pinus rigida*), scrub oak (*Quercus ilicifolia*), little bluestem (*Schizachyrium scoparium*), stiff-leaved aster (*Ionactis linariifolius*), lowbush blueberry (*Vaccinium angustifolium*), Canadian frostweed (*Helianthemum canadense*), and various grasses and sedges. Invasive species also present: Asian bittersweet (*Celastrus orbiculatus*) and buckthorn (*Rhamnus* sp.) and unidentified locust. Also *Tradescantia* spp., *Viola tricolor*, Petunia, and *Cucurbita* are occasional in grassy areas.

General Comments: 2006: Possible hybrid of blunt-leaved milkweed (*Asclepias amplexicaulis*) and common milkweed (*Asclepias syriaca*) observed.

Management Comments: 2006: The young plants might not be getting enough light because of competing shrubs and trees and encroaching invasives. The power company appears to be spot-dropping trees under the liens and leaving cut tops where they fall, which is occasionally upon the rare plant. A patch-work tree and shrub removal should be done in the next 8-10 years or canopy growth might become too thick for the rare plant.

Location

Survey Site Name: Rock Rimmon, NE of
 Managed By:

County: Hillsborough
 Town(s): Manchester
 Size: 1.9 acres

USGS quad(s): Manchester North (4307114)
 Lat, Long: 430012N, 0712845W
 Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2006: Powerline north of Rimmon Park runs east/west between the Piscataquag River and the Amoskeag Power Plant on Merrimack River. Park at Northwest Elementary School baseball field at north end of Youville St. which is off Kelly St. which runs east/west between Rte. 114A and Rte. 293. A very short path at the end of road leads to the powerline. Plants are in the corridor under the powerline, to the right (east), on the north edge of the corridor, directly abutting the side of the house at 864 Leyte Street. Closer parking on Leyte St. off Fieldcrest Road, off Goffstown Road more to the north and east than the school lot.

Dates documented

First reported: 2006-07-10

Last reported: 2006-07-10

Kunhardt, L., D. Lievens, B. Weber, and J. Manter. 2006. Field survey to Rock Rimmon, NE of on July 10.

New Hampshire Natural Heritage Bureau - Plant Record

clustered sedge (*Carex cumulata*)**Legal Status**

Federal: Not listed
State: Listed Threatened

Conservation Status

Global: Apparently secure but with cause for concern
State: Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Historical records only - current condition unknown.
Comments on Rank:

Detailed Description: 1931: Specimen collected.
General Area: 1931: Rock ledges.
General Comments:
Management
Comments:

Location

Survey Site Name: Rock Rimmon
Managed By: Rock Rimmon Park - Undeveloped Area

County:	Hillsborough	USGS quad(s):	Manchester South (4207184)
Town(s):	Manchester	Lat, Long:	425957N, 0712909W
Size:	7.7 acres	Elevation:	270 feet

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: Manchester. Rock Rimmon in West Manchester.

Dates documented

First reported:	1931-08-01	Last reported:	1931-08-01
-----------------	------------	----------------	------------

New Hampshire Natural Heritage Bureau - Plant Record

Downy False Foxglove (*Aureolaria virginica*)**Legal Status**

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 2005: 11 plants of normal vigor, 50% immature fruit, 50% with top lopped off. Scattered distribution. 1992: No details.

General Area: 2005: Plants scattered mid-slope, SW aspect on a 8-15% slope. 1992: Steep oak-dominated slope. Species associated with dry conditions besides *A. virginica* include two more commonly found species of *Aureolaria*, *A. flava* (smooth false foxglove) and *A. pedicularia* var. *pedicularia* (fern-leaved false foxglove), *Solidago odora* (sweet goldenrod), *Ceanothus americanus* (eastern New Jersey tea), and *Lespedeza* sp. (bush-clover).

General Comments:
Management
Comments:

Location

Survey Site Name: Country Club Hill Drive
Managed By:

County: Hillsborough
Town(s): Manchester
Size: 1.9 acres

USGS quad(s): Manchester North (4307114)
Lat, Long: 430125N, 0712908W
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: From I-93 in Manchester take Exit 10, Rte. 3A south to Country Club Hill Drive, south (second) access. Drive uphill, park at building #4, and climb the hill across the street.

Dates documented

First reported: 1992 Last reported: 2005-09-05

Lievens, Deborah. 2005. Field survey to Country Club Hill Drive on September 7.

New Hampshire Natural Heritage Inventory. 1993. An ecological inventory of Manchester, NH. Report submitted to the Norwin S. and Elizabeth Bean Foundation. 59 pp., 4 appendices.

New Hampshire Natural Heritage Bureau - Plant Record

Golden Heather (*Hudsonia ericoides*)

Legal Status

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Apparently secure but with cause for concern
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Fair quality, condition and/or landscape context ('C' on a scale of A-D).
Comments on Rank: A small population.

Detailed Description: 2009: Searched for [wrong location] but not found. 1992: No details. 1984: About 20 plants.
General Area: 1992: Sandy, open alluvial deposits of river bank supports a diverse assemblage of species including: *Acer saccharinum* (silver maple), *Fraxinus pennsylvanica* (green ash), *Tilia americana* (basswood), *Andropogon gerardii* (big bluestem), *Eragrostis spectabilis* (tumble-grass), *Leptoloma cognatum* (fall witch-grass), *Solidago bicolor* (silverrod), and *Rhamnus frangula* (European alder-buckthorn). 1984: On a sandy section of riverbank dominated by *Andropogon gerardii* (big bluestem).

General Comments:

Management 1992?: The presence of the dam here probably contributes to the artificial nature of the
Comments: outcrop community which was undoubtedly more prevalent before such major rivers were dammed. A study of the flood regime and seasonal river dynamics would be necessary to make further recommendations on these communities and others along the Merrimack River. It is uncertain what effect the abundant exotic species have on the degradation of the natural communities.

Location

Survey Site Name: Manchester Outcrops
Managed By:

County: Hillsborough	USGS quad(s): Manchester North (4307114)
Town(s): Manchester	Lat, Long: 425958N, 0712810W
Size: 25.5 acres	Elevation: 180 feet

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2009 (Not found, searched west rather than east side of river): From 293 take exit 6 for Amoskeag Bridge. Bear to the right off the exit as if to go over the bridge. Take first right following the Amoskeag Fishways signs. Park at Fishway parking area. Follow the paved sidewalk to the end and bear left at path down to the river. 1984: Outcrops, on island below Amoskeag Power Plant dam in Merrimack river. [From east bank of the river] Near the sign for Eloquent Sytems Corp., proceed along the north edge of the building, through a break in the chain link fence, and onto the riverbank. At low to medium river flow one can cross the channel to gain access to the island.

Dates documented

First reported: 1984-09-19	Last reported: 1992
----------------------------	---------------------

Pinet, Barbara. 2009. Field survey to Manchester Outcrops on June 15.

New Hampshire Natural Heritage Inventory. 1993. An ecological inventory of Manchester, NH. Report submitted to the Norwin S. and Elizabeth Bean Foundation. 59 pp., 4 appendices.

New Hampshire Natural Heritage Bureau - Plant Record

licorice goldenrod (*Solidago odora*)**Legal Status**

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Poor quality, condition and/or landscape context ('D' on a scale of A-D).
Comments on Rank: Too much development pressure, few plants.

Detailed Description: 1992: Hundreds of plants. 1985: 10 vegetative plants in flower, found in 2 separate areas.
General Area: 1985: Mesic acidic oak conifer forest. Moist mid- to lower-slope. Filtered light to shade. Associated species include naked tick trefoil (*Desmodium nudiflorum*), eastern New Jersey tea (*Ceanothus americanus*), wild licorice (*Galium circaezans*), and cluster-leaved tick trefoil (*Desmodium glutinosum*).

General Comments:

Management 1992: Disturbance around the edges where the sweet goldenrod occurs has likely benefitted
Comments: the population, however, the habitat is becoming degraded by the presence of solid waste.

Location

Survey Site Name: Manchester Landfill, west of
Managed By:

County: Hillsborough
Town(s): Manchester
Size: 4.8 acres

USGS quad(s): Manchester North (4307114)
Lat, Long: 430109N, 0712928W
Elevation: 330 feet

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 1992: Along the south and SE lower edges of the hill north of Dunbarton Rd. and west of the Manchester landfill. 1985: Manchester Landfill. North of Dunbarton Road, west and north of large landfill, south of powerline.

Dates documented

First reported: 1985-08-01 Last reported: 1992

Harvey, Liz. 1992. Field survey to Dunbarton Road Hill on October 20.

New Hampshire Natural Heritage Inventory. 1993. An ecological inventory of Manchester, NH. Report submitted to the Norwin S. and Elizabeth Bean Foundation. 59 pp., 4 appendices.

New Hampshire Natural Heritage Bureau - Plant Record

licorice goldenrod (*Solidago odora*)**Legal Status**

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: 2011: These plants were transplanted from the roadside along Dunbarton Road because they were going to be impacted by road and utility improvements.

Detailed Description: 2011: 57 plants transplanted to this site in 11 separate clumps.

General Area:

General Comments: 2011: Transplanted populations are to be monitored for 2 years as part of the environmental review recommendations.

Management

Comments:

Location

Survey Site Name: Dunbarton Road

Managed By:

County: Hillsborough

Town(s): Manchester

Size: .1 acres

USGS quad(s): Manchester North (4307114)

Lat, Long: 430056N, 0712937W

Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: Travel north on Dunbarton Road, then turn left into the Drop-off Facility Access Road. Plants were transplanted within the protected shoreline of Black Brook, just west of the 90 degree curve in the access road.

Dates documented

First reported: 2011-09-26

Last reported: 2011-09-26

Hurley, Luke. 2011. Email to M. Coppola regarding site visit and transplant discussed on August 30.

New Hampshire Natural Heritage Bureau - Plant Record

licorice goldenrod (*Solidago odora*)**Legal Status**

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Extirpated - no longer present at this site.
Comments on Rank: 2011: These plants were moved because they were going to be impacted by road and utility improvement project along Dunbarton Road.

Detailed Description: 2011: 57 plants transplanted from this site to a new location in September. 2011: 30-50 flowering plants estimated, some as clumped groups and some individual plants.

General Area: 2011: Area is adjacent to busy road, with relatively flat topography. Other common plants are other goldenrod species (*Solidago* spp.), maples (*Acer* spp.), birch (*Betula*) and pine (*Pinus*).

General Comments: 2011: 57 plants transplanted from this site to a new location near the transfer station (EO #7968) in September.

Management
Comments:

Location

Survey Site Name: Dunbarton Road
Managed By: UNH - Manchester (Hackett Hill)

County: Hillsborough
Town(s): Manchester
Size: 2.2 acres

USGS quad(s): Goffstown (4307115)
Lat, Long: 430124N, 0713001W
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: Travel north on Dunbarton Road, past landfill. Locations are on the right/east side of Dunbarton Rd. across from Aggregate industries.

Dates documented

First reported: 2011-08-11
Last reported: 2011-09-26

Hurley, Luke. 2011. Field survey to Dunbarton Road on August 11.

New Hampshire Natural Heritage Bureau - Plant Record

lion's-foot rattlesnake-root (*Nabalus serpentarius*)**Legal Status**

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Not ranked (need more information)

Description at this Location

Conservation Rank: Historical records only - current condition unknown.
Comments on Rank:

Detailed Description: 2010: Searched for but not found. 2009: Searched for but not found. 1931, 1977, 1906:
Specimen collected.

General Area: 1931: Dry rock ledges. Rocky slope.

General Comments:

Management

Comments:

Location

Survey Site Name: Rock Rimmon

Managed By: Rock Rimmon Park - Undeveloped Area

County: Hillsborough

USGS quad(s): Manchester South (4207184)

Town(s): Manchester

Lat, Long: 425957N, 0712909W

Size: 7.7 acres

Elevation: 270 feet

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2009: (Not found). Manchester from West Bridge St: follow Coolidge Ave up hill to left on Kelley St.; continue to Youville and turn right; go three blocks and park at ball field. Follow trails up hill to rock ledges. 1931: Rock Rimmon. Dry rock ledges. 1906: Manchester City.

Dates documented

First reported: 1906-09-07

Last reported: 1931-08-28

Lievens, Deborah and Chris Kane. 2010. Field survey to Rock Rimmon on September 1.

New Hampshire Natural Heritage Bureau - Plant Record

long-spined sandbur (*Cenchrus longispinus*)

Legal Status

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 2005: 26 plants estimated at Area 1 (2 x 10 m), 20 at Area 2. Mostly clumped with scattered plants, normal to vigorous condition. 80% with mature fruit, and 20% in leaf. Plants ranged from 6-20 in tall. Area 3 with ca. 200 plants, 85% with mature fruit, and 15% in leaf. 1992: No details (Area 1, summit of Rock Rimmon).

General Area: 2005: Areas 1 and 2 in powerline right-of-way, Area 1 plants at top of hill on edge of woods, area 2 slightly downhill from area 1. Dominant species include *Quercus* sp. (Oak), *Pinus rigida* (pitch pine) and weedy grasses. Associated species include: *Ceanothus americanus* (eastern New Jersey tea), *Trichostema dichotomum* (bluecurls), *Trifolium arvense* (rabbit-foot clover), *Erigeron [Conyza] canadensis* (horseweed), and invasive *Frangula alnus* (alder-buckthorn). At Area 3, growing in sandy, stony soil without thick grass cover. Associated species include: *Ambrosia artemisiifolia* (common ragweed), *Trifolium pratense* (red clover), *Erigeron [Conyza] canadensis* (horseweed), *Plantago major* (common plantain), and other grasses. The invasive plant *Frangula alnus* (alder-buckthorn) is in the adjacent woods. 1992: Along transmission lines (Area 1), and in niches and slides on the summit.

General Comments:

Management Comments: 2005: Heavy ORV use in Areas 1 and 2 has moved sand, removed vegetation, and probably reduced population. Also problem with trash and tire dumping. Area 3 is near a ball field and has lots of foot traffic. 1992: On the summit, broken glass is a severe problem, replacing the soil layer in the rocky niches. In general, the area shows evidence of heavy recreational use and excessive litter.

Location

Survey Site Name: Rock Rimmon
Managed By: Rock Rimmon Park - Undeveloped Area

County: Hillsborough	USGS quad(s): Manchester North (4307114)
Town(s): Manchester	Lat, Long: 425958N, 0712909W
Size: 4.0 acres	Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: From Rte. 293 in Manchester take Exit 6 at Amoskeag Bridge. Head west on Goffstown Rd. Turn south on Montgomery, then right on Mason. Go two blocks to Youville, then turn right. Park at Cullerot Park (Area 3). For Areas 1 and 2, follow Youville north to its end and access powerline from trail end. Also, in 1992, observed on the niches and slides of the summit of Rock Rimmon.

Dates documented

First reported: 1992	Last reported: 2005-08-17
----------------------	---------------------------

Lievens, Deborah and Janet Manter.. 2005. Field survey to Rock Rimmon on August 17.

New Hampshire Natural Heritage Inventory. 1993. An ecological inventory of Manchester, NH. Report submitted to the Norwin S. and Elizabeth Bean Foundation. 59 pp., 4 appendices.

New Hampshire Natural Heritage Bureau - Plant Record

lopsided rush (*Juncus secundus*)**Legal Status**

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Not ranked (need more information)

Description at this Location

Conservation Rank: Historical records only - current condition unknown.
Comments on Rank:

Detailed Description: 2010: Searched for but not found. 2009: Searched for but not found. 1931: Specimen collected.

General Area: 1931: Peaty depression on granite.

General Comments:

Management

Comments:

Location

Survey Site Name: Rock Rimmon

Managed By: Rock Rimmon Park - Undeveloped Area

County: Hillsborough

USGS quad(s): Manchester South (4207184)

Town(s): Manchester

Lat, Long: 425957N, 0712909W

Size: 7.7 acres

Elevation: 270 feet

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2009 (Not found): From West Bridge St. in Manchester follow Coolidge Ave. up hill to left on Kelley St.; continue to Youville and turn right; go three blocks and park at ball field. Follow trails up hill to rock ledges. 1931: Manchester. Rock Rimmon; peaty depression on granite.

Dates documented

First reported: 1931-08-27

Last reported: 1931-08-27

Lievens, Deborah and Chris Kane. 2010. Field survey to Rock Rimmon on September 1.

New Hampshire Natural Heritage Bureau - Plant Record

narrow-leaved white-topped-aster (*Sericocarpus linifolius*)**Legal Status**

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Good quality, condition and landscape context ('B' on a scale of A-D).
Comments on Rank:

Detailed Description: 1992: More than 100 plants in over 8 clumps, in good condition, in a 10x5 m area. Some past flower. 1951: Specimen collected. 1899: Reported.

General Area: 1992: Oak-pine rocky summit woodland. Associated species include *Solidago odora* (sweet goldenrod), *Solidago bicolor* (silverrod), frostweed, oaks, *Pinus rigida* (pitch pine), *Aster* sp., *Sassafras albidum* (sassafras), *Apocynum androsaemifolium* (spreading dogbane), and *Aureolaria flava* (smooth false foxglove). 1951: In niches in ledges.

General Comments: 1899: Reported in "Proceedings Manchester Society of Arts and Sciences."

Management Comments: 1992: The park shows heavy recreational use and excessive litter. Broken glass is a particularly severe problem. It is replacing the soil layer in the rocky niches and seems to have the same effect on plants as it does on people.

Location

Survey Site Name: Rock Rimmon

Managed By: Rock Rimmon Park - Undeveloped Area

County: Hillsborough

USGS quad(s): Manchester South (4207184)

Town(s): Manchester

Lat, Long: 425956N, 0712908W

Size: 6.2 acres

Elevation: 270 feet

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: Manchester. Rock Rimmon Park in West Manchester. Area 1: To the east of the largest ledges, above the tennis courts and near the top. Area 2: In niches in ledges.

Dates documented

First reported: 1899

Last reported: 1992-08-29

Harvey, Liz. 1992. Field survey to Rock Rimmon on August 28.

New Hampshire Natural Heritage Inventory. 1993. An ecological inventory of Manchester, NH. Report submitted to the Norwin S. and Elizabeth Bean Foundation. 59 pp., 4 appendices.

New Hampshire Natural Heritage Bureau - Plant Record

Sessile-fruited Arrowhead (*Sagittaria rigida*)**Legal Status**

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Not ranked (need more information)

Description at this Location

Conservation Rank: Historical records only - current condition unknown.
Comments on Rank:

Detailed Description: 1896: Specimen collected.
General Area: 1896: River bank.
General Comments:
Management
Comments:

Location

Survey Site Name: Manchester
Managed By: Piscataquog River Park - Undeveloped Area

County: Hillsborough
Town(s): Manchester
Size: 254.8 acres

USGS quad(s): Manchester South (4207184)
Lat, Long: 425913N, 0712912W
Elevation:

Precision: Within 1.5 miles of the area indicated on the map (location information is vague or uncertain).

Directions: Manchester City river bank.

Dates documented

First reported: 1896-08-28
Last reported: 1896-08-28

New Hampshire Natural Heritage Bureau - Plant Record

smooth slender crabgrass (*Digitaria filiformis* var. *laeviglumis*)**Legal Status**

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Not ranked (need more information)
State: Not ranked (need more information)

Description at this Location

Conservation Rank: Historical records only - current condition unknown.
Comments on Rank:

Detailed Description: 1931: Specimen collected.1902: Specimen collected.
General Area: 1931: Thin humus in shallow depressions of granite ledge. Peaty hollows in granite ledges.
General Comments:
Management
Comments:

Location

Survey Site Name: Rock Rimmon
Managed By: Rock Rimmon Park - Undeveloped Area

County: Hillsborough USGS quad(s): Manchester South (4207184)
Town(s): Manchester Lat, Long: 425956N, 0712908W
Size: 5.5 acres Elevation: 270 feet

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 1931: Manchester, peaty hollows in granite ledges, Rock Rimmon. [Also described as:] Thin humus in shallow depressions of granite ledge, Rock Rimmon, West Manchester.1902: Rock Rimmon.

Dates documented

First reported: 1902-09-08 Last reported: 1931-08-27

Haines, Arthur. 2012. E-mail to Bill Nichols regarding *Digitaria filiformis* var. *laeviglumis* specimen at Rock Rimmon, dated March 5.

New Hampshire Natural Heritage Bureau - Plant Record

Wild Lupine (*Lupinus perennis*)

Legal Status

Federal: Not listed
State: Listed Threatened

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Fair quality, condition and/or landscape context ('C' on a scale of A-D).
Comments on Rank: 2003 (C): Fair-sized number of healthy plants, but close to an ATV trail and dependent on powerline management.

Detailed Description: 2011: 149 inflorescences, 5% in flower, 65% in bud, clumped in a 10-100 square meter area. Also 45 vegetative patches. 2003: 45 flowers counted (50% of plants in flower), clumped in a 10-100 square meter area.

General Area: 2011: Similar to 2010 description. Invasive species observed were common dock (*Rumex acetosa*) and flat-stemmed blue grass (*Poa compressa*). 2003: Blueberry / scrub oak barrens in powerline corridor. Associated species include cinquefoil (*Potentilla* sp.), yarrow (*Achillea millefolium*), blueberry (*Vaccinium* sp.), scrub oak (*Quercus ilicifolia*), and graminoids.

General Comments: 2003: The population has fluctuated in size over several years.

Management Comments: 2003: ATVs use the grassy area to turn around and to get to a trail through the woods. This part of the powerline corridor was brush-hogged in 2001.

Location

Survey Site Name: Hackett Hill powerline
Managed By: UNH - Manchester (Hackett Hill)

County: Hillsborough USGS quad(s): Manchester North (4307114)
Town(s): Manchester Lat, Long: 430159N, 0712914W
Size: .4 acres Elevation: 300 feet

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2011: Dunbarton Road in Manchester; at 1.0 miles NW of Front Road, powerlines cross street. 4WD road starts at power station. Population is about 1 mi. north on powerline (UTM 19 4767485 297374). 2003: From the old UNH building on Hackett Hill Rd, go up "authorized vehicle only" road, take first trail to left to the powerlines (43 01 59N, 71 29 16W NAD 27).

Dates documented

First reported: 2003-05-29 Last reported: 2011-05-26

Hoy, Joann. 2011. Field survey to Hacket Hill on May 26.

New Hampshire Natural Heritage Bureau - Plant Record

Wright's spikesedge (*Eleocharis diandra*)**Legal Status**

Federal: Not listed
State: Listed Endangered

Conservation Status

Global: Critically imperiled due to rarity or vulnerability
State: Not ranked (need more information)

Description at this Location

Conservation Rank: Historical records only - current condition unknown.
Comments on Rank:

Detailed Description: 1908: Specimen collected. 1906: Specimen collected.
General Area: 1908: Shelving bank.
General Comments:
Management
Comments:

Location

Survey Site Name: Merrimack River, Manchester City
Managed By: DOT - Carthagina Island

County: Hillsborough
Town(s): Manchester
Size: 627.9 acres

USGS quad(s): Manchester South (4207184)
Lat, Long: 425933N, 0712813W
Elevation:

Precision: Within 1.5 miles of the area indicated on the map (location information is vague or uncertain).

Directions: Merrimack River, Manchester City.

Dates documented

First reported: 1906-10-11
Last reported: 1908-10-16

New Hampshire Natural Heritage Bureau - Animal Record

Grasshopper Sparrow (*Ammodramus savannarum*)**Legal Status**

Federal: Not listed
State: Listed Threatened

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Not ranked (need more information)

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 2004: 1 adult male, 1 adult female. How observed: heard, seen (Obs_id 2431).
General Area: 2004: Terrestrial - Grassland / Field (Obs_id 2431).
General Comments: 2004: Male first found on May 27. Still present, along with second bird (presumed female) on June 17, when the latter was somewhat agitated, suggesting that the birds were nesting. No birds were found on July 2, and no further visits were conducted (Obs_id 2431).

Management
Comments:

Location

Survey Site Name: Exit 7 Field
Managed By: UNH - Manchester (Hackett Hill)

County: Hillsborough
Town(s): Manchester
Size: 77.1 acres

USGS quad(s): Manchester North (4307114)
Lat, Long: 430103N, 0712913W
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2004: Old landfill along Dunbarton Road [and I-293 near the State Vocational Institute] (Obs_id 2431).

Dates documented

First reported: 2004-05-27
Last reported: 2004-05-27

New Hampshire Natural Heritage Bureau - Animal Record

Peregrine Falcon (*Falco peregrinus anatum*)

Legal Status

Federal: Not listed
State: Listed Threatened

Conservation Status

Global: Apparently secure but with cause for concern
State: Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Poor quality, condition and/or landscape context ('D' on a scale of A-D).
Comments on Rank: Only 1 extant nesting site within EO.

Detailed Description: 2011: Brady-Sullivan Tower: 3 chicks fledged. 2010: Brady-Sullivan Tower: 5 chicks fledged. 2009: Citizens Bank: 3 chicks fledged. 2008: Brady-Sullivan Tower: 3 chicks fledged, 1 male, 2 female. 2007: Brady-Sullivan Tower: 1 chick fledged. 2006: Brady-Sullivan Tower: 2 chicks fledged. 2005: Brady-Sullivan Tower: 4 chicks fledged. 2004: Brady-Sullivan Tower: 2 chicks fledged. 2003: Brady-Sullivan Tower: 3 chicks fledged. 2002: Brady-Sullivan Tower: 3 chicks fledged. 2001: Brady-Sullivan Tower: 4 chicks fledged. 1990-91: ASNH has been able to confirm that the same adult peregrine (silver band left leg and a black band right leg) has returned to overwinter each year since 1990-91. 1987-1990: A banded immature-plumaged falcon observed near Elm Street during this period.

General Area: 2008-2001: Man-made nest box on tall building (Brady-Sullivan Building) in center of downtown Manchester.

General Comments: 2007: 1 chick banded, 3 unhatched eggs collected. Same pair as 2006. Adult female raised in Worcester, MA. 2006: 2 chicks banded, collected 1 unhatched egg. 6-yr old male banded silver right, black/green 6/7 left raised at Cathedral Ledge in 2000; new 1-yr old female banded silver right, black/green 02/Z left. 2005: 5-yr old adult male banded silver right, black/green 6/7 left raised at Cathedral Ledge in 2000; 6-yr old adult female banded dark right, black/red *A/*S left raised at Throgs Neck Bridge in NYC in 1999. 2004: Collected 3 unhatched eggs. 4-yr old adult male banded silver right leg, black/green 6/7 left leg raised at Cathedral Ledge in 2000; 5-yr old adult female banded dark right, black/red *A/*S left raised at Throgs Neck Bridge in NYC in 1999. 2003: Nest site activity monitored using micro-cams. Banded 3 chicks and collected 1 egg for USFWS on 5/26/2003. Adult male banded silver right, black/green 6/7 left; adult female banded dark right, black/red *A/*S left (Obs_id 706). 2001: Incubation confirmed on 4/6/2001. 4 chicks banded. Sub-adult male banded silver right, black/green 6/7 left; adult female banded dark right, black/red *A/*S left (Obs_id 708). 2000: An unmated one-year-old female raised in New York City took up residence at a nesting box located on the New Hampshire Tower Building (no updated information on wintering activity).

Management Comments: 2007: Relationship with new facility manager off to a good start with no significant management issues.

Location

Survey Site Name: Manchester
Managed By:

County: Hillsborough	USGS quad(s): Manchester South (4207184)
Town(s): Manchester	Lat, Long: 430013N, 0712800W
Size: 2.4 acres	Elevation: 200 feet

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: New Hampshire Tower building at 1750 Elm Street in downtown Manchester (Brady-Sullivan Building).

Dates documented

First reported: 1986-01-01	Last reported: 2011
----------------------------	---------------------

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

Martin, C. 2004. Word document summarizing the 2004 peregrine falcon breeding season.

Martin, Chris. 2007. Status of Breeding Peregrine Falcons in New Hampshire in 2007. Final report submitted to NH Fish and Game, October, 15, 2007.

New Hampshire Natural Heritage Bureau - Animal Record

Pied-billed Grebe (*Podilymbus podiceps*)**Legal Status**

Federal: Not listed
State: Listed Threatened

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Not ranked (need more information)

Description at this Location

Conservation Rank: Good quality, condition and landscape context ('B' on a scale of A-D).
Comments on Rank: Habitat excellent; deep, open water and buttonbush swamp, but entire wetland is surrounded by gravel pit.

Detailed Description: 1992: Male bird observed swimming and diving in open water; called twice (after use of broadcast vocalization tapes).

General Area: 1992: Shrub marsh dominated by *Cephalanthus occidentalis* (buttonbush). Alder swamp and narrow-leaved deep marsh to west of observed grebe.

General Comments: 1992: Entire wetland is surrounded by the city of Manchester gravel pit operation; a powerline bisects the wetland.

Management Comments: 1992: Minimize runoff, maintain what buffer zones still exist. Monitor water quality and vegetative regime.

Location

Survey Site Name: Black Brook Wetland
Managed By:

County:	Hillsborough	USGS quad(s):	Manchester North (4307114)
Town(s):	Manchester	Lat, Long:	430102N, 0712943W
Size:	2.8 acres	Elevation:	240 feet

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: Wetland along Black Brook ca. 1 mile west of the Everett Turnpike on Dunbarton Road. Park on Dunbarton Road, access wetland by walking in near powerline.

Dates documented

First reported:	1992-05-17	Last reported:	1992-05-17
-----------------	------------	----------------	------------

Frye, Sheila. 1992. Field survey to Black Brook.

New Hampshire Natural Heritage Bureau - Animal Record

Redfin Pickerel (*Esox americanus americanus*)**Legal Status**

Federal: Not listed
State: SC

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Rare or uncommon

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 2000: Area 626: 1 individual observed.
General Area: 2000: Area 626: Freshwater stream.
General Comments:
Management
Comments:

Location

Survey Site Name: Black Brook
Managed By: UNH - Manchester (Hackett Hill)

County:	Hillsborough	USGS quad(s):	Goffstown (4307115)
Town(s):	Manchester	Lat, Long:	430131N, 0713017W
Size:	2.3 acres	Elevation:	

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2000: Area 626: Black Brook at Dunbarton Road in Manchester.

Dates documented

First reported:	2000-07-06	Last reported:	2000-07-06
-----------------	------------	----------------	------------

NHDHR Request for Project Review (RPR)

Please mail the completed form and required material to:

Cultural Resources Staff
Bureau of Environment
NH Department of Transportation
7 Hazen Drive
Concord, NH 03302

RECEIVED

DEC 04 2012

DHR Use Only

R&C #

4370

Log In Date ____ / ____ / ____

Response Date ____ / ____ / ____

Sent Date ____ / ____ / ____

**Request for Project Review by the
New Hampshire Division of Historical Resources
for Transportation Projects**

RECEIVED

DEC 11 2012

VHIB, INC.

☒ This is a new submittal.

☐ This is additional information relating to DHR Review and Compliance (R&C)#:

GENERAL PROJECT INFORMATION

DOT Project Name & Number I-293 Exits 6 & 7 Transportation Planning Study (Manchester #16099)

Brief Descriptive Project Title This project involves addressing transportation needs along approximately three (3) miles of the F.E. Everett Turnpike [F.E.E.T]/Interstate Route 293, extending northerly from the overpass of the West Bridge Street to approximately one (1) mile north of the NH Route 3A interchange (Exit 7) in the City of Manchester, New Hampshire.

Project Location I-293 Exits 6 & 7

City/Town Manchester

Lead Federal Agency and Contact (if applicable) Not Yet Identified, but Likely FHWA
(Agency providing funds, licenses, or permits)

Permit Type and Permit or Job Reference #

DOT Environmental Manager (if applicable) Marc Laurin

PROJECT SPONSOR INFORMATION

Project Sponsor Name Keith Cota
Chief Project Manager
Bureau of Highway Design
NHDOT

Mailing Address JOM Building | PO Box 482 | 7 Hazen Drive Phone Number 603-271-1615

City Concord State NH Zip 03302-048 Email kcota@dot.state.nh.us.gov

CONTACT PERSON TO RECEIVE RESPONSE

Name/Company Dale E. Abbott

Mailing Address 6 Bedford Farms Drive Phone Number 603-644-0888

City Bedford State NH Zip 03110 Email dabbott@vhib.com

This form is updated periodically. Please download the current form at <http://www.nh.gov/DHR/review>. Please refer to the Request for Project Review for Transportation Projects Instructions for direction on completing this form. Submit one copy of this project review form for each project for which review is requested. **Include a self-addressed stamped envelope** to expedite review response. Project submissions will not be accepted via facsimile or e-mail. This form is required. Review request form must be complete for review to begin. Incomplete forms will be sent back to the applicant without comment. Please be aware that this form may only initiate consultation.

PROJECTS CANNOT BE PROCESSED WITHOUT THIS INFORMATION

Project Boundaries and Description

- ☒ Attach the relevant portion of a 7.5' USGS Map (photocopied or computer-generated) **indicating the proposed area of potential effect (APE)**. (See RPR for Transportation Projects Instructions and R&C FAQs for guidance. Note that the APE is subject to approval by lead federal agency and SHPO.)
- ☒ Attach a detailed narrative description of the proposed project.
- ☐ Attach current engineering plans with tax parcel, landscape, and building references, and areas of proposed excavation, if available.
- ☒ Attach photos of the project area/APE with photo key (overview of project location and area adjacent to project location, and specific areas of proposed impacts and disturbances.) (Blank photo logs are available on the DHR website. Informative photo captions can be used in place of a photo log.)
- ☒ A DHR file review must be conducted to identify properties within or adjacent to the APE. Provide file review results in **Table 1**. (Blank table forms are available on the DHR website.)
File review conducted on 7/20/2012.*

*The DHR recommends that all survey/National Register nomination forms and their Determination of Eligibility (green) sheets are copied for your use in project development.

Architecture

Are there any buildings, structures (bridges, walls, culverts, etc.) objects, districts or landscapes within the APE? ☒ Yes ☐ No

If no, skip to Archaeology section. If yes, submit all of the following information:

- ☒ Attach completed **Table 2**.
- ☐ Photographs of **each** resource or streetscape located within the APE. Add to the photo key and photo log noted above. (Digital photographs are accepted. All photographs must be clear, crisp and focused.)
- ☒ Copies of National Register boundary (listed or eligible) mapping, and add National Register boundaries for listed and eligible properties to the 7.5' USGS project map (if applicable).

Archaeology

Does the proposed undertaking involve ground-disturbing activity? ☐ Yes ☐ No
If yes, submit all of the following information:

- ☒ Description of current and previous land use and disturbances.
- ☒ Available information concerning known or suspected archaeological resources within the project area (such as cellar holes, wells, foundations, dams, etc.)

Please note that for many projects an architectural and/or archaeological survey or other additional information may be needed to complete the Section 106 process.

AGENCY COMMENT

This Space for DOT and Division of Historical Resources Use Only

Sent to DHR; Authorized DOT Signature: 

Date: 11/30/12

☐ Insufficient information to initiate review.

☒ Additional information is needed in order to complete review.

Comments: Area considered archaeologically sensitive. Continue development of APE. Consult with DOT's comments. Also keep in mind that visual impacts would be encompassed by the APE so the last side of the river would probably be included.

If plans change or resources are discovered in the course of this project, you must contact the Division of Historical Resources as required by federal law and regulation.

Authorized DHR Signature: 

Date: Dec 6, 2012

Please mail the completed form and required material to:

Cultural Resources Staff
Bureau of Environment
NH Department of Transportation
7 Hazen Drive
Concord, NH 03302

DHR Use Only

R&C # _____

Log In Date ____ / ____ / ____

Response Date ____ / ____ / ____

Sent Date ____ / ____ / ____

**Request for Project Review by the
New Hampshire Division of Historical Resources
for **Transportation** Projects**

- ☒ This is a new submittal.
☐ This is additional information relating to DHR Review and Compliance (R&C)#:

GENERAL PROJECT INFORMATION

DOT Project Name & Number I-293 Exits 6 & 7 Transportation Planning Study (Manchester #16099)

Brief Descriptive Project Title This project involves addressing transportation needs along approximately three (3) miles of the F.E. Everett Turnpike [F.E.E.T]/Interstate Route 293, extending northerly from the overpass of the West Bridge Street to approximately one (1) mile north of the NH Route 3A interchange (Exit 7) in the City of Manchester, New Hampshire.

Project Location I-293 Exits 6 & 7

City/Town Manchester

Lead Federal Agency and Contact (*if applicable*) Not Yet Identified, but Likely FHWA
(*Agency providing funds, licenses, or permits*)

Permit Type and Permit or Job Reference #

DOT Environmental Manager (*if applicable*) Marc Laurin

PROJECT SPONSOR INFORMATION

Project Sponsor Name Keith Cota
Chief Project Manager
Bureau of Highway Design
NHDOT

Mailing Address JOM Building | PO Box 482 | 7 Hazen Drive Phone Number 603-271-1615

City Concord State NH Zip 03302-048 Email kcota@dot.state.nh.us.gov

CONTACT PERSON TO RECEIVE RESPONSE

Name/Company Dale E. Abbott

Mailing Address 6 Bedford Farms Drive Phone Number 603-644-0888

City Bedford State NH Zip 03110 Email dabbott@vhb.com

This form is updated periodically. Please download the current form at <http://www.nh.gov/DHR/review>. Please refer to the Request for Project Review for Transportation Projects Instructions for direction on completing this form. Submit one copy of this project review form for each project for which review is requested. Include a self-addressed stamped envelope to expedite review response. Project submissions will not be accepted via facsimile or e-mail. This form is required. Review request form must be complete for review to begin. Incomplete forms will be sent back to the applicant without comment. Please be aware that this form may only initiate consultation.

For some projects, additional information will be needed to complete the Section 106 review. All items and supporting documentation submitted with a review request, including photographs and publications, will be retained by the DHR as part of its review records. Items to be kept confidential should be clearly identified. For questions regarding the DHR review process and the DHR's role in it, please visit our website at: <http://www.nh.gov/nhdhr/review> or contact the R&C Specialist at christina.st.louis@dcr.nh.gov or 603.271.3558.

PROJECTS CANNOT BE PROCESSED WITHOUT THIS INFORMATION

Project Boundaries and Description

- ☒ Attach the relevant portion of a 7.5' USGS Map (photocopied or computer-generated) **indicating the proposed area of potential effect (APE)**. (See RPR for Transportation Projects Instructions and R&C FAQs for guidance. Note that the APE is subject to approval by lead federal agency and SHPO.)
- ☒ Attach a detailed narrative description of the proposed project.
- ☐ Attach current engineering plans with tax parcel, landscape, and building references, and areas of proposed excavation, if available.
- ☒ Attach photos of the project area/APE with photo key (overview of project location and area adjacent to project location, and specific areas of proposed impacts and disturbances.) (Blank photo logs are available on the DHR website. Informative photo captions can be used in place of a photo log.)
- ☒ A DHR file review must be conducted to identify properties within or adjacent to the APE. Provide file review results in **Table 1**. (Blank table forms are available on the DHR website.)
File review conducted on 7/20/2012.*

**The DHR recommends that all survey/National Register nomination forms and their Determination of Eligibility (green) sheets are copied for your use in project development.*

Architecture

Are there any buildings, structures (bridges, walls, culverts, etc.) objects, districts or landscapes within the APE? ☒ Yes ☐ No

If no, skip to Archaeology section. If yes, submit all of the following information:

- ☒ Attach completed **Table 2**.
- ☐ Photographs of **each** resource or streetscape located within the APE. Add to the photo key and photo log noted above. (Digital photographs are accepted. All photographs must be clear, crisp and focused.)
- ☒ Copies of National Register boundary (listed or eligible) mapping, and add National Register boundaries for listed and eligible properties to the 7.5' USGS project map (if applicable).

Archaeology

Does the proposed undertaking involve ground-disturbing activity? ☐ Yes ☐ No

If yes, submit all of the following information:

- ☒ Description of current and previous land use and disturbances.
- ☒ Available information concerning known or suspected archaeological resources within the project area (such as cellar holes, wells, foundations, dams, etc.)

Please note that for many projects an architectural and/or archaeological survey or other additional information may be needed to complete the Section 106 process.

AGENCY COMMENT

This Space for DOT and Division of Historical Resources Use Only

Sent to DHR; Authorized DOT Signature: _____ Date: _____

- ☐ **Insufficient information to initiate review.**
- ☐ Additional information is needed in order to complete review.

Comments: _____

If plans change or resources are discovered in the course of this project, you must contact the Division of Historical Resources as required by federal law and regulation.

Authorized DHR Signature: _____ Date: _____

Attachment
Request for Project Review by the New Hampshire Division of Historical Resources
I-293 Exits 6 & 7 Transportation Planning Study
November 14, 2012

See **Figure 1** showing the approximate limits of the current project study area.

A. Attach a detailed written description of the proposed project.

(1) Narrative Description of the Proposed Project

Project Description

The New Hampshire Department of Transportation is conducting a *Transportation Planning Study* to examine turnpike transportation system upgrades along three (3) miles of the F.E. Everett Turnpike [F.E.E.T.] (I-293) in the City of Manchester beginning at the overpass of West Bridge Street, north of Exit 5 (Granite Street), through and including Exit 6 (Goffstown Road) to approximately one (1) mile north of Exit 7 (NH Route 3A).

The Purpose of this Planning Study is to consider transportation system modifications aimed at addressing capacity and safety related deficiencies along the mainline and at the interchanges (Exits 6 and 7) for a 3-mile segment of I-293 including consideration of relocating and reconfiguring Exit 7 into a fully directional interchange.

The Planning Study will establish a range of practicable alternatives to be advanced to Part B (Environmental Documentation) for further development of preliminary engineering and formal environmental documentation and to assist the communities with long-range planning.

Proposed Action

The planning-level study shall consider the widening of I-293 to no more than six lanes; consideration of turnpike widening under the West Bridge Street overpass; alternative interchange configurations with Goffstown Road, Front Street, Eddy Road, River Front Drive, and the Amoskeag Street Bridge over the Merrimack River at Exit 6; consideration of a new I-293 full-access interchange north of the Manchester Community College with connection to NH Route 3A and Dunbarton Road; Consideration of the removal of the existing interchange ramps at Exit 7 (NH Route 3A); and consideration of the I-293 overpasses for Stark Way and Black Brook.

Describe the character of the APE

I-293 is a major, north-south, arterial circumferential highway extending through and around the City of Manchester. It also functions as a local connection to Interstate 93 (north and south), NH Route 101 (east and west) and US Route 3 (F.E. Everett Turnpike south to Nashua and into Massachusetts) and thus providing critical accessibility and mobility within the greater Manchester area as well as throughout southern New Hampshire.

Within the limits of the project study area, I-293 consists of a four lane highway with two interchange locations (Exit 6 and Exit 7). Exit 6, which is commonly referred to as the Amoskeag Traffic Circle, provides full-access to the turnpike system (on/off access in both directions). The existing ROW is approximately 880' in width in this area. Exit 7 (Route 3A) is currently a limited-access interchange, with off-ramp access to Route 3A in the northbound direction and on-ramp access to the turnpike system. South of Exit 6, the ROW is approximately 120' Wide. North of Exit 6 the existing road ROW is approximately 300' in width.

(2) Engineering Plans

Conceptual design plans will be developed for the alternatives identified in the Planning Study. These plans have not yet been generated.

(3) Photos of the APE

The project study area encompasses a number of buildings and structures. Due to the preliminary nature of the Planning Study and its associated potential effects, a thorough evaluation of every property within the potential project vicinity was not performed at this time. Under the current scope of work, field work was limited to a windshield survey of the cultural resources located within the project study. The windshield survey encompassed properties on both the east and west sides of the Merrimack River, in order to evaluate potential visual effects to historic properties. Sites identified from the DHR Site File Review were visited in the field to evaluate their current integrity to record a representative photograph of each site. In addition, the windshield survey was conducted to identify properties that have not been previously evaluated for listing in the National Register, but which are over 50 years old. The attached photo-log contains 54 photographs documenting the results of the windshield survey.

(4) DHR File Review

A site file search of inventoried and designated resources in the vicinity of the Planning Study area was conducted on July 20th and July 23rd, 2012. On October 11, 2012, a reconnaissance survey was completed to relocate inventoried properties and those listed in the National Register of Historic Places (National Register) and/or the State Register of Historic Places (also referred to as “designated properties”) was conducted.

Methods

VHB conducted a cultural resources survey for the Manchester 16099 Exit 6-7 Planning Study, and evaluated potential adverse effects to properties over 50 years old in the vicinity of the Planning Study area. The cultural resources survey consisted of two components. The first component was the identification of previously recorded properties, compiled at the New Hampshire Division of Historical Resources (NHDHR) and from the City of Manchester. The second component consisted of a windshield survey of properties located within the areas potentially affected by the project and those that may have indirect visual effects. It should be noted that the preliminary stage of the Planning Study precludes the establishment of a definitive Area of Potential Effect (APE); however an initial review of properties likely to be affected by elements of the potential project, as discussed in the Planning Study, is discussed below.

Nicole Benjamin-Ma performed a site file search at NHDHR for recorded above-ground properties on July 20, 2012, to gather information on previously documented resources in the Planning Study area and its vicinity (**Table 1**). Generally speaking, the site file search was limited to properties located within a ¼ -mile radius of the Planning Study area, and the search was limited to properties located on the west side of the Merrimack River.¹ One National Register-listed district and one National Register-certified district are located within the Planning Study area vicinity. There are seven individually recorded properties located within the Planning Study area vicinity. Of these seven recorded properties, one property is listed in the National Register; one property is listed in the State Register; one property was determined individually eligible for the National Register by NHDHR; two properties have been determined eligible by NHDHR as part of a district (McGregorville/Notre Dame district); one property was determined not eligible for the National Register; and for one property, a National Register nomination form was prepared but the property was never formally listed. In addition, two project area forms on file at NHDHR cover areas located in the vicinity of the proposed Planning Study area. The results of the site file search are discussed below and summarized in **Table 1** and **Figure 2**.

The City of Manchester maintains GIS information for historic above-ground resources located within the city limits, including National Register districts and locally-designated districts subject to specific zoning regulations; individual National Register-listed properties; properties determined eligible for the National Register; and local historic sites. The city’s GIS information was merged with the results of the NHDHR site file search for a complete picture of all properties located within the Planning Study area vicinity.

Previously Recorded Properties

Amoskeag Millyard Historic District

The Amoskeag Millyard Historic District extends along both sides of the Merrimack River, primarily between Exits 5 and 6 of I-293. The Amoskeag Manufacturing Company was incorporated 1831 by local entrepreneurs and Boston Associates, a partnership that had financed previous textile manufacturing ventures in Lowell and Waltham, MA. They began acquiring land on the east side of river at the site of a 50-foot fall, and by the late 1830s, a dam and

gatehouse, along with the first mill buildings, were constructed. During the 1870s, they expanded the complex to the west side of the river, and the water-powered mills were converted to steam power by the early 20th century. A hugely successful enterprise with several dozen industrial buildings, the company started acquiring and consolidating other large textile companies in 1906. By the 1910s, the Amoskeag Manufacturing Company was the largest textile company in the world. After WWI, competition from southern industrial enterprises caused serious financial difficulties, and after attempts to rent, raze, and sell off some of the company's buildings did not improve the financial situation, the company declared bankruptcy in 1935. Other industrial companies moved into the complex, but after WWII this business model was difficult to continue due to the various needs of tenants and increased demand for parking. The construction of I-293 in 1954 removed a number of the industrial buildings, and in the 1960s, a number of alterations to the millyard were completed in order to adapt the site for modern industrial use. Currently, the millyard contains a mix of residential, commercial, and retail space, with a ½-mile Riverwalk along the east side of the river.

In May 2012, the National Park Service certified the Amoskeag Millyard Historic District, already designated as a local landmark district, as “substantially meeting all of the requirements for local historic district ordinances under 36 CFR Part 67.8,” and “substantially meeting all the requirements for listing in the National Register of Historic Places.”² The district meets Criteria A, C, and D for listing in the National Register.³ The millyard buildings, structures, and sites generally appear well-preserved and largely intact, with little or no apparent alteration since the recent integrity evaluation. The millyard is considered an integral part of Manchester’s downtown area, and is designated as part of the city’s zoning Ordinance as the Amoskeag Millyard Mixed Use District (AMX). Two historic district overlays, consisting of the local landmark districts of the Amoskeag Millyard Historic District and the Amoskeag Corporation Housing Historic District, are contained within the AMX. These districts are overseen by the Heritage Commission, with guidelines regarding the establishment and project review within the districts explained by Section 7.05 of the zoning ordinance. The boundaries of the Amoskeag Millyard Historic District overlay are consistent with those of the National Register-certified district. The Amoskeag Millyard Historic District also contains a designated Scenic and Cultural Byway, along Commercial Street east of the river.

The majority of the millyard buildings and property are located on the east side of the river, with a small number of buildings located on the west side of the river, east of McGregor Street on the north and south sides of West Bridge Street. The buildings located in this area are the 1895, Stark Mills Cotton Storehouse, located at 93 Eddy Road, the 1919, American Cotton Duck, as well as a small c. 1898 Valve House located just north of 95 Eddy Road⁴. The two industrial buildings (Photographs 1-4) are currently utilized as a commercial business park and public storage rental space, while the Valve House (Photograph 5) does not appear to be in use. In addition, the east millyard building, 1891 Mill #12 Annex, Cloth Room, is located at 195 McGregor Street, in close proximity to the existing footprint of I-293. The south end of 195 McGregor Street (Photographs 6-7) is currently occupied by offices, while the north end of the building appears to be vacant.

The widening of I-293 will be visible from a number of buildings, structures, and sites in the Amoskeag Millyard Historic District, on the east and west sides of the Merrimack River. Generally, visibility of I-293 is limited to those resources located directly along the current I-293 right-of-way on the west side of the river (Photographs 9-13), and the riverfront on the east side of the river (Photographs 51-54); the multi-story height of the millyard buildings precludes visibility from portions of the millyard located further away from I-293 as well as visibility from the Scenic and Cultural Byway along Commercial Street. Although the 1954 construction of I-293 already severely impacted portions of the millyard and its resources, further evaluation of potential visual effects of the widening of I-293 will need to be conducted during subsequent phases of planning for the proposed project.

Amoskeag Manufacturing Company Housing District

This district consists of five non-contiguous groups of buildings located around the outer boundaries of the Amoskeag Millyard Historic District, on both the east and west side of the Merrimack River. The five groups consist of 67 buildings total, representing extant examples of tenement blocks and overseers' residences constructed by the Amoskeag Manufacturing Company between 1838 and 1916. The district excludes single-family homes erected for agents and superintendents, which vary more widely in character. Although the majority of the housing district groups are located on the east side of the river, District E is located on the west side of the river, one block from the Planning Study area. District E consists of five former overseers' houses on the west side of McGregor Street, constructed in 1882. All five houses are similar in form and massing, with a rear kitchen ell and a separate barn in the rear of the property. The houses are 2 1/2 stories with Stick Style details, and have a much more suburban feel than the brick tenement blocks constructed for mill workers across the river.

The Amoskeag Manufacturing Company Housing District was listed in the National Register in 1982. The Amoskeag Corporation Housing Historic District, a City of Manchester historic overlay district, has the same boundaries and groups as the National Register district. The district is overseen by the Heritage Commission (see discussion under “Amoskeag Millyard Historic District”).

The houses within District E (Photograph 14), located closest to the Planning Study area, have had a number of alterations including small additions and replacement of siding and windows. However, as a group they are similar in size and massing, consistent with their thematic grouping as part of the National Register nomination form. However, all five groups of buildings in the Amoskeag Manufacturing Company Housing District are located on the outskirts of the Amoskeag Millyard Historic District. The taller millyard buildings are situated between the company housing and I-293 on the west side of the Merrimack River, and between the company housing and the river on the east side of the river. Therefore, the widening of I-293 in the millyard area is not anticipated to have a visual effect on the houses located within the Amoskeag Manufacturing Company Housing District. This evaluation, however, will need to be re-assessed during future planning phases of the proposed project.

418-420 Notre Dame Avenue (NR listed 1996)

This building has a prominent location on the corner of Notre Dame Avenue and Armory Street, on the same block (Photograph 17) as 404 Notre Dame Avenue (MAN0290) and 412 Notre Dame Avenue (MAN0292). This three-story Classical Revival apartment building was constructed in 1907 and is fronted by a three-story curved porch set between two bays. Corinthian columns support the porch. The flat roof has a wide overhang, which is supported by several brackets set into a wide cornice. The woodwork of the porch and cornice appear intact, though the building is clad in vinyl siding with replacement 2/1 vinyl sash windows. In 1908, the first credit union in the country opened on the first story, in order to serve local French-Canadian immigrant workers of the Amoskeag Manufacturing Company; today the building is home to America's Credit Union Museum. The building was listed under Criterion A for its role in the establishment of American credit unions, and Criterion C as a well-preserved example of a Classical Revival apartment building.

The building at 418-420 Notre Dame Avenue is located within ¼ mile of the Planning Study area; however, there are several blocks of buildings between the house and the Planning Study area. A number of multiple-story millyard buildings rise above I-293, effectively blocking the view of the roadway from the recorded properties on Notre Dame Avenue (Photograph 18). This evaluation, however, will need to be re-assessed during future planning phases of the proposed project.

412 Notre Dame Avenue (MAN0292)

This multiple-family residence is located between 404 Notre Dame Avenue (MAN0290) and 418-420 Notre Dame Avenue (NR listed 1996). Constructed in 1885, this 2 ½ story Queen Anne house has a distinctive two-story, full-width front porch supported by fluted columns and rounded bays on the second story. The house has a hipped roof and a raised granite foundation, and alterations include the use of vinyl siding and replacement vinyl sash. Similar to the house at 404 Notre Dame Avenue (MAN0290), the house at 412 Notre Dame Avenue has not been individually evaluated for National Register eligibility, but a DOE dated September 9, 2009 indicates that the house is considered a contributing resource to the potential McGregorville/ Notre Dame historic district. The DOE notes that more information would be needed to assess individual eligibility of the building.

The recorded properties on Notre Dame Avenue are located within ¼ mile of the Planning Study area, but during the field visit, it was determined that the distance of the houses and the intervening multiple-story millyard buildings prevent visibility of I-293 (Photograph 18). This evaluation, however, will need to be re-assessed during future planning phases of the proposed project.

404 Notre Dame Avenue (MAN0290)

This house is located on the west side of Notre Dame Avenue (Photograph 17), across from Lafayette Park, next to 412 Notre Dame Avenue (MAN0292) and 418-420 Notre Dame Avenue (NR listed 1996). The building is a 2 ½ story front-gable multiple-family residence constructed in 1890. The sidehall entrance has a portico with round columns, with a two-story bay on the south side of the façade. The house is set on a granite foundation, and siding and window sash are modern vinyl replacements. The house has not been evaluated for individual significance, but a DOE dated June 24, 2009 notes that the building is eligible as part of a district. The McGregorville/ Notre Dame area was identified in a 1991 Historic Resource Survey of Manchester as a potential historic district with a number

of well-preserved buildings associated with the city's Franco-American history. The boundaries of the potential district have not been determined, but the neighborhood is located west of McGregor Street. Although the house was not individually evaluated, the DOE notes the building's loss of integrity of materials and workmanship.

Similar to the building at 418-420 Notre Dame Avenue, the house at 404 Notre Dame Avenue is located several blocks from the Planning Study area. In addition, the millyard buildings that are sited between Notre Dame Avenue and I-293 prevent visibility of the roadway (Photograph 18). The proposed project is not anticipated to impact the building at 404 Notre Dame Avenue or the eligibility of the surrounding potential historic district. This evaluation, however, will need to be re-assessed during future planning phases of the proposed project.

Eugene and Marie Quirin House, 250 Coolidge Avenue (MAN0139)

The three-story Eugene and Marie Quirin House is located at the corner of Coolidge Avenue and Bremer Street. The c. 1906 dwelling has several Queen Anne elements, including a round corner tower, projecting bays, multiple porches, and turned balusters. Although much of the building is clad in vinyl siding, original materials such as wood shingles on the turret, copper roof finials, and windows have been retained. A bas relief over the portico is believed to depict the Quirin family crest. Quirin was a French immigrant who became a prominent Manchester businessman and was active in the local French community. In 1955, his descendants sold the house to the French-Canadian Phaneuf family, who converted it into a funeral home for the family business. The house was listed in the State Register in 2006, and a DOE dated February 8, 2006 notes eligibility under Criterion A for association with the French-Canadian community in Manchester as well as Criterion C as a good local example of the Queen Anne style. The DOE also states that more information would be needed to determine National Register eligibility, noting a concern about the vinyl siding and two 20th century additions, but suggests that Criterion B may be a possibility for the building as well.

There are several blocks of buildings between the Eugene and Marie Quirin House and the area covered by the Planning Study, including a mixture of both 19th and 20th century commercial, industrial, and residential buildings. The distance between the Quirin House and the Planning Study area precludes visibility of I-293 limiting the potential for the potential project to have an impact on the Quirin House.

“Amoskeag Federal House,” 225 Eddy Road

This c. 1835 two-story house (Photograph 20-21) is located on a parcel bordered by I-293 on the south and Eddy Road on the north. The house features a Greek Revival pediment in the front gable. A plaque in the center of the gable (currently undecorated) is surrounded by wood trim; this may have originally contained a louvered attic vent. Other decorative elements include a narrow frieze, fluted cornerboards, and a fluted door surround with full transom lights. A 1 ½-story rear ell extends from the north elevation. Alterations include the apparent infill of windows on the west elevation, the application of vinyl siding, replacement vinyl windows sash, and the replacement of the front door and surround lights. The house served as an agent's house for the nearby Amoskeag Manufacturing Company for many years.

The house has been moved twice, both from nearby lots.¹ Originally, the house is reported to have been situated at the former corner of Eddy Road and Front Street, overlooking the falls. In the 1950s, the house was moved south on Eddy Road when the interchange at Exit 6 of I-293 was constructed. In 1984, the house was moved to an adjacent parcel to its current location, where it is utilized as office space. A National Register nomination form was prepared for the house in 1974 and is on file at NHDHR, but the building was never listed and it is unclear whether the nomination was submitted. The house is also a designated Local Historic Site. NHDHR does not have an inventory form for the house, and does not have a DOE on file.

The property is bounded by I-293, and therefore any widening of the roadway will impact the property. However, the setting has already been greatly impacted by I-293 and late 20th century infill construction on adjacent lots on along Eddy Road, and previous moves and alterations have already compromised the integrity of the house.

Martin-Stearns House, 367 Front Street (MAN1088)

The Martin-Stearns House (Photograph 32) is located on the east side of Front Street, separated from I-293 by a narrow branch of Black Brook and a wide swath of dense vegetation growing along the banks. The 1 ½-story house was constructed c. 1850 and features a Gothic Revival center cross-gable roof along with Greek Revival

cornerboards and frieze. The house has a granite foundation and clapboard siding. Alterations include new window sash and the recent addition of a front porch east of the center entrance portico. A DOE dated February 10, 1999 (updated April 21, 1999) indicates that the house is individually eligible for the National Register under Criterion C, as the best-preserved example of an Andres Jackson Downing style cottage in the earliest village that was associated the mills. The DOE notes that more information is needed to determine whether the houses along Front Street contribute to an eligible district (see discussion of Front Street under “I-293 Widening” below).

333 Front Street (MAN1089)

This c. 1900 house (Photograph 33) is located on the east side of Front Street, near the Martin-Stearns House at 367 Front Street. Similar to the Martin-Stearns House, Black Brook and the surrounding heavy vegetation serve as a barrier between the property and I-293. The 1 ½-story front gable house has a sidehall entrance, covered by a metal hood. Windows and siding have been replaced with vinyl alternatives, and a DOE dated November 8, 1995 notes that the property was determined not eligible for the National Register. The significance of the house within a district was not evaluated at that time.

Exit 5 Study Area form

In 2000, a project area form was prepared for proposed work at Exit 5 of I-293, consisting of the immediate area of I-293 between the Boston and Maine Railroad bridge on the south and West Bridge Street on the north. The Exit 5 Study Area overlaps the Planning Study area at the south end, including the southern-most millyard buildings. In a DOE dated February 9, 2000, NHDHR determined that the entire project area did not constitute an eligible district, but that certain portions of the project area required further research and evaluation. Specific mention was made of the Amoskeag Millyard Historic District, for which a separate inventory form had been prepared, and which had been determined eligible for National Register listing (see discussion of “Amoskeag Millyard Historic District”).

Granite Street Project Area form

The Granite Street Project Area form consists of Granite Street and Lake Street, between Main Street on the west and Chestnut Street on the east. The west end of the Granite Street project area is located within ¼ mile of the Planning Study area. However, similar to the Exit 5 Study Area form, a DOE dated March 28, 2001 noted that the Granite Street project area had undergone numerous changes and was determined not eligible as a district. Although the area as a whole is not eligible as a district, the DOE identified the eligible Amoskeag Millyard Historic District partially within the boundaries, but did not evaluate the individual eligibility of resources located within the project area.

B. Architecture: Are there any buildings or structures within the project area? If yes, list each building and provide photographs or streetscapes.

Using the City’s of Manchester’s GIS assessor’s digital tax parcel database, a total of 1,118 properties are known to occur within 0.25 miles of the Planning Study area. Due to the preliminary nature of the Planning Study and its associated potential effects, a thorough evaluation of every property within the potential project vicinity was not performed at this time. Based on the results of the windshield survey, **Table 2** contains a preliminary list of properties that appear to be NR-eligible, but not yet inventoried.

C. Archaeology: Does the proposed undertaking involve ground-disturbing activity? If yes, provide the following items.

- (1) Project specific map and/or preliminary site plan that fully describe the project boundaries and areas of proposed excavation.***

Please see **Figure 1**. Areas of proposed excavation have not yet been identified.

- (2) Description of current and previous land use and disturbances.***

The history of land use in the Planning Study area is directly tied to the utilization of the Amoskeag Falls through time. The banks of the Merrimack River in the vicinity of the falls was occupied as early as 10,000 years ago, with early sites recorded on the surrounding terraces, islands in the river, nearby wetlands, and tributaries. (Bunker 2001: 4).⁶ Both fish and game were plentiful in the area, attracting the Penacook tribe who named the area

“Namoskeag,” meaning “place of much fish.” Investigation of these sites indicates consistent use of the area by prehistoric people over time, rather than use of the area as a temporary settlement (Bunker 2001:4).⁶

The falls continued to be the focal point of settlement during the historic (post-contact) period, with the development of the Amoskeag Manufacturing Company dominating land use on both sides of the Merrimack River during 19th and early 20th century. The first European settlers in the area arrived in 1722, and for the next century the falls powered lumber mills and other, smaller water-powered enterprises (Bunker 2001:5; <http://www.city-data.com>).⁸ In the early 19th century, the area was chosen as the site of the country’s first textile mills, taking advantage of the 85-foot drop at Amoskeag Falls. During the first several decades of the company’s operations the manufacturing operations generally took place on the east side of the falls; the mill village that supported the new millyard was located at the head of the falls on the east side of the river, in the Planning Study area where the Exit 6 interchange is currently located. By the mid-19th century, the mill village extended north along Front Street, with several workers cottages extant from this period. The 1892 Hurd Atlas shows that the mill village also encompassed Goffstown and Dunbarton Roads near Front Street. The map notes a hotel, post office, ice house, and schoolhouse on Front Street, and cemetery off of Goffstown Road. The area in the north portion of the Planning Study area remained sparsely settled through the end of the 19th century (Hurd 1892).⁷

Although the Amoskeag Manufacturing Company owned land on both sides of the Merrimack River, the company did not start erecting industrial buildings on the west side of the river until the 1870s (Marlatt et al. 2003:26-28; Mausolf 2012: 3).⁹ A series of cotton storehouses and a bridge to connect the storehouses to the operations on the east side of the river were constructed in 1871, where I-293 is currently located at the base of Foundry Street (the bridge abutments are still extant). The west side millyard was soon expanded during the 1880s to include sheds, a coal house, foundry, planning mills and stables (mostly non-extant), with a cloth storehouse and six-story No. 11 Mill constructed during the early 1890s (currently 195 McGregor Street). Between 1895 and 1920, manufacturing buildings continued to be erected north of West Bridge Street, including the Coolidge Mill along McGregor Street and a number of storehouses closer to the riverbank, in close proximity to the site of I-293 (Mausolf 2012:4).¹⁰ The west millyard structures from this time period are mostly extant. Although the Amoskeag Manufacturing Company disintegrated during the 1930s, former millyard buildings on the west side of the river continued to be used by other manufacturing enterprises into the mid-20th century.

Development during the mid-20th century had a major impact on the millyard and village on the west side of the river. Construction of I-293 and its supporting interchanges resulted in the destruction of the original mill village at the head of the falls. A number of the late-19th century buildings constructed by the Amoskeag Manufacturing Company, located in the west millyard adjacent to the riverbank and south of West Bridge Street, were also removed during construction of the turnpike.

(3) Any available information concerning known or suspected archaeological resources within the project area.

Introduction

The following is a summary of previously-recorded archaeological sites located in the vicinity of the Planning Study area. The New Hampshire Division of Historical Resources (NHDHR) prescribed a five-kilometer buffer within which to identify recorded resources, in order to best understand the broad patterns of prehistoric and historic era development and use of the area, and to assess any potential impacts to the resources that are associated with these settlement patterns.

Methods

A site file search was conducted at the NHDHR offices on July 20th and July 23rd 2012 to identify previously recorded archaeological sites and their associated forms, as well as completed archaeological study reports that are likely to assist in the identification and understanding of archaeologically sensitive areas in the vicinity of the Planning Study area. A table presenting a synopsis of the recordation, contents, and evaluation of the sites is presented as **Table 3**. A total of 45 sites have been recorded in the five-kilometer buffer, including prehistoric, historic, and multi-component sites. By far, the vast majority of the recorded sites (including prehistoric and historic) are located adjacent to, or within close proximity of, the Merrimack River. It should be noted that the largely undeveloped area at the north end of the Planning Study area, where the new Exit 7 and associated

connections are planned, has no recorded archaeological sites in the vicinity. However, this should not be construed as an indication of a lack of archaeological potential; rather, this likely reflects the lack of investigation and survey of the area.

Results

Amoskeag Falls

This major waterway served as a main source of sustenance during the earliest settlement of the area, and the Amoskeag Falls provided the impetus for the continuation of that development during the historic era, when industrial advantages joined transportation benefits of commercial and residential development along the river. A concentration about approximately a dozen prehistoric and multi-component sites have been located in the immediate area of Amoskeag Falls. A number of these sites were originally noted in the 1930s and 1940s, and surveyed in the late 1970s and 1980s by the New Hampshire Archaeological Society (NHAS) as part of the NH State Conservation and Rescue Archaeology Program (SCRAP). Although several of the sites had been written about in publications of the archaeological community, by the time they were formally investigated during the late 20th century most of these sites had been destroyed by development.

Other sites have been recorded more recently (1980s-present) as part of field school programs, CRM project surveys, or independent investigations. These sites include three recommended by the surveyors as eligible for the National Register; one site evaluated as potentially significant; and three sites recommended as not eligible. The sites recommended as eligible include the multi-component site 27-HB-362; the historic site 27-HB-377; and 27-HB-229, a prehistoric site. The form for 27-HB-362 notes that future data recovery from the site has the potential to fill gaps of understanding left by the destruction of other sites previously located near the Amoskeag Falls. A fourth site located in the Amoskeag Falls vicinity has been assessed as potentially significant. The prehistoric site 27-NH-413 was surveyed by the State Archaeologist quite recently, after an artifact find by a landowner. The form notes the “high research” potential of the site, and the National Register eligibility evaluation section notes the site’s eligibility under National Register Criterion D, which recognizes the site’s potential to yield significant information in the future. However, the evaluation section leaves the National Register eligibility column (i.e., where the evaluator chooses between individually eligible; eligible in a district; not eligible; or more information needed) blank and there is no official Determination of Eligibility. Three additional historic sites located near the falls (27-HB-364, 27-HB-367 and 27-HB-368) were recommended not eligible for the National Register. Site 27-HB-364 was considered not eligible due to lack of integrity of the site, while excavations at 27-HB-367 are considered to have exhausted the recovery potential of the site.

(Clyde) “Berry sites”

Nearly half of the recorded sites were surface collected by local historian Clyde F. Berry during the 1930s. The artifacts are kept at the NHAS, and the 1980s and 1990s preparation of forms that are in the NHDHR files appears to be part of an effort to have these sites formally recorded at NHDHR, rather than as part of a systematic, comprehensive effort to update or assess the integrity of the sites. That being said, a few of the Berry sites have been investigated more recently, especially during the 1980s in affiliation with the NHAS and SCRAP, possibly in advance of planned development projects. These recently-investigated sites are noted as likely destroyed, based on reports of future development noted in the forms. Aside from the small number of recorded Berry sites that have been the subject of more recent surveys, no recent information about the Berry sites is available and their integrity has not been assessed. These sites are located throughout the five-kilometer radius, and include some of the Amoskeag Falls area sites.

Additional significant recorded sites

One additional archaeological site has been determined eligible for the National Register by the NHDHR, in a Determination of Eligibility dated November 3, 1992. Site 27-HB-030 is located near the outer edge of the five-kilometer buffer, southwest of the Planning Study area. Although plowing has occurred at this prehistoric site, activity areas within the site are still distinguishable, suggesting the data potential for a site that may be associated with Middle Archaic and Woodland period occupations of the Amoskeag Falls region.

References

¹ The windshield survey encompassed properties on both the east and west sides of the Merrimack River, in order to evaluate potential visual effects to historic properties.

² Documentation of the Amoskeag Millyard Historic District was initially prepared by Lisa Mausolf on a NHDHR area form; this was updated in February 2012 for submission to the National Park Service for National Register certification.

³ The inclusion of Criterion D is due to potential archaeological deposits related to a major canal route that pre-dates construction of the mills.

⁴ Names and construction dates of the millyard buildings from Lisa Mausolf, "Amoskeag Millyard, Manchester, New Hampshire," prepared for NHDHR and National Park Service, February 14, 2012.

⁵ Patty Howard, "Historic Building Relocated," *The Union Leader*, Thursday, January 12, 1984. The article notes that the building has not been definitively proven to be an agent's home, which hampers its eligibility, although the 1974 National Register form cites city directory information that indicates its occupation by mill agents. Further research to clarify the ownership of the house has not been conducted.

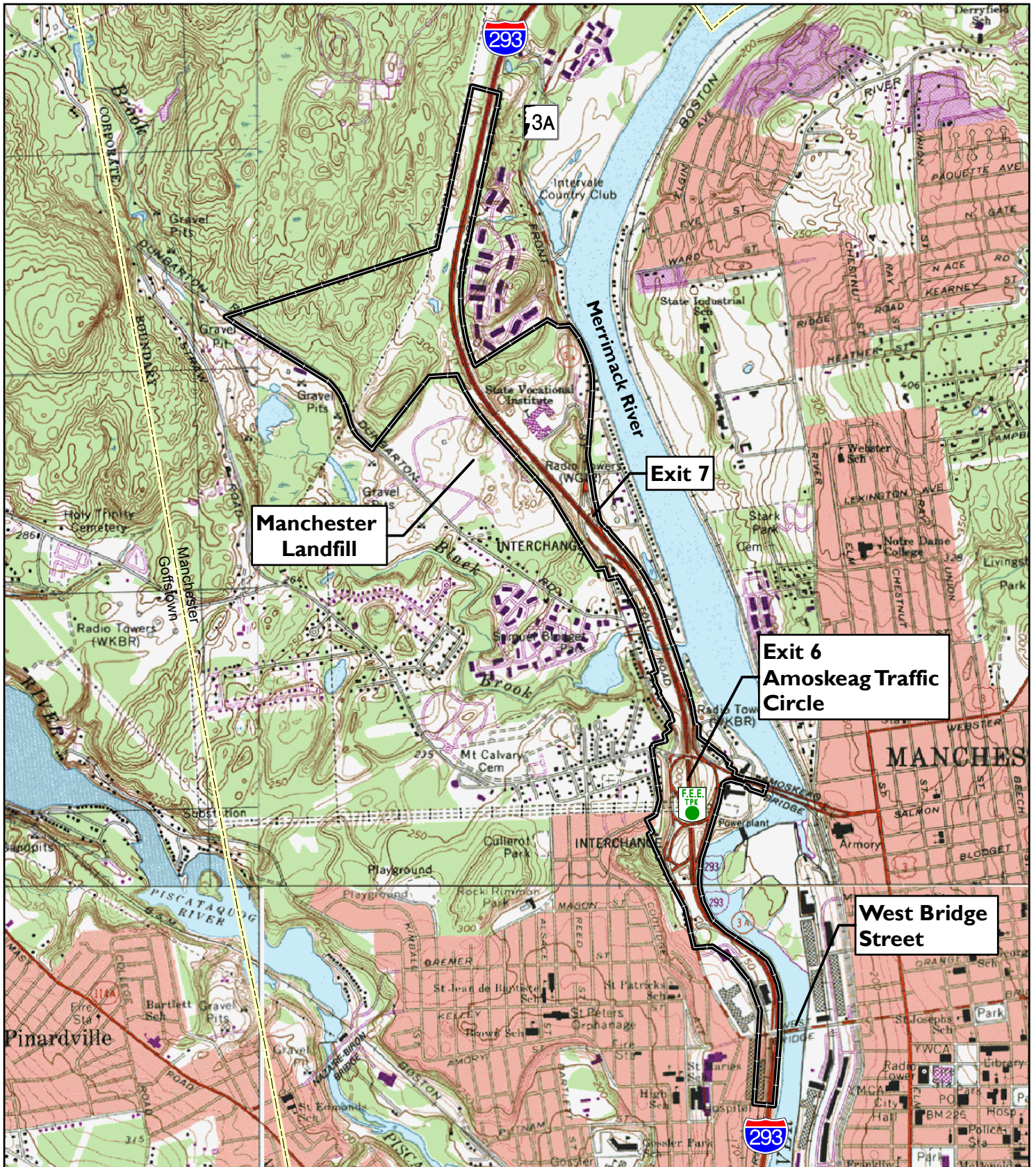
⁶ Bunker, Victoria, "Phase I-A Preliminary Archaeological Reconnaissance, Riverwalk Granite Street Gateway, Riverfront Development Plan." Prepared for CLD Consulting Engineers, Inc., March 2001.

⁷ D.H. Hurd, Atlas of the State of New Hampshire, (Boston: D.H. Hurd and Company, 1892).

⁸ "Manchester – History." <http://www.city-data.com/us-cities/The-Northeast/Manchester-History.html>, accessed November 2012.

⁹ Marlatt, Ellen et al. (Independent Archaeological Consulting, LLC), "Preliminary Archaeological Report: Results of Background Research and Initial Subsurface Testing, I-293 Exit 5 Highway Improvement Project (NJDOT #10622-A), Manchester (Hillsborough County), New Hampshire." Prepared for CLD Consulting Engineers, Inc. and the New Hampshire Department of Transportation, February 2003.

¹⁰ Mausolf, Lisa, "Amoskeag Millyard, Manchester, New Hampshire." Prepared for the New Hampshire Division of Historical Resources, February 2012.



Legend



Approximate Limits of Study Area

Source: USGS Quadrangles: Manchester North, Manchester South, Pinardville, Goffstown.

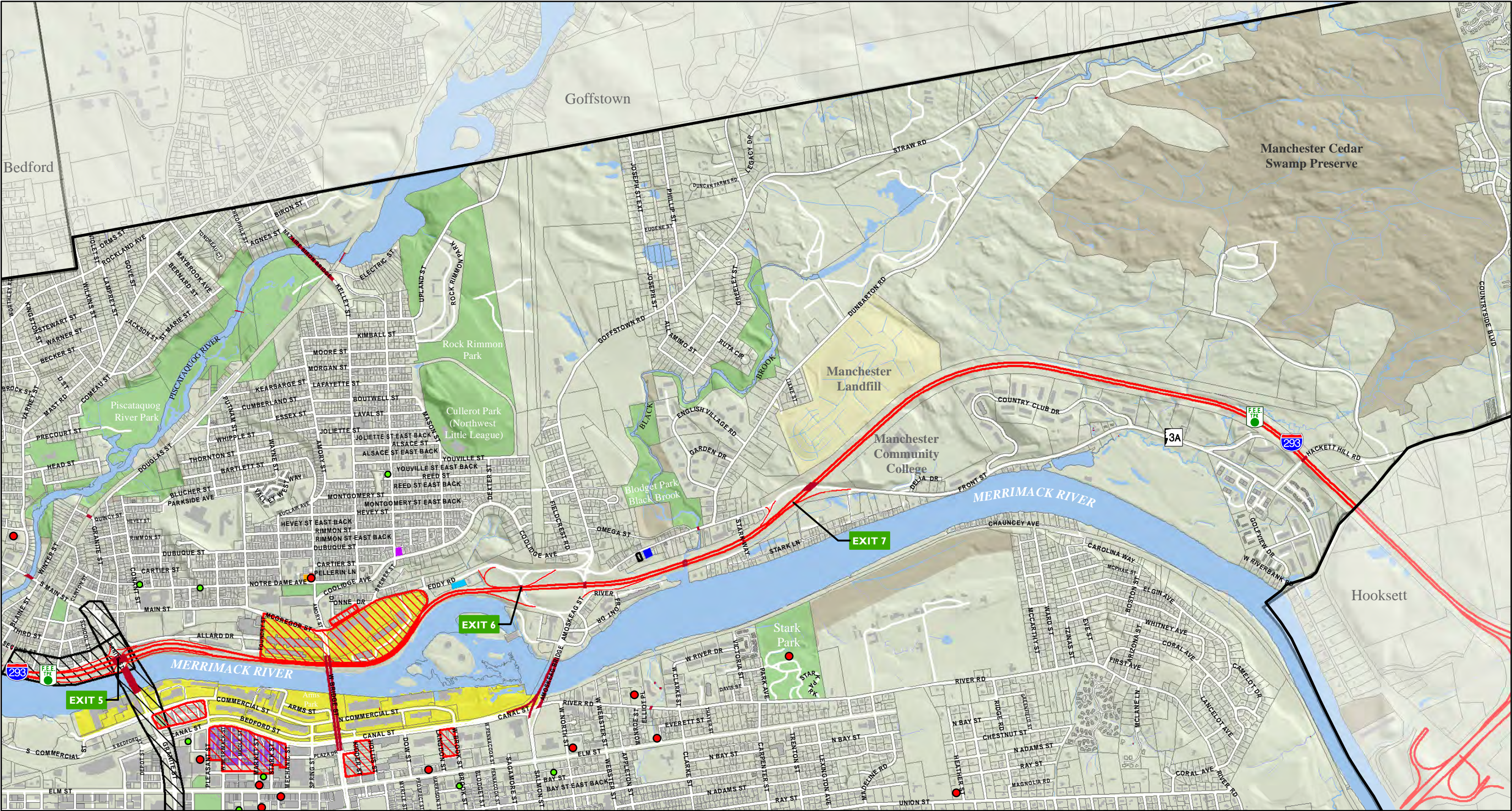


0 2,000 4,000 Feet

VHB Vanasse Hangen Brustlin, Inc.

Figure 1 USGS Project Location Map
Manchester 16099
FEET/I-293, Exit 6-7 Planning Study

City of Manchester, NH

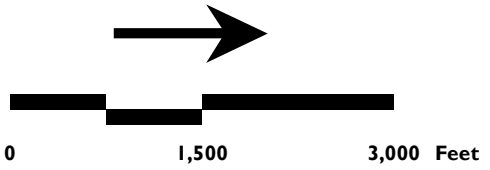


Legend

- Assessor's Tax Parcels
- Building
- Surface Water
- Stream
- City Park Land
- Conservation/Public Land
- Bridge

- Preliminary NHDR Aboveground Research Results
Property Designation Status
- Certified NR District; NR Listed
 - NR Eligible Individually
 - Potentially NR Eligible/SR-Listed
 - Within Potential Eligible District/Potentially Eligible Individually
 - Not NR Eligible
 - NR Form Prepared but Property is not Listed

- City of Manchester Districts Under Zoning Ordinance
- Amoskeag Corporation Housing Historic District
 - Amoskeag Millyard Historic District
- City of Manchester Identified Historic Sites
- NR Listed
 - NR Eligible (Recommended Eligible by Preparer of Documentation)



VHB Vanasse Hangen Brustlin, Inc.

**Manchester I6099
FEET/I-293, Exit 6-7 Planning Study**

**Figure 2 DRAFT
Cultural Resource Areas**

Manchester, NH

New Hampshire
DOT
Department of Transportation

NH DOT Project and Number and/or Project Title: I-293 Exits 6 & 7 Transportation Planning Study (Manchester #16099)				DHR R&C #:
RPR Table 1: PREVIOUSLY SURVEYED OR LISTED PROPERTIES (within ¼ mile)				
NH DHR Property Name / Historic District Name	NH DHR Inventory #	National Register-listed, Eligible, or Not Eligible	Date of Determination (mm/dd/yy)	National Register Criteria of Significance (if applicable)
Amoskeag Millyard Historic District	N/A	Certified NR district	05/31/12	A, C, D; potentially B
333 Front Street	MAN1089	NR Not Eligible indiv.	11/08/95	N/A
Martin-Stearns House, 367 Front Street	MAN1088	NR Eligible indiv.	04/21/99	C
412 Notre Dame Avenue	MAN0292	Within potential Eligible district/ potentially Eligible indiv. (more information needed)	09/09/09	None noted, likely A and C for district
404 Notre Dame Avenue	MAN0290	Within potential NR Eligible district	06/24/09	None noted, likely A and C for district
Manchester Exit 5 Study Area	N/A for area, includes MAN0028, MAN0063, and MAN0029	Not Eligible as NR district, but contains portion of Amoskeag Millyard Historic District within boundaries	02/09/00	N/A
Granite Street Area	MAN0021- MAN0024	Not Eligible as NR district, but contains portion of Amoskeag Millyard Historic District within boundaries	03/28/01	N/A
418-420 Notre Dame Avenue	N/A	NR listed	10/31/96	A and C
Eugene and Marie Quirin House, 250 Coolidge Avenue	MAN1039	Potentially NR Eligible indiv. (more information needed)/ SR-listed	02/08/06	A and C; potentially B

Amoskeag Manufacturing Company Housing Districts	N/A	NR listed	09/23/82	None noted, likely A and C
Amoskeag Federal House, moved to 225 Eddy Road	N/A	NR form prepared but property is not listed	NR form prepared 05/20/74	None noted/ if Eligible, likely A and C

NH DOT Name and Number and/or Project Title: I-293 Exits 6 & 7 Transportation Planning Study (Manchester #16099)		DHR R&C #:
RPR Table 2: PROPERTIES WITHIN THE AREA OF POTENTIAL EFFECT; NOT YET SURVEYED (Full APE has not been established at this stage. Field visit included areas with potential direct and visual effects; properties that appear NR-eligible based on field visit, but not yet inventoried, are included below. All properties within ¼ mile of the Planning Study area submitted on separate table.)		
Resource Identification (property address, parcel number, mile marker etc. with ability to link to mapping and photos)	Estimated Age	Basis for age: owner info., visual, municipal records etc.
Front Street between Dunbarton Road and Goffstown Road (potential district)	c. 1850-1900	Visual estimation
Amoskeag School, 121 River Front Drive	1898	Plaque on building
Amoskeag Hydroelectric Plant (west end of Amoskeag Dam)	1934	Utility company documentation

Table 3: Documented Archaeological Resources within 5 KM of Project Study Area

Site Number	Town	Site Name	Date Recorded	DOE	Description
27-HB-030	Bedford	Bowman Brook Powerline site	1992	Eligible (11/3/92)	Prehistoric site with artifacts dating to the Middle Archaic and Late Woodland periods. Recovered artifacts consist mainly of stone tools, pottery fragments, and fire-cracked rock, likely representing temporary campsites. Although more recent plowing has affected the stratigraphy of the site, the form notes that "site extent and intra-site activity areas can be delineated."
27-HB-058	Manchester	Berry #11	originally recorded 1937, form prepared 1992	N/A	Prehistoric and historic site surveyed in 1933 with artifacts stored at the Manchester Historical Society. The small number of artifacts consists of stone tools, a stone bowl fragment, and a historic glass fragment. Although no further survey was undertaken, the 1992 form notes that the site may remain intact.
27-HB-059	Manchester	Berry #10	originally surveyed 1933, form prepared 1992	N/A	Prehistoric and historic site surveyed in 1933 with artifacts stored at the Manchester Historical Society. The small number of artifacts consists of a stone tool and debitage, along with a historic glass fragment. Although no further survey was undertaken, the 1992 form notes that the site has likely been destroyed by construction.
27-HB-062	Manchester	Berry #19	originally surveyed 1933, form prepared 1992	N/A	Prehistoric and historic site surveyed in 1933 with artifacts stored at the Manchester Historical Society. Artifacts include a small number of lithic artifacts, glass fragments, and a 1916 coin. Although no further survey was undertaken, the 1992 form notes that the site is likely destroyed by recent development.
27-HB-063	Manchester	Berry #22	originally surveyed 1934, form prepared 1992	N/A	Prehistoric site surveyed in 1934, with a small number of lithics recovered. Artifacts are located at the Manchester Historical Society. No further survey has been completed, and the 1992 form does not mention the current potential integrity of the site.
27-HB-064	Manchester	Berry #24	originally surveyed 1935, form prepared 1992 (?)	N/A	Prehistoric site surveyed in 1935, with a small number of lithic tools and ground stone recovered and stored at the Manchester Historical Society. No further survey has been completed, but the 1992 form mentions that the site may be intact.
27-HB-073	Goffstown	Berry #13	originally surveyed 1933, form prepared 1980	N/A	Prehistoric site surveyed in 1933 with artifacts stored at the Manchester Historical Society. Artifacts include a recovery of a number of stone tools, lithic debitage, and pottery fragments. Some historic artifacts were recovered, but not discussed on the form. Two cemeteries are located on the site, and the 1980 form notes that their development has likely disturbed much of the prehistoric site.

Table 3: Documented Archaeological Resources within 5 KM of Project Study Area

Site Number	Town	Site Name	Date Recorded	DOE	Description
27-HB-076	Manchester	Smyth Site	originally recorded 1967-1969, form prepared 1979	N/A	Prehistoric and historic habitation and burial site excavated 1967-1969, with several hundred prehistoric artifacts including lithic tools and debitage, ochre, stone bowl fragments, ceramic fragments, and beads. At least one historic artifact was also recorded. The site was destroyed by construction in 1969, and a number of reports about the site have been published.
27-HB-077	Manchester	Neville Site	originally recorded 1968, form prepared 1979	N/A	This prehistoric habitation site was contiguous with the Smyth Site (27-HB-76), and was destroyed in 1969.
27-HB-078	Manchester	Eddy Site	originally published 1942, recorded 1979, excavated and updated 1984-1985	N/A	This prehistoric habitation site was excavated 1984-1985, with several thousands artifacts recovered including ceramic fragments, lithic debitage, and bone fragments. The site was subsequently destroyed by construction, but detailed information about the site and excavation is on file.
27-HB-079	Manchester	Berry #2	originally surveyed 1933, form prepared 1980	N/A	Prehistoric site surveyed in 1933 with artifacts stored at the Manchester Historical Society. Artifacts include a number of tools, lithic debitage, and ground stone. Although no further survey was undertaken, the 1980 form notes that development has likely destroyed the site in part or entirely.
27-HB-080	Manchester	Berry #15	originally surveyed 1933, form prepared 1980	N/A	Prehistoric site surveyed in 1933 with artifacts stored at the Manchester Historical Society. Artifacts include a large number of pottery sherds and a small number of stone tools. No further survey was undertaken, and the 1980 form notes that the integrity of the site is unknown. The form also notes that the location of this site may be the same as 27-HB-85.
27-HB-081	Manchester	Berry #44	originally surveyed 1936, form prepared 1981	N/A	Prehistoric site surveyed in 1936 with artifacts stored at the Manchester Historical Society. Artifacts include a large number of stone tools, lithic debitage, and ceramic sherds. No further survey was undertaken, but the 1981 form notes that the area has been not been subject to development, and therefore may retain a good deal of integrity.
27-HB-082	Manchester	Lavoie Site	1985	N/A	This prehistoric site is represented by one quartz flake; 19th and 20th century fill was also excavated but not discussed on the form. The 1985 form notes that undisturbed portions of the site may be extant.
27-HB-083	Manchester	Jacques Site (part of Berry #20)	originally surveyed 1933, excavated and form prepared 1985	N/A	Disturbed prehistoric and historic site, originally surveyed in 1933 with more recent excavations during the 1980s. Artifacts include lithic tools and debitage and prehistoric ceramic fragments, as well as historic nails, glass, ceramics, metal, and brick fragments. The 1985 form notes that the site has been destroyed by construction.

Table 3: Documented Archaeological Resources within 5 KM of Project Study Area

Site Number	Town	Site Name	Date Recorded	DOE	Description
27-HB-084	Manchester	Hermsdorf Site (part of Berry #20)	originally surveyed 1933, excavated and form prepared 1985	N/A	Prehistoric site originally surveyed in 1933 with further investigations in the 1980s. Artifacts include a number of stone tools and debitage artifacts. Some historic artifacts were excavated, but were not discussed in the form. The 1985 form notes that the site has likely been destroyed.
27-HB-085	Manchester	North River Road Site (part of Berry #15)	originally surveyed 1933, excavated and form prepared 1985	N/A	Prehistoric and historic site originally surveyed in 1933, with further investigation during the 1980s. Recovered artifacts include lithic tools and debitage; intact historic deposits containing glass, metal and historic ceramic sherds were also located during the 1980s excavations. Some ceramics diagnostic to the Middle Woodland period. The form notes that the site has been destroyed.
27-HB-093	Bedford	Berry #69	originally surveyed 1938, form prepared 1980	N/A	Prehistoric site surveyed in 1935; only one ceramic sherd was recovered and is stored at the Manchester Historical Society. No further survey has been completed, and the form does not mention the current potential integrity of the site.
27-HB-106	Manchester	Stark Fort	1975	N/A	Excavations at the site of the fort recovered no artifacts, and no further work was recommended.
27-HB-113	Manchester	N/A	1979	N/A	Form has little information, but indicates that the site is prehistoric. The form also notes that most of the site was destroyed during construction of a sewer line.
27-HB-134	Manchester	Berry #30	originally surveyed 1934, form prepared 1980	N/A	Prehistoric site with artifacts stored at the Manchester Historical Society. Two lithic flakes were recovered. No further survey has been completed, and the 1980 form does not mention the potential integrity of the site.
27-HB-137	Manchester	Berry #35	originally surveyed 1935, form prepared 1980	N/A	Prehistoric and historic site surveyed in 1935 with artifacts stored at the Manchester Historical Society. Artifacts include a small number of lithic artifacts, along with historic material such as glass fragments, whiteware, slate, and bone. No further survey has been completed, and the 1980 form does not mention the potential integrity of the site.
27-HB-142	Manchester	Berry #50	originally surveyed 1936, form prepared 1980	N/A	This historic site consists of a cemetery that is still extant. Recovered artifacts include glass and slate fragments, stored at the Manchester Historical Society.
27-HB-143	Manchester	Berry #55	originally surveyed 1937, form prepared 1980	N/A	This historic site was surveyed in 1937 with artifacts stored at the Manchester Historical Society. A small quantity of ceramic sherds, glass fragments, and slate fragments were recovered. The 1980 form does not mention the potential integrity of the site.

Table 3: Documented Archaeological Resources within 5 KM of Project Study Area

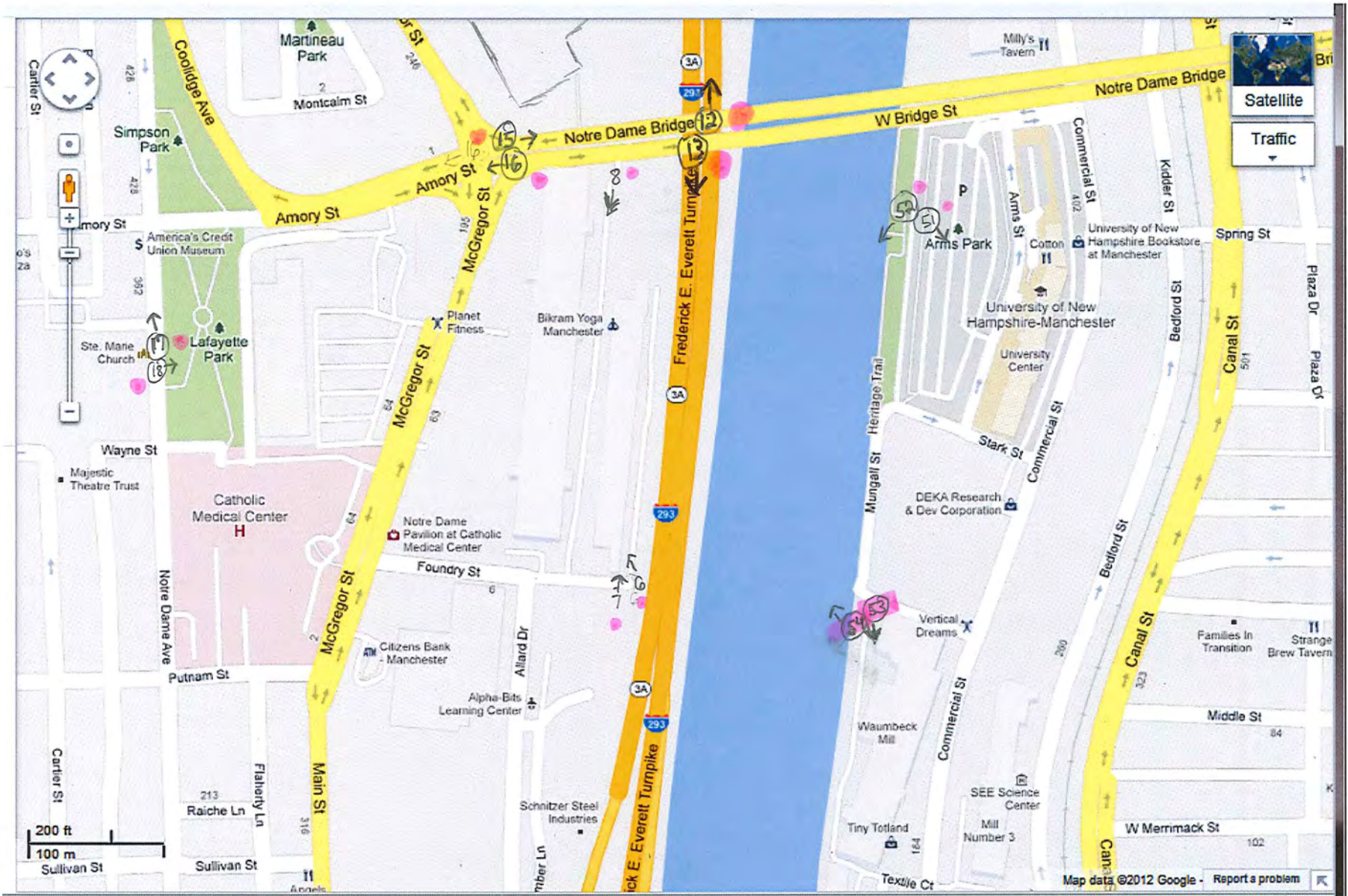
Site Number	Town	Site Name	Date Recorded	DOE	Description
27-HB-148	Manchester	Berry #63	originally surveyed 1937, form prepared 1980	N/A	Prehistoric and historic site surveyed in 1937 with artifacts stored at the Manchester Historical Society. Artifacts include one prehistoric ceramic sherd and historic glass fragments. The 1980 form does not mention the potential integrity of the site.
27-HB-150	Manchester	Berry #70	originally surveyed 1938, form prepared 1980	N/A	Prehistoric and historic site surveyed in 1938 with artifacts stored at the Manchester Historical Society. Artifacts include a small number of prehistoric lithics and pottery fragments, as well as glass fragments. The 1980 form does not mention the potential integrity of the site.
27-HB-153	Bedford	Berry #76	originally surveyed 1939, form prepared 1980	N/A	Prehistoric and historic site surveyed in 1938 with artifacts stored at the Manchester Historical Society. Artifacts include a number of prehistoric lithic tools and debitage, as well as historic slate and glass fragments. The 1980 form does not mention the potential integrity of the site.
27-HB-170	Bedford	N/A	1982	N/A	This prehistoric site was likely a temporary work site, with recovery described as a "scatter of chert flakes."
27-HB-187	Goffstown	N/A	1986	N/A	This historic site consists of stone foundations for a 19th century schoolhouse. No artifacts were recovered during testing.
27-HB-202	Bedford	N/A	1981	N/A	A single lithic flake was found during construction in the area. Testing indicated that stratigraphy was intact, but as the site was not threatened, large-scale excavation to determine site boundaries was not completed.
27-HB-229	Manchester	N/A	1982-1983	The site was recommended as eligible for the National Register under Criterion D; no DOE on file	This prehistoric site is represented by a number of lithic debitage, a pottery sherd dating to the Early Woodland period, and fire-cracked rock. Construction has disturbed the upper layers of the site, but subsoil below this fill remains intact.
27-HB-347	Manchester	N/A	2005	N/A	This historic site consists of an abandoned portion of a cemetery. There is little information on the form, which notes that the investigation consisted of non-recovery survey and mapping.
27-HB-362	Manchester	Neville II Site	2005-2010	The site was recommended as eligible for National Register listing under Criterion D; no DOE on file	This site has both prehistoric and historic components, with intact deposits present. Archaeological potential for the site is noted as significant on the form, as other nearby sites have been destroyed.
27-HB-364	Manchester	N/A	2005	The site was recommended not eligible for National Register; no DOE on file	This historic site is the former location of one of the Amoskeag Manufacturing Company buildings; portions of some of the walls are extant. A non-recovery survey and photo-documentation of the site took place in 2005. The form notes that potential for data recovery is minimal due to disturbance of the site.

Table 3: Documented Archaeological Resources within 5 KM of Project Study Area

Site Number	Town	Site Name	Date Recorded	DOE	Description
27-HB-365	Manchester	N/A	2005	N/A	This historic site is the former location of one of the Amoskeag Manufacturing Company buildings. No artifacts were collected or recorded; the site was photo-documented in April of 2005. The form notes that potential for data recovery is minimal due to disturbance of the site.
27-HB-366	Manchester	N/A	2002-2005	N/A	Historic site with a large number of artifacts, including a small quantity of prehistoric artifacts. Asbestos tile was found during excavation, and assessment of the site was noted as delayed until remediation was complete.
27-HB-367	Manchester	N/A	2005	The site was recommended not eligible for the National Register; no DOE on file	This historic site consists of a large quantity of domestic refuse artifacts, primarily associated with late 19th and early 20th century mill worker housing. Artifacts also included the secondary deposit of a small quantity of prehistoric points and lithic debitage. The form recommends that excavation has exhausted data potential for the site.
27-HB-368	Manchester	N/A	2004-2005	The site was recommended not eligible for the National Register; no DOE on file	Historic site consisting of domestic refuse from the mid-19th century and 20th century, associated with mill worker housing. Several thousand artifacts were recovered, including bottle fragments, ceramic sherds, and faunal remains. Despite the number of artifacts recovered, the form notes that the site retains little integrity.
27-HB-377	Manchester	N/A	2005	The site was recommended as eligible for the National Register as part of a series of locks and canals along the Merrimack River	This historic site consists of a canal associated with the Amoskeag Manufacturing Company. A portion of the canal is still extant, though some modern refuse in the canal was noted on the form.
27-HB-407	Manchester	N/A	2008-2009	N/A	Minimal documentation form (prehistoric), no information available.
27-HB-408	Manchester	N/A	2008-2009	N/A	Minimal documentation form (historic), no information available.
27-HB-409	Manchester	N/A	2008-2009	N/A	Minimal documentation form (historic), no information available.
27-HB-411	Manchester	N/A	2010	N/A	Prehistoric site with recovery of a small quantity of non-diagnostic lithic debitage. The form notes that a portion of the site was destroyed during construction of a nearby building and parking lot, but the extent of the site was not determined; the site was not assessed for significance.

Table 3: Documented Archaeological Resources within 5 KM of Project Study Area

Site Number	Town	Site Name	Date Recorded	DOE	Description
27-HB-413	Manchester	Mercier Site	2011	The form notes the high research potential of the site and specifies Criterion D (significant information potential) in the evaluation section, though the individual eligibility column was not completed. No DOE on file.	Prehistoric site with artifact recovery including a Dalton point and Early Woodland pottery, along with a small scatter of lithic debitage and pottery sherds. Investigation was limited to a small garden plot, but the form notes that the site likely extends further than the study area.
27-HB-420	Manchester	N/A	2008-2009	N/A	Minimal documentation form (period unknown), no information available.







Satellite

Traffic

US Army
Dept

Public
Service of NH

Amoskeag
River Walk

La Quinta Inn &
Suites Manchester
Amoskeag
Fishways

Merrimack River

Frederick E. Everett Turnpike

Eddy Rd
174

Sherry's
Management
Group

Hot Stone
Pizzeria



je Ave

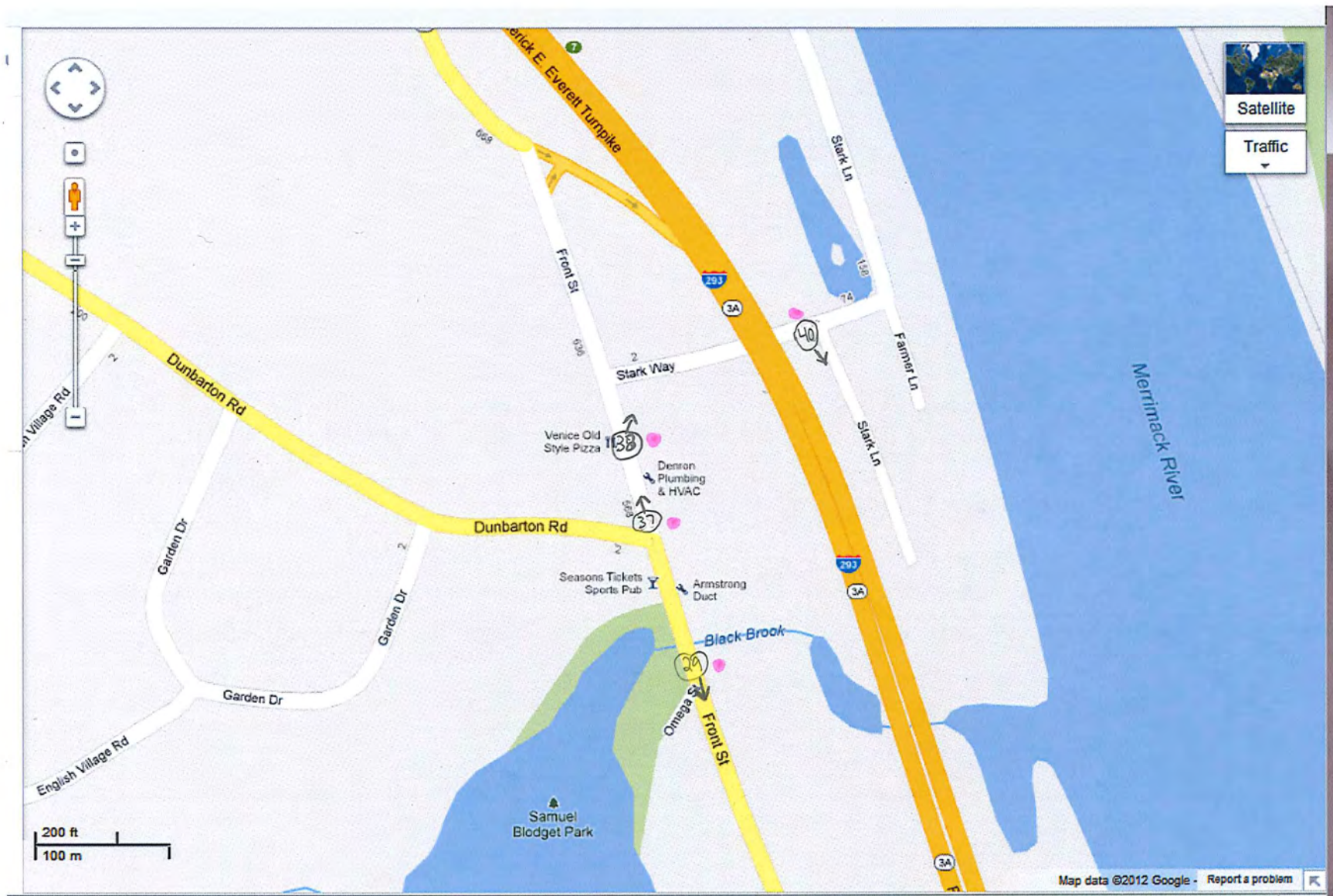
ason St

200 ft
100 m

Coolid

Map data ©2012 Google - [Edit in Google Map Maker](#) [Report a problem](#)

Clear



Satellite

Traffic

Merrimack River



200 ft

100 m

Manchester Community College

New Hampshire Technical College Learning Resource Center

44

45

41

42

39

Front St

3A

Frederick E. Everett Turnpike

293

Frederick E. Everett Turnpike

293

Sunk Ln

Stark Ln

Stark Ln



Satellite

Traffic

Merrimack River

Country Club

Front St

Country Club Dr

Country Club Dr

Country Club Dr

Country Club Dr

Frederick E. Everett Turnpike

293

293

293

Frederick E. Ev

Front St

Front St

Deia Dr

46

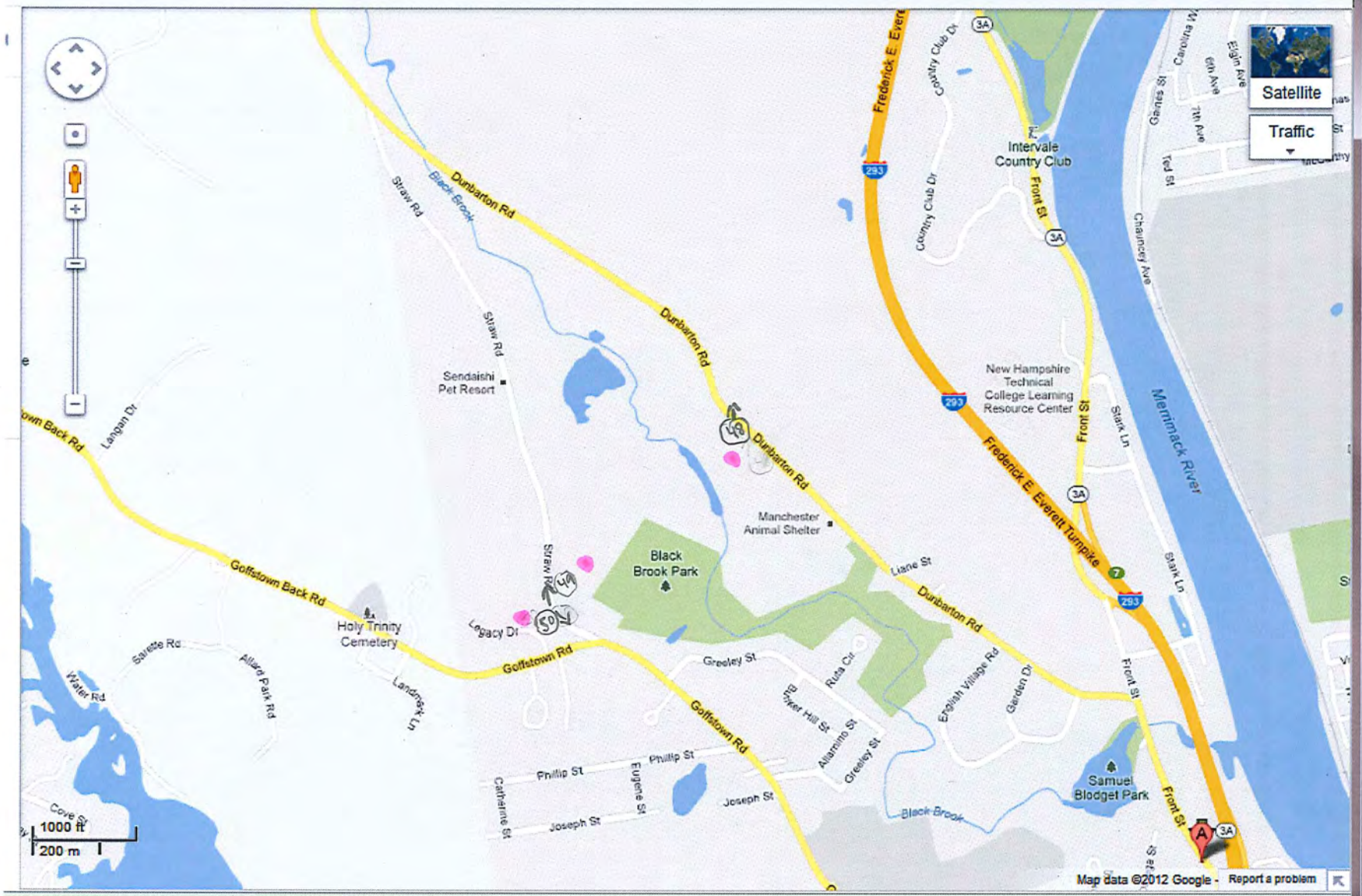
45

47



200 ft
100 m

Map data ©2012 Google - [Edit in Google Map Maker](#) [Report a problem](#)





1. I-293 Planning Study, Manchester, NH. View of 95 Eddy Road (left, American Cotton Duck) and 93 Eddy Road (right, Stark Mills Cotton Storehouse), southwest elevations. Photographer facing SE, October 2012.



2. I-293 Planning Study, Manchester, NH. View of 93 Eddy Road (Stark Mills Cotton Storehouse), southeast elevation. Photographer facing N, October 2012.



3. I-293 Planning Study, Manchester, NH. View of 93 Eddy Road (Stark Mills Cotton Storehouse), northeast elevation. Photographer facing NW, October 2012.



4. I-293 Planning Study, Manchester, NH. View of 95 Eddy Road (American Cotton Duck), northeast elevation. Photographer facing N, October 2012.



5. I-293 Planning Study, Manchester, NH. View of Valve House north of 95 Eddy Road, southeast and southwest elevations, I-293 visible behind structure. Photographer facing NE, October 2012.



6. I-293 Planning Study, Manchester, NH. View of 195 McGregor Street (Mill #12 Annex, Cloth Room), east elevation along I-293. Photographer facing NW, October 2012.



7. I-293 Planning Study, Manchester, NH. View of 195 McGregor Street (Mill #12 Annex, Cloth Room), east elevation along I-293. Photographer facing N, October 2012.



8. I-293 Planning Study, Manchester, NH. View of 195 McGregor Street (Mill #11), east elevation overlooking Mill#12 Annex and I-293. Photographer facing E, October 2012.



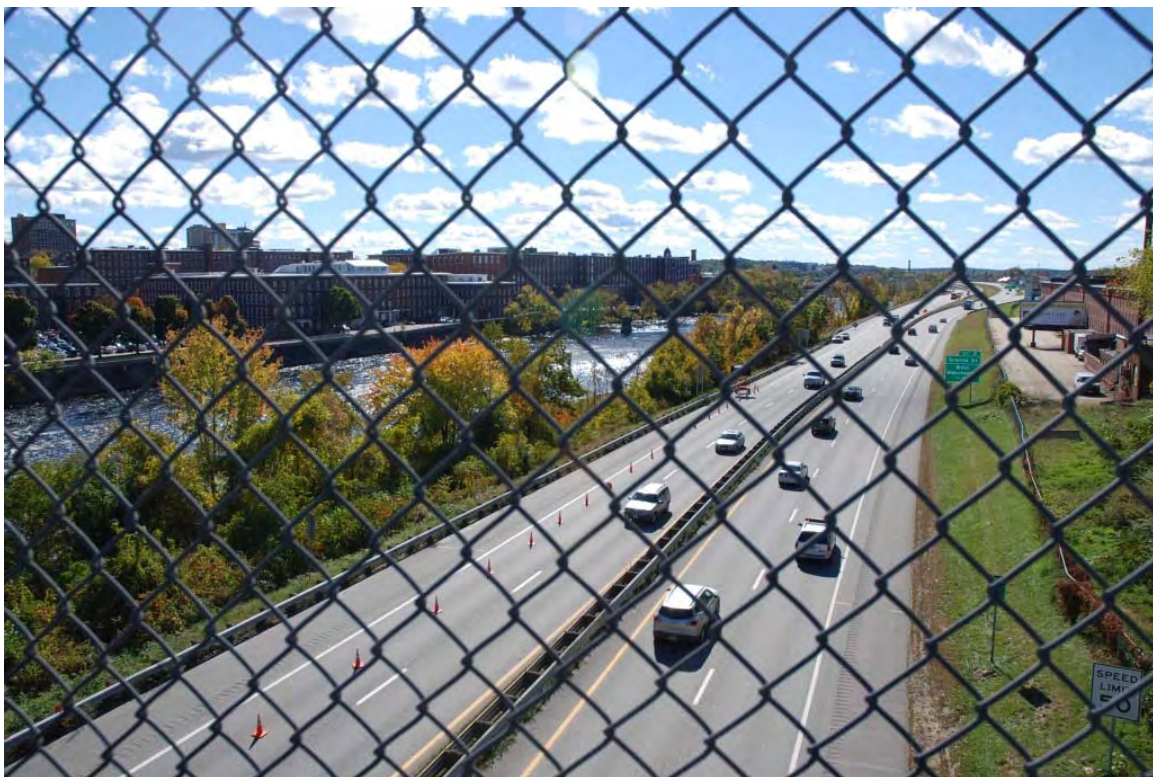
9. I-293 Planning Study, Manchester, NH. View of 97 Eddy Road (Cotton Storehouses), northeast elevation. Photographer facing W, October 2012.



10. I-293 Planning Study, Manchester, NH. View of 99 Eddy Road (Coca-Cola Warehouse, non-contributing due to age), NW elevation. Photographer facing S, October 2012.



11. I-293 Planning Study, Manchester, NH. View of I-293 from northwest corner of Amoskeag Millyard Historic District. Photographer facing E, October 2012.



12. I-293 Planning Study, Manchester, NH. Overview of Planning Study area from Notre Dame Bridge on Bridge Street, 195 McGregor Street in background right. Photographer facing S, October 2012.



13. I-293 Planning Study, Manchester, NH. Overview of Planning Study area from Notre Dame Bridge on Bridge Street, 93 and 95 Eddy Road on left. Photographer facing N, October 2012.



14. I-293 Planning Study, Manchester, NH. View of District E of the Amoskeag Manufacturing Company Housing District, McGregor Street. Photographer facing S, October 2012.



15. I-293 Planning Study, Manchester, NH. View of Notre Dame Bridge on Bridge Street (I-293 overpass) from intersection of McGregor Street and Armory Street. Photographer facing SE, October 2012.



16. I-293 Planning Study, Manchester, NH. View toward McGregorville/ Notre Dame area from intersection of McGregor Street and Armory Street. Photographer facing W, October 2012.



17. I-293 Planning Study, Manchester, NH. View of Notre Dame Avenue streetscape, 404 Notre Dame Avenue (MAN0290) in foreground, 418-420 Notre Dame Avenue (NR listed) in background center (MAN0920 not visible). Photographer facing NW, October 2012.



18. I-293 Planning Study, Manchester, NH. View toward I-293 from Notre Dame Avenue, Lafayette Park in foreground and millyard in background. Photographer facing E, October 2012.



19. I-293 Planning Study, Manchester, NH. View of Eddy Road Streetscape, south of Exit 6 interchange. Photographer facing NW, October 2012.



20. I-293 Planning Study, Manchester, NH. View of 225 Eddy Road (“Amoskeag Federal House”), southeast façade. Photographer facing N, October 2012.



21. I-293 Planning Study, Manchester, NH. View of 225 Eddy Road (“Amoskeag Federal House”), northwest elevation. Photographer facing SE, October 2012.



22. I-293 Planning Study, Manchester, NH. View of Coolidge Avenue streetscape from intersection of Coolidge Avenue and Fieldcrest Road, October 2012.



23. I-293 Planning Study, Manchester, NH. View of 796 Coolidge Avenue at the intersection of Goffstown Road and Coolidge Avenue. Photographer facing SW, October 2012.



24. I-293 Planning Study, Manchester, NH. View of Goffstown Road streetscape from intersection of Goffstown Road and Coolidge Avenue. Photographer facing SW, October 2012.



25. I-293 Planning Study, Manchester, NH. View toward Exit 6 interchange from intersection of Goffstown Road and Coolidge Avenue. Photographer facing SE, October 2012.



26. I-293 Planning Study, Manchester, NH. View of Amoskeag Hydroelectric Plant off Fletcher Road, east of Exit 6 interchange. Photographer facing S, October 2012.



27. I-293 Planning Study, Manchester, NH. View of River Front Drive streetscape, Exit 6 interchange just out of frame on left. Photographer facing NW, October 2012.



28. I-293 Planning Study, Manchester, NH. View of Amoskeag School, 121 River Front Drive. Photographer facing N, October 2012.



29. I-293 Planning Study, Manchester, NH. View of Front Streetscape from intersection of Front Street and Omega Street. Photographer facing SE, October 2012.



30. I-293 Planning Study, Manchester, NH. View of Front Streetscape. Photographer facing SE, October 2012.



31. I-293 Planning Study, Manchester, NH. View of Front Streetscape. Photographer facing SE, October 2012.



32. I-293 Planning Study, Manchester, NH. View of Martin Stearns House, 367 Front Street (MAN1088), southeast façade. Photographer facing N, October 2012.



33. I-293 Planning Study, Manchester, NH. View of 333 Front Street (MAN1089), southwest façade. Photographer facing NE, October 2012.



34. I-293 Planning Study, Manchester, NH. View of Front Streetscape. Photographer facing SE, October 2012.



35. I-293 Planning Study, Manchester, NH. View of Front Streetscape. Photographer facing NW, October 2012.



36. I-293 Planning Study, Manchester, NH. View of 272 Front Street, northeast façade. Photographer facing SW, October 2012.



37. I-293 Planning Study, Manchester, NH. View of along Front Street from intersection of Front Street and Dunbarton Road. Photographer facing N, October 2012.



38. I-293 Planning Study, Manchester, NH. View of 575 Front Street, west façade and south elevation. Photographer facing NE, October 2012.



39. I-293 Planning Study, Manchester, NH. View of Stark Lane streetscape. Photographer facing NE, October 2012.



40. I-293 Planning Study, Manchester, NH. View of Stark Lane streetscape. Photographer facing SE, October 2012.



41. I-293 Planning Study, Manchester, NH. View of Manchester Community College campus. Photographer facing W, October 2012.



42. I-293 Planning Study, Manchester, NH. View of Manchester Community College campus, toward I-293 (behind trees on left). Photographer facing SW, October 2012.



43. I-293 Planning Study, Manchester, NH. View of new warehouse buildings on Dale Road, north of Manchester Community College campus buildings. Photographer facing NW, October 2012.



44. I-293 Planning Study, Manchester, NH. View along Delia Drive, west of Front Street near Manchester Community College campus. Photographer facing SE, October 2012.



45. I-293 Planning Study, Manchester, NH. View of condominium buildings north of Front Street at Country Club Drive, southeast façade. Photographer facing SE, October 2012.



46. I-293 Planning Study, Manchester, NH. View of Front Streetscape from intersection of Front Road and Country Club Drive. Photographer facing N, October 2012.



47. I-293 Planning Study, Manchester, NH. View (representative) of Country Club Drive condominium development, south side. Photographer facing NE, October 2012.



48. I-293 Planning Study, Manchester, NH. View along Dunbarton Road in approximate location of potential new Exit 7 connection. Photographer facing N, October 2012.



49. I-293 Planning Study, Manchester, NH. View along Straw Road near intersection of Straw Road and Goffstown Road, in location of potential new Exit 7 connection. Photographer facing WN October 2012.



50. I-293 Planning Study, Manchester, NH. View toward intersection of Straw Road and Goffstown Road from Straw Road, in location of potential new Exit 7 connection. Photographer facing SE, October 2012.



51. I-293 Planning Study, Manchester, NH. View of Amoskeag Millyard Historic District east of the Merrimack River, 400 Commercial Street (left, Machine Shop Buildings) and 340 Commercial Street (right, Mill #8, Central Division). Photographer facing SE, October 2012.



52. I-293 Planning Study, Manchester, NH. View across Merrimack River to I-293 from Amoskeag Millyard Historic District Riverwalk on east side of Merrimack River. Photographer facing SW, October 2012.



53. I-293 Planning Study, Manchester, NH. View of Amoskeag Millyard Historic District on east side of Merrimack River, 250 Commercial Street (Amoskeag Mills #5, Waumbec). Photographer facing S, October 2012.



54. I-293 Planning Study, Manchester, NH. View across Merrimack River to I-293 from Amoskeag Millyard Historic District, 250 Commercial Street (Amoskeag Mills #5, Waumbec). 195 McGregor Street (Mill#12 Annex, Cloth Room) in background. Photographer facing NW, October 2012.