Brown Farm-Watchaug Meadows, East Longmeadow, MA

Existing Conditions Assessment and Site Development Concepts

October 2011

Prepared by the
Pioneer Valley Planning Commission
for the Town of East Longmeadow

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Acknowledgements

This study is a first step toward understanding the Brown Farm-Watchaug Meadows site and its potential for meeting recreational and housing needs within the Town of East Longmeadow. Funding for this study was provided through the Town's Community Preservation Act Committee based on a request by the Board of Selectmen.

In the work of this study, staff from the Pioneer Valley Planning Commission received steady and informed guidance from an advisory committee of town officials. Special thanks to the members of the committee who were:

James Driscoll, Selectman and Board of Health Chairman
Sean Kelley, Department of Public Works Special Projects Manager
George Kingston, Planning Board and Conservation Commission Member
Carolyn Porter, Director of Recreation
Nick Breault, Town Administrator

This study was further informed by more than 30 interested residents who attended the public meeting on September 19, 2011. Thank you to all who voiced ideas to help this study better reflect the collective hopes of the Town for the Brown Farm-Watchaug Meadows site.

Pioneer Valley Planning Commission staff for this study were Patty Gambarini, Senior Environmental Planner, Danielle McKahn, Land Use Planner, and Jim Scace, Senior Planner/GIS Specialist in consultation with Anne Capra, Principal Planner, and Jayne Armington, Planning Specialist.

Executive Summary

Over a period of 30 years, the Town of East Longmeadow has acquired 238 acres in an area of Town that has been referred to as "Watchaug Meadows." The most recent acquisition, the Koch and Brown Farm properties, prompted the Board of Selectmen to begin thinking about whether the area might be developed in order to meet some of the Town's needs for affordable housing for seniors, and additional passive and active recreation facilities. With funding from the Community Preservation Act, the Town hired the Pioneer Valley Planning Commission (PVPC) to evaluate the limitations and possibilities of the area for addressing these needs.

PVPC's work has been four-fold: help define the Town's needs, inventory and assess site conditions, identify possible locations for active and passive recreation facilities and affordable senior housing, and produce conceptual design development alternatives as a springboard for further discussion within the Town. This study refers to the collection of Town properties as the Brown Farm-Watchaug Meadows.

Based on PVPC's inventory and analysis of natural and cultural resource factors, 74 percent of the site is covered by wetlands and floodplains. The area also serves as a stormwater basin with delivery of storm flow from the surrounding residential neighborhoods through at least 21 outfalls. The only sizable contiguous area that is not located in wetlands or floodplains is some 30 acres at the former Brown Farm on Hampden Road. This upland area could possibly accommodate senior housing and several athletic fields, depending on how the development is configured.

It is important to note that PVPC's assessment is based on discussions with Project Advisory Team members, several site visits, and on mapping from MassGIS and the Town. Follow up wetlands and soil surveys will be essential to verifying conditions and suitability of the former Brown Farm for athletic fields or senior affordable housing. The area at the former Brown Farm also seems to provide the only potential location for motor vehicle access and egress, though this will also require further study due to a small hill that impairs visibility to the west when exiting the site.

While much of the Town's property at Brown Farm-Watchaug Meadows is not suitable for development, expanding on the existing trail system to create an extended network of walking paths would greatly enhance passive recreation opportunities. These trails may be accessed at several possible locations along the periphery of the site, including the Brown Farm at Hampden Road. Providing limited trailhead parking may be desireable, with the possible exception of the Fernwood Conservation Area trailhead at the end of Fern Glen Road where street parking may be adequate. In improving the trail network and trail access to Brown Farm-Watchaug Meadows, it will be important to think about how to better connect neighborhoods, schools, and surrounding conservation areas to this recreational asset through sidewalks and signs.

The four site development concepts for Brown Farm-Watchaug Meadows all include an extended trail network as part of the plan. Where the concepts differ is in the configuration and density of possible senior housing and athletic fields at the Brown Farm site. The fourth concept, based on comments from the public meeting, includes only trails with no housing or formal athletic fields.

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Section 1 - Introduction

Watchaug Meadows is an extensive area of hardwood swamp and forest located east of the Town center and bounded by Somers and Hampden roads to the south and intersected by Porter Road to the north. To the west, the closest road is Kibbe Road, and to the east, the closest roads are Fernwood Drive and Stonehill Road. Watchaug Meadows is one of the largest unbroken open spaces in the Town of East Longmeadow. It covers some 430 acres some of which are Town owned and the rest of which is in private hands. This assessment focuses on the 12 parcels owned by the Town encompassing some 283 acres just north of Hampden Road. (See Map 1.1 below.)

Map 1.1: Location of Watchaug Meadows, Hampden Road Site

With the recent acquisition of the former Brown Farm and Koch properties at the southern end of the site, the Board of Selectmen asked the Pioneer Valley Planning Commission (PVPC) to help evaluate the conditions of the entire 283-acre parcel and to identify possible locations for development of active and passive recreational facilities and affordable senior housing, while also meeting the Town's conservation goals.

Scope of Work

For the project, PVPC has been working in consultation with a Project Advisory Team of Town officials composed of: Selectman and Board of Health Chairman James Driscoll; Department of Public Works Special Projects Manager Sean Kelley; Planning Board and Conservation Commission member George Kingston; Director of Recreation Carolyn Porter; and Town Administrator Nick Breault.

To understand the limitations and possibilities of the Brown Farm-Watchaug Meadows site, PVPC's project work has entailed the following:

- Work with the Project Advisory Team to define the Town's needs and goals for the site
- Inventory and assess site conditions and context of the site
- Identify possible locations for active and passive recreation facilities and affordable senior housing while also attending to conservation values
- Meet with the Project Advisory Team to describe and discuss findings of the site assessment
- Define conceptual design development alternatives and identify how green site development could be integrated into development plans
- Identify next steps and recommendations
- Conduct a public forum to describe the work of this study, and based on public input, produce one additional conceptual design development alternative

Area of Study

The area of study involves a total of 12 parcels that came into Town ownership over the past 30 years. Three of these parcels were essentially left over from residential development projects as undevelopable land and donated to the Town. These include the Stevens Conservation Area, the Craven Conservation Area, and the Campbell Conservation Area. Two properties were taken by tax title and the Brown Farm and Koch properties were purchased by the Town in 2009 (See Table 1.1 below for a fuller description of these properties.) According to the Massachusetts Division of Conservation Services, none of the parcels have Conservation Restrictions as defined by M.G.L. c. 184, s. 31-33.

Table 1.1: Town Owned Parcels at Watchaug Meadows

Property name	Acreage (rounded)	Description
Koch property	31 acres	Consists of wooded wetlands. The tributary to Watchaug Brook flows through this property.
Brown Farm property	45 acres	Former home of Mountain View Stables, the site includes a 14,000 square foot stable building, a former paddock, riding ring, and a gravel driveway. Former lawn area is

Property name	Acreage (rounded)	Description
		now fairly overgrown. The rest of the site is wooded with mature trees, several stone walls, and several paths (now somewhat overgrown) that traverse the parcel.
Stevens Conservation Area*	21 acres	Donated by the family of Fred Stevens, this property consists of land between Rural Lane, Mayflower and Puritan, on the one side and the Overbrook Road development on the other. It was donated in the 1990s and is leftover land from developing the aforementioned streets.
Craven Conservation Area*	23 acres	Donated by Mrs. Mildred Craven in 1996 in memory of her husband, who was a former police chief in East Longmeadow. The property consists of land that could not be developed due to wetlands and was donated at the time her other property on Parker Street was developed into house lots.
Hoover Quarry/Fernwood Conservation Area*	70 acres	Area was acquired by tax title in 1979. It consists of the original quarry and the haul road that connected Parker Street and Kibbe Road. Hoover also includes the parcel labeled "Fernwood." Area was originally called Hines Quarry after the owner Mr. William Hines.
Campbell Conservation Area*	72 acres	Donated by Donald Campbell of Brodeur-Campbell Fence, the developer of Campbell Estates on Kibbe Road, this area consists of undevelopable land. It was donated in the early 2000s.
Other	21 acres	Two parcels acquired by tax title and located just north of the former Brown Farm and Koch properties.
Total Acreage	283 acres	

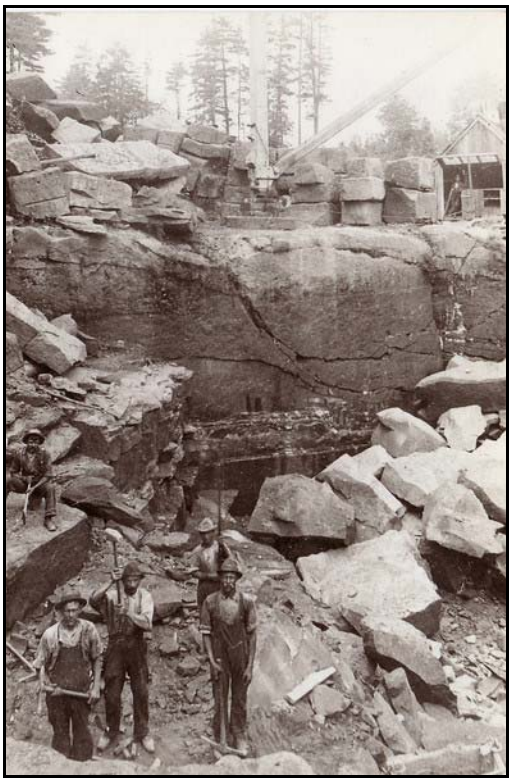
Some Historical Notes

▪ East Longmeadow was famous for its brownstone and redstone quarries, which in the early days helped provide a livelihood for townspeople. These quarries once furnished stone for the U.S. Armory in Springfield and many public buildings and colleges, including Mt. Holyoke, Smith, Yale, Wesleyan, and Princeton. (*OSRP 2000*).

▪ It is estimated that the quarry near the area of the pond at Watchaug Meadows began its start up operations around 1890. In 1894, it was owned by Mrs. W. Hines and run by Sawn & Robinson. William Sawn and George Robinson got together and ran a couple of quarries in Town. In 1912, the property is listed as W. Hines estate. The Hoover family owned the property from the 1930s to at least 1949, hence its current name. Other locations in Watchaug Meadows may have been quarried as well.

▪ Like other sites in this part of East Longmeadow, the Brown and Koch properties have been primarily agricultural or residential since the 19th Century. L.J. Richards maps dated 1894 and 1912 depict the site as quarried and undeveloped with some farmers residing along major roads. Sanborn Fire Insurance Maps were not available for the vicinity of the site.

▪ The Brown Farm property had a seasonal restaurant, the "Blossom View Tearoom", from 1925 to 1933. It operated from April 19th (Patriots Day) to October. It was in the old house on Hampden road at the front of the property, which was built around 1840. More recently, the Brown property was home to Mountain View Stables.



A James and Marra Quarry in East Longmeadow (Source: Smug Mug)

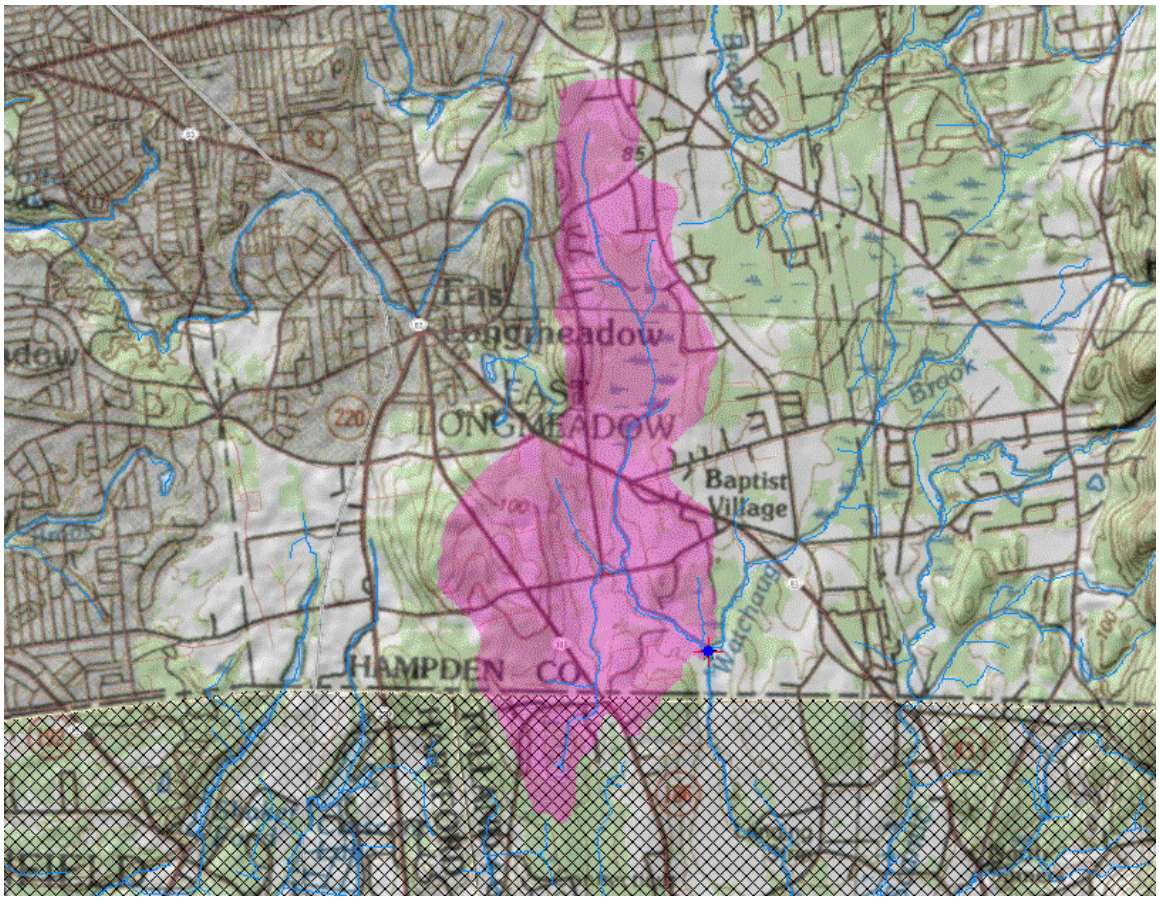
Section 2 – Existing Conditions: Natural Resources Considerations

Natural resources considerations take environmental factors into account, including wetlands and stream systems, soils, vegetation, and biodiversity. In addition to the analysis maps referred to within the text below, Map 2.5: Natural Resources at the end of this section provides a summary of environmental factors.

Wetlands and Stream System

Watchaug Meadows drains to a headwaters tributary of Watchaug Brook, which crosses the site from its northern to southern extent. The stream drains a 3.73 mile area, flowing in a southerly direction. (See map 2.1.) It joins Watchaug Brook in the southernmost part of Town and then flows into the Scantic River in Connecticut, which in turn flows into the Connecticut River in East Windsor, Connecticut.

Map 2.1: Watershed of Headwaters Tributary Draining Watchaug Meadows



Source: USGS Stream Stats

The Massachusetts Natural Heritage and Endangered Species Program describes Watchaug Meadows as a multi-lobed complex of wetlands with riparian uplands. MassGIS mapping shows extensive wetlands covering approximately 74 percent of the site.[1] In addition, the 100-year floodplain covers the central portion of the site, attenuating as it extends north and south. (See Map 2.2: Wetlands and 100-Year Floodplain.)[2] It is important to note too that there are at least 21 stormwater outfalls draining to this area from the surrounding developed residential areas.

Summary of Natural Resources Considerations

- *Significant wetlands*
- *Predominantly poor to very poorly draining soils*
- *Largest area of well drained soils located on the Brown Farm property*
- *Several plant communities, including sedge dominated wet meadows, Red Maple swamp, New England transitional hardwood forest, and upland meadows*
- *No priority habitat or vernal pools, though described by NHESP as habitat for species of special concern*

Soils and Slopes

Soils on site are predominantly poor to very poorly draining. According to the Natural Resources Conservation Service, there are some 28 different soil types for this site. PVPC grouped these soils based on basic drainage characteristics: Very Poorly drained; Poorly Drained; Somewhat Excessively Drained, Moderately Well Drained, Well Drained, Unknown. (See Map 2.3: Soils.) The largest area of well drained soils is located on the former Brown property.

The vertical change in elevation or slope is gradual in most places across Brown Farm-Watchaug Meadows, with land sloping 1.5 to 3 percent toward the center of the site, the location of the tributary to Watchaug Stream. There are steeper slopes on the former Koch property and in the uplands on the former Brown Farm property. At the Brown Farm property, slopes are as steep as 13 percent in one location. See Map 2.5: Natural Resource Considerations, which shows 1-foot contours with 5-foot indexes (darker lines), a mapping layer that comes from the Town of East Longmeadow Engineering Department.

Vegetation

Though there are sedge dominated wet meadows, namely along the transmissions lines that traverse the site, Brown Farm-Watchaug Meadows is largely covered in forest. There is Red Maple Swamp throughout the extensive low lying areas and New England Transitional

[1] Mapping uses DEP wetlands information that is interpreted from 1:12,000 scale 1999 photography. Interpretation is field checked by Department of Environmental Protection (DEP) Wetlands Conservancy Program (WCP). (*DEP Website*)

[2] Thought the stream through Watchaug Meadows is continuous, note that on the wetlands and floodplain map it does not show up as continuous. This is because streams were digitized from aerial photography and if it enters a swamp it shows as discontinuous. There is another hydrology layer that connects the dots, but it does not work well at this scale. (J. Scace correspondence 8/24/10)

Hardwood Forest in the uplands. Major species in the transitional hardwood forest include: Oaks (*Quercus spp.*), Eastern white pine (*Pinus strobus*), Red maple, American beech (*Fagus grandifolia*), and Yellow birch (*Betula alleghaniensis*). This can be seen on the eastern side of the Brown Farm property and at the Hoover Quarry entrance, though there is more Paper birch (Betula papyrifera) and Black cherry (*Prunus serotina*) at that location.

At the Brown Farm property, there is also an upland meadow. Species here include: Red maple (*Acer rubrum*) along the edges of the property, and Golden rod (*Solidago spp.*), Little bluestem (*Schizachyrium scoparium*), Orchard grass (*Dactylis glomerata*), and Bedstraw (*Galium spp.*) throughout the center of the property.

There are also many invasive plants throughout Watchaug Meadows. These include: Oriental bittersweet (*Celastrus orbiculatus*), Japanese barberry (*Berberis thunbergii*), and Garlic mustard (*Alliaria petiolata*). Recommendations on control are included in the Appendixes.

Biodiversity

Watchaug Meadows provides wetland habitats, with red maple swamps and sedge dominated wet meadows as well as adjacent uplands along the length of the Watchaug Brook tributary. There are no verified or potential vernal pools on site, according to state records, though locally one official indicates there is likely one vernal pool at the Hoover Quarry/ Fernwood Conservation Area. [3]

In its 2008 Atlas, the Natural Heritage and Endangered Species Program (NHESP) shows the entire Watchaug Meadows as Core Habitat, which they define as areas of most importance for conservation planning.[4] The Core Habitat encompasses a large area that extends south beyond Watchaug Meadows. (See Map 2.4: Biodiversity). A description of this area—referred to as Core Habitat BM1122—is included in the Appendixes.

NHESP reports that there is no Priority Habitat, which shows known occurrences of state listed species (endangered, threatened, of special concern). This 2008 information on Priority Habitat represents a change from the 2006 Atlas, in which NHESP showed 84 acres of Priority Habitat based on observations of Species of Special Concern (within the last 25 years). Species described in the 2006 Atlas were:

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[3] Vernal pools are ephemeral wetlands that fill annually from snowmelt, rain, and the rising groundwaters of spring and early summer. In most years, the pools completely dry out by mid to late summer. Numerous woodland amphibians and reptile species have evolved life cycles that exploit the temporary nature of this wetland without the predation of fish.

[4] Biodiversity in Massachusetts is described by two major resources developed by the Massachusetts Division of Fisheries and Wildlife's Natural Heritage and Endangered Species Program (NHESP): the *Biomap* and *Living Waters* reports. These reports delineate both Core Habitats (and their natural communities and populations of rare plant and animal species) of most importance for biodiversity conservation planning and Priority Habitats, a regulatory layer updated about every two years that shows known geographical extent of habitat for occurrences of state-listed rare species, both plants and animals. The data base of rare species is maintained by NHESP, and is codified under the Massachusetts Endangered Species Act (MESA). Priority Habitat is delineated based on records of state-listed species observed within the last 25 years prior to delineation and contained in the NHESP data base.

Blue Spotted Salamander (*Ambystoma laterale,* formerly identified at this site as Jefferson Salamander (*Ambystoma jeffersonianum*), a species of Special Concern that has not been found on site since 1982. These two salamanders interbreed so NHESP now calls occurrences east of the Connecticut River Blue Spotted and west of the Connecticut River Jefferson unless genetic testing shows otherwise.

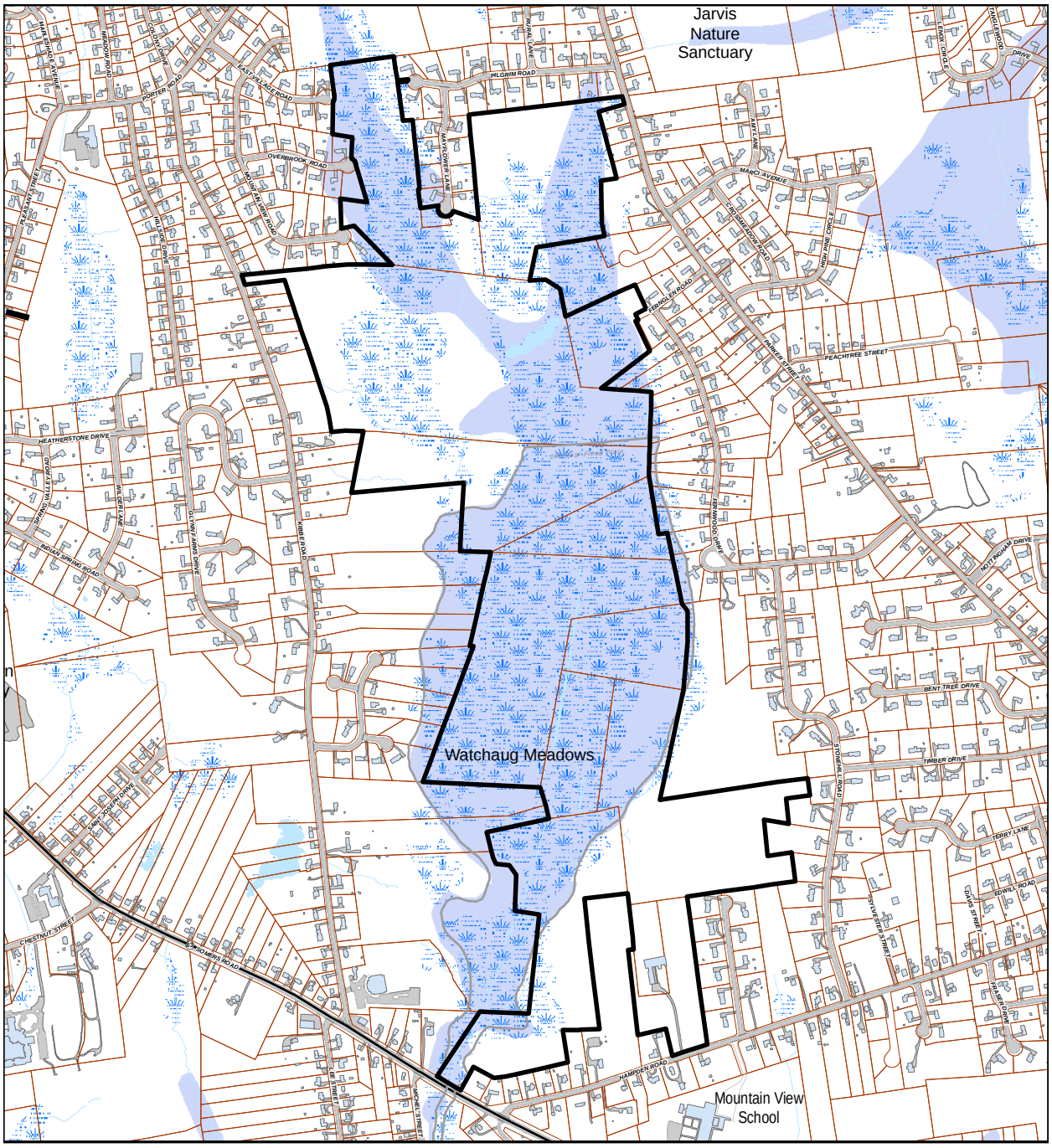
Four-Toed Salamander (Hemidactyliul scutatum) had been listed as Threatened, but delisted in 2008 because it is more common than thought. NHESP indicates that it is likely still on site.

The Atlas also indicates the site is habitat for Box Turtle (*Terrapene Carolina)*, a species of special concern.

It has also been noted that Watchaug Meadows is a major warbler resting area during spring migration and both red-tailed hawks and great horned owls nest on site.[5]

[5] 2000 Open Space and Recreation Plan

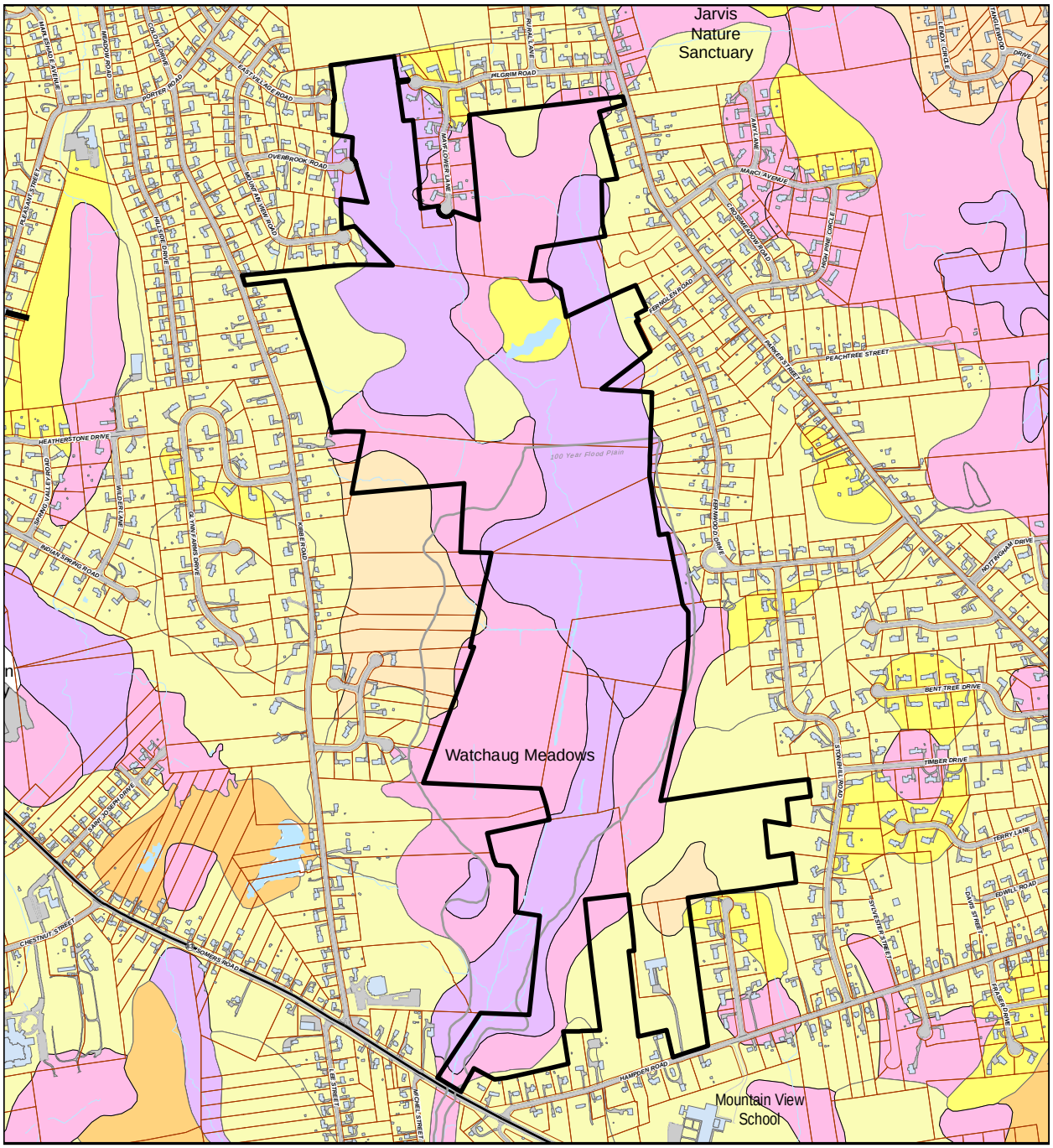
Map 2.2: Wetlands and 100-Year Floodplain



Town of East Longmeadow

HAMPDEN ROAD SITE ASSESSMENTS
FLOODPLAIN AND WETLANDS

Map 2.3: Soils

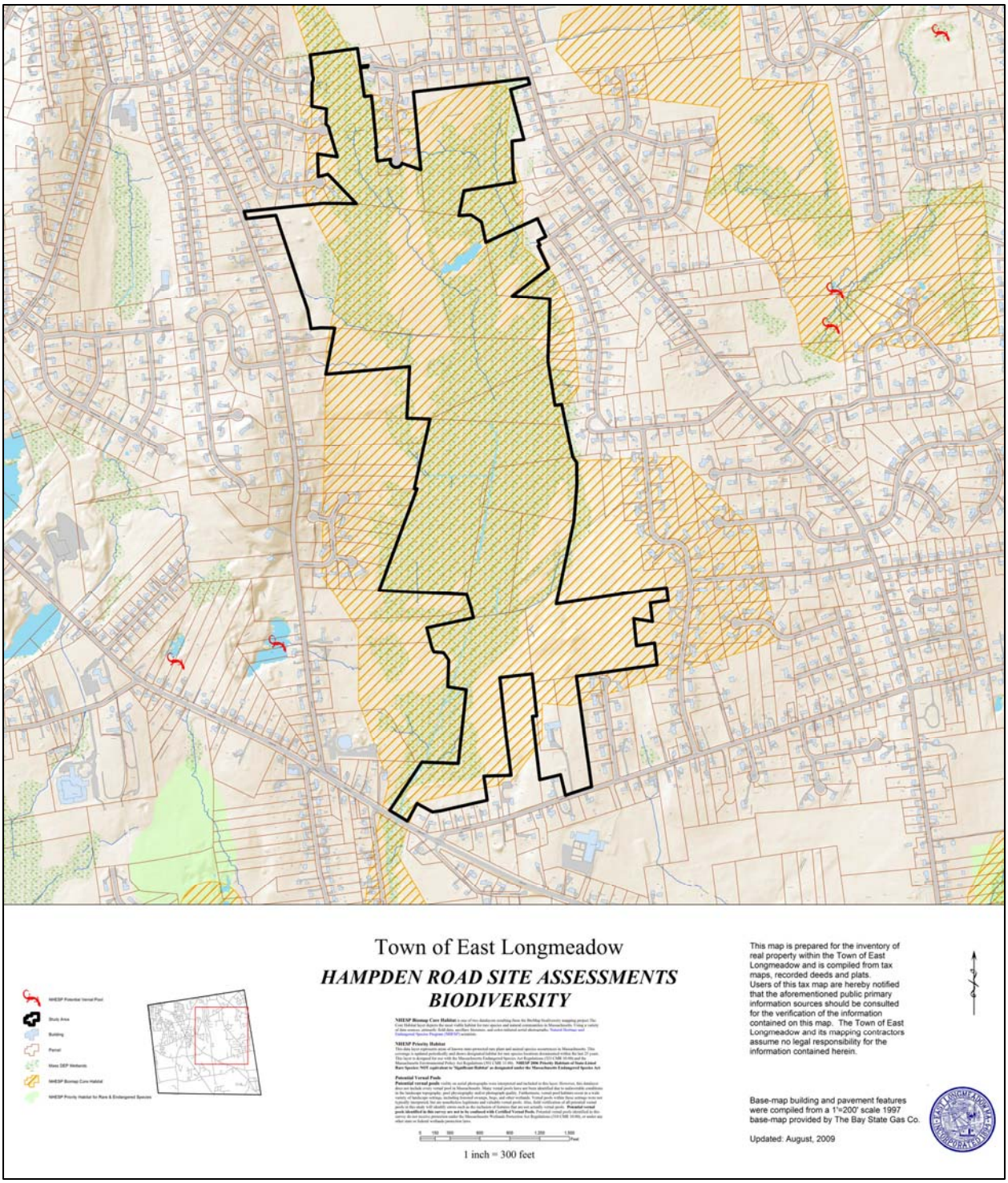


Town of East Longmeadow

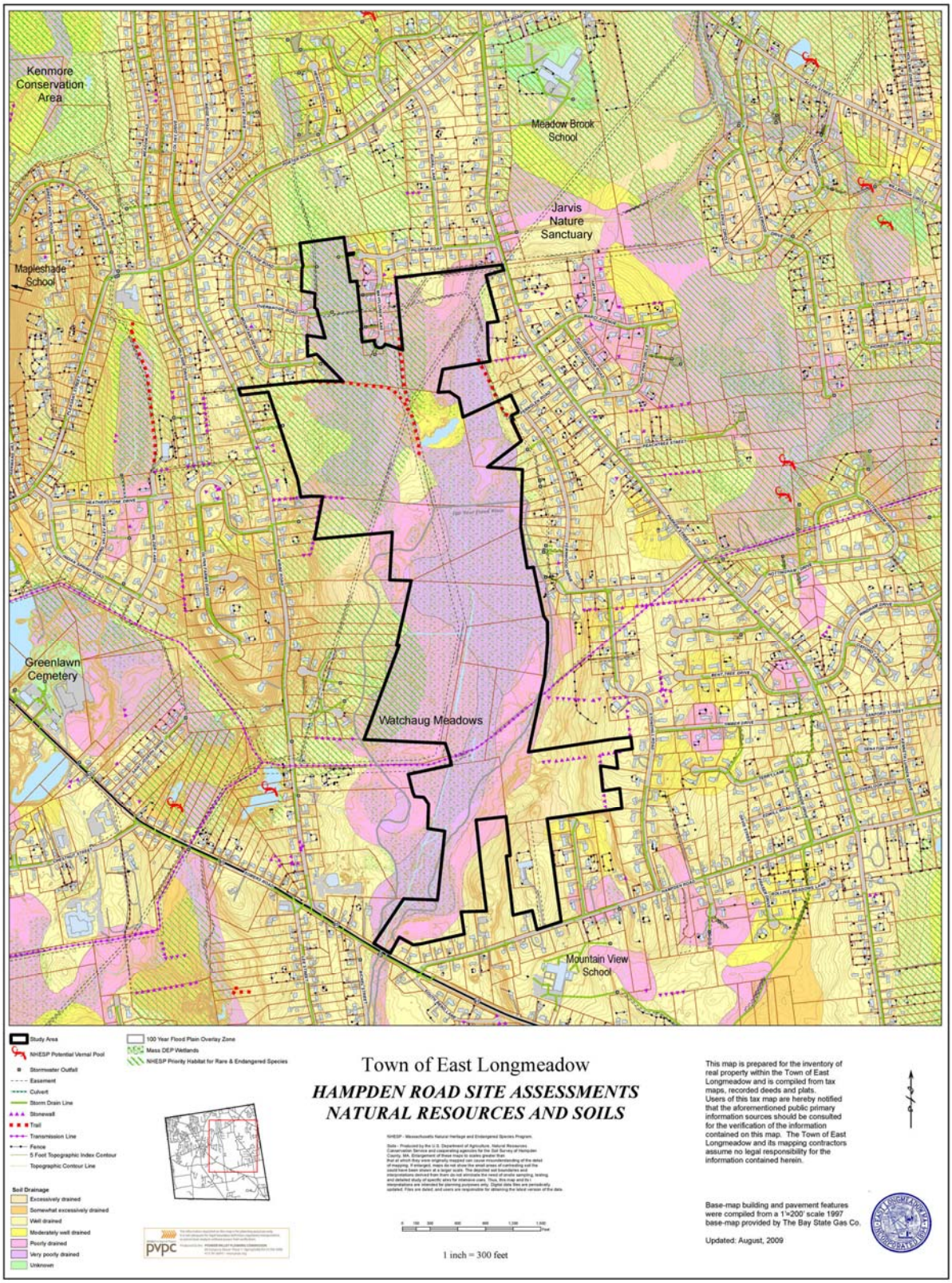
HAMPDEN ROAD SITE ASSESSMENTS
SOIL DRAINAGE

Excessively drained	Well drained	Poorly drained
Somewhat excessively drained	Moderately well drained	Very poorly drained

Map 2.4: Biodiversity



Map 2.5: Natural Resources Considerations



Section 3 – Existing Conditions: Cultural Resources and Infrastructure Considerations

Cultural and infrastructure considerations take human factors into account, including land use, nearby assets, brownfield properties, transportation, utilities and easements, stormwater drainage, scenic areas, stone walls, trails, and access points to the site. In addition to the analysis maps referred to within the text below, Map 3.7: Cultural Resources and Infrastructure, provides a summary of existing human factors.

Surrounding Land Uses

The Watchaug Meadows site is located in a residential area of East Longmeadow with significant "low" and "medium" density housing (See Map 3.1: Land Use Classifications). Low density housing is defined here to contain less than two dwelling units per acre, and medium density housing is defined to contain between two and four dwelling units per acre. There are also several locations with "high" density housing, defined as over four dwelling units per acre. There are a few commercial and industrial areas nearby as well.

The properties immediately adjacent to the site are all zoned for residential use (with the exception of the single commercial property indicated in the southwest corner of the map). Properties along the southeastern boundary of the site are zoned Residential AA, which requires a minimum lot size of 40,000 square feet and 175 feet of frontage. The other surrounding residential properties are zoned Residential A, which requires a minimum lot size of 25,000 square feet and 140 feet of frontage. Several abutting parcels far exceed these minimum lot size requirements and extend long distances, some 1,688 liner feet deep, from Kibbe Road or Stone Hill Road to the boundary of Town owned land at Watchaug Meadows.

Key Land Use Features

- *Site is in a residential area*
- *Predominant land uses surrounding the site include:*
  - *Low density residential (less than 2 dwelling units per acre)*
  - *Medium density residential (2 to 4 dwelling units per acre)*
  - *Open space, including fields, forests, cropland and wetlands*
- *There are also some:*
  - *High density residential areas (greater than 4 dwelling units per acre)*
  - *Commercial land uses*
  - *Public and institutional land uses*
  - *Industrial land uses*
- *Significant nearby assets include:*
  - *Conservation areas*
  - *Schools*
  - *Churches*
  - *Commercial cluster and high density residential at Somers and Kibbe Road*
- *Other nearby features*
  - *Police and fire station*
  - *Nursing home and senior housing*
  - *Cemetery*
  - *Kibbe Road Landfill (closed)*
  - *Kennel*

The Brown Farm-Watchaug Meadows site is adjacent to the Mountain View Elementary School on Hampden Road and is within walking distance, approximately half a mile, of the Meadow Brook Elementary School (see Map 3.2: Nearby Land Uses). Mapleshade School is also nearby (just west of the area shown on the map).

In addition, there are several significant conservation areas nearby, including the Jarvis Conservation Area, the Kenmore Conservation Area, and the Veratti Conservation Area. (See dark green colored areas in Map 3.2: Nearby Land Uses).

Cultural assets near the site include several churches, and there are several additional sites used for public and institutional purposes, including the Town's police and fire stations and a nursing home.

To the north of the site (just north of the area shown in Map 3.2: Nearby Land Uses and just over one-half mile from Meadow Brook School (door to door) and just under 1 mile from the northeastern corner of the Watchaug Meadows site), is Bluebird Estates senior housing. To the south and adjacent to the site, at the intersection of Somers Road and Kibbe Road, there is a cluster of commercial uses and one small high density residential area. Finally, although not an asset, it is important to note that the closed Kibbe Road Landfill site is located directly adjacent to the site.

Smaller nearby assets not labeled on the map include the Greenlawn Cemetery and other open space parcels owned by the Conservation Commission, including Pine Quarry (southwest corner of the map) and Indian Springs (next to the police and fire complex). Open space properties owned by the Conservation Commission that are not located within the map area include the High Pine, Peach Tree Road, Charles Buckingham and Tanglewood properties (all east of the map area). Although not an asset, it is also worth noting that there is a kennel to the north of the site on Porter Road. The property owner may consider a residential development on this property in the future.

More detailed information on the Jarvis Conservation Area and the Kibbe Road Landfill site is provided below:

Jarvis Conservation Area

The official name of the area referred to as the Jarvis Conservation Area is the Robert J. Jarvis Nature Sanctuary. This area, which was originally owned by the school committee, was established prior to 1979 on undevelopable land left over after the building of Meadowbrook School and is dedicated in memory of a former school superintendent.[6] Most of the Jarvis Conservation Area is classified as "wet meadow" by the Wetlands Protection Act, based on vegetation and soil. There is also a stream that crosses the property in the Northeast corner and supports a small swamp. The white pine plantation is classified as upland vegetation, but it is necessary to cross the wetland to access this area. In spring and summer there is a significant population of American woodcock, another indication of the wet nature of the area.[7]

[6] George Kingston, 7-6-10 e-mail

[7] George Kingston, 7-14-10 e-mail

Kibbe Road Landfill (Closed)

The Kibbe Road Landfill is located approximately 1,500 feet west of the recently purchased Koch property, which comprises the southwestern portion of the site (see Map 3.2: Nearby Land Uses). The landfill is also located on the site of the former James T. Marra brownstone quarry. This facility is an inactive, uncapped and unlined former municipal solid waste landfill that also received industrial waste during the 1940s and 1950s. It is located adjacent to a stream and wetland system that is hydraulically connected to the wetlands that comprise the western part of the Koch site. No comprehensive site assessments are known to have been conducted for this landfill.[8]

Transportation

The importance of transportation in considering Watchaug Meadows and other open space and recreation projects is articulated in the Town's Open Space and Recreation Plan:

> The entire region is an area which is having difficulty meeting federal clean air standards. Open space and recreation planning must be consistent with the need to reduce motorized vehicle use. This means providing for alternate, non-motorized transportation, including bicycle routes and paths, and providing for recreational opportunities that can be accessed with no or little vehicle use, especially in newly developed areas.

Key Transportation Features

- *Main roads surrounding site: Porter, Parker, Hampden, Somers and Kibbe*
- *No bike lanes*
- *Few existing sidewalks*
- *No bus service near site*

The Watchaug Meadows site is bounded by five main roads: Porter Road to the north, Parker Street to the east, Hampden Road and Somers Road to the south, and Kibbe Road to the west (see Map 3.3: Transportation). There is no bus service along any of these roads, there are no bike lanes, and there are few existing sidewalks (shown by the yellow line on Map 3.3: Transportation). The sidewalks shown in yellow are only located on one side of the Street, and they begin at Mountain View School and continue east along Hampden Road, then North along Parker Street to Bent Tree Drive. The other sidewalk runs along the north side of Porter Road.

Despite having few sidewalks in the vicinity, the site is easily reached on foot from the Mountain View Elementary School. Future sidewalk priorities should include the roads immediately adjacent to the site, and should aim to connect the site to Meadow Brook School, Mapleshade School, to the intersection of Somers Road and Kibbe Road, and to the church on Chestnut Street. In addition, there are significant opportunities to connect other nearby assets, including the conservation areas and high density residential areas, with the Watchaug Meadows site by developing additional sidewalks and trails.

[8] Phase 1 Environmental Site Assessment, 2009

Though not in the immediate vicinity of the site, there are Peter Pan and Pioneer Valley Transit Authority (PVTA) bus lines that run through the Town of East Longmeadow, but there is no rail service in Town.

Public Utilities and Easements

Public Utilities and Easements Features

- *Town sewer lines and New England Power transmission line on site*
- *Other site easements held by New England Power, Mass Electric Company and the Magnolia Pipeline Company*
- *Easy access from site to water and sewer*

Overall, the site enjoys good access to off-site water and sewer mains. Water main access could be extended to the southern (most developable) portion of the site from Hampden Road or Anna Maria Lane. On the site itself, there are a number of right of ways for utilities and easements (see Map 3.4: Public Utilities and Easements), including electric transmission lines, a pipeline easement (held by the Magnolia Pipeline Company), and Town sewer lines. A New England Power electric transmission line runs roughly east-west across the southern portion of the site (purple line), and the site has additional power line easements held by the New England Power Company and Mass Electric Company as well. Town Sewer Lines run in east-west and north-south directions at several locations on northern portion of site, and also run along eastern edge of the site to Fernwood Drive, off Parker Street.

Stormwater

Key Stormwater Features

- *At least 21 stormwater outfalls drain from a large surrounding area to the site*
- *As a result, it is likely that the ecological quality of the site is impacted by water pollution*

The Watchaug Meadows site consists largely of remnant, undevelopable wetland areas which, prior to the establishment of current environmental regulations, were frequently used to dispose of stormwater runoff. These stormwater drainage uses for older developments continue to this day.

Development and roads generally increase the quantity of stormwater runoff due to replacement of natural areas with less pervious surfaces such as lawns and pavement. As a result, less rainwater can percolate into the ground and more rainwater runs off the site. In addition, runoff flows more quickly from developed sites than under natural conditions, which increases erosion and results in sediment pollution.

Stormwater drain outfall to site (Hoover Quarry Area)

Development increases the quantity of other pollutants in runoff as well,

including nutrients from lawn fertilizers (causing algae and bacteria problems), pesticides, salts and sediments that have

been applied to roads in winter, and oil and heavy metals from vehicles.

At least 21 stormwater outfalls drain water from a large surrounding area to the Watchaug Meadows site. This drainage area has been estimated in Map 3.5: Stormwater Drainage based on storm drain line and outfall locations (not delineated based on topography). Although no open storm channels have been installed on the site, some of the outfalls create temporary open channels. Because the site receives runoff from a large residential drainage area, it is likely that the ecological quality of the site is impacted by water pollution.

Key Current Site Use and Features

- *Enjoys significant informal recreation, including cross-country skiing, nature study, hiking and mountain biking*
- *Trails are not maintained, some are not well-used, and many are becoming overgrown*
- *Some abutting property owners have obstructed trails with brush debris*
- *Stone walls crisscross portions of site, and there are a number of scenic areas*
- *Need to address the steep vertical curve along Hampden Road, which may limit the visibility of a site access point at Hampden Road*
- *A lead and asbestos survey should be completed in advance of restoration or demolition of the building on the Brown property*

Current Site Uses

Trails

From the various trails on site, it is apparent that there is use of the site by the community for informal recreation. These activities include hiking, nature study, mountain biking, and cross-country skiing. Some of the trails had been previously mapped by the Town, and some additional trails were mapped by the Pioneer Valley Planning Commission as part of this project (see Map 3.6: Trails, Stone Walls and Access Points). It appears that the trails on site are not maintained, and some are not well-used, so many are becoming overgrown. In addition, some abutting property owners are dumping yard debris on the site, possibly to obstruct access and discourage trail use by the public. This is particularly evident in the Hoover Quarry Conservation area portion of the site. The Fermwood Conservation Area enjoys good trail access from the end of Fern Glenn Road, but access at the Craven and Hoover Conservation Areas is somewhat difficult and is not inviting. Overall, however, there is great potential to expand on the existing trail system and develop a comprehensive network of walking paths throughout the site.

Scenic Resources

Stone walls crisscross several portions of the site, usually at boundaries with properties adjacent to the site (see Map: 3.6: Trails, Stone Walls and Access Points). These stone walls are composed of redstone. In addition to stone walls, there are a number of scenic areas on site (detailed in Opportunities and Constraints section below).

Site Access Points

All site access points, whether vehicle or pedestrian access points, are marked on Map 3.6: Trails, Stone Walls and Access Points. There are currently four points of access to Watchaug Meadows, but really only two seem currently viable (former Brown Farm property and Fernwood Conservation Area), and all could be more inviting to encourage use by residents from surrounding neighborhoods. Points of access are described in Table 3.1 below.

Table 3.1: Current Points of Access to Watchaug Meadows

Site Access Name	Notes
Corner Koch Property at Somers Road	Access is fairly wet with the Watchaug Brook tributary passing alongside. More importantly, the higher speed traffic along Somers Road makes this location unsafe for access.
Former Brown Farm property on Hampden Road	Access here is good by foot or vehicle, with informal parking up the by old horse barn. Egress from the site by vehicle onto Hampden Road requires further study. See discussion in Section 5 and recommendations in Section 7.
Fernwood Conservation Area - End of Fern Glenn Road	Located in a quiet neighborhood, this point of entry provides good pedestrian access to the site for the surrounding neighborhood. If driving to the site, there is potential for parking along the roads at the trailhead.
Craven Conservation Area - Parker Street (just south of Pilgrim Road)	Though the trail here is completely overgrown, there is space for off-street parking of about three to four vehicles.
Hoover Quarry Conservation Area - Kibbe Road	Access here is overgrown and appears intentionally obstructed by piles of debris and dirt. With removal of these obstructions, there could be space for off street parking of perhaps 2 vehicles.

Environmental Contamination

A Phase I Environmental Site Assessment (ESA) has been completed on the Brown and Koch properties within the site. There are no documented releases of oil or hazardous materials to the site. However, as previously noted, there is evidence of illegal dumping of yard waste along the Brown site's eastern property boundary.

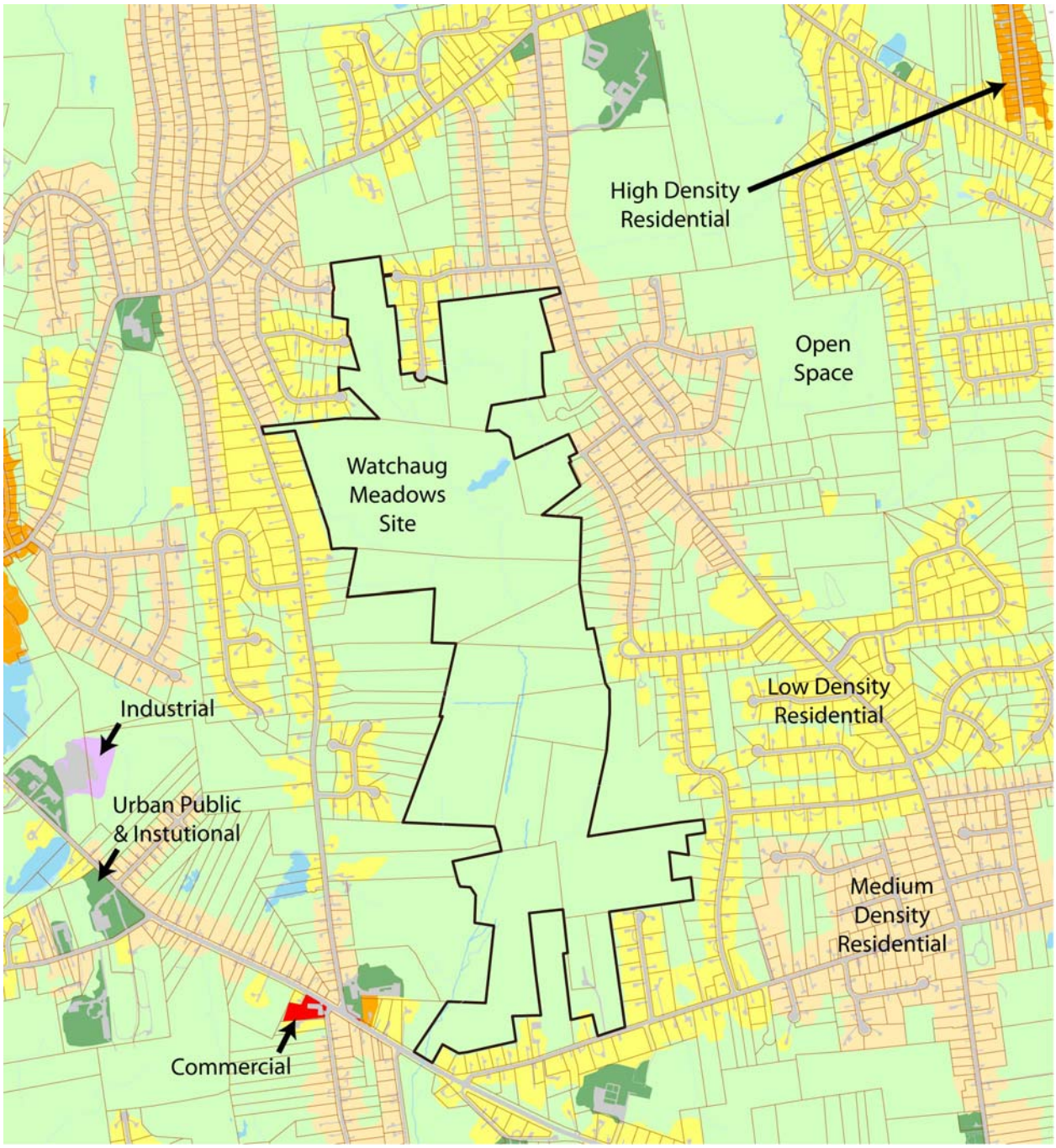
With regard to the on-site building on the Brown property, the ESA states that lead-treated and asbestos-containing materials may be present within the building. As a result, Pioneer Environmental, which authored the report, recommends that a lead and asbestos survey be completed in advance of restoration or demolition of this building. Also in relation to this

building and property, the Board of Health possesses documentation (filed in 1970) of the septic design and permit for the Brown property.

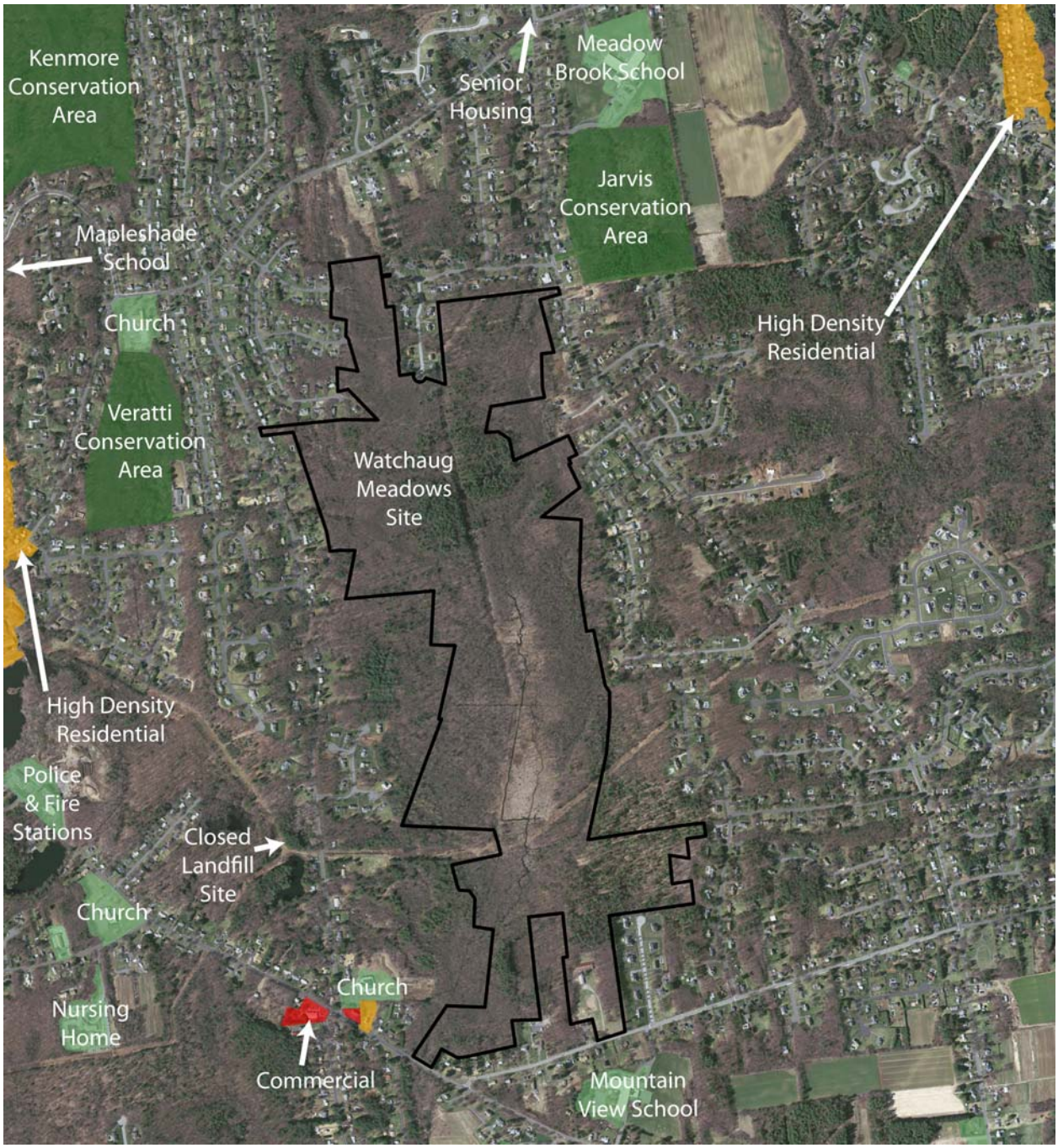
Cultural and Infrastructure Considerations Summary

- *Residential development surrounds site*
- *Significant open space nearby, including conservation areas*
- *Schools, churches, institutional and commercial areas, high density residential areas, and senior housing in vicinity*
- *No bus service or bike lanes, and few sidewalks*
- *Sizeable area drains to site via storm drain lines and outfalls*
- *Network of trails on site not maintained*
- *Stone walls and scenic areas on site*
- *Numerous access points, but limited potential vehicle access points*

Map 3.1: Land Use Classifications

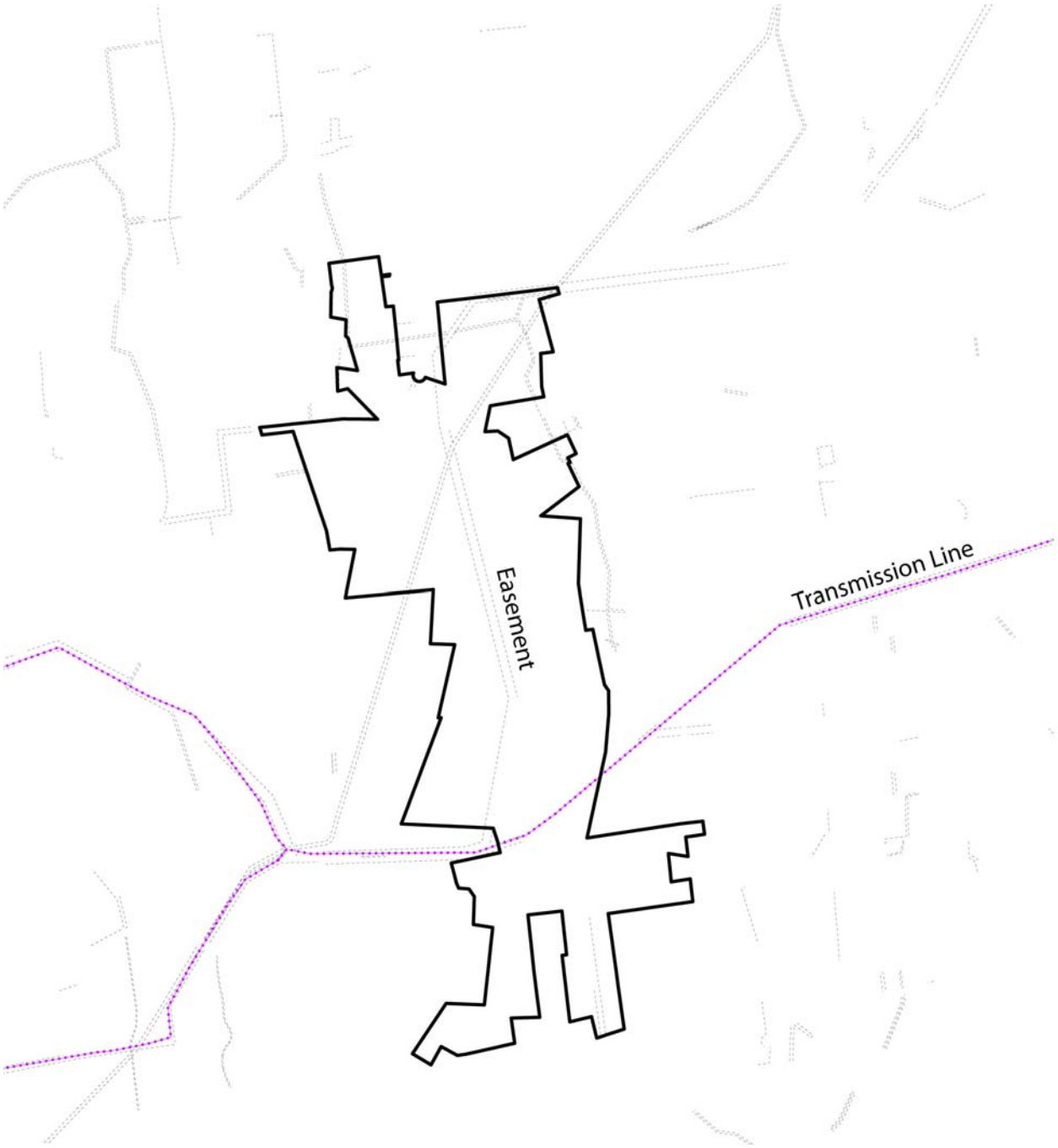


Map 3.2: Nearby Land Uses

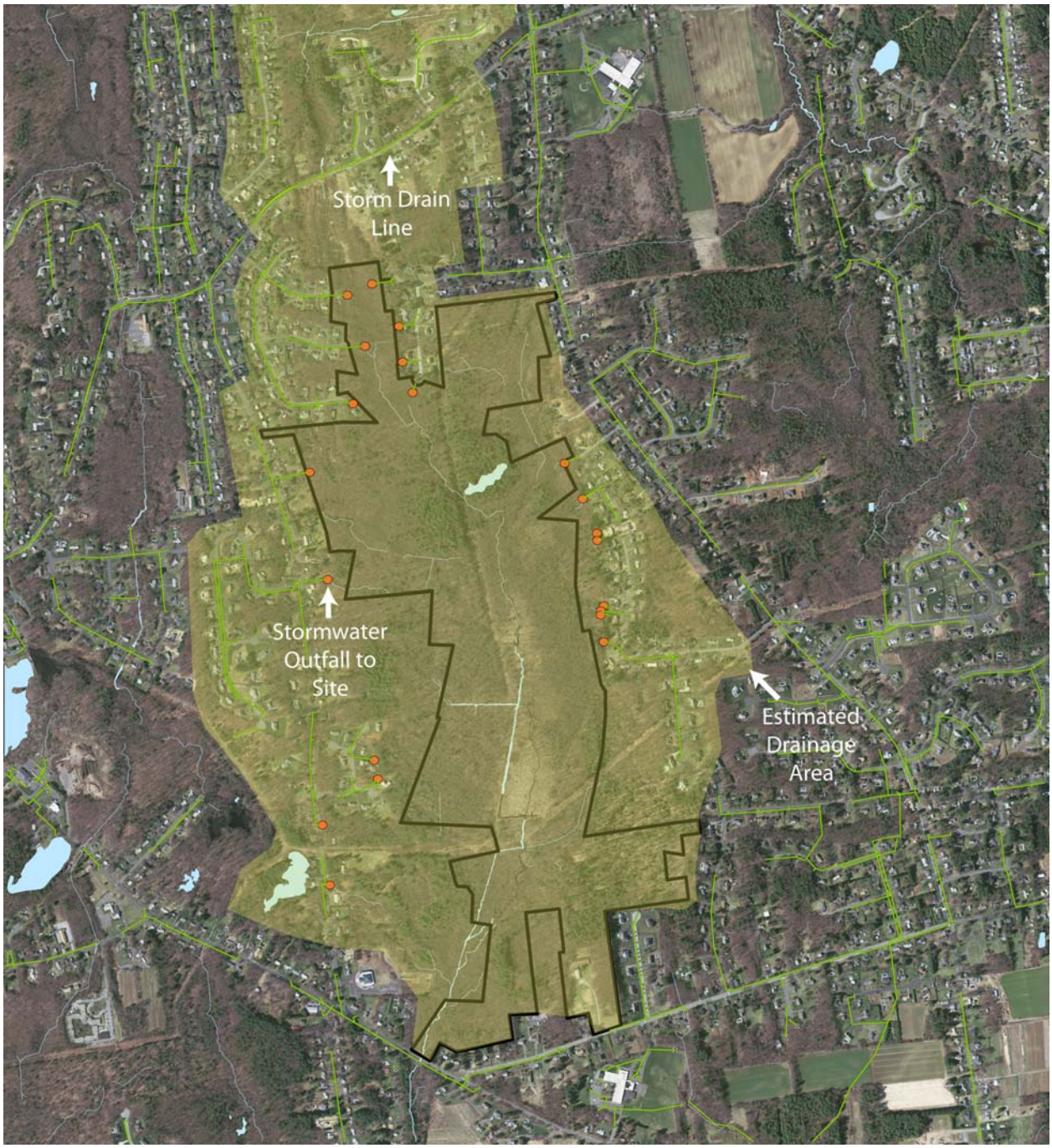


Map 3.3: Transportation

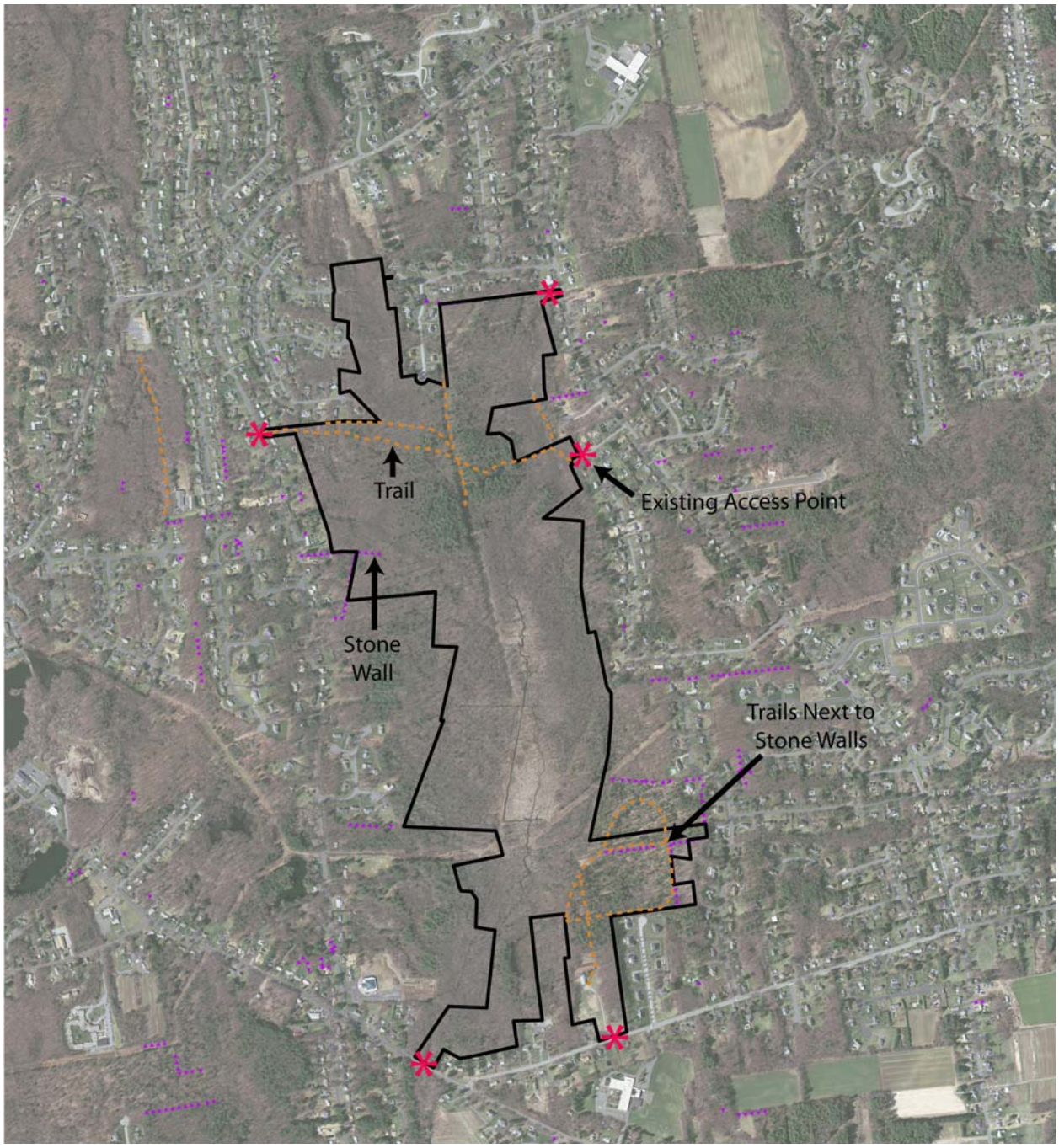
Map 3.4: Public Utilities and Easements



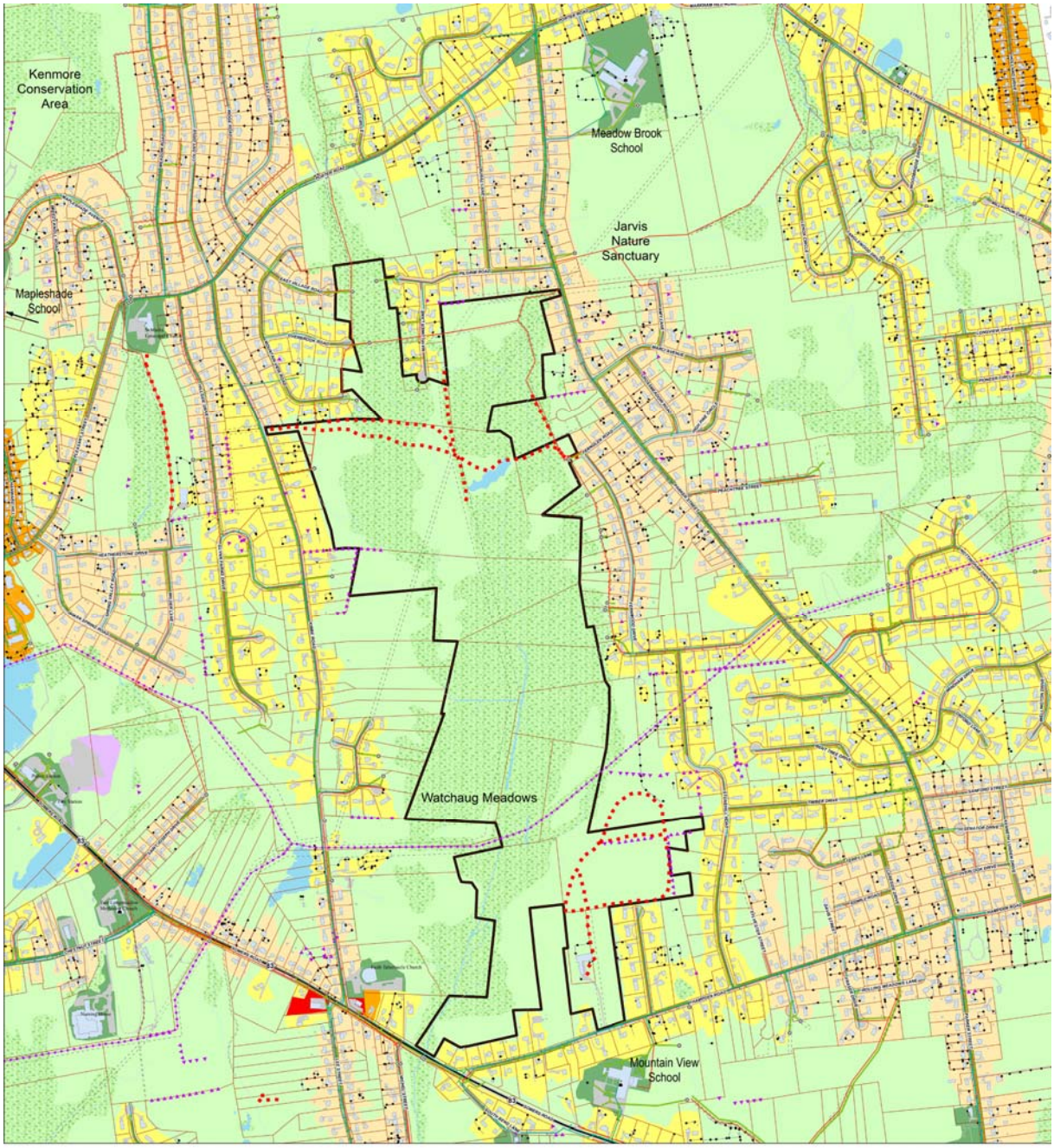
Map 3.5: Stormwater Drainage



Map 3.6: Trails, Stone Walls and Access Points



Map 3.7: Cultural Resources and Infrastructure



Town of East Longmeadow

HAMPDEN ROAD SITE ASSESSMENTS

CULTURAL RESOURCES

School
Stormwater Outfall
Water Mains & Laterals
Sewer Mains & Laterals
Easement
Culvert
Storm Drain Line
Stonewall
Trail
Transmission Line
Fence

Study Area
Mass.DEP Wetlands
Field, Forest, Crop land, Wetlands
Low Density Residential, Very Low Density Residential
Medium Density Residential
High Density Residential; Multi-Family Residential
Industrial; Transportation; Waste Disposal
Commercial
Urban Public/Institutional
Water
Building
Pavement

pvpc

0 150 300 600 900 1,200 1,500 Feet

0 0.125 0.25 Miles

1 inch = 304 feet

This map is prepared for the inventory of real property within the Town of East Longmeadow and is compiled from tax maps, recorded deeds and plats. Users of this tax map are hereby notified that the aforementioned public primary information sources should be consulted for the verification of the information contained on this map. The Town of East Longmeadow and its mapping contractors assume no legal responsibility for the information contained herein.

Base-map building and pavement features were compiled from a 1"=200' scale 1997 base-map provided by The Bay State Gas Co.

Updated: August, 2009

Section 4: Town Needs

There have been high hopes for Watchaug Meadows, and particularly the former Brown Farm, in meeting some of the Town's recreation and senior affordable housing needs. Both areas of need are pressing. For recreation there are often four to five teams vying for use of one field. For affordable housing, the 2010 census figures indicate that the Town is short 108 units in meeting the state's 10 percent affordable housing requirement.[9] Project Advisory Team members have indicated that the most urgent need for affordable housing is among seniors.

Following is a discussion about the needs within the Town's housing and recreation programs and a list of objectives for the Brown Farm-Watchaug Meadows site to help meet these needs, including passive recreation and conservation.

Housing

East Longmeadow has a significant need for subsidized affordable housing, including family and affordable housing for seniors. As of spring 2010, the Town had 431 units on its subsidized affordable housing inventory. This is 7.1 percent of the Town's (year-round) housing stock as defined by the 2010 Census. Based on these figures, the Town would need an additional 108 subsidized housing units to reach the 10 percent affordable housing requirement as mandated under Massachusetts State Law Chapter 40B.[10] The Massachusetts Department of Housing and Community Development uses the latest decennial census as a baseline to determine a municipality's percentage of affordable housing. The Town of East Longmeadow had over 499 building permits issued for new single family homes in the last decade.

The Town has expressed significant concern about the need in particular for affordable housing for seniors. To be eligible for subsidized affordable housing, a household must earn no more than 80 percent of the annual Area Median Income (AMI), although some subsidized housing programs set even lower income thresholds to serve poorer households. The United States Department of Housing and Urban Development (HUD) establishes the AMI for geographic regions called Metropolitan Statistical Areas (MSAs), not for specific communities. All municipalities in Hampshire and Hampden counties are part of the Springfield Metropolitan Statistical Area (MSA). In 2010, the 80 percent AMI limit for a one-person household is an annual income of $43,800 and $50,050 for a household of two.

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[9] Massachusetts Department of Housing and Community Development, Chapter 40B Subsidized Housing Inventory (SHI) as of June 30, 2011, http://www.mass.gov/Ehed/docs/dhcd/hd/shi/shiinventory.pdf

[10] Also known as the Comprehensive Permit Law, Chapter 40B was enacted in 1969 to make affordable housing more widely available throughout the state by reducing unnecessary barriers created by local approval processes, local zoning, and other restrictions. For communities with less than 10 percent of their housing stock deemed affordable, the state statute enables local Zoning Boards of Appeals (ZBAs) to approve housing developments in any zoning district in Town if at least 20-25 percent of the units have long-term affordability restrictions.

A general rule of thumb is that a household should be spending no more than 30 percent of their income on housing-related costs. Households that spend more than this amount are considered "housing cost burdened." Households with subsidized housing are guaranteed to they will pay no more than 30 percent of their monthly household income on rent or mortgage. Using the examples of typical senior household sizes above (one- and two-person households), a low-income one-person household with an annual income of $43,800 could afford to pay $1,069 in rent each month, or to purchase a home for approximately $114,000. In the second example, a low-income two-person household with an annual income of $50,050 could afford to pay $1,251 in rent each month, or to purchase a home for approximately $132,000.[11]

The Housing Authority currently manages 3 properties with nearly 200 subsidized apartments for seniors, veterans and disabled residents. These are:

- Inward Commons
  - 52 apartments on Somers Road north of Chestnut Street
- Quarry Hill
  - 80 apartments on Somers Road north of Chestnut Street
- The Village Green
  - 40 apartments at the end of John Street

In addition, Brownstone Gardens is a privately owned senior affordable housing development with 172 apartments at the intersection of Pleasant Street, Callender Avenue, and Somers Road. On Benton Drive, there are five units of housing that are sold by lottery and have affordable deed restrictions.

In addition to the need for affordable housing as defined by the Commonwealth (including senior affordable housing), the Town of East Longmeadow has self-identified a need for market-rate "affordable" senior housing. Based on anecdotal accounts, recent market-rate senior developments have created senior housing units that have cost more than $300,000. A $300,000 condominium requires an annual household income of approximately $94,280. Ideally, market rate "affordable" units would range in price from $130,000 to $200,000, accommodating senior households with annual incomes between approximately $43,120 and $64,200. Some market rate senior housing might meet the affordable housing criteria set by the Commonwealth, while some would not. Creating market rate senior housing on this site would require the Town to identify a developable portion of the property that it would like to sell to a private senior housing developer. This is something for further consideration by the Town, but beyond the scope of this project.

[11] For more information on affordable housing sale prices and rents, visit http://www.mass.gov/?pageID=ehedterminal&L=3&L0=Home&L1=Community+Development&L2=Chapter+40B+Planning&sid=Ehed&b=terminalcontent&f=dhcd_cd_ch40b_saleprices&csid=Ehed

Active Recreation Facilities

Soccer and Lacrosse

The Town of East Longmeadow supports youth soccer and lacrosse programs that both require the use of fields for practice and games. Both programs have had tremendous growth in recent years.

In particular, the East Longmeadow Soccer Program, which serves youth in kindergarten through high school, has grown, from 72 teams in 2006 to 95 teams in the 2010. The program has teams in both the spring and fall with a small number of teams in the summer as well. Fall is the busier season with 55 teams at play compared to 25 teams in the spring, and four teams in the summer.

The lacrosse program, offered to youth in grades 3 to 8, has seen a 85 percent jump in participation. In 2005 there were 5 teams with 106 participants and this past spring there were 9 teams with 196 participants. Based on demand, the Recreation Department has just begun offering fall lacrosse with programs for both boys and girls.

With this boom in growth, there has been a corresponding increase in competition for practice and game time on fields. To help meet this demand, the Town recently constructed several new fields at the Meadowbrook Elementary School. The new fields are an important first step, but pressure for practice and game time remains significant. In the fall, 55 soccer teams compete for the use of 15 fields. In the spring, 25 soccer teams and 9 lacrosse teams compete for the use of 17 fields. In the spring, several of the fields (really outfields) are reverted to use as diamonds for the baseball program. And in the fall several of the fields are used by the field hockey and football programs.

The Town also relies on private land at Lenox, formerly American Saw & Manufacturing Co., for four soccer fields and at New Life Baptist Church for a small field that is used by the boys' lacrosse program. While the soccer and lacrosse programs are said to be grateful for the use of these fields, the Recreation Department's objective is to eliminate the reliance on private property for the youth sports program. Issues such as lack of irrigation that result in poor conditions for play, and schedules that are further constrained by having to share fields with teams from other towns can be overcome if the Town of East Longmeadow has its own facilities.

In both the fall and the spring, the high school is an important site for youth practices which take the fields after the high school athletic teams finish their games and practices. The Youth Soccer program usually uses 2 fields at the high school in both the spring and the fall. The other two fields are used by football and field hockey in the fall and boys and girls lacrosse in the spring. The high school fields are overused all year round and are typically in rough shape for play, especially in the spring due to heavy wear from boys' and girls' lacrosse.[12] While the addition of irrigation to the three back grass fields and the installation of an artificial turf field inside the stadium will relieve some of the pressure on the grass

[12] Lacrosse is a sport that uses a field roughly the size of a soccer field. It is a fast game in which the ball is kept up in the air and thrown along from player to player. This sport is hard on field grass due to the quick stops and fast turns.

fields, it is important to institute a rest and restoration program giving the fields a chance to grow new grass without constant use. The "grass" on the high school fields is not really grass at all, but weeds like clover, crab grass, plantain, purslane, chickweed and dandelions due to the heavy wear.

At Mapleshade Elementary School there are two fields, where the girl's lacrosse program (3rd and 4th grade and 5th and 6th grade divisions) practice and play games three to four days per week in the fall. In the spring Mapleshade Elementary School is home for the girls' field hockey program (3rd and 4th grade and 5th and 6th grade teams).

In the spring, Meadowbrook Elementary School and the upper field at Mt View Elementary School are largely dedicated to the youth baseball program. The youth soccer programs must make room for the use of the baseball diamonds by moving the spring teams back to fields at Lenox, Birchland Park Middle School, Center Field, the high school, and Heritage Park.

In total, the Town has 17 field sites varying in size from 40 x 60-foot fields to 120 x 70-yard fields, not including the 5 fields on private property. Only six sites are suitable or useable for full size soccer fields.

Table 4.1: East Longmeadow Field Facilities

Location	Facilities	Teams/programs that use	Notes
Pine Knoll	3 small fields – two side by side for games and one for warm ups (60 x 40 feet)	▪ Kindergarten ▪ 5 soccer teams in spring for games and practice ▪ 9 soccer teams in fall for games and practice	Pine Knoll is also used by Kindergarten T-ball program
Center Field	Modified soccer field in outfield of softball field (70 x 60 yards)	▪ Spring - 4 soccer teams (grades 3,4,5) ▪ Fall - 8 soccer teams (grades 3,4,5) ▪ Pioneer Valley (PV) soccer travel teams Under 9 through Under 12, which involves 13 teams in the spring and 14 teams in the fall	Irrigation on softball diamond
New Life Baptist Church	Small Lax field	▪ 3 & 4th grade boys lacrosse for games and practice - 3 teams in the spring	Cannot fit three teams on this small parcel
Lenox	4 soccer fields – 2 modified, 1 full, 1 small	▪ PV soccer travel teams Under 9 through Under 14, which involves 38 teams in the spring and 53 in the fall	No irrigation Have to share with St. Mary's teams from Longmeadow
Heritage Park	Back Soccer Field – (100 x 50 yards) full	▪ PV soccer teams Under 12 through Under 14 in fall and spring ▪ Grades 6, 7, 8 with 3 soccer teams one high school soccer team	Small field with boundaries restricted by woodland

Location	Facilities	Teams/programs that use	Notes
Birchland Park Middle School	1 full-size soccer field	▪ PV travel soccer Under 12 through Under 14 fall and spring	Has irrigation, East Longmeadow Soccer Association has invested in seed and fertilizer for this site.
Meadowbrook Elementary School	1 full-size soccer field 1 modified soccer field 1 practice area	▪ PV travel soccer Under 9 through Under 14 use both fields for games in the fall but limited use in the spring	Has irrigation, best field in Town, saved for games but used extensively for games by all divisions.
Mt View Elementary School	3 soccer fields in fall only 2 soccer fields in the spring	▪ 1st and 2nd grade boys and girls soccer, which involves 13 teams in the spring and 14 teams in the fall ▪ 3 & 4th grade boys lacrosse in desperate need of field space in the spring	Mt View Upper field used for baseball diamond.
Mapleshade Elementary School	2 girls Lacrosse fields in the spring, which are then lined as 2 field hockey fields in fall	▪ Girls lacrosse grade 3rd through 6th grade practice and games in the spring. ▪ Girls field hockey for grade 3rd through 6th grade practice and games in the fall.	No irrigation Field conditions vary
High School	4 full size sport fields divided around site and adapted depending on sport	▪ High school varsity and junior varsity, boys and girls soccer teams in the fall ▪ High school varsity and junior varsity field hockey teams in the fall ▪ High school varsity and junior varsity, boys and girls lacrosse teams in the spring ▪ High school varsity and junior varsity football teams in the fall	Field space depends on use of baseball and softball outfields as 2 of the 4 fields are in the outfields of diamonds. Irrigation recently installed.

Source of information: East Longmeadow Recreation Department

Baseball and Softball

The Town of East Longmeadow supports approximately 50 youth baseball and youth softball teams, that practice and compete through three seasons, April through October. Though there has not been dramatic growth in the baseball program, softball grew from 5 teams in 2005 to 11 teams in 2011. The Center Field softball diamond has been abandoned by the high school varsity and junior varsity teams in favor of the skinned surfaces at the Birchland Park Middle School. This has placed additional pressure on the Birchland fields and made it more difficult to accommodate youth teams for practices and games.

Most of these youth baseball and softball teams play in the spring season., however there has been an increasing number of teams playing summer or fall baseball and softball. The Town also hosts two adult softball leagues (Twin Meadows and the Relics over 60 league) as well as the Tri-County Baseball League. These leagues play spring, summer and fall.

There were 37 Recreation Department baseball teams vying for field time in the spring of 2010. This includes the 2 teams of the Tri-County Baseball League. While the 6 teams in the Kindergarten Division play at Pine Knoll on a small 45-foot diamond that can easily accommodate them for practice and games, competition for field use among the other baseball teams presents great difficulties. (See Table 4.2)

- 15 youth recreation baseball teams in grades 1 through 4 compete for use of three 60-foot diamonds at Mountain View, Meadowbrook, and Mapleshade elementary schools for practices. Memorial Field at Heritage Park is reserved for games, which take place evenings and weekends.

- 7 youth recreation baseball teams with players in grades 5 and 6 Bronco Division must share the use of the only two 70-foot diamonds at Center Field/Leahy Field Diamond and Heritage Park/Blackman Field Diamond. This division is pressed to manage practice needs with just the two diamonds once games begin.

- 14 teams compete for use of the three 90-foot diamonds (at Center Field/Veterans, and two diamonds at the High School), including 7 youth recreation baseball teams in grades 7-10, the 3 high school athletic teams (varsity, junior varsity, freshmen), 2 Tri-County Adult Baseball Teams, and two East Longmeadow teams at 5th through 7th grade level that are playing in the Springfield league.

Scheduling field use is most problematic for teams in need of practice and game time on 60-foot and 90-foot diamonds. All teams that use the 90-foot diamonds are considered travel teams, with an expectation of more frequent and longer practices. Coaches for these teams prefer to hold practice 2 to 3 days per week that are 1.5 to 2 hours in duration. Among these teams, games are typically held twice a week, with each lasting about 2 hours.

Given that there are essentially four to five teams vying for time at each type of field (60 and 90-foot diamonds), it is difficult for coaches to get in more than one practice time each week per team. A far more functional ratio for scheduling practices and games would be three teams per field. To begin working toward that ratio and overcome the issue of limited field space, the Recreation Department has moved field sports like soccer out of the outfields of baseball diamonds so the diamonds have more playable days. In addition, the Department of Public Works has installed two temporary 60' diamonds at Mountain View and Mapleshade to replace those lost due to school expansion at Mountain View and reconstruction at Meadowbrook. Resulting in a total gain of one 60-foot diamond overall.

Softball

East Longmeadow also supports 10 youth softball teams for girls in grades 1 through 8 and two high school softball teams (varsity and junior varsity) that all seek practice and game times on three softball diamonds. Two of these fields are located at Birchland Park Middle School and one at the high school. The ratio here is 12 teams on 3 diamonds with the same need for extended game time and practice sessions as baseball.

With the attraction of better facilities, the high school recently moved their practices to Birchland Park Middle School. This in effect crowded out the youth program which had to cut back on practice times.

There are also two adult softball programs, Relics League for 60+ and Twin Meadows Men's Softball. Twin Meadows plays at the high school softball field on Sundays. Both of these teams play at the field sport facility at Mapleshade Elementary School when it is not in use. Mapleshade's field sport facility has two fields for the girls' lacrosse program in the spring and two fields for the girls' field hockey program in the fall. Unfortunately, these fields cannot be used by the youth softball teams as their practice and play times conflict with the lacrosse and field hockey practices.

For more information about recreation teams and numbers of participants and number of fields see documents in Appendixes from the Recreation Department.

Table 4.2: East Longmeadow Existing Baseball and Softball Facilities

Location	Facilities	Teams/programs that use	Notes
Pine Knoll	1 45-foot baseball diamond	▪ Used by Kindergarten 6 teams for T-ball	Family friendly site, too small for any other division. Good introduction to parents of young children to the site to which they may want to send their children to in the summer for the Day Program
Center Field	Veterans Field: 90-foot baseball diamond	▪ High school freshmen for practice (no games); ▪ 7 & 8th grade Sandy Kofax 2 of the 4 teams can use it for games and practice ▪ 9 & 10th grade 2 Mickey Mantle teams, for practice only.	Not the preferred field due to the shallow outfield fence and issues with water around 1st base esp. Usable for games by "B" & "C" level teams in the Sandy Kofax division. Not functionally for the remaining 10 teams.
	Leahy Field: 70-foot baseball diamond	One of 2 fields used by Bronco Division 5 & 6th graders – 7 teams in the spring	Enclosed facility with a club house and concession stand.
	Softball field	No use.	Underutilized as it is has a grass infield.
Heritage Park	Memorial Field: 60-foot baseball diamond	Used primarily for games by the 1 & 2 grade Pinto Division and the 3 & 4th grade Mustang Division once the season starts . Total of 15 teams	Has irrigation and is in very good condition. Preferred field. Family friendly venue.
	Blackman Field: 70-foot baseball diamond	Used primarily by the 5 & 6th grade Bronco Division for games. 7 teams	Has irrigation and is in very good condition. Preferred field. Family friendly venue.

Location	Facilities	Teams/programs that use	Notes
Meadowbrook Elementary School	60-foot baseball diamond- newly constructed	▪ Used primarily for practices with some games if they can't be played at Heritage by the 3 & 4th grade Mustang Division 7 teams	Has irrigation and is in very good condition. Field orientation makes it a difficult location for late afternoon games.
Mt View Elementary School	60-foot baseball diamond	▪ Used for games or practices by the 1 & 2 grade Pinto Division Total of 8 teams.	Constructed as a temporary diamond. Has circle cut outs for bases but not base paths. Drains well no irrigation
Mapleshade Elementary School	60-foot baseball diamond	▪ Used primarily for practices by the 1 & 2 grade Pinto Division as they don't hit the ball as far interfering with the field sports in the outfield. 8 teams	Constructed as a temporary diamond. Has circle cut outs for bases but not base paths. Does not drain well and has FH and Lax to compete with in the outfield.
High School	2 90-foot baseball diamonds	▪ High school varsity and junior varsity teams ▪ Sandy Kofax and Mickey Mantle 7 – 10th Grade, 4 teams ▪ American Legion team for 16 to 20 yr. olds, 1 team ▪ Adults in Tri County (2 East Longmeadow teams) ▪ Fall baseball league for high school-aged students, 3 East Longmeadow teams	In good shape and preferred fields for the teams in the 90' Divisions. Fields are scheduled based on skill level and age group with the older and higher skilled teams playing on the Varsity field and the "B" teams playing on the junior varsity field.
High School	Softball diamond	▪ High school girls varsity softball team practice and games ▪ Girls softball program 10 spring teams grades 1 through 8th. Usually only 2 teams in the 7/8th grade division ▪ Men's softball program – Sundays only	No irrigation though field drains well. Dirt infield and outfield large enough to accommodate all skill levels. Field usually assigned to the 7/8th grade girls softball teams as their game and practice field.
Birchland Park Middle School	2 Softball diamonds	▪ High school varsity and junior varsity teams ▪ Girls softball program grades 1 through 6th, which involves 8 teams	This is the preferred site because they are skinned infields and it has 2 diamonds together. This allows coaches to support each other, share ideas and equipment like the pitching machine. This helps develop the youth coaches skills quicker. ,

Source of information: East Longmeadow Recreation Department

Objectives
Site conditions present limitations in meeting all of the Town's housing and recreation needs, but the following are objectives identified through discussions with the directors of the Housing Authority and Recreation Department and with members of the Project Advisory Team.

Housing

- 20 to 40 new affordable housing units, which would serve to meet one-quarter to one-third of the Town's needs for affordable housing

Because the Watchaug Meadows site is owned by the Town of East Longmeadow, it is a promising location for new senior affordable housing that would be owned and operated by the Housing Authority.

Active Recreation
Some combination of:

- 3 full-size multi-use fields (210 x 360 feet, plus 25-foot run out area) to be used in the spring for boys lacrosse teams and travel soccer. In fall, would be used for soccer and football.
- 1 baseball diamond with 90-foot base path to accommodate play by 7th grade through adult programs
- 2 softball fields with 70-foot base path and skinned infields suitable for youth through adult teams

Bathrooms, benches, bleachers, and storage for equipment would also be important components of these facilities. A concession area (if there is water and sewer on site) or possibly just vending machines, and a small playground to occupy children while older siblings are playing on the fields, would be desirable as well.

Passive Recreation and Conservation
While thinking about development of the site, it is also important that conservation objectives remain clear. These have been articulated by the Project Advisory Team as follows:

- Protect wetlands
- Protect threatened species and species of special concern (salamanders)
- Maintain wildlife corridor (bobcat, deer, possibly bear and moose)

These conservation objectives work well with one of the major recreation objectives articulated by the Project Advisory Team: develop an expanded trail network that can accommodate passive recreation activities. These activities include hiking, cross-country skiing, birding, horseback riding, and possibly mountain biking.

The Town's Open Space and Recreation Plan (2000) also recognizes the "need for additional recreational opportunities appropriate" to the senior population. Further, a letter from the Council on Aging (COA) to the OSRP committee indicates, "We have an active Walking Club as well as solitary walkers who need a well maintained walking trail to solve the current safety concerns of walking on the side of roadways." This letter refers to the senior recreational organization in Town called the "Morning Glory Walkers," a club in which seniors walk together for exercise.

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Section 5: Opportunities and Constraints

The following is an analysis based on the environmental and cultural considerations identified in Sections 2 and 3. This section focuses on the possibilities and limitations on use of the site for meeting the Town's needs described in Section 4, including development of athletic fields, affordable housing for seniors, and recreational trails. This analysis directly informs the formulation of the design development concepts for the site presented in Section 6 and the recommendations in Section 7.

Athletic Fields and Affordable Housing for Seniors

Most of the Brown Farm-Watchaug Meadows site is not suitable for development due to extensive wetlands, floodplains, and poorly drained soils. The southeastern portion of the site, formerly the Brown Farm, appears to present the only sizable upland area that is suitable for development of athletic fields, housing, and associated parking (see Map 5.1: Areas Suitable for Development). Maps obtained from MassGIS and informal site walks by PVPC indicate that this area—some 30 acres—is not wetlands or located in a flooplain area, and it has well-drained soils. The Town's contour map, however, indicates there is one area along the eastern edge here with a slope of 13 percent. Delineation of wetlands, soils analysis, and survey work will be important next steps to confirm all of these conditions.

The former Brown Farm property is also the sole area of the Watchaug Meadows site with access that is dry and wide enough to provide entrance and exit for vehicles. This potential vehicle access is located on Hampden Road, some 1,300 feet east of Somers Road (indicated by an orange asterisk on Map 5.6: Opportunities and Constraints). The one possible drawback is that there may not be adequate visibility for vehicles exiting the site due to its location down gradient of a small hill along the road just west of the site. In this case, the driver trying to turn onto Hampden Road cannot see an oncoming vehicle until it has reached the hill's crest. Due to potential safety issues, the vertical curve alignment of this hill may need to be addressed. Section 7 on Recommendations identifies next steps to develop an appropriate solution.

Limited sight distance at site entrance: View looking west on Hampden Road from the site.

Trails

The remaining land on site, though undevelopable, presents a significant opportunity for creating a large network of passive recreation trails for community use. By referring to these trails as "passive recreation trails," there is an assumption that motorized uses are prohibited. New trails (see Map 5.2: Potential New Trails) can connect the site's existing trails to each other and to other portions of the site. In particular, a new trail that generally follows the periphery of the site with several trails crossing east to west, such as the trail between the

Fernwood and Hoover Conservation Areas, would vastly improve connections within the site and to the surrounding neighborhoods. The expansion of the trail network might also feature some of the history of the site, perhaps with an "Old Quarry Cultural Trail." Because of the extensive wetlands on site, most trails would require small bridges and or possibly boardwalks. For trails planning, it may be worth determining what animals are using the site and how they are moving through it so that trails could avoid areas frequented by wildlife. Note that the trail locations shown on Map 5.2: Potential New Trails are conceptual only, and would need to be sited based on more detailed surveying and mapping of the site.

An expanded trail network could also connect the site to nearby conservation and open space areas. See discussion in this section below under Connections to Nearby Assets.

Trails could be accessed by residents from numerous points at the periphery of the site (marked by asterisks in Map 5.6: Opportunities and Constraints). In addition to existing pedestrian access points (see pink asterisks), one additional pedestrian access point could be established (see purple asterisk). Some of these trailheads can accommodate some parking. At the Fernwood Conservation Area it is possible to park on the street. The Craven Conservation Area already has sufficient space for off-street parking for three to four vehicles. Off street parking might also be accommodated at the trailhead located at the Hoover Quarry Conservation Area.

With construction of trails, it is important to note that the Town could be subject to new amendments under the Architectural Barriers Act that will apply to outdoor developed facilities constructed or altered with the use of federal grants and loans or covered by Title II of the American Disabilities Act. Under these requirements, regulations will apply to pedestrian routes developed primarily for outdoor recreational purposes, and newly constructed or altered trails directly connected to a trailhead or another trail complying with guidelines. Accessibility will be required at 20 percent of each type of outdoor constructed feature within a trailhead.[13] A question and answer sheet on the rules is included in the Appendixes to this document.

Costs for constructing accessible trails will vary, depending on the existing site conditions and preferred surface material, according to Kathleen Lowry, Landscape Architect, for DCR's Universal Access Program. For estimating purposes, she suggests using $40/linear or running foot of trail for a 5-foot wide trail. A 5-foot wide trail, she notes, is a standard width for wheelchair accessibility and for a sidewalk paver to do the construction. She notes that hand tools could make a narrower trail, but wider passing spaces are then required at regular intervals. This cost estimate also assumes a 4-6-inch depth for the trail surface material and 3/8-inch minus "stones plus dust," which she says provides a reasonable gradation for packing firmly, yet small enough particle size (less than ½-inch) for wheelchair access.

[13] United States Access Board, December 2009 Webinar. To see updates on this rulemaking, see: http://www.access-board.gov/outdoor/

Scenic Areas
Trail development should capitalize on the scenic areas that are present on the Brown Farm-Watchaug Meadows site (see Map 5.3: Scenic Areas). In the northern portion of the site, there are some particularly scenic areas along the trail, including the quarry pond in the Fernwood Conservation Area and the main tributary stream to Watchaug Brook. The stream in this area has sections where the water tumbles over large cobblestones or small dams, creating small waterfalls. The Brown Farm site itself has several scenic areas along existing trails with old stone walls and mature white pines and beech trees in the surrounding woodlands.

Opportunities for Seniors
As mentioned in Section 4 above, the Open Space and Recreation Plan identifies a "need for additional recreational opportunities appropriate" to the senior population.
New senior-friendly walking trails at Brown Farm-Watchaug Meadows could serve the Morning Glory Walkers and other seniors. The site also presents a unique opportunity to combine new affordable senior housing with access to recreation that is well suited to this population.

Connections to Nearby Assets
A key opportunity at the Brown Farm-Watchaug Meadows lies in connecting the site to significant nearby assets (See Map 5.4: Potential Connections to Significant Assets). These connections can be made with a combination of trails and sidewalks. This includes connecting the site to schools (Mountain View, Meadow Brook and Mapleshade) and to conservation areas (Jarvis, Veratti and Kenmore).

In this vein, the Town can begin to prioritize development of new sidewalks in a way that makes these important connections between the site and nearby assets (see Map 5.5: Priority Sidewalks). High priority connections could be those between the site and the nearby schools and conservation areas. Next, priority connections could be the extension to the commercial corner at the intersection of Somers Road and Kibbe Road, to higher density housing areas, and to other public and institutional assets.

Conservation
The limitations to development at Watchaug Meadows present certain advantages in addressing the Town's conservation objectives. In turn, these objectives, which include protecting wetlands and habitat and corridors for wildlife, can be combined with effect to meet the Town's desire for passive recreation trails.

There are some 253 acres for conservation at Watchaug Meadows, which includes the 186 acres owned by the Conservation Commission. This is the largest contiguous tract of protected open space in East Longmeadow.

Both wetlands and wildlife habitat are likely impacted by stormwater runoff delivered from surrounding development to the site's 21 outfalls. Stormwater runoff can be detrimental to water quality and the survival of wetland species for several reasons. In developed areas, stormwater typically travels over hard surfaces, such as roads, driveways, and rooftops. Traveling over these impervious surfaces, stormwater typically gains velocity and erosive force, which enables it to pick up and carry even more pollutants and sediments to receiving

waters. As these surfaces are heated by the sun in warmer months, stormwater runoff can also significantly elevate temperatures in receiving waters. Efforts to reduce impervious surfaces and to capture more stormwater for infiltration in the uplands of surrounding neighborhoods, would reduce these impacts, improving the quality of the wetlands and wildlife habitat. At the same time, such an initiative would help to increase awareness among residents about better stormwater management practices on their own properties. At the very least, there should be no new stormwater permitted to drain to the site.

It is believed that Watchaug Meadows may serve as a corridor for movement and possibly habitat for larger animal species, such as bobcat, deer, bear, and moose.[14] Use of the site for passive recreation will provide more opportunities to observe and take note of these uses by wildlife. This is not something that could be accomplished within the scope or timeframe of this project. It will be important to determine how animals are moving through the site. Based on wildlife observations elsewhere, it is possible that the primary corridor is along the tributary stream to Watchaug Brook. Some of the constraints for both aquatic and terrestrial species using this corridor include fragmentation of Watchaug Meadows from other undeveloped areas, caused by the road crossing at Somers Road to the south and Porter Road to the north. At Porter Road the crossing has been further impaired with the recent addition of a chain link fence above the culvert's headwall. An important guide for better design of such crossings is the *Massachusetts River and Stream Crossings Standards.*[15]

[14] George Kingston at May 4, 2010 meeting with Project Advisory Team.
[15] This document is available at:
http://www.streamcontinuity.org/pdf_files/MA%20Crossing%20Stds%203-1-11.pdf

Summary of Opportunities and Constraints Analysis

The Brown Farm-Watchaug Meadows site is capable of meeting some, but not all of the Town's needs (see Section 4 above). Based on the opportunities and constraints analysis, the following are the conclusions and important considerations for meeting these needs. Key points are also summarized in Map 5.6: Opportunities and Constraints.

- *The upland portion of the site on the Brown Farm property (approximately 30 acres) is suitable for development and could accommodate several athletic fields and affordable housing for seniors, depending on how development is configured.*

- *Because most opportunities to access the site involve wetland or stream crossings, or would be very narrow, the only suitable entrance for vehicles to access the site is from Hampden Road (orange asterisk on Map 5.6: Opportunities and Constraints)*

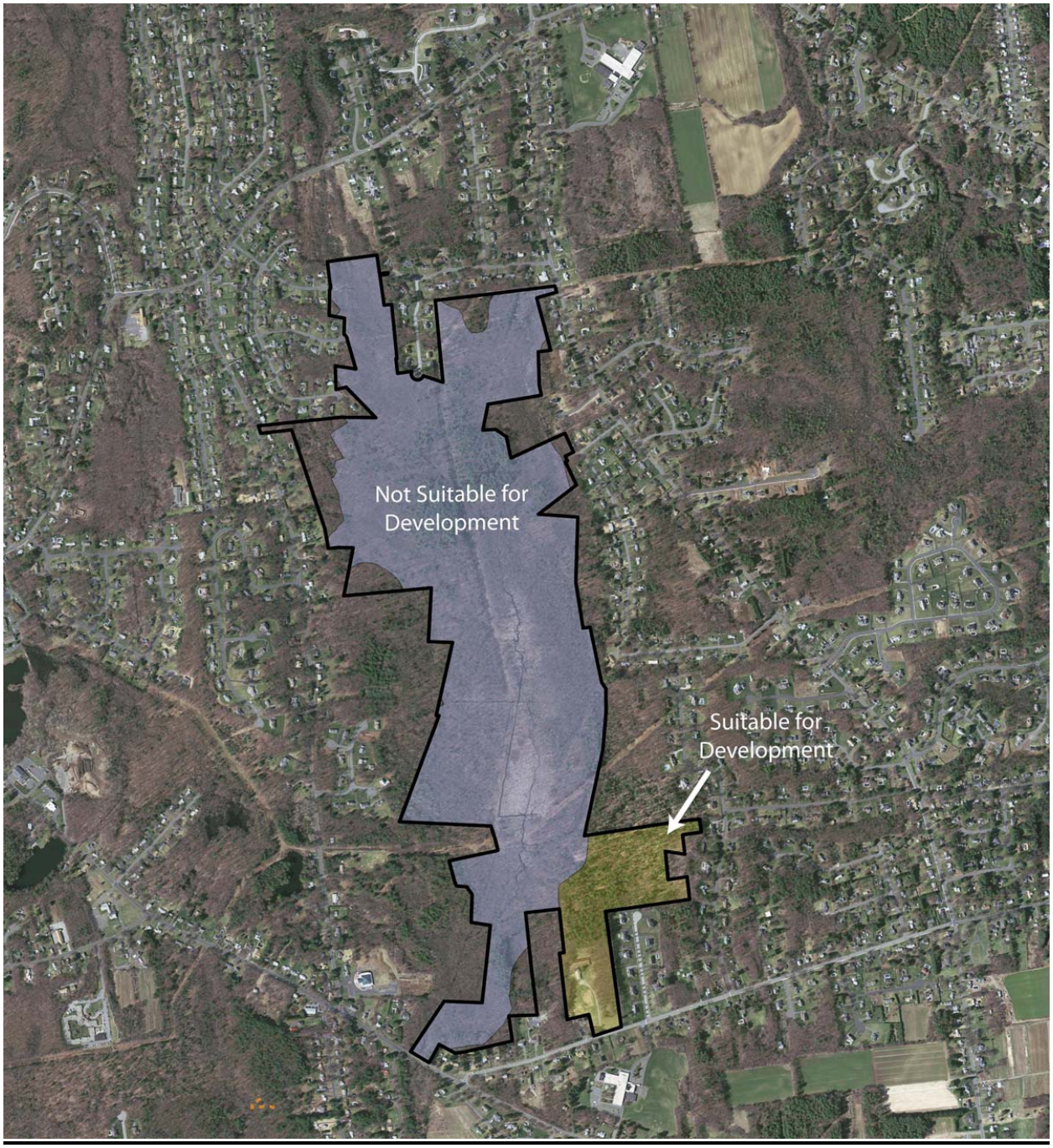
- *Though much of the Town's property at Watchaug Meadows is not suitable for development, expanding on the existing trail system to create an extended network of walking paths would greatly enhance passive recreation opportunities. These trails may be accessed at a number of locations at the periphery of the site (pink and purple asterisks on Map 5.6: Opportunities and Constraints) with limited trailhead parking.*

- *Because the site already receives significant stormwater runoff from the surrounding area via at least 21 outfalls, no new stormwater should be permitted to drain to the site. Also, improved stormwater management in the upland neighborhoods surrounding the site would reduce current impacts to wetlands and wildlife.*

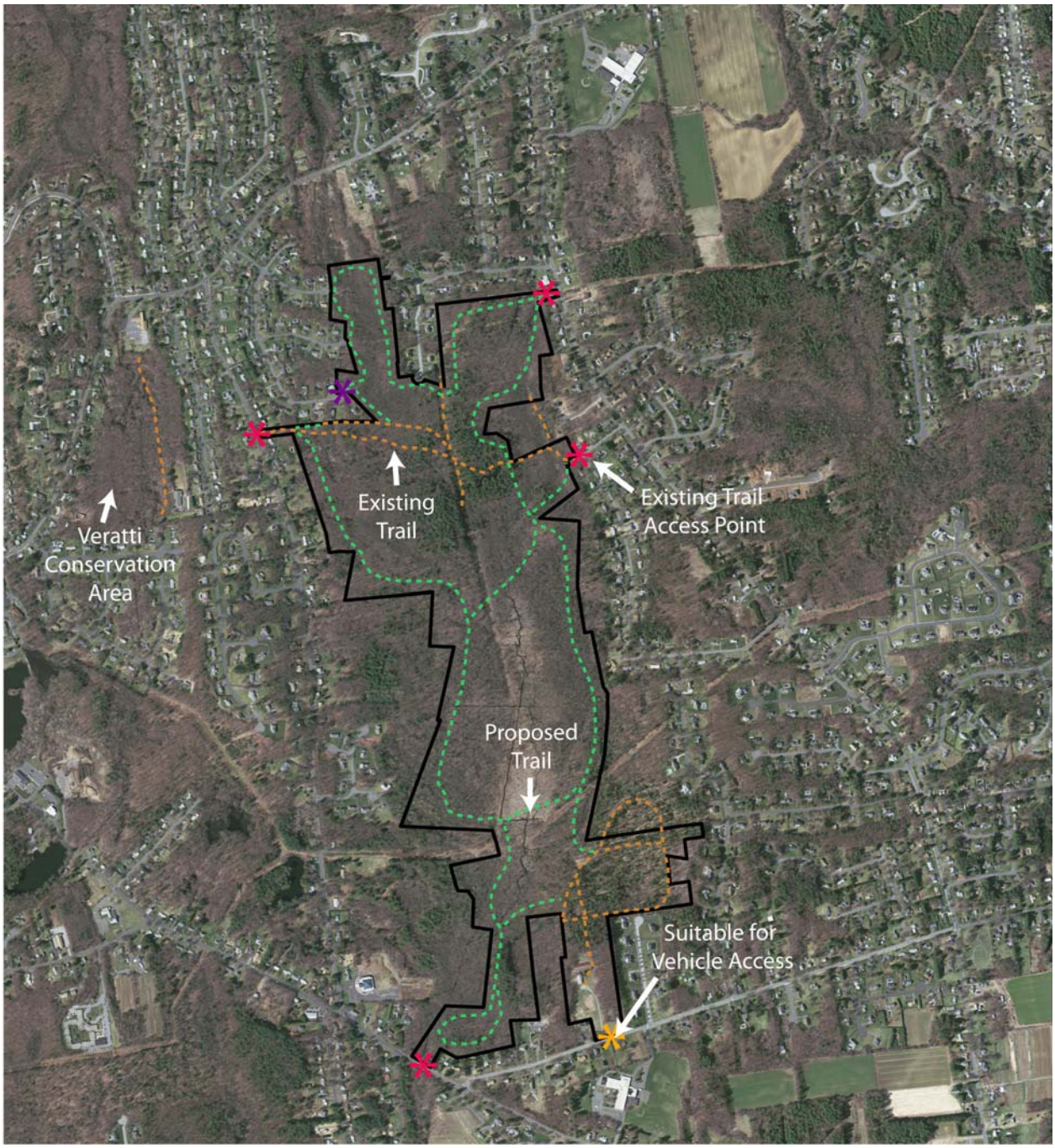
- *Especially scenic areas include the pond, several small waterfalls, and the barn (located on abutting property) that serves as a backdrop to the open space at the Brown Farm property. These areas can be preserved and enhanced to allow for passive enjoyment by the community.*

- *Development of new trails, sidewalks and signage can make connections between the site and nearby schools, conservation areas and other assets (senior housing, public and cultural institutions, high density residential areas, etc.). Also, new sidewalk development ought to be prioritized to connect the site to nearby assets.*

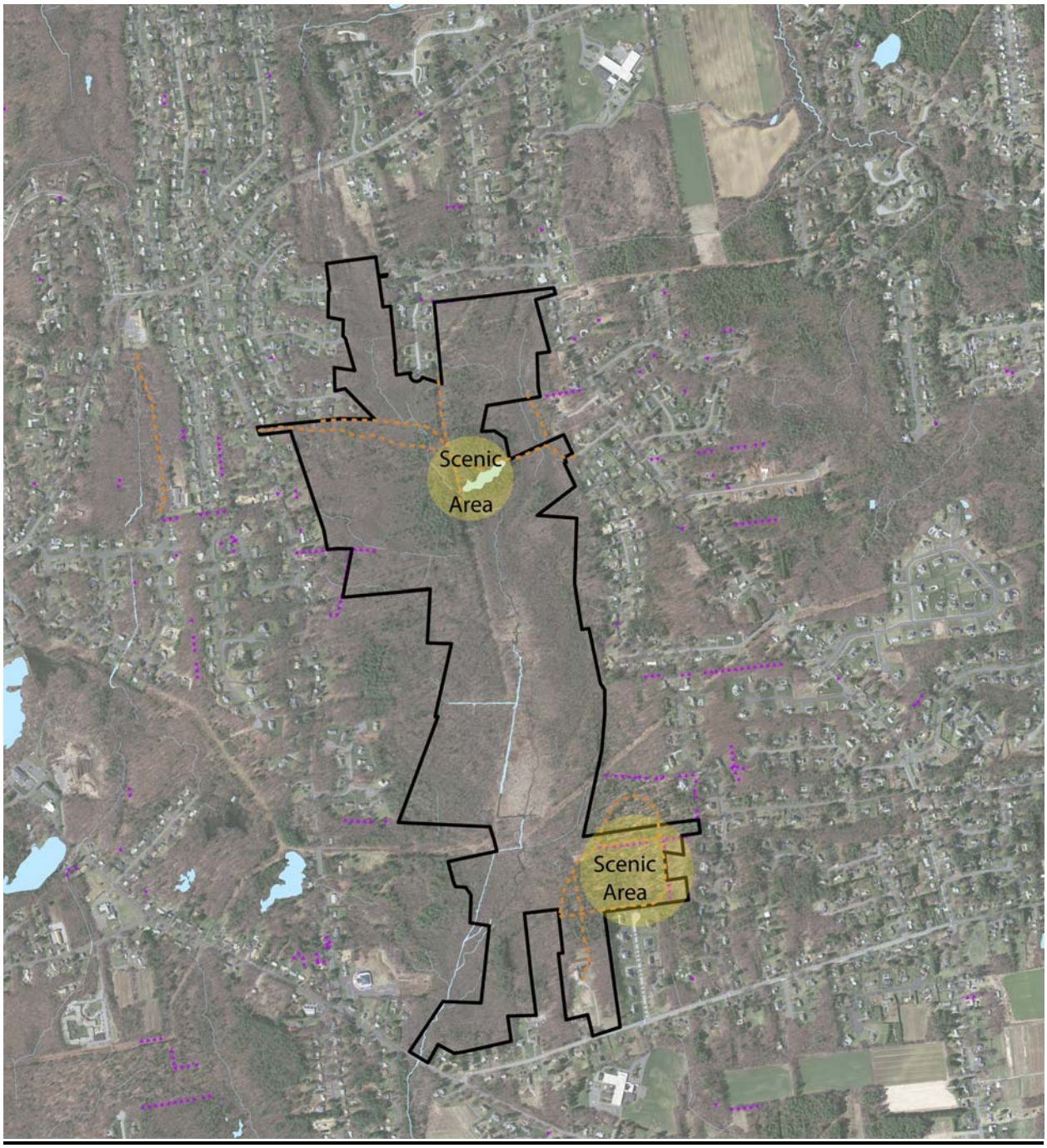
Map 5.1: Area Suitable for Development



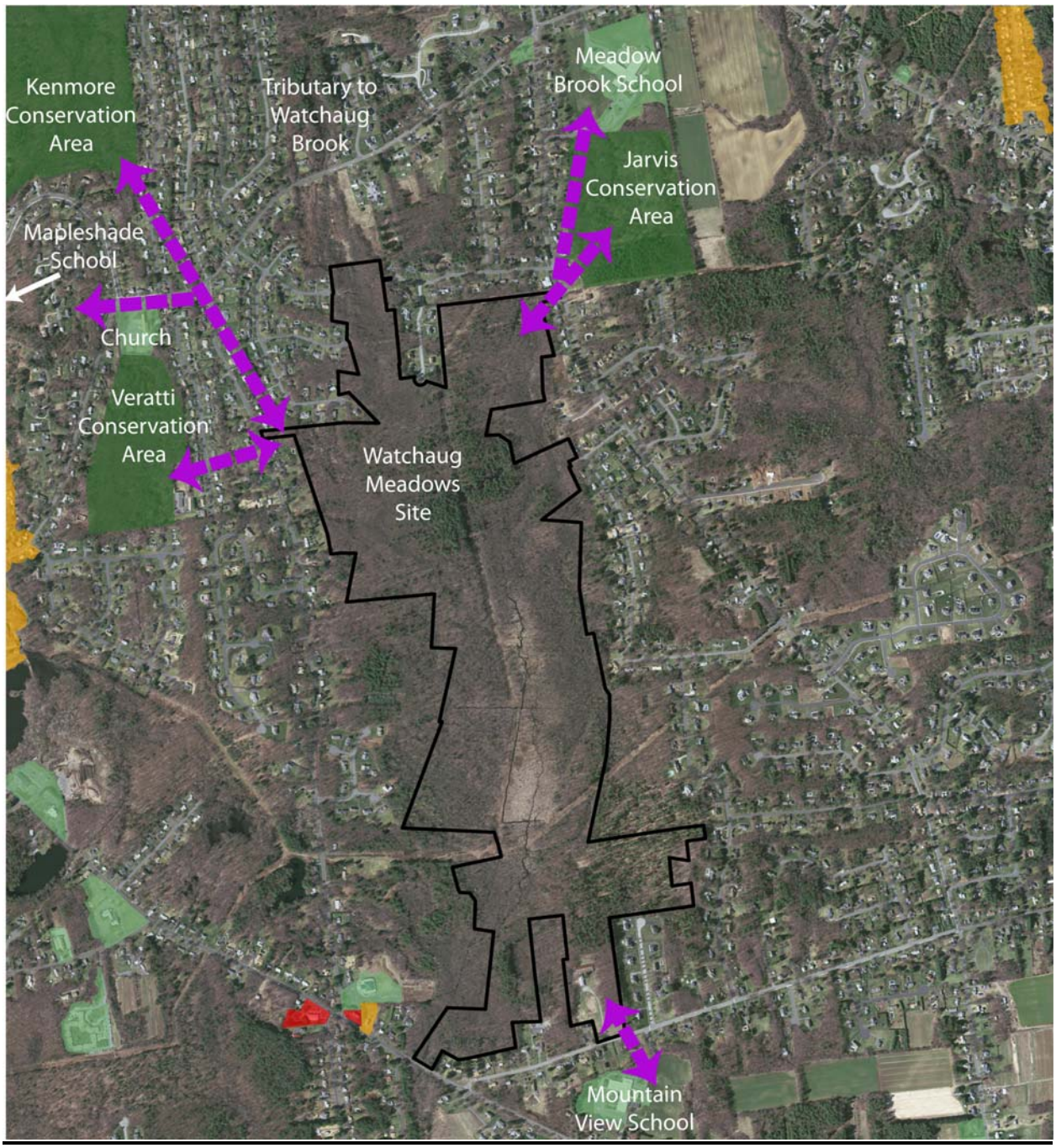
Map 5.2: Potential New Trails



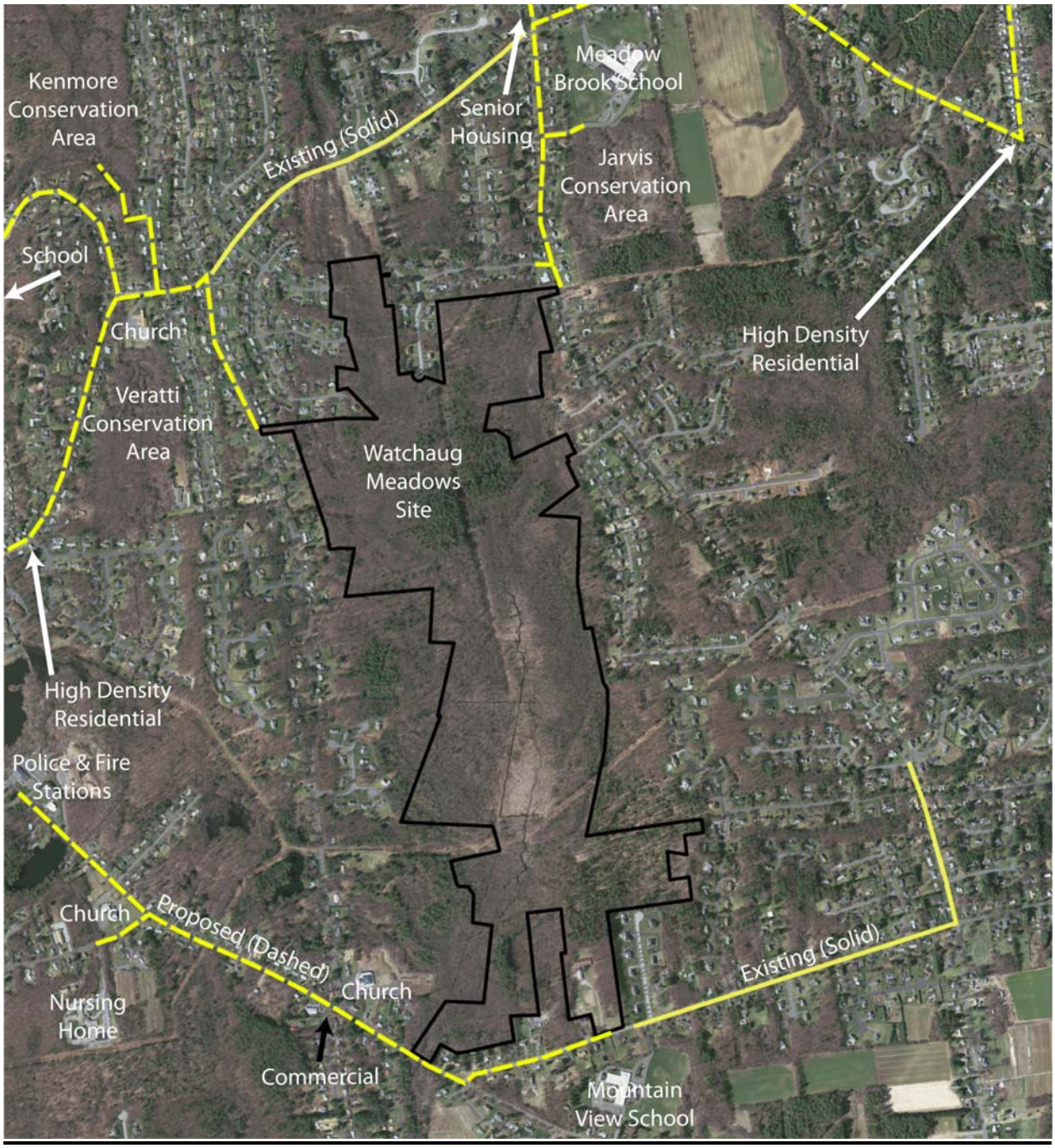
Map 5.3: Scenic Areas



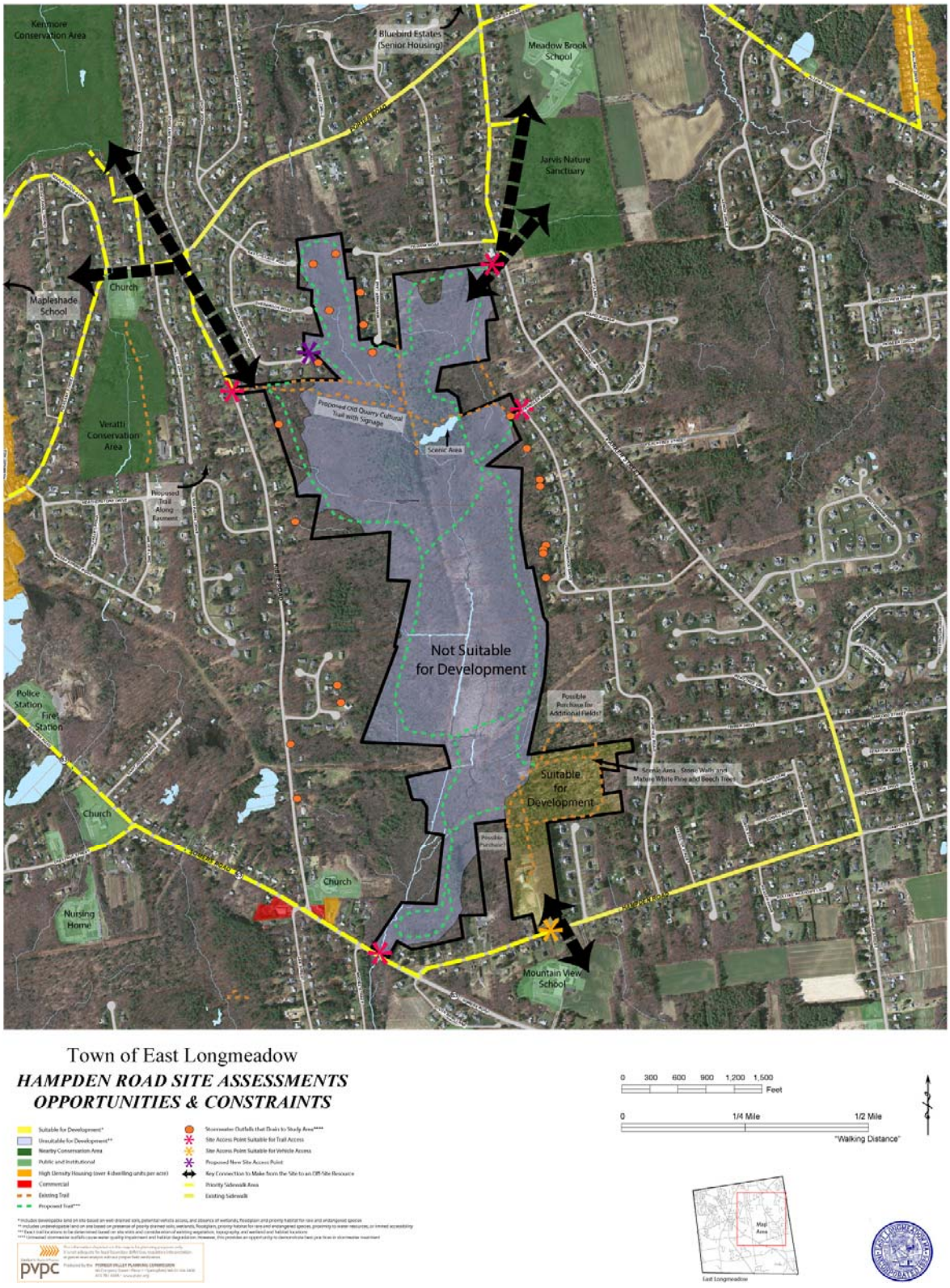
Map 5.4: Potential Connections to Significant Assets



Map 5.5: Priority Sidewalks



Map 5.6: Opportunities and Constraints



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Section 6: Site Development Concepts

Housing Considerations

Based on the research described in the preceding sections of this report, as well as discussions with Lynn Booth, Executive Director of the East Longmeadow Housing Authority, it was determined that the senior affordable housing development at the Brown Farm site could consist of two-story town home-style buildings that would provide housing that fits with the overall character of the community. In addition, the development should provide a community room and community open space for the residents, as well as connections to passive recreation trails. Within the development's shared open space, other active living features could be accommodated as well, including community garden plots for residents, on-site footpaths, and outdoor courtyards and seating areas.

The senior housing development should include a choice of housing unit types, including studio units, one-bedroom units and two-bedroom units. In general, one-bedroom housing units are most common for senior housing, and there is demand for some studio and two-bedroom units as well. As a starting point, these design concepts completed as part of this project assumed a mix of 15 percent studio units, 70 percent one-bedroom units, and 15 percent two-bedroom units. Based on other housing developments, it was assumed that studio units average 560 square feet, one-bedroom units average 640 square feet, and two-bedroom units average 980 square feet. A two-story building template with a footprint large enough to accommodate 7 units (including 1 studio unit, 5 one-bedroom units, 1 two-bedroom unit, and room for hallways, elevators and stairs) was developed in order to create the design concepts. Based on this building template, the average unit size for the entire development would be 677 square feet per unit. In addition, it is important to note that some first floor units should be fully accessible for persons with disabilities.

Finally, the Housing Authority Director indicates that it is reasonable to provide one parking space for each unit to accommodate the parking needs of residents, plus one parking space for every 10 units for visitors and employees. The design concept accommodates 49 dwelling units, so 54 parking spaces are the minimum number that would need to be provided.

Recreation Considerations

With the development potential of the Brown Farm property, the Project Advisory Team agreed that it seems appropriate to explore options for active recreation facilities. Team members noted that nearby homes should have some buffer from these facilities. The design concepts take this into account by providing 50 feet of space between all property boundaries and site facilities. Design concepts also provide for a multi-use trail that leads from the Brown Farm area to the expanded trail network in Watchaug Meadows.

With the opportunity to develop fields at Brown Farm, the constraints on the baseball and soccer programs in particular will be greatly alleviated. Changes toward efficiency and in consolidating uses by certain age groups (youth versus high school and adult) at the other sporting facilities in Town may also be important and could have direct bearing on the facilities for Brown Farm. Given the Town recreation program's most pressing needs (see

discussion in Section 4), the design concepts strive to accommodate as much space as possible for full-size fields for use by soccer, lacrosse, football, and baseball. The concepts also include a 20 by 30-foot restroom facility that is sited near the fields. If the Town determines that portable toilets might require less maintenance, this small building could be used instead for equipment storage or for a concession stand.

Full-size multi-use fields are 360 by 210 feet with a 25-foot run out area on all sides. The baseball diamond has a 90-foot base path and provides 400 feet between home plate and the center field fence, occupying a total of some 4.5 acres. It will be important to ascertain through an actual survey whether the slopes along the eastern edge of the baseball diamond will limit inclusion of such a large facility. While the 90-foot diamond could be relocated slightly more to the west, a multi-use field or smaller diamond may provide for a better fit in this area.

There was discussion in the Project Advisory Team about a possible land swap with an abutting neighbor to the west that would provide for a consolidation of developable space on the Brown Farm. The neighbor would in turn get an equal amount of upland area on the Koch property. This requires further investigation to determine whether the neighbor is amenable to such a transaction.

The number of parking spaces needed for the multi-use fields is calculated based on an assumption of providing parking for 22 athletes, plus two coaches and two assistant coaches per field.[16] This makes for a total of 26 parking spaces for each multi-use field. For the baseball diamond, the number of parking spaces needed is calculated based on an assumption of providing parking for 18 athletes, plus two coaches and two assistant coaches. This makes for a total of 22 parking paces for the diamond, though the concepts here account for 26 parking spaces for the diamond. To accommodate additional parking during games, the access road could be designed to allow for parallel parking along its length.

Concept #1

The first design concept devotes the site to recreational purposes. (See design concept at end of this section.) Along a tree-lined 24-foot wide access road into the site, there are three full-size multi-use fields to the west.[17] At the end of the access road to the east, there is one baseball diamond with a 90-foot base path. All fields are optimally oriented to minimize periods where athletes would have visibility issues due to the sun. Two parking lots each provide space for 52 vehicles and there could be space along the access road to allow for an option to accommodate additional parallel parking on the western side. On the eastern side of the access road, there is a sidewalk that leads from Hampden Road to the interior of the Brown Farm property where it connects with a multi-use trail. On Hampden Road, this sidewalk could conceivably connect to the Mountain View Elementary School. This concept also includes a 20 by 30-foot restroom facility that alternatively could be used for equipment storage or as a concession stand if the Town opts to use portable toilets on site.

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[16] There is no standard in Town for number of parking spaces at athletic facilities.

[17] To meet new stormwater permit regulations, it would be beneficial to promote Low Impact Development practices on the site and specifically minimize the amount of impervious surface. As such the road width used for the concepts is the minimum allowed with a variance under the Town's subdivision regulations.

Concept 1 Feedback
Discussions with the Project Advisory Team about Concept 1 brought up the following considerations:

- It may be desirable to move the baseball diamond about 20 feet west (closer to the parking lot), as the field itself already includes a green space and spectator area between the parking lot and baseball diamond. This would minimize clearing and grading to the east of the baseball field and also reduce cutting into the slopes in this area.

- The "pocket park" at the southern portion of the site abutting Hampden Road could help tie the site to Mountain View School and provide a park for public use. There are few public playgrounds in town, and this would also provide an activity for children attending their siblings' sports events.

- Instead of a pocket park, a small affordable senior housing development of approximately 14 to 18 senior housing units could be constructed in this space (see Concept #3 which includes this idea).

Concept #2
In the second site design concept, one multi-use athletic field is removed to make way for an affordable senior housing development. (See design concept at end of this section.) This concept accommodates 49 housing units, meeting nearly one-half of the Town's needs for affordable housing, as previously discussed in Section 4. This includes 7 studio units, 35 one-bedroom units, and 7 two-bedroom units. It also includes a community building with a 1,600-square-foot footprint and shared open space for both passive and active recreation, including a courtyard, community garden, footpaths, and seating area. The community room is sized to accommodate a gathering of all residents up to 100 people. A second story could also be built to provide additional community space or dwelling units for residents or staff. For parking associated with the housing, there are 60 parking spaces, where 54 are required. There is also the option to accommodate parallel parking along the access road. The total minimum number of parking spaces required for the entire site design could be reduced by allowing some visitor and staff parking spaces to be shared with some spaces needed for the recreation fields. The total housing development footprint is approximately 3 acres, including the interior roadway (not main access road to the site), sidewalks, buildings, parking, and open space. This works out to 16 dwelling units per acre.

Concept 2 Feedback
Discussions with the Project Advisory Team about Concept 2 brought up the following considerations:

- In winter, plowing could go as far as the first parking lot to the north of the housing complex. The second parking lot to the north could provide a snow storage area and the remainder of the site to the north could stand unplowed. This would leave 8 plowed parking spaces in the first lot that would be available for recreational users who could use the fields and trails for cross-country skiing and snowshoeing.

- In order to minimize noise impacts to the senior housing area, the town could consider additional landscaping to the north of the parking lot that serves the senior housing development and the multi-use fields. Another possibility is to create a small berm to deflect noise upwards.

- One option for moving forward with the affordable senior housing development might be to use a Low Income Tax Credit developer to build and manage the development. The developer would then hold a long-term lease on that portion of the property.

Additional Discussion about Both Concepts 1 and 2:

- Development of the Brown Farm property could serve as a Low Impact Development demonstration project, though further discussions with the Department of Public Works are imperative.

- The restroom location shown is not optimal with regard to the fields. It would be better to place the restrooms at a more central location between the three fields. However, the town can only bring sewer to the topographical high point (shown on each concept drawing) because beyond this point, an expensive and cost prohibitive pump station would be needed. Another option is to use portable toilets which provide a low-cost alternative.

- For both concepts, all fields are shown in the largest possible size. Fields might be used more flexibly with smaller multi use fields using the outfield of the baseball diamond.

- Emergency vehicle access has not been detailed in either concept. Some small changes will be required to provide an adequate turn-around radius for fire trucks.

- Trees cleared for the project might be saved and stored on-site in order to be used to build benches and for use in trail management. However, it is uncertain whether this strategy would be cost effective.

Concepts #3 and #4
PVPC developed Concept 3 based on discussions about Concepts 1 and 2 with the Project Advisory Team. Concept 3 retains all of the athletic facilities proposed in Concept 1 and includes 14-19 senior affordable housing units at the front of the site in two two-story townhome buildings. (See design concept at end of this section.)

Comments at the September 2011 public meeting supported the development of a fourth concept that shows the entire site devoted to passive recreation. (For notes from this meeting see Appendixes.) Concept #4 as a result shows a modest access drive from Hampden Road with parking for 20 vehicles. This concept suggests a trail network that would start at Hampden Road, connect to an existing trail at the Brown Farm site that then leads to what would be an expanded network of trails at Watchaug Meadows.

Brown Farm Site Development Concept #1

Recreation Program

- 1 baseball diamond with 90-foot base path
- 3 full-size multi-use fields (360 foot by 210 foot with 25 foot runout) suitable for soccer, lacrosse, field hockey
- Multi-use trails next to existing stone walls
- Sidewalks and crosswalks for pedestrians
- 104 parking spaces (assumes full use of fields by players and coaches: 26 vehicles per field)
- Option to accomodate additional parallel parking along west side of entrance road
- Restrooms

Notes

- Concept employs optimal north-south field orientation
- Need to address limited sight distance at Hampden Road exit
- Consider traffic calming and crosswalk across Hampden Road to Mountain View Elementary School
- Possible use of Mountain View Elementary School for overflow parking
- Potential to demonstrate Low Impact Development stormwater managment strategies

Concept Plan 1

N

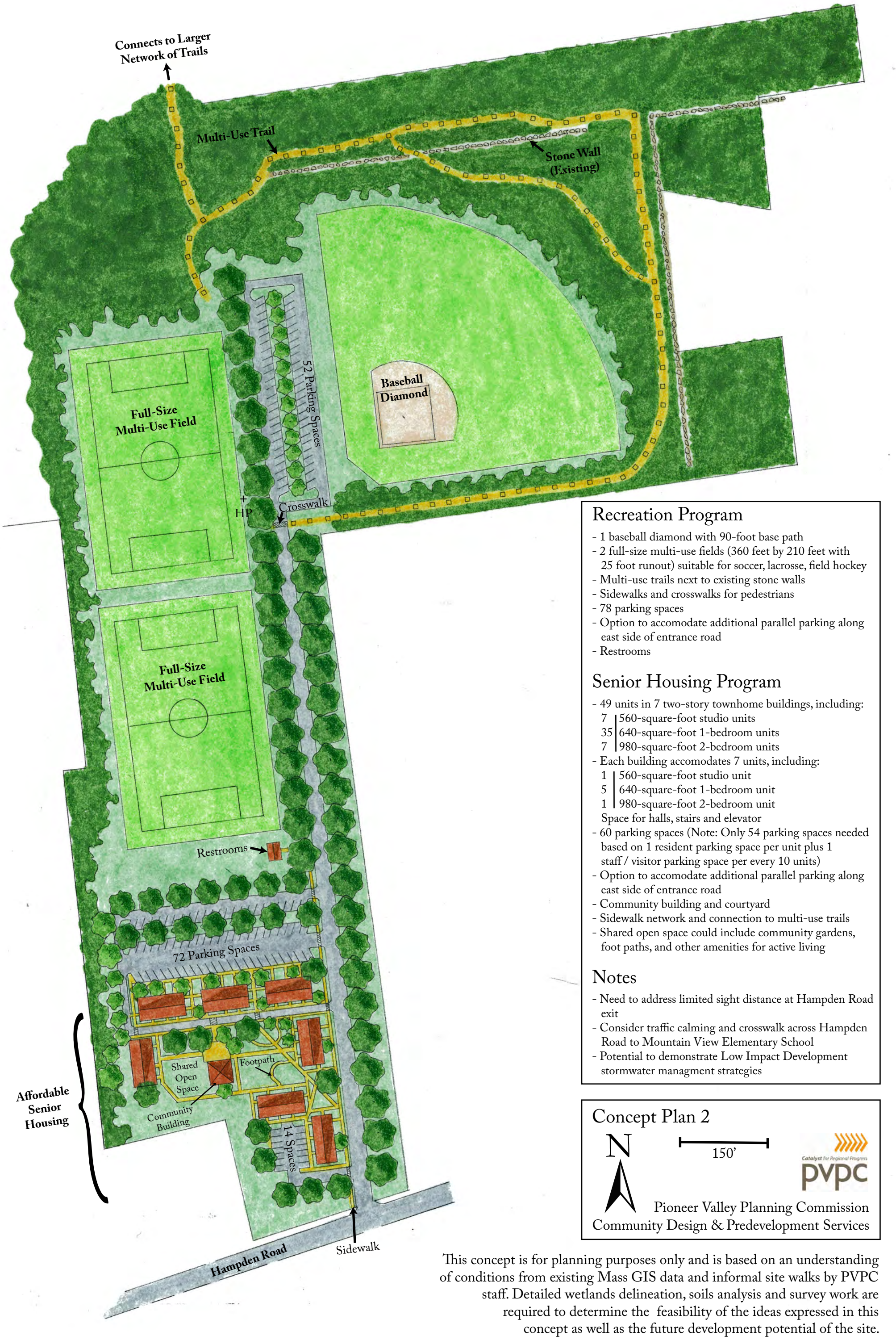
150’

Catalyst for Regional Progress PVPC

Pioneer Valley Planning Commission
Community Design & Predevelopment Services

This concept is for planning purposes only and is based on an understanding of conditions from existing Mass GIS data and informal site walks by PVPC staff. Detailed wetlands delineation, soils analysis and survey work are required to determine the feasibility of the ideas expressed in this concept as well as the future development potential of the site.

Brown Farm Site Development Concept #2



Recreation Program

- 1 baseball diamond with 90-foot base path
- 2 full-size multi-use fields (360 feet by 210 feet with 25 foot runout) suitable for soccer, lacrosse, field hockey
- Multi-use trails next to existing stone walls
- Sidewalks and crosswalks for pedestrians
- 78 parking spaces
- Option to accomodate additional parallel parking along east side of entrance road
- Restrooms

Senior Housing Program

- 49 units in 7 two-story townhome buildings, including:
  - 7 | 560-square-foot studio units
  - 35 | 640-square-foot 1-bedroom units
  - 7 | 980-square-foot 2-bedroom units
- Each building accomodates 7 units, including:
  - 1 | 560-square-foot studio unit
  - 5 | 640-square-foot 1-bedroom unit
  - 1 | 980-square-foot 2-bedroom unit
  - Space for halls, stairs and elevator
- 60 parking spaces (Note: Only 54 parking spaces needed based on 1 resident parking space per unit plus 1 staff / visitor parking space per every 10 units)
- Option to accomodate additional parallel parking along east side of entrance road
- Community building and courtyard
- Sidewalk network and connection to multi-use trails
- Shared open space could include community gardens, foot paths, and other amenities for active living

Notes

- Need to address limited sight distance at Hampden Road exit
- Consider traffic calming and crosswalk across Hampden Road to Mountain View Elementary School
- Potential to demonstrate Low Impact Development stormwater managment strategies

Concept Plan 2

N

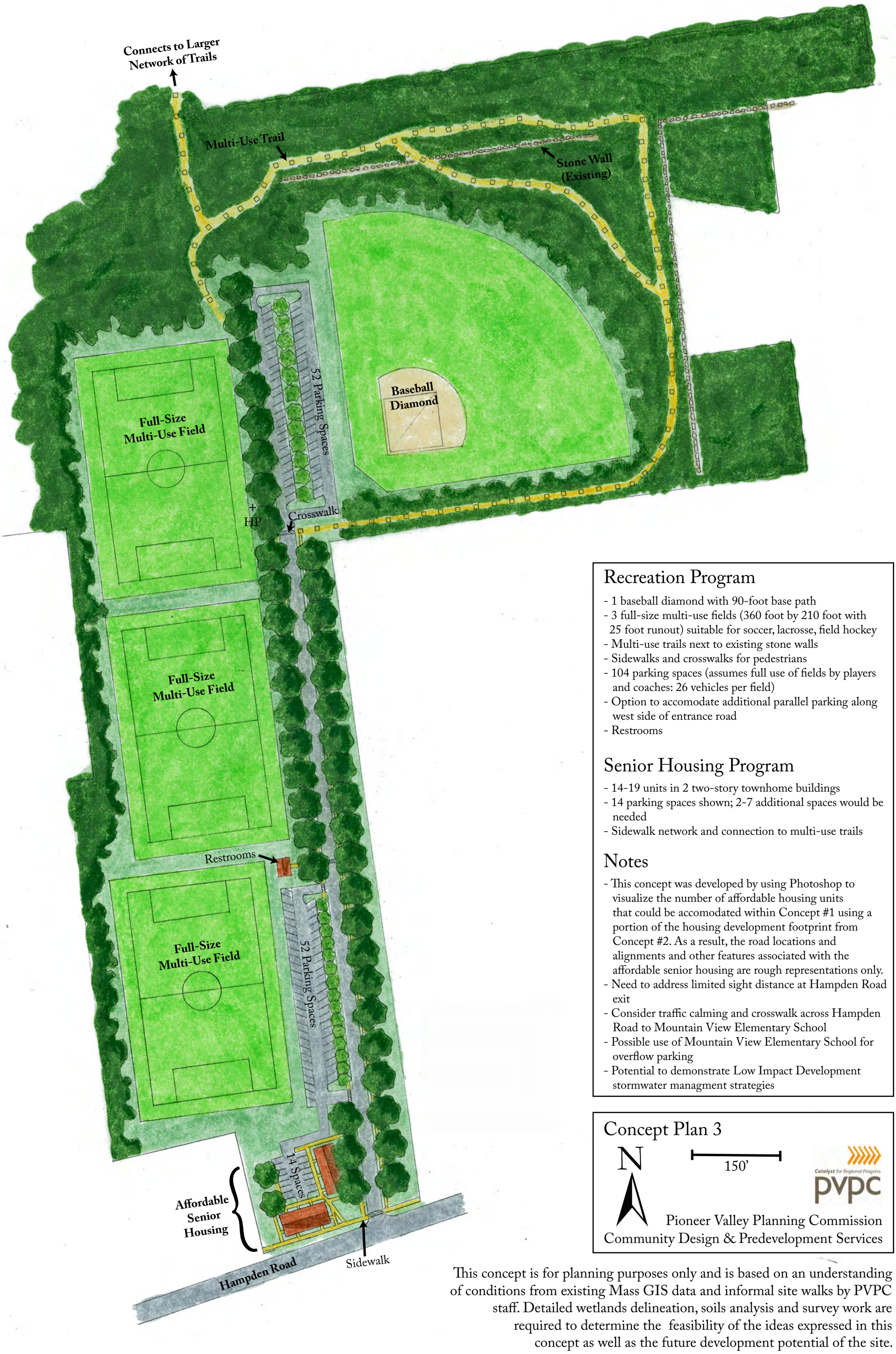
150’

Catalyst for Regional Progress PVPC

Pioneer Valley Planning Commission
Community Design & Predevelopment Services

This concept is for planning purposes only and is based on an understanding of conditions from existing Mass GIS data and informal site walks by PVPC staff. Detailed wetlands delineation, soils analysis and survey work are required to determine the feasibility of the ideas expressed in this concept as well as the future development potential of the site.

Brown Farm Site Development Concept #3



Recreation Program

- 1 baseball diamond with 90-foot base path
- 3 full-size multi-use fields (360 foot by 210 foot with 25 foot runout) suitable for soccer, lacrosse, field hockey
- Multi-use trails next to existing stone walls
- Sidewalks and crosswalks for pedestrians
- 104 parking spaces (assumes full use of fields by players and coaches: 26 vehicles per field)
- Option to accomodate additional parallel parking along west side of entrance road
- Restrooms

Senior Housing Program

- 14-19 units in 2 two-story townhome buildings
- 14 parking spaces shown; 2-7 additional spaces would be needed
- Sidewalk network and connection to multi-use trails

Notes

- This concept was developed by using Photoshop to visualize the number of affordable housing units that could be accomodated within Concept #1 using a portion of the housing development footprint from Concept #2. As a result, the road locations and alignments and other features associated with the affordable senior housing are rough representations only.
- Need to address limited sight distance at Hampden Road exit
- Consider traffic calming and crosswalk across Hampden Road to Mountain View Elementary School
- Possible use of Mountain View Elementary School for overflow parking
- Potential to demonstrate Low Impact Development stormwater managment strategies

Concept Plan 3

N

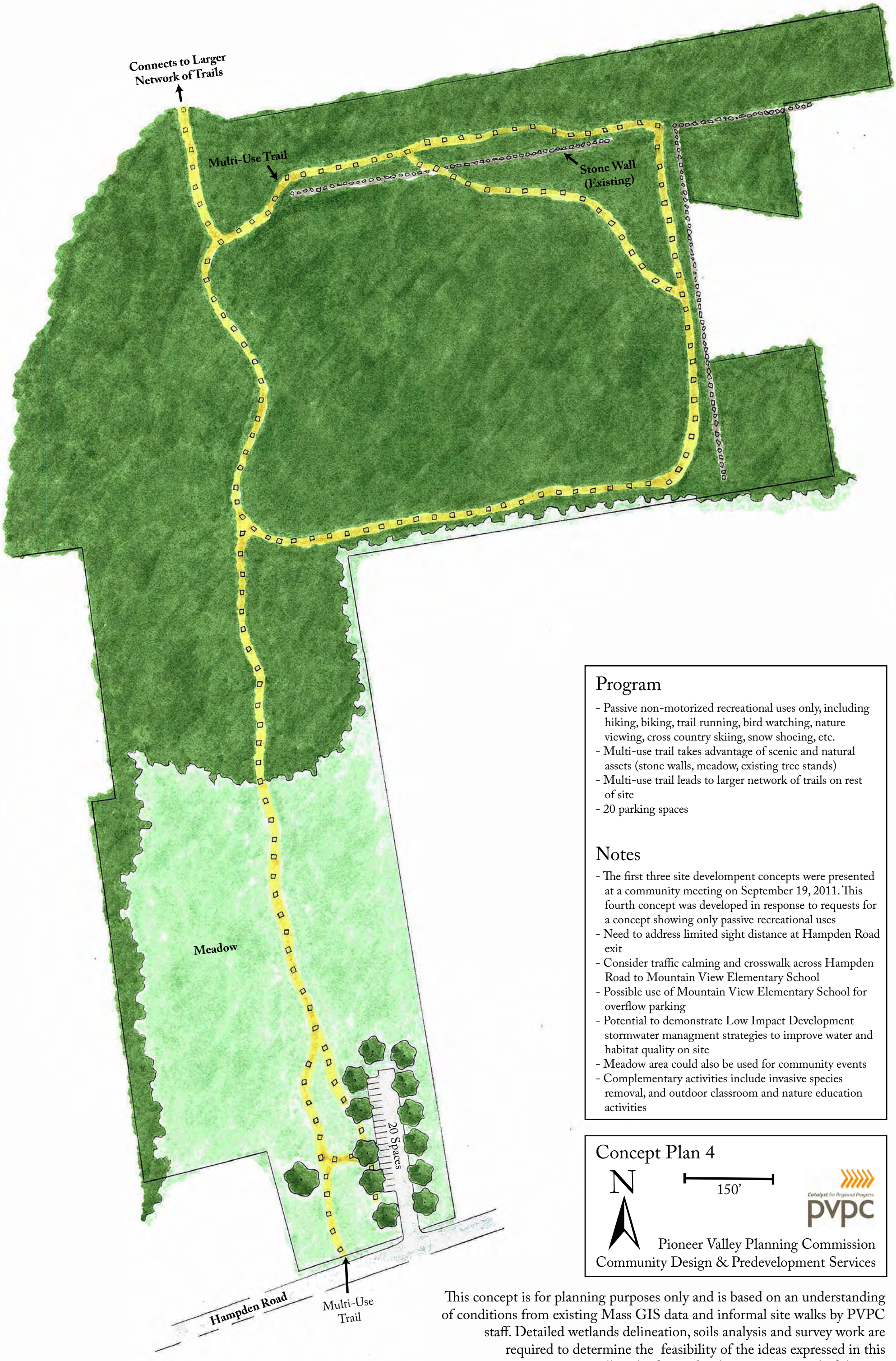
150’

Catalyst for Regional Progress PVPC

Pioneer Valley Planning Commission
Community Design & Predevelopment Services

This concept is for planning purposes only and is based on an understanding of conditions from existing Mass GIS data and informal site walks by PVPC staff. Detailed wetlands delineation, soils analysis and survey work are required to determine the feasibility of the ideas expressed in this concept as well as the future development potential of the site.

Brown Farm Site Development Concept #4



Program

- Passive non-motorized recreational uses only, including hiking, biking, trail running, bird watching, nature viewing, cross country skiing, snow shoeing, etc.
- Multi-use trail takes advantage of scenic and natural assets (stone walls, meadow, existing tree stands)
- Multi-use trail leads to larger network of trails on rest of site
- 20 parking spaces

Notes

- The first three site developent concepts were presented at a community meeting on September 19, 2011. This fourth concept was developed in response to requests for a concept showing only passive recreational uses
- Need to address limited sight distance at Hampden Road exit
- Consider traffic calming and crosswalk across Hampden Road to Mountain View Elementary School
- Possible use of Mountain View Elementary School for overflow parking
- Potential to demonstrate Low Impact Development stormwater managment strategies to improve water and habitat quality on site
- Meadow area could also be used for community events
- Complementary activities include invasive species removal, and outdoor classroom and nature education activities

Concept Plan 4

N

150’

Catalyst for Regional Progress PVPC

Pioneer Valley Planning Commission
Community Design & Predevelopment Services

This concept is for planning purposes only and is based on an understanding of conditions from existing Mass GIS data and informal site walks by PVPC staff. Detailed wetlands delineation, soils analysis and survey work are required to determine the feasibility of the ideas expressed in this concept as well as the future development potential of the site.

Section 7: Recommendations

Based on the site conditions inventory and assessment and the design development concepts, PVPC has ten general recommendations and also more detailed recommendations specific to Green Site Development and to vehicle access at the Brown Farm site on Hampden Road.

General Recommendations

- Continue the process of engaging neighbors and other stakeholders to solicit input on best ways to use the site and to obtain feedback on the preliminary concept plans. The September 2011 public meeting has served as an important first step.
- Determine the relative importance of using the site for recreation vs. affordable housing (could use entire site for recreation; could eliminate one field and accommodate approximately 49 senior affordable housing units; could eliminate two fields and accommodate a greater number of senior affordable housing units)
- Work with the Recreation Department to understand trends in demographics and how demand for its programs may increase. It was suggested at the September 2011 public meeting that the boom in demand for facilities may be the result of a "bubble" in population. Will this period of extreme demand be sustained, will it grow even more, or will it pass in the coming years? Getting an answer to this question seems an important next step in exploring what active recreation facilities ought be built at the Brown Farm site.
- Conduct a more in depth environmental analysis, including wetlands delineation and soil survey if some development of athletic fields or housing is to be pursued at the Brown Farm site.
- Take an incremental approach, perhaps beginning with the demolition of the horse barn, conducting wetlands delineation, soil analysis, and a site survey at the Brown Farm. This could also include study of the vehicle safety issues of egress at the Brown Farm site onto Hampden Road (see detailed recommendations below).
- Initial work could also include: developing trail heads at the Brown Farm, and the Craven and Hoover Quarry Conservation areas; conducting a survey to lay out an expanded trail network; and constructing the trails. Community Preservation Act funding might be combined with State of Massachusetts Recreational Trails Grant Program funding to provide support for such a project. See the discussion on trials in Section 5, which includes suggested cost guidelines.
- Prioritize development of new sidewalks that would help to connect trailheads at Brown Farm-Watchaug Meadows to nearby schools and conservation areas, to the commercial area at Somers Road and Kibbe Road, and to higher density housing in the surround area.
- Explore approaches to promoting the site's history, perhaps beginning with research specific to the quarry. The quarry road could serve as an attraction of sorts with a trail and interpretive materials about East Longmeadow's quarry history. Another idea is to pursue historic register nomination for the quarry. Such a designation would make the area eligible for preservation funding through the Massachusetts Historical Commission.

- Establish green site development goals and strategies for the project (see detailed recommendations for goals below and the Appendixes, which has 10 summary strategies developed by PVPC)
- Reduce stormwater impacts to the Brown Farm-Watchaug Meadows site by working in the surrounding neighborhoods to identify locations where stormwater could be redirected from pipes to soak into the ground near to where it falls. For the Town, this can include installation of swales, bioretention areas/rain gardens along road right of ways and in roundabouts (particularly the roundabout at the end of Fernwood Drive). For homeowners, this could include redirecting storm runoff from roof downspouts to rain barrels or to rain gardens. Soil mapping for this project indicates that soils in the surrounding neighborhoods are well draining and thus well suited to infiltration of stormwater.

Vehicle Access

As mentioned in Section 5, the entrance point to the site at Hampden Road may not provide adequate visibility for those vehicles exiting the site due to its location down gradient of a small hill along the road just west of the site. In this case, the driver trying to turn onto Hampden Road cannot see an oncoming vehicle until it has reached the hill's crest. Due to potential safety issues, the vertical curve alignment of this hill may need to be addressed. The following steps are recommended in order to be able to develop appropriate solutions:

1. Submit a request to PVPC to conduct a study of traffic volumes and speeds in the vicinity of the site. PVPC will perform two free traffic counts for a community each year. There is a request form available on the PVPC Transportation Section web page, which must be submitted by the Chair of the Board of Selectmen.
2. Contract an engineer to estimate the "sight distance" westward along Hampden Road from the entrance location.
3. Estimate the potential trip generating characteristics of the proposed development.

Once completed, this information will help the Town determine the extent of mitigation required for this location. Some potential steps to address the problem may include:

- Changing the speed limit along Hampden Road; however, an informal assessment by the PVPC Transportation Section suggests that this may not be a viable option because speed limits are set by the Massachusetts Department of Transportation (MassDOT), not the Town of East Longmeadow, and MassDOT follows specific criteria for setting road speed limits that cannot be easily altered.
- Re-grading the portion of the roadway that is producing inadequate visibility (this may be the best solution but will also be the most expensive solution); and/or
- Installing traffic calming measures to reduce vehicle speeds at this location. Any traffic calming measures considered by the Town should be coordinated with emergency personnel, and should be designed to be clearly visible and to provide adequate advance warning. Potential traffic calming measures might include bumping out the curb in this area to narrow the roadway and installing a flashing light and pedestrian crossing. A pedestrian light at this location would also create a better connection between the site and the Mountain View Elementary School.

Green Site Development Goals
Should the Town move forward with development of the Brown Farm-Watchaug Meadows site, PVPC recommends the following green site development goals. For Green Site Development Strategies, see the Appendixes.

Overall

- Develop the site in a way that minimizes destruction of natural resources and wildlife habitat
- Connect the site to the larger community and support walking and biking
- Use development of the site as a model for low impact development, especially with capture of stormwater near to where it falls for infiltration into soils. Along roadways and parking lots and associated with the housing this can include bioretention areas, infiltration trenches, and other such stormwater best management practices.

Recreation Amenities

- Design fields, specify soils, and select plant species so that organic field management strategies can be successfully implemented. This will help to promote the health of recreational users as well as avoid contamination of natural resouces. See the web for resources on organic management of turf fields. Also, the Town of Marblehead, Massachusetts, has been a leader in demonstrating successful organic management of athletic fields.
- Minimize light pollution through efficient lighting design

Senior Housing

- Design buildings for passive solar and to accommodate solar electric installations
- Reduce water use
- Provide adequate recycling storage for residents
- Minimize light pollution
- Reduce heat pollution through landscaping and light colored hardscape and roof surfaces
- Provide shared open space and foster a sense of community
- Create a walkable pedestrian oriented environment and provide access from the housing development to recreational trails on site

Construction Activities

- Minimize site disturbance (including avoiding disturbance of trees that will be preserved)
- Minimize soil compaction so that the site retains its ability to infiltrate rainfall and snowmelt
- Manage stormwater runoff and stabilize soils
- Minimize and manage hazardous wastes

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Appendix A

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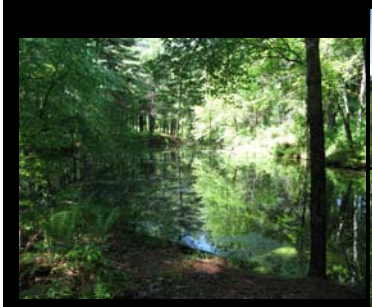
Watchaug Meadows Site Assessment



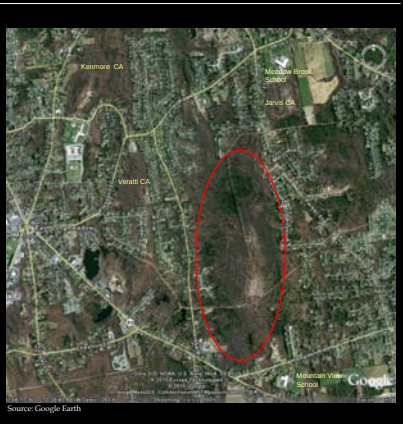
Patty Gambarini
Danielle McKahn

Outline

1. Introduction to Site
2. Natural Resource Considerations
3. Cultural Resource Considerations
4. Opportunities and constraints - Watchaug Meadows
5. Review of Town wish list
6. Opportunities and constraints - site specific
7. Discussion

Location

- Located east of town center
- Bounded by Somers and Hampden roads to south
- Near Mountain View and Meadow Brook elementary schools
- Near several other conservation areas



Source: Google Earth

History

- Site depicted as quarried and undeveloped with some farmers residing along major roads on historic maps (back to 1870)
- Redstone quarry at at least one location –likely started around 1890 (Sawn & Robinson, Hines, Hoover)

Source: LJ Richards Map 1894

Source: Smug Mug

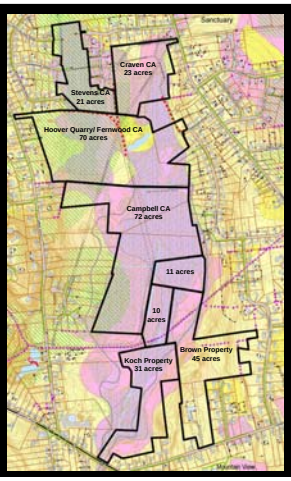
History

- Brown property had seasonal restaurant, the "Blossom View Tea Room" from 1925 to 1933
- More recently Brown property home to Mountain View Stables

Description

12 parcels totaling ~ 283 acres

- Stevens CA – Donated in 2000; left over from development
- Craven CA – Donated in 1996; left over from development
- Hoover Quarry/Fernwood CA – Acquired in 1980; consists of original quarry and haul road that connected Kibbe Road and Parker Street
- Campbell CA – Donated in 1999; consists of undevelopable land
- Koch and Brown Properties – Recently acquired; Koch largely wetlands with poorly draining soils; Brown has some good upland areas



"Natural" Resource Considerations

- Stream system
- Wetlands
- Soils
- Biodiversity
- Vegetation

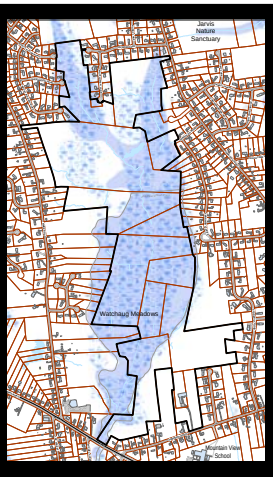
Stream System

- Site drains to headwaters tributary of Watchaug Brook
- Tributary joins Watchaug Brook in town's south, which flows into Scantic River

Source: USGS StreamStats

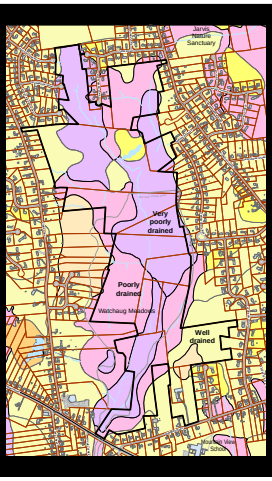
Wetlands

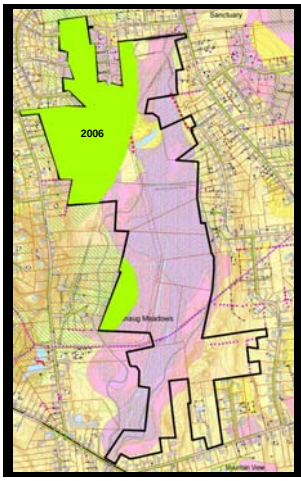
- Multi lobed complex of wetlands that cover ~ 74% of site
- 100 year flood plain concurrent with most of the wetlands
- Kibbe Road landfill hydraulically connected to the wetlands on Koch site



Soils

- Soils predominantly poor to very poorly draining
- Largest area of well drained soils is Brown property





Biodiversity

- No verified or potential vernal pools on site
- Priority Habitat - regulatory

  2008 - no Priority Habitat for state listed species (endangered, threatened, of special concern)

  2006 - 84 acres identified as Priority Habitat with species of special concern; four-toed salamander which had been located on site was de-listed

Biodiversity

- Core Habitat - for biodiversity and conservation planning
- Largely wetland habitats, including small streams, red maple swamps, and sedge-dominated wet meadows, as well as adjacent uplands along many miles of Watchaug Brook and multiple headwater tributaries
- Wood and Spotted Turtles
- Four-toed and Blue-spotted Salamanders
- Eastern Box Turtles
- Eastern Worm Snakes
- Habitat fragmentation from suburban development and road crossings is a potential threat to species

Blue-spotted salamander
(*Ambystoma laterale*)

Eastern box turtle
(*Terrapene carolina*)

Vegetation

- Site home to several plant communities

Streamside wetlands – Red maple (*Acer rubrum*), Sedges (*Carex spp*.)

New England Transitional Hardwood Forest - Oaks (*Quercus spp*.), Eastern white pine (*Pinus strobus*), Red maple, American beech (*Fagus grandifolia*), Yellow birch (*Betula alleghaniensis*), at Brown property. Similar at Hoover Quarry entrance, though more Paper birch (Betula papyrifera) and Black cherry (*Prunus serotina*)

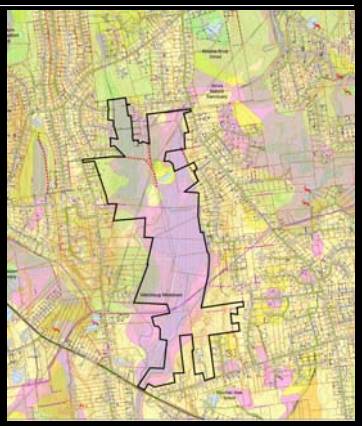
Vegetation (cont'd)

Upland meadow at Brown property – Red maple (*Acer rubrum*) along edges, Golden rod (*Solidago spp*.), Little bluestem (*Schizachyrium scoparium*), Orchard grass (*Dactylis glomerata*) Bedstraw (*Galium spp*.)

Invasive plants – Oriental bittersweet (*Celastrus orbiculatus*), Japanese barberry (*Berberis thunbergii*), Garlic mustard, (*Alliaria petiolata*)

Natural Resources Map

- Significant wetlands
- Predominantly poor to very poorly draining soils
- Largest area of well drained soils on Brown property
- No priority habitat or vernal pools, though described as habitat for species of special concern
- Several plant communities

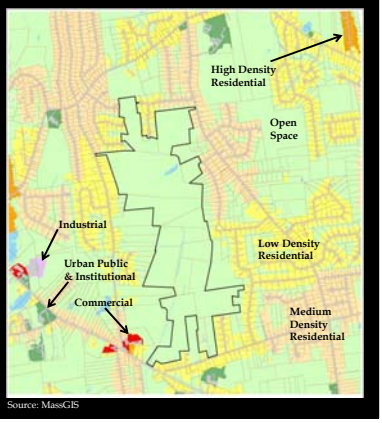


"Cultural" Resource Considerations

- Resulting from Human Activity
  - Land Use
  - Nearby Assets
  - Transportation
  - Utilities & Easements
  - Stormwater Drainage
  - Stone Walls, Trails & Access Points
  - Scenic Areas

Land Use

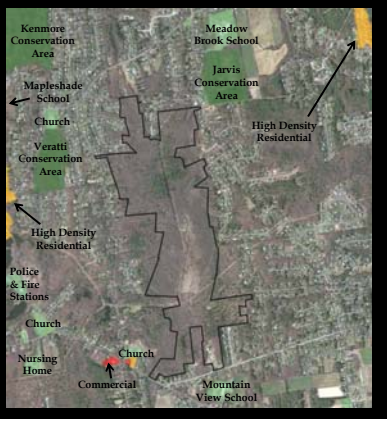
- Site is in a Residential Area
- Predominant Land Uses Surrounding Site:
  - Low Density Residential (<2 dwelling units / acre)
  - Medium Density Residential (2-4 dwelling units / acre)
  - Open Space: field, forest, cropland, wetlands
- There is also some:
  - High Density Residential (>4 dwelling units / acre)
  - Commercial
  - Urban Public and Institutional
  - Industrial



Source: MassGIS

Nearby Assets

- Conservation Areas
- Schools
- Churches
- Other
  - Commercial area
  - High density residential areas
  - Police and fire stations
  - Nursing home
  - Bluebird Estates senior housing is just north of map area, .3 miles from Meadow Brook School



Transportation

- Main Roads Around Site: Porter, Parker, Hampden, Somers, Kibbe
  - No bus service
  - No bike lanes
  - Few existing sidewalks

Public Utilities & Easements

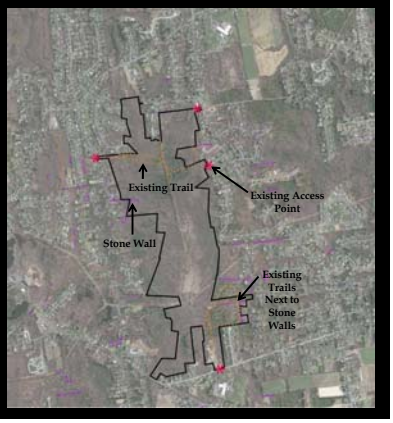
- Transmission Line
  - New England Power
  - Runs roughly east-west across southern part of site
- Easements
  - New England Power (in addition to transmission line easement)
  - Mass Electric Company
  - Magnolia Pipeline Company
  - Town sewer
- Other
  - Abundant water and sewer access around site

Stormwater Drainage

- At least 21 stormwater outfalls drain from a large surrounding area to the site
- Drainage area is very rough estimate based on storm drain line and outfall locations

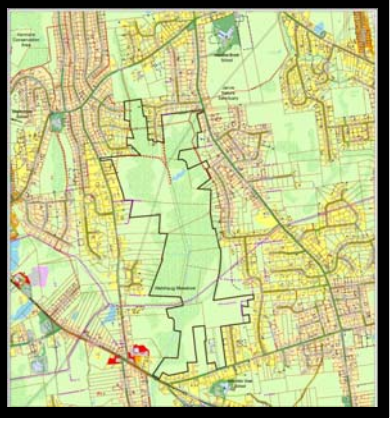
Stone Walls, Trails & Access Points

- Network of trails on site, based on:
  - Town data
  - Additional GPS points mapped by Pioneer Valley Planning Commission
- Existing access points marked by an asterisk
- A number of stone walls on and near site
- On south end of site, two trails run next to stone walls



Cultural Resources Map

- Residential development surrounds site
- Significant open space nearby, including conservation areas
- Schools, churches, institutional and commercial uses, high density residential areas, and senior housing in vicinity
- No bus service or bike lanes, and few sidewalks
- A sizeable area drains to the site via storm drain lines and outfalls
- Network of trails and stone walls on site somewhat limited

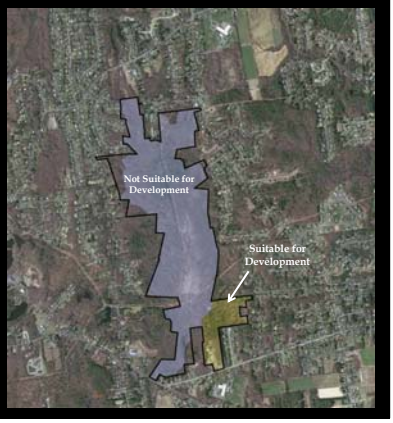


Opportunities & Constraints Site Analysis

- Factors that constrain development
- Areas with:
  - Wetlands
  - Floodplain
  - Poorly drained soils
- No Priority Habitat for Rare and Endangered Species on site

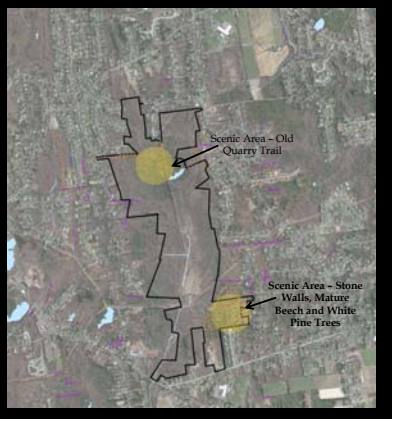
Opportunities & Constraints Site Analysis

- Portions of Site Not Suitable for Development
  - Much of site covered by wetlands, flood plain, poorly drained soils
  - Athletic fields problematic in areas with poor drainage
- Area Suitable for Development
  - Not covered by wetlands or in flood plain
  - Well-drained soils
  - Adequate vehicle access and space for fields and parking



Opportunities & Constraints Site Analysis

- Scenic Areas on Site
  - Northern portion of site has scenic area around former quarry and quarry road
  - Southern portion of site has scenic trails with stone walls and mature trees in New England Transitional Hardwood Forest



Opportunities & Constraints Site Analysis

- Recommended Access Points
  - Purple Asterisk: potential new trail access
  - Pink Asterisk: existing access point with limited to no space for vehicle access, recommended for trail access only
  - Yellow Asterisk: existing access point recommended for vehicle access to site

Opportunities & Constraints Site Analysis

- Potential New Trails
  - Around periphery of site
  - Connecting the trail systems at the north and south ends of the site
  - Connecting to trails at nearby conservation area

Opportunities & Constraints Site Analysis

- Potential Connections to Significant Assets
  - Schools (Mountain View, Meadow Brook, Mapleshade)
  - Conservation areas (Jarvis, Veratti, Kenmore)
  - Open space to north of site

Opportunities & Constraints Site Analysis

- Potential New Sidewalk Connections to:
  - Schools
  - Conservation areas
  - Churches
  - Police and Fire Stations
  - Nursing home
  - Senior housing
  - Commercial area
  - High density residential

Opportunities & Constraints Recommendations

- Opportunities & Constraints: Site
  - Build athletic fields in portion of area suitable for development
  - Allow vehicles to access site at yellow asterisk and park next to fields

Opportunities & Constraints Recommendations

- Opportunities & Constraints: Site
  - Develop passive recreation in areas not suitable for development
  - Develop new trails, including an Old Quarry Cultural Trail
  - Consider new trail access points (purple asterisks)
  - Consider implementing stormwater best management practices in surrounding neighborhoods to improve water quality and habitat, and to educate public

Opportunities & Constraints Recommendations

- Opportunities & Constraints: Context
  - Make connections to schools, conservation areas and senior housing
  - Prioritize new sidewalks to connect site to nearby assets and high density residential areas
  - Develop new trail connection to Veratti Conservation Area
  - Limit new stormwater drainage to site, as site already receives runoff from a significant surrounding area

Wish List

Conservation
Protect wetlands
Protect threatened species and species of special concern (salamanders)
Maintain wildlife corridor (bobcat, deer, possibly bear and moose)

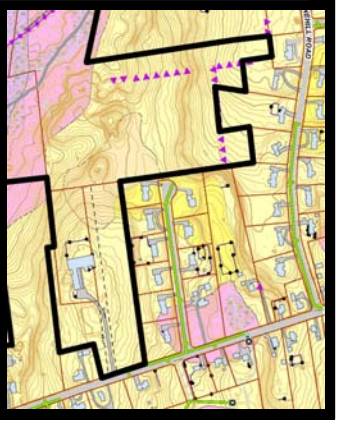
Recreation
Better access for passive recreation (hiking, horseback riding, mountain biking, birding), and including multi-season recreational use (cross country skiing and possibly sledding)
3 full soccer size fields (120 x 70 yards+run out area)
2 softball fields with 70-foot base path = 2 acres minimum each
1 baseball diamond with 90-foot base path = 4.5 acres minimum each

Benches
Bleachers
Storage for equipment
Bathroom facilities
Concession area (if have water and sewer on site) could also just be vending machines.
Small playground
1 acre dog park
(Recreation building would be great, but need first to address the other athletic needs. Building should include office, storage, gymnasium, classroom space, bathrooms.)

Housing
Market rate affordable senior housing (price range $100,000 to $200,000)

Opportunities & Constraints – Brown Property

- Lovely scenic uplands area with existing trails traversing woodlands with stone walls
- Stately older trees, especially to eastern edge of woodlands
- Length along western edge of property already seems disturbed
- Horse barn that needs to be demolished
- Need to consider nearby residences
- Egress from site to Hamden Road warrants some study to ascertain how to make safe
- Area suitable for development is limited in capacity to accommodate wish list



Discussion

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Appendix B

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Common Invasive Species and Management Options

last modified January 16, 2009

Compiled by Chris Mattrick, Hannah Vollmer, Bill Brumback, and Ted Elliman, New England Wildflower Society

Norway Maple (*Acer platanoides*)

- Mature trees in vicinity of natural areas should be removed to eliminate potential seed sources.
- Cut-stem application or basal bark application of 25%-35% Glyphosate.

Garlic Mustard (*Alliaria petiolata*)

- Plant is a biennial. Pull plants or cut to ground before or during blooming in spring. Can also pull rosettes in the fall.
- Can also spray foliage with 1% Glyphosate in early spring

Japanese Barberry (*Berberis thunbergii*)

- Can pull out plants and seedlings.
- Cut-stem application of 25% Glyphosate in late summer/fall is effective

Oriental Bittersweet (*Celastrus orbiculatus*)

- Can pull small plants, but must get entire root.
- In late summer or early fall, apply 25% solution of triclopyr to cut stems – more established stands may require cutting earlier in season and then spraying resprouted foliage 1 month later.

Black Swallow-wort (*Cynanchum louiseae*) and pale swallow-wort (*Cynanchum rossicum*)

- Small infestations can be repeatedly removed by digging out roots for several years – each small piece of root will produce a new plant.
- Can cut in mid July to prevent spread of seeds but cutting will not kill plant – plants cut during the flowering period will recover, flower, and produce seeds.
- Best option is spraying foliage using 1%% triclopyr at flowering in June – Can also cut stems and apply Glyphosate to cut stems, but stems are very small, and this treatment may not be as effective as foliar applications.

Winged Euonymus / Burning Bush (*Euonymus alatus*)

- Pull smaller plants when soil is moist.
- Cut-stem application of 25% Glyphosate in fall.

Japanese Knotweed (*Fallopia japonica*)

- Mowing or cutting to ground can be effective, but must be continuously treated.
- Can use rugs or heavy black polyethylene to smother plants.
- Best method is to cut stems off at about 3 feet high just below a stem node – use a squirt bottle and fill hollow stem up ¼ of the way with 25 % Glyphosate (*Rodeo* if in a wetland). In all cases, dispose of cut stems properly, since the plant can resprout from stem or root pieces

Glossy Buckthorn (*Frangula alnus*) and Common Buckthorn (*Rhamnus cathartica*)

- Seedlings and small plants can be pulled in early spring and summer.
- Annual burning for 5 or 6 years will kill most seeds and older stems.
- Cut stem and treat with 25% Glyphosate (*Rodeo* if in a wetland).

Morrow's Honeysuckle (*Lonicera morrowii*) and other shrubby honeysuckles

- Can dig plants but entire root must be removed.
- Cut stems and treat with 25% Glyphosate (*Rodeo* if in a wetland).

Purple Loosestrife (Lythrum salicaria)

- Can hand dig when there are only a few plants (less than 10).
- Spray plants just as they are beginning to flower with 1% Glyphosate (use *Rodeo* since this plant is found in wetlands). In some small stands, cutting plants ahead of time and spraying resprout will increase effectiveness of control but also increase disturbance
- Biological control, *Galerucella* beetles eat leaf and roots, can be used on large stands.

Japanese Stiltgrass (*Microstegium vimineum)*

- This annual plant, similar-looking to native whitegrass (*Leersia virginica*), flowers and seeds in the fall. Repeated annual pulling or weedwacking before flowering will diminish populations.
- Foliar spray of 1% Glyphosate (*Rodeo* if in a wetland) – or *Journey* (active ingredients are Imazapic, a pre-emergent herbicide, plus Glyphosate) may be used in upland situations.

Common Reed (*Phragmites australis*)

- Cutting 3-4 times a growing season for 3-4 consecutive years can work, but if you don't cut enough or skip a year, the stand can increase in density and still spread by rhizomes– if possible, remove shoots to prevent resprouting.
- Can use cut-stem method – 25%-35% Glyphosate (use *Rodeo*, since Phragmites is found in wetlands) generally in early August through September. Foliar spraying will also work, but should be used primarily on monocultures since foliar spray can also reach non-target plants in the area.
- Note: There is a native subspecies of Phragmites, which is not invasive, so be sure to properly ID your plants.

Multiflora Rose (*Rosa multiflora*)

- Plants can be pulled in spring. Use a weed wrench on large plants. Some resprout will probably occur.
- Repeated cutting 3-6 times a growing season for several years can be effective.
- Can spray foliage with 5% Glyphosate but best to cut stem in late summer followed by 25% Glyphosate (use Rodeo if in a wetland).

Notes on Invasive Species Control
From Haddam Land Trust site visit 10-2-10

Flame girdling invasives
Many of our native species are adapted to occasional burning, but non native invasives are not accustomed to burning. Flame girdling is an easier treatment than an organized burn, which takes many people to control.

Flame girdling is a method tested and effective on Barbery, Multiflora rose, and Winged euonymous. Flame girdle and then dab base with Glyphosate to be sure that get basal buds, especially on Barberry and Multiflora.

When flame girdling, should not wear any nylon clothing. Need ear protection. Back pack sprayer to extinguish any flame once done. Propane wand costs and backpack with 10lb. cylinder ~ $300 to $400. Get 400,000 BTU wand and be sure has on off control on the handle.

Barberry - Has long growing season. Can photosynthesize in wide range of conditions so can travel into interior of forest and take over understory. Also correlation with incidence of Lyme disease and barberry because barberry provides good habitat for white footed mice.

Autumn Olive – Cut and create brush pile for cover habitat. Best to do cut and dab with Glyphosate in August when tree in draw down mode as it will pull in more of the poison at that time of year.

Asian bittersweet – Cut and recut through the season to exhaust storage in the roots.

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Appendix C

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BioMap and Living Waters

Guiding Land Conservation for Biodiversity in Massachusetts

Core Habitats of East Longmeadow

This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is not intended for use in state regulations.

Produced by:

Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries and Wildlife
Executive Office of Environmental Affairs
Commonwealth of Massachusetts

Produced in 2004

BioMap and Living Waters:
Guiding Land Conservation for Biodiversity in Massachusetts

Table of Contents

Introduction
- What is a Core Habitat?
- Core Habitats and Land Conservation
- In Support of Core Habitats

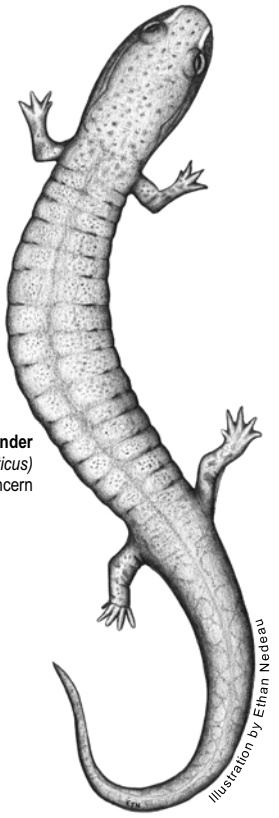
Understanding Core Habitat Species, Community, and Habitat Lists
- What's in the List?
- What does 'Status' mean?

Understanding Core Habitat Summaries

Next Steps
- Protecting Larger Core Habitats
- Additional Information

Local Core Habitat Information*
- BioMap: Species and Natural Communities
- BioMap: Core Habitat Summaries
- Living Waters: Species and Habitats
- Living Waters: Core Habitat Summaries

* Depending on the location of Core Habitats, your city or town may not have all of these sections.



Spring Salamander
(Gyrinophilus porphyriticus)
Species of Special Concern

Funding for this project was made available by the Executive Office of Environmental Affairs, contributions to the Natural Heritage & Endangered Species Fund, and through the State Wildlife Grants Program of the US Fish & Wildlife Service.

Natural Heritage & Endangered Species Program

Massachusetts Division of Fisheries and Wildlife
North Drive, Westborough, MA 01581
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821
http://www.nhesp.org

For more information on rare species and natural communities, please see our fact sheets online at ***www.nhesp.org***

BioMap and Living Waters:
Guiding Land Conservation for Biodiversity in Massachusetts

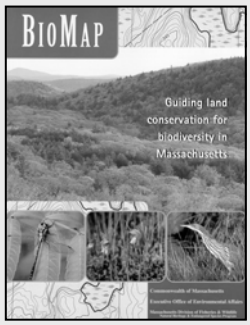
Introduction

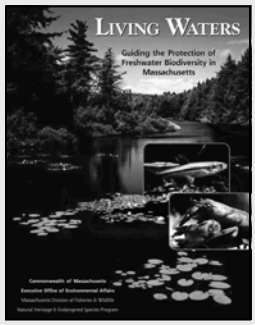
In this report, the Natural Heritage & Endangered Species Program provides you with site-specific biodiversity information for your area. Protecting our biodiversity today will help ensure the full variety of species and natural communities that comprise our native flora and fauna will persist for generatons to come.

The information in this report is the result of two statewide biodiversity conservation planning projects, ***BioMap*** and ***Living Waters***. The goal of the BioMap project, completed in 2001, was to identify and delineate the most important areas for the long-term viability of terrestrial, wetland, and estuarine elements of biodiversity in Massachusetts. The goal of the Living Waters project, completed in 2003, was to identify and delineate the rivers, streams, lakes, and ponds that are important for freshwater biodiversity in the Commonwealth. These two conservation plans are based on documented observations of rare species, natural communities, and exemplary habitats.

What is a Core Habitat?

Both BioMap and Living Waters delineate ***Core Habitats*** that identify the most critical sites for biodiversity conservation across the state. Core Habitats represent habitat for the state's most viable rare plant and animal populations and include exemplary natural communities and aquatic habitats. Core Habitats represent a wide diversity of rare species and natural communities (see Table 1), and these areas are also thought to contain virtually all of the other described species in Massachusetts. Statewide, BioMap Core Habitats encompass 1,380,000 acres of uplands and wetlands, and Living Waters identifies 429 Core Habitats in rivers, streams, lakes, and ponds.





Get your copy of the ***BioMap*** and ***Living Waters*** reports! Contact Natural Heritage at 508-792-7270, Ext. 200 or email natural.heritage@state.ma.us. Posters and detailed technical reports are also available.

Core Habitats and Land Conservation

One of the most effective ways to protect biodiversity for future generations is to protect Core Habitats from adverse human impacts through land conservation. For Living Waters Core Habitats, protection efforts should focus on the ***riparian areas***, the areas of land adjacent to water bodies. A naturally vegetated buffer that extends 330 feet (100 meters) from the water's edge helps to maintain cooler water temperature and to maintain the nutrients, energy, and natural flow of water needed by freshwater species.

In Support of Core Habitats

To further ensure the protection of Core Habitats and Massachusetts' biodiversity in the long-term, the BioMap and Living Waters projects identify two additional areas that help support Core Habitats.

In BioMap, areas shown as ***Supporting Natural Landscape*** provide buffers around the Core Habitats, connectivity between Core Habitats, sufficient space for ecosystems to function, and contiguous undeveloped habitat for common species. Supporting Natural Landscape was

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generated using a Geographic Information Systems (GIS) model, and its exact boundaries are less important than the general areas that it identifies. Supporting Natural Landscape represents potential land protection priorities once Core Habitat protection has been addressed.

In Living Waters, ***Critical Supporting Watersheds*** highlight the immediate portion of the watershed that sustains, or possibly degrades, each freshwater Core Habitat. These areas were also identified using a GIS model. Critical Supporting Watersheds represent developed and undeveloped lands, and can be quite large. Critical Supporting Watersheds can be helpful in land-use planning, and while they are not shown on these maps, they can be viewed in the Living Waters report or downloaded from www.mass.gov/mgis.

Understanding Core Habitat Species, Community, and Habitat Lists

What's in the List?

Included in this report is a list of the species, natural communities, and/or aquatic habitats for each Core Habitat in your city or town. The lists are organized by Core Habitat number.

For the larger Core Habitats that span more than one town, the species and community lists refer to the entire Core Habitat, not just the portion that falls within your city or town. For a list of all the state-listed rare species within your city or town's boundary, whether or not they are in Core Habitat, please see the town rare species lists available at www.nhesp.org.

The list of species and communities within a Core Habitat contains only the species and natural communities that were explicitly included in a given BioMap or Living Waters Core Habitat. Other rare species or examples of other natural communities may fall within the Core Habitat, but for various reasons are not included in the list. For instance, there are a few rare species that are omitted from the list or summary because of their particular sensitivity to the threat of collection. Likewise, the content of many very small Core Habitats are not described in this report or list, often because they contain a single location of a rare plant

Table 1. The number of rare species and types of natural communities explicitly included in the BioMap and Living Waters conservation plans, relative to the total number of native species statewide.

BioMap

	Species and Verified Natural Community Types	
Biodiversity Group	**Included in BioMap**	**Total Statewide**
Vascular Plants	246	1,538
Birds	21	221 breeding species
Reptiles	11	25
Amphibians	6	21
Mammals	4	85
Moths and Butterflies	52	An estimated 2,500 to 3,000
Damselflies and Dragonflies	25	An estimated 165
Beetles	10	An estimated 2,500 to 4,000
Natural Communities	92	> 105 community types

Living Waters

	Species	
Biodiversity Group	**Included in Living Waters**	**Total Statewide**
Aquatic Vascular Plants	23	114
Fishes	11	57
Mussels	7	12
Aquatic Invertebrates	23	An estimated > 2500

species. Some Core Habitats were created for suites of common species, such as forest birds, which are particularly threatened by habitat fragmentation. In these cases, the individual common species are not listed.

What does 'Status' mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act, M.G.L. c.131A, and its implementing regulations, 321 CMR 10.00. Rare species are categorized as Endangered, Threatened, or of Special Concern according to the following:

- ***Endangered*** species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- ***Threatened*** species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- ***Special Concern*** species have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition, the Natural Heritage & Endangered Species Program maintains an unofficial ***watch list*** of plants that are tracked due to potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated any laws or regulations, but they can help to identify ecologically important areas that are worthy of protection. The status of natural communities reflects the documented number and acreages of each community type in the state:

- ***Critically Imperiled*** communities typically have 5 or fewer documented sites or have very few remaining acres in the state.
- ***Imperiled*** communities typically have 6-20 sites or few remaining acres in the state.
- ***Vulnerable*** communities typically have 21-100 sites or limited acreage across the state.
- ***Secure*** communities typically have over 100 sites or abundant acreage across the state; however excellent examples are identified as Core Habitat to ensure continued protection.

Legal Protection of Biodiversity

BioMap and Living Waters present a powerful vision of what Massachusetts would look like with full protection of the land that supports most of our biodiversity. To create this vision, some populations of state-listed rare species were deemed more likely to survive over the long-term than others.

Regardless of their potential viability, all sites of state-listed species have full legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.37 and 10.59). The ***Massachusetts Natural Heritage Atlas*** shows **Priority Habitats**, which are used for regulation under the Massachusetts Endangered Species Act and Massachusetts Environmental Policy Act (M.G.L. c.30) and **Estimated Habitats**, which are used for regulation of rare wildlife habitat under the Wetlands Protection Act. For more information on rare species regulations, see the *Massachusetts Natural Heritage Atlas*, available from the Natural Heritage & Endangered Species Program in book and CD formats.

BioMap and Living Waters are conservation planning tools and do not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the combined BioMap and Living Waters vision is fully realized, we must continue to protect all populations of our state-listed species and their habitats through environmental regulation.

Natural Heritage & Endangered Species Program

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Understanding Core Habitat Summaries

Following the BioMap and Living Waters Core Habitat species and community lists, there is a descriptive summary of each Core Habitat that occurs in your city or town. This summary highlights some of the outstanding characteristics of each Core Habitat, and will help you learn more about your city or town's biodiversity. You can find out more information about many of these species and natural communities by looking at specific ***fact sheets*** at www.nhesp.org.

Next Steps

BioMap and Living Waters were created in part to help cities and towns prioritize their land protection efforts. While there are many reasons to conserve land – drinking water protection, recreation, agriculture, aesthetics, and others – BioMap and Living Waters Core Habitats are especially helpful to municipalities seeking to protect the rare species, natural communities, and overall biodiversity within their boundaries. Please use this report and map along with the rare species and community fact sheets to appreciate and understand the biological treasures in your city or town.

Protecting Larger Core Habitats

Core Habitats vary considerably in size. For example, the average BioMap Core Habitat is 800 acres, but Core Habitats can range from less than 10 acres to greater than 100,000 acres. These larger areas reflect the amount of land needed by some animal species for breeding, feeding, nesting, overwintering, and long-term survival. Protecting areas of this size can be very challenging, and requires developing partnerships with neighboring towns.

Prioritizing the protection of certain areas within larger Core Habitats can be accomplished through further consultation with Natural Heritage Program biologists, and through additional field research to identify the most important areas of the Core Habitat.

Additional Information

If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program:

by Phone *508-792-7270, Ext. 200*

by Fax: *508-792-7821*

by Email: *natural.heritage@state.ma.us*.

by Mail: *North Drive*
Westborough, MA 01581

The GIS datalayers of BioMap and Living Waters Core Habitats are available for download from MassGIS: www.mass.gov/mgis

Check out www.nhesp.org for information on:

- Rare species in your town
- Rare species fact sheets
- BioMap and Living Waters projects
- Natural Heritage publications, including:
  - Field guides
  - Natural Heritage Atlas, and more!

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BioMap: Species and Natural Communities

East Longmeadow

Core Habitat BM1019

Natural Communities

Common Name	Scientific Name	Status
Calcareous Basin Fen		Critically Imperiled
Inland Atlantic White Cedar Swamp		Imperiled

Plants

Common Name	Scientific Name	Status
Bristly Buttercup	*Ranunculus pensylvanicus*	Threatened
Climbing Fern	*Lygodium palmatum*	Special Concern

Invertebrates

Common Name	Scientific Name	Status
Hessel's Hairstreak	*Callophrys hesseli*	Special Concern

Vertebrates

Common Name	Scientific Name	Status
Blue-spotted Salamander	*Ambystoma laterale*	Special Concern
Eastern Box Turtle	*Terrapene carolina*	Special Concern
Eastern Spadefoot	*Scaphiopus holbrookii*	Threatened
Eastern Worm Snake	*Carphophis amoenus*	Threatened
Four-toed Salamander	*Hemidactylium scutatum*	Special Concern
Jefferson Salamander	*Ambystoma jeffersonianum*	Special Concern
Spotted Turtle	*Clemmys guttata*	Special Concern

Core Habitat BM1122

Plants

Common Name	Scientific Name	Status
Climbing Fern	*Lygodium palmatum*	Special Concern

Vertebrates

Common Name	Scientific Name	Status
Blue-spotted Salamander	*Ambystoma laterale*	Special Concern
Eastern Box Turtle	*Terrapene carolina*	Special Concern
Eastern Worm Snake	*Carphophis amoenus*	Threatened
Four-toed Salamander	*Hemidactylium scutatum*	Special Concern
Jefferson Salamander	*Ambystoma jeffersonianum*	Special Concern
Spotted Turtle	*Clemmys guttata*	Special Concern
Wood Turtle	*Clemmys insculpta*	Special Concern

Core Habitat BM1143

Plants

Common Name	Scientific Name	Status
Small Site for Rare Plant		

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BioMap: Core Habitat Summaries

East Longmeadow

Core Habitat BM1019

Although surrounded by development, this multi-lobed Core Habitat east of downtown Springfield contains the state's largest known population of the rare Bristly Buttercup, a healthy population of Hessel's Hairstreak butterfly, an uncommon natural wetland community, and significant habitat for rare reptiles and amphibians. It encompasses the headwaters and tributaries of the North and South branches of the Mill River, including the Inland Atlantic White Cedar Swamp in Wilbraham. Protecting this area will help avoid further fragmentation caused by suburban developments and roads.

Natural Communities

In Wilbraham, this Core Habitat includes the westernmost Inland Atlantic White Cedar Swamp included in the BioMap. Inland Atlantic White Cedar Swamps are forested wetlands dominated by Atlantic White Cedar, with Hemlock, Spruce, Red Maple, and Yellow Birch. As in all Atlantic White Cedar swamps, water-saturated peat overlies the mineral sediments. The swamp here surrounds a small Calcareous Basin Fen, which is a very uncommon and diverse sedge-dominated peatland community, a surprisingly limey area within the acidic swamp.

Plants

The state's largest known population of the Threatened Bristly Buttercup is thriving in moist, sunny habitat within this Core Habitat. Two populations of the Climbing Fern (Species of Special Concern) inhabit nearby wooded areas.

Invertebrates

This Core Habitat includes the Wilbraham Atlantic White Cedar Swamp, which is an unfragmented habitat of adequate size to support its healthy population of Hessel's Hairstreak. This rare butterfly has been known to occur here for over 40 years. This is the most inland population of Hessel's Hairstreak in Massachusetts.

Vertebrates

This multi-lobed Core Habitat includes small, meandering streams, red maple and cedar swamps, wet meadows, and scattered vernal pools. Despite encroaching development, there is a considerable amount of connected wetland habitat as well as a relatively large number of rare species observations in this area. The Core Habitat contains significant habitat for Four-toed, Jefferson, and Blue-spotted Salamanders, and Spotted Turtles. Eastern Spadefoot toads are also present in certain wetlands and adjacent uplands with sandy soils. The area contains the largest concentration of documented observations of the Eastern Worm Snake in the state.

Core Habitat BM1122

This Core Habitat encompasses many wetlands, riparian areas, and uplands in East Longmeadow and Hampden that provide significant habitat for several species of state-protected rare amphibians and reptiles, as well as for the rare Climbing Fern.

Plants

A very large and vigorous population of the Climbing Fern (Species of Special Concern) grows here in the understory of an acidic oak and conifer forest.

BioMap: Core Habitat Summaries

East Longmeadow

Vertebrates

This multi-lobed complex of wetlands and riparian uplands provide significant habitat for Wood and Spotted Turtles, as well as for Four-toed and Jefferson Salamanders. The area also contains habitat for Eastern Box Turtles and Eastern Worm Snakes. The Core Habitat is comprised largely of wetland habitats, including small meandering streams, red maple swamps, and sedge-dominated wet meadows, as well as adjacent uplands along many miles of Watchaug Brook and multiple headwater tributaries. Habitat fragmentation from suburban development and numerous road crossings is a potential threat to the species found here.

Appendix D

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Chart of Program Participants by Field Sports

Field Sports	2011 Registered	2011 Teams	2010 Registered	2010 Teams	2009 Registered	2009 Teams
Soccer (spring, fall, HS summer)	1,275	94	1,271	96	1,239	91
Baseball (spring, fall, summer)	351	33	380 no summer baseball	36	482	39
Lacrosse (Girls & Boys in spring & Summer, Fall)	197	9	195	9	154	7
Football (fall) V & JV at each level (pw, jr, sr)	**94**	**6**	**96**	**6**	**122**	**6**
Softball (spring , summer,fall)	**124**	**11**	**122**	**11**	**123**	**10**
Field Hockey (fall)	**35**	**2**	**42**	**3**	**46**	**3**
Legion Baseball (summer)	**n/a**	**1**	**n/a**	**1**	**n/a**	**1**
HS Baseball (fall)	**n/a**	**3**	**n/a**	**4**	**n/a**	**4**
Totals	2076	159	2106	166	2166	161
	Teams that use grass fields	112				
	Teams that use diamonds	48				

Important points to note about the info above:

	Grass sports		**Diamonds**	
Growth from 2005-2011	Soccer	82-94 teams	Baseball	35-36 teams
	Lacrosse	5-9 teams	Softball	7-11 teams
	Field hockey	0-2 teams		
	Total Teams	**90-112**	**Total**	**42-48**

1. Participant data does not reflect teams that are not registered trough the Rec Dept but instead register as teams using fields such as Summer Softball, HS Fall Baseball.
2. Also data dose not reflect EL teams that are organized outside of the Youth Associations but use the fields as walk ons such as baseball team playing in the John L Sullivan League.

Chart of Program Participants by Field Sports

2008 Registered	2008 Teams	2007 Registered	2007 Teams	2006 Registered	2006 Teams	2005 Registered	2005 Teams
1,200	89	1,170	96	1,170	72	1,178	82
548	65	469	36	493	40	455	35
121	6	136	6	143	6	106	5
125	6	123	6	129	6	109	3
167	14	115	6	125	9	162	7
53	4	64	4	50	1	0	0
n/a	1	**n/a**	1	n/a	1	n/a	1
n/a	2	**n/a**	1		0		0
2214	187	2077	156	2110	135	2010	133
						Teams that use grass fields	90 grass
						Teams that use diamonds	42 diamond

of fields in 2005 as compared to 2011

Grass Fields	town 2005 owned	private ownership	town 2011 owned	private ownership
Sport Fields Modified	1C, 3mtv, 1mb, 1ms	3am,	1C, 1mb, 2mtv, 3pk	3am
Sport Fields Full Size	1BP, 6HS, 1H	1am	1BP, 6HS,1H, 1mb	1am
Soccer girls & boys				
Field Hockey/Lax girls			2ms	
Football				
Lacrosse - boys		1nlc	1mtv	1nic
TOTOAL Grass fields	14	5	17	5
Ball Diamonds				
Baseball 90'	2HS, 1C		2HS, 1C	
Baseball 70-80'	1H, 1Le		1H, 1Le	
Baseball 60'	1mb, 1mtv, 1H		1mb,1mtv,1ms,1H	
Baseball 40'	1pk		1pk	
Softball 60-65	2BP, 1C, 1HS, 1ms		2BP, 1C, 1HS, 1ms	
TOTAL Diamond	14	0	15	0

Grass Fields

A. **1** Additional full size field: which are used for Soccer, Field Hockey, Lacrosse, Football -1 at Meadowbrook

B. **3** Additional modified fields: which are used for Soccer, Field Hockey, Lacrosse - 1 Mapleshade due to field improvements, 3 at PK for Kindy program

C. Between 2005 and 2011 boys and girls lacross and field hockey have grown and each requires its own field markings so sharing the same space not realistic. This creates an additonal demand for field space that shear #'s do not reflect.

D. For proper field care fields should be rested the current number of fields does not allow for proper rest, rejuvination and renovation.

E. This wet Fall has also made it difficult to schedule make up games as the field space is so tightly scheduled to accommodate the game schedule and one practice a week for each team.

Diamonds

A. **1** additional youth 60' diamond was added at Mapleshade after the field renovation.

B. There has been a significant increase in baseball on the 90' diamonds which are used by Sandy Kofax, Mickey Mantle, Legion and Tri-County Teams. Insuficient # of fields to accommodate make-ups.

Appendix E

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Section 508 Navigation
Skip Navigation

Accessible trails

Hosted by AmericanTrails.org

Questions and Answers on proposed ADA trail guidelines

Americans with Disabilities Act trail guidelines report released

By Stuart Macdonald, Chair, National Association of State Trail Administrators

The Americans with Disabilities Act (ADA) requires us to make trails accessible, but doesn't specify how. New regulations being finalized will, however, affect all of us who plan and design trails. The final report of the Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas includes soon to be proposed ADA Accessibility Guidelines (ADAAG) for trails, outdoor recreational access routes, beach access routes, and picnic and camping facilities.

Currently the report is undergoing a regulatory assessment by the Access Board, an independent federal agency responsible for developing minimum accessibility guidelines under the ADA. Next will be a review by the federal Office of Management and Budget. Eventually the proposed guidelines will be published in the Federal Register with an invitation for public comment over a 90 -day period.

The following questions and answers cover the highlights of the trail guidelines:

First, what exactly is a trail according to proposed ADA accessibility guidelines?

A trail is "a route that is designed, designated, or constructed for recreational pedestrian use or provided as an pedestrian alternative to vehicular routes within a transportation system."

What kinds of trails are subject to the proposed ADA accessibility guidelines?

The accessibility guidelines apply to those trails which are designed and constructed for pedestrian use. These guidelines are not applicable to trails primarily designed and constructed for recreational use by equestrians, mountain bicyclists, snowmobile users, or off-highway vehicle users, even if pedestrians may occasionally use the same trails. However, a multi-use trail specifically designed and designated for hiking and bicycling would be considered a pedestrian trail.

Does that mean an urban bikeway is a "pedestrian trail"?

Accessibility guidelines apply to trails used as nonmotorized transportation facilities for bicyclists and skaters as well as pedestrians. However, bicyclists and skaters have design needs which exceed the minimum guidelines for trails. In some cases, the AASHTO Guide (1999) may requires a greater level of accessibility than the ADA trail guidelines. The appendix of the Access Board report compares the AASHTO guide with the ADA trail guidelines.

Will we have to bring existing trails up to ADA standards?

The proposed guidelines apply only to areas of newly designed or newly constructed and altered portions of existing trails. However, for entities covered by title II of the ADA, "program accessibility," may require accessibility to be provided on existing trails. "Program accessibility" generally means that the major elements in a recreation program need to be accessible. Clearly, though, trails involve an "experience" that is more complex than typical park facilities.

Must we improve accessibility when trail maintenance is done?

The proposed guidelines state that "Routine or periodic maintenance or repair of existing trails or trail segments does not trigger the accessibility guidelines." Examples include removal of debris, reshaping the trail bed, erosion control, etc.

Related topics:

Trail design
Structures
Maintenance
Federal funding
Greenways
Health & trails
Rails to trails
Planning

More resources:

Bibliography
Quotations
Glossary
Acronyms
Tools
Products & services

For more opportunities for training on trail design, construction, and management see the National Trails Training Partnership area.

Does an accessible trail have to be paved? What about handrails and other edge protection?

Paving is not required, as long as the surface is "firm and stable." While handrails and edge protection are not required, they may be provided and should meet appropriate standards.

What about new trails that are nowhere near a road or an accessible trailhead?

The proposed guidelines apply only to trails that "connect to an accessible trail" or "designated trailhead."

So what is an accessible trail?

Under the proposed guidelines, an accessible trail would meet these minimum technical provisions:
Clear tread width: 36" minimum
Tread Obstacles: 2" high maximum (up to 3" high where running and cross slopes are 5% or less)
Cross Slope: 5% max.
Running slope (trail grade) meets one or more of the following:
- 5% or less for any distance.
- up to 8.33% for 200' max. Resting intervals no more than 200' apart.
- up to10% for 30' max. Resting intervals 30'.
- up to 12.5% for 10' max. Resting intervals 10'.

No more than 30% of the total trail length may exceed a running slope of 8.33%.
Passing Space: provided at least every 1000' where trail width is less than 60"
Signs: shall be provided indicating the length of the accessible trail segment.

What if building a trail to an accessible standard just isn't logical, or desirable, or even possible?

While the proposed accessibility guidelines address the special circumstances where designers and operators may not be able to achieve accessibility, they are encouraged to always provide access to the greatest extent possible. Departures from specific accessibility guidelines are permitted for any portion of the trail where compliance would:

cause substantial harm to cultural, historic, religious, or significant natural features or characteristics;
substantially alter the nature of the setting or the purpose;
require construction methods or materials that are prohibited by Federal, State, or local regulations or statutes;
not be feasible due to terrain or the prevailing construction practices.

For detailed information on accessible trails, the new ADA regulations, and how they apply to specific situations, see the American Trails website: www.AmericanTrails.org. Click on the "Resources & Library" icon, then click on "Accessible Trails." The final report of the Regulatory Negotiation Committee on Accessibility Guidelines for Outdoor Developed Areas proposes ADA Accessibility Guidelines (ADAAG) for trails, outdoor recreational access routes, beach access routes, and picnic and camping facilities is available at: www.access-board.gov/PUBS/outdoor-rec-rpt.htm.

The AASHTO Guide for the Development of Bicycle Facilities is the primary guidebook for facilities built with transportation funds. The Guide (available for $30 from AASHTO at 202-624-5800, 800-231-3475, or www.aashto.org/bookstore/a_bs.html) generally provides a greater level of accessibility than the ADA trail guidelines (except running slope).

Appendix F

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Brown Farm - Watchaug Meadows Site Assessment

Patty Gambarini
Danielle McKahn

PVPC's charge

1. Evaluate conditions of Brown Farm-Watchaug Meadows Site
2. Identify possible locations for:
   - active and passive recreational facilities
   - affordable senior housing

   while also attending to conservation values
3. Develop 1 to 3 plan concepts to help with discussion about site's future

First step toward understanding limitations and possibilities

Project advisory committee

- James Driscoll, Selectman and Board of Health
- Sean Kelley, Department of Public Works
- George Kingston, Planning Board and Conservation Commission
- Carolyn Porter, Recreation Department
- Nick Breault, Town Administrator

Objectives for tonight

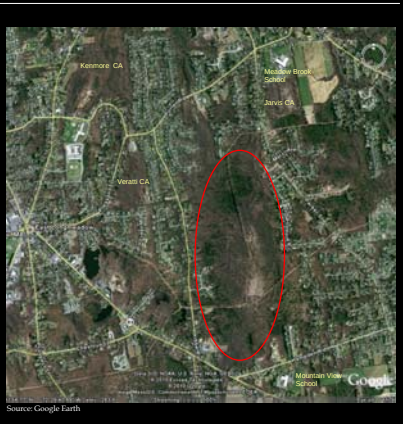
1. Describe what we have learned about the site itself, about the Town's needs, and the site's ability to accommodate these needs
2. Answer your questions
3. Hear what ideas you might have about the future of Brown Farm – Watchaug Meadows

Outline for tonight

1. Introduction to Site
2. Natural Resource and Cultural Resource/ Infrastructure Considerations
3. Town Needs
4. Opportunities and Constraints
5. Site Design Concepts
6. Discussion

Location

- Area identified as "Watchaug Meadows" in OSRP
- Located east of Town center
- Bounded by Somers and Hampden roads to south



Source: Google Earth

History

- Site depicted as quarried and undeveloped with some farmers residing along major roads on historic maps (back to 1870)
- Redstone quarry at least one location –likely started around 1890 (Sawn & Robinson, Hines, Hoover)

Source: LJ Richards Map 1894

Source: Smug Mug

History (cont'd)

- Brown property had seasonal restaurant, the "Blossom View Tea Room" from 1925 to 1933
- More recently Brown property home to Mountain View Stables

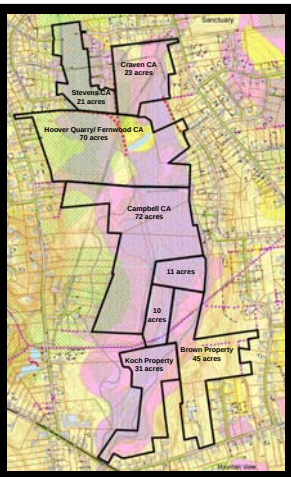
Description

Extensive area of hardwood swamp and forest – one of largest areas of unbroken open space in Town

Focus on 12 parcels owned by Town totaling ~ 283 acres

Came into Town ownership over past 30 years

- Tax title (Hoover Quarry and Fernwood CA)
- Donated to Town, essentially left over from development (Stevens CA, Craven CA, Campbell CA)
- Recently purchased (Koch and Brown properties)

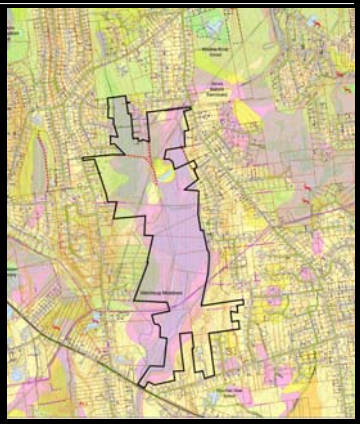


"Natural" Resource Considerations

- Stream system
- Wetlands
- Soils/slopes
- Vegetation
- Biodiversity

Natural Resources Summary

- Area forms headwaters tributary of Watchaug Brook
- Wetlands cover 74% of site, 100-year flood plain tends to coincide with this boundary
- Soils predominantly poor to very poorly draining - largest area of well drained soils on Brown Farm property
- Gradual slopes overall
- Plant communities - streamside wetlands, transitional hardwood forest
- No priority habitat, though entire area described as core habitat



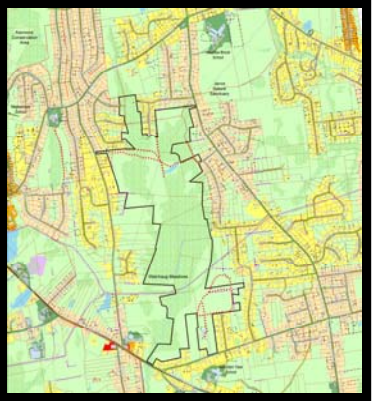
"Cultural" Resource/Infrastructure Considerations

Factors resulting from human activity

- Surrounding land uses
- Nearby assets
- Stormwater drainage
- Transportation
- Utilities & easements
- Trails and stone walls
- Points of access

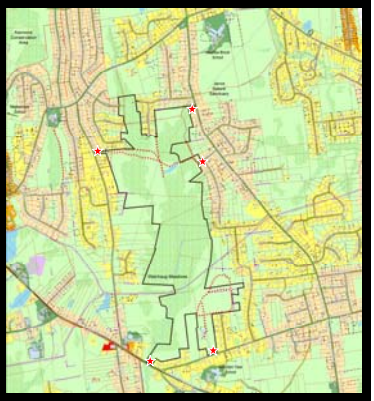
Cultural Resources Summary

- Residential development surrounds site
- Schools, churches, commercial uses, high density residential, senior housing in vicinity
- Significant open space nearby, including 3 conservation areas
- Surrounding area drains to site with at least 21 outfalls
  - More pollutants and sediments
  - Elevated temperatures in receiving waters



Cultural Resources Summary

- No bus service or bike lanes, few sidewalks
- Water and sewer lines nearby
- Easements for transmission lines and utilities cross site
- Several trails and stone walls
- Five points of access to site (only 2 currently viable)
- Phase I assessment
  - No release of oil or hazardous material
  - Evidence of illegal dumping on former Brown Farm
  - Landfill hydraulically connected



Town Needs - Housing

- **Affordable housing, particularly senior housing**
- **State requirement of 10% affordable housing**
- **7.1% of housing stock in Town defined as affordable**
- **Need additional 108 units to meet state requirement**
- **If subsidized affordable, then units would be for two-person household with incomes of less than $50,050**
- **If market rate, then affordable units could range in household incomes (approximately $40,000 and $65,000), translating to prices of $130,000 to $200,000**
- **Recent market rate senior housing units have cost more than $300,000, requiring an annual household income of approximately $90,000**

Objective:

- **20 to 40 new affordable housing units**

Town Needs - Recreation

- **Recreation program booming in growth**
- **Soccer – from 72 teams to 95 teams since 2006**
- **Lacrosse – from 5 teams to 9 teams since 2005**
- **Youth baseball and softball program adds another 50 teams**
- **Some important steps made already in addressing demand**
- **Still often 4 to 5 teams vying for use of one field**

Objective:
Some combination of the following

- **3 full size multi use fields (360x210 feet + run out area)**
- **1 baseball diamond with 90-foot base path**
- **2 softball fields with 70-foot base path**

Town Needs – Recreation and Conservation

Passive recreation:

- **Expanded trail network to accommodate activities, including hiking, horseback riding, mountain biking, birding**
- **Well-maintained walking trails for seniors**
- **Multi-season recreational use – cross country skiing**

Conservation objectives:

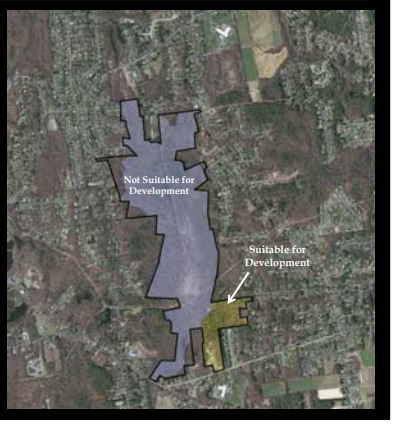
- **Protect wetlands and wildlife species of concern**
- **Maintain wildlife corridor (bobcat, deer, possibly bear and moose)**

Opportunities & Constraints Analysis

- Based on environmental and cultural considerations, explores possibilities and limitations for:
  - housing
  - recreation
  - conservation

O&C: Areas Suitable for Development

- Large area not suitable for development of athletic fields or housing
- Trails though are a possibility in this area
- Area suitable for development ~30 acres at former Brown Farm property

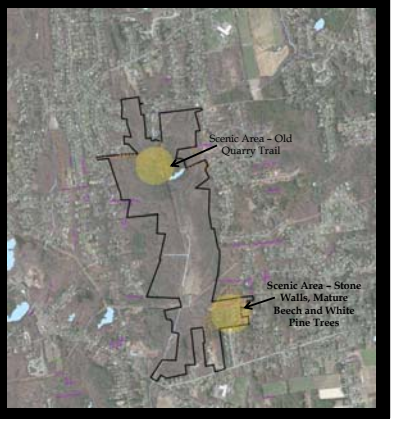


O&C: Potential New Trails

- Extend existing and introduce new paths to expand network of trails
- Periphery trail
- Small bridges and possibly boardwalks
- Highlight history of site
- Six possible trailheads

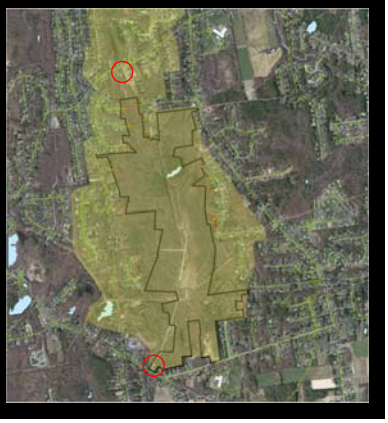
O&C: Scenic Areas

- Several scenic areas
- Trail development capitalize on these assets



O&C: Conservation

- Preserve wetlands habitat
- Corridors
  - will learn more as use site
  - improved road crossings would help
- Reduce stormwater runoff impacts

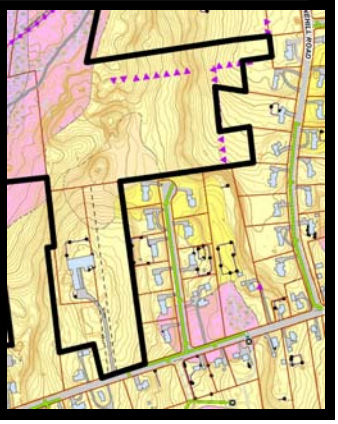


O&C: Connections to Nearby Assets

- Potential Sidewalk Connections
  - Schools (Mountain View, Mapleshade, Meadow Brook,)
  - Conservation areas (Jarvis, Kenmore)
  - Churches
  - Police and Fire Stations
  - Senior housing
  - Commercial area
  - High density residential

O&C: Brown Farm Property

- 30 acres not wet or in flood plain, well draining soils – need to confirm
- Adequate vehicle access and space for fields, parking – study for safe vehicle egress
- Need to consider nearby residences – establish buffer
- Site lends itself in some ways to development
  - Already disturbed along western edge
  - Horse barn needs to be demolished



O&C: Summary

- Could accommodate recreation and housing, but not meet all needs
- Unique opportunity to combine senior housing with access to passive recreation
- Only suitable vehicle access at Hampden Road
- Expanded trail network can capitalize on scenic areas and make connections within the site and to surrounding neighborhood
- Serves as stormwater basin– improved management in neighborhoods would reduce impacts

Site Design Concept #1

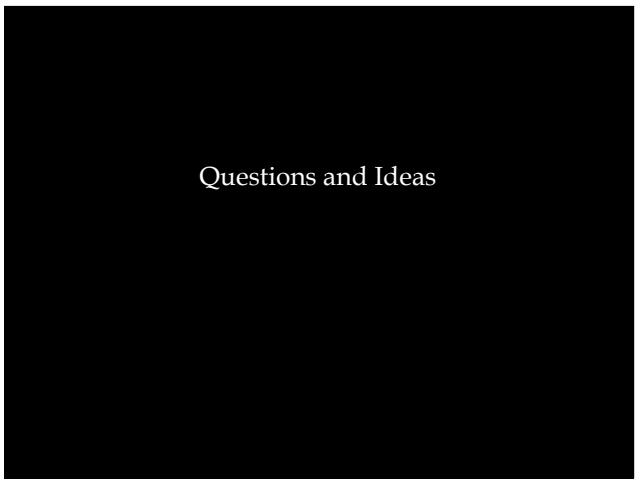
- 1 baseball diamond with 90-foot base path
- 3 full size multi-use fields (360′ x 210′ with run out)
- Multi use trails next to existing stone walls
- Sidewalks and crosswalks
- 104 parking spaces
- Option to include additional parallel parking along west side of road entrance
- Restrooms
- At least 50 foot buffer from property lines

Site Design Concept #2

- Constants in each of these concepts (diamond, trails, stone walls, restrooms)
- Variations (multi-use fields, sidewalks and crosswalks, parking, housing)
- Removed full size multi use field to accommodate housing
  - 7 two-story buildings
  - 49 units (mix of studio, 1 bedroom, and 2 bedroom)
  - Community building and courtyard
  - Shared open space
  - Combined parking with southern field

Site Design Concept #3

- Combined concepts #1 and #2
  - Restored number of fields
  - Reduced number of housing units down to 14 to 19
  - Parking for housing separate from fields


Questions and Ideas

Appendix G

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Brown Farm – Watchaug Meadows Public Meeting
September 19, 2011

After a 30 minute presentation of the Brown Farm-Watchaug Meadows assessment and design concepts, residents were invited to ask questions, offer comments and suggest new ideas. The following notes summarize the major topics that were discussed.

Senior Housing

One resident questioned whether there was enough space for senior housing and fields, and another commented that the development must comply with the town's zoning regulations.[1] Some residents did not think housing was appropriate for the site, and one resident questioned whether senior housing and athletic fields are compatible uses. She thought that it may be too much to try to combine both of these uses on site.

On the other hand, others voiced support for senior housing on the site. It was noted that there is a huge need for affordable senior housing, and that there is currently a two to three year waiting list for senior housing in town. One resident thought that the combination of housing and fields could be okay. PVPC staff noted that this is a unique opportunity to bring senior residents within close proximity of walking trails.

Residents expressed concern about the impacts of noise and traffic on any potential senior housing. Housing should be buffered from noise from the fields, perhaps with trees. One resident expressed concern about driving conflicts between senior residents and community visitors to the athletic fields.

Traffic

Several residents expressed concern about traffic on Hampden Road and the safety of the access drive that would be required to use the site for athletic fields. There is a hill to the west of the site that would create visibility problems. It was noted that a study of these traffic safety issues is one of the recommendations of PVPC's site assessment.

Parking

Several residents expressed concerns about parking for the athletic fields. The development concepts do not show Anna Maria Lane, and residents of this street expressed concern that people might park on this road to access the fields. They would like this to be prohibited.

One resident thought that the parking for the athletic fields shown in the development concepts was inadequate.[2]

[1] The number of parking spaces for senior housing provided in the development concepts was determined based on discussions with the East Longmeadow Housing Authority. The potential developments shown are concepts only, and were used approximate the number of housing units that could be developed on-site in different scenarios. Any final development would conform to all applicable zoning and site development requirements.

[2] The number of parking spaces in the development concepts was based on parking use at other athletic facilities in town. The recreation department provided PVPC with the number of parking spaces required for different types of fields.

Passive Recreation Development Concept

Several residents expressed support for a fourth development concept that uses the site only for conservation and passive recreation activities. They indicated the site is ideal for passive recreation. This concept would include trails and interpretive signage. One resident commented that ATV use on the site needs to be considered, as the site is likely being used for this purpose currently.

Athletic Fields

It was noted that there is a significant need for fields. However, some residents questioned whether they are needed. One resident commented that more study is needed, as each field will cost a lot of money. It was suggested that the Town determine whether it is in a "bubble" where the demand for recreation programming is clearly at a peak, but that as the population ages so too may the demand for programming.

Several concerns were expressed with regard to use of the site for athletic fields. One resident asked about field lighting, as well as safety and patrolling of the fields to prevent nuisance activities. Another resident said it was important to look closely at the soils. A soils study is one of the recommendations of this site assessment.

It was suggested that the town clearly track the budget for the project on the town website, so that residents can see how much money the town has invested to date.

Appendix H

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Ten Summary Strategies for Green Site Development

The Pioneer Valley Planning Commission has developed 10 summary strategies for green site development that will be useful if development of the Brown Farm site moves forward. The strategies are as follows:

Strategy #1: Select a Site in a "Smart" Location

Smart growth is a comprehensive land development strategy that concentrates new development in and near existing communities, commercial enters, and infrastructure in order to protect open space and farmland, revitalize and beautiful downtowns and nearby neighborhoods, and provide more housing and transportation choices. Although the Brown Farm site is not located near an existing commercial center, this site is near several schools, making it a good location for recreation fields and the site has ready access to existing sewer and water infrastructure needed for development. The Town could strengthen the "smart" location of this site by developing a mixed-use commercial and higher density residential node at the nearby intersection Somers Road and Kibbe Road, where there is currently a cluster of commercial uses and one small high density residential area.

Strategy #2: Assess Your Site and its Surrounding Context

The second green site development strategy, Assess Your Site and Its Surrounding Context, is being completed as part of this study. Green site development requires that the final development concept reflect the results of the site assessment.

Strategy #3: Minimize Destruction of Natural Resources and Wildlife Habitat

The third strategy is most relevant to greenfield (previously undeveloped) sites and to sites with significant habitat value like Watchaug Meadows. Some green site development strategies to consider are listed below:

Design

1. Create a site development plan that reflects the natural terrain and minimizes clearing and grading
2. Preserve natural topography outside of the developed area to reduce unnecessary land disturbance and to preserve natural drainage channels on the site
3. Minimize and balance cut and fill to reduce total land disturbance and minimize the importing or exporting of earth materials from the site
4. Maintain contiguous forested areas

Construction

1. Minimize clearing and grading associated with construction activities
2. Limit clearing for utility trenches to the minimum area necessary to maneuver a backhoe or other construction equipment
3. Use limit-of-work controls (also known as perimeter controls or development envelopes) that establish the limits of clearing, grading, vehicle travel, and materials and equipment storage on the site

4. Limit the extent of a site exposed at any one time by phasing construction operations. Re-vegetate disturbed areas immediately after grading is complete, and never leave land unstabilized over the winter season

Tree Preservation

1. Preserve specimen trees that have a circumference at breast height (4.5 feet above the ground) of 60 inches or more
2. Preserve trees that are associated with:
    a. Significant forest communities
    b. Wetlands, water bodies and their buffers
    c. Slopes over 25 percent
3. Protect trees on adjacent properties whose drip lines extend into the project site
4. Use construction practices that protect the entire area within the critical root zone of trees to be preserved, including understory vegetation
5. If significant trees cannot be preserved, transplant them if feasible. Use transplanting methods that maximize plant survival
6. Replace any trees that were targeted for preservation or transplanting but then lost during construction

<u>Strategy #4: Reduce Transportation Impacts and Connect the Site to the Larger Community</u>

The fourth strategy listed above, Reduce Transportation Impacts and Connect the Site to the Larger Community, can be met through a variety of development strategies. Some considerations are listed below.

Encourage Alternative Transportation

1. Construct sidewalks and pathways that connect the site to nearby assets identified in the Site Assessment
2. Consider developing bike lanes on roads surrounding and nearby the site
3. Create a site design that gives equal consideration to the safety, circulation routes, and overall experience of pedestrians, bicyclists, and drivers
4. In addition to car parking on-site, install bike racks near the athletic fields and trailheads, and consider covered storage areas that shelter bicycles from the elements

Encourage Carpooling and Compact Cars, and Discourage On-Site Driving

1. Create parking spaces that are reserved for carpools and/or compact cars. Locate these spaces in preferred locations nearest to site buildings, trailheads and athletic fields
2. Create and clearly mark areas designated for carpool drop off and pick up
3. Include a ride board where residents can post notices offering rides, seeking rides, or to make carpooling arrangements
4. Reduce on-site driving through efficient design of roads and parking areas

Strategy #5: Improve Building Performance through Energy Efficient Design

Some possible green building strategies that reduce energy use are listed below:

Passive Solar Design

1. Orient buildings with the long axis running east-west (facing within 10 degrees of due south if possible)
2. Design south-facing glass to be between 7 and 12 percent of conditioned square footage. Design east and west facing windows to meet daylighting needs, while minimizing window areas to the north
3. Select south-facing windows that maximize heat gain and minimize heat loss
4. Use indoor materials with high thermal mass (heat capacity) when located near windows that are exposed to thermal radiation. To increase heat retention and moderate temperature swings in winter, locate brick, stone, ceramic tile, concrete and other high mass materials as close to south-facing windows as possible. These materials store solar energy during the day, increasing heat retention and moderating temperature swings in the winter
5. In summer, use overhangs, awnings, porches, deciduous trees, and other control elements to provide shading along the south facing side of buildings. Architectural elements or trees should fully shade south-facing windows during the summer months, and allow full sun on windows during the wintertime
6. Make use of natural lighting within the building(s) without compromising thermal energy efficiency

Additional Energy Efficiency and Renewable Energy Measures

1. Meet Energy Star standards
2. Design buildings with natural ventilation cooling instead of installing air conditioning systems
3. Accommodate future solar electric installations by building south-facing roofs with the optimal slope of approximately 37 degrees

Strategy #6: Reduce Water Use and Minimize Stormwater Runoff Impacts

The sixth strategy can be implemented through the following:

Use Low Maintenance Landscaping

1. Minimize the total lawn area
2. Maximize use of plants and landscaping with low maintenance requirements, and that require little or no irrigation
3. Minimize use of potable water for landscape irrigation by installing high-efficiency irrigation systems, using mulch to prevent water evaporation, irrigating with captured rainwater, and reusing building greywater
4. Incorporate Low Impact Development practices for stormwater management, including use of rain barrels, rain gardens and bioswales

Reduce Pollution Impacts During Construction

1. Use seeding and mulching to stabilize soils in bare areas
2. Use silt socks (filled with compost) and sediment traps to trap stormwater sediments
3. Store soil, construction, and waste materials using controls that minimize exposure of the materials to rainfall
4. Prevent the design release rate of any stormwater structure from increasing stream channel erosion downstream
5. Ensure that the banks of detention, retention, and infiltration basins are stabilized with vegetation

Develop a Stormwater Management Plan

1. Post-development peak discharge rates should not exceed pre-development peak discharge rates. Peak discharge rates are the maximum rate of stormwater runoff that occurs during a storm
2. Remove 80 percent of total suspended solids (TSS) from post-development storwater runoff. Total suspended solids (TSS) is a water quality measurement that is listed as a conventional pollutant in the U.S. Clean Water Act. Suspended solids in water reduce light penetration in the water column, can clog the gills of fish and invertebrates, and are often associated with toxic contaminants because organics and metals tend to bind to particles.
3. Use infiltration strategies to ensure that the groundwater recharge rate after the development is complete is the same as the pre-development groundwater recharge rate
4. Before discharging water into infiltration areas/devices, remove at least 44 percent of total suspended solids (TSS) using Best Management Practices (BMPs) for stormwater management described in the Massachusetts Stormwater Handbook
5. Ensure that the banks of detention, retention, and infiltration basins are stabilized with vegetation, are sloped at a gentle grade not exceeding 4:1 to a depth of two feet (2') below the control elevation, and have sinuous rather than straight shorelines to maximize the vegetated area

<u>Strategy #7: Minimize and Manage Waste</u>

To Minimize and Manage Wastes, consider the following actions:

Construction Waste Management and Topsoil Recovery

1. Identify non-hazardous construction debris that can be salvaged or recycled
2. Develop a construction waste management plan that identifies all materials that will be diverted from disposal for reuse on site, charitable donation, and recycling. Set a goal of diverting 50 percent of construction waste from disposal by reusing materials on-site and by sending materials for off-site recycling. Salvage or recycle waste cardboard, metal, brick, acoustical tile, concrete, plastic, clean wood, glass, gypsum wall-board, carpet and insulation.
3. Preserve and re-apply at least 6 inches of the site's topsoil and at least 12 inches of the site's subsoil

Collection and Storage of Recyclables

1. Create a well-marked area or areas that can be used by all building occupants for collection of paper, cardboard, glass, plastics, and metals for recycling
2. Consider including a collection area for organic wastes
3. Coordinate the size, location and other features of recycling areas with the anticipated collection services

Handling and Storage of Hazardous Materials

1. Develop a plan that describes all hazardous materials that will be stored on site and where they will be stored
2. Use "Best Management Practices" to handle and store hazardous materials so that infiltration systems, water bodies, and storm drains do not receive contaminated runoff
3. Employ measures for spill prevention and response
4. When possible, recycle hazardous materials

Strategy #8: Reduce Heat Pollution

To Reduce Heat Pollution consider the following actions:

1. Select light colored pavements and reflective roofing materials. "Cool pavements" include reflective, light-colored paving products, as well as permeable "grass pavers" with grasses growing in the center. "Cool roofs" include light-colored metal roofs and roof coatings.
2. Cover site hardscape with shade from landscaping vegetation
3. Shade site hardscape with architectural elements, such as awnings
4. Select reflective roofing material for covered parking spaces. Set a goal of covering at least 50 percent of the site hardscape with shade or vegetation or reflective paving materials

Strategy #9: Minimize Light Pollution

To Minimize Light Pollution consider the following actions:

1. Use the minimum amount of outdoor lighting needed and limit or eliminate landscape lighting
2. Use full cutoff fixtures that shield and direct light downward. Cutoffs should shield bulbs from visibility
3. Focus light downwards, limiting lighting to a 90 degree angle above the horizontal plane. Avoid pointing any light upwards, including parking, security and aesthetic lighting, and never use upward search or spotlighting.
4. If spotlights are used to illuminate buildings, signs or specific site features, target the spotlight directly on the object, and limit spotlighting to a 45 degree angle above the horizontal plane
5. Install timers that turn all nonessential lighting off (including display, parking and sign lighting) after hours, leaving only the lighting necessary for site security
6. Design interior lighting in a way that prevents it from shining directly out of windows. Alternatively, employ automatic controls to ensure that interior lights are shut off after dark when there are no building occupants.

7. Install lighting poles in parking lots that are no higher than 25 feet tall
8. Illuminate signs from the top, not the bottom. Internal illumination is acceptable as long as it does not cause light to be directed upward or off the property boundaries.

Strategy #10: Improve and Create New Wildlife and Human Habitats

To Improve and Create New Wildlife and Human Habitats consider the following:

Wildlife Habitat

1. Develop trails that minimize disturbance to the site's best wildlife habitat areas, and restore and enhance existing habitat areas as necessary
2. In areas disturbed by construction or previously cleared, use native and adapted plant landscaping to restore or create new wildlife habitat
3. Whenever possible, connect new habitat to adjacent habitat and open space areas

Healthy Human Habitat

1. Create a walkable, pedestrian oriented development with sidewalks and pathways, safe street crossings and street trees
2. Accommodate bicycle travel by installing bike racks
3. Preserve and create natural areas, and install native plant landscaping that creates wildlife habitat. Create pathways and sitting areas for people to access and enjoy open space.
4. Include features that foster community, including common spaces