



Massachusetts Department of Conservation and Recreation  
Bureau of Planning and Resource Protection  
Resource Management Planning Program

## RESOURCE MANAGEMENT PLAN

# Blue Hills Planning Unit

*Including Blue Hills Reservation, Ponkapoag Golf Course,  
and Town Brook Flood Control Site*



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April 2011





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## RESOURCE MANAGEMENT PLAN

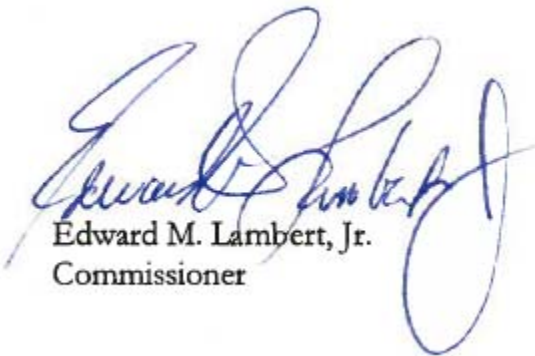
# 2011

Deval L. Patrick, Governor  
Timothy P. Murray, Lt. Governor  
Richard K. Sullivan, Jr., Secretary  
Edward M. Lambert, Jr., Commissioner  
John P. Murray, Deputy Commissioner for Park Operations

Resource Management Plans (RMPs) provide guidelines for management of properties under the stewardship of the Department of Conservation and Recreation (DCR). They are intended to be working documents for setting priorities, enabling the Department to adapt to changing fiscal, social and environmental conditions. The planning process provides a forum for communication and cooperation with park visitors and the surrounding communities to ensure transparency in the DCR's stewardship efforts.

For more than a century, the Blue Hills Reservation has provided visitors respite from their daily lives and an opportunity to reconnect with nature. This wildland offers a variety of nature-based recreation activities that are unequalled in metropolitan Boston. It is also home to some of Massachusetts rarest plants and animals, and historic resources that attest to our agrarian and industrial pasts.

Generations have swum in Houghton's Pond, learned about nature at the Trailside Museum, viewed the Boston skyline from a rocky hilltop, and enjoyed the sound of birdsong echoing through the morning woods. This RMP balances recreation and resource protection at the Blue Hills so that these experiences, and others, are available to future generations.



Edward M. Lambert, Jr.  
Commissioner

The Massachusetts Department of Conservation and Recreation (DCR), an agency of the Executive Office of Energy and Environmental Affairs, oversees 450,000 acres of parks and forests, beaches, bike trails, watersheds, dams, and parkways. Led by Commissioner Edward M. Lambert, Jr., the agency's mission is to protect, promote, and enhance our common wealth of natural, cultural, and recreational resources. To learn more about DCR, our facilities, and our programs, please visit us at [www.mass.gov/dcr](http://www.mass.gov/dcr). Contact us at [mass.parks@state.ma.us](mailto:mass.parks@state.ma.us).



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# EXECUTIVE SUMMARY

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## INTRODUCTION

For over 117 years, the Blue Hills Reservation has offered abundant opportunities for natural recreation in the largest protected open space in metropolitan Boston. This Resource Management Plan (RMP) addresses the management riddle of how to welcome growing numbers of users and their changing needs while protecting the rare and fragile world within the park. It provides guidance that will protect, promote, and enhance the Blue Hills' natural, cultural, and recreation resources well into the reservation's second century.

This RMP covers DCR's Blue Hills Reservation, including the Quincy Quarries and Ponkapoag Golf Course, and the Town Brook Flood Control Site (FCS). These properties were identified by the Department of Conservation and Recreation as constituting a single planning unit. They are included in this plan because of their physical proximity to each other and, with the exception of Town Brook FCS, because they share a common management structure.

## MANAGEMENT GOALS

The RMP process provides a systematic assessment of natural, cultural, and recreation resources; their current condition and future potential; and current and anticipated management resources and practices. Through this process a principle for the management of the Blue Hills and associated goals are identified.

The following management principle was developed for the Blue Hills Planning Unit.

Through the use of limited management resources – financial, labor, capital and equipment – to protect, and when possible enhance, the natural and cultural qualities and recreational opportunities that inspired the creation of the Blue Hills Reservation, amid the challenge of accelerating, neighboring development and environmental change.

Five goals are associated with this principle; they are:

- Make recreation sustainable and appropriate for the Blue Hills environment;
- Protect those natural resources most at risk from misuse, overuse, obsolete practices or avoidable environmental change;
- Preserve the distinct scenic and historic qualities of the reservation;
- Promote recreation, and other activities, that increase appreciation of the natural and cultural environments and their protection; and
- Repel or mitigate external pressures that threaten the character and qualities of the Blue Hills.

These objectives were developed with an awareness that enhanced management of the Blue Hills' natural and cultural resources will result in improved recreation opportunities and visitor experiences; and that enhanced management of recreation activities will result in increased protection of natural and cultural resources. They are also intended to enhance the public's understanding and appreciation of this unique park.

## RECOMMENDATIONS

This RMP offers 207 specific, actionable recommendations that, when implemented, will achieve management goals. These recommendations have been ranked according to priority and the availability of resources for implementation.

There are 77 high priority recommendations. Resources are currently available to implement 16 of these recommendations; they are:

- Decrease the seasonal exclusion of mountain bikes to the month of March.
- Conduct annual summits of the reservation's stakeholders in order to promote an ongoing dialogue among the Regional Director, District Manager, and stakeholders.
- Promote the Blue Hills as a study site for academic, governmental, non-profit, and other research (e.g., water quality, forest health) in order to meet specific information needs and enhance resource management.

- Modify Special Use Permit procedures to increase awareness of the need for these permits and to ensure that associated research reports are provided to appropriate park staff and to the DCR Archives.
- Work with MassDOT, and other transportation planning entities, to reduce through and commuter traffic in the reservation.
- Work with MassDOT to install “Now entering the Blue Hills Reservation” and “Now leaving the Blue Hills Reservation” signs along routes I-93 and 24 to increase awareness of the reservation among drivers passing through.
- Using new traffic count data, conduct an assessment of pedestrian safety.
- Initiate discussions with the MassDOT regarding the potential transfer to the DCR of an approximately two-acre, forested parcel between Fowl Meadow and the Blue Hills.
- Request that MassDOT perform a safety study and warrant analysis for a left-hand turn lane from Route 138 south into the Trailside Museum south parking lot.
- Require that Trail Watch members operating in the Chickatawbut Hill section receive training in snake biology and conservation, and submit Rare Species Observation Forms to the NHESP for all rare snakes observed.
- Implement required mitigation measures for the draining of the Quincy Quarries and dedicate any remaining funds to site improvement.
- Require that Trail Watch members operating in the Quincy Quarries section receive training in snake biology and conservation, and submit Rare Species Observation Forms to the NHESP for all rare snakes observed.
- Require that Trail Watch members operating in the St. Moritz section receive training in snake biology and conservation, and submit Rare Species Observation Forms to the NHESP for all rare snakes observed.
- Open appropriate existing trails in the Ponkapoag section to mountain bike use, in accordance with the *Trails Guidelines and Best Practices Manual*. Revisit the impacts of this recommendation on natural resources,

golf course operations, trail user conflicts, and public safety in the upcoming Trail System Plan.

- Open appropriate existing trails in the Ponkapoag East section to mountain bike use, in accordance with the *Trails Guidelines and Best Practices Manual*. Revisit the impacts of this recommendation on natural resources, trail user conflicts, and public safety in the upcoming Trail System Plan.
- Open appropriate existing trails in the West Street section to mountain bike use, in accordance with the *Trails Guidelines and Best Practices Manual*. Revisit the impacts of this recommendation on natural resources, trail user conflicts, and public safety in the upcoming Trail System Plan.

There are 88 medium priority recommendations. Funding is currently available for the following five recommendations.

- Promote responsible pet ownerships by increasing awareness of requirements to keep pets leashed and to pick up and properly dispose of pet waste.
- Keep species and natural community information up to date.
- Increase staff awareness of regulations affecting park operations, such as the Wetlands Protection Act and Massachusetts Endangered Species Act, and enhance protection of natural resources through participation in training offered by the DCR’s Bureau of Planning and Resource Protection.
- Prohibit the importation of firewood from off the reservation.
- Contact MassDOT to clarify use of the bridge over Route 24 by DCR administrative vehicles.

There are 42 low priority recommendations. Funding is currently not available for any of these, but may become so in more than five years.

A management Summary and Implementation Plan for the Blue Hills Reservation is provided at the end of this Executive Summary.

**PUBLIC PARTICIPATION IN DEVELOPING THIS  
RESOURCE MANAGEMENT PLAN**

Notice of a public meeting and of the DCR’s intent to prepare a Resource Management Plan for the Blue Hills Reservation was published in the July 8, 2009 Environmental Monitor. Additional announcements were made on the DCR web page and press releases were provided to the Quincy Patriot Ledger. An initial public meeting was convened at the Trailside Museum, Milton, on July 29, 2009. Approximately 70 people attended this meeting, which ran from 6:30–9:00 P.M. Public input on the plan was received at the meeting and through U.S. and e-mail received after the meeting.

Notice of a public meeting on the draft Resource Management Plan for the Blue Hills Planning Unit

was published in the November 22, 2010 Environmental Monitor. The meeting was held on December 7, 2010 at the Ponkapoag Golf Course’s club house; 34 people attended.

Notice of availability of the draft Resource Management Plan was published in the December 8, 2010 Environmental Monitor. The public comment period on the draft RMP ran from December 9, 2010 – February 7, 2011; 236 sets of written comments were received. Information on the public process for this RMP is provided in Appendix B (Public Participation).

This Resource Management Plan was submitted to the DCR’s Stewardship Council on March 4, 2011, and was adopted on April 1, 2011.

## Blue Hills Planning Unit Management Summary and Action Plan

### Guiding Principles for Stewardship

Make recreation sustainable and appropriate.  
 Protect those natural resources most at risk.  
 Preserve the distinct scenic and historic qualities of the reservation.  
 Promote recreation, and other activities, that increase appreciation of the natural and cultural environments and their protection.  
 Repel or mitigate external pressures that threaten the character and qualities of the Blue Hills.

### Division of Urban Parks and Recreation Management Resources

The Blue Hills Reservation is maintained and operated by a combination of District and Regional personnel. As of FY10, there were 16 year-round and 31 seasonal District staff, and 7 year-round and 5 seasonal Regional staff. Ponkapoag Golf Course is operated and maintained by 5 year-round and 24 seasonal employees.

**RECOMMENDATIONS:** Forest and Park Supervisor I and Forest and Park Supervisor II (Houghton’s Pond Recreation Area); Forest and Park Supervisor I (Trailside Museum); Forestry Assistant (Region-wide); Recreation Facility Supervisor (District-wide); and a Visitor Services Supervisor (Region-wide).

A year-round assistant District Manager and up to 5 additional laborers are recommended to improve the maintenance and operation of Ponkapoag Golf Course.

### Division of Urban Parks and Recreation Management Activities

Activity	Spring	Summer	Fall	Winter
Mow and trim athletic fields	2x/month	2x/month	2x/month	
Schedule use of picnic sites	As needed	Daily	As needed	
Inspect playground equipment	Weekly	Weekly		
Beach sanitizing	2x/month	2x/month		
Water quality testing (Houghton’s Pond)	Weekly	Weekly		
Water safety monitoring (Houghton’s Pond)		Daily		
Clean comfort station	Daily, when open	Daily	Daily, when open	
Visitor guidance/info	Daily	Daily	Daily	Daily
Update kiosk content	Monthly	Monthly	Once	Once
Interpretive events	Once	Once	Once	Once
Interpretive or recreational programs	Weekly	Weekly	Weekly	Weekly
Direct traffic in parking lots		Weekends	Weekends	Weekends
Park Serve Day	Once			
Other volunteer events	As volunteers are available	As volunteers are available	As volunteers are available	
Routine patrols	Daily	Daily	Daily	Daily
Trail system maintenance	As needed	As needed	As needed	As needed
Marking trails system	As needed		As needed	
Maintain Ponkapoag boardwalk		As needed		
Monitor rare plants	Once	Once		
Invasive plant monitoring and control	As time allows	As time allows		
Hemlock insecticide injections		Once		

*Continued on next page.*

### Division of Urban Parks and Recreation Management Activities (Continued)

Activity	Spring	Summer	Fall	Winter
Monitor nest boxes	Weekly	Weekly		
Monitor Conservation Restrictions				Once
Swap orifice in Ponkapoag Dam	Once		Once	
Mow grasslands			Once	
Mow and trim lawn	2x/month	2x/month	2x/month	
Mow recreational fields		Weekly	6x/week	
Mow greens (Ponkapoag Golf Course)	6x/week	6x/week		
Mow roughs(Ponkapoag Golf Course)	5x/week	5x/week	5x/week	
Mow tees and fairways (Ponkapoag Golf Course)	3x/week	3x/week	3x/week	
Water greens and tees (Ponkapoag Golf Course)	As needed	As needed	As needed	
Pick up litter	2x/month	2x/month	2x/month	
Empty trash barrels	Weekly	Weekly	As needed	As needed
Snow removal				See DCR winter storm plan
Maintain/repair gravel parking lots	As needed	As needed	As needed	
Maintain/repair gravel road to AMC camp	As needed	As needed	As needed	As needed

### Other DCR Operational Support

Action	DCR Unit	Interval
Issuance of Special Use Permits	Special Services and Events	As needed
Scheduling use of DCR-controlled fields	Special Services and Events	As needed
Arborist support	Engineering	Annually
Assessment of DCR-owned dams	Engineering	
Catch basin cleaning	Engineering	Annually
Oversight of maintenance, repair, and construction	Engineering	Ongoing
Parkway traffic study	Engineering	Every 20 years
Pick up accumulated leaves and take to compost yard	Engineering	As requested
Street and parking lot sweeping	Engineering	Every 45 days
Update storm water management plan	Engineering	Every 5 years
Wildfire response	Forest Fire Control	As needed
Web site updates	External Affairs	As requested
Preparation of legal agreements, notice of noncompliance, etc.	Legal Services	As needed
Archival services	Planning	As requested
Assistance with trails planning	Planning	As requested
Cultural resources technical support and training	Planning	As requested
Ecological technical support	Planning	As requested
GIS support	Planning	Ongoing
Historic Curatorship Program	Planning	Ongoing
Land acquisition	Planning	As needed
Master planning	Planning	As needed
Interpretive planning assistance	Ranger Services	As requested
Technical support on accessibility issues	Universal Access Program	As requested
Identification and increased awareness of DCR's legislative needs	Government Relations	As required
Minor building system repair (e.g., wiring, plumbing)	Mobile Maintenance	As requested
Sign-making	Sign Shop	As requested
Technical assistance with water quality issues	Lakes and Ponds Program	As requested
Partnership development	Partnerships Program	As requested

### Recommended DCR Staff Stewardship Actions – 2011 to 2013

Action	DCR Unit	Funding
Decrease the seasonal exclusion of mountain bikes from trail to only the month of March.	South Region	Operations
Conduct annual summits of reservation’s stakeholders in order to promote an ongoing dialogue among the Regional Director, District Manager, and stakeholders.	South Region Partnership Program External Affairs	Operations
Promote the Blue Hills as a study site for academic, governmental, non-profit, and other research (e.g., water quality, forest health) in order to meet specific information needs and enhance resource management.	External Affairs	
Modify Special Use Permit procedures to increase awareness of the need for these permits and to ensure that associated research reports are provided to appropriate park staff and the DCR Archives.	Special Services and Events External Affairs	
Work with MassDOT, and other transportation planning entities, to reduce through and commuter traffic in the reservation.	Planning Engineering	
Work with MassDOT to install “Now Entering Blue Hills Reservation” and “Now Leaving Blue Hills Reservation” signs along routes I-93 and 24 in order to increase awareness of the reservation among drivers passing through.	Planning Engineering	
Perform a safety study and warrant analysis for a left-hand turn lane from Route 138 south into the Trailside Museum south parking lot.	Engineering	Engineering
Conduct a traffic volume study on interior reservation roads.	Engineering	Engineering
Implement required mitigation measures for the draining of the Quincy Quarries and dedicate any remaining funds to site improvement.	Planning Engineering South Region	Tipping fees
Keep species and natural community information up to date.	South Region	
Perform in-kind replacement of the roofing shingles on the pavilion at the Chickatawbut Overlook to avoid water damage to the pavilion’s sheathing and wooden structural elements.	South Region	Operations
Contact MassDOT to clarify use of the bridge over Route 24 by DCR administrative vehicles.	South Region Legal Services	
Increase staff awareness and protection of natural resources through participation in training offered by the DCR’s Bureau of Planning and Resource Protection.	South Region Planning	Planning
Exclude Trail Watch bikes from trails in rare snake habitat east of Route 28.	South Region	Operations

### Partnered Stewardship Opportunities

Action	DCR Unit	Partners
Prohibit the importation of firewood from off the reservation.	South Region	AMC Mass Audubon YMCA



The beach at Houghton's Pond, with Great Blue Hill in the background.

## SECTION 1. INTRODUCTION

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### 1.1. THE BLUE HILLS

For over 117 years, the Blue Hills Reservation has offered abundant opportunities for natural recreation in the largest protected open space in metropolitan Boston. Visitors experience a seemingly unaltered and enveloping natural world, yet within sight of the ever-expanding city skyline. Its hills preserve the memories of Native American presence and the settlers that followed. These same hills shelter a wealth of plant and animal life.

This Resource Management Plan (RMP) addresses the management riddle of how to welcome growing numbers of users and their changing needs while protecting a rare and fragile world, even as development and growth press in on all sides. This plan provides guidance that will protect, promote, and enhance the Blue Hills' natural, cultural, and recreation resources well into the reservation's second century.

### 1.2. RESOURCE MANAGEMENT PLANS

RMPs guide the management of properties under the stewardship of the Department of Conservation and Recreation (DCR). They identify clear goals and objectives; inventory and assess environmental, cultural, and recreation resources; identify current management practices and capabilities; and develop specific, implementable management recommendations.

The DCR is required to prepare management plans for "all reservations, parks, and forests under the management of the department." (M.G.L. Chapter 21: Section 2F; Appendix F) These plans "shall include guidelines for the operation and land stewardship of the aforementioned reservations, parks and forests, shall provide for the protection and stewardship of natural and cultural resources and shall ensure consistency between recreation, resource protection, and sustainable forest management." This is achieved through the preparation of RMPs.

In 2008, the DCR conducted a statewide survey of all of its properties for the purpose of guiding

resource management planning (DCR 2009a). Nearly 400 properties were grouped into 86 planning units, largely on the basis of physical proximity and shared management structure. RMPs will be prepared for each of these units and, collectively, will include “all reservations, parks, and forests.”

The statewide survey reviewed and synthesized existing data on each planning unit’s natural resources, infrastructure, and staffing (DCR 2009a). New information was generated on each planning unit’s cultural resources, recreational activities, and operations and management considerations. These three variables, and natural resources, were used to prioritize the preparation of RMPs.

This process defined the Blue Hills Planning Unit presented in this RMP. It also identified it as the highest priority for the preparation of an RMP.

### **1.3. THE PLANNING PROCESS**

RMPs are developed by the DCR’s Regional Planning Program through an iterative process of data gathering and analyses, public input, writing, review, and revision.

Public input is an important part of the process. The legislative mandate that requires the preparation of management plans directs the Commissioner of the DCR to “seek and consider public input in the development of management plans, and shall make draft plans available for a public review and comment period through notice in the Environmental Monitor.”

There were two periods of public input associated with the preparation of the Blue Hills RMP. The first occurred early in the planning process, prior to preparing the RMP. The second occurred following the release of the draft plan. A public meeting was associated with each of these comment periods. Additional information on public participation in the development of this plan is provided in Appendix B.

Following public comment and revision, draft RMPs are submitted to the DCR Stewardship Council for review. Once reviewed and adopted by the council, RMPs become the primary guidance document for managing a planning unit’s resources.

### **1.4. MANAGEMENT PRINCIPLE AND GOALS**

A principle for management of the Blue Hills Planning Unit and five associated goals were developed through the planning process.

#### **Management Principle**

Through the use of limited management resources – financial, labor, capital and equipment – to protect, and when possible enhance, the natural and cultural qualities and recreational opportunities that inspired the creation of the Blue Hills Reservation, amid the challenge of accelerating, neighboring development and environmental change.

#### **Goals**

The following five goals, and associated management recommendations (Section 4), have been developed to achieve the management objective. Each is of equal importance.

**Goal 1.** Make recreation sustainable and appropriate for the Blue Hills environment.

Recreational activities and facilities must be compatible with the reservation’s natural and cultural resources, able to be managed with available resources, and economically feasible if they are to be sustainable. Inappropriate activities, regardless of their sustainability, do not belong on the reservation.

**Goal 2.** Protect those natural resources most at risk from misuse, overuse, obsolete practices or avoidable environmental change.

The Blue Hills are home to some of Massachusetts’ rarest plants, animals, and natural communities. Their protection on the reservation is crucial for maintaining the biodiversity of the Commonwealth.

Protection of the reservation’s more common natural resources is also important. Because it is these resources that most visitors encounter, it is their protection that most affects the quality of the visitor experience.

**Goal 3.** Preserve the distinct scenic and historic qualities of the reservation.

The reservation’s cultural resources represent a range of pre- and post-contact human endeavors in the region, from Native American occupation to Cold War-era missile defense. Preservation of



cultural resources, landscapes, and vistas connects us to our past.

**Goal 4.** Promote recreation, and other activities, that increase appreciation of the natural and cultural environments and their protection.

Park management largely depends on the support of well-informed visitors. Programs and materials that educate visitors about the relationship between their actions and the health of the reservation's resources can decrease negative impacts. Because recreation is the primary reason that people visit the Blue Hills, emphasis is placed on interpretive and educational materials associated with recreational activities.

**Goal 5.** Repel or mitigate external pressures that threaten the character and qualities of the Blue Hills.

Activities off the reservation may affect resources and visitor experiences on the reservation. Changes in adjacent land use, increases in commuter traffic and changes in traffic patterns, non-native plants on abutting properties, and stormwater runoff have all affected, and continue to affect, the character and qualities of the Blue Hills. Activities on abutting properties have also resulted in encroachment onto the reservation. Protection and enhancement of the reservation's resources and recreational opportunities requires addressing activities both on and off the reservation.

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The Captain's House was constructed in 1900 as one of the Blue Hills' original administrative buildings. It remains in use today as the DCR South Region Office.

## SECTION 2. EXISTING CONDITIONS

### 2.1. INTRODUCTION

The Blue Hills Reservation was established in 1893 by the Metropolitan Park Commission. Since its creation, the reservation has been the largest protected open space in metropolitan Boston. It is the wildland in Boston's back yard.

Charles Eliot (1893), one of the architects of the Metropolitan Park System, opined:

*"...crowded populations, if they would live in health and happiness, must have space for air, for light, for exercise, for rest, and for the enjoyment of that peaceful beauty of nature which, because it is the opposite of the noisy ugliness of towns, is so wonderfully refreshing to the tired souls of townspeople."*

For over 117 years, the Blue Hills Reservation has served this function by providing the people of greater Boston with access to nature and nature-based recreation.

This section describes the present state of the natural, cultural, and recreation resources and infrastructure of the Blue Hills Planning Unit.

### 2.2. PROPERTIES INCLUDED IN THIS RMP

The Blue Hills Planning Unit includes the Blue Hills Reservation, associated Conservation Restrictions, Ponkapoag Golf Course, and Town Brook Flood Control Site. These properties are included in this plan because of their physical proximity to each other and, with the exception of Town Brook FCS, because they share a common management structure. Locations of these properties are identified in Figure 2.2.1.

#### 2.2.1. Blue Hills Reservation

The Blue Hills is physically large (6,116 acres) and contains extensive resources. In order to orient you to the portion of the reservation under consideration, it has been divided into 15 sections. These sections are identified in Figure 2.2.2.

Information is first presented for the entire reservation, and then for individual sections. The presentation sequence is from west to east (i.e., left to right in figures) for those sections of the reservation north of I-93, and then west to east for sections south of I-93. This was done to permit you

to readily locate on the accompanying figures those features and areas identified in the text.

The sections of the Blue Hills Reservation are identified and defined as follows:

***Little Blue Hill (LB)***. Located in Canton, Little Blue Hill includes all DCR properties from Route 138, west to the Fowl Meadow portion of the Neponset River Reservation.

Adjacent land uses include low-density residential development to the north, intensive commercial development to the south (i.e., along Royall Street), forest to the east, and a combination of forest, wetland, and intensive use to the west.

There are two Conservation Restrictions, on three parcels, associated with this section.

***Hemenway Pond (HE)***. This section is located between Route 138 and Canton Avenue in the Town of Milton. It is bordered to the north by Dollar Lane and to the south by residences along the north side of Hemlock Drive.

Adjacent land uses include low-density residential development to the north and south, open land to the east, and a combination of forest, wetland, and high-density residential development to the west.

In 1966 the Town of Milton entered into a 99-year agreement with the Metropolitan District Commission (MDC) for the care and control of this section.

***Great Blue Hill (GB)***. The Great Blue Hill section is bounded by Route 138 to the west, Blue Hill River Road/Hillside Street to the south, the Reservation Headquarters, Operations Yard, and Unquity Road sections of the reservation to the east, and the property boundary to the north.

Adjacent land use includes a mixture of forest, open land, and wetlands to the north; forests, recreation land, and low-density residential development to the south; forest to the east; and a mixture of forests, open land, and low-density development to the west.

There is one Conservation Restriction associated with this section.

***Brookwood Farm (BF)***. All DCR lands located east of Route 138, south and west of Blue Hill River Road/Hillside Street, and north of I-93 in both Canton and Milton are included in this section.

Adjacent land uses include a combination of forest and low-density development to the north, forest to the south, low-density development to the east, and open land and intensive use to the west.

There is one Conservation Restriction associated with this section.

***Houghton's Pond (HP)***. Included are all recreation facilities, infrastructure, and natural features east of Blue Hill River Road, south of Hillside Street, north of I-93, and west and south of Bugbee Path in Milton.

Adjacent land uses include forests to the north and east; a combination of wetlands and forests to the south; and low-density development to the west.

***Reservation Headquarters (HQ)***. Located between 685 and 725 Hillside Street in Milton; this section includes the Blue Hills District Office, Brian T. Broderick Stable, South Region Office, Massachusetts State Police Milton Barracks, and all associated parking and other infrastructure to both the north and south of Hillside Street in Milton.

Adjacent land use to the north, south, and west is forest. A combination of forest and intensive use (i.e., the Operations Yard) are to the east.

***Operations Yard (OP)***. Garages, administrative buildings, a salt shed, fuel pumps and tanks, parking, and all other facilities located in the Blue Hills District Operations Yard at 681 Hillside Street, Milton are included in this section.

The adjacent land use in all directions is forest.

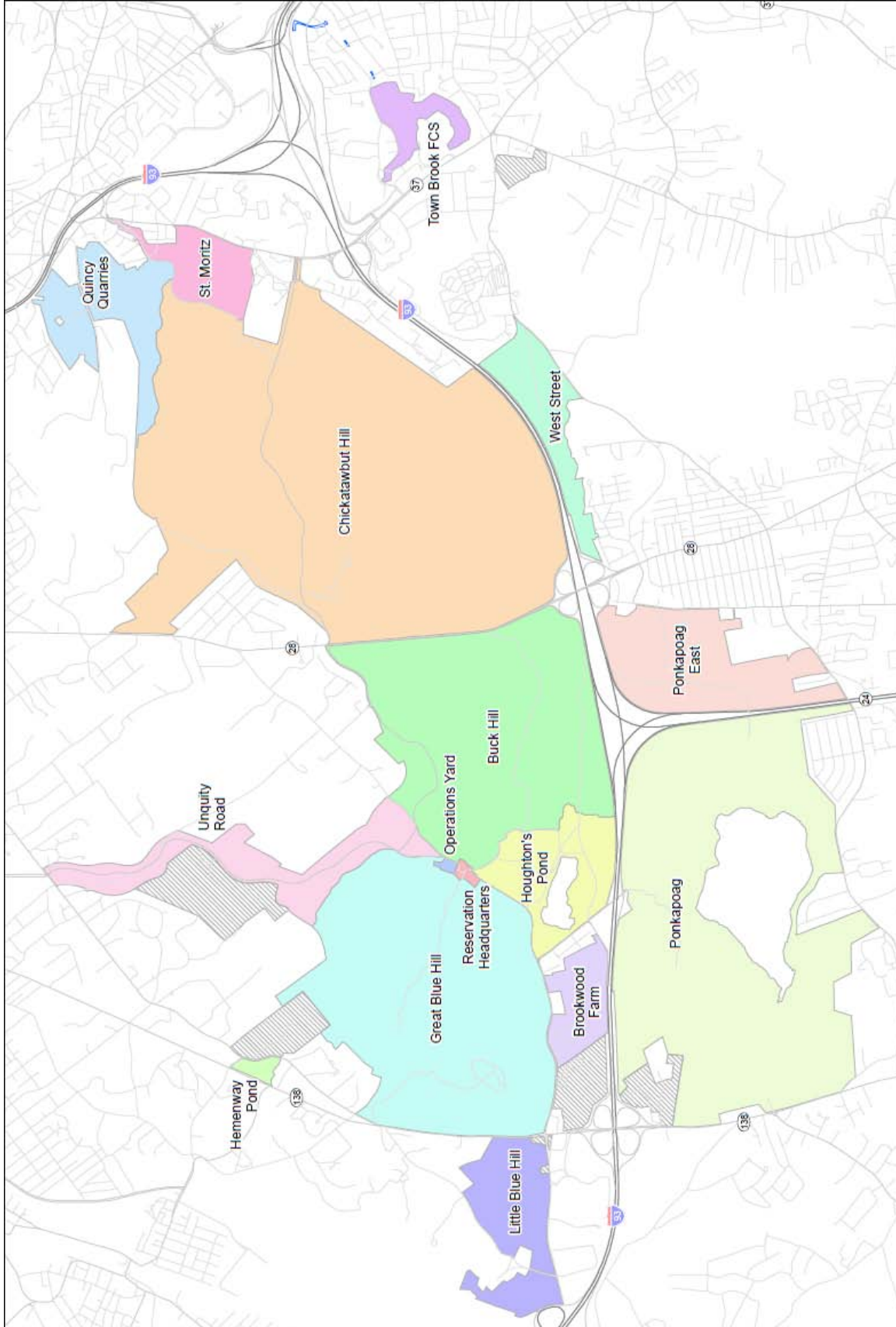
***Unquity Road (UN)***. All facilities and infrastructure along Unquity Road, between Canton Avenue to the north, Hillside Street to the south, Chestnut Run Path and the property boundary to the west, and the property boundary to the east.

In 1969 the Town of Milton entered into a 99-year agreement with the MDC for the care, custody, and control of approximately 42.7 acres of this section for flood control purposes.

Adjacent land uses include low-density development and forest to the north, forest to the south, a mixture of forest, wetland, and high- and low-density development to the east, and forest and low-density development to the west.

Placeholder for Figure 2.2.1 – The Blue Hills Planning Unit

Back of Figure 2.2.1.



**Sections of the Blue Hills Reservation**  
Figure 2.2.2.

1:41,000

0 0.25 0.5 1 Mile  
0 1,250 2,500 5,000 Feet

Massachusetts  
 DCR GIS Apr-11

Geographic data supplied by the Office of Geographic and Environmental Information (MassGIS) and  
 DCR GIS, Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs.

There is one Conservation Restriction associated with this section.

**Buck Hill (BH).** Located between Houghton's Pond and Route 28, this section is bounded on the south by I-93 and on the north by private land and the Unquity Road section of the reservation.

Adjacent land uses include forest and low-density development to the north; forest, wetland, and intensive use to the south; forest and wetland to the east; and forest, intensive use, recreation, and open land to the west.

**Chickatawbut Hill (CH).** This section includes all DCR property east of Route 28, north of I-93 in Randolph and Braintree, north and west of Wood Road, south and west of St. Moritz, and south of the Quincy Quarries. It includes Chickatawbut, Hawk, Wampatuck, Rattlesnake, and adjacent hills.

In 1969, the Town of Milton entered into a 99-year agreement with the MDC for the care, custody, and control of approximately 5.14 acres, in the northwest corner of this section, for flood control purposes.

Adjacent land uses are complex and varied. To the north is a mixture of forest, open land, intensive use (commercial development south of Ricciuti Drive), recreation, open land, and wetlands. To the south are wetlands, forests, and low-density development. Land uses to the east include intensive use (i.e., Wood Road and Willard Street), high-density development, and forest. To the west are forests, low-density residential development, and open land.

**Quincy Quarries (QQ).** Located both north and south of Ricciuti Drive in Quincy; the Quincy Quarries section is bordered by Mullin Avenue to the north, private lands to the west, Sawcut Notch Path to the south, and Wampatuck Road and Furnace Brook Parkway to the east.

Adjacent land use reflects the City of Quincy to the north, east, and west, and the reservation to the south. To the north is a mixture of intensive use and low- and high-density residential development. The reservation's forest and wetlands lie to the south. Land use to the east is primarily a mixture of residential development, both low- and high-density, with some open space and forests. To the west is a mixture of open space, high-density residential development, intensive use (commercial

development south of Ricciuti Drive), and forest land uses.

**St. Moritz (SM).** St. Moritz is bordered on the west by Wampatuck Road and Furnace Brook Parkway, on the east by Willard Street, and on the south by the pipeline right-of-way along the northern boundary of Pine Hill Cemetery of Quincy.

Adjacent land uses reflect the City of Quincy to the north and east, and the reservation to the south and west. Residential development, both low- and high-density, and intensive use dominate adjacent lands in the City of Quincy. High-density residential development abuts the western edge of the Furnace Brook Parkway. The dominant land use to the west is forest.

**Ponkapoag (PO).** This section is bordered on the west by Route 138 in Canton, on the north by I-93, on the east by Route 24, and on the south by Randolph Street, Canton and Canton Avenue, Randolph. Ponkapoag Golf Course is included in this section.

Adjacent land uses are largely residential or natural. A mixture of forest, open land, and wetlands occur to the north. Residential development, both low- and high-density, is the dominant land use to the south; other uses include wetlands, forests, and open land. To the east are forests and wetlands. Low-density residential development is the most common land along the western boundary, with intensive land use to the northwest.

There is one Conservation Restriction associated with this section.

**Ponkapoag East (PE).** Located in Randolph, Ponkapoag East is bordered on the west by Route 24, on the north by I-93, on the east by High Street, and on the south by Reed and Canton streets.

Adjacent land uses reflect the reservation to the north and west, and residential and commercial development to the south and east. Forest and wetlands are the dominant land uses to the north and west. Residential developments, both low- and high-density, are the most common land uses to the south. To the east is a mixture of high-density residential development and intensive land use (i.e., the Scanlon Drive area).

**West Street (WS).** This section is located between West Street and I-93 in Braintree and Randolph, to



the north of Great Pond Reservoir. The term “Far East Ponkapoag” has previously been used to reference this section of the reservation.

Adjacent land uses reflect the reservation to the north and the Great Pond Reservoir watershed to the south. Low-density residential development, forest, and intensive use (i.e., Pacella Industrial Park) land uses also abut to the south. To the east is intensive development.

There is one Conservation Restriction, on two parcels, associated with this section.

**New Acquisition.** A 56-acre parcel in Canton was recently acquired by the DCR. Due to the timing of the acquisition, information on this parcel is not included in the main body of this RMP. An overview of this parcel is provided in Appendix D.

### **2.2.2. Town Brook Flood Control Site (FCS)**

Town Brook FCS is a 62 acre property located in Braintree. It is bordered by South Shore Plaza and Lakeside Avenue to the north, Walnut Street, Parkside Avenue, Parkside Circle, and Rita Road to the east, West Street to the south, and commercial development along Route 37 to the west. This flood control site has previously been referred to as “Quincy Reservoir” or “Old Quincy Reservoir.” It is under the control of the Town of Braintree.

Adjacent land uses include intensive development to the north, south, and west, and a mixture of low- and high-density residential development to the east. Small patches of forest are also present to the north and west.

The DCR holds permanent easements on three nearby private properties along Town Brook.

## **2.3. BLUE HILLS RESERVATION**

### **2.3.1. Reservation-wide Resources**

#### **Natural Resources**

**Topography.** The reservation ranges in elevation from approximately 60 to 635 feet above sea level. (Figure 2.3.1) It is characterized by a range of East-West oriented hills. The tallest of these, Great Blue Hill, is the highest point in the metropolitan Boston area. It, along with Buck and Chickatawbut hills, affords a near 360-degree view of eastern Massachusetts.

**Geology.** The reservation is underlain by three east-west oriented bands of bedrock. The northernmost, and most extensive, band is composed of granite and quartz and underlies the reservation’s hills. Immediately south of the hills is a narrow band of Pondville conglomerate. The southernmost band of bedrock includes sandstones and slate.

Granite and quartz cliffs and ridge tops provide recreational opportunities for visitors and habitat for plants and wildlife. Outcrops of all three bedrock types contribute to the reservation’s aesthetics.

Information on the geologic history of the Blue Hills is provided in Appendix E.

**Soils.** The reservation’s soils vary with topography and location. Shallow, rocky, nutrient-poor soils are found on hilltops and steep slopes. Deeper, richer soils (e.g., sandy-loams) are common to the gentle slopes, valleys, and depressions among the hills. They are also common in level sections of the reservation. Poorly drained organic soils (i.e., mucks) occur along the Blue Hill River and are common beneath wetlands. Additional information on the reservation’s soils may be found in Pergallo (1989).

#### Water Resources

The Blue Hills’ ponds, streams, wetlands, and other water resources provide drinking water, recreation resources, and plant and wildlife habitat. (Figure 2.3.2)

**Watersheds.** The reservation straddles the boundary of two watersheds; the Neponset River and the Weir River watersheds. The hills’ main ridgeline forms a divide between these watersheds so that water falling north of the ridgeline generally flows toward the Neponset River and water falling south of the ridgeline generally flows toward the Weir River.

Much of the Blue Hills within the Weir River Watershed serves as a recharge area for Great Pond Reservoir; the water supply for the towns of Braintree, Holbrook, and Randolph. (Figure 2.3.2) This portion of the Blue Hills has been designated as Outstanding Resource Waters (ORW) in order to protect the drinking water of approximately 75,000 residents living downstream. (Please see Appendix F for additional information on ORWs.)

**Ponds.** Nine named ponds occur on the reservation. (Figure 2.3.2) The combined surface area of these

ponds is approximately 275 acres. Several small, unnamed ponds also occur on the reservation.

Historic water quality problems in these ponds are documented in Appendix G.

**Vernal Pools.** Fifty-five certified vernal pools are known from the Blue Hills Reservation. (Figure 2.3.3) Thirty-two potential vernal pools have also been identified. Pools certified after the development of the Potential Vernal Pool datalayer (i.e., December 2000) may be identified as both certified and potential vernal pools.

**Streams.** Numerous streams occur throughout the reservation. Although some flow year-round (i.e., perennial streams), most do not (i.e., intermittent streams). (Figure 2.3.2) Perennial streams include Ponkapoag Brook, Balster Brook, Blue Hills River, Pine Tree Brook, Furnace Brook, and Bouncing Brook. The reservation's intermittent streams tend to be un-named, and have flows associated with rain storms and snow melt.

**Flood Zones.** These zones are associated with many of the reservation's wetlands, ponds, and streams. Approximately 248 acres of the reservation is located within the 100-year flood zone, and an additional 203 acres is located within the 500-year flood zone. (Figure 2.3.2) Little of the reservation's infrastructure or recreation resources occur within these zones.

### Vegetation

Approximately 770 species of plants have been recorded on the Blue Hills Reservation and adjacent areas in recent decades. (Appendix H)

Three plants, lesser snakeroot, Nantucket serviceberry (i.e., Nantucket shadbush), and rannoch-rush (i.e., pod-grass) are protected under the Massachusetts Endangered Species Act (MESA; Table 2.3.1). A fourth plant, the state-endangered cankerweed (i.e., lion's foot), was recently observed on the reservation (Rawinski 2010a) but has not yet been verified by the Massachusetts Natural Heritage and Endangered Species Program (NHESP) or added to its database.

Three state-listed plants have been recorded on the adjacent Neponset River Reservation and may be present, but undetected, in the Blue Hills (NHESP 2007a). These species are Long's bulrush, northern

coastal violet (i.e., Britton's violet), and palegreen orchis; all are listed as threatened.

**Table 2.3.1. State-listed species of the Blue Hills Reservation as identified by the NHESP.**

Species <sup>a</sup>	Type <sup>b</sup>	MESA <sup>c</sup>	Unit <sup>d</sup>
Marbled salamander	A	T	A
Attenuated bluet	I	SC	P
Coastal swamp metarranthis	I	SC	P
Data-sensitive insect <sup>e</sup>	I	E	P
Hentz's redbelly tiger beetle	I	T	U
Hessel's hairstreak	I	SC	P
New England bluet	I	SC	P
Oak hairstreak	I	SC	U
Pitcher plant borer	I	T	P
Scarlet bluet	I	T	P
Waxed sallow moth	I	SC	U
Lesser snakeroot	P	E	S
Nantucket serviceberry (i.e., Nantucket shadbush)	P	SC	U
Rannoch-rush (i.e., pod-grass)	P	E	P
Blanding's turtle	R	T	P, T
Copperhead <sup>f</sup>	R	E	S
Timber rattlesnake <sup>f</sup>	R	E	S

a. NHESP fact sheets for all identified species are available at [www.mass.gov/dfwele/dfw/nhESP/species\\_info/ mesa\\_list/ mesa\\_list.htm](http://www.mass.gov/dfwele/dfw/nhESP/species_info/ mesa_list/ mesa_list.htm).

b. Types of state-listed species includes; A = Amphibian; I = Insect; P = Plant; and R = Reptile.

c. Status of species listed under the Massachusetts Endangered Species Act: E = Endangered; T = Threatened; and SC = Species of Special Concern.

d. Rare species management units as proposed by the NHESP (2007a). The management units are: A = Rare Salamander; P = Ponkapoag Bog and Pond; S = Rare Snake; T = Rare Turtle; and U = Upland Woodland. Refer to Appendix I for additional information.

e. This insect is not identified in accordance with the NHESP's policy of not revealing in site-specific documents the name or location of rare species susceptible to collection (NHESP 2007a).

f. These species are deemed data sensitive by the NHESP because they are subject to collection and persecution. They are included in this table, by permission of the NHESP, because the NHESP judges that it is in these species' benefit that the public know of their presence at the Blue Hills.

Information on these and other rare species protected under MESA is presented at the general level, without specific locational information. At the request of the NHESP, this information is not made public in order to avoid unauthorized removal, collection, or take of a MESA-listed rare species or alteration to its habitat.

Placeholder for Figure 2.3.1. Topography of the Blue Hills Planning Unit.

Back of Figure 2.3.1.

Placeholder for Figure 2.3.2. Water resources of the Blue Hills Planning Unit.

Back of Figure 2.3.2.

Placeholder for Figure 2.3.3. Priority Natural Resources

Back of Figure 2.3.3.



The Massachusetts Endangered Species Act (MESA; Appendix F) designates Priority Habitat for state-listed plants and animals. Over 75% of the Blue Hills Reservation has been designated Priority Habitat. (Figure 2.3.3; Appendix J)

Information on the vegetative history of the Blue Hills is provided in Appendix E.

**Invasive Species.** Twenty-five species of invasive plants and nine species of plants classified as likely invasive (MIPAG 2005) have been recorded on the reservation and adjacent areas. (Appendix H) These “are non-native species that have spread into native or minimally managed plant systems” where they “dominate and/or disrupt native ecosystems” (Somers et al. 2006). Their uncontrolled spread poses a threat to the diversity of native plants and animals. No reservation-wide surveys have been conducted to determine the abundance and distribution of these plants, although some populations have been identified.

**Natural Communities.** Twenty natural communities, 11 terrestrial and nine palustrine (i.e., non-tidal freshwater), have been identified. (Table 2.3.2) These communities represent specific combinations of plants and physical conditions that occur repeatedly across the landscape. Plant and animal diversity at the Blue Hills is largely a function of the diversity and health of natural communities. The distribution of these communities remains largely unknown.

Five community types, those ranked S2 and S3, are considered rare in Massachusetts and tracked by the NHESP. These communities are among the most important and threatened natural features of the Blue Hills. Preliminary information exists on the distribution of these communities.

The majority of the Blue Hills, approximately 89%, is forested uplands. This forest is a mosaic of natural communities, and is characterized by a variety of oaks in combination with variable mixtures of white pine, hickory, or hemlock. The distribution of these mixtures is unknown.

Wetlands account for 11% of the Blue Hills’ land cover. Forested wetlands (7.7% of land cover) are dominated by either Atlantic white cedar or red maple communities. Non-forested wetlands (3.4% of land cover) are dominated by shrubs or herbaceous vegetation.

Cultural grasslands are uncommon at the Blue Hills, accounting for only 5% of land cover. This community includes a variety of grassland types, ranging from golf courses and athletic fields to abandoned pastures and hayfields. The natural resources value of this community varies with management.

**Table 2.3.2. Natural communities of the Blue Hills Reservation<sup>a</sup>.**

<b>Community Type</b>	<b>System<sup>b</sup></b>	<b>State Rank<sup>c</sup></b>
Acidic Rock Cliff	T	S4
Acidic Rocky Summit/Rock Outcrop	T	S4
Acidic Talus Forest/Woodland	T	S4
Atlantic White Cedar Bog <sup>d,e</sup>	P	S2
Cultural Grassland	T	N/A
Deep Emergent Marsh <sup>d,f</sup>	P	S4
Highbush Blueberry Thicket	P	S4
Inland Acidic Pondshore/ Lakeshore	P	S4
Inland Atlantic White Cedar Swamp <sup>d</sup>	P	S2
Level Bog	P	S3
Mixed Oak Forest	T	S4
Oak–Hemlock–White Pine Forest	T	S5
Oak–Hickory Forest	T	S5
Ridgetop Chestnut Oak Forest/Woodland	T	S4
Ridgetop Pitch Pine–Scrub Oak <sup>d</sup>	T	S2
Red Maple Swamp <sup>e</sup>	P	S5
Shrub Swamp <sup>d,e</sup>	P	S5
Successional White Pine	T	S5
White Pine–Oak Forest	T	S5
Woodland Vernal Pool <sup>e</sup>	P	S3

- a. Classified according to Swain and Kearsley (2001). Information from NHESP (2007a), Swain (2009), and observations by the Resource Management Planner.
- b. T = Terrestrial and P = Palustrine in accordance with Swain and Kearsley (2001).
- c. Communities are ranked from the most rare (S1) to the most common (S5); N/A indicates a cultural community, which is not ranked.
- d. NHESP fact sheets for these communities are available at [www.mass.gov/dfwele/dfw/nhesp/natural\\_communities/fact\\_sheets.htm](http://www.mass.gov/dfwele/dfw/nhesp/natural_communities/fact_sheets.htm).
- e. The extent of this community type may be moderately reduced (<50%) in Massachusetts in response to climate change (Manomet and DFW 2010).
- f. The majority of this community type is at risk of being eliminated from Massachusetts as a result of climate change (Manomet and DFW 2010).

**Interior Forests.** MassWildlife has identified four blocks of interior forest, totaling approximately 738 acres. These blocks are areas where forest cover is

relatively unfragmented by human development (MassGIS 2009); it is important for some species.

### Wildlife

The Blue Hills provides breeding, migratory, and wintering habitat for hundreds of species of wildlife. Some (e.g., raccoon, blue jay) are generalists, able to exploit both natural and built environments. These are common throughout eastern Massachusetts, including the reservation. Others (e.g., fisher, ovenbird) require contiguous forest; something available on the reservation but lacking from much of the region. For a few species, the reservation represents the last suitable habitat in eastern Massachusetts.

Knowledge of the reservation's wildlife differs among taxa, with some groups well surveyed and others poorly known. For most species, there is insufficient information to identify their distribution on the reservation.

**Birds.** Approximately 160 species of birds have been recorded on the Blue Hills Reservation and adjacent areas. (Please see Appendix K.) The Reservation's forests, fields, thickets, wetlands, and ponds provide habitat to a variety of resident, breeding, migrating, and wintering birds such as the pileated woodpecker, yellow warbler, fox sparrow, and red crossbill.

Although the NHESP database does not identify any state-listed birds on the reservation, 11 are included in the bird list. (Appendix K) These species were observed during migration; such occurrences are not tracked by the NHESP.

**Mammals.** Twenty-two species of mammals have been recorded at the Blue Hills. An additional 25 species may potentially be present, but have not yet been confirmed. Known species include a variety of mice, shrews, squirrels, weasels, as well as raccoons and deer. (Appendix L) None of these species are state-listed.

The New England cottontail, a candidate for listing under the U.S. Endangered Species Act, has been observed on the reservation in the past (Smith 2009). It is unknown if this species is still present.

**Reptiles.** Fourteen species, including four turtles and nine snakes, are confirmed to be present on the reservation. (Appendix M) Three additional turtles

and three additional snakes may also be present, but have not yet been confirmed.

Three state-listed reptiles are known from the Blue Hills. The Blanding's turtle has historically been recorded on the reservation and appropriate habitat remains in most sections. Two snakes, the copperhead and timber rattlesnake, are also state-listed. The Blue Hills is the sole location for these species in eastern Massachusetts. Appropriate habitat for these snakes is present in the hilly sections of the reservation.

The eastern box turtle, which has been recorded in Fowl Meadow and historically occurred in the Blue Hills, may still be present (NHESP 2007a).

**Amphibians.** Fourteen species have been confirmed from the reservation. (Appendix N) Four additional species may also be present. Of the confirmed species, the mole salamanders are associated with vernal pools and the lungless salamanders and frogs are primarily associated with streams and permanent water bodies.

One state-listed species, the marbled salamander, is known from the Blue Hills. Suitable habitat for this species is limited to the central portion of the reservation.

**Fish.** The distribution and diversity of the Blue Hills' fish are largely attributable to human intervention, including poisoning (e.g., Stroud 1953), stocking game fish, and the introduction of aquarium fish. Nineteen species have been recorded in the reservation's waters (Appendix O); most are game fish. None are state-listed.

**Insects.** The Blue Hills' insects are poorly known. Three groups for which there is partial information are the butterflies and moths (Lepidoptera), dragon and damselflies (Odonata), and long-horned beetles (Coleoptera: Cerambycidae).

Over 200 species of butterflies and moths have been recorded on the reservation (Appendix P); five are state-listed. (Table 2.3.1) Two of the state-listed species are associated with dry, forested hills; the other three are associated with wetlands.

Gerhard's underwing, a state-listed moth, has also been reported from the reservation (Jaffe 2010a). However, this report has not been verified by the NHESP or added to its database.

Over 40 species of damselflies and dragonflies have been recorded on the reservation (Appendix P); three are state-listed. (Table 2.3.1) All three state-listed species are associated with wetlands.

Forty-five species of long-horned beetles are known from the Blue Hills (Vlasak and Vlasakova 2002); none are state-listed.

Two additional state-listed insects inhabit the Blue Hills. The first, Hentz's redbelly tiger beetle, is associated with dry, forested hills. The second, a data-sensitive endangered insect, is associated with wetlands. Specific information on the identity of this insect is withheld in accordance with the NHESP's policy of not revealing the name or location of species particularly susceptible to collecting.

### **Cultural Resources**

Cultural resources are places that contain physical remains or indications of past human activity and/or any artifacts that have been constructed or manipulated by human influence and hold potential significance for understanding past, present, or future human behavior (DCR 2005). Cultural resources are at least 50 years old and have important historical, cultural, scientific, or technological associations.

Types of cultural resources include (NPS 1997):

- Buildings – such as a house, barn or comfort station;
- Structures – such as a road or pavilion;
- Landscapes or areas that include both natural and cultural resources – such as an agricultural landscape or a designed overlook;
- Sites of an event or an activity – such as a quarry;
- Objects or smaller scale elements – such as fountains or memorials; and
- Ethnographic resources that convey the history of a certain group of people.

The term cultural resources is often used interchangeably with the term historic resources, however, it should be noted that in the United States, cultural resources are typically classified at a basic scale in relation to the arrival of European settlers. Resources from prior to the arrival are classified as Pre-Contact; those from after the arrival, and at least 50 years old, are classified as historic.

Archaeological resources may be either Pre-Contact or historic.

### **Archaeological Resources**

Information on the reservation's archaeological resources is presented at a general level, without specific locational information. This information is not made public in order to avoid unauthorized excavation and/or removal of archaeological resources. The DCR cannot present specific information about archaeological sites.

***Pre-Contact Period.*** Thirteen Pre-Contact Period sites have been identified from studies within the reservation's boundaries, and an additional 12 sites occur on privately-owned properties abutting the reservation. Over 70 more sites that have been identified but could not be dated have been recorded in the reservation to date.

One Paleo-Indian Period site, which dates from over 10,000 years ago, is known from within the reservation. This site appears to be a tool manufacturing workshop where crude, fluted points were fabricated.

Occupation during the Archaic Period (3,000–9,000 years before present) has been documented at seven sites within the reservation and four privately owned sites abutting the reservation. At least one of these sites was occupied from the early Archaic Period until the late Woodland Period on a more or less continuous, albeit seasonal, basis.

There are comparatively few documented Woodland Period (400–3,000 years before present) sites in the area. Three sites located entirely within, and two partially within, the reservation have yielded Woodland Period artifacts.

***Contact Period.*** There are currently no known archaeological resources associated with Native Americans during the Contact Period (250–400 years before present). It is anticipated that such resources exist, due to the presence of sites in the periods before and after. Archaeological resources associated with post-contact settlement are known to occur on the reservation.

***Historic Period.*** Documentation of historic archaeological sites within the reservation is not as plentiful as the Pre-Contact site documentation. When the National Register nomination was submitted for listing in 1980 (Cole and Chase 1980),

the few historic archaeological sites known at that time were specifically excluded from the nomination due to a lack of adequate overall knowledge. Nonetheless, there are historic archaeological sites scattered throughout the reservation reflecting settlement and development from the Colonial Period up through the 1930s, representing primarily residential and industrial activities.

Four cellar holes have been identified and documented, three of them being former homesteads with other site features including stone walls and in one case field remnants. These cellar holes, consisting of dry laid fieldstone and granite, and range from being visible and stable, to only being traces left of a former foundation. A fourth cellar hole is partially collapsed and may have been a former pump house.

Additional historic archaeological resources include remnants of a grist mill and a CCC camp. These resources are addressed in the cultural resource information provided for individual sections of the reservation.

### Linear Structures and Associated Features

Linear structures include parkways and stone walls. Parkway, and their associated culverts, cross through multiple sections of the Blue Hills and, in some cases, are used as section boundaries. Because of this they are considered a reservation-wide resource. Stone walls, for similar reasons, are also considered reservation-wide resources.

Information on reservation-wide historic resources is presented below. However, the majority of information on the reservation's historic resources is presented by section of the reservation. A listing of the historic cultural resources of the Blue Hills Reservation is provided in Appendix R. Locations of these resources are identified in Figure 2.3.4.

For purposes of discussion, the Blue Hills' historic resources have been associated with three time periods. These time periods are applicable to understanding these resources within the context of the development of the reservation. They are:

- Pre-Reservation: pre-contact up to 1892;
- Metropolitan Parks Commission (MPC) era: 1893–1919; and
- Metropolitan District Commission (MDC) era: 1920–1960.

In some cases, there is insufficient information on a resource to associate it with one of these three eras.

An overview of significant events in the reservation's history is provided in Appendix S.

**Parkways.** Historic parkways provide transportation links and recreational experiences along with historic and natural landscapes. The Blue Hills Reservation parkways, listed in the National Register, include:

*Chickatawbut Road* – an internal park road, within Braintree, Milton, and Quincy. This longest, hilliest, and most scenic road in the reservation, it was developed in sections from 1897 to 1915, with later improvements undertaken by the MPC and the CCC from 1929 to 1939.

The Chickatawbut Overlook, constructed by the CCC, is just off this road; it is described in the Chickatawbut Hill section.

*Hillside Street* – an internal park road, within Milton. Curvilinear and relatively flat, it was a pre-existing road that was incorporated into the park in 1898, with repairs and a slight relocation of a portion in 1901 and again in 1929. It serves as the “administrative spine” of the reservation.

*Unquity Road* – an internal park road, within Milton. Hilly and curvilinear, it was constructed 1901–1905, with changes in 1935–1936. This road serves as a transition from the residential Blue Hills Parkway to the north, to the more natural setting of the reservation to the south.

*Furnace Brook Parkway Extension* – the segment of parkway that runs between Wampatuck Road and the rotary only; initially constructed between 1904 and 1907; impacted by construction of a railroad bridge in 1924 and again in the 1960s by the construction of I-93. The remainder of Furnace Brook Parkway is outside this planning unit, and so it is not addressed in this RMP.

*Wampatuck Road* – an internal park road, within Quincy. Described as “sinuous,” it was constructed in 1905–1906, and subsequent improvements were made by WPA workers in 1938.

*Blue Hill River Road* – two discontinuous segments: one a border road in Canton that was initially a part of Hillside Street, the other a border road in Milton that becomes an internal parkway. Both segments

Placeholder for Figure 2.3.4. Historic Resources of the Blue Hills Reservation.

Back of Figure 2.3.4.

are relatively flat. The southern segment was constructed 1913 and extended northward in 1927. Part of this road was lost to the construction of Route 128.

*Green Street* – a border road that spans Canton and Milton on the edge of the Little Blue Hill section. This is a hilly roadway originally constructed by the local municipalities and acquired by the MDC in 1942.

The Blue Hills Parkway in Dorchester, also listed in the National Register, does not fall within this planning unit and so it is not addressed in this RMP.

**Culverts.** The reservation’s culvert system, which dates to the early 20<sup>th</sup> century, is also included in the National Register parkways nomination. Many of these culverts are small, character defining features of the parkways that they pass under. Constructed primarily of stone, all assist with the passage of water underneath the roadway beds. The largest, Pine Tree Brook Culvert, is individually called out in the nomination due to its size and prominence. This culvert, constructed in 1904 (and extended in 1935) is a concrete arched culvert that is faced with granite. Water in the brook is channeled into the culvert through a concrete sluiceway.

**Stone Walls.** A system of stone walls, most of which pre-date the establishment of the reservation, occurs throughout the reservation. These walls represent primarily the 18<sup>th</sup> and 19<sup>th</sup> century agricultural use of the land; dividing fields and pastures used for husbandry, marking boundaries, and containing livestock. They can still be found today alongside some roads and drives, surrounding former homesteads, and even in the middle of the woods. Conditions range from intact walls with few intrusions or failures (classified as satisfactory), to areas with partial remnants of walls with stones (classified as failing). Some of these walls are visible on an 1895 map of the reservation (French, Bryant and Taylor, Topographers 1895).

In certain cases some individual walls are prominent features of a landscape; these walls are also addressed by section of the reservation.

### Cultural Resources Summary

The cultural resources presented above as reservation-wide resources tie the Blue Hills Reservation together physically, culturally and

temporally. The remainder of the cultural resources includes an incredible range of resources spanning three centuries, from historic agricultural landscapes, to park buildings designed by high profile architectural firms, to industrial quarry remnants and a Nike missile launcher site. Information on these resources is presented in the section of the reservation in which they occur. This format provides a means of understanding them within their immediate contextual surroundings and in relationship to the other natural, recreation and infrastructure resources in each section. Resources are presented as chronologically as possible within the time periods identified above.

When looking for information on a specific resource, please refer to Appendix R, which identifies the section of the reservation in which it occurs. Then refer to the text for that section.

## **Recreation Resources**

### Recreational Activities

The Blue Hills Reservation provides a variety of seasonal and year-round recreational opportunities. Some take place at developed fields, courts, or facilities; along trails; along roads; and in unimproved natural environments.

The following recreational activities are allowed at the Blue Hills:

- Baseball (includes softball);
- Basketball;
- Bicycling, mountain;
- Bicycling, road;
- Boating, non-motorized;
- Cricket;
- Cross-country running;
- Dog walking (on-leash);
- Farming;
- Fishing;
- Golf;
- Hiking;
- Horseback riding;
- Horseshoes;
- Ice skating/ice hockey;
- Kite flying;
- Nature study/photography;

- Orienteering;
- Picnicking;
- Playground use;
- Rock climbing;
- Running/jogging (includes both road and trail);
- Skiing, downhill (includes tubing and snowboarding);
- Skiing, cross-country;
- Snowshoeing;
- Soccer;
- Swimming; and
- Volleyball.

Locations of recreation facilities are identified in Figure 2.3.5.

The Blue Hills Reservation is one of 73 DCR properties that participate in the Park Passport program.

Recreation in violation of park regulations also takes place. Off-leash dogs are encountered on the reservation’s trails and at recreation areas. Geocaching, an off-trail activity, takes place throughout the reservation. Other unauthorized recreational activities include tree climbing with technical climbing equipment (e.g., Joslin 2006), the periodic establishment of a commercially operated “zip line,” OHV use, and hunting. The frequency of these activities and number of participants are unknown.

### Demographics

There is no comprehensive demographic profile of the reservation’s visitors. However, information is available on two user groups, trail users and permit holders. Information on trail users was obtained from surveys conducted in 2009 (Loomis et al. 2009). Information on permit holders was obtained from 2009 Special Use and Athletic Field permits. Using ZIP Codes, the geographic origins of these known park users were identified.

Twenty-five percent of 374 known park users originate from within five miles of the reservation, 50% originate from within nine miles, 75% originate from within 14 miles, and 95% originate from within 28 miles. Residents living within these distances

represent potential visitors to the Blue Hills. (Figure 2.3.6)

More than four million potential visitors live within a 28-mile radius of the Blue Hills. (Table 2.3.3) Demographic information on these potential visitors was obtained from the 2000 U.S. Census; the most recent census for which data are available (U.S. Census Bureau 2001).

**Table 2.3.3. Population and number of households potentially served by the Blue Hills Reservation.**

	<b>5 Miles</b>	<b>9 Miles</b>	<b>14 Miles</b>	<b>28 Miles</b>
Population	654,299	1,403,865	2,282,683	4,034,101
Households	249,613	551,336	894,129	1,551,445

Approximately 21–24% of potential visitors are children, ages 18 and under. (Table 2.3.4) Over 156,000 children live within five miles of the reservation, and over 928,000 live within 28 miles.

**Table 2.3.4. Age of population potentially served by the Blue Hills Reservation. Values represent percentage of households.**

<b>Age</b>	<b>5 Miles</b>	<b>9 Miles</b>	<b>14 Miles</b>	<b>28 Miles</b>
Children	23.9	21.2	21.3	23.0
Adult	62.1	66.3	65.8	64.0
Seniors	14.0	12.5	12.9	13.0

Seniors account for approximately 13% of potential visitors. (Table 2.3.4) Nearly 92,000 live within five miles of the reservation, and nearly 523,000 live within 28 miles.

Many potential visitors come from households where English is not the primary language spoken. (Table 2.3.5) Within five miles of the reservation, approximately 58,000 households have primary languages other than English. Within 28 miles, this increases to approximately 345,000 households.

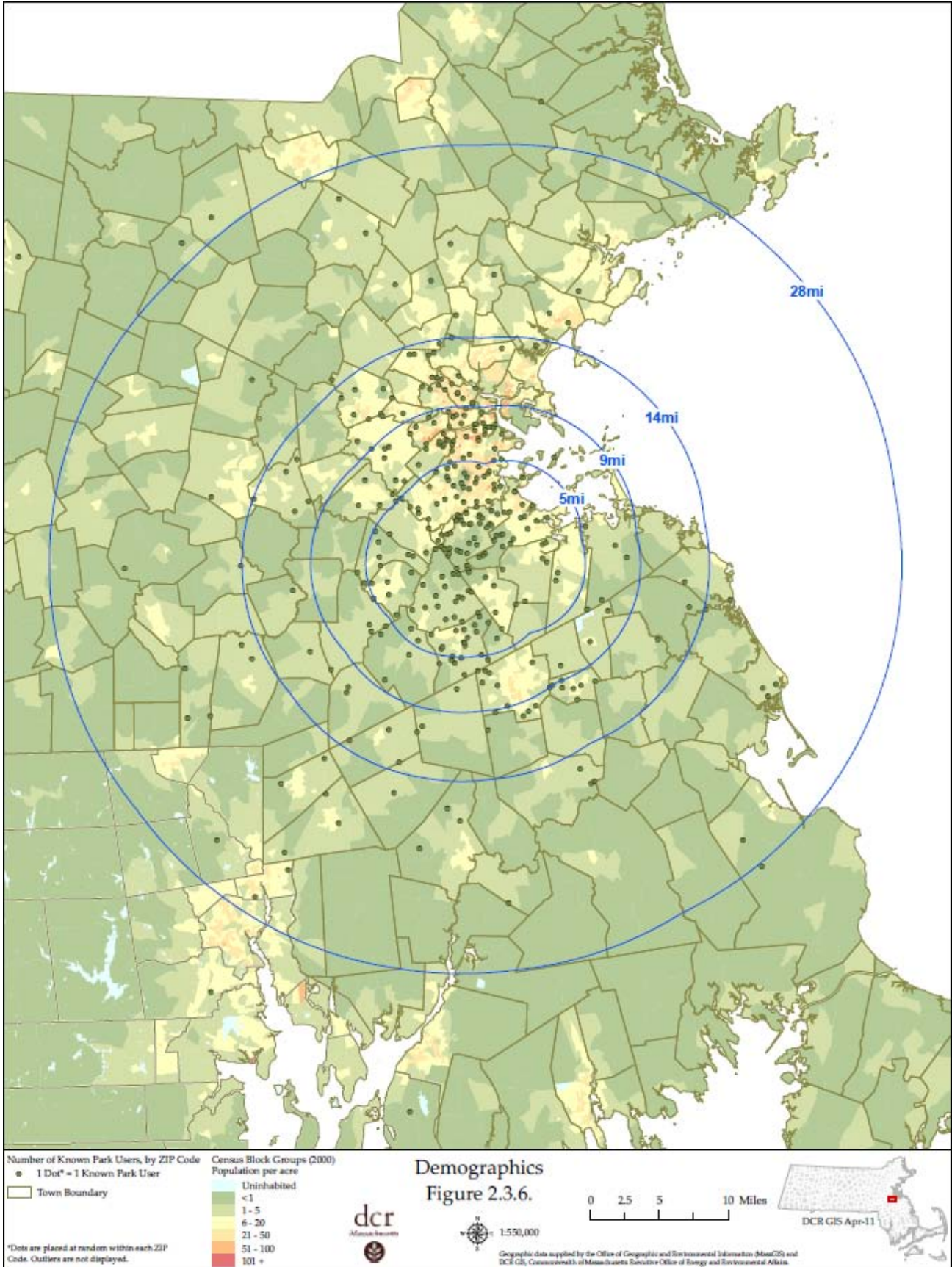
**Table 2.3.5. Primary language spoken in households potentially served by the Blue Hills Reservation. Values represent percentage of households.**

<b>Language</b>	<b>5 Miles</b>	<b>9 Miles</b>	<b>14 Miles</b>	<b>28 Miles</b>
English	77.0	74.6	75.1	77.8
Spanish	6.9	7.2	6.7	5.8
European	10.9	11.8	12.5	12.1
Asian	3.9	4.9	4.3	3.3
Other	1.4	1.5	1.4	1.1



Placeholder for Figure 2.3.5. Infrastructure of the Blue Hills Planning Unit

Back of Figure 2.3.5.



Approximately one-quarter of potential visitors' households are classified as low income. (Table 2.3.6) Over 59,000 low income households are within five miles of the Blue Hills, and over 348,000 are within 28 miles.

**Table 2.3.6. Incomes of household potentially served by the Blue Hills Reservation. Values represent percentage of households.**

Income	5 Miles	9 Miles	14 Miles	28 Miles
Low				
Less than \$24,999	23.8	25.3	23.9	22.4
Medium				
\$25,000 – \$74,999	46.1	42.8	43.1	43.1
High				
\$75,000 or more	30.1	31.8	33.0	34.4

It is unknown if actual visitors to the reservation differ demographically from potential visitors.

### Infrastructure

**Property Boundary.** The Blue Hills Reservation's boundary is 51.0 miles; most is unmarked. An exception is the reservation's boundary with I-93, much of which is fenced.

Boundary information updated as part of the RMP planning process revealed that encroachment (i.e., use of park property by abutters) is uncommon but locally significant.

**Buildings and Structures.** There are 188 buildings and structures on the reservation. The DCR owns 98. Ownership of the remaining 90 buildings and structures is divided among 20 entities, including state agencies, one state authority, non-profit organizations, municipalities, and private commercial interests. (Appendix T) Most (115, 61.1%) are concentrated in two sections of the reservation: Ponkapoag and Great Blue Hill. (Figure 2.3.5)

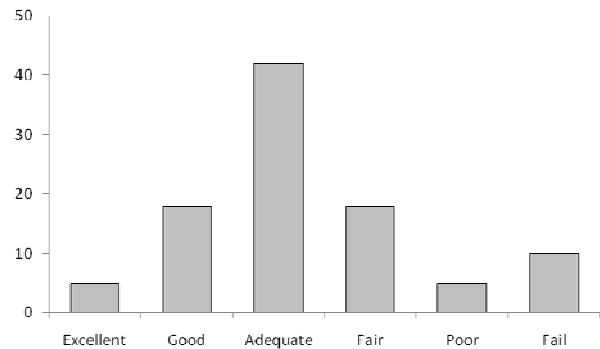
There are 75 buildings and structures in the Ponkapoag section. They are largely associated with three recreation facilities; Ponkapoag Golf Course, the Appalachian Mountain Club's (AMC) Ponkapoag Camp, and the YMCA's Ponkapoag Outdoor Center. Thirty of these buildings and structures are owned and maintained by the DCR.

Forty buildings and structures are located in the Great Blue Hill section. Most are associated with the Trailside Museum, William F. Rogers Ski Area, and

the summit of Great Blue Hill. The DCR owns and maintains 23 of these.

Most sections of the reservation have some development. Clusters of buildings and structures occur in the Brookwood Farm, Houghton's Pond, Reservation Headquarters, Operations Yard, Chickatawbut Hill, Quincy Quarries, and Ponkapoag East sections. Two sections, Hemenway Pond and West Street, have no buildings.

The condition of each DCR-owned building and structure was assessed in accordance with Massachusetts Division of Capital Asset Management standards. (Figure 2.3.7) Most (65) are in adequate or better condition. Another 23 are in fair to poor condition, requiring excessive corrective maintenance and repair or major renovation. Ten are classified as fail, indicating that they are non-operational; all of these are cultural resources.



**Figure 2.3.7.** Condition of DCR-owned buildings and structures at the Blue Hills Reservation.

A complete list of the reservation's buildings and associated structures, and their conditions, is included in Appendix T.

**Roads.** There are 11.9 miles of paved DCR roads in the Blue Hills and state and interstate highways bisect the reservation. A 2009 inventory of the reservation's trails identified 8.0 miles of administrative roads and 36.6 miles of forest roads.

Traffic counts were conducted within the Blue Hills Reservation in the autumn of 2010 (Beta Group, Inc. 2011). Counts were performed at 13 locations on through-roads. Each location had been previously sampled in 1985 (Vanasse/Hangen 1986), permitting the identification of changes in traffic volume over time. Information from these counts is presented by section of the reservation.

**Parking.** Fifty parking areas provide 1,877 parking spaces; 1,665 are available to the public. (Appendix U; Figure 2.3.5) Of these, only 58 are accessible (i.e., HP spaces).

Most public parking is provided by a small number of large capacity lots. Parking for six facilities and the Park and Ride lot jointly account for 1,387 public parking spaces; 84.6% of all those on the reservation. (Table 2.3.7) Most are adjacent to recreation facilities. The 37 other parking areas provide only 16.4% of the reservation’s public parking capacity.

**Table 2.3.7. Distribution of public parking at the Blue Hills Reservation.<sup>a</sup>**

Section	Parking Area(s)	# Public Spaces	% of All Public Spaces
HP	Houghton’s Pond (three lots)	446	26.8
QQ	Ricciuti Drive athletic fields (four lots)	289	17.4
GB	Trailside Museum (two lots)	182	10.9
PO	Ponkapoag Club House	180	10.8
LB	Park and Ride	116	7.0
UN	Ulin Rink	87	5.2
SM	Shea Rink	87	5.2
-	All other areas	278	17.0

a. See Appendix U. Legal Parking Areas of the Blue Hills Reservation for information on individual parking areas.

Most accessible parking is also associated with the parking areas identified in Table 2.3.7. Forty-six accessible spaces, 80.7% of those on the reservation, are located in these areas. All of these areas are paved and striped.

Additional information on these and all other designated parking areas is provided in Appendix U.

In addition to designated areas, public parking is permitted along the shoulders of the reservation’s roads unless posted otherwise. The number of vehicles that can be accommodated along road shoulders is unknown.

**Trails.** An extensive network of trails provides access to virtually every hilltop, wetland, and pond on the reservation. (Figure 2.3.8) The best known trail, the Skyline Trail, extends from the Little Blue Hill to the St. Moritz sections. This approximately

nine-mile long trail passes over the reservation’s highest peaks.

In 2009, a survey was conducted to classify and map every trail and trail feature in the reservation. Over 116 miles of official trails were identified; these are mapped and maintained for public use. (Figure 2.3.8) An additional 14.2 miles of visitor-created informal trails were identified; such trails are not maintained and are not indicated in Figure 2.3.8.

Official trails were categorized by type (i.e., typical trails, forest roads, or administrative roads). There are 69.2 miles of typical trails, 36.6 miles of forest roads (e.g., Wolcott Path), 8.0 miles of administrative roads (e.g., Maple Avenue at Ponkapoag) and 2.4 miles of “other.” Because some trail segments were do not discretely fit one of these categories, and because categorization was conducted by multiple surveyors, these values should be considered approximations.

The trail survey also inventoried trail conditions. Most official trails (79.0 miles) are in good condition. An additional 33.2 miles are in fair condition. Only 3.9 miles are classified as being in poor condition.

Trails cross reservation roads and state highways in dozens of locations; few have crosswalks.

Recent visitor use surveys (Loomis et al. 2009) provide insight into user’s satisfaction with the Blue Hills’ trail conditions. When asked to rate the physical condition of the trails, only 2.5% of 203 respondents indicated that the trail condition was either poor or extremely poor. The majority (87.3%) indicated that trails were either in good or extremely good condition.

**Kiosks and Signs.** There are 39 informational kiosks in the Blue Hills; most are associated with parking areas. (Figure 2.3.5) Each presents a reservation map, regulations and programming information, or both. Information content and presentation varies among kiosks.

An additional kiosk is located at Granite Railway terminus on Mullin Street in Quincy, immediately adjacent to DCR property. Although similar in appearance, this is not a DCR kiosk nor is it maintained by the DCR.

A numbered system is used to identify trail intersections. Small wooden signs, bearing unique

identification numbers, are attached to trees at over 170 trail intersections. Corresponding numbers are printed on the reservation's map so that trail users may identify their exact location.

There is a high level of satisfaction with the reservation's trail signs. In a recent survey (Loomis et al. 2009), 84.6% of respondents agreed or strongly agreed that the signs were adequate and 89.4% agreed or strongly agreed that the signs were accurate.

Nearly 70 informational signs are located throughout the reservation. These chiefly identify gateways to the reservation, named facilities, and roads. A few identify park regulations or provide interpretive information. Most meet DCR's graphics standards (DCR n.d.a). An inventory of these signs is provided in Appendix V.

Regulatory signs (e.g., No Parking) also occur throughout the reservation. They have not been inventoried.

**Memorials and Markers.** There are 14 known memorials on the reservation. These objects, typically carved stones or metal plaques, commemorate or memorialize people and events.

Two plaques and one marker are associated with the Granite Railway terminus. The proximity of these markers to DCR property may lead visitors to incorrectly assume that these memorials are on DCR property.

Fifty-nine granite trail markers were erected in 1985 (Wendland 1985). These posts are chiefly located at trailheads and where trails cross roads. Locations of these markers are unmapped.

An unknown number of granite boundary markers also occur on the reservation. These markers identify both municipal and property boundaries.

### **2.3.2. Little Blue Hill**

Little Blue Hill has few historic or recreation resources, and limited infrastructure. Its primary uses are as wildlife habitat and for passive recreation. It also serves as the physical link between the Blue Hills and Neponset River reservations.

Information on this section's resources is provided below. Information on the resources of the entire Reservation is provided in Section 2.3.1.

## **Natural Resources**

Little Blue Hill is a transition zone between the Neponset River Valley and the rocky, dry uplands of the Blue Hills. Its most important natural resources are located in its eastern half. The slopes and summit of Little Blue Hill (42.8 acres) have been designated Priority Habitat. The entire section is included in the Fowl Meadow and Ponkapoag Bog Area of Critical Environmental Concern. (Figure 2.3.3)

### Water Resources

**Ponds.** A single pond, less than an acre in area, is located in the southeast corner of this section. (Figure 2.3.2) This unnamed pond holds water seasonally, and functions as a vernal pool. No storm drains are known to discharge into this pond.

**Vernal Pools.** Four vernal pools, two certified and two potential, are known from Little Blue Hill. The unnamed pond, described previously, is one of the certified vernal pools. (Figure 2.3.3)

**Streams.** There are no known perennial streams in the little Blue Hill section; intermittent streams are undocumented.

**Flood Zones.** No 100- or 500-year flood zones occur in this section.

**Groundwater.** The Massachusetts Department of Environmental Protection (DEP) has identified an aquifer beneath the western portion of Little Blue Hill. (Figure 2.3.2) No water withdrawals from this aquifer occur in this section.

There are no known threats to the groundwater beneath Little Blue Hill.

### Vegetation

Information on the plants of the Blue Hills Reservation is provided in Appendix H. Information specific to this section of the reservation is generally lacking.

Appropriate habitat exists for two state-listed plants that occur elsewhere on the reservation; lesser snakeroot and Nantucket serviceberry. Two additional state-listed plants not known from the Blue Hills may also be present. Long's bulrush and pale green orchis have been recorded in nearby Fowl Meadow, and appropriate habitat for these plants exists within the Little Blue Hill section (NHESP 2007a).

Placeholder for Figure 2.3.8 Trails of the Blue Hills Planning Unit.

Back of Figure 2.3.8.



**Invasive Species.** No invasive species surveys have been conducted at Little Blue Hill; no populations have been identified.

**Natural Communities.** Three communities have been identified:

- Acidic Rocky Summit/Rock Outcrop;
- Cultural Grassland (i.e., dressage field); and
- Woodland Vernal Pool.

The majority of this section's communities have yet to be classified.

**Interior Forests.** There are no interior forests in this section.

### Wildlife

Five state-listed species, or their habitats, are present. Because of this, the eastern portion has been designated Priority Habitat. (Figure 2.3.3) Information on the state-listed species of Little Blue Hill is provided below.

**Birds.** Information specific to this section of the reservation is generally lacking.

No state-listed birds are known from this section.

**Mammals.** Information specific to this section of the reservation is generally lacking. No state-listed mammals are known from this section.

Little Blue Hill has been identified as one of several potential sites for restoring New England cottontail populations (Tash and Litvaitis 2007). This species, which once inhabited the reservation (Smith 2009), is a candidate for listing under the U.S. Endangered Species Act.

**Reptiles.** No state-listed reptiles are known from this section. One state-listed reptile, the eastern box turtle, has been recorded nearby in the Neponset River Reservation and may also inhabit this section (NHESP 2007a).

**Amphibians.** Information specific to this section of the reservation is lacking.

No state-listed amphibians are known from this section.

**Fish.** Due to the absence of permanent ponds or perennial streams, it is unlikely that fish are present.

**Insects.** Information specific to the Little Blue Hill section is limited to state-listed species.

Suitable habitat for two state-listed species of moths, the waxed swallow moth and the oak hairstreak, occurs in this section. Both species have been recorded nearby on the reservation, and are likely present at Little Blue Hill (NHESP 2007a).

Suitable habitat exists for Hentz's redbelly tiger beetle. These beetles occur under similar conditions elsewhere on the reservation, and may be present at Little Blue Hill (NHESP 2007a).

### **Cultural Resources**

Four cultural resources are known to occur in the Little Blue Hill section of the reservation (Figure 2.3.4); one from the pre-reservation era, one from the MDC era, and one of unknown date unrelated to park development.

**Stone Paddock.** Located in the woods to the west of the Green Street dressage field, this paddock consists of mortared stone walls that are up to five feet tall, forming a 20 x 60 foot rectangular enclosure. The paddock is partially open on one end where a portion of the wall has collapsed, and where there was also likely an opening for a gate. This paddock is a remnant of the former agricultural use of the area and was likely once used to contain livestock. The significance of this structure is unknown.

Tree growth adjacent to the paddock, and associated fallen limbs, have contributed to this resource's condition, which is classified as unsatisfactory.

**Hemenway Bench.** An inscribed, granite bench is located on the western slope of Little Blue Hill. This bench, a memorial to Augustus Hemenway (1853–1931) faces west toward the Neponset River, through a now overgrown vista.

Although there is some staining and lichen growth on this bench, and the vista it once looked out upon is lost, there is no graffiti and the pointing between stones is intact, so it is considered to be in satisfactory condition.

**25 Royall Street Property.** This property's house and detached garage is one of the few remaining residences on Royall Street and reflective of the street's former residential character. The house is a modest front gabled, 1.5 story former home with a front porch and rear shed roofed addition. Clad in a combination of clapboards and cedar shingles, and with a foundation of poured concrete, the building is unadorned of any decorative details. The garage,

detached from the house and located closer to the road, is a front gabled one bay building, clad with a combination of drop board and vertical board wood siding. Construction dates are not known for either building; however it can be inferred from the building forms and materials that both buildings probably date from the first half of the 20<sup>th</sup> century.

Although the house is currently in intermittent use, and recently received a new roof and minor interior repairs, it is considered to be in unsatisfactory condition. Its rear porch is rotted and covered with moss.

The garage is in a much deteriorated state, with holes in the roof and the walls and vegetation beginning to obscure the building. It too is considered to be in unsatisfactory condition.

### **Recreation Resources**

Most recreation activities are trail based, including hiking, horseback riding, dog walking (on-leash), mountain biking, nature study, cross-country skiing, and snowshoeing.

One facility, the Green Street dressage field is located in this section. (Figure 2.3.5) Used for training and exercising of horses, it is open to the public.

Three geocaches are located in this section.

### **Infrastructure**

**Property Boundary.** The boundaries of this section are not marked. Multiple encroachments appear to have occurred along the northern boundary.

An undisturbed, forested inholding exists between the Blue Hills Reservation and the Fowl Meadow section of the Neponset River Reservation. This parcel, approximately two acres in area, is owned by MassDOT.

**Buildings and Structures.** A house and associated one-car garage are located in the southeast corner of this section. (Figure 2.3.5) Both are owned by the DCR and both fail to meet some code or functional requirements. They are used by the Massachusetts State Police.

**Roads.** Green Street (1.2 miles) is the only DCR road in this section.

**Parking.** Public parking is available for commuters and park visitors at the Route 138 Park and Ride lot.

(Figure 2.3.5) This lot is operated by MassDOT. There is no accessible parking.

During the winter, this lot provides overflow parking for the William F. Rogers Ski Area.

Only police or DCR vehicles are permitted to park at the DCR-owned house on Royall Street.

**Trails.** There are 3.6 miles of official trails, and 1.0 mile of informal trails. (Figure 2.3.8) Less than 0.1 miles of trails are classified as being in poor condition.

This section is the western terminus of the reservation's trails; there are no connections to other DCR properties or trail systems from here. Planned improvements to the I-93/I-95 interchange will create a connection between the Blue Hills and Neponset River reservation's trail systems (MassDOT n.d.).

The Claire Saltonstall Memorial Bikeway, a 135-mile long bike trail, includes the section of Route 138 along the eastern border of Little Blue Hill (Massachusetts Bicycle Coalition n.d.).

**Kiosks and Signs.** A map board is located at the trail head along the western edge of the Park and Ride lot. (Figure 2.3.5)

There are no informational signs.

**Memorials and Markers.** The Augustus Hemenway Memorial Bench (see above) is a memorial bench located on the western slope of Little Blue Hill.

### **2.3.3. Hemenway Pond**

Hemenway Pond is perhaps the most overlooked portion of the Blue Hills; it isn't even indicated on the reservation's trail map and guide (DCR and MAS 2009). Although under the long-term control of the Town of Milton, this area remains DCR property. Its resources are primarily natural and cultural, with wildlife habitat and limited passive recreation its primary uses.

Information on this section's resources is provided below. Information on the resources of the entire reservation is provided in Section 2.3.1.

### **Natural Resources**

The natural resources of Hemenway Pond are largely unknown. There is no Priority Habitat.

## Water Resources

**Ponds.** Hemenway Pond (2.2 acres) is a shallow wetland with emergent and floating-leaved vegetation throughout; there is little open water. (Figure 2.3.2) Rainfall and springs in the pond's northeast corner are the source of its water; no storm drains discharge into this pond. Water exits the pond through a culvert on its west side.

**Vernal Pools.** No certified or potential vernal pools have been identified on this property. However, a depression in the woods southeast of the pond likely functions as a vernal pool.

**Streams.** Two small stream segments are present. The first connects the basin southeast of the pond to the pond; the second connects a forested wetland southwest of the pond to wetlands west of Route 138 and north of the Neponset Valley Parkway. There is no information on these streams. (Figure 2.3.2)

**Flood Zones.** There are no 100- or 500-year flood zones in this section.

**Groundwater.** No aquifers have been identified beneath Hemenway Pond. There are no known threats to this section's groundwater.

## Vegetation

Information on the plants of the Blue Hills Reservation is provided in Appendix H. Information specific to this section of the reservation is largely lacking; five species of aquatic plants have been recorded (Hellquist 1972).

**Invasive Species.** Hellquist (1972) reported Brazilian waterweed, a plant classified as likely invasive (MIPAG 2005), occurs in Hemenway Pond. Surveys for terrestrial invasive plants have not been conducted.

**Natural Communities.** Two communities have been identified:

- Deep Emergent Marsh; and
- Woodland Vernal Pool.

Neither community is rare in Massachusetts.

The majority of this section's communities have yet to be classified.

**Interior Forests.** There are no interior forests in this section.

## Wildlife

No site-specific information is available for Hemenway Pond. No state-listed species are known to occur, and there is no designated Priority Habitat.

**Birds.** Information specific to this section is lacking.

**Mammals.** Information specific to this section is lacking.

**Reptiles.** Information specific to this section is lacking.

**Amphibians.** Information specific to this section is lacking.

**Fish.** Information specific to this section is lacking.

**Insects.** Information specific to this section is lacking.

## **Cultural Resources**

Three cultural resources of unknown construction date can be found in the Hemenway Pond section of the reservation. (Figure 2.3.4)

**Stone Retaining Wall.** This dry laid stone wall with a concrete cap is approximately 370 feet in length by six feet high; it runs along the south side of Dollar Lane. Conditions along the length of the wall vary; some portions of the wall are entirely intact, others have lost the concrete capping, while still others have collapsed.

**Granite Entrance Pillars.** These two pillars are located along the west side of Canton Avenue, and identify the entrance to a former road down to the pond. Constructed of mortared granite blocks with carved granite capstones, each pillar is approximately three-feet square and six feet tall. Vegetation partially obscures the pillars from view from Canton Ave. There is evidence of a mortar repair effort on one of the pillars that was done incorrectly, and left excess concrete along the face of the stones. With the exception of this poor repair, the pillars are in satisfactory condition.

## **Recreation Resources**

There are no recreation facilities. Activities appear to be limited to fishing and off-trail hiking. There are no known geocaches.

## Infrastructure

**Property Boundary.** The southern boundary abuts multiple private residences; there are no known boundary markers or signs.

**Buildings and Structures.** There are no buildings.

**Roads.** A single dirt road, off Canton Avenue, provides pedestrian access. There are no DCR paved roads associated with Hemenway Pond.

**Parking.** There is no parking at Hemenway Pond.

**Trails.** There are no official trails and no mapped informal trails.

**Kiosks and Signs.** There are no map boards or informational signs.

**Memorials and Markers.** There are no known memorials or markers.

### 2.3.4. Great Blue Hill

The Great Blue Hill section is rich in natural, cultural, and recreation resources; it has the second largest number of buildings and structures on the reservation. The primary uses are interpretation and education, passive recreation, and skiing at Great Blue Hill, and passive recreation and wildlife habitat elsewhere in this section.

Information on this section's resources is provided below. Information on the resources of the entire reservation is provided in Section 2.3.1.

#### Natural Resources

Great Blue Hill's most important natural resources are associated with rock outcrops along its summits and ridges. The majority of this section (817 acres; 88.9%) has been designated Priority Habitat. (Figure 2.3.3)

#### Water Resources

**Ponds.** Blue Hills Pond is a half-acre manmade pond located at the western edge of the Great Blue Hill section. (Figure 2.3.2) It receives water from a single, natural inlet and also from the Trailside Museum's turtle and otter enclosures (Baystate Environmental Consultants, Inc. 2006). Water from these animal enclosures is affecting water quality (Bay State Environmental Consultants, Inc. 2006). There is no connection between this pond and the William F. Rogers Ski Area.

**Vernal Pools.** Four certified and five potential vernal pools have been identified in this section. (Figure 2.3.3)

**Streams.** Several intermittent streams flow to both the Neponset and Weir River watersheds. One permanent stream, Balster Brook, originates in a wetland north of Wolcott Hill and flows north off the property. Water from heavy rains and melting snow regularly flows from the south slope of Great Blue Hill onto Hillside Street. Water from melting snow at the ski area flows west down Great Blue Hill; some of this water is intercepted by a drainage system and discharged into a seasonal stream. (Figure 2.3.2)

**Flood Zones.** No 100- or 500-year flood zones are located in this section.

**Groundwater.** No aquifers have been identified beneath the Great Blue Hill section. However, a well at the Blue Hills Observatory provides groundwater for domestic use. This water, which is not available to the public, is moderately acidic and exceeds recommended guidelines for sodium and copper (e.g., Biomarine 2009).

There are no known threats to this section's groundwater.

#### Vegetation

Information specific to this section of the reservation is generally lacking. Palmer (2011) reported 20 species; 10 of which were grasses or grass-like plants. Nantucket serviceberry, a Species of Special Concern, is known from multiple locations on Great Blue Hill. This section also contains suitable habitat for lesser snakeroot, a state-endangered plant known from elsewhere on the reservation.

**Invasive Species.** Populations of Louise's swallow-wort are known from the ski slope, weather observatory area, and the open and wooded areas around the Eliot Tower and Eliot Memorial Bridge. Purple loosestrife is present along the north and west shores of Blue Hills Pond (Baystate Environmental Consultants, Inc. 2006), in the Trailside Museum's wildflower garden, and on the ski slope (Echandi 2011a). The Blue Hills Pond also contains common reed (Echandi 2011a). Other invasive plants, including garlic mustard, tree of heaven, Norway maple, and oriental bittersweet are also known from

this section (Echandi 2011a). Formal surveys have not been conducted.

**Natural Communities.** Although systematic surveys have not been conducted, this section's natural communities are fairly well known. The following community types have been documented:

- Acidic Rock Cliff;
- Acidic Rocky Summit/Rock Outcrop;
- Acidic Talus Forest/Woodland;
- Cultural Grassland (i.e., ski runs, Carberry Field);
- Mixed Oak Forest;
- Oak-Hemlock-White Pine Forest;
- Oak-Hickory Forest;
- Ridgetop Chestnut Oak Forest/Woodland;
- Ridgetop Pitch Pine-Scrub Oak;
- Red Maple Swamp;
- Shrub Swamp; and
- Woodland Vernal Pool.

Of these community types, only the Ridgetop Pitch Pine-Scrub Oak and the Woodland Vernal Pool are considered rare in Massachusetts. Examples of the Ridgetop Pitch Pine-Scrub Oak community (e.g., the top of Houghton's Hill) are being lost to plant succession.

**Interior Forests.** An interior forest block, approximately 218.6 acres in area, extends from Wolcott Hill toward Camp Sayre.

### Wildlife

The variety of natural communities in this section provides habitat for a diversity of wildlife. Hilltops and dry oak forests provide habitat for rare insects and uncommon birds, forested slopes and valleys provide habitat for a variety of woodland wildlife, and wetlands and vernal pools provide habitat for amphibians and drinking water for other species.

**Birds.** The birds of Great Blue Hill's summit were studied by Morimoto (1986); who documented 26 species. Anonymous (n.d.) reported 32 birds "commonly seen &/or heard atop Great Blue Hill." Both authors identified eastern towhees, prairie warblers, and field sparrows as common atop Great Blue Hill. These birds are associated with hilltop shrublands, and are typically absent from the

reservation's forests. A complete listing of birds observed is included in Appendix K.

No state-listed birds are known to occur in this section.

**Mammals.** Information specific to this section of the reservation is lacking.

**Reptiles.** Information specific to this section of the reservation is generally lacking. McCasland (2009a) reported ring-necked snakes on the summit of Great Blue Hill. Milksnakes and common garter snakes are also known from this section (Echandi 2011a).

The NHESP (2007a) has identified the eastern portion of this section as habitat for copperheads and eastern timber rattlesnakes, both of which are endangered. They also identified the southeastern portion of this section as rare turtle habitat.

**Amphibians.** Baystate Environmental Consultants, Inc. (2006) reported American bullfrogs and green frogs in Blue Hills Pond.

**Fish.** Baystate Environmental Consultants, Inc. (2006) reported fish, believed to be bluegill, present in Blue Hills Pond.

**Insects.** Much of the information on the reservation's butterflies (Appendix P) was collected at Great Blue Hill (e.g., Champagne 2007 a, b, c; Jaffe 2009a). Two state-listed moths, the orange sallow moth and the oak hairstreak have also been recorded on Great Blue Hill (NHESP 2007a).

Hentz's redbelly tiger beetle, a threatened species, inhabits this section of the reservation (NHESP 2007a).

### **Cultural Resources**

The Great Blue Hill section of the Blue Hills Reservation contains one of the most recognized cultural resources within the reservation; the weather observatory. The observatory, along with a collection of additional features, contributes to understanding the history of the reservation. (Figure 2.3.4) For the purposes of discussing the cultural resources of the Great Blue Hill section, this area may be broken down into four different geographic sub-areas: the summit of Great Blue Hill, the slope of Great Blue Hill, the base of Great Blue Hill, and the Hemenway Hill area.

## Summit

**Summit Road.** The summit of Great Blue Hill is reached by Summit Road, constructed sometime between 1871 and 1884 (i.e., Pre-reservation era).

**Blue Hills Meteorological Observatory.** The observatory is the reservation's only National Historic Landmark (designated in 1989). It consists of a well maintained round concrete tower that is three stories tall and has a crenellated parapet. This tower (the second one on the site, built in 1908 to replace an earlier two story stone one) is attached to a two-story stone building with a hipped roof constructed in 1884–1885 and expanded shortly thereafter in 1889 and again in 1901. Rough cut granite blocks serve as sills, lintels, and quoins on the building corners and openings, while the walls of the building are of stone collected on the hill. Both the tower and the building connected to it contain multiple pieces of equipment used for meteorological purposes.

**Blue Hills Meteorological Observatory Landscape.** Adjacent to the observatory are other buildings, structures and objects associated with the study of weather. Together with the observatory, they collectively form the Blue Hills Meteorological Observatory landscape. (Figure 2.3.4) Elements of this landscape are associated with the pre-Reservation, MPC, and MDC eras.

Next to the observatory is the Rotch Memorial, an engraved stone marker and public drinking fountain that was donated to the MPC in 1914 in honor of Abbot Lawrence Rotch by his widow. The memorial was originally located at the junction of the summit and the circumferential roads, and was moved to the current site in 1968. The fountain is no longer functional.

A small shed, constructed of rusticated concrete block (construction date unknown), is located adjacent to the wall, and has some repointing needs.

The observatory wall, a poured concrete wall with capped piers and segments that connects to an iron fence to make a complete enclosure around these three resources, was constructed in 1905.

One historic building not associated with meteorology, the WGBH building (constructed 1953), is also located at the summit.

Additional modern weather instruments, a series of recent functional sheds for kites and fuel cells and a DEP air monitoring station are also located at the summit. These are not historic resources.

**Eliot Memorial Landscape.** The Eliot Memorial Landscape, located about 200 yards to the northeast of the observatory, consists of three structures: the Eliot Memorial Bridge, Eliot Memorial Path, and the Great Blue Hill Observation Tower (i.e., Eliot Pavilion). (Figure 2.3.4) This landscape includes MPC and MDC era resources.

The path was constructed in 1904, followed shortly thereafter by the construction of the bridge in 1906, in honor of Charles Eliot, the consulting landscape architect to the MPC who died in 1897. The bridge, a pedestrian footbridge constructed of stone, includes a bench from which the hills to the east could once be viewed (now obscured by vegetation), and a carved stone memorial with two inset metal plaques (long since removed).

The adjacent observation tower and pavilion were also built of stone, constructed by the CCC in 1937–1939. The single story pavilion is open on the north side, and the two story tower has openings for viewing – a portion of the view from both is currently obscured by vegetation. Both the bridge and the combined observation tower and pavilion are listed in the National Register. Both structures have experienced mortar loss, and have been tagged with graffiti. The roof of the tower and pavilion is in poor shape, with shingles damaged and/or missing. Both resources are considered to be in unsatisfactory condition and in need of repair.

## Slope

**William F. Rogers Ski Area.** The ski area, located northwest of the observatory, contains several historic features from the MDC era. (Figure 2.3.4) Downhill ski trails at Great Blue Hill were initially proposed by Arthur Shurcliff (1936) and constructed by the CCC in 1935, with trail upgrades and parking added in 1949, followed by the development of infrastructure circa 1960. The lodge, compressor building, maintenance garage, and foundation from the former first aid building all date from this final period of development, and may be fifty or more years old – further research is needed to determine when they were constructed. This ski area is

significant as the location where artificial snowmaking technology was pioneered.

Located at the base of the slope, the main lodge is a chalet-style building, 1.5 stories in height, and is in satisfactory condition (the roof appears to have been shingled relatively recently). The compressor building and the maintenance garage both have damage to the soffit area of each building that does not appear to have affected these buildings' structural integrity. Additional infrastructure includes a variety of sheds, structures associated with the chair lift, and a building associated with snow making. Dates of construction for these elements are largely unknown.

### Base

***Trailside Museum Landscape.*** At the base of Great Blue Hill is the Trailside Museum Landscape, a complex that includes an interpretive center, grounds that house animals that are a part of the museum nature center, as well as a nearby historic comfort station.

***Trailside Museum.*** The Trailside Museum is housed in a building originally constructed by the MPC in 1898 as a residence for the park superintendent. The 1.5 story Dutch colonial with side gambrel roof was converted to use as a museum in 1959. It has been added to twice, and now has rear and side wings used for exhibit and meeting space. The museum is operated by Mass Audubon.

A master plan was recently developed (Pressley Associates 2008) to address deficiencies in the current building hampering its continued use as an interpretive center; this plan proposes the replacement of this building.

***Comfort Station.*** The comfort station, located adjacent to the Trailside Museum, was constructed in 1904 and renovated in 2008. Like many of the buildings constructed by the MPC, it was designed by the Boston architectural firm of Stickney and Austin, a nationally prominent firm whose work is among the most distinctive on the reservation. This building, designed in the rustic architecture style that was particularly popular for park applications at the turn of the century, incorporates textural elements from the Victorian era styles as well as elements from the arts and crafts, all rendered in naturalistic materials and settings. The comfort station is a single story building with a low-sloped front gabled

roof, drop board siding, exposed rafter tails, a projecting bay window and a decorative chimney. This building is listed in the National Register. Recent renovation efforts place this in excellent condition.

***Animal Enclosures.*** Two later historic structures affiliated with the MDC era of park development, the turtle and river otter enclosures at the Trailside Museum, were constructed in 1959 during the conversion of the facility to a museum. The recently developed master plan proposes to replace these two structures (Pressley Associates 2008). A variety of other non-historic buildings and structures are also associated with the museum.

***Additional Historic Resources.*** Two additional historic resources at the base of Great Blue Hill that are not affiliated with either the Ski Area or the Trailside Museum are the Great Blue Hill Pumphouse and the Canton/Milton town boundary marker. (Figure 2.3.4)

The pumphouse, a small stone building, roughly square in form with a hipped roof and exposed rafter tails, is located on Hillside Street opposite Brookwood Farm. Constructed in 1913 to help pump water to the summit, there is currently graffiti on the solid metal door and the roof currently has multiple holes.

The granite town boundary marker, noting the boundary line between Canton and Milton, is located along Hillside Street, Canton and Blue Hill River Road, Milton.

### Hemenway Hill Area

Set in a streambed, the circular, mortared stone lined well located along Base Path (Figure 2.3.4) has a diameter of approximately five feet, and walls that extend above the ground by approximately two feet that are eighteen inches thick. A square concrete pad located on top of the stone rim suggests that a structure was once located on top of the well, probably for pumping purposes. The date of construction is unknown.

This structure, in satisfactory condition, is enclosed by chain link fencing topped with barbed wire. Grates along the streambed and below the fence have been removed, permitting access to the resource.

No other historic resources are known to occur in this portion of the Great Blue Hill section.

### Recreation Resources

There are three major recreation facilities in the Great Blue Hill section: the William F. Rogers Ski Area, Trailside Museum, and the Great Blue Hill summit. (Figure 2.3.5)

The ski area is the reservation's primary winter recreation facility. It has nine trails for skiing and snowboarding, and a snowboard terrain park. The area operates from December 15<sup>th</sup> through March 10<sup>th</sup>, on a combination of natural and manmade snow. Approximately 50% of the trails area is lighted for night use. Equipment rental, lessons, food service, and restrooms are available. The main lodge and ski school buildings are universally accessible, other facilities are not.

The Trailside Museum is open year-round, Friday through Sunday, and Monday holidays. It provides live animal exhibits, interpretive displays, and picnic facilities for museum visitors. Limited snacks are available for purchase at the gift shop. Restroom facilities are available for those paying admission. Portions of the museum are universally accessible.

A DCR comfort station, located immediately adjacent to the museum, is available for all visitors.

An observation tower and picnic tables are located at the summit of Great Blue Hill. Neither is universally accessible. An annual kite festival, sponsored by the Blue Hills Weather Observatory, takes place elsewhere on the summit.

Trail-based recreation taking place in this section includes hiking, horseback riding, dog walking (on-leash), mountain biking, nature study, running, cross-country skiing, and snowshoeing.

There are 13 geocaches.

### Infrastructure

**Property Boundary.** The northern boundary is not marked. There are no signs of encroachment.

**Buildings and Structures.** There are forty buildings and structures; most are located on the summit or western slope of Great Blue Hill. (Figure 2.3.5) Summit buildings are associated with climatological research, communications, or recreation. Buildings on the western slope are primarily associated with

the William F. Rogers Ski Area or the Trailside Museum.

Twenty-three buildings are owned by the DCR. Seven (30.4%) are in fair condition, failing to meet some code or functional requirements. One building, the Great Blue Hill Pump House is non-operational.

Additional information on buildings and structures is provided in Appendix T.

The ski area's existing snow melt drainage system is in disrepair. A corrugated drainage pipe at the base of the slope, east of the main lodge, is crushed. Other pieces of the system, including paved drainage swales and concrete structures, and grates are broken or not maintained. The condition of this drainage system may be contributing to observed erosion on the Red Dot Trail adjacent to the Trailside Museum, flooding and icing in the south parking lot, and damaged masonry.

The freezing and thawing of snow melt from the ski slopes has previously damaged the main lodge (Lyons 1992). A cracked and tilted retaining wall adjacent to the lodge suggests that run off may be a continuing problem.

**Roads.** Three paved DCR roads are associated with this section. Portions of Hillside Street and Blue Hill River Road mark the southern boundary of Great Blue Hill. Summit Road (0.9 miles) provides vehicle access from Canton Avenue to the top of Great Blue Hill. Unpaved forest roads include Wolcott, Border, and Hancock Hill paths.

Route 138, at the Canton/Milton town line, has an average daily traffic of 30,830 vehicles. This is an increase of 25,429 vehicles per day (470.8%) over the 1985 average daily traffic for this location (Beta Group, Inc. 2011). This increase represents an annual growth rate of 7.2%, the largest recorded anywhere on the reservation.

**Parking.** A mixture of public parking areas and restricted lots is present at Great Blue Hill. Public lots are located to the north and south of the Trailside Museum, and along Hillside Street at Accord Path. (Figure 2.3.5) The Trailside Museum's lots have designated accessible spaces. However, there is no fully accessible path from either parking lot to the museum (Pressley Associates 2008).

Restricted parking occurs within the Trailside Museum's grounds, adjacent to the main lodge at the



William F. Rogers Ski Area, and at the weather observatory (two lots). A single accessible space is located adjacent to the ski lodge.

The recent Trailside Museum master plan (Pressley Associates 2008) identifies a variety of parking and traffic flow problems with the current configuration of the museum's north and south lots, including poor circulation, sub-standard sized spaces, and the lack of a bus drop-off area. In addition, parking is limited when both the Trailside Museum and ski area are in operation. A proposed lot design eliminates many of these problems and improves storm water management, with the loss of only six parking spaces.

A seasonal icing problem occurs in the southern portion of the Trailside Museum's south parking lot. Meltwater from the ski slopes runs into the lot creating dangerous driving and walking conditions.

Bicycle parking is provided in the south parking lot, adjacent to the Trailside Museum.

**Trails.** This section has 24.0 miles of official trails and 1.5 miles of informal trails. (Figure 2.3.8) These are perhaps the most popular trails in the reservation, providing access to the summit of Great Blue Hill. Approximately 1.2 miles of trails are classified as being in poor condition.

Three loop trails, the Green Dot, Red Dot, and Breakneck Ledge Loop are located in this section. The surface of the Red Dot Trail is a combination of eroded or compacted soils and exposed bedrock. Its condition reflects the heavy use that it receives as the shortest route to the summit of Great Blue Hill. The other two loop trails are in generally good repair, with localized erosion.

The Skyline Trail, which extends through the northern half of the reservation, passes over five hilltops as it loops through the Great Blue Hill section. It too is in generally good repair with localized erosion.

**Kiosk and Signs.** There are six kiosks; their locations are identified in Figure 2.3.5. Five kiosks are associated with Great Blue Hill; two at the summit, two at trailheads, and one at the Trailside Museum. The sixth kiosk is located at a major intersection (i.e., Five Corners) in the trails network.

This section's signs are also concentrated around Great Blue Hill. Those at the Trailside Museum are

chiefly interpretive, associated with the museum's live animal exhibits. Additional signs, including a DCR Main Identification sign are also present. Ski area signs identify the operator of the facility (Ski Blue Hills LLC) and the facility's regulations; they do not identify the name of the ski area or that it is a DCR facility. The weather observatory area is largely free of signs; an exception is the interpretive display on the use of hydrogen as a fuel source.

A three-panel sign, erected in 2009, is located at the three-way intersection of Hillside Street and Blue Hill River Road. The central panel is a Main Identification sign, and each side panel identifies and directs the public to the reservation's facilities. Banners advertising upcoming public events (i.e., First Day Hikes) are displayed immediately east of this sign.

Additional information on these signs is provided in Appendix V.

**Memorials and Markers.** Eight memorials are known from Great Blue Hill. The following six are located at the Blue Hills Weather Observatory:

- History of Weather Observatory (n.d.);
- James M. Redman memorial (n.d.);
- Founding of Weather Observatory (1885+);
- National Register designation (1980);
- Weather Observatory centennial (1985) – new engraving on the Rotch Fountain; and
- National Historic Landmark designation (1989).

The entire Eliot Memorial Bridge (1904) is a memorial. It bears an inscription, dated 1904, in memory of Charles Eliot.

One additional memorial, to Daniel M. Casey (circa 1994) is located between the weather observatory and the William F. Rogers Ski Area. The origin of this memorial is unknown.

A granite marker, which identifies the boundary between Milton and Canton, is located at the foot of Great Blue Hill. Additional boundary markers may be present but are undocumented.

### 2.3.5. Brookwood Farm

Brookwood Farm is an agricultural landscape with several historic resources. Its primary uses are passive recreation, park operations, and agriculture.

Information on this section's resources is provided below. Information on the resources of the entire reservation is provided in Section 2.3.1.

### **Natural Resources**

Most of Brookwood Farm's natural resources are common in eastern Massachusetts. Priority Habitat is absent.

#### Water Resources

**Ponds.** There are no ponds at Brookwood Farm. Two ponds, 2.8 and 0.8 acres in area, occur on the adjacent Meditech CR. (Figure 2.3.2)

**Vernal Pools.** Two vernal pools, one certified and one potential, have been identified. (Figure 2.3.3)

**Streams.** A perennial stream flows from north to south, across the eastern side of Brookwood Farm. It is associated with wetlands along its entire course. These wetlands, along with intermittent streams originating on the Farm and the Great Blue Hill section, are the source of the stream's water. The stream exits Brookwood Farm to the south, passing under I-93. (Figure 2.3.2)

**Flood Zones.** A 500-year flood zone is associated with the perennial stream and wetland on the east side. (Figure 2.3.2) There are no buildings, structures, or roads in this flood zone.

**Groundwater.** The DEP has identified an aquifer beneath the Meditech CR and the western portion of Brookwood Farm. No water withdrawals from this aquifer occur at Brookwood Farm. (Figure 2.3.2)

A potential threat exists to groundwater. A fuel release, originating at a gas station near the intersection of Royall Street and Route 138, has introduced gasoline-associated chemicals (e.g., benzene) into the soil and groundwater (Sovereign Consulting, Inc. 2009). These chemicals are migrating and are within 150 feet of the Meditech CR. This release is being treated through Monitored Natural Attenuation which appears "to be remediating the groundwater impacts."

#### Vegetation

Information specific to this section of the reservation is generally lacking. An exception is Palmer (2011), who reported two grasses and two wildflowers. Cultural Grasslands, which are uncommon in the reservation, are the dominant upland land cover.

Information on the plants of the Blue Hills Reservation is provided in Appendix H.

No state-listed plants are known from this section.

**Invasive Species.** Purple Loosestrife, black swallowwort, and Asiatic bittersweet have been documented at the farm. Also reported are burningbush, Norway maple, garlic mustard, Japanese barberry, glossy and common buckthorn, multiflora rose, and honeysuckles (Echandi 2011a).

**Natural Communities.** Three communities have been identified:

- Cultural Grassland ("hay" fields);
- Red Maple Swamp; and
- White Pine–Oak Forest.

None of these communities are rare in Massachusetts. The majority of this section's communities have yet to be classified.

**Interior Forests.** There are no interior forests in this section.

#### Wildlife

Brookwood Farm's grasslands provide habitat for species absent from, or uncommon to, the reservation's forests and hilltops.

**Birds.** The grasslands and adjacent thickets provide habitat for migratory sparrows and blackbirds. Eastern bluebirds and tree swallows nest in boxes erected in the fields (Echandi 2009a). Nest boxes for American kestrels are also present, but unoccupied (Echandi 2011a).

No state-listed birds are known to inhabit Brookwood Farm. Although several state-listed birds (e.g., grasshopper sparrow) are associated with grasslands in Massachusetts, the size and discontinuity of the grasslands make it unlikely that this site can support breeding populations of these species.

**Mammals.** Small mammals were surveyed during the summer of 2009 (Morley 2009). Species recorded during these surveys included white-footed deermouse, meadow vole, and American mink. (Appendix L) Other mammals include woodchuck, white-tailed deer, and common muskrat (Echandi 2011a).

**Reptiles.** Echandi (2011a) reported painted turtles and common garter snakes. Other information specific to this section of the reservation is lacking.

The NHESP (2007a) has identified Brookwood Farm as potential habitat for the state-threatened Blanding's turtle.

**Amphibians.** American bullfrogs, wood frogs, spring peepers, and spotted salamanders are known from this section (Echandi 2011a).

**Fish.** It is unknown if fish occur in the perennial stream.

**Insects.** Jaffe (2009b) reported 17 species of butterflies and moths, including skippers, swallowtails, and prominents. (Appendix P)

### Cultural Resources

Brookwood Farm is an extensive historic agricultural landscape with two historic residential buildings, structures, and vegetation features. (Figure 2.3.4) It is representative of the agrarian landscape that was once common in the region. The most immediate challenge facing cultural resources at Brookwood Farm is the stabilization of the Gate Keeper's Cottage.

**Gate Keeper's Cottage.** The Gate Keeper's Cottage, a Cape Cod style house constructed circa 1790 with a rear ell added later, is listed in the National Register. The house is in very poor condition, with a deteriorating roof, interior water damage, sill issues, and a rear ell that has been structurally compromised. It has been classified as "nonfunctioning" and is in need of immediate corrective action.

**Barn.** The barn began as a two-bay English barn, constructed between 1710–1750, with a series of later additions in circa 1840, the early 20<sup>th</sup> century, and circa 1950. It is listed in the National Register.

The oldest portion of the barn was recently removed and is currently in storage at an off-site location. It will be reconstructed at a new site on Brookwood Farm in the future.

**Other Resources.** Other historic resources that contribute to the landscape include a prominent sugar maple allée along the farm's eastern road, referred to by the former owner as "Maple Lane." This allée is currently maintained by arborists with a focus on tree health and not on the protection of

cultural resource values. This lane leads to the Henry Saltonstall Howe House, a two-story colonial revival constructed in 1957, at the southern end of Brookwood Farm. The former gardener's cottage foundation, the garage now in use as a sugar shack, a tractor shed (currently used by the Brookwood Community Farm), culverts, stone walls, entrance pillars, and fields complete the picture. Four additional modern agricultural outbuildings are associated with the operation of Brookwood Community Farm. The Howe House, its specimen trees, and other ornamental vegetation comprise a historic landscape within the larger Brookwood Farm Landscape.

Most of the Farm's historic resources are in satisfactory condition.

### Recreation Resources

There are no recreation facilities at Brookwood Farm, and limited recreation occurs here. The roads and trail segments are used for walking and running, often by employees of nearby businesses during their lunch break. This section is also used for walking dogs. Volunteer activities at Brookwood Community Farm both support the farm and provide recreation to participants.

There are no known geocaches in this section.

### Infrastructure

**Property Boundary.** There is no known encroachment.

An error exists in a 1985 deed for approximately 20 acres of DCR land adjacent to Carisbrooke Road, Milton. As recorded (Norfolk County Registry of Deeds, Book 6600, Page 479), this deed identifies two excepted parcels that total approximately 3.23 acres. It omits a third excepted parcel, approximately 0.46 acres in size that was sold by the previous owner in 1970. (See Norfolk County Registry of Deeds, Book 4642, Page 524.)

**Buildings and Structures.** There are seven buildings and structures at Brookwood Farm; most are associated with past or current agricultural practices. Five are owned by the DCR. (Figure 2.3.5)

Two of the DCR-owned buildings have condition problems. The old barn fails to meet some code or functional requirements; a portion of it is being renovated off-site by the North Bennet Street

School. The Gate Keeper's Cottage has multiple structural problems and is classified as non-operational. The septic system associated with the cottage failed Title V inspection in 2010 (Gotham 2010a). The remaining three buildings are in adequate or better condition.

Additional information on buildings and structures is provided in Appendix T.

**Roads.** A U-shaped loop drive extends from Hillside Street/Blue Hill River Road to the Henry Saltonstall Howe House. The western entrance is open; the eastern entrance is gated. Because of this, vehicle traffic primarily takes place on the western side of the loop.

A paved sidewalk is located along the south side of Hillside Street/Blue Hill River Road. This is part of a larger sidewalk that extends from Route 138 to the intersection of Hillside Street and Blue Hill River Road. It provides a potential pedestrian connection between Brookwood Farm and Houghton's Pond.

Hillside Street, immediately west of Carisbrooke Road, had an average daily traffic of 7,054 vehicles. This is a decrease of 998 vehicles per day (-12.4%) from the 1985 average daily traffic for this location (Beta Group, Inc. 2011). This is the only location on the reservation where traffic is known to have decreased between 1985 and 2010.

**Parking.** There are three parking areas; one is public and two are restricted. (Figure 2.3.5) Public parking is limited to a gravel lot near the farm's main entrance; there are no accessible spaces. A restricted parking area in front of the Henry Saltonstall Howe House is used by the building's resident. The third parking area is located south of the Howe House; it is open to the public during meetings and events.

Vehicles associated with Brookwood Community Farm are parked along the road shoulder adjacent to the tractor shed and greenhouse.

**Trails.** There are approximately 0.8 miles of official trails; they are not connected to the reservation-wide trail system. (Figure 2.3.8) Less than 0.1 miles of these official trails are classified as being in poor condition. There are no informal trails.

**Kiosks and Signs.** A kiosk is located along the main drive at the entrance to the parking lot. (Figure 2.3.5)

There are two signs. A Cantilevered Identification sign (DCR n.d.a) is located in front of the Gate Keeper's Cottage along Hillside Street. The garage/sugar shack bears an oval, wooden sign with the inscription "Brookwood Farm Maple Syrup." The latter is inconsistent with the DCR's graphic standards (DCR n.d.a).

**Memorials and Markers.** An unmarked memorial tree occurs at Brookwood Farm, near the tractor shed.

### 2.3.6. Houghton's Pond

Houghton's Pond is the Blue Hills' primary recreation area. Extensive infrastructure, including historic buildings and structures, supports recreational swimming, picnicking, and field sports. Recreation, both active and passive, is this section's primary use.

Information on this section's resources is provided below. Information on the resources of the entire reservation is provided in Section 2.3.1.

#### Natural Resources

The most important natural resource in this section of the reservation is water. Clean water in Houghton's Pond promotes healthy aquatic ecosystems, provides drinking water for downstream communities, and makes water-based recreation possible.

Over one-half of this section (92.9 acres, 52.7%) is Priority Habitat. (Figure 2.3.3)

#### Water Resources

**Ponds.** This section's main feature is Houghton's Pond, a 26.5-acre, natural spring-fed pond (Conley 1988; Figure 2.3.2). This pond also receives water from Coon Hollow Brook to the northwest and Marigold Brook to the northeast. Water exits through a culvert on the pond's west side. The flow through this culvert regulates the Pond's level.

Houghton's Pond is a designated Great Pond (Appendix J) and is subject to the Public Waterfront Act. It also falls within an area designated as Outstanding Resource Waters. Additional information on these and other regulations is provided in Appendix F.

Twenty-one storm drains discharge into Houghton's Pond, Marigold Marsh, or their buffers. It is unknown if these discharges affect water quality.

Over the past five years (2005–2009), water quality concerns closed Houghton's Pond to swimming on six occasions. Dog and goose waste is believed to be an ongoing threat to water quality (DiPietro 2009). Information on the history of water quality issues at the Blue Hills is provided in Appendix G.

**Vernal Pools.** Three certified and three potential vernal pools have been identified in this section. (Figure 2.3.3)

**Streams.** Three streams, two perennial and one intermittent, occur in this section. Marigold Brook and the stream exiting the pond flow year-round. Coon Hollow Brook flows intermittently. (Figure 2.3.2)

**Flood Zones.** No 100- or 500-year flood zones are located in this section. Although not in a flood zone, Marigold Marsh overflows its shore on a near-annual basis resulting in water in the lower level of the visitor center.

**Groundwater.** No aquifers have been identified beneath this section. A septic system is associated with the comfort station on Blue Hill River Road; it passed Title V inspection in 2010 (Gotham 2010b) and does not constitute a threat to groundwater.

### Vegetation

This section's vegetation was described in the 1970s and 1980s (Gould 1976 and Conley 1988, respectively); this information has been updated to reflect current conditions.

Major tree species include oaks (black, northern red, and white) and white pine. Associated species include birch (paper, gray, and black), hickories (pignut, shagbark), eastern hemlock, red maple, American elm, American beech, and cottonwood. Major shrubs include blueberries, black huckleberry, viburnums, and sweet pepperbush. Timber harvesting has not been conducted in this section since 1987 (Tomlin 1987).

Ornamental plantings are located at the main entrance along Hillside Street, along walkways to the beach, and around the playground.

No state-listed plants are known from this section.

**Invasive Species.** Two-leaf watermilfoil has been recorded in Houghton's Pond (Hellquist 1972). Common reed and purple loosestrife are present in Marigold Marsh. The woods surrounding the marsh are home to Norway maple, glossy and common buckthorn, burning bush, Japanese barberry, garlic mustard, oriental bittersweet, and tree of heaven (Echandi 2010a, 2011a). Japanese knotweed is common along the boundary between the Houghton's Pond section and I-93.

**Natural Communities.** Seven natural communities are known from this section:

- Cultural Grassland (i.e., athletic fields);
- Deep Emergent Marsh;
- Inland Acidic Pondshore/Lakeshore;
- Oak-Hickory Forest;
- Red Maple Swamp;
- Successional White Pine; and
- White Pine-Oak Forest.

These community types are all common in Massachusetts.

**Interior Forests.** There are no interior forests in this section.

### Wildlife

Although Houghton's Pond provides habitat for some species of wildlife, most are not associated with the pond itself.

Information specific to the wildlife of Houghton's Pond comes chiefly from Conley (1988). It is unclear if Conley's information was based on actual, or theoretical, occurrences. Because of this, the information may not accurately reflect the wildlife of the Houghton's Pond section. In addition, distributions of wildlife may have changed in the 22 years since Conley's report.

**Birds.** Eighty-five species of birds have been reported (Conley 1988; Appendix K). Most are songbirds (e.g., eastern tufted titmouse, ovenbird) that are associated with adjacent forested uplands and wetlands. Few birds (e.g., herons, waterfowl, gulls) use the pond itself; mostly during migration.

Canada Geese are common in the pond and on the beach during the swimming season.

No state-listed birds are known to occur in this section.

**Mammals.** Small mammals were surveyed at Houghton's Pond from 1986 through 1988 (Eck and Hollenbeck 1990). Observed species, from the most to the least common, included white-footed deermouse, woodland vole, eastern chipmunk, short-tailed shrew, and meadow vole. Conley (1988) reported these, and 14 additional species of mammals. (Appendix L)

**Reptiles.** Conley (1988) reported 11 species of reptiles, including seven snakes and four turtles, at Houghton's Pond. (Appendix M) Three of these species, the smooth green snake, red-bellied snake, and wood turtle have not been recorded elsewhere on the reservation.

The red-eared slider, a turtle common to the pet trade, was recently identified in Houghton's Pond (Echandi 2010b).

The NHESP (2007a) has identified the Houghton's Pond area as habitat for Blanding's turtle, copperheads, and timber rattlesnakes.

**Amphibians.** Conley (1988) identified eight species of amphibians "found at the Houghton's Pond Recreation Area." (Appendix N) This included the bullfrog, green frog, and leopard frog; species associated with permanent water. Vernal pool species (e.g., spotted salamander, wood frog) were also present. McWade et al (1996) confirmed these vernal pool species, and added a ninth species (spring peeper) to the Houghton's Pond amphibian list.

**Fish.** Fifteen species of fish have been recorded in Houghton's Pond. (Appendix O) Of these, only seven have been observed since 1980. Species believed to be currently present are primarily game fish, including bluegill, largemouth bass, chain pickerel, and rainbow trout. These fish reflect MassWildlife's efforts at managing Houghton's Pond as a recreational fishery. They continue to stock this pond with trout.

**Insects.** Information specific to this section is lacking.

### Cultural Resources

**Water Fountain.** A cast iron drinking fountain located in the Houghton's Pond section, in the

woods alongside the Bugbee Path, is of unknown origin.

**Houghton's Pond Landscape.** This landscape contains buildings, structures, and landscape elements, associated with recreational use of the pond. (Figure 2.3.4) These resources were largely developed during the late MPC and early MDC eras. Historic structures include a visitor center and concession stand.

The visitor center (originally the "sanitary" – a comfort station) was designed by Stickney and Austin in 1910. This building is a one story side-gabled building with projecting bays and a distinctive cedar shingled roof that is designed to look like thatch. Textural in appearance, the roofline incorporates a shallow curved profile over one of the projecting bays and the shingles incorporate a wavy pattern in layout and curve around the edges.

The concession stand, a stone, one story, side gabled, open air pavilion that includes an enclosed area for food service was designed in 1930 by the architectural firm of Putnam and Cox, and is listed in the National Register. Both buildings were renovated in 1997 and are in satisfactory condition.

Historic structures within this landscape also include a set of granite steps leading down to the pond shore, and curvilinear stone walls along the north shoreline and along Hillside Street. The steps have experienced some erosion below them, probably due to water runoff. The walls are constructed of mortared rubblestone and fieldstone. The Hillside Street wall is inscribed "1929," a date that is supported by a reference in the MDC Annual Report of February 1930.

Historic landscape elements include the grass lawn and beach. Collectively, these resources were developed over time to provide amenities to the reservation's beach-goers.

### Recreation Resources

Houghton's Pond is the reservation's primary recreation area. Facilities include a guarded beach, bath house, visitor center, concession stand, comfort station, playground, volleyball courts, three ball fields, and three soccer fields. (Figure 2.3.5) One ball field, a Little League field constructed in 2010, has bleachers, bullpens, safety fencing, and irrigation. The other two ball fields lack these

amenities, having only backstops. The soccer fields are located among the baseball diamonds, and are also used for cricket.

Five picnic sites, numbered one through five, are located along the edges of the pond. They are not universally accessible.

A large grassy area to the west of Houghton's Pond is used by visitors for field day games and events, and also by the DCR for special events (e.g., Mountain Bike Day, First Day Hikes).

Many of the facilities are used seasonally. Ball fields are used approximately April through August. Soccer fields are used approximately September through November. The Houghton's Pond beach and the volleyball courts are used from approximately Memorial Day to Labor Day.

Trail-based recreation in this section includes hiking, horseback riding, dog walking (both on- and off-leash), mountain biking, nature study, running, cross-country skiing, and snowshoeing.

Recreational fishing occurs at Houghton's Pond throughout the year. In some locations fishing access has resulted in damage to the pond's vegetated buffer, resulting in erosion. There is no accessible fishing access.

Two geocaches are known to be present.

### **Infrastructure**

**Property Boundary.** There are no known encroachments.

**Buildings and Structures.** There are four buildings, all owned by the DCR. (Figure 2.3.5) Three are in adequate or better condition, meeting all performance requirements. The fourth, the William J. Scannell Bath House, is in poor condition and in need of replacement. A replacement bath house is currently being designed.

Additional information on buildings and structures is provided in Appendix T.

**Roads.** Three reservation roads, Hillside Street, Blue Hill River Road, and Ponkapoag Trail are associated with Houghton's Pond. There are no crosswalks across any of these roads.

A fourth paved road is located in the woods to the west, north, and east of Breeze Hill. It is an

administrative road, used for park operations, and is not open to the public.

A paved sidewalk is located along the south side of Hillside Street. It extends from the Houghton's Pond Recreation Area to within 60 feet of the intersection at Hillside Street and Blue Hill River Road. There is no crosswalk at this intersection.

Traffic counts were recently made at two locations in this section (Beta Group, Inc. 2011). Counts on Blue Hill River Road, immediately north of the entrance to the Site 5 parking area, identified an average daily traffic of 8,952 vehicles. A similar level of traffic, 8,987 vehicles per day, was recorded on Blue Hill River Road at its junction with Ponkapoag Trail. These figures represent average annual growth rates of 0.4% and 1.3%, respectively, since 1985.

Planned short-term improvements to the I-93/Route 24 interchange (Boston Regional Metropolitan Planning Organization 2007) will result in a decrease in commuter traffic along the portion of Blue Hill River Road adjacent to Picnic Site 5, and an increased volume of commuter traffic on the Ponkapoag Trail overpass. Long-term alternatives, if implemented, will result in the loss of parkland in this section of the reservation.

**Parking.** There are three public parking areas; one each to the north, west, and south of the pond. (Figure 2.3.5) The first two are open year-round. The southern lot, which was reconstructed in 2010 to improve vehicular circulation, parking, and storm water infiltration, is closed from mid-November through mid-April.

Not all lots have appropriate accessible parking. Designated accessible parking spaces in the north and west lots lack required aisles and there are no van accessible spaces. Despite the presence of designated parking spaces in the west lot, there are no accessible paths or facilities; visitors are essentially stuck at their vehicle. In contrast, there are seven designated parking spaces in the south lot; all are van accessible and meet current standards.

During peak periods of use, parking is permitted on the southern shoulder of Hillside Street, between the north (i.e., main) lot and the Regional Office.

There is no bicycle parking.

**Trails.** Approximately 6.3 miles of official trails, and 0.9 miles of informal trails, make their way through the Houghton's Pond section. (Figure 2.3.8) Less than 0.1 miles of official trails are classified as being in poor condition.

A one-mile section of official trails that loop around Houghton's Pond has been designated a Healthy Heart Trail. This trail is part of the DCR's statewide initiative to promote better health. Multiple trail segments connect this loop to the reservation's trail system.

**Kiosks and Signs.** Ten kiosks are present at Houghton's Pond. (Figure 2.3.5) They are associated with parking lots, trail connections, and other entrance points.

Nineteen signs provide information to Houghton's Pond's visitors. Multiple signs identify the Recreation Area's five picnic sites. Two signs, one at Picnic Site 5 and one near the visitor center, identify rules and regulations. Neither sign bears the name or logo of the Department of Conservation and Recreation.

Beach regulations are posted on two signs, one in English and the other in Spanish, attached to the back of a lifeguard chair. The latter is the only non-English sign on the reservation.

An Interpretive Wayside sign, one of only two on the reservation, is located near the visitor center.

Identification signs are provided at the entrance to the main parking lot, at the intersection of Hillside Street and Blue Hill River Road, and at the intersection of Blue Hill River Road and Ponkapoag Trail. The latter does not identify the ball fields or picnic sites as being part of the Blue Hills Reservation.

Additional information on these and other signs is provided in Appendix V.

**Memorials and Markers.** There are no known memorials. Scannell Bath House bears a "suitable marker attached to the building" as required by Chapter 87 of the Acts of 1979. (Appendix W)

### **2.3.7. Reservation Headquarters**

Reservation Headquarters is home to the offices of the DCR's South Region and Blue Hills District. Its resources are primarily cultural, with natural and

recreation resources largely absent. The primary use of this section is park administration and operations.

Information on this section's resources is provided below. Information on the resources of the entire reservation is provided in Section 2.3.1.

#### **Natural Resources**

The headquarters section is largely developed; there are few natural resources in this section of the reservation.

Less than one-tenth of an acre is designated Priority Habitat. (Figure 2.3.3)

#### **Water Resources**

**Ponds.** There are no ponds in this section.

Six storm drains discharge into the Buck Hill section.

**Vernal Pools.** There are no certified or potential vernal pools.

**Streams.** A single intermittent stream passes under this section. This stream enters a culvert in the Great Blue Hill section, flows beneath the paddock area, and enters the storm drain system at Hillside Street. (Figure 2.3.2)

**Flood Zones.** No 100- or 500-year flood zones are located in this section.

**Groundwater.** No aquifers have been identified beneath the headquarters section. A recent review of the Police Station's plumbing suggests that a portion of the building may still be tied-in to a septic system (Haak 2009). Impacts of this potential discharge on groundwater are unknown.

#### **Vegetation**

North of Hillside Street, the vegetation is largely turf grass and ornamental flowers, trees, and shrubs. South of Hillside Street the vegetation is herbaceous.

No state-listed plants are known from this section.

**Invasive Species.** Tree of heaven is located adjacent to the employee parking lot.

**Natural Communities.** Because the Reservation Headquarters section is a culturally modified landscape, there are no natural communities present.

**Interior Forests.** There are no interior forests in this section.



## Wildlife

Characteristic wildlife of this section includes those species associated with buildings and ornamental vegetation.

**Birds.** Most birds observed in this section originate elsewhere on the reservation. However, some are closely associated with artificial nesting and feeding sites. Barn swallows and house sparrows nest in the stables. American robins nest in sheltered areas on the outside of the Regional Office. Ruby-throated hummingbirds feed on nectar from ornamental flowering shrubs and also from feeders adjacent to the Regional Office.

No state-listed birds are known to occur in this section.

**Mammals.** No formal surveys have been conducted; however, eastern gray squirrels, eastern chipmunk, and white-tailed deer have been observed (Echandi 2011a).

**Reptiles.** Information specific to this section is lacking.

The NHESP (2007a) has identified the Reservation Headquarters section as habitat for Blanding's turtle, copperheads, and timber rattlesnakes. This likely reflects transient individuals moving between areas of suitable habitat.

**Amphibians.** Information specific to this section is lacking.

**Fish.** There are no permanent water bodies in this section, so there are no fish.

**Insects.** Information specific to this section is lacking.

## **Cultural Resources**

The headquarters section of the reservation was built by the MPC as a complex of multi-use park administrative buildings between 1899 and 1904, and continues as such today. (Figure 2.3.4) Historic buildings include the District Office (which pre-dates the establishment of the headquarters campus), the Brian T. Broderick Stables, Police Station, and Captain's House (i.e., Regional Office). The complex is partially edged by a post and rail fence, which helps to unify the space.

Laid out as a campus, there is a hierarchical arrangement at play, with the Captain's House

situated in the center at a higher grade, flanked by the stables and the Police Station at a slightly lower grade. Landscape features include the drive, lawn, and mature trees between the stables, Captain's House, and Police Station. Two of these buildings, the stables and Police Station, are listed in the National Register.

**District Office.** This Cape Cod style building with large granite block foundation, twin gable-end interior brick chimneys and gambrel-roofed rear ell, pre-dates establishment of the reservation and likely dates to the early 19<sup>th</sup> century. The other three buildings were designed during the MPC era by the architectural firm of Stickney and Austin specifically for park purposes.

**Brian T. Broderick Stables.** This building is a very large, cross gambrel banked barn with multiple dormers and a louvered roof vent. It was constructed in 1899 for the purposes of housing the reservations' mounted unit, although it appears at first glance to look more like a dairy barn. A stone courtyard was added at the lower level in 1903. The barn is sheathed in asbestos shingle, the roof of the stone courtyard enclosure is failing, there are some structural issues and the complex is in need of asbestos abatement.

The Regional Engineer has indicated that this building is no longer safe for occupation, and the three DCR horses used by the only remaining mounted ranger are currently boarded off-site. The building is used for storage.

Overall, the barn complex is in poor shape. A plan to repair and modernize this stable, while maintaining its historic integrity, has been developed (John Caitlin & Associates Architects, Inc. 2002), with costs estimated at \$2,400,000 (Massachusetts Division of Capital Assets Management 2004).

**Captain's House (Regional Office).** The Captain's House, now used as the Regional Office and *de facto* contact station, was built in 1900 to house the Metro Park Police Captain. This 2.5 story, side gabled, three bay wide Colonial Revival building has a distinctive arched roof entrance porch and recessed, one bay wide, entrance wings on each side. Renovated in 1997, this building is in satisfactory shape.

**Police Station.** The Police Station, constructed in 1904, is a 1.5 story side gabled stone building with

an attached flat roofed, two bay garage set back from the façade in satisfactory condition. Constructed of a combination of granite rubble and dressed granite blocks, the long roof of this building is punctuated with eight front gabled dormers.

**Other Resources.** Additional historic objects in this landscape of unknown origin date include a cast iron water fountain, a hydrant in the woods uphill of the stable, and a granite town boundary marker on the south side of Hillside Street.

### Recreation Resources

Limited recreation occurs here. A restroom, water fountain, and picnic table are provided at the Regional Office. (Figure 2.3.5) These amenities are not universally accessible.

There are no known geocaches in this section.

### Infrastructure

**Property Boundary.** This section is contiguous with DCR property on all sides. There is no encroachment.

**Buildings and Structures.** There are five buildings, all owned by the DCR. (Figure 2.3.5) Four are in adequate or better condition, meeting all performance requirements. The fifth, the Brian T. Broderick Stables, has multiple deficiencies and is non-operational. It is in need of asbestos abatement, has areas of damaged roofing and sheathing, and portions of the building (i.e., the west wall) are in danger of collapse. A plan to repair and modernize this stable, while maintaining its historic integrity, has been developed (John Caitlin & Associates Architects, Inc. 2002).

Additional information on buildings and structures is provided in Appendix T.

**Roads.** Hillside Street, divides the Reservation Headquarters section. There are two crosswalks. The first connects the State Police barracks to a parking lot south of Hillside Street. The second is located where the Skyline Trail crosses the street. Both crosswalks consist of parallel, solid white lines. Four orange traffic cones, two to either side of the road, are placed at the crosswalk along the Skyline Trail to increase its visibility to drivers.

Traffic counts conducted on Hillside Street, adjacent to the State Police barracks, identified an average daily traffic of 10,516 vehicles per day (Beta Group,

Inc. 2011). This represents an average annual growth rate of 1.6% and a cumulative increase of 3,461 vehicles per day (49.1%) since 1985.

**Parking.** Most parking is for state-owned or employee's vehicles. (Figure 2.3.5) This includes lots at the District and Regional offices, and the Police Station. Limited public parking is available in two lots south of Hillside Street. Short-term (i.e., 10-minute) public parking is located adjacent to the Regional Office. This lot provides an opportunity for visitors to obtain information before beginning activities elsewhere on the reservation.

There are no accessible parking spaces.

There is no bicycle parking.

**Trails.** A short (i.e., 0.1 mile) segment of the Skyline Trail directs hikers, cyclists, and equestrians into a driveway used by the DCR and State Police vehicles, as well as vehicles travelling to the Regional Office. (Figure 2.3.8) The entire segment is classified as being in good condition. There are no informal trails.

The Skyline Trail crosses Hillside Street at the base of the driveway to the Regional Office. A crosswalk is present at this location. (See *Roads*, above.)

**Kiosks and Signs.** There are two kiosks. The first is a traditional free-standing kiosk located along the Skyline Trail to the south of Hillside Street. The second consists of a map board and bulletin board attached to the west side of Regional Office. (Figure 2.3.5)

Signs identifying the Blue Hills Reservation's Headquarters (i.e., Regional Office) and Blue Hills District Office are present and consistent with DCR graphics standards (DCR n.d.a). Other signs in this section are not consistent with current standards.

The Massachusetts State Police sign, which does not need to meet DCR graphic standards, is the only illuminated sign on the reservation.

**Memorials and Markers.** An inscribed stone memorial, identifying the Brian T. Broderick Visitors Center and Stables (2001) is located on the southwest side of the historic stable.

### 2.3.8. Operations Yard

The Operations Yard contains much of the physical resources needed to operate DCR properties in the

Blue Hills District. This section includes repair facilities for power equipment, light-duty trucks, and heavy equipment; fuel storage and dispensing; salt and sand storage for winter operations; storage of heavy equipment; and office space for administering operations. Given its industrial nature, this section is not open to the public.

Information on this section's resources is provided below. Information on the resources of the entire reservation is provided in Section 2.3.1.

### **Natural Resources**

The Operations Yard section is largely developed, there are few natural resources.

Priority Habitat is absent.

#### Water Resources

**Ponds.** There are no ponds.

**Vernal Pools.** There are no certified or potential vernal pools.

**Streams.** There are no perennial or intermittent streams.

**Flood Zones.** There are no 100- or 500-year flood zones.

**Groundwater.** No aquifers have been identified beneath the Operations Yard section.

A leaking fuel storage tank introduced gasoline-associated chemicals (i.e., Volatile Petroleum Hydrocarbons) into the soil and groundwater (Tighe and Bond 2001; Appendix G). Elevated levels of these chemicals are still present (Tighe and Bond 2010).

#### Vegetation

Information on the plants of the Blue Hills Reservation is provided in Appendix H. Information specific to this section of the reservation is generally lacking.

No state-listed plants are known from this section.

**Invasive Species.** Japanese knotweed and garlic mustard grow adjacent to the Carpenter's Shop. Amur peppervine, a plant considered likely to be invasive (Appendix H), is also present. Other species likely occur, but have not yet been identified.

**Natural Communities.** This section's natural communities have not been identified.

**Interior Forests.** There are no interior forests in this section.

#### Wildlife

The operations yard's wildlife has not been inventoried.

**Birds.** Information specific to this section is lacking.

**Mammals.** Information specific to this section is lacking.

**Reptiles.** Information specific to this section is lacking.

**Amphibians.** Information specific to this section is lacking.

**Fish.** Information specific to this section is lacking.

**Insects.** Information specific to this section is lacking.

### **Cultural Resources**

The operations yard is a cluster of utilitarian structures around a central work area; it was developed during the MDC era. The landscape includes four historic buildings: a maintenance garage, Repair Shop #1 and Repair Shop #2 (which are connected), and the Carpenter's Shop. An administrative office, possibly non-historic, occurs in the center of the yard, as does a non-historic salt shed. (Figure 2.3.4)

The maintenance garage is the oldest building in the complex. Constructed in 1932, this single story brick building with a flat roof is six bays long. The narrow vehicle bay openings have not been changed in size over the years, and still use double wooden doors. The northeastern corner of the maintenance garage has damaged and missing bricks.

Repair Shop #1 and Repair Shop #2, constructed in 1937, are long brick buildings with wider vehicle bays and modern garage doors. The buildings are used for equipment storage and repair. Repair Shop #1 is four bays wide and is situated at a right angle from the maintenance garage. Repair Shop #2 is ten bays long, and while connected to Shop #1, its façade is offset and the building angles towards the west. The east side of Repair Shop #1 has cracked mortar. It is unknown if this damage is structural.

The Carpenter's Shop, constructed in 1941, is a one story wood frame, shingled building that is built into

a slope, and the rear side of its stone foundation provides access to the basement level.

Despite masonry issues, all of the buildings in this complex are in satisfactory condition.

### **Recreation Resources**

This section of the reservation is not open to the public, there are no recreation facilities.

There are no known geocaches.

### **Infrastructure**

**Property Boundary.** The Operations Yard section is contiguous with DCR property on all sides; there is no encroachment.

**Buildings and Structures.** There are six buildings; all are owned by the DCR. (Figure 2.3.5; Appendix T) Four of these buildings (i.e., maintenance garage, Repair Shops #1 and #2, and Carpenter's Shop) have already been identified and described in the Cultural Resources section, above. The two non-historic buildings are the office and the salt shed.

The office is a single-story wooden building constructed atop a concrete slab. It contains administrative offices and serves as a control point for refueling vehicles and equipment. There is minor rot damage to its siding where the shingles meet the pavement. It is in adequate condition.

The salt shed is a wood framed and sheathed building constructed atop a concrete slab. It is a single level building approximately two stories high. The height of the building allows bucket loaders and dump trucks access to the road salt stored inside. Vehicle use inside the building has caused structural damage to the rafters. Because of this, the salt shed is considered to be in poor condition and in need of renovation.

Additional information on these buildings is provided in Appendix T.

**Roads.** The operations yard is located on Hillside Street, there are no internal roads.

Traffic counts conducted on Hillside Street, in front of the Operations Yard, identified an average daily traffic of 10,642 vehicles per day (Beta Group, Inc. 2011). This is similar to that recorded in front of the nearby State Police barracks in the Reservation Headquarters section. This level of traffic represents an average annual growth rate of 2.3% and a

cumulative increase of 4,607 vehicles per day (76.3%) since 1985.

**Parking.** Parking for heavy equipment and employee's personal vehicles is located adjacent to the maintenance garage, office, and salt shed. (Figure 2.3.5) There are no pavement markings or designated accessible spaces.

**Trails.** There are no trails.

**Kiosks and Signs.** There are no kiosks.

There are three signs. (Appendix V) A Site/Facility identification sign is located at the entrance to the Operations Yard section. Two non-standard signs identify the offices of the Operations Supervisor and Deputy District Manager.

**Memorials and Markers.** There are no known memorials or markers.

### **2.3.9. Unquity Road**

The Unquity Road section has few natural resources and limited, but significant, cultural and recreation resources. Its primary use is as a transportation corridor.

Information on this section's resources is provided below. Information on the resources of the entire reservation is provided in Section 2.3.1.

#### **Natural Resources**

The most prominent natural resources in this section are Pine Tree Brook and its associated wetlands.

There are no records of state-listed species for this section, nor was it included in any of the NHESP's recommended management units for conserving the reservation's rare plants and wildlife.

There is little Priority Habitat (0.6 acres). (Figure 2.3.3)

#### **Water Resources**

**Ponds.** There are no ponds in this section or its associated Conservation Restriction.

**Vernal Pools.** No vernal pools, certified or potential, have been identified.

**Streams.** A variety of perennial streams feed into Pine Tree Brook, which is also a perennial stream. (Figure 2.3.2)

There are three intermittent streams in the associated Conservation Restriction; all three flow eastward into Pine Tree Brook.

**Flood Zones.** An extensive 100-year flood zone is associated with Pine Tree Brook east of Unquity Road. A portion of this flood zone is within the Unquity Road section. (Figure 2.3.2) There are no DCR buildings, structures, or roads in this flood zone.

The area along Pine Tree Brook to the east of Unquity Road is managed by the Town of Milton for flood control. (Please see Section 3.2.9 for additional information.)

There are no flood zones within the associated Conservation Restriction.

**Groundwater.** There are no known aquifers beneath the Unquity Road section or its associated Conservation Restriction.

### Vegetation

Information on the plants of the Blue Hills Reservation is provided in Appendix H. Information specific to this section of the reservation is generally lacking.

No state-listed plants are known from this section.

**Invasive Species.** Asiatic bittersweet grows on Ulin Rink, and Japanese knotweed occurs along the western edge of the rink's parking lot. Other species likely occur but have not yet been identified.

**Natural Communities.** This section's communities have not been inventoried. However, the following two communities have been identified:

- Cultural Grassland (atop former landfill); and
- Deep Emergent Marsh.

**Interior Forests.** There are no interior forests in this section.

### Wildlife

There has been no formal inventory work of this section's wildlife. As a result, there is no site-specific information.

**Birds.** Information specific to this section of the reservation is lacking.

**Mammals.** Information specific to this section of the reservation is lacking.

**Reptiles.** Information specific to this section of the reservation is lacking.

**Amphibians.** Information specific to this section of the reservation is lacking.

**Fish.** MassWildlife stocks trout in Pine Tree Brook. Three species, the creek chubsucker, chain pickerel, and swamp darter have been collected in this stream. (Appendix O)

**Insects.** Information specific to this section is lacking.

## **Cultural Resources**

This section of the reservation is a small narrow area that focuses on Unquity Road. As such, the only cultural resources in this area are the Pine Tree Brook Culvert and Unquity Road itself. (Figure 2.3.4) The former is the largest culvert in the reservation, and the latter is one of the reservation's historic parkways.

## **Recreation Resources**

The Max Ulin Memorial Skating Rink, one of three on the reservation, is located at the northern end of Unquity Road. (Figure 2.3.5) It is used seasonally, from approximately September through March, free-skating, hockey practice, and hockey games. It is equipped with seated ice skating sleds for accessible recreation.

Recreational fishing takes place in Pine Tree Brook. Access to the brook is available from Unquity Road near its intersection with Harland Road.

Border and Valley paths connect trails in the Great Blue Hill section with those in the Buck Hill section.

There are two known geocaches.

## **Infrastructure**

**Property Boundary.** There is no known encroachment.

**Buildings and Structures.** There are one building and two structures in the Unquity Road section. One building and one structure are owned by the DCR. (Figure 2.3.5)

Ulin Rink is a steel frame and masonry block building with metal and masonry sheathing and a metal roof. A recent assessment of the facility (Rink Management Services Corporation 2008) reported it to be in good structural condition with minor repair

and energy efficiency issues. Its condition has been assessed as adequate.

Pine Tree Brook Reservoir Dam (MA-00824) is located along Canton Avenue. The DCR's Office of Dam Safety has classified this dam as "non-jurisdictional" based on low storage volume and dam height. Such dams are not classified for hazard potential.

The Pine Tree Brook Spillway is located along Pine Tree Brook, south of the intersection of Unquity Road and Harland Street. It is property of the Town of Milton.

Additional information on buildings and structures is provided in Appendix T.

**Roads.** Unquity Road extends the length of this section. The western end of Harland Street, a Town of Milton Road, and an unnamed connector between Unquity Road and Hillside Street also occur in this section.

Traffic counts were recently made at two locations on Unquity Road; the first near the north side of Ulin Rink, and the second near where Border Path crosses the road (Beta Group, Inc. 2011). Counts near Ulin Rink identified an average daily traffic of 9,095 vehicles; this represents an average annual growth rate of 1.4% and a cumulative growth of 2,610 vehicles per day (40.2%) since 1985. Counts near Border Path identified an average daily traffic of 7,382 vehicles; an average annual growth rate of (1.2%), and a cumulative growth of 1,865 vehicles per day (33.8%) since 1985.

**Parking.** There are three parking areas; all are open to the public. (Figure 2.3.5; Appendix U) One provides parking for Ulin Rink, another provides limited parking for fishing access to Pine Tree Brook, and the third provides parking for trail access. The surfaces of the first two parking areas are paved; the surface of the third is a combination of gravel and crushed stone. All are in good repair.

**Trails.** There are 2.1 miles of official trails and 0.4 miles of informal trails. (Figure 2.3.8) Approximately 0.2 miles of trails are considered to be in poor condition.

Most trail segments connect to the reservation's trails network. A trail spur connects Border Path with a small parking area at Pine Tree Brook.

**Kiosks and Signs.** A kiosk is located at the Hancock Hill trailhead. (Figure 2.3.5)

There are two signs. The first is a Site/Facility Identification sign located along Unquity Road at Ulin Rink. It bears the text "Max Ulin Memorial Skating Rink." This sign does not identify the facility as part of the Blue Hills Reservation.

The second sign is located at the intersection of Unquity and Chickatawbut roads. It identifies directions to four highways and three municipalities.

**Memorials and Markers.** There are no known memorials or markers.

### 2.3.10. Buck Hill

The Buck Hill section has few cultural or recreation resources, and limited infrastructure. Its primary uses are as wildlife habitat and for passive recreation. The summit of Buck Hill provides one of best views in the reservation.

Information on this section's resources is provided below. Information on the resources of the entire reservation is provided in Section 2.3.1.

#### Natural Resources

Buck Hill, like the neighboring Great Blue Hill and Chickatawbut Hill sections, contains a mosaic of freshwater wetlands, upland forests, and rocky ridge tops. As a result, it provides habitat for many of the species that occur in adjacent sections of the reservation.

Nearly all of the Buck Hill section (769.5 acres, 99.1%) is Priority Habitat. (Figure 2.3.3)

#### Water Resources

**Ponds.** Hillside Pond is three acres in area. (Figure 2.3.2)

**Vernal Pools.** Five vernal pools, one certified and four potential, have been identified. (Figure 2.3.3)

**Streams.** The Blue Hill River, a perennial stream, flows along this section's southern border. An additional perennial stream flows north from Hillside Pond toward Pine Tree Brook. (Figure 2.3.2)

Intermittent streams flow both north, into the Neponset River Watershed, and south into the Weir River watershed.

**Flood Zones.** Wetlands along the Blue Hill River lie within a 100-year flood zone. (Figure 2.3.2) Beech Run, and wetlands in the northeast corner of the section lie within a 500-year flood zone. There are no buildings, structures, or roads in either flood zone.

**Groundwater.** There are no known aquifers beneath the Buck Hill section.

### Vegetation

Information specific to this section of the reservation is generally lacking. Palmer (2011) reported three species of grasses and an old European larch plantation. No state-listed plants are known from this section.

Information on the plants of the Blue Hills Reservation is provided in Appendix H.

**Invasive Species.** Common reed is abundant in drainage areas along Hillside Street (e.g., opposite the Operations Yard section) and in wetlands along Route 28. Other species likely occur but have not yet been identified.

**Natural Communities.** Four communities have been identified:

- Oak–Hickory Forest;
- Ridgetop Pitch Pine–Scrub Oak;
- Red Maple Swamp; and
- Shallow Emergent Marsh.

The Ridgetop Pitch Pine-Scrub Oak community on the top of Buck Hill is perhaps the best example of this community type in the entire reservation.

The majority of this section’s communities have yet to be classified.

**Interior Forests.** A single block of interior forest, 84.5 acres in size, is located to the south and east of Buck Hill.

### Wildlife

The wildlife of the Buck Hill section is largely unknown; few inventories have been conducted. Information on the wildlife of adjacent sections

**Birds.** Information specific to this section of the reservation is lacking.

**Mammals.** Information specific to this section of the reservation is lacking.

**Reptiles.** The NHESP (2007a) has identified the entire Buck Hill section as habitat for copperheads and timber rattlesnakes. The Breeze Hill and Old Route 128 areas have also been identified as rare turtle habitat.

**Amphibians.** A variety of amphibians have been observed along Old Route 128 during spring migration. Species observed include the northern red-backed salamander, two-lined salamander, spotted salamander, spring peeper, green frog, wood frog, pickerel frog, bullfrog, and American toad (McWade and Conrad 1995, McWade et al 1996).

Much of this section has been identified as rare salamander habitat (NHESP 2007a).

**Fish.** Two species, golden shiner and swamp darter, have been collected in Hillside Pond. (Appendix O)

**Insects.** Suitable habitat exists for Hentz’s redbelly tiger beetle. These beetles occur under similar conditions elsewhere on the reservation, and may be present in the Chickatawbut Hill section (NHESP 2007a).

### **Cultural Resources**

The Buck Hill section of the reservation, although large in area, contains few cultural resources. (Figure 2.3.4)

**Bugbee Path Cellar Hole.** A cellar hole surrounded by stone walls (pre-1895) located along the Bugbee Path is of unknown origin but pre-dates the establishment of the reservation.

**Randolph Avenue Stable.** This stable is located on the west side of Route 28 (Randolph Avenue), south of the intersection with Chickatawbut Road. It stands alone, not located nearby any other park administrative buildings or structures. This shingle style stable, a Stickney and Austin design, was constructed in 1908 to house horses and associated gear for patrol use on the eastern side of the reservation.

Three bays wide and 1.5 stories tall, the front gambrel roofed building with wide overhanging soffits and cedar shingle siding is built into a slope on a mortared stone foundation, providing on-grade access to the basement level at the side of the building.

In October 1998, the stable suffered a minor fire that was started by vandals. It has been reported that

extinguishing the fire did more damage to the building than did the fire itself. In 1999, the agency considered relocating this stable adjacent to the Regional Office; this plan never moved forward.

Although this building has been recently roofed, not all doors and windows are effectively sealed to the elements and its overall condition is considered unsatisfactory. The building is currently used for storage.

### Recreation Resources

There are no recreation facilities. Recreational activities are limited to those associated with trails.

There are four known geocaches.

### Infrastructure

**Property Boundary.** There is no known encroachment.

**Buildings and Structures.** The Randolph Avenue Stable is the only building in the Buck Hill section. (Figure 2.3.5) It is in fair condition, requiring excessive corrective maintenance and repair. (Appendix T) There is no recent assessment of its structural and code deficiencies.

Additional information on this building is provided in Appendix T.

**Roads.** Two internal parkways (Hillside Street and Chickatawbut Road), a State Highway (Route 28), and an Interstate Highway (I-93) are associated with Buck Hill.

A crosswalk and crosswalk signal are located at the intersection of Chickatawbut Road and Route 28. Although this crosswalk provides a pedestrian connection between the Buck Hill and Chickatawbut Hill sections, it is not associated with the reservation's trails network.

Planned short-term improvements to the I-93/Route 24 interchange (Boston Regional Metropolitan Planning Organization 2007) will result in an increased volume of commuter traffic on Chickatawbut Road. Long-term alternatives, if implemented, will result in the loss of parkland in this section.

**Parking.** There are three parking areas; all are located along Route 28. (Figure 2.3.5) These lots are gravel and in poor repair. Erosion of gravel from

along the pavement's edge has resulted in drop offs too large for many passenger vehicles.

Legal parking is available at many locations along the shoulder of Chickatawbut Road. These are not mapped.

**Trails.** There are approximately 17.7 miles of official trails and 1.5 miles of informal trails. (Figure 2.3.8) nearly 1.2 miles of official trails, the most in any section of the reservation, are classified as being in poor condition.

**Kiosks and Signs.** Two kiosks are located adjacent to parking lots along Route 28. (Figure 2.3.5)

There are four signs. (Appendix V) A Gateway Main Identification sign is located in the southwest corner of the Route 28 and Chickatawbut Road intersection. The remaining three signs identify roads.

**Memorials and Markers.** There are no known memorials or markers.

### 2.3.11. Chickatawbut Hill

Chickatawbut Hill contains important natural and cultural resources. Recreation facilities and other visitor amenities are limited. The main uses of this area are nature viewing and trail-based recreation.

Information on this section's resources is provided below. Information on the resources of the entire reservation is provided in Section 2.3.1.

### Natural Resources

Chickatawbut Hill is home to the reservation's rarest, and most endangered, natural resources.

This section is essentially all Priority Habitat. Only 0.26 acres are not so designated. (Figure 2.3.3)

### Water Resources

**Ponds.** There is one pond, the Blue Hills Reservoir. (Figure 2.3.2) The area of the reconstructed reservoir is 7.5 acres.

**Vernal Pools.** Thirty-three vernal pools, 23 certified and 10 potential, have been identified. (Figure 2.3.3)

**Streams.** There are four perennial streams. Pine Tree Brook and Furnace Brook are in the Neponset River Watershed, and Bouncing Brook and an unnamed perennial stream are in the Weir River Watershed. (Figure 2.3.2) Unnamed intermittent streams are



associated with the headwaters to Great Cedar Swamp, and unnamed wetlands in the area.

**Flood Zones.** A 500-year flood zone is associated with Great Cedar Swamp, Bouncing Brook, the headwaters of Furnace Brook, and an isolated wetland along Route 28. (Figure 2.3.2) There are no buildings, structures, or roads within these flood zones.

**Groundwater.** No aquifers have been identified beneath the Chickatawbut Hill section.

### Vegetation

Over 130 species of vascular plants were recently recorded in the Chickatawbut Hill section (Rawinski 2010a; Appendix H.) Although not an inventory, the trip report characterizes this section's most prominent plants.

Tree canopy includes a variety of oaks, pines, pignut hickory, and white ash. Although mature trees are present, regeneration of these species is being suppressed by deer browsing. Rawinski (2010a) suggests that the future of the forest is "larger and more numerous" gaps in the tree canopy "unless the deer impact is lessened." It is unknown if similar deer-induced changes in vegetation are occurring elsewhere on the reservation, including the portion of this section to the north of Chickatawbut Road.

Common shrubs include blueberries and black huckleberry. Scrub oak is present, and locally abundant, in burned areas and ridge tops. Several plants, including wintergreen, poison ivy, Virginia creeper, staghorn sumac, Allegheny blackberry, and whip dewberry are greatly reduced in distribution and abundance; likely due to deer (Rawinski 2010a).

Wildflowers common to much of southern New England, such as moccasin flower, wild sarsaparilla, and Canada mayflower, are largely absent. Deer-resistant plants, including thistle, rattlesnake weed, Indian pipe, and orange grass remain common and widespread (Rawinski 2010a). Grasses, sedges, ferns, and rushes are also thriving.

An additional 25 species of plants, largely grasses, rushes, and forbs, were identified by Palmer (2011). Many were associated with the shore of the Blue Hills Reservoir.

Two state-listed plants, lesser snakeroot and cankerweed, are known from this section. These

plants are present in low numbers, with fewer than 10 known occurrences of each. Some of the lesser snakeroot is located in, or adjacent to, trails and may be susceptible to trampling (NHESP 2007a). Both species are being browsed by deer (Rawinski 2010a).

**Invasive Species.** Asiatic bittersweet, common buckthorn, Japanese barberry, tree-of-heaven, and garlic mustard are present in this section's forests. In some locations (e.g., Pakomet Springs, CCC Camp) garlic mustard is present as a monoculture ground cover and obscures cultural resources.

**Natural Communities.** The following six communities have been identified:

- Acidic Rock Cliff;
- Acidic Rock Summit/Rock Outcrop;
- Acidic Talus Forest/Woodland;
- Atlantic White Cedar;
- Deep Emergent Marsh; and
- Ridgetop Pitch Pine-Scrub Oak.

There are multiple ridge tops and outcrops with examples of the Ridgetop Pitch Pine-Scrub Oak community type. The condition of this community type varies among these examples.

The majority of this section's communities have yet to be classified.

Remnants of red pine plantations are present on the southern slopes of Chickatawbut, Fenno, and Kitchamakin hills. Most of these pines are dead or senescent. Because they were planted, these stands of red pine are not considered to be natural communities.

**Interior Forests.** Two blocks of interior forest are located in this section. The first, a 223.5-acre block, is located to the south and east of Chickatawbut, Fenno, Kitchamakin, and Nahanton hills. The second block, 212.0 acres in size, is located north of Chickatawbut Road in the vicinity of Fox Hill.

### Wildlife

Chickatawbut Hill and Ponkapoag are the two most important sections of the reservation for the conservation of rare wildlife. Unlike Ponkapoag's wildlife, the wildlife of Chickatawbut Hill has largely gone unsurveyed. As a result, there are

significant gaps in information on this section's wildlife.

**Birds.** Mass Audubon's research and education programs at Chickatawbut Hill provide information on this section's birds. Smith (1996) reported a variety of migratory hawks and falcons banded at the education center. (Appendix K) Eastern Bluebirds, tree swallows, house wrens, and chimney swifts were all documented to nest here (Smith (1996). Great horned owls, eastern screech-owls, and Canada geese are reported from elsewhere in this section (McWade and Conrad 1996).

The NHESP (2007a) did not identify any state-listed birds in the Chickatawbut Hill section.

**Mammals.** There have been no formal mammal surveys of the Chickatawbut Hill section. Instead, information has been obtained through the use of video monitoring and through casual observation. Motion-activated cameras have documented the presence of white-tailed deer, fisher, coyote, and red fox at the Norman Smith Environmental Education Center (Twining 2009a, Echandi 2011a). White-footed deermice have also been observed (Smith 1996).

**Reptiles.** Copperheads and eastern timber rattlesnakes are present in the Chickatawbut Hill section. Both species are listed as endangered in Massachusetts. The NHESP (2007a) has identified the entire section as habitat for these species.

The reservation's rattlesnake population was recently estimated to be 50–100 individuals; the copperhead population is believed to be larger (NHESP 2009).

Because these snakes occur in only three locations in Massachusetts, their continued existence in the state depends to a great extent upon their protection at the Blue Hills. Areas identified as rare snake habitat, such as the Chickatawbut Hill section, is especially important for their continued existence.

Road kill in the Chickatawbut Hill section has historically affected populations of these snakes (NHESP 2007a); it continues today.

Fungal infections were frequently observed on state-listed snakes in 2009 (NHESP 2009). It is unknown if and how these infections affect individual health and population levels.

There is limited information on this section's other reptiles. McWade and Conrad (1995) reported a northern water snake in one of Chickatawbut Hill's wetlands. Echandi (2011a) also reported northern water snakes, as well as snapping turtles, common garter snakes, and North American racers. Spotted turtles are locally common.

The NHESP (2007a) identified the headwaters of Furnace Brook as rare turtle habitat.

**Amphibians.** A variety of amphibians have been documented in vernal pools and observed crossing Chickatawbut Road, including spotted salamanders, red-backed salamanders, spring peepers, wood frogs, green frogs, and American Toads (McWade and Conrad 1995, Twining 2009b).

The NHESP (2007a) has identified rare salamander habitat in the vicinity of Chickatawbut, Fenno, and Kitchamakin hills.

**Fish.** Fish populations occurred in the Blue Hills Reservoir prior to its recent reconstruction. It is unknown if any fish have been introduced to the reservoir. It is also unknown if there are fish in Pine Tree Brook or Great Cedar Swamp.

**Insects.** Jaffe (2010a, 2010b) reported 11 species of butterflies and moths, including skippers, swallowtails, and true brushfoots. (Appendix P) Of note, is an unconfirmed observation of Gerhard's underwing; a state-listed moth associated with Ridgetop Pitch Pine-Scrub Oak communities.

Suitable habitat exists for Hentz's redbelly tiger beetle. These beetles occur under similar conditions elsewhere on the reservation, and may be present in the Chickatawbut Hill section (NHESP 2007a).

A variety of insects (e.g., boatmen, caddisflies, giant water bugs, predaceous diving beetles) have been observed during vernal pool surveys (e.g., McWade and Conrad 1995).

### Cultural Resources

Five historic landscapes occur within the Chickatawbut Hill section of the reservation. These landscapes include a house site that predates the reservation, two different recreational landscapes from the MDC era that were developed by the CCC as well as a CCC Camp, and a landscape associated with cold war era missile defense. These landscapes

are dispersed through the western half of the Chickatawbut Hill area. (Figure 2.3.4)

***Glover Site Landscape.*** The Glover site is a pre-1895 former house site that is located off of the Braintree Pass Path. A cellar hole is the primary remnant of this former homestead. There are also two faint foundations (probably from former outbuildings), stone walls, and field remnants.

***CCC Camp Landscape.*** This camp, located on Sawcut Notch Path, served as the home to CCC enrollees in Camp SP #1, Company 1170 from 1933 until 1937. The camp, once home to 24 buildings and structures is now an archaeological landscape consisting of only two foundation remnants, some walls and circulation features, and a concrete bunker. A non-historic feature, an engraved granite marker, is also located on the site.

***Chickatawbut Overlook Landscape.*** This landscape is a collection of park rustic features along both sides of Chickatawbut Road. It includes an overlook, a picnic area with two stone barbecue grills, steps, a pavilion, an observation tower, and the viewshed seen from both the tower and overlook.

This area was constructed in 1934 and 1935 by the CCC as a road-side pull-off area, reflecting the increased presence of automobiles in the reservation during the 1930s. Arranged on an axis from an overlook on the north side of the road, southwards upslope to the observation tower, the area was intended as a place to take a short rest and enjoy the view towards the Boston skyline.

The overlook consists of two small parking areas, and a grassed area for picnicking edged by a mortared fieldstone and granite wall framing the view towards the city. A small cast iron viewscope is located here for visitors to further enjoy the view. On the south side of the road is another small grassy picnic area, completed with two mortared stone barbecue grills. Each grill is double sided, and located on a concrete pad. A set of granite steps leads up the slope to the south where the pavilion and the observation tower are located. The overlook is listed in the National Register as a contributing feature of the reservation's historic parkways landscape.

The pavilion, a rectangular shaped, open air stone pavilion has a hipped roof. The cedar shingle roof has recently been removed and work is underway on

an in-kind replacement. The pavilion also has some graffiti.

The observation tower, located adjacent to the pavilion, is a stone tower constructed of partially dressed granite block, with an upper story that was open for viewing. The tower is no longer open to the public. The observation tower has also been tagged with graffiti. The observation tower is listed in the National Register.

***Pakomet Spring Landscape.*** The Pakomet Spring landscape is located along the southern end of Route 28. Constructed by the CCC in 1936–1937, this pull-out has mortared stone walls flanking the entrance to a U-shaped drive. The area formerly included guard rails, landscaping, tables, and seats, but these features are no longer present, and the landscape is now covered with invasive vegetation and no longer open for use. This landscape was constructed as a road-side pull-off, reflecting the increased presence of automobiles in the reservation during the 1930s.

***Nike Integrated Fire Control (IFC) Area Landscape.*** The Nike IFC Area landscape is located atop Chickatawbut Hill, with a view of the city skyline and the harbor. It consists of a small campus that includes four one story concrete block buildings (two of which have tall brick ventilation stacks) with flat or low sloped roofs, a dining hall, a dormitory, an office, and a pump house containing a water tank. A concrete radar pad is located just upslope of these buildings. This summit complex is surrounded by a fence.

These resources were constructed in 1953 and 1954 as part of the Nike Battery BO-55 missile complex. The IFC Area, its associated Launcher Area in the Ponkapoag East section, and an off-reservation barracks area, comprised one of 35 Nike Ajax missile complexes in New England.

Following its use by the Army, this facility was leased to Citizenship Training Group, Inc. in 1968 and the buildings rehabbed in the early 1970s. The IFC's four buildings are in excellent condition, and currently in use as part of the Norman Smith Environmental Education Center at Chickatawbut Hill. There are a few non-historic outbuildings and structures (e.g. garage, observation tower).

## Recreation Resources

Facility-based and non-facility-based recreation takes place in the Chickatawbut Hill section. (Figure 2.3.5)

The Massachusetts Audubon Society operates a summer day camp at the Norman Smith Environmental Education Center. Although interpretive in nature, many of the camp's activities are also recreational. Campers "discover the world of nature through exploration, hikes, games, crafts, living history and more" (Mass Audubon 2010).

The other facility-based recreation area is the Chickatawbut Overlook. Picnic tables and stone grills are available for public use on a first-come first-served basis. There are no universally accessible picnic tables.

Non-facility-based recreation includes hiking, running, horseback riding, nature study, and rock climbing. The first four activities are trail-based and occur year-round. Rock climbing at Rattlesnake Rocks is restricted to organized groups with Special Use Permits.

Although mountain biking is prohibited in the reservation east of Route 28, including the entire Chickatawbut Hill section, it occurs regularly.

Recreation in the Chickatawbut Hill section has the potential to negatively impact state-endangered plants and wildlife associated with rocky outcrops and trails. Trail-based recreation may trample lesser snakeroot plants (NHESP 2007a) and disrupt rare snakes during sensitive times of the year (NHESP 2007b, 2007c). Several trails are within 200 feet of snake dens, a distance considered too close (NHESP 2007a).

There are 15 known geocaches. Off-trail recreational activities, such as geocaching, are incompatible with rare species management (NHESP 2007a) in this section.

## Infrastructure

**Property Boundary.** There is no known encroachment.

**Buildings and Structures.** There are fifteen buildings and structures. (Figure 2.3.5) They are located at three locations: Chickatawbut Hill, the Chickatawbut Overlook, and the Blue Hill Reservoir.

Ten buildings and structures are located on Chickatawbut Hill. (Appendix T) The education center's permanent buildings are owned by the DCR. This includes the administration building, dining hall, dormitory, tank house, and garage. The first four buildings are classified as being in good condition; the garage is classified as excellent condition.

Two temporary buildings, a shed and a bird blind, belong to Mass Audubon. Both are in good condition. An observation tower, which is in good condition, is also the property of Mass Audubon.

Two water tanks are located down slope from the education center. These tanks belong to the MWRA. Their condition is unknown.

A picnic pavilion and an observation tower are located at Chickatawbut Overlook. Both structures are owned by the DCR. They are in fair condition, in need of excessive corrective maintenance and repair. Additional information on these structures is included in the Cultural Resources description above.

Two underground storage tanks and an above ground building are located at the reservoir. These buildings are the property of the MWRA. They are new and in excellent condition.

Additional information on these buildings and structures is provided in Appendix T.

**Roads.** Two internal parkways (Chickatawbut and Wampatuck roads), a state highway (Route 28), and an interstate highway (I-93) are associated with Chickatawbut Hill. A paved administrative road provides access to the Norman Smith Environmental Education Center.

Traffic count data, from four locations along Chickatawbut Road, range from 5,282 to 6,436 vehicles per day and represent average annual rates of increase of 0.9% to 1.9% per year since 1985 (Beta Group, Inc. 2011). Cumulative increases in traffic range from 1,298 to 2,156 vehicles per day (25.7% to 58.7%) during this time period.

The average daily traffic on Wampatuck Road is approximately one-half that of Chickatawbut Road. An average of 2,768 vehicles per day was recorded in 2010. This represents an average annual increase of 0.6%; and a cumulative increase of 369 vehicles (15.4%) since 1985.

A crosswalk and crosswalk signal are located at the intersection of Chickatawbut Road and Route 28. It provides a pedestrian connection between the Chickatawbut and Buck Hill sections. There is no pedestrian connection between this sidewalk and the nearby parking lot at Braintree Pass Path.

Two sections of sidewalk are located to the north and south of Chickatawbut Road, at the Chickatawbut Overlook. A cobblestone walk crosses the road, connecting the two sidewalks. There are no crosswalk markings or signs at this location.

**Parking.** There are five parking areas; four are public and one is restricted. (Figure 2.3.5) Public parking is at paved lots at Braintree Pass Path and Route 28, and also to the north and south of Chickatawbut Road at the overlook. None of these lots has designated HP spaces. The fourth public lot, located on Chickatawbut Road at the western corner of the Blue Hills Reservoir, has one designated HP space. This lot, which is under the control of the MWRA, is currently closed to the public. It is expected to be open for public use by the summer of 2011. Limited public parking is also available off Wampatuck Road at Sawcut Notch Path.

Restricted parking is located at the education center. These spaces are restricted for use by guests and employees. A designated HP parking space is available; it lacks appropriate signs and pavement markings.

Parking for MWRA employees is provided along paved roads within the restricted portion of the Blue Hills Covered Storage Facility. There is no formal parking area.

**Trails.** There are approximately 34.5 miles of official trails; and 5.4 miles of informal trails. (Figure 2.3.8) This represents approximately one-third of the reservation's official and informal trails. Only 0.5 miles of official trails are classified as being in poor condition.

**Kiosks and Signs.** There are five kiosks; one at each of the following locations: Pakomet Springs, the parking lot at Braintree Pass Path and Chickatawbut Road, Sawcut Notch Path at Route 28, Chickatawbut Overlook, and the Skyline Trail at Chickatawbut Road. (Figure 2.3.5) The kiosk at the overlook is missing shingles.

A variety of other signs are present. There are three Main Identification signs that identify the reservation, and a Cantilevered Identification sign at the entrance to the Norman Smith Environmental Education Center. (Appendix V) An Interpretive Wayside exhibit, one of only two on the reservation, is located at the overlook. Its metal frame is rusted and there is peeling paint. Other signs identify roads, provide directions, and identify the location of the former CCC Camp. It is unclear if a "Welcome to Milton" sign is located on the reservation or within the Route 28 right-of-way.

**Memorials and Markers.** A carved stone marker, in honor of Camp SP #1 Company 1170, is located at the former site of the CCC Camp in the northwest corner of this section.

### 2.3.12. Quincy Quarries

The Quincy Quarries section is a highly modified landscape. It has been subject to industrial quarrying, the filling of quarries, and the development of recreation facilities. Its primary uses are active and passive recreation, and wildlife habitat. Despite its historical significance, little interpretation or environmental education takes place.

Information on this section's resources is provided below. Information on the resources of the entire reservation is provided in Section 2.3.1.

#### Natural Resources

The amount of natural resources information varies in relation to Ricciuti Drive. Information is available for the portion of the quarries north of this road, while little information exists on the resources south of this road.

Approximately two-thirds of the Quincy Quarries (125.9 acres, 66.6%) is designated Priority Habitat; all of which occurs south of Ricciuti Drive. (Figure 2.3.3)

#### Water Resources

**Ponds.** There are no named ponds. Open water areas are present in some of the former quarries. (Figure 2.3.2)

**Vernal Pools.** There are six vernal pools, all are certified. (Figure 2.3.3)

**Streams.** Furnace Brook, a perennial stream, is located along the southern margin of the Quincy Quarries section. There are no mapped intermittent streams.

**Flood Zones.** Portions of Furnace Brook are located in 100- and 500-year flood zones. (Figure 2.3.2) There are no buildings, structures, or roads in these flood zones.

**Groundwater.** There are no DEP identified aquifers beneath the Quincy Quarries.

The Ricciuti Drive sports fields are located at the site of the former Quincy landfill. Although capped, the landfill closure, including post-closure monitoring, has not been completed. Because of this, Mass DEP identifies this location as an active 21E site (i.e., waste site). Such sites are generally considered to have the potential to affect groundwater.

A strategy for completing the cleanup of this site is specified in an Administrative Consent Order between the DEP and the DCR (DEP and DCR 2004), and the site is considered adequately regulated (Zupkus 2009).

### Vegetation

Approximately 80 species of plants have been recorded from the Quincy Quarries (Hollenbeck and Eck 1986; AECOM 2010; Appendix H). Because these surveys focused on the grasslands and wetlands north of Ricciuti Drive, it is highly likely that additional species occur south of Ricciuti Drive, but have not yet been identified.

No state-listed plants are known from this section.

**Invasive Species.** The following species of invasive plants are present in the former quarry area north of Ricciuti Drive (AECOM 2010): autumn olive, black locust, purple loosestrife, reed-canary grass, common reed, Japanese knotweed, multiflora rose, and tree-of-heaven. Asiatic bittersweet is common along Mullin Street. Other species may occur but have not yet been documented.

**Natural Communities.** Two communities have been identified:

- Cultural Grassland (i.e., ball fields, area between climbing walls); and
- Deep Emergent Marsh.

Invasive plants are common in the examples of these communities located north of Ricciuti Drive. The majority of this section's communities, including all of those south of Ricciuti Drive, have yet to be classified.

**Interior Forests.** There are no interior forests in this section.

### Wildlife

There is very little information on the wildlife of the Quincy Quarries. Most is anecdotal, and does not provide insight into the variety and abundance of wildlife taxa.

**Birds.** Hollenbeck and Eck (1986) reported cormorant and kingfisher, presumably double crested cormorant and belted kingfisher, at the quarries. Echandi (2011a) reported observing red-tailed hawks, "crows," great blue heron, mallards, and black vultures.

**Mammals.** Information specific to this section is lacking.

**Reptiles.** Northern American racer, northern water snake, common garter snake, and spotted turtle have been reported from this section (Hollenbeck and Eck 1986, Echandi 2011a).

The NHESP (2007a) has identified all of the Quincy Quarries south of Ricciuti Drive as rare snake habitat.

**Amphibians.** Spotted salamanders breed in several vernal pools south of Ricciuti Drive. Bullfrogs, spring peepers, and wood frogs are also present (Echandi 2011a).

**Fish.** Hollenbeck and Eck (1986) reported "goldfish" in the flooded quarries. Although the draining and filling of the quarries eliminated these and other introduced fish species from most quarries, a species tentatively identified as goldfish is still present in the Little Granite Quarry (Echandi 2011a).

It is unknown what species of fish, if any, are present in Furnace Brook.

**Insects.** Information specific to this section is lacking.

## Cultural Resources

Quincy Quarries contains a complex industrial landscape of filled and unfilled quarries, remnants of a railway, and one building. A variety of objects, such as steel rods and anchor bolts may be found in the quarries; stone debris and cut granite blocks with drilled holes and drill scars may be found throughout much of the landscape (e.g., GEI Consultants, Inc. 1998). These are associated with the Quincy granite industry, which encompassed over 50 different granite quarries that were active from 1825 through 1963.

There are five former quarries solely or partially under DCR ownership: Granite Rail, Little Granite Rail, Swingle's (partially on DCR land, partially on City of Quincy land), Berry's, and Bunker Hill. The latter is the quarry that launched the Quincy granite industry. The Granite Rail quarries were drained and filled in the early 2000s, while the other three former quarries are now water bodies, due to water seepage.

**Granite Railway.** Two structures, the southern Granite Railway terminus, the start of the Granite Railway line, and the elevated railway fill, are associated with the Granite Railway, one of the earliest railways in the U.S. This railway was constructed in 1826 to facilitate transport of granite from the Bunker Hill Quarry to the Neponset River. It was then shipped to Charlestown for use in the construction of the Bunker Hill Monument. This railroad is listed in the National Register.

**Granite Rail Quarry Compressor House.** The compressor house is likely the only remaining building associated with quarry operations. A two story brick building with a hipped roof constructed circa 1900, this building is currently used for storage. The building has multiple issues including a leaking roof and damaged gutters and soffits. There is also a variety of electromechanical problems and building code violations (SAR Engineering, Inc. 1997). It is considered to be in unsatisfactory condition.

**Other Landscape Features.** Two additional landscape features that are not owned by DCR, but are located nearby DCR property and associated with the Quincy granite industry include the Lyons Turning Mill, owned by Quarry Hills Associates, and the northern terminus of the Granite Railway. The railway terminus was purchased by the MDC in

1963 and turned over to the City of Quincy in 1968. (Appendix W)

**Bunker Hill Lane.** Two additional buildings, a house and a garage at 57 Bunker Hill Lane, also occur in the Quincy Quarries section of the reservation. They are not associated with the Quincy granite industry. These buildings were purchased in 2009 in order to acquire a right-of-way associated with the property. The MHC has reviewed this property (Loughlin 2009), and demolition will take place in the near future.

## Recreation Resources

Quincy Quarries contains the reservation's largest athletic facility complex. Five fields, one soccer and four baseball, are located off Ricciuti Drive on top of the former Quincy landfill. (Figure 2.3.5)

The rock walls created by quarrying operations are used for recreational rock climbing. The Quincy Recreation Department offers rock climbing clinics for Quincy youth. The AMC also offers climbing clinics. Commercial enterprises, such as Eastern Mountain Sports, also offer rock climbing training at the quarries.

Passive recreation, such as hiking, takes place on the quarries' trails.

There are six known geocaches.

Illegal OHV use, originating from an abutting property, takes place.

## Infrastructure

**Property Boundary.** Encroachments are likely occurring along Ricciuti Drive and Springfield Street.

**Buildings and Structures.** There are 14 buildings and structures. Eleven of these, including eight dugouts and a combination concession building/comfort station, are in the vicinity of the athletic fields. All buildings and structures associated with the Quincy Youth Baseball fields are in excellent condition. (Figure 2.3.5)

There are two cell tower facilities near the ball fields; one on DCR property and the other on private property. The western-most facility, located north of the soccer field, is an AT&T building and tower; it is located on the reservation. The other cell phone

facility (i.e., Verizon), located northeast of the ball fields, is on a private inholding.

A wooden shed of unknown origin and ownership is located on the edge of the northwestern-most parking lot. It is in fair condition. This shed is not secured, and is a potential safety hazard.

The Granite Rail Quarry compressor house is located on Mullin Avenue. This building, which is described in the Cultural Resources section, has multiple structural and mechanical problems. From an infrastructure perspective, this building is classified as being in poor condition and in need of renovation.

A residential house and garage are located at 57 Bunker Hill Lane. The previous owner gutted the house for a planned renovation that did not take place. Both the house and the garage are classified as being in poor condition; they are scheduled to be demolished in Fiscal Year 2011 (i.e., prior to July 2011).

Additional information on these buildings and structures is provided in Appendix T.

**Roads.** Ricciuti Drive, a municipal road, divides the Quincy Quarries section. There are three internal roads; all are associated with parking lots. The first internal road connects Ricciuti Drive to the three parking lots near the soccer field. The second internal road connects Ricciuti Drive to the ball fields' parking lot. The third internal road connects the DCR parking lot to a paved entryway into the quarries.

**Parking.** There are four parking areas; three are public and one is restricted. (Figure 2.3.5)

The parking area at the Ricciuti Drive athletic fields consists of four paved lots. Accessible parking is only available in at the entrance to the Quincy Youth Baseball fields. These lots are available for athletic field and rock climbing parking.

The second public parking lot is the main DCR lot for the Quincy Quarries. There are six spaces, one of which is a designated HP space. There are no signs that direct visitors to additional parking. Immediately east of this DCR lot is a City of Quincy parking lot. This 15-space lot is for visitors to the quarries.

The third public parking area is located on Mullin Avenue in front of the Granite Rail Quarry compressor house. There are no designated HP spaces. This lot is not for parking by rock climbers, and is posted to that effect. Despite this, the parking area is still used by rock climbers.

There are two parking spaces associated with the house at 57 Bunker Hill Lane. These spaces are restricted to use by residents of the house. They will be eliminated after the house is torn down.

**Trails.** There are approximately 4.8 miles of official trails, and 1.4 miles of informal trails. (Figure 2.3.8) There is no official trail connector between trails in this section and trails in the Chickatawbut Hill section.

Additional links to the reservation's trail system are planned. Under the terms of a Section 61 finding issued by the DEP, Quarry Hills Associates is responsible for providing "two additional foot access points to the Blue Hills Reservation" (Babb-Brott 2007). The location of these links has not been identified.

**Kiosks and Signs.** A single DCR kiosk is located at the intersection of the Skyline Trail and Wampatuck Road. (Figure 2.3.5) A kiosk at the northern terminus of the Granite Railway may be confused for a DCR kiosk; it is not.

There are six signs. (Appendix V) Four are related to athletic facilities along Ricciuti Drive. The remaining signs identify Wampatuck Road, and indicate that it is gated between the hours of 8 p.m. and 7 a.m.

**Memorials and Markers.** A metal plaque honoring Bob Foley and Tommy Holmes, is attached to the north side of the Quincy Youth Baseball combined concession building/comfort station. It is dated 2008.

### **2.3.13. St. Moritz**

St. Moritz is the easternmost section of the Blue Hills. Although largely forested, it is best known for its developed recreation facilities. Its primary use is active recreation.

Information on this section's resources is provided below. Information on the resources of the entire reservation is provided in Section 2.3.1.



## Natural Resources

There is little information on the natural resources of St. Moritz; its plants and wildlife are largely undocumented.

Most of St. Moritz (97.9 acres, 91.6%) is designated Priority Habitat. Only Shea Rink, its grounds, and the associated basketball courts are not included. (Figure 2.3.3)

### Water Resources

**Ponds.** There are two named ponds, St. Moritz North (5.6 acres) and St. Moritz South (3.8 acres). They are connected by a culvert. (Figure 2.3.2) The average depth of these ponds is two to three feet (Twining 2009c).

Water in these ponds originates as precipitation and runoff, and flows through the ponds into Furnace Brook.

Both ponds have elevated nutrient levels and plant growth. Phosphate levels, associated with accelerated eutrophication, were detected in St. Moritz North in 2009 (Twining 2009c). Fecal coliform was also detected in water samples taken at that pond (Twining 2009d).

**Vernal Pools.** Two vernal pools, both certified, have been identified. (Figure 2.3.3)

**Streams.** Although not depicted in Figure 2.3.2, a perennial stream exits St. Moritz North and flows northward into Furnace Brook.

An intermittent stream is located on the east side of St. Moritz North pond. It carries storm water from nearby roads and residences into the pond.

**Flood Zones.** A 100-year flood zone is associated with Furnace Brook. (Figure 2.3.2) Portions of Furnace Brook Parkway are within this flood zone.

**Groundwater.** There are no DEP identified aquifers beneath the St. Moritz section, and no known groundwater withdrawals.

### Vegetation

Information specific to this section is extremely limited. Twining (2009e) identified six aquatic plant taxa in the St. Moritz South pond; three terrestrial plants were identified by Palmer (2011) (Appendix H).

Information on the plants of the Blue Hills Reservation is provided in Appendix H.

No state-listed plants are known from this section.

**Invasive Species.** Japanese knotweed and tree of heaven grow adjacent to Shea Rink. Purple loosestrife grows in the ponds (Echandi 2011a). Other species likely occur but have not yet been documented.

**Natural Communities.** Information specific to this section of the reservation is lacking.

**Interior Forests.** There are no interior forests in this section.

### Wildlife

The wildlife of this section has largely gone undocumented. As a result, there is little information specific to this section of the reservation.

**Birds.** There is little information on this section's birds. McWade and Conrad (1995) reported a ring-necked duck and an unidentified scap in the St. Moritz ponds. Twining (2009c) reported Canada geese present in the fall.

**Mammals.** Information specific to this section of the reservation is lacking.

**Reptiles.** Northern water snakes and snapping turtles have been reported from this section (Twining 2011).

The NHESP (2007a) has identified the entire St. Moritz section as rare snake habitat.

**Amphibians.** Spotted salamanders, wood frogs, spring peepers, American toads, and green frogs have been observed (Twining 2011). Given the presence of certified vernal pools, wetlands, and the St. Moritz ponds, additional species of amphibians are likely to occur in this section.

**Fish.** There is no current information on the fish of the St. Moritz ponds. Chain pickerel, pumpkinseed, and yellow perch were historically present (e.g., MassWildlife 1981).

**Insects.** Information specific to this section of the reservation is lacking.

### **Cultural Resources**

There are two known cultural resources, remnants of the ski jump used during the winter carnivals of the

1930s, and the Furnace Brook Parkway landscape. (Figure 2.3.4)

**Ski Jump.** St. Moritz is well known for winter carnivals held during the MPC era, starting in January 1929 and continuing into the 1930s. In 1935 alone, an estimated 35,000 people attended the carnival. The one remaining historic structure located at St. Moritz is a ski jump. Concrete foundations and metal beams are all that remain of this structure. Other historic resources associated with recreation infrastructure may potentially occur in the area.

**Furnace Brook Parkway Landscape.** A segment of Furnace Brook Parkway, extending from the rotary to Wampatuck Road, is located in the St Moritz section. Laid out in 1904–1907, changes were made in 1924 and again in the 1960s. Contributing features to this landscape include the road itself, the tree canopy, green space miters, and culverts. This is one of a number of historic parkways created to connect MPC properties. It is listed in the National Register of Historic Places.

### Recreation Resources

St. Moritz has a variety of recreation facilities. The most prominent of which is the Mayor William T. Shea Memorial Rink. (Figure 2.3.5) It is used seasonally, from approximately September through March, for free-skating, hockey practice, and hockey games. It is equipped with seated ice skating sleds for accessible recreation.

To the south of the building are two basketball courts; only one has nets and backboards. Both courts have faded pavement markings and vegetation growing up through cracks in the pavement. Adjacent to these courts is the Sergeant Robert Allen Curry Ball Field; a single Little League field.

An unnamed playground is located at the north end of Shea Rink, away from parking and adjacent to the rink's mechanical systems. It is poorly situated, has been vandalized, and is in disrepair.

A second playground is located at the Daniel Michael Shea Memorial Park on Bunker Hill Lane. This playground is inspected and maintained by the DCR, and is located within 900 feet of the playground at Shea Rink. A single picnic table is present.

Across Bunker Hill Lane from Shea Park is the St. Moritz Horseshoe Club. This club includes four lanes for pitching horseshoes; within each lane the area between posts is paved with concrete. This facility also includes paved walkways, five benches for viewing matches, a storage shed, and lighting for nighttime play. Chain-link fence, to the north and south, prevent poorly pitched horseshoes from leaving the facility.

A single picnic table is located on the western shore of the northern St. Moritz Pond. There are no other recreation facilities associated with this table. Fishing takes place along this portion of shoreline, and elsewhere in the St. Moritz ponds where access to the water permits.

The eastern end of the Skyline Trail is located adjacent to the Shea Rink parking lot. Hiking the trail from end to end (i.e., St. Moritz to Little Blue Hill) is a popular activity for experienced hikers.

There is one known geocache.

### Infrastructure

**Property Boundary.** Encroachment is likely occurring along Willard Street.

**Buildings and Structures.** There are only two buildings in this section; Shea Rink and a storage shed at the St. Moritz Horseshoe Club. (Figure 2.3.5) The rink is considered to be in adequate condition, in need of some corrective and preventative maintenance. The shed is covered in peeling paint, a piece of the overhanging roof has rotted away, and a large hole has rotted through the back of the building. It is considered to be in poor condition, in need of renovation.

**Roads.** Two parkways, Furnace Brook Parkway and Chickatawbut Road are located in this section. A portion of Bunker Hill Lane, to the east of Furnace Brook Parkway, is also within this section. A paved drive provides employee and service access to the north side of Shea Rink from Willard Street.

**Parking.** There are two parking areas, only one is accessible to the general public. (Figure 2.3.5; Appendix U) The Shea Rink lot provides parking for the rink, basketball court, ball field, and the reservation's trail system. It has four accessible parking spaces; there are no van accessible spaces and required signs and pavement markings are absent. A gravel parking lot is located on Bunker

Hill Lane at the St. Moritz Horseshoe Club. It is for the exclusive use of club members.

**Trails.** There are approximately 3.2 miles of official trails and 0.8 miles of informal trails. They are part of the reservation-wide trail system and connect to trails in the Chickatawbut Hill section. (Figure 2.3.8) Approximately 0.1 miles of trails are classified as being in poor condition.

**Kiosks and Signs.** A kiosk is located at the south end of the parking lot, at the Skyline Trail. (Figure 2.3.5)

There are two signs. One identifies the Shea Rink; its text is not as specified in Chapter 204 of the Acts of 1962. (Appendix W) The other identifies a wooden footbridge along the Skyline Trail.

**Memorials and Markers.** An engraved stone marks the Daniel Michael Shea Memorial Park on Bunker Hill Lane. The engraving dates this stone to 1984 or later. There is no “suitable marker” (Appendix W) designating the Sergeant Robert Allen Curry Ball Field.

### 2.3.14. Ponkapoag

The Ponkapoag section is one of the Blue Hills’ main visitor destinations. It contains outstanding natural and cultural resources, and is home to extensive recreation facilities. Most are associated with Ponkapoag Pond. Here, perhaps more than anywhere else on the reservation, the interconnectedness of resources and recreation is evident.

Information on this section’s resources is provided below. Information on the resources of the entire reservation is provided in Section 2.3.1.

#### Natural Resources

The Ponkapoag section’s most important natural resource is its bog. This bog, which is made up of several distinct natural communities, is uncommon in eastern Massachusetts. It provides “high quality habitat” for seven state-listed insects; one state-endangered plant; and, potentially, one state-threatened reptile (NHESP 2007a).

Given the rarity of the community types that comprise the bog, and the plants and animals associated with them, the Ponkapoag section has been the focus of much research. As a result, extensive information exists.

Less than one-half of this section (533.6 acres, 47.0%) is designated Priority Habitat. This includes the pond and adjacent uplands. (Figure 2.3.3)

All of Ponkapoag is included in the Fowl Meadow and Ponkapoag Bog Area of Critical Environmental Concern.

#### Water Resources

**Ponds.** There two named ponds in this section: Ponkapoag (215.2 acres) and Duck Pool (1.1 acres).

Ponkapoag Pond is located within the Neponset River Watershed. (Figure 2.3.2) Its water originates as precipitation, runoff from immediately adjacent uplands and wetlands, and from wetlands in the Ponkapoag East section. Water leaves the pond through a dam that discharges into Ponkapoag Brook. The volume and timing of discharge are highly regulated. (See Section 3.2.14.)

Because it is a Great Pond, the land beneath Ponkapoag is controlled by the Massachusetts Department of Environmental Protection (DEP 2003). (Also see Appendix F.)

Duck Pool is located within the Weir River Watershed. Its water originates as precipitation or local runoff; there are no outlets. (Figure 2.3.2)

**Vernal Pools.** Eight vernal pools, seven certified and one potential, have been identified. (Figure 2.3.3)

**Streams.** Two perennial streams are associated with Ponkapoag Pond. An unnamed stream conveys water from wetlands in the Ponkapoag East section into Ponkapoag Pond. Ponkapoag Brook conveys water from Ponkapoag Pond to the Neponset River. Intermittent streams connect the pond and bog to adjacent wetlands. (Figure 2.3.2)

Stream flow in Ponkapoag Brook varies seasonally and with precipitation, and depends on the configuration of the dam’s controlled discharge chamber. Eck (1987) estimated a discharge rate of 1.83 cubic feet per second. Recently observed flow rates (ESS Group, Inc. 2007) have ranged from 1.65 to 2.97 cubic feet per day (i.e., 1.06 to 1.83 million gallons per day). These rates were calculated for the dam that was replaced in 2009. Flow data are unavailable for the new dam, but are intended to replicate previous flow rates. Water from this brook is used to irrigate the golf course. (See Section 3.2.14.)

Wetlands in the northern portion of Ponkapoag are hydrologically connected to the Blue Hill River, and not to Ponkapoag Pond. Water that originates in the Brookwood Farm section flows through intermittent streams into the Ponkapoag section. Water that originates in Houghton's Pond flows through a permanent stream into the Ponkapoag section. These waters combine with water from wetlands to the north and east of the YMCA Outdoor Center, and flow northeast into the Houghton's Pond section.

**Flood Zones.** A 100-year flood zone is associated with the perennial stream and wetland in the southeast corner of the pond and also with the pond's north shore. (Figure 2.3.2) Acton Path, from Fisherman's Beach to the AMC Ponkapoag Camp is within this flood zone. A portion of Ponkapoag Trail, near the northeast corner of the pond, is also within this flood zone. There are no buildings or structures in this flood zone.

A 100-year flood zone also occurs along the Blue Hill River and associated intermittent streams. A portion of the paved entrance to the YMCA camp, at Ponkapoag Trail, passes through this flood zone. There are no buildings or structures in this flood zone.

**Groundwater.** The DEP has identified an aquifer beneath the western portion of the Ponkapoag section. (Figure 2.3.2) This same aquifer is below the Brookwood Farm section. There are two water withdrawals from this aquifer; the YMCA's drinking water and swimming pool supply wells. The AMC's well is not located in this aquifer, or any aquifer identified by the DEP.

There are no known threats to groundwater. The improper disposal of chemicals at Indian Line Farm and a fuel leak at the golf course once posed potential threats to groundwater. (Appendix G) These threats no longer exist.

### Vegetation

The plants of Ponkapoag Bog are generally well-known, but similar information is largely lacking for this section's forests and cultural grasslands.

Over 200 plant taxa have been identified in Ponkapoag Bog and adjacent wetlands (Judd n.d., ESS Group Inc. 2007, Palmer 2011; Appendix H). Nearly all of the information on the reservation's mosses and liverworts, and much of the information

on its sedges come from plant surveys at Ponkapoag Bog. An additional 29 species are reported from the Fisherman's Beach area (South Region Reservations & Historic Sites Unit 1989).

Rannoch-rush (i.e., pod-grass), a state-endangered plant, is present in the bog. No other state-listed plants are known to be present (NHESP 2007a).

Information on the plants of the Blue Hills Reservation, in general, is provided in Appendix H.

**Invasive Species.** Invasive plants are both diverse and abundant.

Asiatic bittersweet, common buckthorn, garlic mustard, and multiflora rose are present at Indian Line Farm, associated with disturbed areas. These plants are now present, and in some cases dominant, throughout much of Indian Line Farm's non-forested areas. Norway maples line the border of the farm and Route 138.

Vegetation surveys along the western edge of the bog have revealed increasing populations of common buckthorn, multiflora rose, and Louise's swallow-wort (ESS Group, Inc. 2007). Swallow-wort has also been observed growing in soils associated with the Ponkapoag Dam reconstruction.

Aquatic invasive plants are present in both the pond and bog. Carolina fanwort was recently observed at the southern end of the Ponkapoag boardwalk (Garrett 2010). Curly pondweed is rooted in peat in the central portion of the bog mat and Eurasian water milfoil is present in the shallows north of the dam (Palmer 2011). Purple loosestrife and common reed inhabit the pond's margins (NHESP 2007a). Reed canarygrass is present along the bog's upland margin (ESS Group, Inc. 2007). They pose a threat "to rare species and the significant natural communities" of Ponkapoag (NHESP 2007a). The severity of this threat has not been assessed.

One invasive plant, Japanese knotweed, is associated with the AMC Ponkapoag Camp (Echandi 2011a).

**Natural Communities.** The natural communities of Ponkapoag, like its vegetation, are generally well-known for the pond and bog, but not for its upland forests.

The following communities have been identified:

- Atlantic White Cedar Bog;

- Cultural Grassland (i.e., golf course, Indian Line Farm);
- Deep Emergent Marsh;
- Highbush Blueberry Thicket;
- Inland Acidic Pondshore/Lakeshore;
- Inland Atlantic White Cedar Swamp;
- Level Bog;
- Red Maple Swamp;
- Shrub Swamp; and
- Woodland Vernal Pool.

Four of these community types are considered rare in Massachusetts; the Atlantic White Cedar Bog, Inland Atlantic White Cedar Swamp, Level Bog, and Woodland Vernal Pool. Examples of the first three are in good condition, and closely monitored (e.g., ESS Group, Inc. 2007).

This section's terrestrial natural communities have yet to be classified.

**Interior Forests.** There are no interior forests.

### Wildlife

The diversity of natural communities at Ponkapoag provides habitat for a variety of wildlife. However, the quantity and quality of wildlife information varies among community type and taxa. Those taxa surveyed as part of annual vegetation and water level monitoring activities (i.e., insects) are known best.

Seven state-listed insects are known from Ponkapoag. One state-listed reptile, Blanding's turtle, historically occurred at the site and may still be present.

**Birds.** The Fisherman's Beach management plan (South Region, Reservations & Historic Sites Unit 1989) identified 105 species. (Appendix K) Most are resident and migratory songbirds; few waterbirds (e.g., herons) and waterfowl were reported. Because the list includes both confirmed and hypothetically occurring species, it is unclear which birds were actually present.

Trimitsis (2008a) reported 50 species observed on a single May morning, including 11 species of warblers, a red-bellied woodpecker, and a bobolink. Among the observed warblers were seven northern parula, a species classified as threatened under MESA. Although northern parula nest in red maple and Atlantic white cedar swamps (NHESP 2008a),

such as occur at Ponkapoag, it is unclear if these birds were nesting or migratory. A variety of other species, including woodpeckers, vireos, sparrows, and blackbirds were also recorded.

**Mammals.** Twenty-seven species of mammals have been reported for the Fisherman's Beach area (South Region, Reservations & Historic Sites Unit 1989); not all were documented. Morley (2009) surveyed small mammals along the Ponkapoag Bog boardwalk during the summer of 2009. White-footed and North American deer mice, eastern gray squirrels, southern flying squirrels, red squirrels, and eastern chipmunks were recorded. A similar survey at Indian Line Farm (Morley 2009) identified white-footed and North American deer mice, meadow voles, and American mink. The North American deer mouse observations are questionable, as this species is only known to occur in the central and western portions of Massachusetts (Cardoza et al. 2009). Catinella (2009) reported an eastern coyote attack on a domestic dog at Ponkapoag Golf Course.

**Reptiles.** Fifteen reptiles, 10 snakes and five turtles, were reported for the Fisherman's Beach area (South Region Reservations & Historic Sites Unit 1989). It is unclear which of these species actually inhabited this section of the reservation.

Mello and Patenaude (1994) encountered a Blanding's turtle at Ponkapoag. This state-threatened species has not been observed on the reservation since. However, all of Ponkapoag Pond and Bog, and all associated wetlands are considered rare turtle habitat (NHESP 2007a).

**Amphibians.** Twelve species are reported for the Fisherman's Beach area (South Region, Reservations & Historic Sites Unit 1989). McWade and Conrad (1995) confirmed the presence of green frogs, spring peepers, wood frogs, and spotted salamanders. Twining (2007) also confirmed wood frogs and spotted salamanders. Pickerel frogs were confirmed on the bog mat in 2009.

**Fish.** Eleven species are known from Ponkapoag Pond; most are sport fish. (Appendix O)

It is unknown if this section's perennial streams support fish populations.

**Insects.** Site-specific surveys have been conducted for two groups of insects: Lepidoptera (moths and butterflies) and Odonates (dragon and damselflies).

One butterfly and 114 species of moths have been recorded from Ponkapoag Bog (Mello 1996; Mello and Patenaude 1994; Appendix P). Of these, three are state-listed.

State-listed Lepidoptera are the Hessel's hairstreak, coastal swamp mettaranthis, and pitcher plant borer. Hessel's hairstreak requires Atlantic white cedar communities for habitat (Nelson 2007a). The other two species require acidic bogs (Nelson 2007b, c). Due to these habitat requirements, it is likely that these species are limited to the Ponkapoag section of the reservation.

Forty-five species of Odonates, including three state-listed species have been identified at Ponkapoag. The state-listed attenuated bluet, New England bluet, and scarlet bluet are associated with a variety of wetland types (NHESP 2008b, c, d). However, this is the only known location for these species at the Blue Hills.

A seventh state-listed insect (i.e., the data-sensitive insect) inhabits the Ponkapoag section. Information on this species is not included in accordance with the NHESPs policy of not revealing "the name or location of these species in property-specific documents, as they are particularly susceptible to collection" (NHESP 2007a).

### **Cultural Resources**

Four historic landscapes occur within the Ponkapoag section of the reservation: Indian Line Farm, Ponkapoag Golf Course, AMC Ponkapoag Camp, and the Ponkapoag Outdoor Center. The latter three are still in active use for the purposes for which they were originally developed. Additional historic resources not associated with these landscapes include one structure, one building, and three historic sites.

**Indian Line Farm Landscape.** The former site of Indian Line Farm, a dairy established in the 1920s and later converted to an electronic manufacturing business, is adjacent to Route 138 and on the western edge of the golf course. A number of partially standing stone walls remain from the agricultural use of the site, and they are scattered throughout this area. The absence of other cultural resources at this location is at least partially due to the removal of buildings and structures during site remediation. (Please see Appendix G for additional information.)

**Ponkapoag Golf Course Landscape.** The largest and most well known landscape in this section of the reservation is the Ponkapoag Golf Course. This landscape is located on the west side of Ponkapoag Pond and includes buildings that pre-date the establishment of the golf course and are associated with Redman Farm, a mill site (Ezekiel Fisher saw/grist mill site), walls, and a sugar maple allée, as well as features developed specifically for the golf course itself.

The Redman Farmhouse and corn crib, both constructed circa 1795, are remnants of an agricultural landscape that has otherwise been lost to recreational, residential, and commercial development. The farm house, a 2.5 story, side gabled, Federal style home is listed in the National Register. Gifted to the MPC in 1895 with life tenancy rights, the farm came into MDC ownership in 1928 at which point plans for recreational development began.

The original golf course, an 18-hole course, was designed by noted golf course designer Donald Ross in 1931; construction began in 1932. The combined Club House/Locker Building and the Pro Shop were built in 1932, and the course included Pump House (A) and a drainage system used to maintain turf grasses.

Nine more holes designed by Ross were developed in 1938 and in 1956 the second course was completed with the addition of nine holes designed by William Mitchell. Additional expansion at that time included the Club House/Locker Building, and the pumps and drainage system.

Shelters along the course were added in 1969–1970.

Numerous non-historic buildings and structures (e.g., trash sheds, maintenance facility) also occur within the Ponkapoag Golf Course landscape.

Although most of the landscape's buildings and structures are considered to be in either satisfactory or excellent condition, one (i.e., Pump House B) is considered non-functioning.

**AMC Ponkapoag Camp Landscape.** The Ponkapoag Camp of the AMC is a historic site that was established in July 1921 by the AMC on the east side of Ponkapoag Pond. It includes four historic cottages that were built between 1922 and 1930. Two of the cottages are of log construction; the other

two are wood frame buildings. Twenty-six additional buildings and structures occur on this landscape. All buildings and structures in this landscape are AMC-owned. The cottages and the landscape itself are listed in the National Register.

***Ponkapoag Outdoor Center Landscape.*** The Ponkapoag Outdoor Center (formerly known as Camp Dorchester) was established as a summer camp by the YMCA in 1923, and has been in continuous use since that time. This complex currently includes numerous non-historic, YMCA-owned structures. Due to its continuous use, this site has potential historic significance.

***Other Resources.*** Additional historic resources include the Carpenter's House and several foundations.

The Carpenter's House is a 1.5 story Cape Cod style residence, with twin gable front dormers, twin internal brick chimneys, a small hood supported by decorative brackets over the front door, vinyl siding and replacement windows. The gutter along the edge of the roof on the front of the building is missing. This residence, in unsatisfactory condition, is located along Route 138 and has a low, mortared cobblestone wall with a concrete cap separating the property from the road.

The Fisherman's Beach foundation pad, a 20<sup>th</sup> century foundation remnant located to the south of the pond, is partially obscured by vegetation and in deteriorated condition.

Ponkapoag Cabin Site A, on the north side of the pond, consists of approximately 30, two foot square mortared stone foundation pilings, a small concrete stair, and a concrete pad.

Ponkapoag Cabin Site B is also located on the north side of the pond. It includes a chimney ruin and apparent foundation stones.

The Boy Scout Camp site is located in the northeast corner of this section. It includes numerous foundation pilings and an outdoor fireplace built into a boulder.

### **Recreation Resources**

Although best known for its golf courses, Ponkapoag offers a variety of recreational activities. Some, such as cabin rental and overnight tent camping, are unique to this section.

Ponkapoag Golf Course offers two regulation 18-hole courses. They are open from approximately mid-April through late November. Course #1 is a par 72, 6,500 yard course; Course #2 is a par 71, 6,200 yard course. Due to drainage problems, only 27 holes are in use. Course #1 is operating as a nine-hole course, and all of Course #2 is open. In FY10, there were 58,802 paid starts.

The golf course also includes a driving range, practice green, short-game area, and food concession. Cross-country skiing is allowed during periods of sufficient snow cover.

Public skating, ice hockey, and skating lessons take place at the John P. Metropolis Skating Rink. There are no universally accessible recreation programs.

A single soccer field, "Massasoit Field," is located along Randolph Street, immediately east of Massasoit Community College. It is used, primarily by Canton-based soccer teams, September through November.

Fisherman's Beach provides access to Ponkapoag Pond for fishing and the launching of non-motorized boats. Swimming is officially prohibited, but does occur. Shore-based fishing is also available along the Ponkapoag Dam.

The AMC's Ponkapoag Camp provides cabin rentals, tent sites, or day-use of the area for a fee. Swimming is available, to registered guests, at a guarded beach. The camp is open year-round; the beach is open from approximately Memorial Day through Labor Day.

The YMCA Ponkapoag Outdoor Center offers its campers use of a swimming pool, basketball court, and multi-use field. Its active season is June through late August.

Trail-based recreation in this section includes hiking, horseback riding, dog walking (on-leash), nature study, running, cross-country skiing, and snowshoeing. Mountain biking is currently prohibited, but takes place.

There are four known geocaches.

### **Infrastructure**

***Property Boundary.*** Encroachment is likely occurring along Turner Drive, Randolph.

A recent Article 97 land swap resulted in a change in the reservation's boundary. These changes are not reflected in the current trails map (DCR and MAS 2010).

**Buildings and Structures.** There are 75 buildings and structures at Ponkapoag, the most of any section of the reservation. Of these, 30 are owned by the DCR, 30 are owned by the AMC, 13 are owned by the YMCA, one is owned by the Auburn Golf Learning Center, and one is owned by the Town of Randolph. (Figure 2.3.5; Appendix T)

Most DCR-owned buildings (26) are associated with the golf course. Of these, 14 are either shelters or trash sheds. The remaining buildings at the golf course are associated with course administration and operations.

Most of the golf course's buildings are in adequate or better condition. The exceptions are Pump Houses A and B. The former, which is in active use, is classified in fair condition and in need of "excessive corrective maintenance and repair." Pump House B is a cultural resource not in active use.

Two DCR-owned buildings are associated with the former Redman Farm. The Redman Farmhouse is in good condition. The front of this building is used as office space by the Neponset River Watershed Association (NepRWA); other portions of the building are used by the DCR for storage. The corn crib is used for storage; it needs only minor corrective and preventative maintenance.

Metropolis Rink is believed to be in good condition. The condition of this building has not been recently evaluated by the DCR.

The Carpenter's House serves as a residence. The condition of this building has been described above in the Cultural Resources text.

Ponkapoag Dam, including the spillway, was constructed in 2008–2009. It is considered to be in excellent condition.

Condition assessments were not performed on buildings and structures not owned by the DCR.

Additional information on buildings and structures is provided in Appendix T.

**Roads.** There are 0.8 miles of administrative roads. Maple Avenue, a 0.5 mile paved, one-lane road, extends from the golf course parking lot to Redman

Farm Path. A paved spur connects Maple Avenue to the golf course's maintenance area.

**Parking.** There are seven parking areas; three public and four restricted. (Figure 2.3.5; Appendix U)

The main public parking lot is located at the Ponkapoag Club House. This lot serves the golf course as well as Redman Farmhouse and Metropolis Rink.

The current number of spaces, 180, is insufficient for current and anticipated use. Golf industry standards call for 100–120 parking spaces per 18 holes (NGF Consulting 2009). Although the parking area can accommodate parking for 27 holes, it cannot accommodate parking for concurrent use of the golf course and ice arena, or for two functional 18-hole courses with or without concurrent use of the ice arena.

The Ponkapoag Club House parking lot lacks required HP signs and markings. There are currently no designated van accessible signs, and no marked aisles that connect HP spaces to the club house.

Additional public parking is available at Fisherman's beach and at the I-93/Ponkapoag Trail access ramp. Combined, these two areas provide parking for only 33 vehicles.

Restricted parking is located at the golf course's maintenance garage (employees only), Carpenter's House (resident parking only) and the AMC and YMCA camps (registered camper and staff parking only).

There is no parking at Indian Line Farm. Parking is available at the golf course; however, getting to Indian Line Farm from the golf course is difficult. It requires either two crossings of Route 138, one without a crosswalk or signal, or walking through the golf course's driving range.

Parking for Massasoit Field is on the grounds of Massasoit Community College. There is no agreement for the use of the college's parking lots.

**Trails.** There are approximately 12.6 miles of official trails; and 0.8 miles of informal trails. Official trails include the paths that circle the pond, access roads to the AMC and YMCA camps, and narrower, more typical recreation trails. (Figure 2.3.8) Only 0.1 miles of trails are classified as being in poor condition.



Ponkapoag's trail system connects to other sections of the reservation, as well as to adjacent residential neighborhoods. The bridge over Route 24 provides a connection to trails in the Ponkapoag East section. The Houghton's Pond section may be accessed via Ponkapoag Trail. Official trails also provide access to one residential neighborhood along Randolph Street and another along Canton Street.

There are currently no official trails at Indian Line Farm.

**Kiosks and Signs.** There are seven kiosks; two at Ponkapoag Golf Course, one at Fisherman's Beach, two at the AMC Camp, and two at the YMCA Camp. (Figure 2.3.5)

Signs identify some, not all, of this section's sites and facilities. A Site/Facility Identification sign is located in front of Redman Farmhouse; it identifies Ponkapoag Golf Course. A NepRWA sign is attached to the north entrance of the Redman Farmhouse; it identifies the main entrance to the NepRWA offices. Signs at the golf course identify greens fees, golf shop, and golf club repair center.

Metropolis Rink has two signs. The first is attached to the front of the building and identifies it as being named in memory of Canton firefighter John P. Metropolis. This sign does not bear the designation required by Chapter 287 of the Acts of 1972. (Appendix W) A second sign, a message board for the Canton Recreation Department, is located at the parking lot exit and Route 138.

A small welcome sign is located at the entrance to the YMCA's parking area.

Many of Ponkapoag's sites and facilities lack signs to identify their entrances. There are no signs along main roads at the entrances to Indian Line Farm, Massasoit Field, the AMC Camp, or the YMCA Camp. An engraved granite post identifies the entrance to Fisherman's Beach. However, this marker lacks visual prominence and is easily overlooked.

**Memorials and Markers.** There is one known memorial and one known marker. The memorial is a small, engraved stone located adjacent to the Redman Farm corn crib. It is believed to mark a pet's grave ("Little Trip"). The date of this memorial is unknown.

An engraved stone marker is located on the north shore of Ponkapoag Pond, near the entrance to the boardwalk. It identifies the boardwalk as a National Environmental Study Area and honors the work of Professor William Babcock. It is believed to have been erected in 1988.

### **2.3.15. Ponkapoag East**

The Ponkapoag East section was isolated from most of the reservation by the creation of Routes 128 and 24. It remains physically connected to the Ponkapoag section via a bridge.

This section is largely undeveloped; exceptions are the Nike Launcher Site and the North Randolph Little League ball fields. Ponkapoag East's main uses are wildlife habitat, park operations, and active recreation. Limited passive recreation also occurs.

Information on this section's resources is provided below. Information on the resources of the entire reservation is provided in Section 2.3.1.

#### **Natural Resources**

Ponkapoag East's most important natural resources are its wetlands and adjacent upland. They provide habitat for a variety of wildlife species.

Virtually all undeveloped areas at Ponkapoag East (239 acres, 84.5%) are designated Priority Habitat. (Figure 2.3.3)

#### Water Resources

**Ponds.** There are no ponds at Ponkapoag East.

**Vernal Pools.** Twelve vernal pools, six certified and six potential, have been identified. (Figure 2.3.3)

**Streams.** There are two main perennial streams; one in the Weir River Watershed and the other in the Neponset River Watershed. The first originates off the reservation. It flows north through Ponkapoag East and into the Blue Hill River. The second perennial stream originates in a wetland and flows west into the Ponkapoag section. (Figure 2.3.2)

**Flood Zones.** This section's wetlands, and portions of its perennial streams, are located in 100-year flood zones. (Figure 2.3.2) There are no buildings, structures, or roads in these flood zones.

**Groundwater.** There are no DEP identified aquifers beneath Ponkapoag East. There is one known withdrawal from groundwater, a well located on the

north side of the North Randolph Little League area. It is used to irrigate the ball fields.

A potential threat exists to groundwater. Metals and a pesticide have been identified in soil and sediment samples from the Nike Launcher Area. (Appendix G) Contaminants have not been identified in groundwater in excess of reportable concentrations and current conditions “do not pose an Imminent Hazard to health, safety, public welfare, or the environment” (GEI Consultants, Inc. 2009). However, the full extent and environmental impacts of contamination at this site remain under investigation.

### Vegetation

Information on the plants of the Blue Hills Reservation is provided in Appendix H. Information specific to this section of the reservation is generally lacking.

No state-listed plants are known from this section.

**Invasive Species.** Purple loosestrife and common reed have been documented. Given that the Nike Launcher Area is used to store leaves and other compostable materials, it is extremely likely that additional invasive plants occur in this section.

**Natural Communities.** Five community types have been identified:

- Cultural Grassland (i.e., ball fields);
- Deep Emergent Marsh;
- Highbush Blueberry Thicket;
- Mixed Oak Forest; and
- Red Maple Swamp.

The majority of this section’s communities have yet to be classified.

**Interior Forests.** There are no interior forests in this section.

### Wildlife

Most information on the wildlife of Ponkapoag East comes from vernal pool surveys. As a result, there is good information on this section’s amphibians, but little information on other taxa.

**Birds.** Information specific to this section is lacking.

**Mammals.** Information specific to this section is lacking.

**Reptiles.** Information specific to this section of the reservation is lacking.

**Amphibians.** There is little information on this section’s amphibians. Martinez (1996) reported spotted salamander, marbled salamander, eastern newts, and spring peepers.

The NHESP (2007a) has identified all of Ponkapoag East as rare salamander habitat.

**Fish.** It is unknown if fish are present in the perennial stream.

**Insects.** Information specific to this section is lacking.

### **Cultural Resources**

The Ponkapoag East section of the reservation contains one historic landscape, a large complex of resources that once served as a Nike Missile Launcher Site.

**Nike Missile Launcher Area Landscape.** This landscape is located roughly in the center of this section, to both the north and south of Middle Street.

A companion to the Nike IFC landscape located atop Chickatawbut Hill, this site was also constructed in 1953–1954. Missiles were housed, fueled, and if needed, launched from this facility as directed by the IFC site.

Four historic buildings, including a maintenance garage, sentry station, generator building, and garage remain. The sentry station, generator building, and garage at the Nike Launcher Area lack windows and doors, have damaged roofs, and show signs of vandalism (e.g., smashed concrete blocks). The garage is heavily defaced with graffiti, and litter is common.

Six historic structures, including the barracks foundation, a derrick for hoisting missiles, an elevated shed, and three missile silos also remain. These structures are considered to be in satisfactory condition.

Other landscape features such as roads, berms, and shelters are also found on the site.

A challenge facing the stabilization and preservation of these structures is soil and sediment contamination associated with past military use. (Appendix G) Investigation and remediation

activities associated with these contaminants may affect historic resources.

### Recreation Resources

There is one active recreation facility, the North Randolph Little League area. This facility includes two Little League fields (Wakeling to the south and Cady to the north), four dugouts, two backstops, a scoreboard, and a concession stand.

Trail-based recreation is limited, consisting mainly of hiking and horseback riding. Hunting and mountain biking are both currently prohibited, but take place.

There is one known geocache.

### Infrastructure

**Property Boundary.** Encroachment is likely occurring along High Street.

**Buildings and Structures.** There are 13 buildings and structures. They are associated with either the Nike Missile Launcher Area or the North Randolph Little League facility. (Appendix T)

Eight buildings and structures are located at the launcher area. All are cultural resources, and all are undergoing significant damage due to weather and vandalism. Most are not maintained.

A maintenance garage, the only building in use by the DCR, provides unheated storage. It has been heavily vandalized, with broken windows, damaged masonry blocks, and a missing entry door. This building is classified as being in fair condition.

A sentry station is located along Middle Street, to the west of the maintenance garage. This toll booth-like building is constructed of masonry block and has a flat, wooden roof. Its door and windows are missing and its roof is damaged; it is considered non-operational.

A garage and a generator shed are located north of Middle Street. Both lack entry and garage bay doors, have broken masonry, and damaged or collapsing roofs. They too are considered non-operational.

Three missile silos are located on the west side of the launcher area. All three leak and are filling up with water. Their condition is classified as non-operational.

Associated with the silos is a light-duty elevated shed. It is wooden-framed, sheathed in corrugated metal, and has a corrugated metal roof. This shed is in poor condition.

Five buildings and structures are associated with the North Randolph Little League facility. Two masonry block dugouts are associated with Wakeling Field, and two poured concrete dugouts are associated with Cady Field. All are in adequate condition. A two-story poured concrete concession building is located along High Street. The condition of this building was not assessed.

Additional information on these buildings and structures is provided in Appendix T.

**Roads.** Ponkapoag East is largely bordered by non-DCR roads. There is only one internal park road; Middle Street. It is not open to the public.

There are no traffic count data specific to this section of the reservation. However, data are available for a nearby road. In October of 2008, traffic studies were conducted along Scanlon Drive (Precision Data Industries, Inc. 2008). This road intersects with High Street near the entrance to the Nike Launcher Area. Weekday traffic volumes ranged from 8,137 to 8,213 vehicles per day. Morning and afternoon peaks in volume, associated with commuting periods, were observed. Weekend traffic volumes were lower; 6,223 vehicles on Saturday and 5,266 vehicles on Sunday. Speeds averaged 27–29 MPH on all days.

**Parking.** There are two parking areas; one public and one restricted. (Figure 2.3.5) Public parking is available at the North Randolph Little League facility. There are two HP designated spaces; both lack appropriate markings. Restricted parking is available adjacent to the maintenance garage at the Nike Launcher Area. This parking is located within a fenced area, off of a gated road. It is for DCR vehicles only.

Participants in ranger-led events are instructed to park at the M. L. Donovan School on Reed Street in Randolph. This school is owned by the Town of Randolph; there is no agreement for use of its parking lot for DCR programs.

Ten additional parking spaces will soon be available on private land. These spaces, dedicated to trail

access, are to be set aside in the new Lantana parking lot (Bowles 2009a).

**Trails.** There are approximately 5.6 miles of official trails and 0.3 miles of informal trails. (Figure 2.3.8) Approximately 0.5 miles of trails are classified as being in poor condition.

This section's trails are connected to the reservation's trails network via the bridge over Route 24.

**Kiosks and Signs.** A kiosk is located along the Meadow Road, at a trailhead adjacent to the M. L. Donovan School parking lot. (Figure 2.3.5)

Informational signs in this section are restricted to the North Randolph Little League fields. Signs identifying individual fields, a scoreboard, and numerous commercial advertising signs are present at this facility.

**Memorials and Markers.** There are no known memorials or markers.

### 2.3.16. West Street

West Street was once the southern extent of the Chickatawbut Hill section. Creation of the new Route 128 in the 1950s effectively isolated this section from most park visitors. It remains connected hydrologically to the Chickatawbut Hill section via Great Cedar Swamp and to several other sections of the reservation via the Blue Hill River.

The West Street section lacks sensitive natural and cultural resources, and is of limited recreation value. The primary use of this section is passive recreation.

Information on this section's resources is provided below. Information on the resources of the entire reservation is provided in Section 2.3.1.

#### Natural Resources

West Street's natural resources are largely unknown.

There is little Priority Habitat (2.0 acres, 1.5%) present. (Figure 2.3.3)

#### Water Resources

West Street is where waters from the Blue Hill River and Great Cedar Swamp meet, and flow into Great Pond Reservoir. Water management activities associated with Great Pond have affected the hydrology of this section. (Appendix W)

**Ponds.** There are no ponds in this section or its associated Conservation Restrictions.

**Vernal Pools.** There are no vernal pools in this section or its associated Conservation Restrictions.

**Streams.** Three perennial streams empty into West Street's wetlands and a fourth stream flows from these wetlands into Great Pond Reservoir. (Figure 2.3.2) Only two of these streams, the Blue Hill River and the southern extension of Bouncing Brook, are named.

Two intermittent streams, originating in the Chickatawbut Hill section, flow under Route 93 and into the Blue Hill River. An intermittent stream is located along the western boundary of the Conservation Restriction.

**Flood Zones.** Most of this section is located within a 100-year flood zone. (Figure 2.3.2) Most of old Route 128 occurs within this flood zone. There are no buildings or structures in this zone.

A 500-year flood zone is associated with Great Cedar Swamp immediately south of I-93. There are no buildings, structures, or roads in this flood zone.

**Groundwater.** A small portion of this section, located between old Route 128 and West Street, has been identified as an aquifer by the DEP. No aquifers are known from beneath the Conservation Restriction. (Figure 2.3.2)

#### Vegetation

Information on the plants of the Blue Hills Reservation is provided in Appendix H. Information specific to this section of the reservation is generally lacking.

No state-listed plants are known from this section.

**Invasive Species.** This section has not been surveyed for invasive plants. Incidental observations have identified purple loosestrife, Japanese knotweed, oriental bittersweet, and garlic mustard (Echandi 2011a).

**Natural Communities.** Three communities have been identified:

- Inland Atlantic White Cedar Swamp;
- Shrub Swamp; and
- White Pine–Oak Forest.

The majority of this section's communities have yet to be classified.

**Interior Forests.** There are no interior forests in this section.

### Wildlife

The wildlife of this section is unknown.

**Birds.** Information specific to this section of the reservation is lacking.

No state-listed birds are known to occur.

**Mammals.** No formal surveys have been conducted; however, raccoon and white-tailed deer have been observed (Echandi 2011a).

**Reptiles.** Although not Priority Habitat, the NHESP (2007a) has identified the entire West Street section as rare snake habitat.

**Amphibians.** Information specific to this section of the reservation is lacking.

**Fish.** Information specific to this section of the reservation is lacking.

**Insects.** Information specific to this section is lacking.

### **Cultural Resources**

There are no known historic or archaeological resources.

### **Recreation Resources**

There are few recreational amenities. A single picnic table is located adjacent to the kiosk at the parking area. Old Route 128 and trail segments are used for walking and for walking dogs.

There are two known geocaches.

### **Infrastructure**

**Property Boundary.** There is no known encroachment.

**Buildings and Structures.** There are no buildings or structures.

**Roads.** A portion of old Route 128 extends, from east to west, across the West Street section. There are no other roads.

**Parking.** There is one parking area, a gravel lot that provides parking for up to five vehicles. (Figure 2.3.5)

**Trails.** There are approximately 0.9 miles of official trails and 0.1 miles of informal trails. All official trails are classified as being in good condition.

The southern extension of Great Cedar Swamp effectively prohibits creation of nested loop trails.

This section's trails do not connect to the reservation's trails network.

**Kiosks and Signs.** A kiosk is located at the parking lot. (Figure 2.3.5)

There are no informational signs.

**Memorials and Markers.** There are no known memorials or markers.

## **2.4. TOWN BROOK FCS**

Although Town Brook is owned by the DCR, and is located within the Blue Hills Planning Unit, it is not administered by the Division of Urban Parks. Information on this site's resources is largely unknown.

### **Natural Resources**

Little is known about this site's natural resources; Priority Habitat is absent.

### Water Resources

**Ponds.** This site's open water area is 38.7 acres. (Figure 2.3.2)

**Vernal Pools.** There are no certified or potential vernal pools.

**Streams.** A perennial stream, originating near Wood Road, Braintree, flows into the flood control site. A second perennial stream, Town Brook, serves as the pond's outlet. (Figure 2.3.2)

**Flood Zones.** The open water area is encircled by a 100-year flood zone. (Figure 2.3.2) The discharge area below the dam, and the DCR's downstream easements, are also located in a 100-year flood zone.

**Groundwater.** There are no identified aquifers beneath Town Brook FCS or the DCR's downstream easements.

### Vegetation

Information specific to Town Brook FCS is generally lacking; no state-listed plants are known from this section.

***Invasive Species.*** Information specific to Town Brook FCS is lacking.

***Natural Communities.*** Information specific to Town Brook FCS is lacking.

***Interior Forests.*** There are no interior forests in this section.

### Wildlife

There is little information on the wildlife of Town Brook FCS.

***Birds.*** Information specific to Town Brook FCS is lacking.

***Mammals.*** Information specific to Town Brook FCS is lacking.

***Reptiles.*** The Massachusetts Herpetological Atlas (Jackson et al. 2010) confirmed the presence of the following reptiles in the survey block in which Town Brook is located. These species *potentially* occur at Town Brook.

- Painted turtle;
- North American racer;
- Ring-necked snake;
- Milksnake; and
- Northern water snake.

***Amphibians.*** The Massachusetts Herpetological Atlas (Jackson et al. 2010) confirmed the presence of the following amphibians in their survey block in which Town Brook is located. These species *potentially* inhabit Town Brook.

- Spotted salamander;
- Eastern newt;
- Eastern red-backed salamander;

- Gray treefrog;
- Pickerel frog; and
- Wood frog.

***Fish.*** Information specific to Town Brook FCS is lacking.

***Insects.*** Information specific to Town Brook FCS is lacking.

### **Cultural Resources**

There is no information on the cultural resources of Town Brook FCS.

### **Recreation Resources**

Town Brook is officially closed to the public; there are no recreation facilities or activities.

There are no known geocaches in this section.

### **Infrastructure**

***Property Boundary.*** There is no known encroachment.

***Buildings and Structures.*** The Town of Braintree owns and operates Braintree Dam (MA-00827) and the associated spillway. (Figure 2.3.5) The dam is classified as having a High Hazard Potential.

***Roads.*** There are no publically accessible roads.

***Parking.*** There is no parking area.

***Trails.*** There are no DCR trails at this site.

***Kiosks and Signs.*** There are no kiosks.

There are no known informational signs.

***Memorials and Markers.*** There are no known memorials.



The Boston skyline as viewed from the Blue Hills. The reservation's proximity to a large population center makes it an important amenity while creating numerous management challenges.

## SECTION 3. MANAGEMENT RESOURCES AND PRACTICES

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### 3.1. INTRODUCTION

The Blue Hills Planning Unit includes extensive natural, cultural, and recreation resources. (See Section 2.) Their management is complex and subject to a variety of laws, regulations, policies, plans, and legal agreements. It is also subject to available resources and staffing.

This section describes current management practices and identifies relevant regulations, policies, and legal considerations that guide this management. Select Massachusetts regulations are presented in Appendix F.

### 3.2. BLUE HILLS RESERVATION

#### 3.2.1. Reservation-wide Management

##### Natural Resources

##### Water Resources

Activities on the Blue Hills Reservation that affect the quantity or quality of storm water are regulated by a National Pollutant Discharge Elimination System (NPDES) storm water management plan

(DCR 2007a). This plan describes control measures that the DCR uses to satisfy NPDES Phase II permit requirements for transportation and non-traditional Municipal Separate Storm Sewer Systems (MS4s).

The plan identifies Best Management Practices (BMPs) and measurable goals for each of the six following control measures: public education and outreach; public involvement/participation; illicit discharge detection and elimination; construction site runoff controls; post-construction runoff controls; and pollution prevention/good housekeeping. Many of these BMPs are implemented at the agency-level (e.g., the detection and elimination of illicit discharges, catch basin cleaning), while others are implemented at the facility-level (e.g., the stenciling of catch basins).

##### Vegetation

There is no single management plan for the reservation's vegetation. The *de facto* management policy is to permit populations of most species of plants to increase or decrease without human intervention. Invasive species are an exception to

this, and are controlled through biological, chemical, and mechanical methods.

Two Habitat Management Plans (Echandi 2009*b*; Mass Audubon 2009) guide vegetation management in Priority Habitat, in three sections of the reservation.

The NHESP (2007*a*) made recommendations for managing the Blue Hills' rare plants and their habitats. These recommendations, identified in Appendix I, have been implemented as time and resources permitted. Additional recommendations remain to be implemented.

A management plan (Echandi 2009*c*) guides the cutting of some cultural grasslands within the South Region, including those at Brookwood Farm and Indian Line Farm. This plan specifies that fields are to be cut in early September once every one to three years, and that trails through grasslands be mown at least once, but no more than twice, per month during the growing season.

The reservation's work plan (Appendix X) guides the mowing, trimming, and weeding of vegetation in landscaped areas. The frequency of these activities changes throughout the year. In general, grass is mowed and trimmed every 14 days, or as needed during the growing season.

### Wildlife

There is no single wildlife management plan for the reservation. The *de facto* management policy is to permit most wildlife populations to increase or decrease without human intervention.

Management recommendations exist for the reservation's state-listed animals and their habitats (NHESP 2007*a*; Appendix I). Many have been implemented, as time and resources permitted; others remain to be implemented.

Wildlife research is regulated through Special Use Permits issued by the DCR's Department of Special Events, and by Scientific Collecting Permits issued by Mass Wildlife. Hunting, trapping, and fishing are managed through a variety of regulations.

### **Cultural Resources**

The DCR's Office of Cultural Resources (OCR) provides technical assistance on issues relating to archaeology and the preservation of landscapes, buildings, structures, and objects. It also conducts a

coordinated program of basic and applied research to support planning for, and management of, cultural resources on DCR property through project management and resource management planning. Among these activities are the nomination of properties for inclusion in the State and National Registers.

The OCR is also responsible for overseeing the historic preservation regulatory compliance responsibilities of the agency. It assesses regulatory needs and, when applicable, notifies the Massachusetts Historical Commission (MHC) through the filing of a Project Notification Form or Environmental Notification Form for any projects undertaken, funded, permitted, or licensed in whole or in part by the agency. This is done so that the MHC can make a Determination of Effect of the project on historic and archaeological resources. Finally, the OCR coordinates all archaeological survey, testing, and excavation with the State Archaeologist at the MHC through an archaeological permit.

Buildings, structures, landscapes, sites, and objects that are a minimum of 50 years old, retain historic integrity and are of significance on the local, statewide or national level may be listed in the National Register of Historic Places (NPS n.d.*a*). (Listed resources are identified in Appendix R.) A Determination of Eligibility has been issued for the entire Metropolitan Park System of Greater Boston. Because the Blue Hills Reservation was one of the original parks within this system, all of the reservation as it existed under the MPC is considered eligible for the National Register. Repairs, rehabilitation, and other preservation activities on listed and eligible resources follow guidelines in the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (Weeks and Grimmer 1995).

Maintenance, repair, and modification of the reservation's historic parkways are conducted by the management units in accordance with *Historic Parkway Preservation Treatment Guidelines* (DCR 2006).

Massachusetts law requires the review of all sub-surface disturbances on state property. Although most projects at the Blue Hills receive this review some, such as the installation of sign posts or the planting of trees and flowers, often do not. An



agreement is under development, between the MHC and the DCR, to have DCR's archaeologist provide initial review of activities that result in sub-surface disturbance. Under this agreement, DCR's archaeologist will be the primary reviewer of such projects and activities at the Blue Hills.

### **Recreation Resources**

Public use of the reservation is limited to dawn through dusk.

The process for scheduling the use of athletic fields varies among fields. For DCR-controlled fields, scheduling is done in accordance with procedures identified in the *Community guide for reserving and using Massachusetts Department of Conservation and Recreation athletic fields & facilities* (DCR n.d.b). Procedures for scheduling use of the remaining fields differ among the controlling authorities. Information on specific fields is provided by section of the reservation.

A variety of recreational activities are regulated by permits. Concerts, charity events, community service projects, weddings, road races, and group gatherings that include amusements, barbecues, and or/amplified sound are among those recreational activities that require Special Use Permits ([www.mass.gov/dcr/permits/](http://www.mass.gov/dcr/permits/)). Natural history group field trips and scientific research also require Special Use Permits; although these activities are not specifically identified on DCR's Special Use Permits and Fees web page. Commercial filming, photography, and videography are regulated through Filming and Photography Special Use Permits. All Special Use Permits are issued by DCR's Department of Special Events.

Trail use is managed through a variety of regulations and policies. Regulations governing the use of reservations and parkways (Appendix F) restrict all users to the trail tread; no off-trail use is allowed.

The use of mountain bikes is geographically and seasonally limited. Bikes are excluded from sections of the reservation east of Route 28 due to environmental concerns. Elsewhere in the reservation, bikes are allowed on designated trails only between April 16<sup>th</sup> and December 31<sup>st</sup>. These trails are identified on the reservation's mountain biking map ([www.mass.gov/dcr/parks/metroboston/maps/BlueHillsMtnBikingMap.pdf](http://www.mass.gov/dcr/parks/metroboston/maps/BlueHillsMtnBikingMap.pdf)), and closed trails

are posted with a "no bicycle" sign. Cyclists are required to yield to both hikers and horses.

Awareness of, and compliance with, cycling restrictions is promoted by Blue Hills Trail Watch; a volunteer organization committed to safe and cooperative trail use. This approach is among the most effective ways to encourage appropriate cycling behavior on multi-use trails (Hendricks et al. 2001).

Most of the reservation's trails are officially open to horses on a year-round basis. However, narrow trails, steep topography, and low overhanging branches effectively limit the use of some trails. Horses are also seasonally restricted from the Houghton's Pond waterfront. Horses have the right-of-way when encountering other trail users.

Hikers are allowed on all official trails on a year-round basis. They must yield to horses, but have the right-of-way when encountering bicycles.

Cross-country skiing is permitted on all official trails with "sufficient snow cover" (DCR and MAS 2009). However, skiers are directed to Ponkapoag Golf Course. As with hikers, skiers must yield to horses.

Efforts to manage geocaching began in the fall of 2010. Owners of geocaches located east of Route 28 (i.e., in rare snake habitat) were instructed to "remove their personal property and caches as soon as possible" (Echandi 2011b). The South Region's Natural Resources Specialist is currently working with the geocaching community to locate caches in areas consistent with DCR regulations and the Blue Hills' resource protection needs.

Dogs may accompany trail users on all trails provided that they are on a leash with a maximum length of seven feet. Dogs are not permitted off-leash anywhere in the reservation.

With the exception of DCR, emergency, and utility vehicles, motor vehicles are not permitted on the reservation's trails. Off-Highway Vehicles are not permitted anywhere on the reservation.

### **Infrastructure**

**Property Boundary.** There are no reservation-wide management activities related to marking or monitoring boundaries.

Conservation Restrictions limit the scope of future development on some properties that abut, or are

near, the reservation. Development limitations differ among CRs; most restrict the spatial extent of a property’s development, while others limit the type of development (i.e., passive recreation facilities only). Only two of the CRs are monitored annually, the CRs associated with the Brookwood Farm and Unquity Road sections.

An interagency *Conservation, Watershed Preservation, and Agricultural Preservation Restriction Stewardship Policy* is currently in development for agencies within the Executive Office of Energy and Environmental Affairs. Future monitoring and enforcement will be consistent with this policy.

**Buildings and Structures.** The management of DCR-owned buildings is primarily performed by DCR employees or contractors; non-DCR-owned buildings are managed by their owners. However, there are exceptions. Some DCR-owned buildings and structures are occupied by non-profit or commercial tenants. (Table 3.2.1) Management responsibilities for these buildings are specified in agreements between the DCR and the tenants.

**Table 3.2.1. DCR-owned tenant-occupied buildings and facilities at the Blue Hills Reservation.**

Section	Building or Facility	Tenant
GB	Trailside Museum	Mass Audubon
GB	Ski area	Ski Blue Hills LLC
GB	Meteorological observatory	Blue Hill Observatory and Science Center
UN	Ulin Rink	Town of Milton
CH	Education center	Mass Audubon
SM	Shea Rink	Michael B. O’Toole, Jr. LLC
PO	Redman Farm	NepRWA

Agreements between the DCR and its tenants typically identify the term of the agreement, specify associated fees, provide for DCR access, identify the disposition of capital improvements, identify the tenant as the responsible party for obtaining all necessary permits, specify required casualty insurance, and include a hold harmless agreement. Specific conditions (e.g., maintenance responsibilities) vary among agreements. Information on agreements for managing specific DCR buildings and facilities is presented by section of the reservation.

Under a 1992 Memorandum of Understanding (MOU), the Massachusetts State Police occupy former MDC police stations, office space, garages, and stabling at the Blue Hills. The DCR is responsible for the maintenance and upkeep of these facilities, including heating costs. The care, custody, and control of these buildings revert to the DCR in the event that the police no longer use or occupy the space.

**Roads.** The DCR maintains and repairs park roads and parkways. Management of traffic and related systems is supervised by the Parkways Section of the DCR’s Engineering Bureau, and guided by American Association of State Highway and Transportation Officials standards, the Manual on Uniform Traffic Control Devices (MUTCD; U.S. DOT FHA 2009), and the Historic Parkway Preservation Treatment Guidelines (DCR 2006). Numbered state and interstate highways that pass through the reservation are maintained and repaired by MassDOT (MDC and Massachusetts Highway Department 2001). Select roads are maintained and repaired by local municipalities.

Snow removal is performed by both MassDOT and the DCR. In general, MassDOT is responsible for plowing the reservation’s public roads and the DCR is responsible for plowing access roads into DCR facilities (e.g., Summit Road). The DCR also plows some sidewalks. An interactive map, which identifies DCR’s snow management priorities, is available at [http://maps.massgis.state.ma.us/DCR\\_Snow\\_Priority/viewer.htm](http://maps.massgis.state.ma.us/DCR_Snow_Priority/viewer.htm).

The DCR, or its contractors, sweep the reservation’s roads every 45 days and clean associated catch basins annually. (Appendix X)

**Parking.** With minor exception, the DCR maintains and repairs the reservation’s parking areas. Most snow removal is performed by the DCR.

**Trails.** The design, management, and marking of trails are guided by the DCR’s *Trails Guidelines and Best Practices Manual* (DCR 2010a).

Trail segments are repaired and enhanced, as needed and appropriate, by DCR employees, trail crews, and the Friends of the Blue Hills’ Adopt-A-Trail program. The latter’s trail activities are identified and managed via the terms of a Special Use Permit. One or more individuals commit to maintaining a specific trail segment, ensuring that it receives

regular, consistent maintenance. Not all trail segments are adopted.

The closure of trail segments is achieved through “brushing-in.” Vegetation is cut and piled on the trail to serve as a barricade to trail use. Signs are not posted at the trail segment or trail head to indicate that it is no longer in use. Brushed-in trails are not regularly monitored for use or condition.

There is no reservation-wide approved Habitat Management Plan governing trail work. As a result, work on most trail segments must undergo NHESP review.

There are no formal maintenance standards for trails that provide emergency vehicle access or that serve as fire breaks.

Entities other than the DCR have specific rights and authorities to manage trails on or near utility easements. The agreement for the gas transmission line that crosses the reservation (MDC 1967) permits the gas line’s owner to maintain a 30-foot wide strip of land for “the pipe line, a roadway for use as a maintenance road... and as a bridle path for the general public.” Trail work along, across, or “in the immediate vicinity of” an MWRA easement is regulated by the MWRA and may require a permit. (Appendix F)

Markings are installed and maintained by DCR South Region rangers. Old markings and unofficial signs are actively being removed, and trails remarked in accordance with current agency guidelines and best management practices (DCR 2010a).

**Kiosks and Signs.** The format and placement of regulatory and informational signs are governed by the MUTCD and guided by the DCR *Graphics Standards Manual* (DCR n.d.a). The design and construction of kiosks are solely governed by the graphics manual.

Informational kiosks are managed by DCR rangers, who update content at least eight times per year. Rangers also perform kiosk installation and repair.

**Memorials and Markers.** The placement of markers or plaques on former MDC properties, such as the Blue Hills, is managed by regulations governing the use of reservations and parkways. Under these regulations, memorials and markers are treated as signs and are prohibited without the written

permission of the Commissioner. Revised regulations, which treat plaques and markers as memorials, are in development (Dietz 2009).

### Interpretive Services

Interpretive services and environmental education programs at the Blue Hills are provided by the DCR, Mass Audubon, and a variety of other non-profit organizations. These services and programs reached over 250,000 park visitors in 2009. There is no reservation-wide interpretive plan, nor are offerings coordinated among the organizations.

In 2009, DCR rangers provided 33 interpretive programs and events attended by nearly 6,200 participants. The most popular events, based on attendance, were Maple Sugarin’ Days (2,826 attendees), the Houghton’s Pond Fish Festival (800 attendees), First Day Hikes (450 attendees) and the Dog Sled Fun Run (400 attendees). These four events drew 72% of attendees to DCR interpretive programs at the reservation in 2009.

Rangers also led 959 participants on non-interpretive hikes in 2009. Additional information on these and other events may be found in Brown et al. (2010).

Environmental education by DCR personnel is not limited to formal programs. Rangers provide interpretive information to visitors at the Regional Office, the reservation’s primary contact station. They also regularly educate the public that they encounter while working throughout the reservation. Limited interpretive information is provided at the Houghton’s Pond visitor center. Educational materials are posted at kiosks throughout the reservation.

Mass Audubon, in partnership with the DCR, offers ongoing environmental education programming to visitors to the Blue Hills. It is Mass Audubon’s programming that informs and educates the greatest number of these visitors. Their programming takes place in the Great Blue Hill and Chickatawbut Hill sections of the reservation.

A variety of other non-profit organizations offer interpretive programming and materials. The Friends of the Blue Hills, in conjunction with the Appalachian Mountain Club and Brookline Bird Club, offers environmental-themed hikes (e.g., bird walks). They also present environmental lectures at their annual meeting and their newsletter features

both a naturalist column and the only comprehensive listing of interpretive events. The New England Wildflower Society offers periodic programs on the reservation's plants (e.g., Ferns of the Blue Hills).

## **Operational Resources**

### Administrative Structure

The Department of Conservation and Recreation manages its parks, forests, and reservations under two separate divisions; the Division of State Parks and Recreation (DSPR) and the Division of Urban Parks and Recreation (DUPR). Blue Hills Reservation and Ponkapoag Golf Course are managed by the DUPR.

The reservation is part of a group of DCR facilities within the Blue Hills District of the DUPR's South Region. (Figure 3.2.1) In addition to properties included in this RMP, the Blue Hills District includes the Blue Hills Parkway, Neponset Valley Parkway, and part of the Neponset River Reservation (e.g., Fowl Meadow, Canton Airport).

Ponkapoag Golf Course is one of two DCR properties in the Golf Courses District, which is also in the DUPR's South Region. (Figure 3.2.1) The other property in the district is the Leo J. Martin Golf Course.

### DCR Staffing

**Blue Hills District.** Most employees in the Blue Hills District work throughout the district. Only one position, the Forest and Parks Supervisor II (Houghton's Pond Waterfront Manager), is dedicated solely to the Blue Hills Reservation. The number and job titles of Blue Hills District workers are presented in Table 3.2.2.

District personnel perform a variety of activities related to the operation and maintenance of recreation facilities, athletic fields, and a waterfront; buildings and grounds; parkways; and vehicles and heavy equipment.

**Golf Courses District.** Some Ponkapoag Golf Course employees work throughout the Golf Courses District, while others work solely at Ponkapoag. Three positions, District Manager, Golf Course Superintendent, and Forest and Parks Supervisor III have responsibilities for both the Ponkapoag and Leo J. Martin golf courses. The other positions are dedicated to the Ponkapoag Golf

Course. The number and job titles of year-round and seasonal workers at Ponkapoag are presented in Table 3.2.2.

Ponkapoag personnel manage the golf course and associated equipment and facilities, and provide customer support to golfers. In addition to golf-related duties, they are also responsible for maintaining the appropriate water level in Ponkapoag Pond.

An independent assessment of Ponkapoag Golf Course (NGF Consulting 2009) revealed that Ponkapoag is understaffed. Average maintenance for a "generic" 18-hole golf course requires 9–12 full-time positions. Ponkapoag has five full-time positions and a seasonal staff equivalent to 8.4 full-time positions to maintain its 27 active holes.

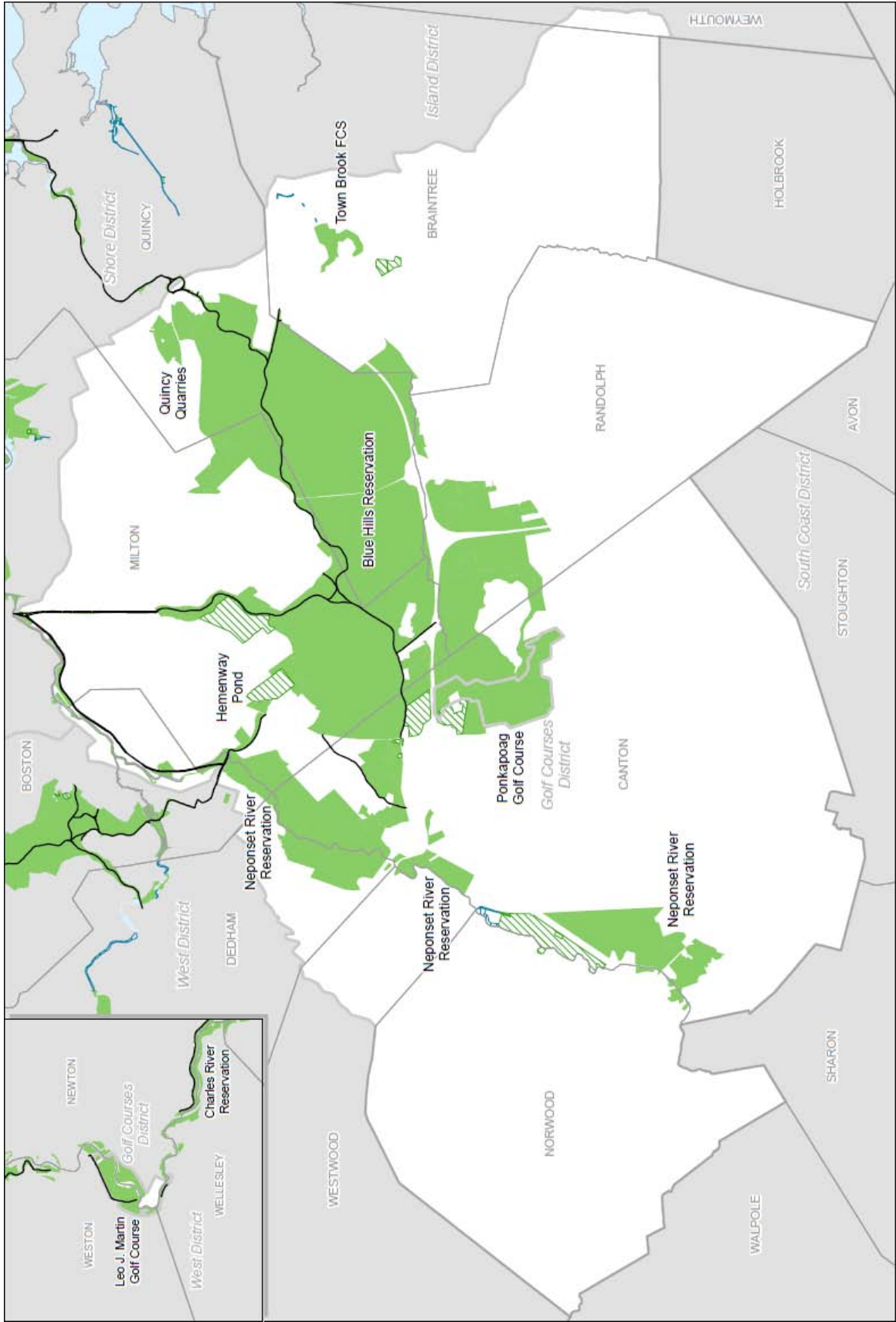
The Golf Courses District Manager and the South Region Director have identified the creation of an Assistant District Manager position as necessary to improve the performance of current operations and management activities throughout the district (i.e., at both the Ponkapoag and Leo J. Martin golf courses).

The seasonal nature of the Blue Hills' recreation facilities leads to a minor reassignment of district personnel in winter. Some Blue Hills District and Ponkapoag personnel are seasonally reassigned to DCR skating rinks elsewhere in the South Region. Because none of the rinks at the Blue Hills are operated by the DCR; there are no DCR employees at these facilities.

**South Region.** Some staffing occurs at the regional, rather than the district, level. These positions provide support to all districts in the South Region. The number and job titles of regional employees are presented in Table 3.2.2.

Regional personnel provide administrative support, natural resources management, and visitor services.

Staffing is significantly reduced from past levels. O'Connor (1985) reported a total of 34 year-round and 70 seasonal employees dedicated to the Blue Hills. Current staffing, including both the South Region and the Blue Hills District, is 24 full-time and 36 seasonal employees. Full- and part-time staffing is 29.4% and 48.6% lower, respectively, than 1985 levels.



**Blue Hills and Golf Courses Districts**  
Figure 3.2.1.

1:41,000

0 0.5 1 2 Miles

DCR  
Massachusetts

DCR GIS Apr-11

Geographic data supplied by the Office of Geographic and Environmental Information (MassGIS) and DCR GIS, Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs.

Legend:

- DCR Parkway
- DCR District Boundary
- Town Boundary
- DCR Property
- Fee Interest
- Conservation Restriction
- Other Legal Interest

**Table 3.2.2. Staffing of DCR properties included in this RMP, for fiscal year 2010.**

Job Title	Year-round	Seasonal
<i>Blue Hills District<sup>a</sup></i>		
District Manager	1	0
Forest and Parks Regional Coordinator	1	0
Forest and Parks Supervisor I	0	3
Forest and Parks Supervisor II	1	0
Forest and Parks Supervisor III	3	0
Laborer	0	10 <sup>b</sup>
Laborer II	2	0
Lifeguard	0	18
Maintenance Equipment Operator II	1	0
Park Foreman I	1	0
Park Foreman II	1	0
Recreational Facility Supervisor I	1	0
Recreational Facility Supervisor III	2	0
Recreational Facility Supervisor IV	1	0
Zookeeper <sup>c</sup>	1	0
<i>Ponkapoag Golf Course<sup>a</sup></i>		
Clerk II	0	5
District Manager	1	0
Forest and Parks Supervisor I	2	0
Forest and Parks Supervisor III	1	0
Golf Course Superintendent	0	1 <sup>d</sup>
Laborer	0	10
Recreation Facility Supervisor I	1	1
Starters	0	7
<i>South Region<sup>a</sup></i>		
Administration I	1	0
Administration II	1	0
Clerk II	0	1
Forest and Parks Supervisor I	0	1
Natural Resources Specialist	1	0
Ranger I	1 <sup>e</sup>	3
Ranger II	1 <sup>e</sup>	0
Ranger III	1	0
Recreation Facility Supervisor I	1	0

- a. Blue Hills District employees provide support to the Blue Hills and Neponset River reservations, Ponkapoag employees chiefly provide support to Ponkapoag Golf Course, and regional employees provide support to the Blue Hills District, Ponkapoag Golf Course, and other properties within the South Region.
- b. Three of these positions are at the Shea and Ulin rinks; the other positions are summer positions.
- c. This employee previously worked at the MDC zoos and retains this job title.
- d. Position runs from March through November.
- e. Primary responsibilities are for the Blue Hills District.

The Regional Director has identified additional staffing needs. The following six year-round positions are believed to be necessary to improve the performance of current operations and management activities:

- Forest and Park Supervisor II – Houghton’s Pond Recreation Area;
- Forest and Park Supervisor I – Houghton’s Pond Recreation Area;
- Forest and Park Supervisor I – Trailside Museum liaison;
- Forestry Assistant – Region-wide;
- Recreation Facility Supervisor – Operations Yard; and
- Visitor Services Specialist – Region-wide.

***Division of Planning and Engineering.*** The Division of Planning and Engineering provides planning, engineering, design, and construction management services in support of the Blue Hills and Golf Courses districts and the South Region. These services are provided through three Bureaus: the Bureau of Planning and Resource Protection, Bureau of Project Design and Management, and the Bureau of Engineering.

The Bureau of Planning and Resource Protection prepares RMPs and Trail System Plans; develops and updates GIS data; provides technical assistance with the management of archaeological and historic resources; identifies and acquires properties to be added to the DCR system; maintains an archive of park documents; and provides technical support on ecological resources and the monitoring of Conservation Restrictions. Recent activities at the Blue Hills include the development of this RMP and associated data, purchase of property along Ponkapoag Brook (Appendix D), historic preservation activities at Brookwood Farm, and addressing longstanding mitigation needs associated with the closure of the Quincy Quarries.

The Bureau of Project Design and Management plans, designs, and manages projects to enhance the reservation and golf course. Recent projects include preparation of the Trailside Museum Master Plan (Pressley and Associates 2008), upgrading a ball field at the Houghton’s Pond Recreation Area and developing a long-term vision for the site, and developing plans for a new bath house at Houghton’s Pond.

The Bureau of Engineering is responsible for the engineering and construction of parkways, dams, buildings, and park and recreation facilities. It also provides a resident Regional Engineer to oversee maintenance and construction projects. Replacement of the Ponkapoag Dam; installation of a new sewer force main between Hillside Street and the Scannell Bath House; and ongoing oversight of roofing, electric, and water line repair projects are among this bureau’s recent activities at the Blue Hills. It also provides ongoing street sweeping, catch basin cleaning, and leaf pick up in support of park operations.

***Office of Partnerships.*** The Office of Partnerships works to enhance DCR’s constituency of supporters and users by: working in partnership with park users and supporters to develop and sustain community-based stakeholder groups; facilitating external financial assistance for the planning, design, and construction of capital projects; managing the DCR partnerships Matching Funds Program, which leverages private contributions to improve DCR-owned and managed facilities; and serving as a dedicated point of contact for individuals and non-profit, institutional, and community-based organizations. It is this office that is responsible for identifying and coordinating private and institutional giving and partnerships at the Blue Hills.

#### Supplemental Staffing

***Community Service Program.*** Blue Hills District personnel are supplemented by participants in the Quincy District Court’s Community Service Program. In 2009, an estimated 4,200 community service participants worked in the Blue Hills District. Each participant performed one day of labor, for a total of 4,200 person-days worked. These participants provided light maintenance activities, including cleaning public restrooms, picking up litter, mowing grass, raking leaves, and shoveling snow. Participants in this program are supervised by both Trial Court and DCR personnel.

***Department of Corrections (DOC) Work Crew.*** District personnel are also supplemented by a six to eight member work crew from the Massachusetts Department of Corrections’ Pre-release Center in Roslindale. This crew, which is assigned to the entire Blue Hills District and not just the reservation, is made possible through an MOU between the DOC and the DCR. They provide litter control, leaf

raking, brush cutting and chipping, the cleaning of culverts, and snow and ice removal. In 2009, this crew worked an average of 40 hours per week, every week (MacKenzie 2009), for a total of at least 1,560 person-days worked. They are supervised by both DOC and DCR staff.

**Trail Crews.** Trail crews from the AMC and the Student Conservation Association (SCA) are hired by the DCR to perform maintenance projects on the reservation's trails. The AMC crew designs and conducts technically challenging projects, and the SCA crew performs general trail maintenance. Four AMC crew members worked at the Blue Hills over a six-week period in 2009, for a total of 120 person-days worked. Six SCA crew members worked on the reservation for two weeks, for a total of 60 person-days worked. The SCA crew requires DCR supervision, the AMC crew is self-supervised.

**Volunteers.** Volunteers contribute to the operation and maintenance of the Blue Hills. They plant trees and flowers, paint guardrails, pick up litter, build and erect bluebird boxes, help pull invasive plants, and help maintain trails.

Some volunteers make one-time or short-term contributions to the Blue Hills; others make ongoing contributions to the management of park resources. One-time and short-term volunteers are typically associated with youth groups, corporations, and special volunteer events (e.g., Park Serve Day).

Ongoing volunteers, such as the Friends of the Blue Hills' Adopt-A-Trail Program and the Blue Hills Trail Watch, are park-users who provide ongoing support to the maintenance and safe use of the Blue Hills' trail system. Over 30 participants in the Adopt-A-Trail program have adopted one or more trail segments that range from approximately 1,300 to 13,000 feet in length. They are responsible for normal maintenance of these segments. Approximately 60 Trail Watch members, both on foot and on bike, serve as wandering goodwill ambassadors on the reservation's trails, providing information and reminding trail users of the regulations. In addition, members of this group also provide support for DCR events. Information is lacking on the hours contributed annually by members of each group.

Volunteer activities are independently managed by three DCR personnel: the Ranger III, Natural

Resources Specialist, and Forest and Park Supervisor III. Volunteer recruitment, supervision, and record keeping vary among these personnel.

In 2009, DCR rangers worked with approximately 500 volunteers on park improvement projects; typically at large events that drew hundreds of volunteers (Brown et al. 2010). These events typically involved a half-day, for a total of 250 person-days worked. That same year, the South Region's Natural Resources Specialist conducted 32 volunteer days at the Blue Hills; 556 volunteers participated in these half-day events (Echandi 2010c), for an equivalent of 228 person-days worked. The number of volunteers and volunteer days overseen by the Forest and Park Supervisor III were not recorded.

### Public Safety

The Massachusetts State Police has primary law enforcement authority on state-owned lands. Under the terms of a 1992 MOU, the State Police's responsibilities at the Blue Hills includes enforcing all laws and park rules and regulations, providing visible patrol of park lands, traffic management, crowd control, accident investigation, crime investigation, and facility checks.

Other departments provide supplemental law enforcement. The Executive Office of Energy and Environmental Affairs' Office of Law Enforcement provides primary enforcement of hunting and fishing regulations. Local police provide additional law enforcement on the reservation, within their respective jurisdictions. DCR rangers are not law enforcement officers, but have limited authority to issue citations on the reservation (e.g., parking tickets.)

Fire control is provided by municipalities and by District 4 of the DCR's Bureau of Forest Fire Control. Municipalities also provide emergency medical response. DCR rangers and lifeguards provide first aid.

### General Budgetary Information

A variety of funds support the operations, maintenance, and capital improvement of DCR facilities.

**Operating Budget.** The annual operating budget supports daily operations and maintenance including utilities, supplies, equipment leases, administration,



and the maintenance and minor repair of facilities, vehicles, and equipment. All regions and districts receive operations funds.

Funding for the operation and maintenance of the Blue Hills Reservation comes from the Blue Hills District's operating budget. It is supplemented by materials and services funded through the South Region's operating budget. There are no dedicated operating budgets for individual properties.

In FY 09, the Blue Hills District's operating budget, excluding personnel costs, was approximately \$145,000. In addition, the South Region's budget covered such costs as pool chemicals, rink equipment, heating fuel, landscaping materials, and waste disposal throughout the region.

Staff support is not included in the operating budget funds, but is provided from a centrally administered payroll account. Blue Hills District personnel provide services to facilities throughout the district on an as needed basis. Similarly, South Region personnel, such as rangers and the Regional Engineer, provide services throughout the region on an as needed basis.

**Capital Budget.** The capital budget supports projects (e.g., construction, repair) and items (i.e., equipment) with a per-unit cost of at least \$5,000 and an expected lifespan of at least seven years.

Capital projects are identified and funded through a five-year capital plan. These plans identify proposed capital projects, their costs, and the year in which they are to be funded.

Capital plans are extensively reviewed within the DCR (i.e., Division of Urban Parks and Recreation, Division of State Parks and Recreation, and the Bureaus of Planning and Resource Protection, Engineering, and Capital Planning), approved by the Commissioner, and included in DCR's annual budget. This budget is then reviewed by the Executive Office of Energy and Environmental Affairs, the Executive Office of Administration and Finance, and the Governor. Additional capital initiatives may be identified and added to the budget by the Commissioner of Conservation and Recreation, Secretary of Energy and Environmental Affairs, or the Governor during this review process.

**Other Funding.** In addition to operations and capital funds, DCR facilities may receive funding through

grants, legislative earmarks, the Urban Parks Trust Fund, dedicated funding, or retained revenues.

**Grants.** In recent years a Recreational Trails Grant, administered by the DCR, has funded the AMC trails crew at the Blue Hills. There is no guarantee of future funding from this source.

**Earmarks.** Earmarks are funds directed to specific projects by the Massachusetts General Court via the annual state budget. Such earmarks periodically provide funding for projects at the Blue Hills (e.g., the recent ball field upgrade at Houghton's Pond).

**Urban Parks Trust Fund.** This trust fund uses donations to support special initiatives, within the DUPR, above and beyond basic property maintenance. It is funded through charitable contributions to the DCR, including those donations placed into the "iron ranger" (i.e., a secure metal donation box) located in the Houghton's Pond Recreation Area.

**Dedicated Funds.** Dedicated property funds may come from a variety of sources, and are limited to use at the property on which they are derived. The Blue Hills receives such funds through lease revenues associated with telecommunications towers, and an annual fee associated with the gas pipeline.

An additional source of dedicated funds is tipping fees associated with the Central Artery/Tunnel Project. These funds, \$825,000, are dedicated to improving and managing the Quincy Quarries section. They are currently being used to complete mitigation associated with the filling of the quarries and the former Quincy landfill.

**Retained Revenues.** Ponkapoag Golf Course may retain revenues generated from greens fees and apply them to costs associated with operations, maintenance, and improvements. The maximum amount of revenue that may be retained in a given fiscal year is specified in the state budget and changes yearly.

In fiscal year 2010 these retained revenues were capped at \$1,098,236. The actual revenue collected was \$1,075,232, of which \$964,780 was expended to operate the golf course. Approximately 40% of expenditures went to expenses such as utilities, supplies, capital equipment, and communications.

The remaining retained revenues were used to pay the course's staff.

### 3.2.2. Little Blue Hill

#### Section-wide Management

##### Habitat Management Plan

An approved Habitat Management Plan (HMP; Echandi 2009b, French 2009a) exists for the easternmost portion of this section. The area governed by this HMP corresponds with the Upland Woodland Management Unit delineated by the NHESP (2007a; Appendix I) and includes most of the land east of K-Path. Landscaping, road construction or expansion, trail maintenance, invasive plant monitoring and control, rare species monitoring, and habitat restoration in accordance with the conditions of the HMP may be performed without additional NHESP review. Specific conditions are identified below.

**Landscaping.** Landscaping within five meters of “any and all rare and endangered plant species” is restricted to the period of November through April. This includes pruning vegetation bordering trails, planting native vegetation, removal of downed and hazardous trees, and mowing.

**Roads.** The construction and expansion of roads is allowed, provided that it occurs between November and April. Activities outside this time-frame must undergo NHESP review.

**Trail Maintenance.** Maintenance activities, including vegetation clearance, trail closings, and revegetation may take place throughout the year, with two exceptions. First, vegetation management on trails with rare plants present is limited to the months of September to April. Second, all maintenance of trails within 50-feet of a vernal pool shall be kept to a minimum during the months of March through June, and only hazardous or unsafe vegetation may be removed.

**Invasive Plants.** The DCR monitors and records the locations of invasive species during the spring and summer. These plants are removed by mechanical means (i.e., pulling or cutting) at other times of year, unless located within one meter of the state-endangered Nantucket serviceberry.

**Rare Species Monitoring.** The DCR, in association with representatives of the New England Wildflower

Society, conducts annual assessments of past management activities and the health of rare species populations (e.g., Elliman 2009).

Monitoring state-listed Lepidoptera (i.e., butterflies and moths) is conducted at times appropriate for the species being surveyed. The DCR is responsible for conducting oak hairstreak surveys in June and July, and waxed swallow moth surveys in October and early November.

**Habitat Restoration.** Habitat restoration is restricted to using native plant species. Species native to the Blue Hills' ridge tops are identified in the HMP.

The HMP indicates that the DCR “shall continue to certify vernal pools within this management unit” (Echandi 2009b). There is no time-frame for this activity.

##### Area of Critical Environmental Concern

The Little Blue Hill section is located entirely within the Fowl Meadow and Ponkapoag Bog Area of Critical Environmental Concern (ACEC). A management plan exists for this ACEC (MDC 2002); there is no stewardship committee. Stewardship activities in this section are conducted as part of the overall management of the Blue Hills Reservation, rather than from the perspective of ACEC management.

#### Site and Facility Management

##### Green Street

The DCR is responsible for cutting the grass along the shoulder of Green Street. During the growing season, grass is mowed every 14 days, or as needed.

The dressage field is maintained by local residents. There is no agreement between the DCR and these residents for this to occur. The frequency and types of management practices performed are unknown.

##### Royall Street House

Use of the Royall Street house and garage is governed by a general MOU between the MDC and the Massachusetts State Police.

The DCR is responsible for mowing the grass at this facility; it is cut every 14 days, or as needed, during the growing season. The DCR is also responsible for snow removal.

### Route 138 Park and Ride Lot

The Route 138 Park and Ride lot is maintained by MassDOT.

### **3.2.3. Hemenway Pond**

#### **Section-wide Management**

##### Care and Control Agreement

A 99-year agreement between the MDC and the Town of Milton transferred the care and control of the Hemenway Pond section to the town for the period of 1966–2065 (MDC 1966).

Under the terms of this agreement, the town must obtain written consent from the MDC (now the DCR) prior to the removal of “any trees or shrubbery on said premise.” Written consent is also required to “erect or maintain or cause or allow to be erected or maintained upon said premise any building or structure whatsoever.”

### **3.2.4. Great Blue Hill**

#### **Section-wide Management**

##### Habitat Management Plan

An approved Habitat Management Plan (HMP; Echandi 2009b, French 2009a) exists for the western half of the Great Blue Hill section. The area governed by this plan corresponds with the Upland Woodland Management Unit delineated by the NHESP (2007a; Appendix I) and extends from Route 138 eastward to the five-corners area. The William F. Rogers Ski Area is specifically excluded.

Landscaping, road construction or expansion, trail maintenance, invasive plant monitoring and control, rare species monitoring, and habitat restoration in accordance with the conditions of the HMP may be performed without additional NHESP review.

The conditions of the HMP for the Great Blue Hill section are largely the same as those for the Little Blue Hill section (See Section 3.2.2.) However, there is a difference between sections in the management of invasive plants.

Populations of Louise’s swallow-wort are actively controlled within the Great Blue Hill section. Herbicides are used adjacent to buildings and structures on the summit of Great Blue Hill to both control swallow-wort and protect the integrity of

historic resources. Application of herbicides is restricted to the months of June and July, and is performed by licensed DCR staff. No herbicides are used within three meters of Nantucket serviceberry plants. Elsewhere in this section, mechanical methods (e.g., hand pulling) are used.

#### **Site and Facility Management**

##### Blue Hills Pond

A management plan for the Blue Hills Pond watershed was developed in 2006 (Baystate Environmental Consultants 2006); funding has been unavailable to implement recommendations.

##### Trailside Museum

A five-year MOU (2007–2012) governs the management of the Trailside Museum. The purpose of this MOU is to provide interpretive programming to park visitors. There is no provision for a long-term lease of this facility, nor any other long-term agreement between the DCR and Mass Audubon.

The DCR is responsible for major repairs, and Mass Audubon minor repairs, to the Trailside Museum. (Table 3.2.3) The DCR provides “janitorial and maintenance supplies, and materials,” and Mass Audubon is responsible for other operational expenses. Mass Audubon is also responsible for keeping the driveway to the museum free of snow and ice, providing an annual report that includes recommended new equipment and capital expenditures, and for opening and operating the adjacent comfort station.

**Table 3.2.3. Roles and responsibilities for maintenance and repair of the Trailside Museum.**

<b>Maintenance or Repair Activity</b>	<b>Responsible Party<sup>1</sup></b>
Capital improvements	DCR
Maintenance and minor repairs	MAS
Utility costs	DCR
Litter and trash removal	MAS

1. DCR = Massachusetts Department of Conservation and Recreation, MAS = Massachusetts Audubon Society.

Mass Audubon is also responsible for managing vegetation on the grounds of the Trailside Museum. Vegetation at the museum’s parking areas and adjacent to the comfort station is maintained by the DCR.

Responsibility for maintaining and repairing the Trailside Museum north and south parking lots is

split between the DCR and the operator of the William F. Rogers Ski Area. (Please see William F. Rogers Ski Area, below.)

**Interpretive Services.** The Trailside Museum, which is the reservation’s official interpretive center, provides displays and live animal exhibits that focus on the nature of the Blue Hills. There is a minimal fee for visiting the museum; viewing the outdoor animal exhibits is free of charge.

Mass Audubon offers 16 educational and interpretive programs for school groups and more than 12 programs for Boy and Girl Scouts. Information on these programs may be found on the Mass Audubon web page ([http://massaudubon.org/Nature\\_Connection/Sanctuaries/Blue\\_Hills/groups.php](http://massaudubon.org/Nature_Connection/Sanctuaries/Blue_Hills/groups.php)). Current pricing for these programs, when conducted at the Trailside Museum, is \$125 per hour.

The Trailside Museum’s public, community group, and school programs reached 26,048 attendees in fiscal year 2008 (MAS 2008). An additional 2,597 people attended special events at the museum. There were 15,853 museum attendees, and an estimated 195,576 people visited the museum’s outdoor displays.

Mass Audubon is provided an annual “management fee to cover the expenses of providing... services.” This fee, if any, is appropriated each year by the Massachusetts Legislature. Museum entrance fees, camp registration costs, and fees for group programs help subsidize Mass Audubon’s presence at the Blue Hills.

William F. Rogers Ski Area

Ski Blue Hills Management LLC operates the ski area under a five-year Permit Agreement (2007–2012). This agreement provides them “the right to operate, manage, and maintain a ski, snowboarding, and snowtubing operation.” A long-term lease (i.e., 25+ years) is possible under Massachusetts law.

**Recreation.** The ski area is to be open from 9:00 a.m. to 9:00 p.m., seven days per week, from December 15<sup>th</sup> through March 10<sup>th</sup>. This ski season may be shortened or extended, upon written request. Artificial snow-making is used to ensure snow cover on ski trails, thereby maximizing the days of operation.

The operator is responsible for inspecting, maintaining, and operating the ski area’s chairlift. They are also responsible for the Magic Carpet® conveyor ski lift.

The ski area operator must offer a twice monthly “learn to ski and snowboard” program at a reduced price. This program is designed to provide “lower-income residents of the Commonwealth” the opportunity to participate in these recreational activities.

A variety of other management responsibilities, are specified in the Permit Agreement. The ski area operator provides “for the maintenance of an adequate ski/snowboard patrol organization;” operates a ski and snowboard school; and manages a concession for food, beverages, equipment rental, and equipment sales.

**Buildings and Grounds.** The Permit Agreement identifies a complex division of responsibilities for maintaining buildings and grounds. (Table 3.2.4)

**Table 3.2.4. Roles and responsibilities for maintenance and repair of the William F. Rogers Ski Area.**

Maintenance or Repair Activity	Responsible Party <sup>1</sup>
Capital improvements	DCR and SBH
Maintenance and minor repairs	SBH
Utility costs	DCR and SBH
Litter and trash removal	SBH

1. DCR = Massachusetts Department of Conservation and Recreation, SBH = Ski Blue Hills LLC.

Capital improvement costs are shared between the ski area operator and the DCR. Ski Blue Hills’ annual capital expenditure is based on a percentage of their operating revenues, with the DCR providing reimbursement for “major repairs or replacements.” All improvements to the property must be approved in advance by the DCR, and become the property of the DCR.

Utility costs are also shared. The DCR covers the cost of electricity and heating fuel for the main lodge and ski school, and the operator pays all other utilities.

The DCR annually pays the ski area operator fixed amounts for operational expenses (\$30,000), supplies (\$10,000), and snow removal (\$10,000).

Snow making consumes approximately 16,000,000 gallons of potable water per ski season, at an annual cost of approximately \$100,000. The ski area

operator is responsible for this cost. Ownership of snow-making equipment is divided between the DCR and the ski area operator.

Three alternative water sources have been proposed in order to decrease snowmaking costs and the demand placed on the Town of Canton’s municipal water supply. These alternatives are pumping directly from multiple wells; pumping well water into a large-volume storage tank, and creating a reservoir for snow making (Leggette, Brashears & Graham, Inc. 2001). Each has numerous fiscal, environmental, regulatory, design, and construction challenges. There are currently no plans to implement any of these alternatives.

Runoff from snow melt is managed via a drainage system at the base of the slopes. This system of metal culverts and concrete and bituminous channels directs melt-water into an intermittent stream that leads to the Neponset River. The system is in disrepair (e.g., sections of collapsed pipe) and only partially effective. In several locations melt-water bypasses this system and flows into the Red Dot Trail, Trailside Museum grounds, south parking lot, and woods down-slope of the ski area.

Ski Blue Hills LLC is responsible for mowing the ski slopes in the late fall in order to cut back invading woody vegetation. The DCR is responsible for mowing in the spring and summer, when Ski Blue Hills LLC is not operating on the premises. The cutting regime is intended to maintain the slopes for skiing, not to manage for ecological values.

Landscape alterations, including grade changes, tree removal, and drainage alterations require DCR approval. The ski area operator is responsible for remediating erosion associated with these activities.

The DCR has primary responsibility for maintaining and repairing the Trailside Museum north and south parking lots. Snow removal from these lots, and the lot adjacent to the ski area’s main lodge, is the responsibility of the Ski Blue Hills, who is compensated by the DCR for “salt and plowing assistance.”

The operator is also responsible for ensuring “unimpeded traffic flows, efficient drop-offs, and clearly understood directions for vehicular traffic” in the north and south parking lots. Traffic management in these lots is performed by ski area

employees; and by DCR rangers when sufficient ski area employees are not available.

### Blue Hill Meteorological Observatory

The Blue Hills Observatory and Science Center, Inc. operates the meteorological observatory under a five-year Special Use Permit (2009–2013). A long-term lease (i.e., 25+ years) is possible under Massachusetts law.

The observatory is operated for the purposes of conducting atmospheric educational programs for schools and the general public, weather data recording, and the preservation and display of historical meteorological instruments and records.

**Buildings and Grounds.** Under the terms of the Special Use Permit, the DCR is responsible for capital and utility costs and the Blue Hill Observatory and Science Center is responsible for minor repairs and operational costs. (Table 3.2.5) The latter includes maintaining the observatory’s grounds, keeping walks clear of snow and ice, off-site trash disposal, monitoring the performance of mechanical systems, and performing routine preventative maintenance. All improvements to the property must be approved in advance by the DCR and reviewed by the Massachusetts Historical Commission.

**Table 3.2.5. Roles and responsibilities for maintenance and repair of the Blue Hill Meteorological Observatory.**

Maintenance or Repair Activity	Responsible Party <sup>1</sup>
Capital improvements	DCR
Maintenance and minor repairs	BHO
Utility costs	DCR
Litter and trash removal	BHO

1. DCR = Massachusetts Department of Conservation and Recreation, BHO = Blue Hill Observatory and Science Center.

The DCR is responsible for maintaining and repairing the Summit Road and the observatory’s parking area.

A small number of bird nest boxes have been erected around the observatory grounds. These boxes are maintained and monitored by the observatory.

**Interpretive Services.** Approximately 6,500 students attend weekday programs during the spring and fall (McCasland 2009b). Open houses, one in the spring and one in the fall, each draw an estimated 500

attendees. Training workshops draw an estimated 200 teachers annually.

### Privately-owned Buildings and Structures

WGBH is responsible for costs associated with its transmitter building and tower. The Town of Milton is responsible for costs associated with its water tower. Management of other privately owned buildings and structures is also the sole responsibility of their owners.

### Carberry Field

Carberry Field is located within Priority Habitat, but is not addressed in the HMP. It is mowed once per year, in early September.

### Hemenway Hill Area

Systemic insecticides are injected into some hemlock trees in order to reduce tree mortality caused by hemlock wooly adelgid.

Fencing around the stone well in the east side of this section reduces access to this resource, decreasing potential vandalism damage.

## **3.2.5. Brookwood Farm**

### **Section-wide Management**

Brookwood Farm's grasslands are cut once per year, in early September. During the growing season, foot paths are mowed through the fields every 14 days. Bluebird nest boxes have been erected in these fields; they are monitored by DCR staff and volunteers.

Invasive plants are managed through the use of biological controls and herbicides. Since 2008, the NepRWA and the DCR have been using *Galerucella* beetles to control purple loosestrife (NepRWA 2009). An herbicide (Garlon® 4 Ultra) is used to control a population of Louise's swallow-wort in the cultural grasslands (Echandi 2010d) and also to control vegetation growing along the stone wall along Hillside Street.

Sugar maples along the eastern drive are maintained, on an as needed basis, by a commercial arborist. Typical management includes pruning dead or damaged branches, and the removal of dead or diseased trees and their replacement with new sugar maples.

Systemic insecticides are injected into some of this section's hemlock trees in order to reduce tree mortality caused by hemlock wooly adelgid.

Brookwood's driveways are maintained and repaired by the DCR. The DCR is also responsible for snow removal.

***Interpretive Services.*** Maple Sugarin' Days, one of the reservation's largest interpretive events, takes place at Brookwood Farm each March. During this two-day event there is no public parking; attendees arrive by shuttle bus or walk from the Trailside Museum or Houghton's Pond. Presentations on current and historic methods of maple syrup production are provided. This event requires several weeks of firewood cutting, maple sap collection, and boiler cleaning and operation. Labor is provided by the DCR and the Trial Court Community Service Program.

### **Site and Facility Management**

#### Blue Hill River Road/Hillside Street

The DCR is responsible for snow removal from the sidewalk along the south side of Blue Hill River Road in Canton and Hillside Street in Milton. This sidewalk is categorized as a low priority in DCR's storm management plan.

#### Gate Keeper's Cottage

The Gate Keeper's Cottage is included in the list of historic resources eligible for DCR's Historic Curatorship Program (DCR n.d.c); a curator will likely be solicited in a future RFP.

Repair of this building and the historic barn are part of a larger effort that also envisions construction of a new operations barn. There is currently no master plan for this effort.

#### Historic Barn

A portion of the historic barn was recently removed from the site and repaired by the North Bennet Street School. It will be reassembled at Brookwood in 2011. This process is governed through a North Bennet Street School Carpentry Project Agreement with the DCR (O'Shaughnessy 2008) and a Memorandum of Agreement between the DCR, North Bennet Street School, the Canton Historical Commission, and the Massachusetts Historical Commission.

Repair of this barn and the Gate Keeper's Cottage are part of a larger effort that also envisions construction of a new operations barn. There is currently no master plan for this effort.

### Brookwood Community Farm

Brookwood Community Farm, a non-profit organization, manages approximately two acres of agricultural fields as an organic farm. This farm is operated under one-year permit (2007) that is renewable for up to four additional years. The farm is responsible for all agricultural supplies and practices.

**Buildings and Grounds.** The Community Farm's permit provides for their use of one bay of the tractor shed. A "temporary and removable greenhouse may be erected adjacent to the tractor shed." This greenhouse may not exceed 19 x 20 feet. The shed bay and greenhouse are occupied in accordance with the terms of this permit.

**Interpretive Services.** Brookwood Community Farm offers educational programs on farms and farming to schools and other community groups.

### Henry Saltonstall Howe House

The second floor of the Henry Saltonstall Howe House is an occupied residence. Use of the house's main floor for meetings is coordinated through the South Region's rangers and with the house's resident.

### **3.2.6. Houghton's Pond**

Houghton's Pond is one of the reservation's most heavily used areas, and it receives a correspondingly high level of management. Most management is associated with the scheduling, operation, and maintenance of the Houghton's Pond Recreation Area. Facilities within this recreation area are addressed individually in the Site and Facility Management portion of this section.

#### **Section-wide Management**

Lawns, other than athletic fields, are cut every 14 days or as needed during the growing season. (Appendix X) This is performed by a combination of DCR employees and participants in the Trial Court Community Service Program.

The DCR maintains and repairs all parking areas. This, with one exception, includes snow removal.

There is no snow removal along Blue Hill River Road, from its intersection with Ponkapoag Trail to the athletic field/Site 4 parking area. This road is gated from the late fall to the early spring, and closed to the public.

The DCR is also responsible for snow removal from the sidewalk along Hillside Street. It is categorized as a low priority in DCR's storm management plan.

Rangers direct traffic, and issue parking citations, in the Houghton's Pond lots during periods of high use. Massachusetts State Police provide public safety support and law enforcement.

Trails between the bath house, visitor center, and concession stand are closed to bicycles. Most others in this section remain open to all trail users.

**Interpretive Services.** Houghton's Pond is the primary location of many of the reservation's largest interpretive programs and events. First Day Hike participants assemble at Houghton's Pond before heading to other sections of the reservation; hot foods and beverages are provided to hikers at this location. The Mountain Bike Festival takes place on the field adjacent to Picnic Site 5. Mountain bike companies and organizations set up displays and booths on-site. The Dog Sled Fun Run also takes place here. The Houghton's Pond Fish Festival occurs both in this field and around the entire Houghton's Pond shoreline. Picnic Site 5 is also the organizational location for many of the charity events that take place on the reservation.

Smaller-scale interpretive and recreational activities, such as interpretive hikes and the Blue Hills Walking Club, begin at Houghton's Pond.

### **Site and Facility Management**

#### Playground

The condition of playground equipment is informally inspected every seven days. Formal inspections are conducted annually.

#### Concession Stand

The concession stand is operated under a five-year permit (2008–2012) by Family Affair Catering. At a minimum, the concession must be open from the weekend prior to Memorial Day through and including Labor Day. During this period, the concessionaire is required to maintain a minimum service schedule from 10:00 a.m. to 6:00 p. m.,

seven days per week, weather permitting. These hours of operation may be extended at the request of the Houghton's Pond Waterfront Manager.

### Houghton's Pond Waterfront

The Houghton's Pond waterfront is staffed with lifeguards from 10:00 a.m. until 6:00 p.m., seven days per week, during July and August. Outside of these dates and times, unguarded swimming is available "at your own risk." Operation of this waterfront is governed by the DCR *Waterfront Program Procedure Manual* (DCR 2007b). Regulations governing swimming are posted at the beach, and are also available on the DCR web page.

The waterfront area is the focus of intensive maintenance activities. Bathroom facilities are cleaned on an ongoing basis every day that the beach is open. Litter is picked up, and trash barrels emptied, every seven days, or as needed. Beach sand is sanitized every 14 days. The frequency of other maintenance activities is identified in Appendix X.

Water quality is monitored at Houghton's Pond. In accordance with the State Sanitary Code, water samples are obtained and analyzed within five days of the beach's opening, and then once per week throughout the swimming season. Test results determine whether or not the beach is open for swimming.

Dogs and horses are excluded from the immediate beach area during the swimming season. This is done to help maintain water quality. Wildfowl are not actively excluded.

Mass Wildlife stocks Houghton's Pond with trout each spring. Fishing is allowed from the pond shore.

### Picnic Sites

Three picnic sites (Sites 3, 4, and 5) may be reserved for use by groups of 25 or more; the Blue Hills District Office schedules their use. No reservations are allowed for the Memorial Day weekend, Labor Day weekend, or the week of Independence Day. During these periods use is first-come, first-served. The remaining picnic sites (Sites 1 and 2) are always available for use on a first-come, first-served basis.

### Athletic Fields

Use of athletic fields along Blue Hill River Road is scheduled by the DCR. Reservations require submission of an athletic field scheduling request

form, which is available on the DCR web page ([www.mass.gov/dcr/recreate/scheduling\\_request.pdf](http://www.mass.gov/dcr/recreate/scheduling_request.pdf)).

Grass at these fields is cut every seven days during the growing season.

An existing revocable permit (MDC 1970) gives the Massachusetts Army National Guard priority for use of the athletic fields. The permit allows the Guard to use the Houghton's Pond athletic fields and the wooded area west of the fields "as an alternate assembly area in the event the primary location of the National Guard armory is destroyed, damaged, or unavailable." This agreement permits the assembly of soldiers, vehicles, and materials on the athletic fields; including the field recently renovated.

## **3.2.7. Reservation Headquarters**

### **Section-wide Management**

Vegetation management is largely restricted to lawn maintenance. Lawns are cut every 14 days, typically by participants in the Trial Court Community Service Program. Trial Court labor is also responsible for spring cleanup and raking leaves.

### **Site and Facility Management**

#### Regional Office

The Regional Office provides minor amenities for vehicle maintenance. An air hose, connected to a compressor in the building's basement, allows for the inflating of vehicle and equipment tires. A water hose, located behind the building, is used for washing ranger, other DCR, and Trial Court vehicles.

DCR employees place and maintain hummingbird feeders outside the Regional Office.

Blue Hills Trail Watch's tools are stored in a shed near the office. Adopt-A-Trail tools are stored in a locker immediately behind the building.

**Interpretive Services.** DCR rangers provide information, often relating to environmental education, to visitors to the contact station at the Regional Office.

#### Brian T. Broderick Stables

In 2002 a plan was developed to restore the Brian T. Broderick Stables to a working stable (John Caitlin and Associates Architects, Inc. 2002), at an



estimated cost of 2.4 million dollars (DCAM 2004). This plan was not implemented. Access to this building is restricted to minimize the potential for injury.

### Hillside Street

The Massachusetts State Police have placed four orange traffic cones around the main crosswalk on Hillside Street in order to increase its visibility to drivers.

A small field, to the south of Hillside Street, is cut annually.

### **3.2.8. Operations Yard**

#### **Section-wide Management**

The refueling of district and regional vehicles and equipment takes place at fuel pumps located in the center of the Operations Yard. District vehicles, power equipment, and heavy equipment are maintained and repaired in this section’s garage and shops.

There are no other management activities unique to this section.

### **3.2.9. Unquity Road**

#### **Section-wide Management**

There is no section-wide management unique to this section of the reservation.

#### **Site and Facility Management**

##### Max Ulin Memorial Skating Rink

In July 2010, the Town of Milton received a five-year, no-cost permit to operate Ulin Rink. Under this permit, the DCR is responsible for major repairs, and the Town of Milton minor repairs, to the rink. (Table 3.2.6)

**Table 3.2.6. Roles and responsibilities for maintenance and repair of the Max Ulin Memorial Skating Rink.**

<b>Maintenance or Repair Activity</b>	<b>Responsible Party<sup>1</sup></b>
Capital improvements	DCR
Maintenance and minor repairs	TOM
Utility costs	TOM
Litter and trash removal	TOM

1. DCR = Massachusetts Department of Conservation and Recreation, TOM = Town of Milton, the current permittee.

The Town of Milton subsequently entered into a three-year agreement (2010–2013) with Curry College for the management and operation of the rink (Town of Milton 2010). Some of the town’s responsibilities, as identified in the five-year permit, were assumed by Curry College. Under this agreement, the allocation of ice time is the same as when the rink was managed by the DCR.

### Pine Tree Brook

A 1969 agreement transfers the “care, custody and control” of two parcels of land along Pine Tree Brook to the Town of Milton “for so long as the Harland Site Reservoir is owned, operated and maintained by the Town” (MDC 1969). One of these parcels is located along Pine Tree Brook, east of Unquity Road. (See Section 3.2.11 Chickatawbut Hill, for information on the other parcel.)

Under this agreement, the town must obtain written consent to “erect or maintain or cause or allow to be erected or maintained upon said premise any building or structure whatsoever except a dam” (MDC 1969). The agreement also requires that “the cutting or removal of trees and shrubs... be held to a minimum compatible” with recreation and flood control purposes.

Management of the dam and associated structures at the Harland Street Reservoir is the responsibility of the Town of Milton. The town is also responsible for regulating water levels in Pine Tree Brook.

### Camp Sayre

The Conservation Restriction on Camp Sayre is monitored annually.

### Unquity Road

The DCR manages the parking lot at Base Path; there is no regular maintenance.

### Unquity Landfill

Vegetation is cut to prevent roots from penetrating the cap over this former landfill.

### **3.2.10. Buck Hill**

#### **Section-wide Management**

The New England Wildflower Society, in association with the DCR, monitors state-listed plants.

The DCR is responsible for maintaining and repairing the gravel parking areas along Route 28. There is no regular maintenance of these lots.

### 3.2.11. Chickatawbut Hill

#### Section-wide Management

Some hemlocks in this section are being treated with a systemic insecticide in order to reduce tree mortality caused by hemlock wooly adelgid.

#### Site and Facility Management

##### Blue Hill Reservoir

The MWRA is responsible for the quantity and quality of drinking water in its covered storage facility. It is also responsible for the maintenance and repair of the access road, parking area, and all buildings and structures associated with this facility.

Vegetation management adjacent to the covered storage facility’s buildings, access road, and parking area is the responsibility of the MWRA. It is presently unclear whether the MWRA or the DCR is responsible for managing vegetation above the underground storage tanks and around the edges of the Blue Hill Reservoir.

The DCR is responsible for maintaining and repairing the Blue Hill Reservoir Dam. An emergency action plan (GEI Consultants Inc. 2009) specifies procedures to be taken in the event of dam failure or other emergency situation. Such plans are required for all high hazard potential dams in Massachusetts.

##### Pine Tree Brook

A 1969 agreement transfers the “care, custody and control” of two parcels of land along Pine Tree Brook to the Town of Milton “for so long as the Harland Site Reservoir is owned, operated and maintained by the Town” (MDC 1969). One of these parcels is located along Pine Tree Brook, immediately east of Route 28. (See Section 3.2.9 Unquity Road, for information on the other parcel.)

Under this agreement, the town must obtain written consent to “erect or maintain or cause or allow to be erected or maintained upon said premise any building or structure whatsoever except a dam” (MDC 1969). The agreement also requires that “the cutting or removal of trees and shrubs... be held to a

minimum compatible” with recreation and flood control purposes.

#### Norman Smith Environmental Education Center at Chickatawbut Hill

The five-year MOU that governs the management of the Trailside Museum also governs the use of the education center.

The DCR is responsible for major repairs, and Mass Audubon minor repairs, to the Norman Smith Environmental Education Center at Chickatawbut Hill. (Table 3.2.7) Mass Audubon is solely responsible for maintaining the wooden observation tower, shed, and bird observation blind.

**Table 3.2.7. Roles and responsibilities for maintenance and repair of the Norman Smith Environmental Education Center.**

Maintenance or Repair Activity	Responsible Party <sup>1</sup>
Capital improvements	DCR
Maintenance and minor repairs	MAS
Utility costs	DCR
Litter and trash removal	MAS

1. DCR = Massachusetts Department of Conservation and Recreation, MAS = Massachusetts Audubon Society.

In addition to their MOU, Mass Audubon also holds a Special Use Permit from the DCR for wildlife research and education activities. This permit allows them to place, maintain, and monitor eastern bluebird, American kestrel, eastern screech-owl, and other nest boxes on the reservation. Some are located at the Norman Smith Environmental Education Center.

Mass Audubon’s permit also allows them to “relocate snakes inside the reservation where snake/human conflict exists,” including from inside the education center’s grounds during the summer camp season. A permit from the NHESP is also required to capture and relocate state-listed species.

An approved HMP exists for a two-acre area within the grounds of the Norman Smith Environmental Education Center (Mass Audubon 2009; French 2009b). A combination of cutting and herbicide application is used to maintain a low cover of woody and herbaceous vegetation.

The DCR is responsible for maintaining and repairing the access road to the Norman Smith Environmental Education Center. Mass Audubon is

responsible for keeping this road “free from ice and snow.” The MOU is silent on who is responsible for snow removal from the parking areas. Mass Audubon plows these areas in association with maintaining the access road.

*Interpretive Services.* Mass Audubon provides environmental education and interpretation through its summer day camp for children ages 4.5–14. It runs from late June through late August, and provides information on energy, insects, water resources, wildlife habitat, and endangered species. Emphasis is placed on the Blue Hills. Nearly 390 children attended this camp in fiscal year 2008.

### **3.2.12. Quincy Quarries**

#### **Section-wide Management**

The management of this section is unique. In addition to typical activities that occur throughout the reservation (e.g., management of recreation facilities), management of the Quincy Quarries also involves completing long-term obligations associated with the filling of quarries and closing of landfills. These obligations are specified in a U.S. Army Corps of Engineers permit (#NAE-199-3185), Quincy Conservation Commission Order of Conditions (DEP File Number 59-0772), and an Administrative Consent Order issued by the DEP (ACOP-SE-04-4001). They apply to areas both north and south of Ricciuti Drive.

Landfill closures require development of post closure maintenance and monitoring plans. These plans, which are not yet developed for this site, will guide some future management activities in this section of the reservation.

Replication of 83,400 ft<sup>2</sup> of wetlands is required as mitigation for filling the Quincy Quarries. Approximately 46,700 ft<sup>2</sup> have already been replicated on site. An additional 36,700 ft<sup>2</sup> remain to be replicated. This replication will take place off-site; the specific location has yet to be determined.

The planting and monitoring of vegetation in replicated wetlands is also required as compensatory mitigation for the filling of the quarries. Vegetation monitoring is scheduled to be performed by a consultant, and invasive species control is scheduled to be conducted by DCR staff. Biocontrol is planned for purple loosestrife and the use of an herbicide is planned to control Japanese knotweed.

## **Site and Facility Management**

### **Granite Rail Quarry Compressor House**

The DCR is responsible for maintaining this building. Because it is unoccupied, it receives little regular maintenance.

The DCR manages the building’s grounds. Lawn mowing and snow removal are performed by DCR employees, often with the assistance of Trial Court Community Service Program participants.

### **AT&T Mobility Cell Site #1160**

A five-year Highground Special Use Permit governs the management of this privately owned facility. Cingular Wireless PCS is solely responsible for its operation, maintenance, and repair. All improvements must be approved, in advance, by the DCR.

### **Athletic Facility**

A five-year (2007–2012) MOU between the DCR and the City of Quincy governs the use and management of the athletic facilities north of Ricciuti Drive. The purpose of this MOU is to allow the city “to continue to access, use, operate, maintain, and repair” this facility “for the use of the general public.”

The city is responsible for the day-to-day operation and scheduling of the soccer, and baseball fields. “Reasonable preference” is given to Quincy residents for use of four of the five fields. The fifth field is available to all regional users.

All repairs, renovations, and other capital improvements to buildings, structures, and infrastructure are the responsibility of the city; there is no cost or obligation to the Commonwealth. Major repairs require DCR approval; minor repairs do not.

The DCR retains the authority to use the fields and associated parking areas for scheduled special events.

### **Ricciuti Drive**

Ricciuti Drive is maintained and repaired by the City of Quincy; employees of Quarry Hills manage litter along the road and maintain ornamental plantings in the road’s median.

The DCR is responsible for the maintenance and repair of a small parking area along the north side of

Ricciuti Drive. Due to recurring vandalism, the decision was made to no longer locate a kiosk at this parking area.

**Mini Fenway Park**

Approximately 12 acres south of Ricciuti Drive is leased to Kids Replica Ballpark, Inc. for the purpose of constructing and operating a replica of Fenway Park. (Appendix W) The term of this lease is 20 years from the commencement of full operations; three 10-year lease extensions are allowed.

There is no authorized storage of vehicles in or near the site of Mini Fenway Park.

**Furnace Brook Parkway**

The DCR is responsible for snow removal from the sidewalks along Furnace Brook Parkway. The sidewalk between Wampatuck Road and Willard Street is a high priority, and the sidewalk from Willard Street to the rotary a low priority, in DCR’s storm management plan.

**Quarry Hills**

Quarry Hills is privately owned and is not part of the Blue Hills Reservation. However, planned activities at Quarry Hills will affect management of the Quincy Quarries section of the reservation.

Quarry Hills Associates is responsible for providing two “foot path access points” to the Blue Hills Reservation, and also for providing or financially supporting “public footpaths” across their property (Babb-Brott 2007).

**3.2.13. St. Moritz**

**Section-wide Management**

A segment of the property boundary was surveyed in spring 2010 to identify encroachment. Follow-up action is being taken to resolve identified encroachment. No further surveys are planned.

**Site and Facility Management**

**St. Moritz Horseshoe Club**

The horseshoe facility along Bunker Hill Lane is operated by the St. Moritz Horseshoe Club. The club pitches on Monday and Tuesday nights, from 7:00–10:00 p.m., in the spring and summer. Membership is required.

Maintenance of infrastructure associated with the St. Moritz Horseshoe Club is believed to be the responsibility of the club; there is no formal written agreement. As a result, information is lacking on the type and frequency of maintenance activities.

**Daniel Michael Shea Memorial Park**

The condition of playground equipment is informally inspected every seven days. Formal inspections are conducted annually.

Grass is cut on the reservation’s general schedule of every 14 days, or as needed during the growing season.

**Willard Street**

MassDOT is responsible for maintaining and repairing Willard Street.

**Mayor William T. Shea Memorial Rink**

Shea Rink is operated under a five-year Permit Agreement (2010–2015) by Michael B. O’Toole, Jr. LLC. Under the agreement, the DCR is responsible for major repairs, and Michael B. O’Toole, Jr. LLC minor repairs, to the rink. (Table 3.2.8)

**Table 3.2.8. Roles and responsibilities for maintenance and repair of the Mayor William T. Shea Memorial Rink.**

<b>Maintenance or Repair Activity</b>	<b>Responsible Party<sup>1</sup></b>
Capital improvements	DCR
Maintenance and minor repairs	MBO
Utility costs	MBO
Litter and trash removal	MBO

1. DCR = Massachusetts Department of Conservation and Recreation, MBO = Michael B. O’Toole, Jr. LLC, the current permittee.

The operator is also responsible for maintaining the rink’s parking lot, including snow removal, and for maintaining the vegetation in the immediate vicinity of the building.

Under the terms of the permit, Shea Rink is operated as a statewide facility available to all members of the general public, without preference to any one organization or group. The rink must be open daily, from at least October through March. The permit also specifies the days and times of approximately 18 hours of free public skating per week.

The DCR is responsible for operating and maintaining outdoor recreation facilities located

adjacent to Shea Rink. The basketball courts are available on a first-come, first-served basis. The playground located adjacent to Shea Rink is closed, and is no longer maintained or inspected.

**Interpretive Services.** Ranger-led hikes in the western portion of the reservation originate from the trailhead on the south side of the Shea Rink parking lot. An interpretive hike on the history of the St. Moritz Winter Carnival is offered each January.

Sergeant Robert Allen Curry  
Little League Ball Field

This field is operated and managed by the DCR; it may be reserved in accordance with DCR guidelines (DCR n.d.b). The field’s turf is cut infrequently during the growing season (e.g., every 14 days) if there is no scheduled use.

**3.2.14. Ponkapoag**

**Section-wide Management**

Area of Critical Environmental Concern

The entire Ponkapoag section is located within the Fowl Meadow and Ponkapoag Bog ACEC. A management plan exists for this ACEC (MDC 2002); there is no stewardship committee. Stewardship activities at Ponkapoag are conducted as part of the overall management of the Blue Hills Reservation, rather than from the perspective of ACEC management.

**Site and Facility Management**

Indian Line Farm

Grasslands are cut once per year, typically in early September. Vegetation above the capped portion of the site may be cut more frequently, as needed, in order to prevent the establishment of woody vegetation. (See Appendix G for additional information on the capping of this site.) All cutting is performed by DCR personnel.

Populations of Louise’s swallow-wort, an invasive plant, are spot treated with herbicide by DCR staff.

Redman Farm

Responsibility for management of the Redman Farmhouse is identified in a five-year agreement (2005–2010) between the DCR and NepRWA. The DCR is responsible for major repairs, and NepRWA

is responsible for minor repairs. (Table 3.2.9) The DCR retains sole use of the house’s basement and garage bays.

**Table 3.2.9. Roles and responsibilities for maintenance and repair of the Redman Farmhouse.**

<b>Maintenance or Repair Activity</b>	<b>Responsible Party<sup>1</sup></b>
Capital improvements	DCR
Maintenance and minor repairs	NepRWA
Utility costs	DCR
Litter and trash removal	NepRWA

1. DCR = Massachusetts Department of Conservation and Recreation, NepRWA = Neponset River Watershed Association.

The agreement allows NepRWA to designate 10 parking spaces solely for their use; they have chosen not to enforce this condition. It also allows them to maintain one sign on the building.

John P. Metropolis Skating Rink

Metropolis Rink is operated under a 25-year lease (2005–2030) by the Town of Canton’s Recreation Department. The Town is responsible for all operations, maintenance, and repair. (Table 3.2.10)

**Table 3.2.10. Roles and responsibilities for maintenance and repair of the John P. Metropolis Skating Rink.**

<b>Maintenance or Repair Activity</b>	<b>Responsible Party<sup>1</sup></b>
Capital improvements	TOC
Maintenance and minor repairs	TOC
Utility costs	TOC
Litter and trash removal	TOC

1. DCR = Massachusetts Department of Conservation and Recreation, TOC = Town of Canton.

The town is also responsible for snow and ice removal; the replacement, repair, and maintenance of blacktopped pavement serving the premises; and the maintenance, repair, and replacement of ice-resurfacing machines and edgers. Additions and alterations to the building, including structural changes, are allowed provided that the DCR receives at least 20 days notice and that these changes do not alter the general design, use, character, or structure; decrease building size; or reduce the rink’s fair-market value.

Under the terms of the lease, Metropolis Rink is to “be occupied for the purpose of operating a public ice-skating-rink program for all citizens of the Commonwealth.” The rink must be open from September 15<sup>th</sup> through April 15<sup>th</sup>, inclusive. The

town sets the hours of operation, and may extend the operating season. Ice time is allocated in the following priority: public skating; youth groups; high school hockey; and adult organizations or informal groups. At least 12 hours per week must be dedicated to public skating. Fee structures are subject to approval by the DCR.

Special events are allowed, provided that the DCR receives at least five days notification.

The DCR has priority use of the rink's meeting room from 8:00 a.m. to 5:00 p.m., Monday through Friday and on Thursday evenings. The DCR must provide at least two days advance notice to the town.

### Ponkapoag Golf Course

**Professional Services.** Ponkapoag Golf Course is operated by the DCR in association with professional services providers. It is open seven days per week, from at least early April through late November. It must be open from 5:30 a.m. to 8:00 p.m. from Memorial Day weekend through Labor Day weekend, and from 6:00 a.m. through 7:00 p.m. before Memorial Day weekend and after Labor Day weekend.

Professional golf services are provided by Auburn Golf Learning Center, Inc. under a five-year permit (2008–2013). Auburn operates and manages a driving range and golf pro shop, it also offers golf cart rentals, golf lessons and clinics, and the services of a golf professional.

The golf course's food concession is managed through a separate five-year permit (2008–2012). The concessionaire (Deli Zioso, Inc.) is required to maintain a minimum service schedule seven days per week, while the club house is open to the public. These hours of operation may be extended at the request of the Golf Courses District Manager.

Legislation exists that allows an entity, other than the DCR, to operate Ponkapoag Golf Course. Chapter 182 of the Acts of 2008 (Appendix W) allows for the leasing of these facilities for 25 years with the option of a five-year renewal; thereby facilitating their long-term management by a municipality, non-profit organization, or for-profit business.

**Buildings and Grounds.** The DCR maintains most of the buildings and structures associated with Ponkapoag Golf Course. Temporary structures, such

as the ball rental shed at the driving range, are the responsibility of the golf course operator. The operator is also responsible for the day-to-day maintenance and cleaning of their concession areas.

Maintenance and repair of golf course vehicles, power equipment, and heavy equipment is performed at the golf course's maintenance garage. Fuel for vehicles and equipment is also dispensed at this location. Pesticides and fertilizers for managing turf are stored in this building and in nearby chemical lockers.

DCR personnel are responsible for cutting, fertilizing, and watering the courses. Greens are cut six times per week, roughs are cut five times per week, and tees and fairways are each cut three times per week.

Fertilizers are applied by golf course personnel. Application rates vary among the different sections of the course, but are below the recommended limit of 180 pounds of nitrogen/acre/year (Petrovic 1998). Greens receive four to five lbs/acre/year and tee boxes receive six lbs/acre/year (Tworig 2009a). Fairways receive up to 119 lbs/acre/year, and the course's roughs are not fertilized (DCR 2004).

A variety of fungicides, and limited insecticides, are used to maintain the course. In 2008, 2,027 pounds of dry fungicide and 56 gallons of liquid fungicide were used, as was 5.4 gallons of liquid insecticide (Tworig 2009b). Application of pesticides is performed by licensed pesticide applicators, in a manner consistent with product labeling and the golf course's Integrated Pest Management Plan (DCR 2004).

An irrigation system delivers water to the greens and tees; fairways are not irrigated. This system, constructed in 1936, is manually operated and requires the use of hoses and "snap" valves. The frequency and length of watering is determined by the Golf Course Superintendent's assessment of turf conditions and professional judgment.

Water to irrigate the golf course is drawn from Ponkapoag Brook. A water withdrawal permit allows for the withdrawal of up to 170,000 gallons per day over a 210 day golf season, for a maximum withdrawal of 35.7 million gallons (DCR 2008). Since 2003, actual water consumption has averaged 6.5 million gallons per year; 18.2% of the maximum allowed (Tworig 2009a).

**Proposed Improvements.** Future irrigation and drainage improvements to Course #1 are governed by conditions identified in the Certificate of the Secretary of Energy and Environmental Affairs (EOEA Number 10573; Bowles 2009b). This certificate allows for drainage improvements to Course #1, the construction of an irrigation well and pond, installation of a new system, and creation of a two-acre lined irrigation pond.

Required mitigation associated with these planned improvements includes the creation of a new detention basin for flood storage, implementation of a Seasonal Demand Management Plan, monitoring of water levels in Ponkapoag Pond and Brook, continuation of the Ponkapoag Pond Water Level Monitoring Program, development and implementation of an Integrated Pest Management Plan, erosion and sediment controls during construction, and wetland restoration and replication.

#### Ponkapoag Pond

The water level in Ponkapoag Pond is actively managed by the DCR. This is accomplished via seasonal adjustments to the flow of water through dam's discharge chamber. Orifice plates, which are perforated steel plates that regulate water flow, are changed twice per year in order to maintain desired water levels.

Management is designed to achieve the following conditions:

Maximum elevation	151.78 feet
Minimum elevation	149.78 feet
Maximum drawdown rate	1.5 inches/week
Drawdown period start	June 1
Drawdown period end	September 15

A water level monitoring program, approved by the NHESP and required under an Order of Conditions issued by the Canton Conservation Commission (DEP File No. 124-560), requires annual investigation of hydrology, plant communities, and rare species.

Changes in hydrology are measured, twice per month, through the use of six piezometers and two staff gauges. Stream discharge measurements, downstream of the dam, are also made twice per month. All measurements are made by consultants under contract to the DCR.

Vegetation is monitored annually. Plant cover is quantified in seven 10m x 10m plots, and the diameter at breast height (DBH) of six specific Atlantic white cedar trees is measured. All measurements and associated analyses are performed by a consultant under contract to the DCR.

Bi-weekly wildlife surveys are conducted around the pond, from May through October, to document the presence or absence of six state-listed invertebrates. These surveys are part of the required monitoring, and are conducted by consultants under contract to the DCR.

The Ponkapoag Pond Dam is managed by the DCR in accordance with an Operations and Maintenance Plan (GZA GeoEnvironmental, Inc. 2009). Visual inspections are routinely performed by the Golf Course Superintendent and other DCR staff; a registered professional engineer inspects the dam at least once every five years.

The DCR is responsible for the maintaining and repairing the Ponkapoag boardwalk.

#### Ponkapoag Outdoor Center

The YMCA of Greater Boston operates the Ponkapoag Outdoor Center under a five-year (2007–2012) MOU with the DCR. The center's primary purpose is "providing an outdoor youth summer camp and educational center for the advancement and protection of the environment." This camp may operate between June 15<sup>th</sup> and Labor Day, annually.

The MOU caps the number of users at 300 during the summer, and 100 during the off-season. At least 25% of the summer camp participants must be children from low-income families.

Access to, or use of, the center by those not associated with the YMCA is prohibited. However, the center is located on public parkland, which the general public may access and use.

The YMCA is solely responsible for providing the staff, materials, and services necessary to operate the center. It is also responsible for complying with all applicable laws, regulations, and ordinances and obtaining all needed permits and licenses.

The YMCA is responsible for operating, maintaining, and obtaining the appropriate permits for two wells. The first well provides domestic water

and is the source for the center's Transient Non-community Water System. The second well provides water for the center's swimming pool.

**Building and Grounds.** Under the terms of the MOU, the YMCA is responsible for both major and minor repairs to the Ponkapoag Outdoor Center, reflecting the organization's ownership of the buildings and structures. Work on the premises must be approved in advance by the DCR, and all improvements become property of the DCR.

Planting, vegetation management, and grounds maintenance is performed by the YMCA in consultation with the DCR. The YMCA must provide 30-days advance notice, and receive DCR approval, prior to commencing vegetation management projects. They are also responsible for snow removal from the center's access road and associated parking lot.

**Recreation.** The YMCA is responsible for managing its pool in a manner consistent with the DCR *Waterfront Program Procedure Manual* (DCR 2007b). Under the terms of the MOU, lifeguards must be present Monday through Friday, between the hours of 11:00 a.m. and 5:00 p.m., while the center is operational. Monitoring of the pool's water quality is conducted in a manner consistent with the State Sanitary Code. (Appendix F)

**Interpretive Services.** The YMCA's Ponkapoag Outdoor Center offers an environmental science program along with non-environmental programming (e.g., aquatics, creative arts).

#### Massasoit Field

The DCR's South Region rangers schedule the use of this soccer field. Maintenance is performed by Canton Youth Soccer; there is no formal agreement for them to do so.

#### Fisherman's Beach

The DCR is responsible for maintaining the gravel surface of the Fisherman's Beach parking lot. Maintenance and repairs are performed on an as needed basis.

#### Ponkapoag Camp

The AMC maintains, manages, and operates the Ponkapoag Camp under a five-year MOU (2007–2012) with the DCR. The camp's purpose is to

provide "outdoor camping and recreational opportunities to the public."

Cabins and tent site rentals, and day-use access are provided and managed by the AMC. Rental rates vary between the summer and off-season. Fee structures are subject to approval by the DCR.

The AMC is solely responsible for providing the staff, materials, and services necessary to operate the camp. It is also responsible for complying with all applicable laws, regulations, and ordinances and obtaining all needed permits and licenses.

The camp's water supply originates in a shallow, hand-dug well and is pumped to two water supply points. It is classified as a Transient Non-community Water System, and the AMC is solely responsible for obtaining DEP certification of the well and for all repairs and improvements required to maintain certification. Additional drinking water is provided by campers.

**Buildings and Grounds.** The AMC is responsible for maintaining the camp's buildings and grounds, reflecting the organization's ownership of these buildings and structures. Proposed changes to the historic chestnut cabins must be approved by both the DCR and the MHC prior to the commencement of any work. Changes to other buildings and structures require pre-approval by the DCR. All improvements to the premises become the immediate property of the DCR.

Planting, vegetation management, and grounds maintenance are performed by the AMC in consultation with the DCR. The AMC must provide 30-days advance notice, and receive DCR approval, prior to commencing vegetation management projects. The DCR is providing systemic injections of insecticides into hemlocks around the AMC cabins in order to reduce tree mortality caused by hemlock wooly adelgid.

The DCR is solely responsible for cutting down vegetation, either living or dead, in the Ponkapoag Camp. It is also responsible for maintaining vegetation along the camp's access road. The AMC instructs campers to transport firewood to Ponkapoag Camp from off-site.

Responsibility for maintaining the camp's roads is shared by the DCR and the AMC. The DCR is responsible for the long-term maintenance of the



access road. The management goal is to maintain this road's surface in a condition that effectively limits vehicle speeds. Use of the road is limited to AMC patrons and employees, and DCR vehicles. The AMC is responsible for minor road, erosion, and drainage repairs, using materials provided by the DCR. They are also responsible for maintaining parking areas associated with their cabins.

**Recreation.** The AMC is responsible for managing its beach in a manner consistent with the DCR *Waterfront Program Procedure Manual* (DCR 2007b). Under the terms of the MOU, lifeguards must be present from the last weekend in June through and including Labor Day, between the hours of 11:00 a.m. and 5:00 p.m.

Water quality is monitored at the AMC's waterfront area in accordance with the State Sanitary Code. (Appendix F) Samples are obtained and analyzed within five days of the beach's opening, and then once per week throughout the swimming season. Test results determine whether or not the beach is open for swimming; they are provided to the DCR.

**Interpretive Services.** The AMC offers limited environmental and interpretive programs to its campers.

#### Pump Station 6

The Town of Randolph is responsible for the maintenance and repair of its sewage pump station (No. 6), which is located at the northern terminus of Turner Drive.

#### Route 24 Bridge

MassDOT owns and operates a bridge over Route 24 that functions as a trail connector between the Ponkapoag and Ponkapoag East sections of the reservation. They are solely responsible for its maintenance and repair.

There is no agreement between the DCR and MassDOT that ensures its use by administrative vehicles (e.g., utility vehicles, pickup trucks) or by the public.

### **3.2.15. Ponkapoag East**

#### **Section-wide Management**

A segment of the property boundary was surveyed in spring 2010 to identify encroachment. Follow-up

action is being taken to resolve identified encroachment. No further surveys are planned.

Ranger-led hikes to the Ponkapoag and Ponkapoag East sections originate here.

#### **Site and Facility Management**

##### Nike Launcher Area

The DCR is responsible for the maintaining and repairing buildings and structures in the Nike Launcher Area. Only one building, the maintenance garage, is actively maintained. Investigations continue into extent of soil and sediment contamination associated with past use of this site's buildings and structures. (Appendix G)

Leaves and other vegetation are piled over the silos. These materials are not composted on-site, but are temporarily stored at the Launcher Area until being transported to the DCR composting facility in Boston.

The DCR is responsible for maintaining Middle Street. The Town of Randolph maintains and repairs High Street.

##### North Randolph Little League

There is no written agreement between the DCR and the North Randolph Little League (NRL) for the operation and management of the ball fields and their associated buildings and structures. The NRL currently schedules use of these fields, and maintains and repairs the turf and all infrastructure at the facility. The types and frequency of maintenance activities are unknown.

Irrigation water for the ball fields is obtained from an on-site well. The NRL is responsible for all permitting associated with this well.

##### M. L. Donovan School

The Donovan School is municipal property, and not part of the reservation. However, DCR rangers lead hikes from this school and instruct participants to use its parking lot. There is no agreement between the DCR and the Town of Randolph for the use of this parking area.

### **3.2.16. West Street**

#### **Section-wide Management**

Chapter 677 of the Acts of 1970 (Appendix W) gave the Water Resources Commission, “in cooperation with the water departments of the towns of Braintree, Randolph and Holbrook” the authority to “cause the removal of all trees, vegetation, top soil and peat strata down to a clean, firm base” in this section.

The Act further directed the MDC to transfer the care and control of this entire section of the reservation to the Town of Braintree upon completion of vegetation and soil removal. This work was not completed and the care and control was never transferred. However, this Act has never been repealed or superseded. The potential still exists for the Town of Braintree to assume the full care and control of the entire West Street section.

The water level in this section was set by an Act of the Massachusetts Legislature (Chapter 581 of the Acts of 1966; Appendix W). A “low-head earthen dam” maintains the river at 127 feet in elevation. It is regulated as part of the management of Great Pond.

### **Site and Facility Management**

#### **Blue Hill River Road**

A Revocable Permit was issued to Ridge Arena in 1969 to “use a portion of the dead end of Blue Hill River Road” for free public parking purposes. This permit has not been revoked. It is unclear if the Ridge at Blue Hills, which replaced Ridge Arena, has assumed the right to use Blue Hill River Road for parking.

#### **West Street**

This street is maintained and repaired by the Town of Braintree. A small gravel parking area along the street is maintained by the DCR.

### **3.3. TOWN BROOK FCS**

#### **Section-wide Management**

The Town of Braintree is responsible for the maintenance and management of all resources and infrastructure at this site. The types and frequency of management activities are unknown.



Active management is needed to protect the reservation's natural, cultural, and recreation resources. Recommendations in this section balance resource protection with compatible use.

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## SECTION 4. RECOMMENDATIONS

### 4.1. INTRODUCTION

Previous sections have described the Blue Hills Planning Unit's current resources (Section 2) and their management (Section 3). This section considers the future of the planning unit and provides recommendations that, when implemented, will conserve and enhance the Blue Hills Reservation's natural and cultural resources while offering sustainable nature-based recreation.

This section includes two types of recommendations, Land Stewardship Zoning and specific recommendations. Land Stewardship Zoning provides general guidance on compatible land uses throughout the planning unit. Specific recommendations address existing and developing issues, challenges, and opportunities at the Blue Hills Reservation. Collectively, these recommendations are the means by which this plan's goals and objective are realized.

### 4.2. LAND STEWARDSHIP ZONING

Resource Management Plans must protect natural and cultural resources, and ensure consistency between recreation, resource protection, and sustainable forest management (M.G.L. Chapter 21: Section 2F). The zoning of properties at the landscape level and Land Stewardship Zoning at the planning unit level are the mechanism through which this is achieved.

#### 4.2.1. Landscape-level Zoning

The Technical Steering Committee (TSC) of the Forest Futures Visioning Process has recommended that the DCR adopt a management paradigm that classifies its state and urban park lands into three zones; Forest Reserves, Parklands, and Woodlands (TSC 2010). These zones are intended "to conserve and manage forests for a more comprehensive suite of environmental goods and services" and segregate incompatible activities into different land use zones.

**Forest Reserves.** Areas of 15,000 acres or more, where “the dominant ecosystems service objectives are biodiversity maintenance and the underlying supporting services of nutrient cycling and soil formation, watershed protection, and long-term carbon sequestration” (TSC 2010). Secondary services “include provision of wilderness/spiritual values and recreation.” Management of these areas would generally consist of letting natural processes take their course.

**Parklands.** Areas where the dominant ecosystem services objectives are the provision of natural and cultural resources based recreation, preservation of ecologically significant areas and “special places,” and promotion of cultural values. Management approaches range “from areas where natural processes dominate to highly modified environments where use is intensively managed.”

**Woodlands.** Areas where the dominant ecosystem services objectives are the provision of wood production, early successional wildlife habitat, watershed management, increased carbon sequestration, and the restoration of late successional forests. Active, sustainable forest management occurs in Woodlands.

Areas in Parklands or Woodlands with high ecological, social, or cultural values may be designated Patch Reserves. Their objectives and management would be similar to those of the larger Forest Reserves.

DCR properties have not yet been zoned at the landscape level. Given the TSC’s recommendation to classify “all DCR lands in heavily populated areas and other forested areas with high recreational values” as Parklands (TSC 2010), it is likely that the Blue Hills Reservation will be classified as Parkland.

Portions of the Blue Hills may be appropriate for Patch Reserves. As indicated previously, the majority of the reservation (76.2%) is Priority Habitat, with the Chickatawbut Hill and Ponkapoag sections, in particular, providing critical habitat for some of Massachusetts’ rarest species. It is recommended that these be classified as Patch Reserves. However, it is unclear how future guidance will address the identification of Patch Reserves within Parklands.

## 4.2.2. Planning Unit-level Zoning

The development and application of Land Stewardship Zoning is the result of a step-by-step analysis of a planning unit’s natural and cultural resources, compatible public access, and recreational uses. In a sense, zoning is the culmination of the planning process, and helps guide the long-term management of the reservation.

### Land Stewardship Zoning Guidelines

Land Stewardship Zoning guidelines define three standard zones. They also define significant feature overlays, which are applied on a supplemental basis. A brief description of these zones and of significance overlays follows. A more detailed description is provided in Appendix Y.

**Zone 1.** Areas that contain unique, exemplary, or highly sensitive resources and landscapes; requiring special management approaches and practices to protect and preserve their features and values. Examples include rare species habitat identified as being highly sensitive to human activities, archaeological or cultural sites, and rare or exemplary natural communities.

**Zone 2.** Areas containing typical yet important natural and cultural resources on which common forestry practices and dispersed recreational activities can be practiced at sustainable levels. Examples include ecosystems characterized by a diversity of wildlife and plant habitats, rare species habitat that is compatible with sustainable forestry and dispersed recreation, agricultural resources, and resilient cultural sites and landscapes.

**Zone 3.** Sites, structures, and resilient landscapes constructed or developed for administrative, maintenance, or recreation purposes. These areas accommodate concentrated use and require intensive maintenance. Examples include park headquarters and maintenance areas, parking lots, swimming pools and skating rinks, paved bikeways, swimming beaches, campgrounds, playgrounds, athletic fields, parkways, golf courses, picnic areas and pavilions, concessions, and areas assessed to be suitable for these uses.

## Recommended Land Stewardship Zoning

Recommended zoning for the Blue Hills Planning Unit is presented in Figure 4.2.1. Descriptions of these zones are provided below.

**Zone 1.** The reservation's most environmentally sensitive areas are included in this zone. The first is Ponkapoag Pond, which has the highest concentration of rare species in the planning unit. Nine state-listed species and three rare natural community types are associated with Ponkapoag Pond; all are sensitive to changes in water levels and chemistry.

Most of the reservation to the east of Route 28 is also designated Zone 1. This area provides habitat for five state-listed species; four of which, two plants and two animals, are state-endangered and sensitive to disturbance.

Dispersed, passive recreation occurs throughout this zone, which is primarily managed for the protection of rare species and their habitats.

**Zone 2.** Most undeveloped areas are classified as Zone 2. This includes most, or all, of the Little Blue Hill, Hemenway Pond, Great Blue Hill, Brookwood Farm, Unquity Road, Buck Hill, Ponkapoag East, and West Street sections of the reservation. It also includes portions of the Ponkapoag section. These areas are to be managed for a combination of resource protection and compatible passive recreation.

**Zone 3.** All currently developed areas are included in this zone. They are to be managed for active recreation, administration and operations, and flood control, as appropriate.

Three undeveloped areas have been designated Zone 3 because they are considered suitable for future administrative, maintenance, or recreation use.

The first is a portion of the Little Blue Hill area between the Skyline Trail and Royall Street. The presence of existing structures and disturbed soils at the site, and its location in a commercial/industrial area make it appropriate for future administrative (e.g., materials storage yard) or athletic facilities. There are currently no plans to develop this area. Any proposed development will require a full environmental review and public process. This area is to be managed as a Zone 2 in the absence of administrative or recreation development.

The second undeveloped area designated Zone 3 is Indian Line Farm. This was done to allow for the *potential* expansion of the Ponkapoag Golf Course at some future date. There are currently no plans to expand the golf course into Indian Line Farm, nor is any other potential development considered for this site. As with the Royall Street area, Indian Line Farm is to be managed as a Zone 2 in the absence of administrative or recreation development. Any proposed development of this area will require a full environmental review and public process.

The third, and final, area designated Zone 3 in consideration of future development is the eastern portion of the West Street section of the reservation. This area, which currently includes a small parking lot, a single picnic table, and paved portions of the old Route 128, is currently under consideration for the creation of an expanded picnic area. This picnic area would replace a portion of the existing pavement.

### Significant Features Overlays

Land Stewardship Zones may be supplemented with significant feature overlays that identify specific designated/recognized resource features. (Appendix Y) The purpose of these overlays is to provide more precise management guidance for recognized resources and to recognize, maintain, protect, or preserve unique and significant values, regardless of the zone in which they occur.

Three significant feature overlays were identified for the Blue Hills Planning Unit. (Figure 4.2.1) These overlays are described below.

**Historic Resources.** All DCR-owned properties listed in or eligible for listing in the State and National Registers of Historic Places are included in this overlay. Four historic cabins at the AMC Ponkapoag Camp are listed in the National Register, but are not included in the overlay because they are not owned by the DCR.

Properties included in this overlay should be afforded a high level of preservation in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties (Weeks and Grimmer 1995) and through consultation with the DCR's Office of Cultural Resources. Historic parkways are also subject to the DCR's *Historic Parkway Preservation Treatment Guidelines* (DCR 2006).

***Priority Habitat.*** This overlay includes those areas designated as Priority Habitat by the NHESP. Activities within this overlay that may alter rare species habitat are subject to regulatory review under MESA. (Please see Appendix F.) The boundaries of this overlay will change over time as the NHESP updates its Priority Habitat data layer.

***Area of Critical Environmental Concern.*** Those portions of the Fowl Meadow and Ponkapoag Bog ACEC (i.e., the Little Blue Hill and Ponkapoag sections) are included in this overlay. Activities on,

or impacting, lands within this overlay must meet a variety of performance standards as identified in the ACEC regulations. (Please see Appendix F.)

#### **4.3. BLUE HILLS RESERVATION**

Management recommendations for the Blue Hills Reservation, in its entirety and by section of the reservation, are presented in Tables 4.3.1–4.3.16.

#### **4.4. TOWN BROOK FCS**

There are no recommendations.

Figure 4.2.1. Recommended land Stewardship Zoning

Back of Figure 4.2.1



**Table 4.3.1. Recommendations for reservation-wide resources.**

Recommendation	Priority <sup>a</sup>	Resources <sup>b</sup>	Responsible Party <sup>c</sup>
<b><i>Goal 1. Make recreation sustainable and appropriate to the Blue Hills environment.</i></b>			
Decrease the seasonal mountain bike exclusion to the month of March.	H	1	R
Develop and implement an educational program to discourage all trail use during mud season.	H	2	R, T, V
Reduce trail user conflicts by: developing and distributing trail etiquette literature; posting trail etiquette “Yield” signs at kiosks, bulletin boards, and key locations along trails; revising future trail maps to include information on trail etiquette; and working with the DCR Mounted Unit and partners to offer training in trail etiquette.	H	2	O, R, V
Prepare a Trail System Plan to include those issues not specifically addressed in this RMP, such as trail creation or closure, management of closed trails, and the potential relocation of trails near vernal pools, and ongoing mapping needs.	H	3	C, P, T
Gather additional demographic information on visitors to the Blue Hills in order to identify the diversity of park users, and to ensure that programming, facilities, and infrastructure are fully available to all.	H	3	C, P
Develop a Habitat Management Plan for trail work so that trail maintenance and repair may be performed on a reservation-wide basis, in accordance with <i>Trails Guidelines and Best Practices Manual</i> (DCR 2010a).	H	3	R
Promote responsible pet ownership by increasing awareness of requirements to keep pets leashed and to pick up and properly dispose of pet waste.	M	1	R, V
Create a Recreation Facility Repairer position.	M	2	O
Partner with non-profit organizations to identify opportunities to obtain grants to improve and expand resource management, recreational, and educational opportunities on the reservation.	M	2	R, T, V
Work with MassDOT to install Supplemental Guide signs on I-93 to direct vehicle traffic to enter the park via Exit 2 (Route 138).	M	2	O, P
Continue to encourage all lessees to pursue environmentally sustainable practices consistent with their programming and activities.	M	3	L, R, T
Increase awareness among winter trail users of the need to stay off ski tracks in order to allow for ongoing use by cross-country skiers.	L	2	R, V

*Continued on next page.*

**Table 4.3.1. Recommendations for reservation-wide resources. (Continued)**

Recommendation	Priority <sup>a</sup>	Resources <sup>b</sup>	Responsible Party <sup>c</sup>
<b><i>Goal 2. Protect the natural resources most at risk from misuse, overuse, obsolete practices, or avoidable environmental change.</i></b>			
Fill Forest and Park Supervisor II position to provide support for natural resources management.	H	2	O
Work with the Massachusetts Division of Fisheries and Wildlife to conduct a study of white-tailed deer populations within the Blue Hills Reservation and to ascertain the extent of their impacts on the reservation's natural resources; if warranted, discuss deer management options.	H	2	O, R
Prepare a comprehensive Vegetation Management Plan (VMP) to address vegetation management in Priority Habitat, the maintenance of allées and historic landscapes, monitoring and control of invasive species, mowing cultural grasslands, and the maintenance of turf and ornamental plants.	H	3	C, P, R
Keep species and natural community information up to date.	M	1	R, V
Increase staff awareness of regulations affecting park operations, such as the Wetlands Protection Act and Massachusetts Endangered Species Act, and enhance the protection of natural resources through participation in training offered by the DCR's Bureau of Planning and Resource Protection.	M	1	P, R
Prohibit the importation of firewood from off the reservation.	M	1	R, T
Survey the reservation's remaining uncertified vernal pools, and submit paperwork for those pools with the potential to be certified.	M	2	R, V
Prepare a comprehensive fire management and response plan that addresses operational responsibilities, public safety, habitat management, impacts to rare species, and the creation and maintenance of associated infrastructure (e.g., fire roads).	M	3	C, O, P
Fill the Forestry Assistant position.	M	3	O
Survey appropriate habitat for remnant populations of the New England cottontail.	L	2	R, V
<b><i>Goal 3. Preserve the distinct scenic and historic qualities of the reservation.</i></b>			
Increase staff awareness and protection of cultural resources through participation in workshops and training on topics, such as the monitoring and protection of significant archaeological resources, offered by the DCR's Office of Cultural Resources.	M	2	P, R
Prepare and submit MHC Archaeological Site Forms for sites identified in this plan, but not already included in MHC's inventory.	M	2	P
With the exception of public safety needs, limit new development along the reservation's ridgelines to below tree canopy level.	M	2	P, R
Accurately map parkway culverts, using GPS, to record their locations and existing conditions.	M	3	P, R, V
Monitor parkway culverts on a bi-annual basis, clearing debris as necessary to maintain functionality and assess necessary repairs.	M	3	R
Conduct a reconnaissance archaeological survey, as resources become available.	L	3	C, P
Establish a volunteer project to GPS and photo-document all stone walls within the reservation.	L	3	R, V

*Continued on next page.*

**Table 4.3.1. Recommendations for reservation-wide resources. (Continued)**

Recommendation	Priority <sup>a</sup>	Resources <sup>b</sup>	Responsible Party <sup>c</sup>
<b><i>Goal 4. Promote recreation that increases appreciation of the natural and cultural environment and its interdependence with them.</i></b>			
Conduct annual summits of the reservation’s stakeholders in order to promote an ongoing dialogue among the Regional Director, District Manager, and stakeholders.	H	1	R, V, X
Promote the Blue Hills as a study site for academic, governmental, non-profit, and other research (e.g., water quality, forest health) in order to meet specific information needs and enhance resource management.	H	1	X
Modify Special Use Permit procedures to increase awareness of the need for these permits and to ensure that associated research reports are provided to appropriate park staff and the DCR Archives.	H	1	S
Educate the public and local officials with regard to snake biology and protection; as recommended by the NHESP (2007a).	H	2	O, R, V
Fill the Visitor Services Specialist position.	M	2	O
Establish quarterly, informal meetings to provide park visitors increased opportunities to meet with park administrators to discuss their concerns.	M	2	R
Prepare a comprehensive interpretive plan for the reservation that: increases awareness and appreciation of its Native American history, role in the Quincy granite industry, military heritage, and the contributions of the CCC; and establishes ongoing coordination among interpretive program providers.	M	3	O, R
Increase ranger presence on trails to promote enhanced compliance with trail regulations.	M	3	R
Consolidate the three volunteer programs into a single program under the control of the Visitor Services Specialist and employ best management practices (e.g., Brudney 1994, 2005, Hager and Brudney 2004) for recruiting, managing, and tracking hours worked by volunteers.	L	3	R
<b><i>Goal 5. Repel or mitigate external pressures that threaten the character and qualities of the Blue Hills.</i></b>			
Work with MassDOT, and other transportation planning entities, to reduce through and commuter traffic in the reservation.	H	1	O, P
Work with MassDOT to install “Now Entering Blue Hills Reservation” and “Now Leaving Blue Hills Reservation” signs along routes I-93 and 24 in order to increase awareness of the reservation among drivers passing through.	H	1	P
Using new traffic count data, conduct an assessment of pedestrian safety.	H	1	C, P
Conduct annual monitoring of Conservation Restrictions.	H	2	R
Work with the Massachusetts State Police to develop a speed enforcement plan.	M	2	R
Install “Share the Road” and bicycle vehicular traffic warning signs on internal park roads and parkways to increase driver awareness of the presence of cyclists.	M	2	E, R

- a. Priorities are High (H), Medium (M), or Low (L).
- b. Availability of resources for implementing recommendations: 1 – funding is currently available; 2 – funding is currently unavailable, but may become so in the near future; 3 – funding is currently unavailable, but may become so in more than five years.
- c. The following codes identify the party responsible for implementing the recommendation: C = contractor or consultant; E = Bureau of Engineering; L = Legal Services; O = other; P = Bureau of Planning and Resource Protection; R = regional and district staff; S = Department of Special Events; T = reservation tenant; V = volunteer or partner; X = Office of External Affairs and Partnerships.

**Table 4.3.2. Recommendations for the Little Blue Hill section.**

<b>Recommendation</b>	<b>Priority<sup>a</sup></b>	<b>Resources<sup>b</sup></b>	<b>Responsible Party<sup>c</sup></b>
<b><i>Goal 1. Make recreation sustainable and appropriate to the Blue Hills environment.</i></b>			
Develop a written agreement for the use of the Green Street dressage field.	M	3	L, R
<b><i>Goal 2. Protect the natural resources most at risk from misuse, overuse, obsolete practices, or avoidable environmental change.</i></b>			
Conduct active habitat management for state-listed rare species; as recommended by the NHESP (2007a).	M	3	R, V
Develop a survey and monitoring program for rare species; as recommended by the NHESP (2007a).	M	3	R, V
<b><i>Goal 3. Preserve the distinct scenic and historic qualities of the reservation.</i></b>			
Stabilize the partially collapsed segment of the stone paddock.	M	3	C, P
As part of the reservation's Vegetation Management Plan, develop a vista clearing and maintenance protocols for the Hemenway Bench area.	M	3	P, R
The Hemenway Bench should be cleaned by a qualified stone conservator to remove existing lichen.	L	3	C, P
Assess the 25 Royall Street property for potential inclusion in DCR's Historic Curatorship Program.	L	3	P
Remove existing fallen limbs, vegetation and saplings that are adjacent to the stone paddock and carefully remove any vegetation within the masonry.	L	3	P, R, V
<b><i>Goal 5. Repel or mitigate external pressures that threaten the character and qualities of the Blue Hills.</i></b>			
Initiate discussions with the MassDOT regarding the potential transfer to the DCR of an approximately two-acre, forested parcel between Fowl Meadow and the Blue Hills.	H	1	P
Monitor boundaries for encroachment.	H	2	R

a. Priorities are High (H), Medium (M), or Low (L).

b. Availability of resources for implementing recommendations: 1 – funding is currently available; 2 – funding is currently unavailable, but may become so in the near future; 3 – funding is currently unavailable, but may become so in more than five years.

c. The following codes identify the party responsible for implementing the recommendation: C = contractor or consultant; E = Bureau of Engineering; L = Legal Services; O = other; P = Bureau of Planning and Resource Protection; R = regional and district staff; S = Department of Special Events; T = reservation tenant; V = volunteer or partner; X = Office of External Affairs and Partnerships.

**Table 4.3.3. Recommendations for the Hemenway Pond section.**

Recommendation	Priority <sup>a</sup>	Resources <sup>b</sup>	Responsible Party <sup>c</sup>
<b><i>Goal 2. Protect the natural resources most at risk from misuse, overuse, obsolete practices, or avoidable environmental change.</i></b>			
Inventory Hemenway Pond’s natural resources in order to identify management needs.	L	3	R, V
<b><i>Goal 3. Preserve the distinct scenic and historic qualities of the reservation.</i></b>			
Work with the Town of Milton and the Milton Historical Commission, and encourage them to actively preserve cultural resources.	L	3	P, R
Vegetation and excess concrete should be carefully removed from the granite pillars and the joints repointed as necessary by a historic masonry expert.	L	3	C, P

a. Priorities are High (H), Medium (M), or Low (L).

b. Availability of resources for implementing recommendations: 1 – funding is currently available; 2 – funding is currently unavailable, but may become so in the near future; 3 – funding is currently unavailable, but may become so in more than five years.

c. The following codes identify the party responsible for implementing the recommendation: C = contractor or consultant; E = Bureau of Engineering; L = Legal Services; O = other; P = Bureau of Planning and Resource Protection; R = Regional and district staff; S = Department of Special Events; T = reservation tenant; V = volunteer or partner; X = Office of External Affairs and Partnerships.

**Table 4.3.4. Recommendations for the Great Blue Hill section.**

Recommendation	Priority <sup>a</sup>	Resources <sup>b</sup>	Responsible Party <sup>c</sup>
<b><i>Goal 1. Make recreation sustainable and appropriate to the Blue Hills environment.</i></b>			
Advocate that MassDOT install a left-hand turn lane on Route 138 south for vehicles to enter the Trailside Museum south parking lot. Request that MassDOT perform a safety study and warrant analysis for a left-hand turn lane from Route 138 south into the Trailside Museum south parking lot.	H	1	E
Have a structural engineer inspect the foundation of the ski area’s main lodge and make recommendations for its maintenance or repair.	H	3	E
Request that Ski Blue Hills LLC repair, replace, or remove the shed at the bottom of the beginner’s slope.	H	3	R
Work with the ski area operator to ensure that all portions of the ski slopes have an “erosion-protective cover of vegetation.”	M	2	R, T
Modify signs and striping at the Trailside Museum north and south parking lots to ensure compliance with accessible parking requirements.	M	2	C, E, O
Implement parking lot upgrades as described in the Trailside Museum Master Plan (Pressley Associates 2008).	M	3	C, E
Promote the long-term leasing of the William F. Rogers Ski Area.	M	3	L, R
Add a Gateway sign to the northeast corner of the Route 138 and Blue Hill River Road intersection. Provide Wayfinding Guide signs for the Trailside Museum, Houghton’s Pond, and the Regional Office.	M	3	O, R
Work with Ski Blue Hills LLC to pursue a comprehensive approach to environmental sustainability, such as through adoption of the Sustainable Slopes Charter (National Ski Areas Association 2005).	M	3	R, T
Update the study of alternative water supplies for snowmaking at the William F. Rogers Ski Area (Leggette, Brashears & Graham, Inc. 2001).	M	3	C, E
Conduct an engineering assessment of the ski area’s existing drainage system to determine its condition and ability to control runoff, and to estimate the cost of repair, modification, or replacement.	M	3	C, E
Install a Trailside Museum Wayfinding Guide sign on the north side of Hillside Street, opposite the exit of the Houghton’s Pond main parking lot.	M	3	R
Explore assigning the cost of maintaining Summit Road, on a proportional basis, to the tenants atop Great Blue Hill.	L	3	L, R, T
<b><i>Goal 2. Protect the natural resources most at risk from misuse, overuse, obsolete practices, or avoidable environmental change.</i></b>			
Implement recommendations identified in the Blue Hills Pond Watershed Management Plan (Baystate Environmental Consultants, Inc. 2006).	H	3	C, E
Conduct active habitat management for state-listed rare species; as recommended by the NHESP (2007a).	H	3	R, V
Restore examples of the Ridgetop Pitch Pine-Scrub Oak community type on Houghton, and Hemenway hills.	M	3	R, V
Manage trails, recreation, landscaping, roads, and construction relative to rare plants, insects, and natural communities; as recommended by the NHESP (2007a).	M	3	R
Develop a survey and monitoring program for rare species; as recommended by the NHESP (2007a).	M	3	R
Plan landscaping, maintenance, and construction to avoid impacts to rare snakes; as recommended by the NHESP (2007a).	L	3	E, R

Continued on next page.

**Table 4.3.4. Recommendations for the Great Blue Hill section. (Continued)**

<b>Recommendation</b>	<b>Priority<sup>a</sup></b>	<b>Resources<sup>b</sup></b>	<b>Responsible Party<sup>c</sup></b>
<b><i>Goal 3. Preserve the distinct scenic and historic qualities of the reservation.</i></b>			
Remove graffiti from the Great Blue Hill Observation Tower, Eliot Pavilion and the Eliot Memorial Bridge.	H	2	R, V
Replace the Great Blue Hill Observation Tower and Eliot Pavilion’s roof and repair damaged masonry.	H	3	C, E, P
Repair soffit damage on the ski area’s compressor building and garage.	M	3	C, E
Repair masonry damage to the Eliot Memorial Bridge and replicate the two missing plaques.	M	3	C, E, P
Restore historic views from the Eliot Memorial Bridge and Eliot Tower without negatively affecting state-listed species or promoting invasive plants. This recommendation may be implemented in advance of the Vegetation Management Plan.	L	3	P, R, V
Repair masonry damage to the shed at the weather observatory.	L	3	C, E, R
Research the historic significance of structures at the William F. Rogers Ski Area.	L	3	P
Replace the Great Blue Hill pump house roof’s sheathing and shingles.	L	3	C, E
<b><i>Goal 4. Promote recreation that increases appreciation of the natural and cultural environment and its interdependence with them.</i></b>			
Establish a long-term agreement with Mass Audubon for the operation of the Trailside Museum and Norman Smith Environmental Education Center.	M	2	O, L, R
Strategize with the Massachusetts Audubon Society on ways to implement the Trailside Museum Master Plan (Pressley Associates 2008).	M	3	P, R, V
Provide Trail Watch, or other trained volunteers, at the Eliot Pavilion on busy weekends to answer questions and promote enhanced compliance with trail regulations.	M	3	R, V
Create a Forest and Park Supervisor I position to provide dedicated on-site support to the Trailside Museum.	L	3	O
<b><i>Goal 5. Repel or mitigate external pressures that threaten the character and qualities of the Blue Hills.</i></b>			
Work with MassDOT to improve pedestrian safety along Route 138.	M	2	E, P, R

a. Priorities are High (H), Medium (M), or Low (L).

b. Availability of resources for implementing recommendations: 1 – funding is currently available; 2 – funding is currently unavailable, but may become so in the near future; 3 – funding is currently unavailable, but may become so in more than five years.

c. The following codes identify the party responsible for implementing the recommendation: C = contractor or consultant; E = Bureau of Engineering; L = Legal Services; O = other; P = Bureau of Planning and Resource Protection; R = Regional and district staff; S = Department of Special Events; T = reservation tenant; V = volunteer or partner; X = Office of External Affairs and Partnerships.

**Table 4.3.5. Recommendations for the Brookwood Farm section.**

Recommendation	Priority <sup>a</sup>	Resources <sup>b</sup>	Responsible Party <sup>c</sup>
<b><i>Goal 3. Preserve the distinct scenic and historic qualities of the reservation.</i></b>			
Establish a functioning complex of historic and non-historic buildings at the Brookwood Farm entrance by: continuing the existing relationship with the North Bennet Street School; reconstructing the historic barn; stabilizing and initialing rehabilitation of the Gate Keeper’s Cottage; and constructing a new park operations barn.	H	2	E, P, R, V
Solicit a curator, through the Historic Curatorship Program, for the Gate Keeper’s Cottage.	H	2	P
Promote partnerships that help preserve the cultural resources and historic uses of Brookwood Farm.	M	2	P, R, X
As part of the reservation’s Vegetation Management Plan, manage the sugar maple allée to preserve this historic landscape feature.	M	3	C, P, R
<b><i>Goal 5. Repel or mitigate external pressures that threaten the character and qualities of the Blue Hills.</i></b>			
Correct the deed (Book 6600, Page 479) for the portion of Brookwood Farm near Carisbrooke Road, Milton, to exclude a third, 0.46+/- acre parcel. This parcel is identified as “Lot A” in Book 4642, page 524 of the Norfolk County Registry of Deeds.	L	3	L, P

- a. Priorities are High (H), Medium (M), or Low (L).
- b. Availability of resources for implementing recommendations: 1 – funding is currently available; 2 – funding is currently unavailable, but may become so in the near future; 3 – funding is currently unavailable, but may become so in more than five years.
- c. The following codes identify the party responsible for implementing the recommendation: C = contractor or consultant; E = Bureau of Engineering; L = Legal Services; O = other; P = Bureau of Planning and Resource Protection; R = Regional and district staff; S = Department of Special Events; T = reservation tenant; V = volunteer or partner; X = Office of External Affairs and Partnerships.



**Table 4.3.6. Recommendations for the Houghton’s Pond section.**

<b>Recommendation</b>	<b>Priority<sup>a</sup></b>	<b>Resources<sup>b</sup></b>	<b>Responsible Party<sup>c</sup></b>
<b><i>Goal 1. Make recreation sustainable and appropriate to the Blue Hills environment.</i></b>			
Construct a replacement for the William J. Scannell Bath House.	H	2	C, E, P, R
Make a portion of Picnic Site 4 accessible by installing accessible grills and picnic tables, and creating a hardened path to nearby accessible parking.	H	2	R
Modify signs and striping at the main and Site 5 parking lots to ensure compliance with accessible parking requirements.	H	2	C, E, O
Decrease the amount of litter in the Houghton’s Pond parking lots by establishing an anti-littering awareness campaign, providing additional compacting trash receptacles, and revisiting the timing of existing litter management activities.	M	2	R
Create a Forest and Park Supervisor I position to provide support for managing Houghton’s Pond.	M	3	O
Improve the fishing access area on the west side of Houghton’s Pond to eliminate erosion and restore the vegetated buffer.	M	3	R, V
Establish a safe pedestrian connection between Houghton’s Pond and Brookwood Farm by improving the intersection of Hillside Street and Blue Hill River Road in Milton.	M	3	C, E
Provide bike parking.	L	2	P, R
Create a universally accessible fishing platform on the southeast shore of Houghton’s Pond.	L	3	R
Establish an accessible path from parking area to the picnic Site 5.	L	3	C, R
Review the Massachusetts National Guard’s contingency plans to use the Houghton’s Pond ball fields; revoke or modify the 40-year-old permit, as necessary.	L	3	L
<b><i>Goal 2. Protect the natural resources most at risk from misuse, overuse, obsolete practices, or avoidable environmental change.</i></b>			
Stencil catch-basins to indicate “Do not dump. Drains to Houghton’s Pond,” in accordance with the DCR Storm Water Management Plan (DCR 2007b).	M	3	R, V
<b><i>Goal 3. Preserve the distinct scenic and historic qualities of the reservation.</i></b>			
Reset the granite steps on new bases.	M	2	C, P
Stabilize the water fountain feature.	M	2	C, P
<b><i>Goal 5. Repel or mitigate external pressures that threaten the character and qualities of the Blue Hills.</i></b>			
Work with MassDOT to explore bicycle accommodations on the Ponkapoag Trail Bridge.	M	2	P

a. Priorities are High (H), Medium (M), or Low (L).

b. Availability of resources for implementing recommendations: 1 – funding is currently available; 2 – funding is currently unavailable, but may become so in the near future; 3 – funding is currently unavailable, but may become so in more than five years.

c. The following codes identify the party responsible for implementing the recommendation: C = contractor or consultant; E = Bureau of Engineering; L = Legal Services; O = other; P = Bureau of Planning and Resource Protection; R = Regional and district staff; S = Department of Special Events; T = reservation tenant; V = volunteer or partner; X = Office of External Affairs and Partnerships.

**Table 4.3.7. Recommendations for the Reservation Headquarters section.**

<b>Recommendation</b>	<b>Priority<sup>a</sup></b>	<b>Resources<sup>b</sup></b>	<b>Responsible Party<sup>c</sup></b>
<b><i>Goal 1. Make recreation sustainable and appropriate to the Blue Hills environment.</i></b>			
Designate and operate a portion of the Regional Office as the reservation’s primary contact station and direct visitors to this location.	M	3	R
Prepare a universal access renovation plan for the contact station and associated visitor parking at the Regional Office.	M	3	C, O, P
Develop approximately 300 feet of trail, between the southern terminus of Wolcott Path and the Hillside Street crosswalk, in accordance with <i>Trails Guidelines and Best Practices Manual</i> (DCR 2010a).	M	3	R, V
Upgrade the Hillside Street crosswalk in front of the Brian T. Broderick Stables.	M	3	E
Install Wayfinding Guide signs on the south side of Hillside Street, to direct visitors into the Regional Office’s drive and short-term parking.	M	3	R
Provide bike parking.	L	2	P, R
Install a Wayfinding Guide sign on the south side of Hillside Street so that visitors leaving the Regional Office are directed to the Trailside Museum.	L	3	R
<b><i>Goal 2. Protect the natural resources most at risk from misuse, overuse, obsolete practices, or avoidable environmental change.</i></b>			
Investigate the potential septic system connection at the Police Station.	H	3	E
<b><i>Goal 3. Preserve the distinct scenic and historic qualities of the reservation.</i></b>			
Identify and implement temporary structural stabilization measures for the Brian T. Broderick Stables.	H	3	C, E
Pursue historic curatorship for the Brian T. Broderick Stables.	H	3	P
Update the 2004 (DCAM 2004) renovation plan for the Brian T. Broderick Stables, to reflect new reuse assumptions.	M	3	C, P

a. Priorities are High (H), Medium (M), or Low (L).

b. Availability of resources for implementing recommendations: 1 – funding is currently available; 2 – funding is currently unavailable, but may become so in the near future; 3 – funding is currently unavailable, but may become so in more than five years.

c. The following codes identify the party responsible for implementing the recommendation: C = contractor or consultant; E = Bureau of Engineering; L = Legal Services; O = other; P = Bureau of Planning and Resource Protection; R = Regional and district staff; S = Department of Special Events; T = reservation tenant; V = volunteer or partner; X = Office of External Affairs and Partnerships.

**Table 4.3.8. Recommendations for the Operations Yard section.**

Recommendation	Priority <sup>a</sup>	Resources <sup>b</sup>	Responsible Party <sup>c</sup>
<i>Goal 1. Make recreation sustainable and appropriate to the Blue Hills environment.</i>			
Repair the structural damage to the salt shed.	H	3	C, E
<i>Goal 3. Preserve the distinct scenic and historic qualities of the reservation.</i>			
Assess the masonry damage on the maintenance garage and Repair Shop #1 to determine the cause and identify repair needs.	H	2	C, E, P

a. Priorities are High (H), Medium (M), or Low (L).

b. Availability of resources for implementing recommendations: 1 – funding is currently available; 2 – funding is currently unavailable, but may become so in the near future; 3 – funding is currently unavailable, but may become so in more than five years.

c. The following codes identify the party responsible for implementing the recommendation: C = contractor or consultant; E = Bureau of Engineering; L = Legal Services; O = other; P = Bureau of Planning and Resource Protection; R = Regional and district staff; S = Department of Special Events; T = reservation tenant; V = volunteer or partner; X = Office of External Affairs and Partnerships.

**Table 4.3.9. Recommendations for the Unquity Road section.**

Recommendation	Priority <sup>a</sup>	Resources <sup>b</sup>	Responsible Party <sup>c</sup>
<i>Goal 1. Make recreation sustainable and appropriate to the Blue Hills environment.</i>			
Modify signs and striping at the Ulin Rink parking lot to ensure compliance with accessible parking requirements.	L	3	C, E, O
Upgrade the Ulin Rink sign to reflect that it now operates under a lease agreement.	L	3	O, R, T

a. Priorities are High (H), Medium (M), or Low (L).

b. Availability of resources for implementing recommendations: 1 – funding is currently available; 2 – funding is currently unavailable, but may become so in the near future; 3 – funding is currently unavailable, but may become so in more than five years.

c. The following codes identify the party responsible for implementing the recommendation: C = contractor or consultant; E = Bureau of Engineering; L = Legal Services; O = other; P = Bureau of Planning and Resource Protection; R = Regional and district staff; S = Department of Special Events; T = reservation tenant; V = volunteer or partner; X = Office of External Affairs and Partnerships.

**Table 4.3.10. Recommendations for the Buck Hill section.**

<b>Recommendation</b>	<b>Priority<sup>a</sup></b>	<b>Resources<sup>b</sup></b>	<b>Responsible Party<sup>c</sup></b>
<b><i>Goal 1. Make recreation sustainable and appropriate to the Blue Hills environment.</i></b>			
Evaluate locations of trails relative to the dens of state-listed snakes and reroute or close trail segments, as necessary, in accordance with <i>Trails Guidelines and Best Practices Manual</i> (DCR 2010a).	H	3	O, P, R
Request that MassDOT install “Trail Crossing” signs and distance plaques at the intersection of Route 28 and the Skyline Trail.	M	2	P
Add the gravel parking lots along Route 28 to DCR’s surface improvement schedule.	M	3	E, R
<b><i>Goal 2. Protect the natural resources most at risk from misuse, overuse, obsolete practices, or avoidable environmental change.</i></b>			
Maintain the current physical extent of the Ridgetop Pitch Pine-Scrub Oak community type on Buck Hill and restore this community on Tucker Hill. Provide for scenic vistas on those hilltops where there is no potential for conflict with state-listed snakes.	M	3	R, V
<b><i>Goal 3. Preserve the distinct scenic and historic qualities of the reservation.</i></b>			
Conduct annual monitoring of stonework at the Bugbee Path cellar hole and carefully perform routine vegetation removal.	M	3	P, R, V
Complete the mothballing of the Randolph Avenue Stable by ensuring that all openings are properly sealed and there is adequate ventilation.	L	3	C, P
Conduct a structural and needs assessment and explore potential future reuse options for the Randolph Avenue Stable.	L	3	E, P

a. Priorities are High (H), Medium (M), or Low (L).

b. Availability of resources for implementing recommendations: 1 – funding is currently available; 2 – funding is currently unavailable, but may become so in the near future; 3 – funding is currently unavailable, but may become so in more than five years.

c. The following codes identify the party responsible for implementing the recommendation: C = contractor or consultant; E = Bureau of Engineering; L = Legal Services; O = other; P = Bureau of Planning and Resource Protection; R = Regional and district staff; S = Department of Special Events; T = reservation tenant; V = volunteer or partner; X = Office of External Affairs and Partnerships.

**Table 4.3.11. Recommendations for the Chickatawbut Hill section.**

Recommendation	Priority <sup>a</sup>	Resources <sup>b</sup>	Responsible Party <sup>c</sup>
<b><i>Goal 1. Make recreation sustainable and appropriate to the Blue Hills environment.</i></b>			
Require that Trail Watch members operating in this section receive training in snake biology and conservation, and submit Rare Species Observation Forms to NHESP for all rare snakes observed.	H	1	O, R, V
Evaluate locations of trails relative to the dens of state-listed snakes and reroute or close trail segments, as necessary, in accordance with <i>Trails Guidelines and Best Practices Manual</i> (DCR 2010a).	H	3	O, P, R
Install Wayfinding Guide signs at the intersection of Chickatawbut Road and Route 28.	M	2	R
Request that MassDOT install “Trail Crossing” signs and distance plaques at the intersection of Route 28 and the Skyline Trail.	M	2	P
Create universally accessible parking and picnic facilities on the north side of the Chickatawbut Overlook parking area.	M	3	C, E, O, R
Improve the crosswalk at the Chickatawbut Overlook.	M	3	C, E
Provide bike parking.	M	3	P, R
<b><i>Goal 2. Protect the natural resources most at risk from misuse, overuse, obsolete practices, or avoidable environmental change.</i></b>			
Plan landscaping, maintenance, and construction to avoid impacts to rare snakes; as recommended by the NHESP (2007a).	H	2	E, R
Exclude all non-emergency vehicles, except in exigent situations, and non-utility company motor vehicles from trails in rare snake habitat east of Route 28.	H	2	R
Reinstitute seasonal nighttime closings of Chickatawbut Road, east of Route 28, and Wampatuck Road; as recommended by the NHESP (2007a).	H	3	R
Conduct active habitat management for state-listed rare species; as recommended by the NHESP (2007a).	H	3	R
Manage trails, recreation, landscaping, roads, and construction relative to rare plants, insects, and natural communities; as recommended by the NHESP (2007a).	H	3	R
Maintain the current physical extent of the Ridgetop Pitch Pine–Scrub Oak community type on Chickatawbut, Fenno, Kitchamakin, Wampatuck, and Rattlesnake hills. Provide for scenic vistas on those hilltops where there is no potential for conflict with state-listed snakes.	M	3	R, V
Develop a survey and monitoring program for rare species, as recommended by the NHESP (2007a).	M	3	R
Create and monitor turtle nesting habitat; as recommended by the NHESP (2007a).	M	3	R

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**Table 4.3.11. Recommendations for the Chickatawbut Hill section. (Continued)**

Recommendation	Priority <sup>a</sup>	Resources <sup>b</sup>	Responsible Party <sup>c</sup>
<i>Goal 3. Preserve the distinct scenic and historic qualities of the reservation.</i>			
Develop and implement vista clearing protocols for the Chickatawbut Overlook viewshed. This recommendation may be implemented in advance of the VMP.	H	3	P, R
Develop and implement vegetation maintenance protocols for the Chickatawbut Observation Tower, Chickatawbut Pavilion, and picnic area. This recommendation may be implemented in advance of the VMP.	H	3	P, R
Remove graffiti from the Chickatawbut Observation Tower and Chickatawbut Pavilion.	M	2	R, V
Investigate permanently closing the portion of Chickatawbut Road between the intersection with Wampatuck Road and the entrance to the Pine Hill Cemetery.	M	2	P, R
Conduct annual monitoring of the stonework of the Glover site's cellar hole and carefully perform routine vegetation removal following guidance provided by the Office of Cultural Resources.	M	3	C, P

a. Priorities are High (H), Medium (M), or Low (L).

b. Availability of resources for implementing recommendations: 1 – funding is currently available; 2 – funding is currently unavailable, but may become so in the near future; 3 – funding is currently unavailable, but may become so in more than five years.

c. The following codes identify the party responsible for implementing the recommendation: C = contractor or consultant; E = Bureau of Engineering; L = Legal Services; O = other; P = Bureau of Planning and Resource Protection; R = Regional and district staff; S = Department of Special Events; T = reservation tenant; V = volunteer or partner; X = Office of External Affairs and Partnerships.

**Table 4.3.12. Recommendations for the Quincy Quarries section.**

<b>Recommendation</b>	<b>Priority<sup>a</sup></b>	<b>Resources<sup>b</sup></b>	<b>Responsible Party<sup>c</sup></b>
<b><i>Goal 1. Make recreation sustainable and appropriate to the Blue Hills environment.</i></b>			
Require that Trail Watch members operating in this section receive training in snake biology and conservation, and submit Rare Species Observation Forms to NHESP for all rare snakes observed.	H	1	O, R, V
Revise signs at the Granite Rail Quarry compressor house to indicate that rock climbing access is available on Ricciuti Drive and not permitted at this location.	M	3	O, R
In association with the City of Quincy, remove the wooden shed from the northwest parking lot of the Quincy Youth Baseball facility along Ricciuti Drive.	L	2	R
Post signs at the DCR's Quincy Quarries parking lot indicating that additional parking and quarry access are available at the Quincy Youth Baseball parking lots.	L	3	O, R
<b><i>Goal 2. Protect the natural resources most at risk from misuse, overuse, obsolete practices, or avoidable environmental change.</i></b>			
Implement remaining mitigation measures for the draining of the Quincy Quarries and dedicate any remaining funds for site improvement.	H	1	C, E, P, R
Exclude all non-emergency vehicles, except in exigent situations, and non-utility company motor vehicles from trails in rare snake habitat east of Route 28.	H	2	R
Plan landscaping, maintenance, and construction to avoid impacts to rare snakes; as recommended by the NHESP (2007a).	H	2	E, R
<b><i>Goal 3. Preserve the distinct scenic and historic qualities of the reservation.</i></b>			
Demolish the house and garage at 57 Bunker Hill Lane, Quincy.	H	2	C, R
Stabilize and mothball the Granite Rail Quarry compressor house.	H	3	C, P
Pursue historic curatorship for the Granite Rail Quarry compressor house.	H	3	P
<b><i>Goal 5. Repel or mitigate external pressures that threaten the character and qualities of the Blue Hills.</i></b>			
Monitor boundaries for encroachment.	H	2	R

a. Priorities are High (H), Medium (M), or Low (L).

b. Availability of resources for implementing recommendations: 1 – funding is currently available; 2 – funding is currently unavailable, but may become so in the near future; 3 – funding is currently unavailable, but may become so in more than five years.

c. The following codes identify the party responsible for implementing the recommendation: C = contractor or consultant; E = Bureau of Engineering; L = Legal Services; O = other; P = Bureau of Planning and Resource Protection; R = Regional and district staff; S = Department of Special Events; T = reservation tenant; V = volunteer or partner; X = Office of External Affairs and Partnerships.



**Table 4.3.13. Recommendations for the St. Moritz section.**

<b>Recommendation</b>	<b>Priority<sup>a</sup></b>	<b>Resources<sup>b</sup></b>	<b>Responsible Party<sup>c</sup></b>
<b><i>Goal 1. Make recreation sustainable and appropriate to the Blue Hills environment.</i></b>			
Require that Trail Watch members operating in this section receive training in snake biology and conservation, and submit Rare Species Observation Forms to NHESP for all rare snakes observed.	H	1	O, R, V
Remove the playground located on the north side of Mayor William T. Shea Memorial Rink.	H	3	R
Modify signs and striping at the Shea Rink parking lot to ensure compliance with accessible parking requirements.	M	3	C, E, O
Develop a written agreement for the use of the St. Moritz Horseshoe Club.	M	3	L, R
Request that the St. Moritz Horseshoe Club repair, replace, or remove its shed.	M	3	R
Upgrade the Shea Rink sign to reflect that it now operates under a lease agreement.	L	3	O, R, T
Install a memorial marker at the Sergeant Robert Allen Curry Ball Field.	L	3	R
<b><i>Goal 2. Protect the natural resources most at risk from misuse, overuse, obsolete practices, or avoidable environmental change.</i></b>			
Plan landscaping, maintenance, and construction to avoid impacts to rare snakes; as recommended by the NHESP (2007a).	H	2	E, R
Exclude all non-emergency vehicles, except in exigent situations, and non-utility company motor vehicles from trails in rare snake habitat east of Route 28.	H	2	R
Develop a watershed management plan for the St. Moritz Ponds.	H	3	C, O, R, P
<b><i>Goal 3. Preserve the distinct scenic and historic qualities of the reservation.</i></b>			
Conduct a survey for additional remnants of historic winter recreational use of the St Moritz area.	L	3	C, P
<b><i>Goal 5. Repel or mitigate external pressures that threaten the character and qualities of the Blue Hills.</i></b>			
Monitor boundaries for encroachment.	H	2	R

a. Priorities are High (H), Medium (M), or Low (L).

b. Availability of resources for implementing recommendations: 1 – funding is currently available; 2 – funding is currently unavailable, but may become so in the near future; 3 – funding is currently unavailable, but may become so in more than five years.

c. The following codes identify the party responsible for implementing the recommendation: C = contractor or consultant; E = Bureau of Engineering; L = Legal Services; O = other; P = Bureau of Planning and Resource Protection; R = Regional and district staff; S = Department of Special Events; T = reservation tenant; V = volunteer or partner; X = Office of External Affairs and Partnerships.

**Table 4.3.14. Recommendations for the Ponkapoag section.**

Recommendation	Priority <sup>a</sup>	Resources <sup>b</sup>	Responsible Party <sup>c</sup>
<b>Goal 1. Make recreation sustainable and appropriate to the Blue Hills environment.</b>			
Open appropriate, existing trails to mountain bike use, in accordance with <i>Trails Guidelines and Best Practices Manual</i> (DCR 2010a). Revisit the impacts of this recommendation on natural resources, golf course operations, trail user conflicts, and public safety in the upcoming Trail System Plan.	H	1	R
Replace the irrigation system at the Ponkapoag Golf Course with an automatic irrigation system, and provide associated mitigation (Bowles 2009).	H	2	C, E,
Increase seasonal staffing at Ponkapoag Golf Course, by up to five positions, to permit improved course maintenance in accordance with industry standards.	H	2	R
Modify signs and striping at the Ponkapoag Golf Course parking lot to ensure compliance with accessible parking requirements.	H	3	C, E, O
Improve the tees, greens, bunkers, and cart paths at Ponkapoag Golf Course.	H	3	C, E
Correct “extreme flooding” conditions on Course #1 at Ponkapoag Golf Course.	H	3	C, E
Certify Ponkapoag Golf Course as an Audubon Cooperative Sanctuary (Audubon International 2009).	H	3	R
Create an Assistant District Manager position for the Golf Courses District.	H	3	O
Develop limited recreation infrastructure at Indian Line Farm, including the creation of: a small (i.e., eight or fewer spaces) gravel parking lot; a nested-loop trail; and a connector trail from the Indian Line Farm parking lot to Redman Farm Path. Employ guidelines detailed in <i>Trails Guidelines and Best Practices Manual</i> (DCR 2010a).	H	3	P, R
Request copies of Transient Non-community Water System licenses from the AMC and YMCA camps and keep them on file at the Regional Office. Make provision of copies of these licenses a condition of future permits.	M	3	L, R
Install a Cantilevered Identification signs at each of the four following locations: Ponkapoag Trail off-ramp, at the entrance to the YMCA Ponkapoag Outdoor Center; Canton Avenue, Randolph, at the entrance to the AMC Ponkapoag Camp; Randolph Street, Canton, at the entrance to Fisherman’s Beach; and Washington Street, Canton, at the entrance to the Indian Line Farm parking area.	M	3	O, R
<b>Goal 2. Protect the natural resources most at risk from misuse, overuse, obsolete practices, or avoidable environmental change.</b>			
Work with the AMC Ponkapoag Camp to bring the camp into compliance with State Sanitary Code.	H	3	R
Investigate the benefits of active habitat management at Ponkapoag Pond and Bog in order to prevent the shading of pod-grass by other vegetation and to promote the regeneration of Atlantic white cedar; as recommended by the NHESP (2007a).	M	3	R
Create and monitor turtle nesting habitat; as recommended by the NHESP (2007a).	M	3	R

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**Table 4.3.14. Recommendations for the Ponkapoag section. (Continued)**

Recommendation	Priority <sup>a</sup>	Resources <sup>b</sup>	Responsible Party <sup>c</sup>
<b><i>Goal 3. Preserve the distinct scenic and historic qualities of the reservation.</i></b>			
Replace the missing gutter at the Carpenter’s House to prevent additional water damage.	H	3	T
As part of the reservation’s Vegetation Management Plan, manage the sugar maple allée to preserve this historic landscape feature.	M	3	C, P, R
Manage vegetation at Pump House B, the Randolph Street cellar hole, and the concrete foundation pad at Fisherman’s Beach.	L	3	P, R
Stabilize the masonry at the Ezekiel Fisher saw/grist mill site.	L	3	C, P
Conduct annual monitoring of the stonework of cellar holes and the Ezekiel Fisher saw/grist mill site, and carefully perform routine vegetation removal following guidance provided by the Office of Cultural Resources.	L	3	P, R
<b><i>Goal 5. Repel or mitigate external pressures that threaten the character and qualities of the Blue Hills.</i></b>			
Monitor boundaries for encroachment.	H	2	R

- a. Priorities are High (H), Medium (M), or Low (L).
- b. Availability of resources for implementing recommendations: 1 – funding is currently available; 2 – funding is currently unavailable, but may become so in the near future; 3 – funding is currently unavailable, but may become so in more than five years.
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**Table 4.3.15. Recommendations for the Ponkapoag East section.**

<b>Recommendation</b>	<b>Priority<sup>a</sup></b>	<b>Resources<sup>b</sup></b>	<b>Responsible Party<sup>c</sup></b>
<b><i>Goal 1. Make recreation sustainable and appropriate to the Blue Hills environment.</i></b>			
Open appropriate existing trails to mountain bike use, in accordance with <i>Trails Guidelines and Best Practices Manual</i> (DCR 2010a). Revisit the impacts of this recommendation on natural resources, trail user conflicts, and public safety in the upcoming Trail System Plan.	H	1	P, R
Contact MassDOT to clarify use of the replacement of bridge over Route 24 by DCR administrative vehicles.	M	1	R
Develop a written agreement with North Randolph Little League for the operation and management of the ball fields.	M	3	L, R
Update future versions of the Blue Hills Reservation Trail Map and Guide to identify new off-reservation parking resulting from the Article 97 land transfer.	L	2	R
Develop a written agreement with the Town of Randolph for the use of the Donovan School parking lot for visitor parking during ranger-led hikes.	L	3	L, R
<b><i>Goal 2. Protect the natural resources most at risk from misuse, overuse, obsolete practices, or avoidable environmental change.</i></b>			
Pursue recommendations of the Phase I Initial Site Investigation and Tier Classification report (GEI Consultants, Inc. 2009).	H	3	C, E
<b><i>Goal 3. Preserve the distinct scenic and historic qualities of the reservation.</i></b>			
Replace the perimeter fence at the Nike Launcher Area and post No Trespassing signs to discourage vandalism.	M	3	C, E
Stabilize and mothball the Nike Launcher Area's sentry station, generator building, and garage.	L	3	C, P
Remove graffiti from the Nike Launcher Area's buildings.	L	3	C
<b><i>Goal 5. Repel or mitigate external pressures that threaten the character and qualities of the Blue Hills.</i></b>			
Monitor boundaries for encroachment.	H	2	R

a. Priorities are High (H), Medium (M), or Low (L).

b. Availability of resources for implementing recommendations: 1 – funding is currently available; 2 – funding is currently unavailable, but may become so in the near future; 3 – funding is currently unavailable, but may become so in more than five years.

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**Table 4.3.16. Recommendations for the West Street section.**

<b>Recommendation</b>	<b>Priority<sup>a</sup></b>	<b>Resources<sup>b</sup></b>	<b>Responsible Party<sup>c</sup></b>
<b><i>Goal 1. Make recreation sustainable and appropriate to the Blue Hills environment.</i></b>			
Open existing trails to mountain bike use, in accordance with <i>Trails Guidelines and Best Practices Manual</i> (DCR 2010a). Revisit the impacts of this recommendation on natural resources, trail user conflicts, and public safety in the upcoming Trail System Plan.	H	1	P, R
Develop a written agreement with the tenant’s association at the Ridge at Blue Hills regarding adoption and expansion of the picnic area.	L	3	L, R
<b><i>Goal 5. Repel or mitigate external pressures that threaten the character and qualities of the Blue Hills.</i></b>			
Revoke the permit issued to Ridge Arena that allows for the parking of vehicles along the old Route 128.	H	3	L

a. Priorities are High (H), Medium (M), or Low (L).

b. Availability of resources for implementing recommendations: 1 – funding is currently available; 2 – funding is currently unavailable, but may become so in the near future; 3 – funding is currently unavailable, but may become so in more than five years.

c. The following codes identify the party responsible for implementing the recommendation: C = contractor or consultant; E = Bureau of Engineering; L = Legal Services; O = other; P = Bureau of Planning and Resource Protection; R = Regional and district staff; S = Department of Special Events; T = reservation tenant; V = volunteer or partner; X = Office of External Affairs and Partnerships.

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