



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

RESOURCE MANAGEMENT PLAN

Walden Planning Unit

Including Walden Pond State Reservation



May 2013

In coordination with:



Crosby | Schlessinger | Smallridge, LLC



Walden Planning Unit

Including Walden Pond State Reservation

RESOURCE MANAGEMENT PLAN

2013

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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.

One of the most recognizable properties in the DCR park system, Walden Pond State Reservation is an iconic national and international destination. The pond that inspired Henry David Thoreau's seminal work *Walden, or Life in the Woods* holds divergent meanings. To many, the reservation is a sacred landscape and international cultural heritage site. To some, it is a profound symbol of both Thoreau's writings and the genesis of the land conservation movement. Simultaneously, the reservation is valued for its recreation opportunities, whether swimming in Walden Pond's waters on hot summer days, canoeing on the pond's calm waters, or cross-country skiing in its surrounding forests. This plan outlines recommendations that will improve the visitor experience for all, while preserving Walden Pond and its surrounding natural and cultural resources for the benefit of 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 for the well-being of all. To learn more about the DCR, our facilities and our programs, please visit us at www.mass.gov/dcr. Contact us at mass.parks@state.ma.us.



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EXECUTIVE SUMMARY

INTRODUCTION

Resource Management Plans (RMPs) are working documents that provide a guide to the short- and long-term management of properties under the stewardship of the Department of Conservation and Recreation (DCR). They include an inventory and assessment of natural, cultural, and recreation resources; identify unique characteristics and values of a property; develop clear management goals; and analyze complex resource protection and recreation issues. They guide the management of the DCR's properties by setting priorities, targeting capital and operational resources, protecting sensitive resources, and improving communication and cooperation with park visitors and the surrounding communities.

The Department of Conservation and Recreation is directed by a legislative mandate (M.G.L. Chapter 21: Section 2F) to prepare management plans for "all reservations, parks, and forests under the management of the department." Although the mandate does not specify the format or content of these management plans, it does require that:

"Said management 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."

The legislative mandate also establishes two other requirements. First, that the DCR "shall 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." Second, management plans must be reviewed and adopted by the DCR Stewardship Council, a thirteen-member citizen oversight entity. Within 30 days of adoption, the Commissioner "...shall file a copy of such management plans as adopted by the council" with the Secretary of State and the Joint Committee on the Environment, Natural Resources and Agriculture.

This plan covers the Walden Planning Unit, which includes Walden Pond State Reservation, located in the communities of Concord and Lincoln.

WALDEN PLANNING UNIT

Established as a public recreation area in 1922, Walden Pond State Reservation (the predominant property in the planning unit) provides a variety of educational and recreational opportunities on 335 acres of land. The reservation is a national and international tourist destination, as it hosts the pond that inspired Henry David Thoreau (1817-1862) to write his classic *Walden, or Life in the Woods*. A suite of natural and cultural resources is located on the property including wetlands, archaeological sites, rare plants, and cultural landscapes. From a recreation perspective, the reservation is popular among beachgoers, boaters, fisherman, and hikers.

The planning unit also includes two DCR-held conservation restrictions on lands that hold unique cultural values for their connection to Thoreau and his writings. The planning unit is also part of a larger 2,680-acre public- and privately-owned open space system known as Walden Woods that provides educational, recreational, and spiritual values and functions within the towns of Concord and Lincoln.

As part of the planning process, the DCR developed a management principle and accompanying goals to guide its management of the property.

MANAGEMENT PRINCIPLE AND GOALS

The DCR developed the following management principle for Walden Pond State Reservation:

Walden Pond State Reservation is an internationally acclaimed National Historic Landmark due to its association with Henry David Thoreau and his profoundly influential work Walden, or Life in the Woods. Simultaneously, the reservation is a heavily visited recreation facility as it provides a diverse set of recreational activities, including high demand water-based activities.

The DCR's management of Walden Pond State Reservation shall aim to achieve a balance between these potentially competing uses by ensuring sustainability of its cultural and natural resources,

while providing quality and compatible recreational, educational, and interpretive opportunities for visitors of all abilities.

The following management goals were developed to implement the management principle. Each goal is prioritized equally.

Goal 1: Preserve the cultural resources of the reservation. As a National Historic Landmark, the reservation possesses exceptional value in illustrating our nation's heritage and history. The DCR will manage its archaeological resources, historic buildings and structures, and cultural landscapes to stabilize and protect them from damage or degradation.

Goal 2: Provide quality, safe, diverse, and accessible recreational opportunities and facilities that are compatible with the reservation. The DCR will manage the reservation to provide diverse recreational opportunities and facilities that ensure visitor safety and access, while respecting the reservation's fragile resources and its prominence as a cultural/historic site.

Goal 3: Facilitate the public's understanding and appreciation of the reservation, its past, and its significance. Through orientation, education, and resource interpretation, the DCR will foster the public's appreciation and respect for the reservation, which will provide positive visitor experience, influence visitor stewardship of the reservation's natural, cultural, and recreational resources, and maintain the reservation's meaning and sense of place.

Goal 4: Preserve, protect, and enhance water resources of the reservation, including vernal pools and wetlands. The water resources of Walden Pond State Reservation simultaneously provide important habitats, water-based recreation, and are themselves a symbol of environmental consciousness. The DCR will manage the reservation to preserve wetland resources and enhance water quality.

Goal 5: Maintain and enhance habitats for native plants and wildlife. Walden Pond State Reservation hosts a variety of common and unusual native plants and wildlife. The DCR will manage the reservation to protect these habitats and enhance biodiversity.

Goal 6: Protect the reservation from overuse and misuse by the public. As one of the most heavily

visited facilities in the DCR system, the potential exists for the reservation's key resources to be degraded beyond acceptable limits. The DCR will manage the reservation in a manner that ensures its natural, cultural, and recreation resources are preserved and protected for current and future generations.

PRIORITY RECOMMENDATIONS

This RMP identifies 64 management recommendations that will achieve the identified goals for the planning unit. Twenty-three of these recommendations are identified as high priorities. Of the high priority recommendations, 11 recommendations have available resources for implementation. These recommendations, and the lead unit responsible for their implementation, are identified in the Action Plan at the end of this Executive Summary.

PUBLIC PARTICIPATION IN DEVELOPING THIS RESOURCE MANAGEMENT PLAN

Notice of a public meeting for the Walden Planning Unit's RMP appeared in the November 22, 2010 issue of *The Environmental Monitor* (Volume 75, Issue 2). Announcements were posted on the DCR website and press releases provided to the *Concord Journal*, *Lincoln Journal*, and *Boston Globe*. Announcements were also directly distributed to individuals, regional and local stakeholder organizations, and local officials identified by DCR staff. The following public meetings were held as information gathering sessions with the public for the Resource Management Plan and Visitor Services Master Plan (VSMP):

- RMP/VSMP Kickoff Public Meeting held on December 8, 2010, from 7:00 p.m. to 8:30 p.m. at the Concord Town House;
- Visitor Services Workshop held on March 24, 2011 at the Hunt Recreation Center in Concord;
- Visitor Services Recommendations Workshop held on November 17, 2011 at the Harvey Wheeler Community Center in Concord;
- Interpretive Workshop held on March 27, 2012 at the Harvey Wheeler Community Center in Concord;

- RMP Presentation held on January 31, 2013 at the Harvey Wheeler Community Center in Concord.

The draft RMP was made available on the DCR website on February 1, 2013 and public comments were solicited during a 32-day review period from February 1, 2013 to March 4, 2013; four sets of comments were received and incorporated into the final RMP.

This plan was submitted to the DCR Stewardship Council on April 5, 2013 and adopted by the Council on May 2, 2013.

Priority Action Plan 2013–2017

Priority Action	DCR Lead Unit
Goal 1. Preserve cultural resources of the reservation.	
Consult DCR staff archaeologist/Office of Cultural Resources for all projects that involve ground disturbance to comply with MHC requirements.	Office of Cultural Resources, Planning, Operations
Ensure future projects within the National Historic Landmark District Significant Feature Overlay be compatible with the Secretary of the Interior’s Standards for the Treatment of Cultural Landscapes.	Office of Cultural Resources, Planning
Create program for monitoring of sensitive cultural sites including archaeological sites and the Thoreau House Site, to include monitoring for vandalism, looting, erosion, and compaction in accordance with the Office of Cultural Resources Best Management Practices.	Planning, Operations
Create simple educational signage for the public to communicate applicable federal, state, and local regulations regarding cultural resource protection, and appropriate reporting protocols to follow if cultural resource disturbance is observed.	Bureau of Ranger Services, Operations, Office of Cultural Resources
Goal 2. Provide quality, safe, diverse, and accessible recreational opportunities and facilities that are compatible with the reservation.	
Explore issues around open water swimming.	Bureau of Ranger Services, Legal, Operations
Work with MBTA to repair fence near its rail line, and review visitor safety provisions.	Legal, Operations
Install signage along western property boundaries abutting railroad lines to discourage public access across rail lines.	Legal, Operations
Study, design, and construct improvements at crosswalks across Route 126 in consultation with Town of Concord.	Engineering, Planning
Construct landscape improvements that promote access between the visitor parking lots and new visitor center, and orient visitors directly to Route 126 crosswalks.	Engineering, Planning
Design and construct a universally accessible connection between the top of the E-Ramp at Route 126 and the bathhouse and Main Beach.	Universal Access Program, Planning
Goal 3. Facilitate the public’s understanding and appreciation of the reservation, its past, and its significance.	
Design and construct an environmentally-sensitive visitor center and accompanying improvements that orient visitors to key sites of reservation, and interpret cultural and natural resources; the building will also provide a new park headquarters office space for Walden Pond staff.	Operations, Planning, Visitor Services
In coordination with stakeholders, prepare a Comprehensive Interpretive Program (CIP) for new visitor center and reservation.	Operations, Visitor Services
Use renewable energy sources to power visitor center and ultimately all buildings to reduce reservation’s carbon footprint and become a teaching model of environmental sustainability.	Engineering, Planning

Continued on next page.

Priority Action Plan 2013–2017, Continued

Priority Action	DCR Lead Unit
Goal 4. Preserve, protect, and enhance water resources of the reservation, including vernal pools and wetlands.	
Conduct appropriate seasonal maintenance of permeable parking areas to ensure continued functionality as designed.	Engineering
Continue boat monitoring program during summer months to inspect boats for aquatic invasive species.	Office of Water Resources
Conduct a visitor education program to reduce potential impacts to water quality.	Office of Water Resources, Operations
Construct new septic system associated with visitor center; site outside Walden Pond groundwater collection area.	Engineering, Planning
Install signage at boat ramp identifying invasive aquatic weeds with instructions and reservation contact information.	Visitor Services, Office of Water Resources
Coordinate annual water sampling to monitor potential nutrient loadings, potential stormwater impacts, aquatic invasive species management, and effects of climate change.	Office of Water Resources
Goal 5. Maintain and enhance habitats for native plants and wildlife.	
Conduct training with park staff on environmental regulatory compliance, habitat protection, invasive plant species, and trail maintenance activities.	Planning, Operations
After an initial process of documentation and prioritization, develop an invasive plant species control plan for terrestrial and aquatic species, with attention to regulatory requirements for implementation.	Planning, Office of Water Resources
Goal 6. Protect the reservation from overuse and misuse by the public.	
Improve visitation estimates through various efforts, including incorporating walk-ins and bicyclists to estimates.	Planning, Operations
Study, design, and construct new park roadway entrance on former trailer park property and develop accompanying management provisions to ensure efficient and safe operation.	Engineering, Planning

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The Main Beach at Walden Pond on a busy summer day. (Photo credit: DCR)

SECTION 1. INTRODUCTION

1.1. WALDEN POND STATE RESERVATION

Established as a public recreation facility in 1922 by the Commonwealth of Massachusetts, Walden Pond State Reservation is a national and international historic destination due to its connection to Henry David Thoreau (1817-1862). Thoreau spent two years, two months, and two days between July 1845 and September 1847 on the shores of Walden Pond. His solitary experience inspired his seminal work *Walden, or Life in the Woods*. Thoreau's works have had enormous societal influence, including on political reform movements in the United States and abroad (Cain, 2000), while also affecting how individuals choose to live their lives.

The close association with Thoreau is why Walden Pond State Reservation is one of the DCR's most prominent and revered properties, and why Walden is synonymous with quiet reflection and solitude. Yet, during the summer and fall months, the reservation is rife with activity, and finding opportunities for quiet introspection can be challenging. This paradox has been an ongoing theme throughout the reservation's history, and continues to present management challenges today. How to accommodate hundreds of thousands of

visitors a year, ensure their safety and meet their expectations, all while protecting the natural and cultural resources of the reservation remains a significant management challenge. This planning document provides a blueprint to meet this challenge.

1.2. AN INTRODUCTION TO RESOURCE MANAGEMENT PLANS

Resource Management Plans (RMPs) guide the management of properties under the stewardship of the Department of Conservation and Recreation (DCR). They identify clear goals for the Department's management of the properties; inventory and assess natural, 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) 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. This process identified the Walden Planning Unit.

The DCR selected the reservation to undergo a Resource Management Planning process, as well as a Visitor Services Master Plan process due to its prominent status, the presence of complex management challenges, and the identified need for a new visitor center. The planning process creates specific recommendations to protect natural and cultural resources and improve visitor experience.

To assist with this task, the DCR selected the consulting firm of Crosby, Schlessinger, and Smallridge, LLC as the primary consultant, with BSC Group, Maryann Thompson Architects, and Epsilon Associates as sub-consultants.

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. As the natural resources consultant, BSC Group assisted in the preparation of this RMP through research and writing.

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 “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 Walden Planning Unit RMP. The first occurred during a series of four public meetings, prior to preparing the RMP. The second occurred following the release of the draft plan. 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. RECENT CAPITAL IMPROVEMENTS

The Massachusetts Department of Environmental Management (DEM) operated Walden Pond State Reservation between 1974 and 2003. The DEM implemented a number of improvements in the 1990s and early 2000s including restoration of Walden Pond’s shorelines (with the exception of the pond’s eastern bank, above the Main Beach); construction of a Clivus Multrum comfort station in the main parking lot; and acquisition of a 26.5-acre property bordering Goose Pond’s north shoreline from the Town of Concord.

In 2003, the DCR was created through a merger of the Metropolitan District Commission (MDC) and the DEM. In 2005, the DCR partnered with the Town of Concord to make stormwater improvements to prevent discharge from paved surfaces (including Route 126 and the reservation parking lots) from entering the pond. In Fiscal Year 2006, the Friends of Walden Pond (a role of the Thoreau Society) contributed \$25,000 towards repairs to the bathhouse (bathroom stall partition repair and replacement, painting, electrical work, and repair of walls due to excessive dampness). The funds were matched one to one by the DCR.

Recognizing the need to complete the pond restoration and create a universally accessible path to the bathhouse and pond, the DCR initiated a planning process in 2007 with input from the Walden Pond Advisory Board. Consensus on a preferred approach to address universal access was not reached. However, the DCR put funding for a new visitor center for the reservation on its capital plan, and agreed to revisit these issues in concert with the new visitor center.

1.5. MANAGEMENT PRINCIPLE AND GOALS

As part of the planning process, a principle and accompanying goals to guide management of the Walden Planning Unit were developed.

Management Principle

Walden Pond State Reservation is an internationally acclaimed National Historic Landmark due to its association with Henry David Thoreau and his profoundly influential work Walden, or Life in the Woods. Simultaneously, the reservation is a heavily visited recreation facility as it provides a diverse set of recreational activities, including high demand water-based activities.

The DCR's management of the Walden Pond State Reservation shall aim to achieve a balance between these potentially competing uses by ensuring sustainability of its cultural and natural resources, while providing quality and compatible recreational, educational, and interpretive opportunities for visitors of all abilities.

Management Goals

The following goals are deemed to be of equal importance:

Goal 1: Preserve the cultural resources of the reservation. As a National Historic Landmark, the reservation possesses exceptional value in illustrating our nation's heritage and history. The DCR will manage its archaeological resources, historic buildings and structures, and cultural landscapes to stabilize and protect them from damage or degradation.

Goal 2: Provide quality, safe, diverse, and accessible recreational opportunities and facilities that are compatible with the reservation. The DCR will manage the reservation to provide diverse recreational opportunities and facilities that ensure visitor safety and access, while respecting the reservation's fragile resources and its prominence as a cultural/historic site.

Goal 3: Facilitate the public's understanding and appreciation of the reservation, its past, and its significance. Through orientation, education, and resource interpretation, the DCR will foster the public's appreciation and respect for the reservation, which will provide positive visitor experience, influence visitor stewardship of the reservation's natural, cultural, and recreational resources, and maintain the reservation's meaning and sense of place.

Goal 4: Preserve, protect, and enhance water resources of the reservation, including vernal pools and wetlands. The water resources of Walden Pond State Reservation simultaneously provide important habitats, water-based recreation, and are themselves a symbol of environmental consciousness. The DCR will manage the reservation to preserve wetland resources and enhance water quality.

Goal 5: Maintain and enhance habitats for native plants and wildlife. Walden Pond State Reservation hosts a variety of common and unusual native plants and wildlife. The DCR will manage the reservation to protect these habitats and enhance biodiversity.

Goal 6: Protect the reservation from overuse and misuse by the public. As one of the most heavily visited facilities in the DCR system, the potential exists for the reservation's key resources to be degraded beyond acceptable limits. The DCR will manage the reservation in a manner that ensures its natural, cultural, and recreation resources are preserved and protected for current and future generations.

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Heywood's Meadow. (Photo credit: DCR)

SECTION 2. EXISTING CONDITIONS

2.1. INTRODUCTION

The 335-acre Walden Pond State Reservation is located in the suburban towns of Concord and Lincoln, approximately 18 miles from downtown Boston. It is a popular attraction in the region, and a valuable open space reserve rich in history and ecological significance. Most notably, Walden Pond and its surroundings are the locations that inspired the famed author and naturalist Henry David Thoreau (1817-1862) to write the acclaimed book *Walden, or Life in the Woods*. Regarded as an iconic American literary work, *Walden* touches a variety of subjects from the importance of the individual living simply and deliberately, as well as communicating larger societal messages such as environmental stewardship and social responsibility.

Because of the reservation's association to Thoreau, it attracts a large number of national and international travelers and is a popular tourist destination in the region. As it has for generations, Walden Pond and the surrounding reservation also provides quality outdoor recreational opportunities to the public. The pond and surrounding woods provide such opportunities as hiking, swimming,

canoeing, fishing, picnicking, bird watching, cross-country skiing, photography, and nature observation.

Challenges exist in balancing the protection of Walden's natural and cultural resources and "preserving the Walden of Thoreau and Emerson" (a condition stated in the transfer deed from the donating families), while meeting the demands of the public that wishes to enjoy them. As early as the 1920s and until the mid-1970s, the reservation received overwhelming crowds of recreational visitors, as no limits were placed on visitation. Today, the DCR estimates that approximately 500,000 people visit the reservation each year, even with a 1,000 people at one time limitation (see Section 2.4 Historical Context). As stewards of Walden Pond and the surrounding reservation, the DCR must implement innovative and sustainable management strategies that first preserve the historical and ecological integrity of the pond and reservation. Second, the DCR must aim to provide quality recreational opportunities and accommodate the large public demand for Walden.

2.2. WALDEN PLANNING UNIT

Figure 2.2.1 shows the properties located in the Walden Planning Unit. Table 2.2.1 summarizes the

physical, ecological, and political settings associated with the Walden Planning Unit.

Fee Interest Lands

Walden Pond State Reservation is the primary property in the Walden Planning Unit. The reservation is bounded to the north by Route 2 and a former landfill owned by the Town of Concord and to the west by the MBTA Fitchburg Commuter Rail line. Route 126 forms the southeast boundary, but bisects the reservation further to the north.

In 2006, the DCR obtained seven parcels from the former Massachusetts Highway Department that collectively comprise 3.57 acres. Six of these parcels directly abut the south side of Route 2 and a historic cemetery of unknown ownership that was not included in the transfer. The remaining parcel is located west of Fairhaven Road, and abuts the Bear Garden Hill Conservation Restriction (CR).

The Department of Environmental Management (predecessor agency to the DCR) sought these lands to improve the connection between the reservation and the Bear Garden Hill CR. A Declaration of Restriction by the United States of America, executed after its transfer to the DCR, requires these lands be used solely for public park and recreation purposes in perpetuity.

Conservation Restrictions

The DCR holds two Conservation Restrictions in the Walden Planning Unit: Bear Garden Hill and Brister's Hill. Both properties have historical significance to Thoreau and *Walden*. The Walden Woods Project, a non-profit organization established to protect lands near Walden Pond, purchased the properties in the early 1990s to protect them from development.

Bear Garden Hill Conservation Restriction

Bear Garden Hill is located west of the reservation in a wooded setting, and is accessible via two points of access. One point of access is located off Fairhaven Road (no formal parking area is available at this location). The other is located off Sudbury Road in Concord from an unmarked parking area. The property contains 24.9 acres and provides hiking trails on the southern portion of the property. The property is near the site of the Boiling Spring, a

feature referenced in "The Ponds" chapter of *Walden*.

Brister's Hill Conservation Restriction

The DCR holds a Conservation Restriction on a 19-acre parcel known as Brister's Hill. The parcel is accessible from a trail near a two-space parking lot off Walden Street. The parcel is named after Brister Freeman, a freed slave who lived on or near the property in the late 1700s. Located north of Route 2 and east of Walden Street, the site contains a network of trails and interpretive features that highlight the many contributions of Thoreau and his lasting impact. The Walden Woods Project funded the interpretive project and oversaw its design and construction.

2.3. REGIONAL OPEN SPACE CONTEXT

Walden Pond State Reservation is part of a contiguous network of permanently protected open space commonly known as Walden Woods. Walden Woods is defined as an area of geographic, geologic, and ecological features related to the writings of Henry David Thoreau (Schofield, 1993). Lands comprising Walden Woods are owned by the Commonwealth of Massachusetts, towns of Concord and Lincoln, federal agencies, land trusts, private homeowners, and non-profit organizations. In all, Walden Woods contains approximately 2,680 acres of protected open space and is defined by some as a self-contained ecosystem (Schofield, 1993). Major parcels include Walden Pond State Reservation, Hapgood Wright Woods, Wright Woods, Adams Woods, Pine Hill and Flint's Pond in Lincoln. The Walden Woods Project, a local non-profit whose mission is to preserve the land, literature, and legacy of Henry David Thoreau through conservation, education, research and advocacy, actively pursues open space conservation within this area.

Place holder for Figure 2.2.1. 2008-2009 Orthoimagery Map

Back of Figure 2.2.1. 2008-2009 Orthoimagery Map

Table 2.2.1. Physical, ecological, and political settings of the Walden Planning Unit.

Planning Unit		Walden	
Location	Town of Concord	Middlesex County	
	Town of Lincoln	Middlesex County	
DCR Management Structure	Complex:	Walden	
	District:	Metro West	
	Region:	North	
Properties	Town	Area ^a	Perimeter ^a
Walden Pond State Reservation	Concord	260.06 acres	6.27 miles
Fee (Care, Custody and Control)	Lincoln	74.86 acres	
	Total	334.92 acres	
Ecoregion	Southern New England Coastal Plains and Hills		
Watershed	Sudbury/Assabet/Concord Rivers (SuAsCo)		
Legislative Districts			
Senate District	Third Middlesex	Senator Michael Barrett	
House Districts	Ninth Middlesex	Representative Thomas Stanley	
	Fourteenth Middlesex	Representative Cory Atkins	
Conservation Restrictions	Name	Area ^a	Fee Owner
	Brister’s Hill	18.98 acres	Walden Woods Project
	Bear Garden Hill	24.92 acres	Walden Woods Project
Designations	Designation	Agency	
	Priority Habitat (116.23 acres) ^b	Massachusetts Natural Heritage & Endangered Species Program	
	National Historic Landmark	U.S. National Park Service	

a. Land areas calculated using a Geographic Information System (GIS).

b. Area of Priority Habitat within the Walden Planning Unit in the most recent version of the Natural Heritage Atlas, October 2008.

2.4. HISTORICAL CONTEXT

Lands within the Walden Planning Unit have a complex and diverse history of human use, including Native Americans, European settlers, disenfranchised former slaves and immigrants, entrepreneurs, and recreationists. The history evokes themes that resonate today; from the genesis of the land conservation movement based on Thoreau's writings, to the history of public recreation land in the Commonwealth. A list of significant events in the Walden Planning Unit can be found in Appendix D.

Pre-Contact

Existing evidence suggests that Native Americans widely inhabited the Concord area, including Walden Pond and its surrounding Walden Woods, prior to contact with European settlers. The nearby

confluence of the Assabet, Concord, and Sudbury Rivers and the corresponding harvesting of shad, herring, and salmon is believed to be a factor that facilitated the settlement of Native Americans in the area (U.S. National Park Service, 2002).

During early Native American settlement in southern New England (during the Paleoindian {ca. 12,500 to 9,500 B.P.} and Early Archaic periods {ca. 9,500 B.P. to 8,000 B.P.}), population densities were relatively low, due to a lack of resource predictability. Throughout southern New England during the Middle Archaic Period (ca. 8,000 B.P. to 6,000 B.P.), there is a presumed increase in population density due to the increase in size and variety of archaeological sites found in southern New England during this time period (Dwyer and Stark, 1996). The late Archaic Period (ca. 6,000 B.P. to 3,000 B.P.) in southern New England is characterized by the emergence of highly specialized

technologies that were designed for a range of seasons and environments, and is well represented among the known archaeological resources in the Concord area (Blanke, 1993). The Woodland Period (ca. 3,000 B.P. to 450 B.P.) saw the emergence of pottery and horticulture (Dwyer and Stark, 1996).

A group of Native Americans associated with the Eastern Algonquin language group known as the Nipmucks are thought to have inhabited the Concord area for approximately 12,000 years before European settlement (U.S. National Park Service, 2002). Consistent with land use patterns of Native Americans of New England, seasonal camps were established along the Concord, Assabet, and Sudbury Rivers (Donahue, 2004). Historical accounts suggest Native Americans in the Walden area purposely set fires to manipulate the landscape for their benefit (Shattuck, 1835), while others have disputed the notion (Russell, 1983).

Contact

The Town of Concord was incorporated in 1635 as the first interior settlement in the Massachusetts Bay Colony (U.S. National Park Service, 2002). The primary settlement area occurred in Concord Center, located about 1.25 miles from Walden Pond. Agriculture was the predominant economic regional base during the First Settlement Period (1620-1675) and the Colonial Period (1676-1776), although it was not an established land use in the Walden area because of a lack of agrarian soil suitability (Schofield, 1993). The Town of Lincoln was incorporated in 1754 by merging land areas from various towns, including Concord. Following the Revolutionary War, the woods near Walden Pond attracted abandoned and freed slaves who lived on private land (Lemire, 2009).

By 1840, various families owned the land surrounding Walden Pond, mostly for the purposes of timber harvesting. The accomplished philosopher and writer, Ralph Waldo Emerson, purchased a 10-acre tract of land adjacent to the pond in 1844 after a chance encounter with landowners during a solitary walk on Walden Pond. Although it is not entirely clear how Emerson intended to use the property, it has been suggested that Emerson purchased the property to keep the area preserved, in contrast to other woodlands in the area that were being harvested due to an increase in timber prices (Maynard, 2004).

Soon after purchasing the property, Emerson granted permission to his friend and fellow Transcendentalist Henry David Thoreau to live on the property. Thoreau was familiar with Walden Pond, having visited it during his childhood, and was enamored with the idea of living on the pond shores even as a child (Salt, 1993). The idea to temporarily separate himself from society may have been planted in Thoreau's mind after an 1837 visit to a Harvard friend named Charles Stearns Wheeler, who had built a shanty and resided near Flint's Pond in Lincoln (Cain, 2000). Concrete references to putting such a plan into action were included in Thoreau's journal in 1841, including a December 24th entry:

I want to go soon and live away by the pond where I shall hear only the wind whispering among the reeds. It will be success if I shall have left myself behind. But my friends ask what I will do when I get there. Will it not be employment enough to watch the progress of the seasons?
(Thoreau, 1841: p. 299)

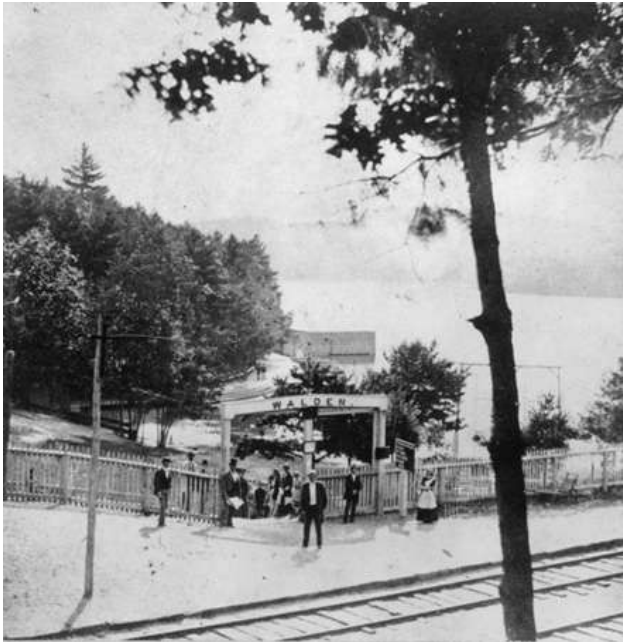
Thoreau began work on the cabin in March 1845, and started his residence along the pond's northwest shore on July 4, 1845. He continued to live in his cabin until September 6, 1847. After the publishing of *Walden* seven years later and furthered by the publishing of his journals, Thoreau and Walden Pond became inextricably linked.

Immediately preceding Thoreau's tenure at Walden Pond in 1844, a section of railroad opened in Concord that eventually connected Boston with Fitchburg (Drake, 1880). The woods near the train tracks housed shanties for railroad workers, typically poor Irish immigrants. In *Walden*, Thoreau mentions his purchase of an "uncommonly fine" shanty from a railroad laborer that Thoreau used the remnants of to construct his cabin. Fredric Tudor, known as the "Ice Baron," would purchase ice harvesting rights to Walden Pond and use the new rail line to transport ice harvests from Walden Pond (Seaburg and Paterson, 2003). Tudor developed and perfected methods to ship ice to far away locales such as the West Indies, Cuba, and India. In the *Walden* chapter "The Pond in Winter," Thoreau describes workers harvesting ice and hauling it by horse towards the rail line. An estimated 10,000 tons of ice were harvested in the winter of 1846-1847. Ice was stacked on the edge of the pond near the railroad,

and covered with hay to insulate and prevent melting (Seaburg and Paterson, 2003).

As a way to improve ridership, the Fitchburg Railroad company in 1866 constructed and opened “Walden Lake” near the western shores of the pond. Accessible only by train, the amusement park attracted crowds from Boston and communities along the rail line. During the life of the Walden Lake amusement park, infrastructure was built including bathhouses, a pedestrian bridge over the rail line, baseball fields, a bicycle track, and a dance hall. The amusement park burnt down during two fires, one in 1900 and the other in 1902 from sparks emanating from trains. The park was not rebuilt. Remnants of the amusement park remain today on adjacent conservation lands not under the control of the DCR (Maynard, 2004).

The rail line is still active today as a commuter rail line operated by the Massachusetts Bay Transit Authority (MBTA).



Entrance gate at Walden Lake amusement park, 1870s. Picture taken facing Ice Fort Cove. Concord Free Public Library. Accessed online at: <http://www.concordlibrary.org/scollect/walden/7.htm>.

Walden in Public Ownership

In 1922, the Emerson, Heywood, and Forbes families owned approximately 80 acres of land surrounding Walden Pond. The prospect of the lands surrounding Walden Pond being privately owned and developed, including the property where Thoreau had built his temporary homestead, inspired

the families to donate the property to public ownership (Maynard, 2004). With the sole and express purpose of “preserving the Walden of Emerson and Thoreau,” the families donated the land to the Commonwealth of Massachusetts (see Appendix E for a summary of Walden-related Acts and Resolves). Because a state park system devoted to recreation did not yet exist, and the deed specifically forbade transfer of the reservation to the Metropolitan District Commission, Middlesex County was designated as trustee of the reservation. Four recreational activities (“bathing, boating, fishing, and picnicking”) were specifically reserved in the deed. Prior to 1922, the lands on the east part of the pond were used by the public, evidenced by a plan showing lands included in the transfer with two bathhouses, two restrooms, and a boat house in the vicinity of the Main Beach.

In 1924, Arthur A. Shurcliff, a prominent Boston-based landscape architect, prepared a plan to facilitate access to the Main Beach. Although not all elements of the plan were integrated, the overall site plan for the Main Beach appears to have been heavily influenced by Shurcliff’s vision. Some components of the plan remain today, including two stairways that connect Route 126 to the Main Beach. The plan included a parking area, which was removed in the 1970s, on the pond side of Route 126 in the area of the present day picnic area.

In 1935, the Cambridge Turnpike (present day Route 2) was rerouted to avoid Concord Center. A portion of the new roadway was placed just north of Walden Pond in a layout still in place today. Construction of the bypass greatly facilitated access between the reservation and Boston and its immediate suburbs.

Accommodations for the public swimming beach were made throughout the 1940s, including the construction of a two-story public convenience station that provided men’s and women’s bathrooms on the top floor and a first aid station and staff office space on the bottom floor. The 1940s also saw the excavation of Thoreau’s foundation by amateur archaeologist Roland Robbins, and the placement of a memorial to honor the cabin site.

Limited visitation estimates during this general time period indicate heavy recreational demand for the park, including a record of 25,000 people in a single day in the 1930s (Gardiner and Associates, 1974). The county’s management of the reservation

prioritized water-based recreational activities, and was indifferent toward preserving or promoting the site's enormous historic significance (Maynard, 2004). This philosophy was evident in 1957, when the county planned to make "improvements" to the Red Cross Beach.

Under the plan, the county removed approximately 100 trees, and constructed a road bed that was to provide emergency access to Red Cross Beach (Maynard, 2004). The plan called for widening the width of beachfront, measured from bank to shoreline, from 10 to 50 feet; and construction of a 100-foot long concrete bathhouse (Nickols & others v. Commissioners of Middlesex County, 1960). Acting on a lawsuit filed by the members of the public, the Massachusetts Supreme Judicial Court found the extent of tree cutting, coupled with the roadway construction, to be in violation of the wishes of the donating families as set forth in the transfer deeds. The court ordered the county to cease and desist the beach improvement project, and restore areas of the northeast pond shore affected by the project.

In 1955, the state's Department of Natural Resources (DNR) took, by eminent domain, a 44-acre parcel abutting Route 2 and the railroad tracks. The acquisition would commence several DNR purchases within 12 years near Walden Pond totaling 99 acres.

In 1965, the U.S. National Park Service designated Walden Pond as a National Historic Landmark. The designation did little to alter the county's management of Walden Pond, as it remained skewed toward providing intensive water-based recreation. For instance, in 1968 Middlesex County treated Walden Pond with Rotenone, a chemical used to reclaim the pond from smaller fish to maximize sport fish harvesting.

Transfer to State Management

Under the leadership of newly elected Middlesex County Commissioners (including future U.S. Senator Paul Tsongas), transfer of reservation management responsibilities from Middlesex County to the DNR was recommended in January 1973 (Boston Globe, 1973). The idea was not new, as a similar proposal in 1967 was narrowly defeated in the Massachusetts Senate (Boston Globe, 1967). Transfer of care and maintenance responsibilities to

the state's Department of Natural Resources occurred in July 1974.

As a precursor to initiate the transfer, Middlesex County and the DNR started a planning process that resulted in the 1974 report entitled Walden Pond Restoration Study. Often referred to as the Gardiner report (named after Gardiner and Associates, the Cambridge-based consulting firm that prepared the report), the study identified key methods in how the state would manage the reservation differently. The report identified a central tenet deemed necessary for future management: the number of visitors to Walden must be restricted. Without any controls, the report estimated that by the year 2000, demand for visitation at Walden Pond would grow 150% to an average of 5,000 visitors per day. The report predicted without any visitation controls, substantial alteration of the reservation infrastructure would be required and would transform Walden into an urban park.

The report identified five alternatives for future limitation of visitors (see Table 2.4.1). The Site Preservation/Historical Development alternative was chosen as the preferred alternative and formed the rationale for the size of the current main parking lot. Unfortunately, the specific methodology used to generate the visitor limits for the five alternatives and preferred alternative is unknown.

Table 2.4.1. Evaluated alternatives for limiting visitation from 1974 Gardiner report.

Alternative	Visitor Limitation
"Do Nothing"	None
"Recreation Development"	1,000 cars/3,000 to 4,000 people at one time
"Site Stabilization/Historical Development"	2,000 to 3,000 people at one time
"Site Preservation/Historical Development" ^a	300 cars/1,000 people at one time
"Extreme Preservation"	200 people at one time

Source: Gardiner and Associates, 1974.

a. Selected and implemented alternative.

Since 1974, the DEM implemented many of the projects envisioned in the Gardiner report. For instance, a series of bank restoration projects around Walden Pond were undertaken. In addition, the DEM removed two parking areas on the pond side of Route 126 and constructed one central parking area using porous pavement. However, one

recommendation in the report to reroute Route 126 to the northeast away from Walden Pond, despite significant efforts, has not advanced beyond preliminary stages. In 2001, an Environmental Notification Form (ENF) was filed pursuant to the Massachusetts Environmental Protection Act (MEPA) that proposed five alternatives for rerouting Route 126. The proposal was met with stiff opposition by the Town of Concord due to required taking of adjacent landfill land, as well as concerns from neighbors on the eastern side of Goose Pond.

Walden Pond garnered international attention in the early 1990s, when private developers made two separate development proposals for nearby lands. An office park development proposed for Brister's Hill and a housing development slated for Bear Garden Hill threatened the integrity and contiguity of Walden Woods. Opposition to the projects catalyzed the formation of the Walden Woods Project. Efforts to develop the properties were ultimately abandoned and the Walden Woods Project, after an exhaustive fundraising campaign, purchased the properties.

2.5. NATURAL RESOURCES

Physical Resources

Topography and Geology

The Laurentide Ice Sheet, which once covered the region with a two-mile thick layer of ice more than 15,000 years ago, developed and shaped the topography and surficial geology of Walden Pond State Reservation (Colman and Friesz, 2001). Ninety percent of the reservation is composed of glaciofluvial (glacial river) deposits of sand, gravel, silt, and clay and is relatively level with an average gradient of 2-5% (Gardiner and Associates, 1974). The highest point on the reservation is Emerson's Cliff, a bedrock outcropping with a maximum elevation of 274 feet above sea level. Several small glaciofluvial features occur in the wooded northwestern area of the reservation, rising 20-40 feet above the surrounding topography (Gardiner and Associates, 1974).

Walden Pond itself is a relict glacial feature known as a kettle-hole lake, which formed as a large piece of ice separated from a retreating glacier during regional deglaciation 12,000 to 15,000 years ago. This large piece of ice created a depression in the barren tundra landscape. The ice block previously

sat on the bottom of Glacial Lake Sudbury. Over time the lake was replaced with sandy and gravelly outwash. As these deposits accumulated around the block of ice, they formed the shores and banks we see today at Walden Pond (Koteff, 1963; Colman and Friesz, 2001). As the block of ice melted, water filled the depression creating Walden Pond.

The contours of the lake bottom and shores still reflect the original shape of the block of ice that created the initial depression. At its deepest point, Walden Pond has a maximum depth of approximately 30.5 meters (100 feet). Water in the pond is very clear and free from turbidity, as it is fed by groundwater and direct precipitation and has no natural inlets to convey sediment. Additionally, conservation efforts aimed at preserving shoreline and adjacent forested upland areas have helped to reduce shoreline erosion and sedimentation into the pond (Colman and Friesz, 2001).

Goose Pond, to the east of Walden Pond, is also a kettle-hole pond, albeit much less substantial in size than Walden Pond. Three other smaller depressions, also considered to be remnant glacial kettle-like features, are located in the northwest section of the reservation. These depressions are approximately 40 feet deep and have side slopes generally greater than 25% (Gardiner and Associates, 1974). In addition, a small kettle-hole occurs east of Emerson's Cliff (Conway School of Landscape Design, 2009). The same processes that created Walden Pond likely formed these additional kettle-hole features.

Soils

Soils in the Walden Pond State Reservation are well to excessively drained, as defined by the U.S. Department of Agriculture (Peragallo, 1990). The soils in the immediate vicinity of the pond are generally in the Hinckley variety and have low runoff potential when thoroughly wet. The distinguishing characteristics of these soils are their relative inability to hold water (Peragallo, 1993).

The surrounding soils and topography exhibit features that are characteristic of the same glacial period that formed Walden Pond. Substrates throughout Walden Pond State Reservation are composed primarily of stratified coarse-grained sand and gravel glaciofluvial material deposited by meltwater streams that formed during regional deglaciation. These soft deposits are overlain on a

hard bed of glacial till and bedrock. Soils within the reservation are typically permeable and well drained. Substrates within Walden Pond State Reservation consist primarily of soils classified in the Hinckley loamy sand and Windsor loamy sand series (U.S. Department of Agriculture, 2012). There are also till-covered hills that elevate above the surrounding landscape, such as Fairhaven Hill in Concord and the Pine Hill complex in Lincoln. An example within the reservation is Emerson's Cliff, upon which the substrates are composed primarily of Charlton-Hollis-rock complex series soils.

Water Resources

Walden Pond State Reservation's ponds and wetlands provide plant and wildlife habitat. A map showing the water resources within the Walden Planning Unit can be found in Figure 2.5.1.

Watersheds

The reservation lies within the Sudbury and Concord river watersheds. The Sudbury River is a tributary to the Concord River, with its confluence located approximately three miles to the northwest of the reservation at Egg Rock in Concord. From there, the Concord River follows north for approximately 15 miles to its confluence with the Merrimack River. At its closest point, the main stem of the Sudbury River passes the reservation approximately three-quarters of a mile to the west and the Concord River approximately one-and-a-half miles to the north-northwest. The area of the reservation south of Walden Pond drains to the Sudbury River, while the areas to the north and west drain to the main stem of the Concord River.

Ponds

There are two major ponds within Walden Pond State Reservation: Walden Pond and Goose Pond. The open waters of these ponds constitute approximately 22% of area within Walden Pond State Reservation. The combined surface area of these ponds is approximately 71 acres (60 acres Walden Pond; 11.28 acres Goose Pond). Little Goose Pond, a third feature located to the northeast of Goose Pond, is a small body of open water encircled by tree cover with deep marsh vegetation. Little Goose Pond is identified as a Certified Vernal Pool by the Natural Heritage & Endangered Species Program (NHESP).

Walden Pond. Walden Pond, by far the largest water body in the planning unit, is approximately 1.6 miles in perimeter. The pond is the deepest natural fresh waterbody in the Commonwealth of Massachusetts, reaching a depth of approximately 100 feet.

With no direct surficial hydrological connections, the pond is fed solely by direct precipitation and groundwater flow. Water balance research conducted by Colman and Friesz (2001) indicates that groundwater constitutes approximately 55% of inflow. Precipitation makes up the remaining 45%. The absence of surficial outlets perpetuates the potential impact of both pollution and flooding.

The contributing aquifer for Walden Pond exhibits an east to west hydraulic gradient, in that the pond gains water from the eastern perimeter and loses water along its western perimeter. Goose Pond, which is hydraulically up gradient, also contributes water to Walden Pond via the underlying and adjacent aquifer. The water residence time is approximately five years (Colman and Friesz, 2001).

Precipitation on adjacent upgradient areas largely infiltrates permeable soils that recharge the aquifer, and flow in groundwater toward the pond. Accordingly, the surface topography adjacent to the pond does not necessarily define the contributing watershed. Because of the permeable soils that surround the pond, only during particularly intense rainfall events does overland flow discharge to the pond (Gardiner and Associates, 1974).

All water in the pond is lost through seepage into the adjacent aquifer or evaporation to the atmosphere. Seepage and evaporation account for 74 and 26 percent of the outflow from the lake respectively.

Water Quality. Though unusually clear and pristine for a water body within close proximity to the Boston metropolitan area, concentrated visitor attendance in the summer months has the potential to affect Walden Pond water quality (Colman and Friesz, 2001). These potential issues are related to nutrient impairment (typically nitrogen and phosphorus). Avian inputs may also affect nutrient deposition, although the closure of an adjacent landfill has reduced the presence of winter gulls (Colman and Friesz, 2001). An unidentified odor attributed to pollen was noted for several days in 1997 (see Baystate Consulting Group, 1997; Fahlander, 1997).

Place holder for Figure 2.5.1. Water Resources Map

Back of Figure 2.5.1. Water Resources Map

Enterococcus bacteria spikes have also resulted in beach postings (see Lefferts, 2008).

Numerous water quality studies have been conducted on Walden Pond (Deevey, 1942; Massachusetts Department of Environmental Management, 1992; Baystate Environmental Consultants, 1997; Colman and Friesz, 2001). The DCR conducts ongoing water quality tests for bacterial contamination required by state law for swimming beaches.

An investigation by Cortell and Associates (1988) confirmed that the pond met all state water quality criteria for Class B waters. Class B waters are designated by the Massachusetts Department of Environmental Protection in the Surface Water Quality Standards (314 CMR 4.00) as “a habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation.” The Cortell study determined that water quality and conditions had not changed significantly in the 37 years since data was collected in 1949. Nitrogen and phosphorus were found in higher levels in the benthic zone, but not the surface waters. The benthic zone is an ecological term to define the bottom of a lake or the ocean, and includes the sediment and some sub-surface layers.

Dissolved oxygen (DO) levels that meet the criteria of a Coldwater Fishery Resource have been documented to 14 meters (Cortell and Associates, 1988). A minor amount of DO (0.3 mg/L) was found at the bottom, a finding consistent with a 1949 study (Cortell and Associates, 1988). However, Colman and Friesz (2001) found that DO was depleted in the hypolimnion (the lower, colder layer of water in a lake), at the very end of the stratification period (and just before late fall turnover) during several years of their study. They also identified a hypolimnetic oxygen deficit that doubled since Deevey’s records from 1939, indicating that nutrient levels and subsequent DO demand have increased.

Colman and Friesz (2001) identified the reservation bathhouse facility’s septic system as being a major contributor to nutrient loading in the pond (specifically nitrates). The restrooms have since been updated with a flushless composting toilet system, which mitigates the nitrogen plume. However, reducing the overall nitrogen to phosphorus ratio may increase the risk of

cyanobacteria blooms, which are even less desirable than typical algae (Colman and Friesz, 2001). Therefore, it is particularly important to control visitor-related inputs of nutrients. Anaerobic conditions in the hypolimnion also have a potentially negative effect on the amount of phosphorus available in the water column.

Microfossil evidence (diatom, *Cladocera*, and algal record in sediment sampling) suggest Walden Pond had high DO levels and low nutrients prior to the early 20th century (Winkler, 1993; Koster et al., 2005). Over time, increased public recreational use and erosion-related runoff has led to the reduction of oligotrophic (low nutrient loads) species. Deevey’s study in 1939 also determined that Walden Pond was mesotrophic (moderate level of nutrient loads), but still leaned towards oligotrophic on the continuum. Walden Pond is now considered mesotrophic with the potential to become eutrophic (as well as more acidic), if use is not regularly managed (Winkler 1993; Colman and Friesz, 2001; Koster et al., 2005).

A beneficial population of benthic *Nitella* algae exists in the pond. The algae fix nutrients and produce DO within lower portions of the lake. This reduces the potential of complete depletion of DO below the epilimnion (the upper layer of water in a lake) during stratification. Losing *Nitella* due to reduced clarity of waters could rapidly speed up the eutrophication process it is currently helping to buffer (Deevey 1942; Colman and Friesz, 2001).

Goose Pond. Goose Pond is an 11.28-acre pond approximately 0.90 miles in perimeter. Similar to Walden Pond, Goose Pond was created by retreating glaciers and is solely fed by a combination of groundwater and precipitation. The DCR does not maintain infrastructure near the pond, aside from an adjacent hiking trail. Park visitors seldom visit Goose Pond (Conway School of Landscape Design, 2009). Accordingly, Goose Pond provides a quieter solitary experience for visitors.

Streams

As indicated by Gardiner and Associates (1974), a number of shallow swales occur within the reservation that could host surface water flow. However, the highly porous soils obviate surface water flow. Accordingly, no mapped streams are present on the reservation.

During a natural resource inventory associated with the Gardiner report, a small channel was observed with an outlet to Heywood's Meadow. Flow was culverted under the Heywood's Meadow Road trail. Assuming Heywood's Meadow has a hydrological connection draining to wetlands to the west of the MBTA commuter rail bed, there may also be low gradient, indiscernible, stream flow within the wetland.

Wetlands

Heywood's Meadow is the predominant wetland feature in Walden Pond State Reservation, located in its southwest section. At about 8.8 acres, it is a large Palustrine system that transitions between shrub swamp, deep marsh emergent, and bog vegetation.

Wyman Meadow, located to the east of Thoreau's Cove on Walden Pond, is characterized as a Palustrine system with deep marsh emergent vegetation. Water levels affect whether this area is hydrologically connected to the pond. During periods of relative high water levels, water overtops a divide where the pond path is currently located. It receives high visitation due to its proximity to the Thoreau House Site. These resources are labeled on Figure 2.5.1.

Vernal Pools

Vernal pools are depressions within upland forests that seasonally flood and are isolated from flowing streams or permanent ponds. They provide important breeding habitat for amphibians and provide food, shelter, and water for other species as well. Vernal pools usually flood in the spring and/or fall, and are often dry in the summer. The location of the vernal pools within the Walden Planning Unit can be found in Figure 2.5.2.

Since vernal pools are temporary bodies of water, they do not support fish populations; for this reason, the pools are used as seasonal breeding habitat for amphibians, which lay gelatinous eggs in the pools. Some frog, toad, and mole salamander species have evolved breeding strategies that rely on a lack of fish populations. Other amphibian species use vernal pools but do not depend on them, including other toad, frog, and newt species. Vernal pools also support a diverse invertebrate fauna, including fairy shrimp (*Eubranchipus spp.*; Swain and Kearsley, 2011).



Certified Vernal Pool, Wyman Meadow. (Photo credit: DCR)

Certified Vernal Pools. Data from the Massachusetts Natural Heritage & Endangered Species Program (NHESP) indicate that Walden Pond State Reservation contains three certified vernal pools. These vernal pools are protected under environmental regulations. The most visible certified vernal pool is located on the Pond Path in Wyman Meadow at Thoreau Cove.

As of this writing, the vernal pool is segregated from Walden Pond, although during high water periods the two water bodies merge. The second certified vernal pool is north of Wyman Meadow, and surrounded by mature trees. The third certified vernal pool is Little Goose Pond.

Potential Vernal Pools. The reservation also contains three potential vernal pools identified by the NHESP. Two potential vernal pools are located in the southeastern part of the reservation. One is directly east of Emerson's Cliff and is characterized as a deciduous wooded swamp. The other potential vernal pool south of the pond is located near the hemlock grove and consists of shrub swamp vegetation. The third potential vernal pool is located north of Wyman Meadow near Route 2 and is characterized by shrub swamp and emergent vegetation. Field observation by BSC Group in 2012 indicates that this pool shows some evidence of stormwater runoff from Route 2 as well as scouring and sedimentation.

During its field investigations, BSC Group also identified a small pool in the northwest section of the reservation that contains a pocket of shrub swamp vegetation within an eastern white pine grove.

Place holder for Figure 2.5.2. Priority Natural Resources Map

Back of Figure 2.5.2. Priority Natural Resources Map

Flood Zones

According to data from the Federal Emergency Management Administration (FEMA) Q3 digital Flood Insurance Rate Maps, no identified flood zones for 100 or 500 year flood events exist within the Walden Planning Unit.

Flooding is a concern due to the presence of dramatic fluctuations of the pond's water levels (Walker, n.d.). The spring of 2010 is a recent example of significant flooding with greater than 15 inches of rain combined with snowmelt over a several week period. Portions of the reservation were closed until water slowly receded through evaporation and eventual groundwater outflow.



Spring 2010 Flooding, Main Beach. (Photo Credit: DCR)

Vegetation

Over 145 species of plants have been recorded at Walden Pond State Reservation in recent decades. An inventory of documented vegetation can be found in Appendix F. Additional inventories in the Concord region are available (Walden Biodiversity Days, 1999; 2009). These data were not used as the lists do not contain locational information to determine which species were located inside or outside of the planning unit.

Parts of the reservation and surrounding Walden Woods have been used by researchers to study the effects of climate change on plant communities. By comparing Thoreau's notes on Concord's flora with more recent plant inventories (e.g., Willis et al., 2008), researchers have found vegetation of the reservation and surrounding areas has changed greatly since Thoreau's time. Many of the species

that have prospered since Thoreau's time are non-native plants, including invasive species.

Various forest and community types for Walden Pond State Reservation were identified by aerial imagery and grouped by the James Sewell Company in 2005. The dominant general vegetation cover types within Walden Pond State Reservation are white pine- oak forest and mixed oak forest. Other general communities within the reservation include deep marsh, shrub swamp, bog, eastern hemlock with and without mixed hardwood, minor areas of deciduous wooded swamp, and pockets of pitch pine. The reservation also contains an abandoned agricultural field that is managed to maintain its open character.

Natural Communities

Field investigation conducted by BSC Group identified 10 vegetation communities with six of these being terrestrial and four being palustrine/lacustrine (i.e., non-tidal freshwater). These natural communities are listed in Table 2.5.1. Some of the small shrub swamp or open water wetlands also meet the criteria for the woodland vernal pool community. These communities represent specific combinations of plants and physical conditions that occur repeatedly across the landscape. Plant and animal diversity at Walden Pond is largely a function of the diversity and health of natural communities.

Table 2.5.1. Natural communities of Walden Pond State Reservation.^a

Community Type	System^b	State Rank^c
Cultural Grassland	T	N/A
Inland Acidic		
Pondshore/Lakeshore	P	S4
Kettle-hole Level Bog	P	S3
Hemlock Ravine	T	S4
Mixed Oak Forest	T	S4
Northern Hardwoods - Hemlock- White Pine Forest	T	S5
Pitch Pine - Oak Forest/Woodland	T	S5
Shrub Swamp	P	S5
White Pine-Oak Forest	T	S5
Woodland Vernal Pool	P	S3

a. Classified according to Swain and Kearsley, 2011.

b. T = Terrestrial and P = Palustrine (Swain and Kearsley, 2011).

c. Communities are ranked from the most rare (S1) to the most common (S5); N/A indicates a cultural community, which is not ranked.

Of the mapped community types, two are given a state rank of S3, which is considered “limited” in Massachusetts and tracked by the NHESP (Swain and Kearsley, 2011). The S3 communities include the woodland vernal pools and the kettle-hole level bog. These communities are among the most sensitive natural features of the reservation, but also receive much less traffic and human influence than the pond itself.

Kettle-hole Level Bog. The northern portion of Heywood’s Meadow supports a floating mat Sphagnum bog that may have developed in a glacial kettle-hole. Low shrub vegetation of the open mat is dominated by leatherleaf (*Chamaedaphne calyculata*) with scattered trees, including black spruce (*Picea mariana*) and tamarack (*Larix laricina*).

Kettle-hole level bogs are a variant of level bogs occurring in kettle depressions in sandy glacial outwash. Vegetation is typically zoned in rings in the peatland. In the case of Heywood’s Meadow however, the vegetation is not zoned. There is no inlet to Heywood’s Meadow; however, there is an outlet that drains southerly. At present the outlet is dammed by beavers, although a culvert fence (known as a “beaver deceiver”) was installed to maintain water levels within the bog.

Woodland Vernal Pool. As mentioned earlier in this section, Walden Pond State Reservation includes three certified vernal pools and three potential vernal pools. The NHESP identifies vernal pools as a separate natural community and defines them as “small, shallow depressions within upland forest that are temporarily flooded and provide important breeding habitat for amphibians.” Information on the vernal pools in Walden Pond State Reservation can be found on page 18.

Rare Species

Walden Pond contains three state-listed, endangered plant species as defined by the NHESP: Acadian quillwort (*Isoetes acadiensis*), lake quillwort (*Isoetes lacustris*), and long-beaked bald-sedge (*Rhynchospora scirpoides*). Walden Pond is one of only six waterbodies in Massachusetts to contain Acadian quillwort, and is the only known waterbody in Massachusetts that currently contains lake quillwort (NHESP, 2012a). Approximately 116.2 acres (34.6%) of the reservation has been designated

as Priority Habitat in the most recent version (October 2008) of the Massachusetts Natural Heritage Atlas. The designation is based on an approximate 300-foot buffer around Walden Pond. The quillworts are the only rare or endangered species known to exist on the reservation (see Table 2.5.2).

The population of lake quillwort was confirmed in 2001 by a team of qualified botanists after observing spores unique to the species under a microscope. A healthy population (approximately 1,000 mature plants with fruits) of lake quillwort was observed in approximately 8 to 15 feet of water (NHESP, 2009a). Other observations have found lake quillwort over seven meters (NHESP, 2012b). Fruiting of lake quillwort occurs between late July and October.

These quillworts require acidic, nutrient-poor water and substrates, with limitations on soil disturbance (NHESP, 2008; NHESP, 2012b).

A Species of Special Concern, long-beaked bald-sedge, was identified in the Goose Pond area of the reservation and was first observed in 2002. The record was approved by the NHESP in 2012. In Massachusetts, the sedge is usually associated with coastal plain pond shores and is typically only found in southeastern Massachusetts. Threats to the sedge include development, trampling and changes in water quality and quantity (NHESP, 2013).

Table 2.5.2. State-listed species of Walden Pond State Reservation.

Species ^a	Type	MESA ^b
Acadian quillwort (<i>Isoetes acadiensis</i>)	Plant	E
Lake quillwort (<i>Isoetes lacustris</i>)	Plant	E
Long-beaked bald-sedge (<i>Rhynchospora scirpoides</i>)	Plant	SC

a. NHESP fact sheets for all identified species are available at http://www.mass.gov/dfwele/dfw/nhESP/species_info/mesa_list/mesa_list.htm.

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

A summary of coordination between the NHESP and DCR during the preparation of this RMP can be found in Appendix G.

Invasive Species

The Massachusetts Invasive Plants Advisory Group (MIPAG) defines vegetative invasive species as: “non-native species that have spread into native or minimally managed plant systems in Massachusetts; these plants cause economic or environmental harm by developing self-sustaining populations and becoming dominant and/or disruptive to those systems (MIPAG, 2005).”

Important characteristics that are indicative of non-native invasive plant species include:

- being non-indigenous to the area;
- producing an abundant number of fruits and seeds;
- having extremely effective dispersal methods;
- becoming rapidly and easily established even in harsh conditions, in areas distinct from the initial invasion, or in minimally managed or native systems;
- persisting without cultivation;
- growing rapidly; and
- causing negative environmental effects that outweigh any benefit, including by reducing biodiversity in an area by outcompeting desirable, native species.

Terrestrial Vegetation. Twelve species of plants classified as invasive (as defined by MIPAG, 2005) have been recorded on the reservation and adjacent areas (see Table 2.5.3). Their uncontrolled spread poses a threat to the diversity of native plants and animals. No formal reservation-wide surveys have been conducted to determine the abundance and distribution of these plants, although some populations have been identified.

Invasive species are particularly notable along the edges of the reservation. Morrow’s honeysuckle, Asiatic bittersweet, and Japanese barberry were advancing into the woods along the boundary with the landfill. Asiatic bittersweet and multiflora rose were present near Route 126 at a field in the southern section of the reservation, while autumn or Russian olive was noted along the edges of the field. Tree of heaven and Japanese knotweed are present in the maintenance area adjacent to and east of Route 126 in Lincoln. Black swallow-wort and black locust are noted along the slope shared with the MBTA

commuter rail corridor. Management efforts by DCR staff and volunteers have been ongoing.

Species were identified from the previous inventories that are found on the MIPAG list (see <http://www.massnrc.org/mipag/invasive.htm>).

Under this planning process, BSC Group compiled identification and control protocols for each invasive species in Table 2.5.3. This information will be expanded to include other invasive species found on the reservation for an invasive species management plan.

Table 2.5.3. Documented invasive plant species of Walden Pond State Reservation.

Common Name	Scientific Name
Tree of heaven	<i>Ailanthus altissima</i>
Japanese barberry	<i>Berberis thunbergii</i>
Asiatic bittersweet	<i>Celastrus orbiculatus</i>
Black swallow-wort	<i>Cynanchum louiseae</i>
Autumn or Russian olive	<i>Elaeagnus spp.</i>
Glossy buckthorn	<i>Frangula alnus</i>
Morrow’s honeysuckle	<i>Lonicera morrowii</i>
Purple loosestrife	<i>Lythrum salicaria</i>
Japanese knotweed	<i>Polygonum cuspidatum</i>
Common buckthorn	<i>Rhamnus cathartica</i>
Black locust	<i>Robinia pseudoacacia</i>
Multiflora rose	<i>Rosa multiflora</i>

Sources: DEM, 1993; Baystate Consulting Group, 1995; Mass Audubon, 2000; Conway School of Landscape Design, 2007; BSC Group observations 2011; 2012.

Aquatic Vegetation. There are no known aquatic invasive plant species in Walden Pond, although a thorough survey of the pond has not been conducted since 2010 (Straub, 2011). Aquatic invasive species are spread to new locations by a variety of means including boats, birds, and dumping of aquariums. Because the public can use private boats on the pond, the potential exists for a boater to unknowingly introduce an invasive species from a previous use. A DCR seasonal worker monitored boats for aquatic invasive plant species during the summer 2012 recreation season. In four documented cases, the lake monitor prevented the introduction of Eurasian water milfoil to the pond by boat inspection. This position is subject to annual funding. Previously, a part-time boat monitor was employed in the summer of 2010, however, resources for this effort were later employed elsewhere in the state for zebra mussel control.

Wildlife

The forested area around Walden provides suitable habitat for various mammals, birds, reptiles, and amphibians. There are no state- or federally-listed rare or endangered wildlife species documented on the reservation.

Walden Pond State Reservation provides breeding, migratory, and wintering habitat for numerous species of wildlife. Some are generalists (e.g., raccoon, blue jay), able to exploit both natural and built environments. These are common throughout eastern Massachusetts, including the reservation. Others require contiguous forest (e.g., fisher, ovenbird); something available in the larger area of Walden Woods, but lacking in much of 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. Due to citizen scientists and other interested parties, extensive species data exists for the Concord and Lincoln region, but it is less clear which species are located directly within the planning unit.

In 2004, the Metropolitan Area Planning Council organized a feasibility study on establishing a wildlife/pedestrian corridor over Route 2. The Federal Highway Administration funded the study that evaluated three potential locations to site a wildlife crossing. The final report notes that four box wildlife culvert crossings under Route 2, constructed by MassHighway in 2004, are effectively used by a variety of wildlife including raccoon, fox, coyote, mink, and fisher. One of these culverts is located north of Goose Pond, accessing land acquired by the DEM in 2002. Ongoing monitoring of the culverts by motion-activated cameras showed a diversity of mammals in the area (University of Massachusetts, 2007).

Comprehensive wildlife inventories have been prepared by volunteers for the larger Walden Woods area (Walden Biodiversity Days, 1999; 2009). However, the inventories apply to a larger area than what is owned and operated by the DCR. The inventories prepared for this plan were assembled using prior species lists from previous planning products specific to Walden Pond State Reservation,

and where necessary, augmented from lists of probable species.

Birds

A list of birds of the Walden Planning Unit can be found in Appendix H.

The portion of Walden Pond State Reservation west of Route 126 is located in the Concord Sudbury Valley Important Bird Area (IBA; Mass Audubon, n.d.). IBAs provide essential habitat to one or more species of breeding, wintering, and/or migrating birds. Specifically, IBA criteria focus on birds that are vulnerable because they are species with a restricted range, species of conservation concern, species requiring unique habitats or species that are vulnerable because they congregate and occur in high densities at specific sites.

Approximately 52 species of birds have been definitively recorded on Walden Pond State Reservation. Another 30 species were identified within the same geographic block that includes the reservation in the Massachusetts Audubon Society's Breeding Bird Atlas. The reservation's forests, fields, wetlands, and ponds provide habitat to a variety of resident, breeding, migrating, and wintering birds such as the scarlet tanager, Baltimore oriole, swamp sparrow, spotted sandpiper, and belted kingfisher.



Red-tailed hawk (*Buteo jamaicensis*) near Goose Pond. (Photo Credit: DCR.)

Although the NHESP database does not identify any state-listed birds on the reservation, three are included in the overall list as located within the general region. These species (northern parula, common loon, and northern harrier) were not included on previous inventories, but have the potential to feed or pass overhead during migration.

Mammals

The undeveloped forests and wetlands on Walden Pond State Reservation and its surroundings provide suitable habitat for a variety of mammals. Twenty-three species of mammals have been confirmed within the planning unit. Known species include a variety of mice, shrews, squirrels, and mustelids. Foxes, coyotes, white-tailed deer and beavers have also been observed on the reservation.

An inventory of mammals, either confirmed or possible based on the Massachusetts State Mammal List, is found in Appendix I.

Reptiles

An inventory of reptiles, either confirmed or possible based on the Massachusetts State Reptile and Amphibian List, is found in Appendix J.

Six species, including three turtles and three snakes, have been reported on the reservation. One unconfirmed record of the spiny softshell turtle (*Apalone spinifera*) was noted from the Massachusetts Department of Fish and Game (2011). If it existed, the species is likely the result of a single individual being released in the pond. The range for this species is typically western New York to the Midwest and south.

Since the reservation lacks any perennial streams, it is unlikely that wood turtles (*Glyptemys insculpta*) would be able to establish a population, but a migrant individual from surrounding areas is possible. Although not confirmed here, the mosaic of upland forested habitat adjacent to wetlands would be suitable to eastern box turtles (*Terrapene carolina*). Heywood's Meadow may also be a large enough wetland system to support spotted turtles (*Clemmys guttata*). Ring neck and red belly snakes are also associated with the White Pine-Oak Forest natural community type, which is prevalent on the reservation.

Amphibians

An inventory of amphibians, either confirmed or possible based on the Massachusetts State Reptile and Amphibian List, is found in Appendix K.

Ten species have been confirmed in the reservation. Of the confirmed species, the mole salamanders and wood frogs are associated with vernal pools for breeding. The majority of the true frogs are primarily associated with wetlands and permanent water bodies while the salamanders and toads are typically forested, terrestrial species.

Fish

An inventory of fish, based on a compilation from a variety of sources, can be found in Appendix L.

As a kettle-hole pond with no natural inlet or outlet, fish in Walden Pond have been actively managed since 1905 (DEM, 1993). The cold water and oxygenated metalimnion of Walden Pond provides trout (*Oncorhynchus* and *Salmo spp.*) habitat, and has been actively stocked annually for over a century to promote the population of this species. In 1968, the pond was "reclaimed;" a procedure in which all of the resident fish are killed in an effort to manage for desirable species (DEM 1993; Joyce, 1993). Following the reclamation of the pond for game fish, rainbow smelt (*Osmerus mordax*) were stocked and regularly supplemented as a source of food for the trout species. Over time, other species have been reintroduced to Walden Pond and now have viable populations. Today, Walden Pond supports populations of smallmouth bass (*Micropterus dolomieu*), largemouth bass (*Micropterus salmoides*), pumpkinseed (*Lepomis gibbosus*), bluegill (*Lepomis macrochirus*), chain pickerel (*Esox niger*), and brown bullhead (*Ameiurus nebulosus*).

In the 1990s, Japanese dignitaries released several sterile Koi into Walden Pond. As of 2012, at least two individuals are believed to be left.

2.6. CULTURAL RESOURCES

Archaeological Resources

Pre-Contact

The vicinity around Walden Pond contains one of the highest prehistoric site densities for any non-coastal area in Massachusetts (Mahlstedt, 1994;

Dwyer and Stark, 1995) due to the nearby confluence of the Assabet, Concord and Sudbury rivers. The Assabet and Sudbury river drainage basins have yielded several archaeological sites identified with various historical periods. Collections analysis by the Massachusetts Historical Commission suggest that this area was first occupied during the Paleo-Indian Period (9,000-12,000 years before present) and more or less continuously throughout prehistory to the Late Woodland and Contact periods (450 years before present; Massachusetts Historic Commission, 1980).

There are at least nine pre-contact archaeological sites in the larger Walden Woods area. Six of these sites are thought to be short-term hunting or fishing camps and were used to manufacture tools (Blanke, 1993). Three of these recorded sites are within the Walden Pond State Reservation boundary (see Table 2.6.1). Two of these sites were surveyed by avocational archaeologists or collectors, and one site was surveyed and excavated by professional archaeologists. Unfortunately, little is known about the archaeological context of these resources (DCR, 2011a). One of these sites is listed on the National Register of Historic Places.

Table 2.6.1. Pre-contact archaeological sites within Walden Pond State Reservation.

Site ID ^a	Type	Period ^b
19-MD-440	Artifact Find	Unknown
19-MD-408	Artifact Find	Unknown
19-MD-750	Artifact Find	Unknown

a. Site IDs from Massachusetts Historic Commission inventory of prehistoric sites.

b. Time periods are Paleoindian Period = 12,000 to 9,000 years before present (BP); Archaic Period = 9,000 to 2,700 BP; Woodland Period = 2,700 to 450 BP; and Contact Period = 450 to 250 BP.

Post-Contact

The reservation contains at least two potential archaeological sites that could contain the former dwellings of freed slaves in the late 1700s or early 1800s. These archaeological sites suggest the reservation has importance as an African-American heritage site. As many as fifteen former slaves are believed to have inhabited Walden Woods at one time or another (Lemire, 2009).

Zilpah White House Site. The reservation includes the house site of Zilpah White, a former slave who after gaining independence lived in a one-room

cabin in the late 1790s or early 1800s (Lemire, 2009).

Cato Ingraham House Site. The reservation also contains the former house site of an abandoned slave named Cato Ingraham. Ingraham lived in a two-room house with his wife Phyllis and two daughters in the early 1800s. The family died within an eight-month span in 1805, likely due to a combination of malnutrition and disease (thought to be tuberculosis; Lemire, 2009).

The Drinking Gourd Project, a Concord-based nonprofit organization focused on raising awareness of Concord's African and Abolitionist history from the 17th through the 19th centuries, has requested permission from the DCR to construct memorial benches at these locations. The benches are aimed to commemorate and educate the public about these former slaves.

Whelan House Site. The reservation also contains a former inhabitation of Hugh Whelan, a Scottish gardener who in 1848 attempted to move and reuse Thoreau's cabin. In letters to Ralph Waldo Emerson immediately after his two-year stay at Walden, Thoreau mentions the cabin was moved and a sizeable foundation was dug by Whelan. However, the house was not successfully joined to the foundation, and Whelan soon abandoned the area (Maynard, 2004).

Historic Resources

Landscapes

Historic landscapes are places that, through their physical characteristics and features, reflect the interaction of human beings with the environment (DCR, 2005). Walden Pond State Reservation possesses a number of important and rich historic landscapes. These historic landscapes are described below with a description of the historic resources they possess.

Main Beach/Day-Use Area Landscape. The Main Beach area, located on the pond's eastern shore, is likely the reservation's most visited asset since it was created as a public recreation area in 1922. In 1924, noted landscape architect Arthur Shurcliff prepared a general conceptual layout of the Main Beach, portions of which were developed.

The bathhouse, constructed in 1947 by the Commissioners of Middlesex County, is a two-floor

building with a steep hipped roof, covered with asphalt shingles and adorned with a cupola. The structure was initially constructed with a concrete facade; however, shingles were added to the second floor exterior in the 1980s to improve the building's aesthetics. The bottom floors contain a first aid station, a bathroom designed to be universally accessible (even though universal access to the bathhouse from the parking lots needs to be implemented) and a bathroom/changing area for staff. The top floors contain men's and women's bathrooms, accessed by stairways that are not universally accessible. The bathhouse has the potential to be retrofitted with low-flow models. The bathhouse is open between Memorial Day and Labor Day during the summer recreation season, and on weekends during the fall.

In addition to the bathhouse, the Main Beach area was extensively refurbished in the 1980s. Remnant structures from the county's management were removed, such as separate men's and women's bathroom buildings and a concrete pier that protruded into Walden Pond from the shoreline. The project installed new flagstone and concrete walkways, new stone masonry terraces and walls, and planted trees.

Stone retaining walls, likely constructed in the late 1940s, run along the pond edge on the east and northeast pond shorelines. The east section of retaining wall is used as a pathway between the boat ramp and the Main Beach. The pathway is not wide enough to meet accessibility requirements, yet is the only feasible access from the designated accessible parking at the boat ramp to the accessible bathrooms at the bathhouse. This section of wall is in decent condition. The wall along the northeast section of shoreline originates near the intersection of the Pond Path and the Main Beach.

A concrete stairway runs from Route 126 to the north facing side of the bathhouse. Access to the stairway is purposely restricted by park staff, using a bike rack at the beach level and a wooden split-rail fence at Route 126. Two other stairways, also constructed of rough concrete, connect to the southeast side of the bathhouse. One stairway, currently open and available for use by park visitors, leads to Route 126. The other stairway connects to an asphalt plaza that overlooks the pond. The public used the staircases when a parking lot (since

removed) was located on the site of the current picnic area. The stairways receive a small amount of foot traffic. Although altered for modern use, the area still retains the overall character of the 1940s landscape.

With steep banks, unstable soils, and heavy use that the Main Beach receives in the summer months, erosion is a prevalent issue. A plan to address erosion was created by the DCR in 2007 known as the East Bank Rehabilitation project (see DCR, 2007a). The plan was not implemented due to cost.

Thoreau House Site Landscape. The Thoreau House memorial marks the approximate location of the Thoreau House Site. The memorial was designed by a renowned Boston-based architectural firm (Perry, Shaw, and Hepburn) that directed the restoration of colonial Williamsburg (Linebaugh, 2005). The orientation of the house site is marked by nine granite posts connected by a taut chain, and the location of the chimney is denoted by a granite marker. Four granite posts mark the location of Thoreau's woodshed immediately behind the house site, opposite the pond. As an amateur archaeologist, Robbins conducted meticulous research and undertook a successful excavation, with permission from the Middlesex County Board of Commissioners, with the goal of finding remnants of Thoreau's cabin (Linebaugh, 2005).

At present, the area around the historic house, due to heavy visitation, is heavily compacted and runoff from small gullies drain toward Walden Pond. Two concrete catch basins, filled with concrete and not in use, are located on the Pond Path near the house site.

A stone cairn that commemorates the house site has been mostly in use since the 1870s (Maynard, 2004; Linebaugh, 2005). The cairn was removed briefly in the 1970s, but returned after complaints from the public and the Thoreau Society (Maynard, 2004).

Many of the elements that comprise the house site memorial are considered historic resources, including the granite posts and markers.

Bean Field Landscape. In *Walden*, Thoreau describes his bean field as totaling two-and-a-half acres, planted in 15-rod rows that, in aggregate, totaled seven miles of rows. He notes his bean field was the only cleared field along Walden Street and was in ear shot of travelers' sometimes less than flattering comments. Sometime after the 1940s, it

was mistakenly believed that the bean field was approximately 25 yards northwest from the house site (Dean, 2005). Through the work of the Thoreau scholar Bradley Dean, it is now generally accepted that the bean field was located directly adjacent to the west side of Route 126, approximately 350 feet from the intersection of Route 126 and Route 2. The site is currently marked by a commemorative granite memorial installed in July 2006 in memory of Dean. The area is an example of an early successional forest.

Memorial Landscape. Across from the current headquarters building is a small u-shaped pathway with a landscaped island and views toward the pond. A historic plan shows this area as a site for the 1922 memorial. The 1922 bronze plaque set into a natural stone celebrates the creation of the state reservation. A second bronze plaque, also set into stone, denotes the listing of the property as a National Historic Landmark. The pathway, plantings, flagpole, and vistas make up this landscape. All are in good condition, although views toward the pond are obscured by trees.

2.7. RECREATION RESOURCES

Recreational Activities

Walden Pond State Reservation offers several recreational activities, while specifically prohibiting certain activities deemed incompatible with Walden's historic/cultural status. The DCR must offer four specific recreational activities (boating, fishing, picnicking, and bathing or swimming) to comply with the wishes of the donating families, as stated in the 1922 transfer deed.

Boating

Canoeing, kayaking, and boating with electric motors are allowed at Walden (gas motors are not allowed). Boating access is provided by an unpaved roadway off Route 126 that leads to a boat ramp jointly maintained by the Massachusetts Department of Fish and Game's Office of Fishing and Boating Access.

Fishing

Walden Pond is stocked every spring and fall with trout by the Massachusetts Department of Fish and Game. Game fish include three trout species (brook, brown, and rainbow) and two bass species

(smallmouth and largemouth). Fishing in boats as well on the shoreline is a popular recreational activity. The shoreline near Long Cove, located near the train tracks on the southwest section of the pond, is a popular location for fishing. Ice fishing occurs in the winter, although it is an activity that is considered to be at the user's risk and discouraged by park staff.

Consumption of certain fish species is discouraged due to the documented presence of mercury in fish tissue (DeCesare, 1991). In 2011, a fish contamination advisory was issued for largemouth and smallmouth bass in Walden Pond due to mercury contamination (Massachusetts Department of Public Health, 2011a). The primary source of the mercury found in fish tissue is thought to be the incineration and burning of fossil fuels (USGS, 1999; Randall, 2011).

Picnicking

A picnic area is offered on a grassy lawn that overlooks the pond amidst pine trees, near Route 126 on the east side of the pond. The picnic area contains six picnic tables. Picnicking also occurs on the swimming beaches.

Swimming

Two designated swimming beaches are currently provided at Walden Pond State Reservation: the Main Beach, located on the pond's eastern shore, and the Red Cross Beach, located on the pond's northeastern shore.

Main Beach. The Main Beach is the only guarded beach at the reservation. Lifeguards are on duty at the Main Beach between Memorial Day and Labor Day. Swimming is allowed outside this timeframe, although it is considered at the user's risk. The beach receives heavy use in the summer months and is likely the most visited location in the reservation. Direct access from Route 126 to the Main Beach is provided via a steep paved ramp, known as the emergency ramp (or E-Ramp), located near an existing crosswalk. The beach is not universally accessible, as the E-Ramp's grade is too steep to meet universal access regulations. Provision of a universally accessible pathway for the Main Beach is a crucial need for the reservation.

Red Cross Beach. Red Cross Beach, located on the pond's northeastern shore, provides unguarded

swimming. When the water table runs higher than usual, the beachfront is narrow and can be completely submerged. Access to the Red Cross Beach is provided by the Pond Path from the northern end of the Main Beach.

Water quality testing for bacteria is performed weekly between Memorial Day and Labor Day at both the Main Beach and Red Cross Beach in compliance with state public health regulations. See Table 2.7.1 for results of these efforts since 2002. When bacteria counts exceed state standards, the swimming area is posted for elevated bacteria and swimming is discouraged. The area is still open for public use for sunbathing and picnicking. Since 2002, the DCR has posted the Main Beach seven times and the Red Cross Beach twice.

Table 2.7.1. Water quality testing at Walden Pond and results, 2002-2011.

Year	Main Beach		Red Cross Beach	
	# of tests	# of tests exceeding standards	# of tests	# of tests exceeding standards
2002	15	0	15	1
2003	16	0	16	0
2004	43	4	35	0
2005	7	0	7	0
2006	15	0	15	0
2007	17	1	16	1
2008	16	1	16	0
2009	16	0	16	0
2010	15	0	0 ^a	0
2011	16	1	N/A ^b	N/A ^b

Source: Massachusetts Department of Public Health, 2011b; 2011c.

a. The Red Cross Beach was closed during the 2010 recreation season due to high water and associated loss of beachfront.

b. Sampling results were not available for the Red Cross Beach during the 2011 recreation season.

Other Recreational Activities

Other recreational activities occur at Walden Pond State Reservation including:

- Walking/hiking;
- Jogging/running (although prohibited on the Pond Path);
- Cross-country skiing/snowshoeing;
- Photography;
- Cultural and nature study; and
- Geocaching (off-trail uses are prohibited).

Ice-skating, in addition to ice fishing, is not recommended and considered to be at the user's risk.

Trail-based activities are the predominant recreational activity within the two Conservation Restrictions in the Walden Planning Unit. The Brister's Hill Conservation Restriction contains trails and an intricate interpretive network that describes Thoreau's environmental, social, and political impact. The Walden Woods Project funded and installed the interpretive elements and opened them to the public in 2006. The interpretation network is intended to, in part, demonstrate the concept of forest succession (a concept observed and first described by Thoreau) by documenting the parcel's recovery from its use as a gravel pit in the 1960s. A trail network exists on the Bear Garden Hill Conservation Restriction that offers hiking, walking, running, as well as cross-country skiing and snowshoeing in the winter.

Prohibited Activities

The 1922 deed prohibits specific recreation activities: "Said parcels are conveyed, subject to the restriction and condition that no part of the premises shall be used for games, athletic contests, racing, baseball, football, motion pictures, dancing, camping, hunting, trapping, shooting, making fires in the open, shows, and other amusements."

In addition to the above activities, swimming outside designated swimming areas, boating with internal combustion engines (gas motors included), sail boating/windsurfing, grilling, biking, horseback riding on trails, and pet walking (on-leash included) are all prohibited at Walden. Flotation devices, hammocks, and metal detectors are also prohibited. The drinking of alcoholic beverages, as at all DCR facilities, is prohibited.

Water Access Around the Pond

The policy set forth in the 1993 DEM Guidelines for Operations and Land Stewardship (GOALS) Plan restricted access to portions of the shore beyond the Main Beach and the Red Cross Beach that could result in erosion. See Appendix M for a summary of recommendations from the 1993 GOALS Plan and the status of their implementation.

Stone Steps. Swimmers routinely access the water at 20 different locations around the pond, accessible from the Pond Path. Many of these points appear

sanctioned for swimmers, even though water access is technically not allowed in non-designated swimming areas, per DCR regulations (304 CMR 12.32(3)). The stone steps were installed during bank restoration projects conducted by the DEM during the 1980s and 1990s, and were constructed primarily to provide dedicated access for fishing. The areas are comprised of a tiered set of flat boulders that lead into the water. During hot summer days, areas around the stone steps are routinely occupied and used to access the water for swimming.

Open-Water Swimming. Open water swimming has increased in popularity in recent years. Long distance swimmers, ranging from triathletes to recreational swimmers, use Walden Pond for training or as part of their personal exercise routine. Swimmers enter the water to swim a portion or all the pond's length and width.

2.8. INFRASTRUCTURE

A map of infrastructure in the Walden Planning Unit can be found in Figure 2.8.1. The figure includes the location of specific parking areas in the main parking lot (parking lots A-F).

Property Boundaries

Property boundaries are fairly well marked, although park staff note that boundaries in the Goose Pond area were resurveyed due to a possible land encroachment (Hoffmann, 2011). Because the area around Walden Pond State Reservation is predominantly open space, encroachment by surrounding landowners is not a significant concern.

In 1966, the Town of Concord received a permit from the Department of Natural Resources (a predecessor agency to the DCR) to construct, repair, and maintain a water pipe line associated with its Pine Hill Reservoir. The permit allowed access over a 40-foot strip of DNR land in Lincoln east of Walden Street/Route 126.

The DCR has been attempting to acquire an in-holding from the Town of Lincoln. The property, approximately 1.9 acres in size, is located west of Route 126, south of a parcel containing a storage garage used by the DCR. The town initially acquired the parcel in 1938. The state has since purchased land surrounding the parcel through various acquisitions.

Buildings and Structures

Buildings within the Walden Planning Unit are listed in Appendix N.

Park Headquarters Building/Bookstore. The current park headquarters/bookstore building is a two-and-a-half story structure located at 915 Walden Street in Concord. The building used to serve as a residence for the park supervisor when the property was operated by Middlesex County. The building is comprised of two single-family residence houses that were merged in the late 1960s. Downstairs, the building contains a reception area, a 400-square foot gallery/conference room space (known as the Tsongas Gallery, named after the late Paul Tsongas), and an accessible bathroom with Clivus Multrum toilets. A 650-square foot bookstore, operated by the Thoreau Society since 1995, is also located downstairs.

The upstairs contains office space for the park supervisor, assistant supervisor, and interpretive staff; a men's and women's bathroom with showers (wastewater is sent to the septic system); and a lunch room/kitchenette for seasonal staff. An oil tank is located on the northwest side of the building that powers a boiler in the basement for heat via forced hot water. The upstairs is not accessible under American Disabilities Act (ADA) standards.

The basement contains a storage area for park operations and the bookstore. In total, the building contains approximately 3,024 square feet. The building is serviced by electrical and water service.

Main Beach Bathhouse. The Main Beach bathhouse is described in Section 2.6 Cultural Resources.

Related infrastructure exists to service the Main Beach including a water fountain/foot shower, two portable bike racks, a kiosk, and a monofilament recycling station for discarded fishing line. Wastewater from the bathhouse, along with liquid effluent from the main parking lot comfort station is pumped to a 16,000-gallon septic tank behind park headquarters. Effluent disperses to a septic field located under Parking Lot F. Other utilities include electric and water. The building is not heated and therefore is closed during the fall and winter months to prevent the freezing of pipes.

Place holder for Figure 2.8.1. Infrastructure Map

Back of Figure 2.8.1. Infrastructure Map

The upstairs restrooms and changing areas are not accessible under American Disabilities Act (ADA) standards.

Thoreau House Replica. The Thoreau House Replica was built in 1985 and designed by Roland Robbins. The house replica serves as a focal point for visitors and guided interpretive programs. The building is in good condition. The building has no utilities.

A sculpture of Henry David Thoreau is located adjacent to the house replica. The sculpture is on loan from Salisbury State University in Maryland and was sculpted by Jo Davidson (1883-1952). The DCR is working with the university to renew a loan agreement. The sculpture was secured to a tree via a chain, but the chain was removed after public complaint.

Nature Center Shed. The nature center shed, located near the existing parking lot for the Thoreau Bookstore, provides storage and has served as a makeshift interpretive center for environmental education in the past. It was built in 2001. The building is in excellent condition. It has electrical service, but no other utilities.

Comfort Station-Main Parking Lot. The comfort station was built in the early 1990s and contains approximately 620 square feet. The building is in good condition and is open year-round. Separate men's and women's bathrooms are provided and use a Clivus Multrum dry composting toilet system. The comfort station receives heavy use during the summer recreation season and is overused compared to its designed capacity. The building has electrical service that powers the hot water and heating.

Contact Station-Main Parking Lot. The contact station in the main parking lot was built in 1970. The building is deemed to be in adequate condition and contains approximately 126 square feet. The contact station has electrical service, but no other utilities. An automatic pay-and-display machine is located adjacent to the contact station and is used when the contact station is not staffed. The machine is used by the public under the honor system. Park attendance estimates are obtained using a car counting device placed in the contact station.

Barn. A barn is located near the park headquarters and is used by the State Police Mounted Unit as a horse stable. The barn contains approximately 1,100

square feet and is adjacent to a 4,200-square foot fenced paddock. The DCR is responsible for its maintenance. The barn is in adequate condition. Other than electrical service, the building has no utilities.



State Police Mounted Unit barn and paddock. (Photo credit: DCR)

Maintenance Garage/Workshop. The central maintenance building is located off a dirt access road that originates from the bookstore/park headquarters driveway off Route 126. The building consists of two garage bays and an attached storage space. The garage has electrical service, but does not have heating/cooling systems. A wood-burning stove provides heat for the building. The garage is in excellent condition.

Recycling Center. A small trailer, recouped from the former Walden Breezes trailer park site, is used as a recycling center. The building is rated as being in good condition. The building has no utilities.

Boat Ramp Contact Station. A small contact station for park staff is located at the boat ramp roadway near Route 126. The contact station is used to protect staff from the sun when collecting parking fees for boaters. The building is not serviced by any utilities. The assistant park supervisor constructed the building around 2002.

Lincoln Garages. There are two garages located on the reservation in Lincoln. One garage, located on the east side of Route 126 approximately 500 feet south from the boat ramp entrance, is believed to have been constructed by Middlesex County in the early 1960s. The garage is in unusable condition. Staff use the area around the garage as a small maintenance yard. A locked guardrail controls access. The building has no utilities.

The other garage is located on the west side of Route 126, approximately 1,600 feet south from the boat ramp entrance. The garage appears to be a remnant from a former homeowner that predated the state ownership of the property (the state purchased the property in 1974). The appraisal report from that acquisition suggests the garage was in use by the homeowner and has remained to this day. The garage consists of a single garage bay, constructed from a concrete frame. Access to the garage is provided by an unguarded driveway off Route 126. Park staff currently use the garage for long-term storage. The building has no utilities. It is in adequate condition.

Building Energy Audit. In 2012, under the Commonwealth's Accelerated Energy Program, the consulting firm of Energy and Engineering Design performed an energy audit of buildings in the reservation. The audit was performed to determine what "quick fix" energy-saving equipment could be applied to lighting, heating, building envelope, and water conservation systems. The audit found that a number of energy savings measures could be employed, including the installation of sensor light fixtures in all lit buildings and low-flow toilets in the bathhouse. Assuming all recommendations are employed, the audit states the upgrades would save approximately \$7,300 annually in electric and water use. These upgrades would take just three years to pay for themselves (Energy Engineering and Design, 2012).

Bollards. As a method to deter a standard practice of parking along Route 126, a series of wooden bollards were installed in the 1970s on recommendation of the Gardiner report (Gardiner and Associates, 1974). The bollards are installed on both sides of Route 126 at various points from the Route 2 intersection in Concord to Baker Bridge Road in Lincoln. Most of the bollards along Route 126 are installed in the road layout. The DCR's ability to reinstall bollards, if damaged, must be coordinated with the local municipality. The bollards are also located on the periphery of certain internal roadways and parking lots.

Gates. Seven metal lockable pivot gates and three chain-and-post gates are located along Route 126 to block vehicular access on the reservation. The boat ramp gate can be programmed to automatically open or close at a particular time, all other gates must be

opened manually. Two additional gates consisting of a chain attached to posts are located along Route 2. Table 2.8.1 shows the number of gates by location.

Table 2.8.1. Gates of Walden Pond State Reservation.

External Roadway	Location	Notes
West of Route 126	Wyman Road, near bean field	Single metal gate
West of Route 126	Woods Road	Single metal gate
East of Route 126	Park entrance	Double metal gate
West of Route 126	E-Ramp	Single metal gate
West of Route 126	Boat ramp	Opens/closes automatically
East of Route 126	Abandoned garage/small maintenance area in Lincoln	Single metal gate
West of Route 126	Heywood Meadow Trail, near hemlock grove	Single metal gate
West of Route 126	Field in south part of reservation	Chain and wooden posts
South of Route 2	Fire Road North, in northwest section of reservation	Chain and wooden posts
South of Route 2	Old County Road, in north section of reservation	Chain and metal posts

Iron Rangers. Two iron rangers (a secure metal cylinder to store donations to the facility) are located on the reservation. One is located in front of the park headquarters, the other is near the Route 126 crosswalk.

Trash Bins. Two big belly solar trash compactors are provided at the main crosswalk, on the east side.

Walden Breezes Trailer Park Structures. Various infrastructure exists on the former Walden Breezes Trailer Park site. The trailer park was purchased by the Commonwealth in 1976 (see McCaffrey, 1974 for background). As a condition to the purchase, existing residents were granted life tenancy. The last remaining tenant abandoned their trailer in 2008 (Scheible, 2008).

The trailer park began operation in the 1930s and contained roughly 70 trailers (Anderson, 1995). When sold to the state, the trailer park also included a trailer park sales office (formerly the Walden Breezes restaurant/snack bar), a trash incinerator, and a laundry room. The site still contains unused

infrastructure related to the trailer park, including water faucets, concrete pads, a chimney, and pavement.

Roads

External Roadways

These roadways are defined as roadways that provide primary access to the reservation, but are not located on DCR property, and accordingly are not maintained by the DCR.

Route 126. Route 126 is a state numbered route with an approximate 60-foot right of way under the care, custody and control of the towns of Concord (known as Walden Street) and Lincoln (known as Concord Road). The posted speed limit on this roadway in the vicinity of Walden Pond State Reservation is 25 miles per hour during the summer months and 35 miles per hour during the rest of the year. Traffic on this roadway is extremely heavy before the park reopens after a capacity closure on summer days. A detailed description of this issue can be found in Section 3.

Sanctioned pedestrian access across Route 126 is currently provided at two crosswalks. One crosswalk connects the main parking lot and E-Ramp to the Main Beach. The other crosswalk is situated about 475 feet to the north and connects Parking Lot A to a pathway that parallels Route 126. Sight lines from both crosswalks appear adequate. Data from a July 2011 count of pedestrians using the two crosswalks show visitors use the Main Beach crosswalk much more frequently (Precision Data Industries, 2011). This data is displayed in Table 2.8.2.

Table 2.8.2. Pedestrian usage of Route 126 crosswalks, July 16, 2011.

Time	Main Crosswalk (# of pedestrians)	Parking Lot A Crosswalk (# of pedestrians)
10am – 11am	493	0
11am – Noon	550	55
Noon – 1pm	532	68
1pm – 2pm	666	80
2pm – 3pm	676	80
3pm – 4pm	566	45
4pm – 5pm	459	40
5pm – 6pm	772	33
<i>Total</i>	<i>4,714</i>	<i>401</i>

Source: Precision Data Industries, 2011.

An ongoing concern among DCR park staff is the amount of visitors who routinely cross Route 126 outside the crosswalks.

The potential rerouting of Route 126 has been proposed as a way to improve visitor circulation in the reservation. The general concept has been discussed as early as 1958 (Hurley, 1958). The rerouting, as conceived in the past, would move the roadway further to the north and east toward Goose Pond, beginning at a point near the Concord landfill and ending near the Concord/Lincoln town line. The primary advantage for the reservation would be allowing a right hand turn for cars coming from Route 2, as opposed to the present left hand turn that backs up traffic. Other benefits include the elimination of the need for pedestrians to cross Route 126, reduction of potential roadway impacts on Walden Pond (including stormwater and spills from a motor vehicle accident), and interpretive potential in transforming the Route 126 roadbed to a historically accurate representation of the roadway during Thoreau's lifetime. An underpass to allow pedestrians to cross beneath Route 126 has also been discussed.

In 2001, the DEM filed an Environmental Notification Form (ENF) to the Executive Office of Environmental Affairs under the Massachusetts Environmental Protection Act (MEPA) office that outlined five alternatives to reroute the roadway (DEM, 2001a). Upon receiving the certificate from the Secretary that required an Environmental Impact Report (EIR), the project has not proceeded.

An ongoing issue is visitors parking in the Concord-Carlisle High School parking lot (located about 0.75 miles northerly from the reservation) and walking to the reservation along Route 126. This access to the reservation is not sanctioned, despite the placement of signs in the high school parking lot.

Route 2. In the section adjacent to the reservation, Route 2 (Cambridge Turnpike) is a divided highway with two travel lanes in each direction. The roadway bisects the Walden Planning Unit, separating the reservation from the Brister's Hill Conservation Restriction. At the Route 2-Route 126 intersection, a crosswalk is installed to provide safe access across Route 2 with pedestrian timers and signals. This crosswalk is available for use by visitors between the reservation and Brister's Hill.

Fairhaven Road and Arena Terrace. Located south of Route 2 between the care and control properties and Bear Garden Hill Conservation Restriction, Fairhaven Road and Arena Terrace are under the jurisdiction of the Town of Concord. Visitors will occasionally park on the side of Fairhaven Road or Arena Terrace and enter the reservation from the west. This access to the reservation is not sanctioned.

Internal Roadways

These roadways are defined as roadways that provide vehicle circulation on DCR property.

Publicly accessible roadways include entrance roads to the main parking lot (also constructed using pervious pavement), the park headquarters/bookstore building, and an unpaved variable-width roadway to the boat ramp. Limited access roadways include forest roads used by park staff for maintenance and an access road used by the Town of Concord for a public water storage facility.

The main parking lot roadway accommodates entering traffic with two lanes, one for northbound and one for southbound traffic off Route 126. Exiting traffic uses a single lane to access Route 126. The roadway is generally in good condition. Accommodation of tour and school buses poses challenges, particularly when buses arrive unannounced. Buses that enter the main parking lot have difficulty turning around when parking lots are filled.

Traffic enters the park headquarters/bookstore parking lot on a roadway designed to encourage a one-way circulation pattern. The roadway shows some wear from erosion along the edges, particularly the areas adjacent to the facade of the park headquarters building.

The unpaved boat ramp roadway descends a 14% grade to the pond shoreline. The steep grade channels stormwater down the hill, resulting in erosion and rutting. When the boat ramp contact station is not staffed, no entrance fee is obtained, as there is currently no pay and display machine at the boat ramp.



Boat ramp roadway. (Photo credit: DCR)

Emergency vehicular access to the beach is provided via a steep incline (12% grade) known as the E-Ramp. The E-Ramp simultaneously serves as the pedestrian connection between the Main Beach and the Route 126 crosswalk.

A dirt maintenance road used by park staff provides access to the maintenance garage, state police barn, and recycling center. The road also branches to Parking Lot F. Park staff occasionally use motor vehicles on forest roads for park maintenance that requires the use of motor vehicles. The forest roads are wide enough (between five and ten feet) to accommodate vehicle use.

A dirt road, located south of the park headquarters and east of Route 126 in Lincoln, is solely used by the Town of Concord for access to an underground water storage facility. The DCR has no maintenance responsibilities for this roadway.

A former roadway still exists on the former Walden Breezes Trailer Park site. Access to the road is restricted. The roadway is used to store school and tour buses after dropping off a large group. The pavement is in good condition and has the potential for reuse. One suggested method to alleviate traffic queuing on Route 126 is to construct a new park entrance road on this site. The advantage is that vehicles could temporarily queue on the roadway before entering the reservation after a park closure. The proposal would require relocating infrastructure including electrical connections, the entrance gate, pay-and-display machine, and contact station.

Parking

An inventory of parking spaces on Walden Pond State Reservation can be found in Appendix O. Pursuant to 801 CMR 4.02, the current parking fee for automobiles at Walden Pond State Reservation is five dollars. Massachusetts residents can purchase an annual MassParks pass for \$35 (\$45 for non-residents) that allows entrance to Walden Pond State Reservation and any MassParks facility. Buses are charged \$30 per day.

Most parking for the reservation is located on a 330-space main lot, accessible from an entrance road on Route 126. The main parking lot was installed after operation of the reservation was transferred from Middlesex County to the DEM. The lot is specifically sized with the intent of ensuring no more than 1,000 people at one time can visit the reservation. Demand for these spaces can be very heavy during the summer months and to a lesser extent, in the fall.

The main lot is made up of six areas marked as Parking Lot A through Parking Lot F (see Figure 2.8.1 for the layout). In 1977, the Department of Environmental Management designed the parking lot, using porous pavement, in collaboration with Northeastern University. The purpose of the project was to monitor and evaluate the performance of permeable pavement. After its initial installation, sections of the parking lot were repaved to improve its permeability (Wei, 1986). The pavement is generally in good condition. Sections of pavement, particularly in southern areas of Parking Lot A, show damage from tree roots. The parking lot has three designated accessible spaces near the comfort station in Parking Lot D, and includes two designated accessible spaces near the Thoreau House Replica in Parking Lot B. Two staff spaces are also reserved near the house replica, although these spaces are rarely used by staff.

A parking lot is also provided at the park headquarters and is used by staff and visitors to the bookstore. The parking lot provides 10 spaces that are striped, and approximately seven informal spaces. Five of the 10 spaces are for the bookstore while the other five are marked "Official Use Only." None of the spaces are designated as accessible spaces.

The boat ramp, located at the southeast corner of the pond, provides approximately 12 parking spaces including three designated accessible spaces and one reserved for vehicles with trailers. The parking lot is not paved or striped. The boat ramp consists of a submerged concrete pad that allows trailers to access the water.

Trails

Figure 2.8.1 includes a map of trails found at Walden Pond State Reservation. A summary of trails and trail length can be found in Appendix P.

The reservation currently provides approximately 13.15 miles of trails. Approximately 2.9 miles of these trails were identified as unauthorized in a 2006 survey. As of 2011, the trail network contained 28 individual trail names. The network includes one of 70 trails across the state designated as a "Healthy Heart Trail." The Healthy Heart Trail Program designated existing trails on DCR properties to encourage incorporation of walking routes into regular exercise regimens. The trail network also connects to adjacent open space owned by the towns of Lincoln and Concord, and the Concord Land Conservation Trust. Trail connections that cross the MBTA commuter rail line to conservation land in Concord are of concern due to safety.

Certain segments of the trail network are redundant. The reservation's fragile soils, coupled with high visitation, result in the establishment of informal trails on a routine basis. This is, in part, the result of trails dead-ending, causing hikers to create their own trails to get back to the pond or another trail, and further damaging the soils and slopes.

The results of a 2011 user survey conducted by the DCR as part of the RMP process suggest trails to prominent areas of the reservation not associated with the pond receive negligible use. For instance, the user survey results show that the Emerson Cliff Trail (3.03%), Heywood Meadow Trail (1.52%), and Goose Pond Trail (3.79%) receive little use. The survey was conducted with the benefit of a trail and location map. A full description of the user survey can be accessed in Appendix Q.

Pond Path. The Pond Path is the reservation's most popular trail and circumnavigates the pond for approximately 1.6 miles. Due to its popularity, a wire fence exists in places along the path to prevent off-trail access. The fence is perceived by some

visitors to be overly intrusive and unsightly; however, prior experience of park staff suggests the wire fence is necessary to prevent damage from off-trail use.

Conditions of the Pond Path vary. Sections of the path along the pond's western edge are particularly susceptible to bank erosion and flooding. The southwestern section of the pond accommodates a narrow strip of trail that shows heavy erosion below a railroad embankment. Although past bank stabilization efforts were made by the DEM to control erosion along the Pond Path, heavy recreational use coupled with sandy soils makes erosion a constant concern. During the flooding of areas surrounding the pond in the summer of 2010, many sections of the Pond Path were rerouted to higher ground. The condition of trails further from the pond is better, as these areas tend to receive less use.



Exposed tree roots on pond bank along western shoreline. (Photo Credit: DCR)

Bay Circuit Trail. Approximately 1.3 miles of the Bay Circuit Trail (BCT) is located on Walden Pond State Reservation, and eventually runs along Route 126 to the Town of Concord's Hapgood Wright Town Forest. The BCT is marked on the reservation with white blazes. Two signs with BCT trail maps are located on or near the reservation to orient BCT users.

The BCT is a 200-mile permanent recreation trail and greenway corridor that extends through 34 towns in eastern Massachusetts. The BCT was first envisioned in 1929 to connect open space and serve as an "Outer Emerald Necklace." Today, the Bay Circuit Alliance, a partnership of public and private

organizations and individuals, works to complete the original vision of a 200-mile circumferential trail that links Kingston and Newburyport (Bay Circuit Alliance, 2011). In 2012, the Appalachian Mountain Club and Trustees of Reservations formally agreed to assist the Bay Circuit Alliance in the completion, enhancement, and long-term protection of the 200-mile Bay Circuit Trail and Greenway.

Signs and Kiosks

Main Identification. The reservation contains two Main Identification Signs. One is located at the park entrance road to the main parking lot; the other is on the southwest corner of the Route 126/Route 2 intersection. Both of these signs meet the DCR Graphics Standards Manual (DCR, n.d.) for Main Identification Signs.

Orientation/Wayfinding. Orientation/wayfinding signage exists at several locations around the reservation.

Two signs located in the main parking lot conform to the criteria of Internal Park Information signs, per the DCR Graphics Standards Manual. One sign on the east end of the parking lot, facing the main entrance road, orients motorists to specific parking lots (A through F) and the parking lot comfort station. The other sign is located at the west end of the parking lot near Route 126 and directs visitors to various locations on the east side of Route 126 including the park headquarters, bookstore, and horse barn. Orientation signage could be improved in the parking lot as signage to the reservation's key locations is lacking (Crosby, Schlessinger and Smallridge, LLC, 2012).

Trail/landmark signs, typically made of wood with brown paint and white trail names, exist throughout the reservation. Some trail/landmark signs differ from these criteria, most notably a sign located on the west edge of Red Cross Beach that denotes the direction of the Thoreau House Site.

Rules and Regulations. Several signs regarding rules and regulations exist at the boat ramp and the Main Beach.

Prominent signage on rules and regulations is located at the top of the E-Ramp near the main crosswalk, the boat ramp parking area, a stairway leading to the bathhouse from Route 126, and a west entrance from adjacent conservation land. Wooden

signs mounted on pressure treated posts are located at the top of the E-Ramp, near the Route 126 crosswalk, and at the boat ramp. These signs alert the visitor to rules regarding closing times and prohibited activities, and generally conform to the Internal Park Information sign criteria from the DCR Graphics Standards Manual.

Many signs are prepared on-site by staff to communicate rules to the public. These signs are typically printed on 8.5" x 11" paper and laminated. These signs do not conform to the DCR Graphics Standards Manual, although it should be noted the signs tend to communicate messages that need to be disseminated immediately (e.g., public safety concern).

Interpretive. Two interpretive signs are found on the reservation. Both signs were developed and installed by the Department of Environmental Management, and predate the creation of the DCR.

One interpretive sign is located at the Thoreau House Site. The sign describes what the house site was like during Thoreau's residence, explains the genesis of the stone cairn that marks the house site, and details the house site discovery by Roland Robbins in 1945. The sign is mounted on wood posts and is encased by wood siding and a translucent plastic cover. The wood siding shows signs of rotting and the plastic cover is scratched. The sign does not meet standards in the DCR Graphic Standards Manual.

The interpretive wayside at the Thoreau House Replica details how Thoreau built the house, how he paid for it, and how it was furnished, using illustrations and text. The sign is in good condition. The sign does not meet standards in the DCR Graphic Standards Manual.

Special Projects. A sign summarizing a bank restoration project initiated in 1996 is located at the top of the E-Ramp. The sign describes the various phases and associated trail closings for the restoration project, which was completed in the late 1990s. In addition, a sign generally conforming to the Internal Park Information criteria in the DCR Graphics Standard Manual provides information regarding the pervious pavement demonstration project in the main parking lot.

Hybrid Signs. Some signs in Walden Pond State Reservation serve more than one function. For

example, four informational signs developed by the DCR Greenways and Trails Program provide information on orientation and rules and regulations. These signs are located at the E-Ramp, Wyman Meadow, the Esker Trail near the boat ramp roadway, and the Pond Path near the Main Beach. The signs were installed in 2011.

A double-sided kiosk, predating the creation of the DCR and located near the main crosswalk, provides multiple functions to visitors. The side facing the pond provides park orientation and historical information on the reservation. A map of the reservation is included on an introductory sign. Although visitors viewing the map face west, the map is oriented toward the east. The orientation on the kiosk map also differs from that shown on a trail map that is offered for free at the park headquarters building. On the other side of the kiosk is an outdated display of DEM properties.

Kiosks. Additional informational kiosks are located at the main crosswalk (adjacent to the double-sided kiosk listed above), the Main Beach near the bathhouse, the boat ramp, and outside the park headquarters building. These kiosks can be opened by park staff and allow content to be changed. These kiosks typically include information on upcoming events relating to the reservation. One kiosk is devoted to the DCR Park Passport Program.

Memorials and Markers

The reservation contains six memorials and markers. They are listed in Table 2.8.3.

Although not a memorial or marker in the traditional sense, the pile of rocks known as the House Site Cairn was created to honor Henry David Thoreau around 1872. Today, a cairn remains and is part of the tradition of visiting the reservation. The location of Thoreau's house and woodshed are marked by granite markers placed in 1947. An incised granite marker placed flush to the ground marks Thoreau's chimney.

Two plaques, placed between two flagpoles, are located on the west side of Route 126, adjacent to a pedestrian path. One plaque commemorates the designation of the reservation as a National Historic Landmark. The other plaque commemorates the transfer of land to the state (Middlesex County would serve as the trustee) to create the reservation in 1922.

The Thoreau Bean Field marker was placed in memory of Bradley Dean, a Thoreau scholar who, among other endeavors, determined the location of Thoreau's bean field. The marker was installed in July 2006.

Table 2.8.3. Memorials and markers in Walden Pond State Reservation.

Marker	Date	Location	Material
House Site Cairn	c. 1872	Near Thoreau House Site	Rocks of various sizes
National Historic Landmark Plaque	1965	Near picnic area	Bronze mounted on stone
Thoreau Bean Field	2006	In area thought to be location of bean field referenced in <i>Walden</i>	Inscribed granite block
Thoreau House, Chimney, and Woodshed Markers	1948	Thoreau House Site	Granite posts and inscribed granite blocks
Walden Pond State Reservation Plaque	c. 1922	Near picnic area	Bronze mounted on stone

2.9. DEMOGRAPHICS AND VISITOR CHARACTERISTICS

Visitor residence data on known Walden Pond State Reservation users exists from the following sources:

- An on-site visitor intercept survey of 131 park visitors to Walden Pond State Reservation conducted in the summer of 2011;
- 278 day-use ticket surveys from park visitors submitted to the DCR by mail or internet from 2006 to 2012; and
- Self-recorded information by visitors at the Thoreau House Replica.

Additional information on potential users of the Walden Planning Unit was accessed from the U.S. Census Bureau. Because full results for the 2010 U.S. Census were not available at the time of this writing, 2000 U.S. Census data are used. Data are also provided on various demographic variables at the one-half-mile and 10-mile ranges, and the statewide average.

Demographics

Visitor Residence

Walden Pond simultaneously receives a steady stream of visitors from national and international locations, while maintaining a base of visitors from Massachusetts communities along the Route 2 and Route 128 corridors.

Log Book Entries. An analysis of summer 2009 Thoreau House Replica log book entries conducted by the DCR Interpretive Coordinator show that Walden Pond State Reservation received visitors from 62 countries, and every state in the United States. A similar analysis of July 2011 entries tallied visitors from 50 countries, and every state with the exception of North Dakota. Many of these entries reference a motivation to visit the location that inspired Henry David Thoreau's *Walden, or Life in the Woods*. The data confirm anecdotal observations that Walden Pond receives steady demand from national and international visitors, attributed to the site's connection with Henry David Thoreau.

ZIP Code Analysis. In previous Resource Management Plans (RMPs), the DCR prepared demographic sections by analyzing census data within a certain distance from the properties. For instance, the Blue Hills Planning Unit RMP (DCR, 2011b) analyzed census information of households within 5, 9, 14, and 28 miles of the Blue Hills Reservation. These mileages were selected based on corresponding percentiles for distance traveled collected from 374 user surveys (i.e., 25% of all survey respondents originate from within five miles of the reservation, 50% of users within nine miles, 75% of all users within 14 miles, and 95% within 28 miles).

The DCR tabulated information from 409 visitors to Walden Pond from the 2006-2012 day-use ticket surveys and the 2011 on-site visitor intercept survey. Visitors came from six countries, 30 states and the District of Columbia, and from 79 municipalities across Massachusetts. From these surveys, a combined 378 valid United States ZIP Codes were analyzed by calculating a distance from the reservation to the ZIP Code centroid. Twenty-five percent of known Walden users originate from within 9.7 miles, 50% originate from within 13 miles, 75% originate from within 38.7 miles, and 95% of visits originate from within 1,253 miles.

Because known Walden Pond users originate from such a dispersed area, it becomes more difficult to draw inferences with confidence about Walden visitors when using census data. Accordingly, an alternative approach was used similar to one featured in the Horseneck Planning Unit RMP (DCR, 2012a).

In this dataset of 378 visitors, the most frequent visits to Walden Pond came from a collection of 20 Massachusetts communities (see Table 2.9.1).

Table 2.9.1. Walden Core Use Communities, as determined by available survey data.

Municipality	% of responses from surveys
Cambridge	9.8%
Boston	5.8%
Arlington	5.3%
Somerville	4.0%
Newton	3.7%
Lexington	3.2%
Waltham	2.9%
Acton	2.4%
Needham	1.9%
Concord	1.6%
Maynard	1.6%
Westford	1.6%
Belmont	1.3%
Brookline	1.3%
Reading	1.3%
Watertown	1.3%
Wayland	1.3%
Wakefield	1.1%
Wellesley	1.1%
Worcester	1.1%
<i>Total</i>	<i>53.4%</i>

Source: Municipal ZIP Codes provided by park users, various DCR user surveys, 2006-2012.

The DCR compiled census data for age, language spoken at home, household income, and educational attainment in these communities to analyze likely demographic characteristics of known visitors to the reservation. For purposes of collecting demographic information for a set of known users, this plan refers to the Walden Core Use Communities (CUCs) that collectively include the 20 municipalities. Not surprisingly, municipalities that provided the most visitors tend to be located near or along the Route 2 and Route 128 corridors. For comparison, demographic information was also tallied within walking distance from the reservation (within a radius of one-half-mile), 10 miles, and the statewide average.

Visitor Characteristics

Visitors from municipalities in the Walden CUCs have a higher proportion of people in the adult (ages 18-64) age range and a lower proportion of people in the child and senior age ranges, compared to households within one-half and 10 miles of the reservation, and the statewide average (Table 2.9.2).

Table 2.9.2. Ages of various demographic groups served by the Walden Planning Unit.

Age Category^a	Walden CUCs (%)	0.5 miles (%)	10 miles (%)	State Average (%)
Children	18.6	24.2	23.0	21.7
Adults	69.6	57.8	63.0	64.5
Seniors	11.7	18.0	14.0	13.8
<i>Total</i>	<i>99.9^b</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>

a. Children (0-17 years); Adult (18-64 years); Seniors (65 years +).

b. Total percentage does not equal 100% due to rounding.

Sources: Walden CUCs and statewide: U.S. Census Bureau, 2010, DP-1 Demographic Profile Summary Data. Data compiled by municipality at <http://factfinder2.census.gov>. One-half and 10 miles: 2000 U.S. Census Data Block Group Data.

Household income is lower in the Walden CUCs, and is closer to the state average compared to the one-half-mile and 10-mile buffer group (see Table 2.9.3).

Table 2.9.3. Annual household income categories for various demographic groups served by the Walden Planning Unit.

Income	Walden CUCs (%)	0.5 miles (%)	10 miles (%)	State Average (%)
Low (< \$25,000)	26.4	9.6	14.1	24.5
Medium (\$25,000 - \$74,999)	41.5	29.0	36.9	45.0
High (> \$75,000)	32.1	61.4	49.0	30.5
<i>Total</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>

Sources: Walden CUCs and statewide: U.S. Census Bureau, 2000, SF4 Summary File (DP2). Data compiled by municipality and statewide at <http://factfinder2.census.gov>. One-half and 10 miles: 2000 U.S. Census Block Group Data.

The data suggests there is a need to continue to provide low-cost recreational opportunities. Currently, parking at the reservation costs five dollars. Massachusetts residents can purchase an annual MassParks pass for \$35 (\$45 for non-residents) that allows entrance to Walden Pond State Reservation and any MassParks facility.

More households in the Walden CUCs do not speak English at home, compared households in the one-half-mile, 10-mile, and state average (see Table 2.9.4). This analysis does not account for international visitors, a subset known to visit the reservation. The data suggests that park communications could be supplemented in a language other than English, although more research is needed to know specifically which languages should be targeted.

Table 2.9.4. Language spoken at home for various demographic groups served by the Walden Planning Unit.

Language	Walden CUCs (%)	0.5 miles (%)	10 miles (%)	State Average (%)
English Only	72.4	86.5	80.6	81.3
Spanish	9.0	2.3	3.1	6.2
Other Indo-European	11.7	7.2	11.7	8.9
Asian/Pacific Island	5.4	3.3	3.7	2.9
Other	1.5	0.6	0.9	0.7
<i>Total</i>	<i>100.0</i>	<i>99.9^a</i>	<i>100.0</i>	<i>100.0</i>

a. Total percentage exceeds 100% due to rounding.

Sources: Walden CUCs and statewide: U.S. Census Bureau, 2000, SF4 Summary File (DP2). Data compiled by municipality and statewide at <http://factfinder2.census.gov>. One-half and 10 miles: 2000 U.S. Census Block Group Data.

Potential park visitors from communities in the Walden CUCs, and the two buffer distances (one-half and 10 miles) tend to have higher levels of education than the statewide average (see Table 2.9.5). This information could be used to improve outreach efforts for interpretation and other park communications. For instance, the data could help inform how to write park communications and help guide development of interpretive materials and programs.

Table 2.9.5. Highest level of educational attainment for various demographic groups served by the Walden Planning Unit.

Level of Educational Attainment ^a	Walden CUCs (%)	0.5 miles (%)	10 miles (%)	State Average (%)
< High School	15.2	3.4	7.6	15.2
High School Degree	20.7	9.7	18.8	27.3
< Bachelor's	13.5	15.8	20.2	17.1
Bachelor's	28.2	28.6	27.2	26.7
> Bachelor's	22.5	42.5	26.3	13.7
<i>Total</i>	<i>100.1^b</i>	<i>100.0</i>	<i>100.1^b</i>	<i>100.0</i>

a. Percentages of total population 25 years old and over.

b. In instances where total percentage exceeds 100% due to rounding.

Source: U.S. Census Bureau, 2000, SF4 Summary File (DP2). Data compiled by municipality at <http://factfinder2.census.gov>. On-half and 10 miles: 2000 U.S. Census Data Block Group Data.

Visitation Estimates

Assessment of the 1,000 People at One Time Limitation

Another central question for the reservation is to assess whether, under current management practices, the 1,000 people at one time limitation is being honored. The main parking lot was purposely sized at 330 spaces to ensure, when at full capacity, the 1,000 people limitation would be met. To assess how the 1,000 people limitation is being executed, data on the frequencies of various transportation methods used by Walden visitors were analyzed. The DCR analyzed available information on:

- The average number of People-Per-Vehicle (PPV). This information was obtained between July 4th and Labor Day 2011 by counting the number of people in each vehicle. Traditionally, visitation estimates prepared by the DCR assume 2.5 PPV enter the reservation.
- The number of people who bicycle to the reservation. Information from pedestrian and bicycle counts on July 16, 2011 was used. It is acknowledged that caution should be taken in making assumptions from this data with the limited sample size. More research should be conducted to improve estimates of bicyclists.
- The number of people expected to arrive by bus, either school, camp, or tour buses. The information was culled from bus reservations in June and July 2011.

Ideally, the number of people who walk to the reservation would be available to inform this exercise. This would include those who park off-site and walk to the reservation (a common practice is for visitors to park at Concord-Carlisle High School and walk), and those who are dropped off and the vehicle driver does not park in the main parking lot. Unfortunately, walk-in counts do not exist for the reservation as they are inherently difficult to adequately obtain. However, information on the other three groups (PPVs, bicyclists, and bus riders) will provide a general sense of a “do not exceed” target.

People-Per-Vehicle Counts. Seasonal workers located at the park contact station conducted the counts. Data from approximately 8,000 vehicles were collected. The results of the counts can be found in Table 2.9.6. Overall, vehicles had an average of 2.23 people. The results show the 2.5 PPV count was generally accurate for weekends in summer 2011. However, the PPV count decreased for weekday use to 2.1 people.

Table 2.9.6. People-Per-Vehicle count results, by days on weekdays and weekends.

	# of vehicles	Observed PPV
Weekday	4,963	2.10
Weekend	2,890	2.42
<i>Total^a</i>	<i>8,660</i>	<i>2.23</i>

a. 807 additional entries are included in the total where the day or date was not recorded.

Assuming the 20 additional spaces available elsewhere on the reservation have a similar PPV count, then a total of 350 parking spaces filled to capacity would result in a maximum of 847 people on a weekend (350 parking spaces x 2.42 PPV). Accordingly, to stay under the 1,000 people limit, no more than 153 people could be present on the reservation who arrived by an alternate means of transportation (biking, walking, or bus).

The PPV counts revealed that roughly one-third of vehicles that entered the main parking lot had a single occupant. Single-occupant vehicles were found to be more common during weekdays than weekends, as 38% of vehicles entering the reservation on weekdays were driven by single occupants, versus 23% of vehicles on weekends. One method to reduce overall roadway traffic on Route 126 could involve providing a shuttle service from local public transit stations. However, the

effort would need to be closely monitored to ensure it is achieving the goal of reducing vehicle traffic on Route 126 and not increasing overall visitation.

Bicyclist Estimates. Counts conducted on a Saturday in July 2011 show Route 126 receives steady traffic from bicyclists (Precision Data Industries, 2011). Counts were conducted at the main crosswalk, the Parking Lot A crosswalk, and in front of the main park entrance between 10am and 6pm. Turning movements of bicyclists were recorded and reported in 15-minute increments.

Results from a user survey showed bikers reported staying on the reservation for an average of 83 minutes (see Appendix Q for information and complete results of the user survey). To prepare a maximum scenario, the greatest number of bikers that entered the reservation from Route 126 in a 90-minute span was chosen. Between 1pm and 2:30pm, 24 bicyclists were counted accessing the reservation from Route 126. When added to the car counts, a maximum of 129 additional people from walk-ins or bus traffic could access the reservation at one time without exceeding the visitation limit.

Bus Estimates. The DCR requires reservations for school and tour groups, although many buses regularly arrive without reservations. Notwithstanding, a review of reservations made between June and July 2011 shows an average of 32 passengers accessed the reservation on buses (includes 103 reservations for both tour buses and swimming groups). If two buses accessed the reservation at the same time, a total of 64 bus passengers would be present on the reservation. While it is unlikely that all bus visitors were present on the reservation at one time, this maximum number was used in this exercise to test an extreme scenario.

The results show that when the parking lot is full and with relatively high quantities of visitors by bike and bus, the number of visitors likely approaches 1,000 people at one time (see Table 2.9.7). When taking into account walk-ins, or visitors who arrive by bus without a reservation, it is possible the threshold is occasionally exceeded. Possible means to reduce the likelihood the limit is exceeded include enforcement of no drop-offs, reducing the number of parking spots, and preventing both unreserved buses from entering the site and visitors from parking off-site and walking into the reservation.

Table 2.9.7. Number of potential visitors at one time by transportation method, weekends.

Method of Transportation	# of visitors, weekend
Motor Vehicle ^a	847
Bicyclists ^b	24
Bus ^c	64
“Walk-Ins”	unknown
<i>Total</i>	<i>935</i>

a. Motor vehicle estimates populated by # of public spaces (approx. 350 spaces x observed PPV count on weekends (2.42)).

b. Bicyclist estimate is from the greatest number of bicyclists observed in a 90 minute span (1pm to 2:30pm) accessing the reservation from Route 126 on Saturday July 16, 2011.

c. Bus estimates derived from an assumption of two buses accessing the reservation at the same time, with an average of 32 passengers per bus (average for 103 buses in June and July 2011).

The results suggest that the DCR should not increase the amount of available parking at Walden if the 1,000 people at one time limit is kept. An analysis of the adequacy of the current visitation limit can be found in Section 3.

Facility Use Estimates

Park staff prepares a daily facility use estimate. The estimates are derived from two sources. First, motor vehicle counts are derived from a car counter at the

contact station. The car counter is capable of counting vehicles in one lane of traffic. Traditionally, the counted number of cars is translated into a visitor estimate by multiplying the 2.5 PPV by the number of cars counted. The second component of the visitation estimates are from school and tour groups who arrive by bus. These groups make reservations with the DCR in advance of their visit, and provide an approximate number of bus occupants. In total, visitation estimates tend to approach 500,000 visitors per year.

The accuracy of these counts is unknown. On the one hand, using the 2.5 PPV may result in over reporting visitation, if on average the PPV is closer to 2.23. On the other hand, the current facility use estimates may underreport visitation, particularly during peak visitation. This is because the counter can only count a single lane of traffic at a time. During peak traffic periods, the contact station is simultaneously handling two lanes of traffic. Furthermore, the estimates do not include visits by people who park at the boat ramp or park headquarters, bus passengers who arrive as part of a group that do not make a reservation, bicyclists, or walk-ins.



Vehicular traffic entering the reservation after a capacity closure. (Photo credit: DCR)

SECTION 3. MANAGEMENT RESOURCES AND PRACTICES

3.1. INTRODUCTION

Walden Pond State Reservation contains a diverse set of natural, cultural, and recreation resources as described in Section 2. Management of these resources is complex, due to the competing demands of protecting these resources while providing recreational opportunities for hundreds of thousands of visitors per year. Effective management of this two-pronged goal requires a working understanding of various laws, regulations, policies, and legal agreements, while working with limited resources and staffing.

This section describes resources available to this planning unit, as well as the relevant management practices, regulations, policies, and legal considerations. A list of relevant Massachusetts regulations is presented in Appendix R.

3.2. MANAGEMENT PRACTICES

Natural Resources

Water Resources

Activities within the Walden Planning Unit that a) occur within a wetland resource area, river front area or wetland buffer, as defined by the Massachusetts

Wetlands Protection Act (WPA), and b) have the potential to fill, dredge, remove, or alter these resource areas are regulated by the local Conservation Commissions and the Department of Environmental Protection (MGL Chapter 131, Section 40).

Beach and trail maintenance within 100 feet of Walden Pond are regulated by an Order of Conditions from the Concord Natural Resources Commission. The DCR is required to regularly renew the order.

Activities within Walden Pond State Reservation that affect the quantity or quality of stormwater are regulated by a National Pollutant Discharge Elimination System (NPDES) plan (DCR, 2007b). This plan identifies Best Management Practices (BMPs) employed by the DCR to properly manage stormwater. Management practices implemented at the reservation-level include sweeping of pervious pavement using vacuum sweeping equipment, leaf removal/catch basin maintenance, and continued compliance with the Wetlands Protection Act. The DCR submits annual reports to the U.S. Environmental Protection Agency regarding system wide compliance with the plan.

The DCR's Office of Water Resources, through its Lakes and Ponds Program, offers technical assistance, monitors water quality at public swimming beaches to ensure public safety, and provides educational materials to the public regarding various issues, including aquatic invasive species. Specific activities conducted by the Lakes and Ponds Program at Walden Pond include semi-annual surveys to check for aquatic invasive species, and coordinating a boat inspection and education program in the summer.

Permits to conduct ecological/hydrological research at Walden Pond, including the use of SCUBA equipment, are issued by the DCR Ecology Program. The DCR is developing a policy to administer research permits.

Vegetation

With exceptions, the applied management policy is to permit vegetation to grow, die, or reproduce without human intervention. Three notable exceptions exist. First, park staff conducts management and control of invasive species (both invasive plant species and invasive pests that affect native plant species) that intervenes with natural processes. Second, regulatory protection of the two endangered quillwort species requires the DCR to prioritize protection of these aquatic plants. Third, vegetative management is conducted to ensure public safety, including tree maintenance work and vegetation clean-ups associated with natural disturbances.

Invasive Species Control. Invasive plant species may be controlled through biological, chemical, and mechanical methods to reduce their extent and competition with other plants or plant communities. Technical assistance is available from the DCR Ecology Program or Lakes and Ponds Program as needed. Control of invasive species located within Priority Habitat requires NHESP review, or can proceed under the guidelines of an approved Habitat Management Plan.

One notable invasive species control effort conducted by the DCR at Walden Pond State Reservation relates to the protection of the hemlock grove from the woolly adelgid (*Adelges tsugae*). The introduction of the predator lady beetle *Sasajiscymnus tsugae* (previously named *Pseudoscymnus tsugae*; see Cheah and McClure,

n.d.) has shown promise in controlling woolly adelgid in the northeastern United States (see U.S. Department of Agriculture, 2004.). DCR park staff and forestry conducted a control effort using *S. tsugae* earlier this decade. However, a sustaining population did not establish itself from that release (Hoffmann, 2012). A recent field survey performed by DCR forestry staff suggests there are enough remaining hemlock trees of suitable health to continue control efforts (Gooch, 2012).

Quillwort Protection. As noted in Section 2, lake quillwort and Acadian quillwort are confirmed to exist in Walden Pond. These plants are listed by the NHESP as endangered and are therefore protected from being killed, collected, or sold. In addition, they are protected from activities that would destroy habitat and thus directly or indirectly cause mortality or disrupt critical behaviors (NHESP, 2012b). Any proposed activity within Priority Habitat, including trail work, terrestrial or aquatic invasive species removal, and beach maintenance activities are subject to potential NHESP review.

In 2009, the NHESP established review protocols for selected DCR properties for conducting trail activities within Priority Habitat. Trails within Priority Habitat at Walden Pond State Reservation were included in this analysis. A 2009 report (see NHESP, 2009b) outlines various trail activities and assigns a specific NHESP review protocol, based on the protected species. The report includes a system of red/yellow/green guidance codes:

A guidance code of green means that the DCR may proceed with a particular trail maintenance activity on a trail segment without NHESP review, subject to specific requirements listed in the NHESP report. Trail activities under this code for lake quillwort were identified as: trail tread maintenance; simple drainage structure installation and maintenance; moderate drainage structure installation; steep slope structure installation; trail closures; and minor stream crossings (defined as a crossing less than 20 feet wide).

A guidance code of yellow means that the DCR may proceed with a particular trail maintenance activity on a trail segment, subject to specific requirements and conditions listed in the NHESP report. NHESP review may be required. Trail activities under this code for lake quillwort on the Pond Path include: trail corridor vegetation clearance (not including

aquatic plants) and wet area crossings (structures over water must be less than four feet wide to qualify for this exemption).

A guidance code of red means that the DCR must file detailed plans for review by the NHESP before proceeding with any activity. Trail reroutes are categorized under the red code.

No habitat management planning has been conducted for the areas surrounding the pond that are within Priority Habitat.

Public Safety. Reservation staff removes damaged vegetation that creates unsafe public conditions and undertakes maintenance activities in landscaped or developed areas, including pruning trees and shrubs, and mowing, trimming, and weeding vegetation. The frequency of these activities changes throughout the year.

In 2001, the DCR Bureau of Forestry and Fire Control established one Continuous Forest Inventory (CFI) plot on the reservation. Created in 1957 with the establishment of 93 plots, the CFI system measures overall forest health from 1,900 plots statewide today. Information is obtained every 10 years on changes regarding tree species, tree growth and mortality. The plot at Walden Pond State Reservation is located in a mature white pine-oak stand that contains trees in the 80-year old age class. The CFI plots statewide help in planning forest management and assessing forest conditions on a large scale.

Park staff also maintain the existing open field in the southern part of the reservation through annual mowing with a brushhog. The maintenance is intended to prevent the growth of vegetation in the open field.

Wildlife

The applied management policy is to permit bird, mammal, reptile, and amphibian populations to increase or decrease without human intervention. Occasional exceptions exist; for instance, protective fencing was installed in the Heywood Meadow area to prevent blockage by beaver dams. Wildlife research is regulated through permits issued by the DCR Ecology Program. Trout are stocked annually by the Massachusetts Department of Fish and Game for sport fishing.

Cultural Resources

The DCR's Office of Cultural Resources (OCR) supports planning for, and management of, cultural resources on DCR property through project management and resource management planning. The OCR coordinates all regulatory compliance related to state and local laws protecting historic and archaeological resources. The OCR also prepares nominations of properties for inclusion in the State and National Registers of Historic Places.

Any project undertaken, funded, permitted or licensed in whole or in part by the DCR may be subject to review by the Massachusetts Historical Commission (MHC). Projects with federal involvement (e.g., funding) could be subject to Section 106 of the National Environmental Policy Act (NEPA). OCR staff assess regulatory needs and, when applicable, notify the MHC through the filing of a Project Notification Form or Environmental Notification Form. The MHC will make a Determination of Effect of the project on historic and archaeological resources. Finally, OCR staff coordinate any archaeological surveys, testing, and excavation with the State Archaeologist 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 (U.S. National Park Service, n.d.). 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 (U.S. National Park Service, 2001).

Massachusetts law requires the review of all sub-surface disturbances on state property. All projects at Walden Pond State Reservation that involve soil disturbance, including invasive plant removal, tree planting, and installing posts or certain types of trail construction are subject to regulatory review. An agreement between the MHC and the DCR allows DCR's archaeologist to provide initial review of activities that result in sub-surface disturbance. Under this agreement, DCR's archaeologist is the primary reviewer of such projects and activities at Walden Pond State Reservation.

The OCR also maintains plans and documents that relate to past capital projects at the reservation. Some of the plans that the OCR maintains were created when the reservation was managed by Middlesex County.

Recreation Resources

Recreational Activities

Boating. The boat ramp is jointly managed by the DCR and Massachusetts Department of Fish and Game's Office of Fishing and Boating Access (OFBA) as a public access facility. General maintenance is conducted by the DCR, although the OFBA has authority to conduct major repairs at the boat ramp. Regulations that govern public access facilities are available at 320 CMR 2. Any proposed change to public access facilities must undergo a specified public review and comment process.

Boats with internal combustion engines, including gas powered motors, are prohibited. Sailboats and windsurfing is also prohibited. A boat monitor, hired by the DCR Lakes and Ponds Program, is hired during the summer months to educate the public and check boats and propellers for aquatic invasive species.

Picnicking. Grilling, open fires, and possession of alcoholic beverages are prohibited. Signage to inform the public of this rule is installed at two access points to the Main Beach, and at the boat ramp. All litter and trash is required to be carried out by visitors. The DCR maintains two "big belly" trash compactors, located on the east side of the Route 126 crosswalk. On busy summer days, staff empty these compactors daily.

Fishing. The Massachusetts Department of Fish and Game (DFG) regularly stocks Walden Pond every spring and fall with brook, brown, and rainbow trout. The DFG also regulates fishing in the state, including at Walden Pond. Fishing licenses are required for all persons 15 years and older. Recent restrictions were enacted that prohibit lead fishing sinkers and jigs less than one ounce in all inland waters of the Commonwealth effective January 1, 2012. Creel limits are in place for bass that prohibit taking more than five bass a day of at least 12 inches in length, and more than three trout (no limitations are in place on length).

The DCR discourages ice fishing at Walden Pond and per agency policy, must post a sign that states "Danger Unsafe Ice Conditions." Any persons choosing to recreate upon Walden Pond, or any waters in the Walden Planning Unit, is considered to be doing so at their own risk.

Swimming. Operation of all public swimming beaches under the auspices of the DCR, including the Main Beach waterfront, is governed by the DCR Waterfront Program Procedure Manual (DCR, 2007c). This manual covers topics such as designated swimming areas, water quality standards, emergency response and preparedness, management of designated swimming areas, and lifeguard recruitment and testing guidelines. The manual sets standards for certification and training for all lifeguards and supervisors.

The Main Beach is staffed with lifeguards seven days a week from Memorial Day through Labor Day. Outside of these dates and times at the Main Beach, swimming is "at your own risk." In addition, swimming outside a designated swimming area at any time during the year, including the Red Cross Beach, is considered "at your own risk," pursuant to the Waterfront Program Procedure Manual. The Main Beach is the only guarded swim area at Walden. The Red Cross Beach is a designated swimming area, but is not guarded. The various stone steps constructed around the pond's edge are not designated as swimming areas.

Open water swimming at Walden Pond presents both challenges and opportunities. Open water swimming has been a point of conflict for some users who feel that the activity interferes with other recreational uses such as fishing or boating. In addition, the DCR has seen a rise in emergency responses either by DCR lifeguards or local rescue personnel to search for lost swimmers or rescue swimmers who are in distress. Frequently, emergency responses are for recreational swimmers who misjudge their abilities. On the other hand, open water swimming reflects an evolution to those who desire an alternative to confined, designated swimming areas, and want to achieve a higher level of aerobic activity.

DCR managers and facility supervisors have the authority to close a swimming beach due to severe weather conditions, a medical emergency, water quality concerns, or any other reason that potentially

threatens public safety or health. Additional requirements are outlined in the Waterfront Program Procedure Manual.

Park staff maintains a list of reservations for groups (often groups from area summer camps) who come to Walden specifically to swim.

Sand is added annually to the Main Beach in the early spring, and during the summer season, the Main Beach is cleaned and raked daily. During the recreation season, staff monitor both the Main Beach and Red Cross Beach for loose rocks and other debris.

Prohibited Recreational Activities. DCR park staff enforce rules and regulations regarding specific prohibited recreational activities when the activity is known to occur on the reservation. Signs are posted throughout the reservation that inform the public that certain activities are against regulations. Prohibitions on trail-based activities exist. Pet walking, horseback riding, and mountain biking on trails are not allowed. Running/jogging is not allowed on the Pond Path due to its narrow sections. In addition, access to specific areas on the south side of the pond is restricted and marked as a restoration zone.

Special Events. A variety of recreational and commercial activities are regulated by special permits, issued by the DCR's Office of External Affairs and Partnerships. Current DCR regulations require special permits for "any commercial or special activity or event upon the lands or waters" (304 CMR 12.17). Most permits issued for Walden Pond since 2009 relate to video and photography shoots. Commercial filming, photography, and videography are regulated through Filming and Photography Special Use Permits. Other activities include ceremonial events such as small weddings, graduation celebrations, and baptisms. All Special Use Permits are issued by the DCR's Office of Permits (www.mass.gov/dcr/permits/).

Universal Access. A series of universally accessible visitor activities are offered, including swimming, kayaking, and hiking. The lack of universal access at Walden Pond State Reservation requires field staff to assist visitors with mobility-related disabilities.

Concessions. Until the fall of 2011, a mobile food truck operated in the main parking lot near the main crosswalk. The operation was subject to a concession agreement that was not renewed (DCR,

2007d). The DCR is seeking a concessionaire for the 2013 recreation season to provide healthy culinary options.

Capacity Closures/Visitation

Peak Vehicular Traffic on Route 126. The heavy traffic volume on Route 126 that attempts to enter the reservation at one time is a pervasive management issue at Walden Pond State Reservation. Peak traffic flow into the reservation typically occurs when the parking lot reopens after a capacity closure. After a closure, park staff will announce a time to reopen, typically in two to three hours. In a review of 106 closures during 2009, 2011, and 2012, the average length of a capacity closure was two and one-quarter hours. Park staff has found two to three hours is generally an adequate length of time to allow a turnover of parking spaces, although will close for longer if deemed necessary.

Typically, five to 10 minutes before the park is set to reopen, traffic on Route 126 increases heavily. Vehicles will attempt to stop in the road shoulder near the park entrance to increase their chances of getting near the front of line. Assistance from State Police is vital to prevent vehicles from stopping on the roadway shoulder in an attempt to gain access to the front of the re-entry queue.

To begin the queue, southbound vehicles will be instructed to line up on the roadway centerline. This allows southbound through-traffic to pass on the road shoulder. Even with the extra lane, queues can extend one-third of a mile to the Route 126/Route 2 intersection. A separate northbound queue forms for northbound traffic. The northbound queue comes into conflict with pedestrians attempting to cross the roadway at the main crosswalk. DCR staff manages the crosswalk to allow pedestrian and northbound vehicle circulation.

The park entrance roadway accommodates two lanes of traffic, one for traffic approaching from the north and one for traffic approaching from the south. A staff person, typically the Supervisor or Assistant Supervisor, stands near the park entrance to answer questions from the public and direct traffic into the reservation. Staff are positioned in the parking lot, with a four-wheeled utility vehicle to provide updates to the Supervisor via radio on the availability of parking spaces. Staff are also

positioned at the main crosswalk to answer questions from the public and prevent vehicles dropping off passengers at the main crosswalk. One management challenge during periods of heavy visitation relate to controlling “drop-offs.” Vehicles will regularly stop along Route 126 to let passengers out, likely done to avoid paying the parking fee. The practice is pervasive, and is difficult to control. Overall, reopenings are staff intensive, as virtually all available staff, with the exception of lifeguards, are involved in reopening the facility to the public.

The DCR uses a Twitter account to communicate park closures and reopenings to subscribed members. As of November 2012, the account has 792 followers. Members can choose to receive notifications of park closures, reopenings, park events, and other news.

1,000 People at One Time Limit. Given the increasingly limited resources available to the DCR, and the various issues the agency faces in accommodating peak visitation at Walden, this RMP recommends the current limit on visitors should not be increased.

As discussed in Section 2, park staff produces visitation estimates by counting the number of cars that enter the reservation, and multiplying the number of cars by 2.5 people per vehicle. In addition, the number of people who access the reservation by bus is added using existing reservations. The number of people who enter the reservation on foot or bike is not known.

Adjusting the capacity limit without an accurate estimate of how many people are accessing the reservation at one time is likely futile. First, the DCR must enhance the ongoing data collection process to improve its visitation estimates at Walden, focusing on the number of unauthorized people who enter the reservation during peak visitation days. Once an estimate is obtained, the DCR can assess its ability to first ensure visitor safety given its current resources. As a second parameter, the DCR should assess its ability to adequately protect natural and cultural resources, and meet visitor expectations.

One interesting finding from the 2011 survey effort (see Appendix Q) is visitors, on average, did not perceive the reservation to be overcrowded compared to their expectations. The finding suggests

that by-and-large, visitor expectations are in line with the level of visitation they experience. In addition, 93% of survey respondents indicated they planned to visit the reservation again. This suggests that people have a generally positive experience.

Another consideration worth mentioning is the type of visitor limitation. The current limitation is based on the maximum number of people who can access the reservation at one time. In theory, it is conceivable that a steady stream of visitors, dispersed throughout the day, could result in the reservation accommodating 4,000 to 5,000 people a day, without triggering a capacity closure. (Assumes 900 people visiting the property in five, two-hour blocks over the course of 10 hours = 4,500 people.)

The 4,000 to 5,000 people quantity is significant, as a daily 5,000 visitor average was identified in the Gardiner report as a likely outcome if no visitor limit was enforced, and would require transforming the reservation into a urban park. Although the scenario is unlikely, it suggests that exploration should be given to instituting a daily limit on visitors, in addition to or in-lieu of the “at one time” limitation.

Certain design scenarios for the new visitor center involve the reconfiguration of parking areas. One possibility the agency should explore is whether to replace lost spaces as a result of these scenarios. For instance, one scenario could result in the loss of 18 parking spaces. If it is found that significant numbers of people are continuing to enter the reservation by bike or foot, the loss of 18 spaces could help normalize maximum visitation closer to 1,000 people at one time.

Recommendations regarding further studies to conduct to improve visitor limits at Walden are made in Section 4.

Reservation Systems. As part of this planning process, the ability of the agency to take reservations for historic/cultural tourists was explored. As noted in Section 2, Walden Pond State Reservation attracts a high percentage of out-of-state and international visitors. Unfortunately, some of these historic/cultural tourists are unable to gain access to Walden during a capacity closure. In certain instances, park staff will allow tourists from afar to access the reservation during a capacity closure; however, staff are not always aware of these situations.

Unfortunately, it is virtually impossible for DCR staff to effectively enforce a reservation system for a particular user group. An effective reservation system geared toward historic/cultural tourists would require the DCR to distinguish between specific user types (to prevent other user groups from using the reservation system). Accordingly, a reservation system would need to be open to all users.

The DCR plans to offer visitors the ability to make reservations at certain facilities in the future. Assessment of this reservation system trial should influence a system that is piloted at Walden.

Infrastructure

Property Boundaries

There are no reservation-wide management activities currently related to marking or monitoring boundaries. Park staff note the property boundaries are well-marked, and property disputes with adjacent landowners are rare, likely due to the scarcity of adjacent developed properties. The property boundaries have not changed since the acquisition of a property north of Goose Pond in 2002. The Bureau of Forestry and Fire Control provides assistance with boundary marking and resolution of encroachments as necessary.

Buildings and Structures

DCR employees handle most of the regular maintenance of DCR-owned buildings and structures. Maintenance includes the park headquarters building (including the bookstore operated by the Thoreau Society), parking lot Clivus Multrum unit, bathhouse, and horse barn and paddock used by Massachusetts State Police. Private contractors perform jobs that require technical expertise.

Roads

The DCR maintains and repairs internal roadways and parking lots. Regular maintenance consists of snow and leaf/vegetation removal, and minor maintenance of the boat ramp roadway (major repairs are handled by the Office of Fishing and Boating Access).

The Town of Concord manages the section of Route 126/Walden Road within its boundaries. The Town of Lincoln manages the section of Route 126/Concord Road within its boundaries.

Parking

The DCR maintains and repairs the reservation's parking areas. Snow removal is performed by the DCR and includes the parking lots (only parking lots B, C, and D are plowed in the winter) and the paved E-Ramp down to the pond.

Documented reports submitted by the DCR to the U.S. Environmental Protection Agency for compliance with the National Pollutant Discharge Elimination System (NPDES) indicate the porous pavement in the main parking area has been properly maintained at least since 2008 (DCR, 2008; DCR, 2009b; DCR, 2010; DCR, 2011c; DCR, 2012b).

Future improvements at the reservation, including construction of a new visitor center, will not increase the amount of available parking spaces. It is likely that the 1,000 people at one time limit will continue to be reached on busy summer days (see Section 2).

Trails

The design, planning, management, maintenance, and marking of trails are guided by the DCR's Trail Guidelines and Best Practices Manual (DCR, 2012c).

Trail segments are repaired, enhanced, created, or closed, as needed and appropriate by DCR staff. Trail crews and/or volunteers provide trail work with the prior approval and supervision of the DCR and in accordance with DCR standards and volunteer policy (DCR, 2011d).

As an agency policy, new trail proposals on DCR lands are evaluated by DCR operations staff with input from planning, forestry and fire Control, and ranger services staff through the Trail Proposal Form of the Trail Guidelines and Best Practices Manual (DCR, 2012c).

Trails may be designated as "authorized" or "unauthorized" by DCR operations staff at any time. Authorized or unauthorized trails may be closed by DCR operations or ranger services staff. Closures may be indicated on maps, the DCR website or through signage.

DCR operations and ranger services staff generally install and maintain trail markings, with the exception of the Bay Circuit Trail markings. The Bay Circuit Trail is marked with white blazes, which are maintained by volunteers with DCR permission.

Old markings and signs on DCR trails may be removed, and trails remarked in accordance with current agency guidelines and best management practices (DCR, 2012c). Additional trail maintenance provisions, related to the protection of the state-listed quillworts along the Pond Path, can be found in this section under Vegetation.

In March 2011, the U.S. Department of Justice implemented a ruling requiring entities that provide public recreational opportunities to make reasonable modifications in their policies, practices, or procedures to permit the use of Other Power-Driven Mobility Devices (OPDMDs) by individuals with mobility disabilities. Exceptions can be made where it is demonstrated that the class of OPDMD cannot be operated in accordance with legitimate safety, resource protection, or other requirements. OPDMDs are defined as: “any mobility device powered by batteries, fuel, or other engines - whether or not designed primarily for use by individuals with mobility disabilities - that is used by individuals with mobility disabilities for the purpose of locomotion, including golf cars, electronic personal assistance mobility devices (EPAMDs), such as the Segway® PT, or any mobility device designed to operate in areas without defined pedestrian routes, but that is not a wheelchair.” The DCR plans to develop a statewide policy to comply with the OPDMD ruling, which will apply to Walden Pond State Reservation.

Signs and Kiosks

The format and placement of regulatory and informational signs are governed by the Manual on Uniform Traffic Control Devices for Streets and Highways and guided by the DCR Graphics Standards Manual (DCR, n.d.a). The manual provides standards for various sign types including lead-in signs, welcome waysides, and orientation, interpretive, and regulatory signs. Park staff repair signs and kiosks. Formal signage is generally prepared by the DCR sign shop. Staff prepare a variety of signs related to park rules.

Memorials and Markers

The placement of markers or plaques at Walden Pond State Reservation is not specifically managed by agency regulations. Under current regulations, memorials and markers would be treated as a sign,

and as such are prohibited without the written permission of the Commissioner.

Interpretive Services

Comprehensive Interpretive Plan

There is no Comprehensive Interpretive Plan (CIP) for the reservation that articulates a static set of interpretive themes, inventories available tools and programs, and coordinates services among various entities. As part of this planning process and to assist with planning for the new visitor Center, the DCR held a public meeting in March 2012 to develop the conceptual underpinnings behind a potential CIP for the reservation. Interpretive staff at the meeting described the existing interpretive themes and practices, and led a discussion with interested parties on four questions:

- “*What do you think makes Walden Pond a special place?*” This question was asked to articulate the public’s attitudes and beliefs on the character-defining features of Walden Pond.
- “*What do you think are the main stories to communicate to visitors at Walden Pond?*” This question was asked to identify the important stories to connect the visitor to the reservation.
- “*How would you describe a ‘typical’ visitor to Walden Pond?*” This question was asked to outline the various groups of visitors that collectively comprise the park audience.
- “*What are the essential visitor experiences at Walden that the DCR should aim to provide?*” This question was asked to improve the DCR’s understanding of the key emotional, physical, and intellectual experiences that visitors should have at the reservation.

The discussion was intended to inform the visitor center design process by creating statements of significance, interpretive themes, audience visitor profiles, and understanding desired visitor experiences. The planning process is modeled after a standard set of steps undertaken by the U.S. National Park Service for interpretive planning (see U.S. National Park Service, 2000). Comprehensive interpretive planning will continue throughout the design of the visitor center. A summary of the responses provided at the March 2012 public meeting can be found in Appendix S.

Current Interpretive Practices

Current interpretive planning at Walden Pond is conducted yearly, and changes sporadically from year to year. Changes include the modification of existing themes or programs, or introducing new themes, core programs, seasonal programs, and special events. Interpretive programming is tailored broadly to various audience types, including school and educational groups; educators; literature and history enthusiasts; and visitors interested in nature/natural history. The programs are designed to communicate a selected set of themes, created by DCR interpretive staff. Selected articulated themes, used for the 2011 recreation season can be found in Table 3.2.1. The primary themes relate to interpreting the life and influence of Henry David Thoreau, and examining his two-year stay at Walden Pond.

Table 3.2.1. Selected 2011 interpretive themes for Walden Pond State Reservation.

Interpretive Theme
Henry David Thoreau's two-year stay at Walden Pond supplied the journal that became <i>Walden, or Life in the Woods</i> .
Thoreau's writings greatly influenced society, including world leaders such as Mohandas Ghandi, Martin Luther King, Jr., and JFK.
The land around Walden Pond paints a picture of forest succession, from use as a woodlot during Thoreau's time, to conservation land in the present.
Land and cultural uses of Walden Woods have changed markedly in its history.

Source: DCR, 2011e.

Appendix T summarizes a selected set of core interpretive programs, seasonal interpretive programs and special events. A set of special events are offered by the DCR and other entities, including the Thoreau Society and the Walden Woods Project. The special events range from commemorating Martin Luther King, Jr.'s birthday by communicating its connection to Thoreau and his ideas, to organized accessible hiking and kayaking events. The list is not a complete inventory of programming at the reservation.

DCR interpretive staff work with partnering organizations to develop additional materials, such as the Walden Woods Project, to offer an annual teacher workshop. The Friends of Walden Pond, an

activity of the Thoreau Society, funds ongoing programs and activities at Walden Pond. The Massachusetts Department of Fish and Game co-sponsors angler education programs at Walden Pond. MassAudubon shares interpretive ideas and co-sponsors programs at its nearby Drumlin Farm Sanctuary.

School groups comprise a significant percentage of the interpretive audience. A targeted teaching module entitled "Henry David Thoreau: The Making of a Naturalist" provides education about landscape design and use through hands-on activities and first-hand experience with the reservation's natural and cultural resources. The module is available on the Walden Pond State Reservation webpage.

In addition to these programs and coordinating with partnering entities, DCR interpretive staff regularly works with the public in informal settings by roving at the house replica and Thoreau House Site.

DCR Regulations

The DCR has the authority to make and enforce regulations regarding parks, forests and reservations. These regulations are designed to accomplish three goals: protect public safety, protect natural and cultural resources, and protect user experiences. The regulations that currently apply at Walden Pond State Reservation are detailed in 304 CMR 12.00; Forest and Park Rules. Selected regulations are described in Table 3.2.2.

Table 3.2.2. Selected DCR regulations applicable to Walden Pond State Reservation.

Regulation (304 CMR 12.00)	Sub-Section
Hours of Operations	12.03
Public Behavior, Disorderly Conduct, and Removal of Persons	12.04
Enforcement	12.05
Alcoholic Beverages Prohibited	12.06
Audio or Noise Producing Devices	12.07
Dumping, Littering, and Garbage	12.10
Damage to Buildings, Signs and Other Property; Metal Detectors; Geological Features and Artifacts	12.11
Solicitation and Commercial Use	12.12
Fires, Lighted Smoking Materials, Embers	12.13
Free Flight Devices	12.16
Special Use Permits	12.17
Hunting, Fishing, and Trapping	12.18
Traffic Rules and Parking	12.23
Trail Use, General Provisions	12.28
Use of Department Water Bodies including Beaches	12.32
Boating/Watercrafts	12.34

Regulations detailed in 304 CMR 12.00 (see <http://www.mass.gov/dcr/legal/downloads/3041200.pdf>).

3.3. OPERATIONAL RESOURCES

DCR Staffing

Prior to 2012, the DCR managed its parks, forests and reservations using a management structure with two divisions. The Division of Urban Parks and Recreation (DUPR) managed facilities in the greater Boston area, while the Division of State Parks and Recreation (DSPR) managed facilities outside of greater Boston. The arrangement maintained geographic boundaries between two former state recreation agencies that preceded the DCR prior to a 2003 merger (the Metropolitan District Commission and the Department of Environmental Management). Each division was further divided into management regions, then districts.

Under the Parks Unification effort in 2012, the DCR bridged the divide between DUPR and DSPR by merging the two divisions. Now a single division (the State Parks Division otherwise known as MassParks) oversees all parks in the DCR system. The DCR also created an additional field management level, by assigning complexes within districts. Complexes were created to facilitate and

encourage the sharing of resources between facilities. Under the revised structure, the Walden Planning Unit is within the North Region, Metro West District, and Walden Complex.

North Region

The North Region is comprised of three districts: the Metro West District, Middlesex Essex District, and Coastal District. Specialized staff resources assigned to the North Region are available on an as-needed basis to Walden Pond State Reservation. This includes services related to interpretation and engineering. The region is headed by a North Region Director that reports to the Deputy Director of State Parks.

Metro West District

The Metro West District is comprised of two complexes: Walden and Hopkinton. The district includes a functionally and geographically varied set of properties in the DCR system. Management is provided by a Metro West District Manager who reports to the North Region Director.

Walden Complex

The Walden Complex includes Walden Pond State Reservation, Carlisle State Forest and Great Brook Farm in Carlisle; Billerica State Forest and Warren H. Manning State Forest in Billerica; Lowell Heritage State Park, the John J. Janas Skating Rink, and the Raymond Lord Memorial Swimming Pool in Lowell; and Lowell-Dracut-Tyngsborough State Forest. In addition to managing the park, the Walden Pond Park Supervisor serves as the Walden Complex Field Operations Team (FOT) Leader. The team leader is responsible for coordinating the operational needs and scheduling of staff for all parks and facilities in the Walden Complex, through the use of Field Operation Teams. The Walden FOT Leader reports to the Metro West District Manager.

For the 2012 recreation season, staffing at Walden Pond State Reservation remained stable from the previous year, with the exception of a reduction in the length of service for an interpretive seasonal position, and the addition of a seasonal boat ramp monitor. The seasonal boat ramp monitor position is planned full-time between late May and early September for the 2013 recreation season. Table 3.3.1 summarizes staffing resources at Walden Pond State Reservation.

Table 3.3.1. Staffing resources available at Walden Pond State Reservation^a.

Job Title	Year-round	Seasonal
Complex FOT Leader	1	
Assistant Park Supervisor	1	
Visitor Services Supervisor	1	
Clerk	1	
Forest & Parks Supervisor I		2
Laborer I		10
Lifeguard I		11
Lifeguard II		1
Maintenance Equipment Operator II		1
Park Interpreter		2
Park Ranger		1
Recreation Facility Supervisor I		1
Environmental Educator/Boat Ramp Monitor		1
Summer Worker		4
Total	4	34

a. Includes staff who worked at Walden Pond State Reservation during the 2011 recreation season. This does not include staff who worked at other facilities (e.g., Great Brook Farm State Park) within the Walden Complex.

Aquatics Unit

The DCR created a statewide aquatics unit as part of the Parks Unification effort in May 2012. The aquatics unit is responsible for providing oversight and ensuring compliance with policy and procedures for all DCR pools and beaches. The unit is staffed by a director and three regional staff members.

Visitor Services and Programming

The visitor services and programming unit within MassParks prepares and coordinates interpretive programming statewide for various natural and cultural resources found within DCR parks. The unit is staffed by an Assistant Director and Chief of Interpretive Services, who oversees two interpretive staff members and an Administrative Assistant.

Bureau of Planning and Resource Protection

The Bureau of Planning and Resource Protection includes Regional Planning, Recreational Facilities Planning, Landscape Architecture, Architecture, GIS, Land Protection Planning, Areas of Critical Environmental Concern (ACEC), Ecology, and Cultural Resources. These programs within the Bureau prepare various planning documents, including RMPs; develop and update GIS data;

oversee building repair and design projects; provide technical assistance with the stewardship of archaeological and historic resources; identify and acquire properties to be added to the DCR system; maintain an archive of park documents; and provide technical support for stewardship of ecological resources.

Division of Engineering

The Division of Engineering is responsible for the engineering and construction of parkways, dams, buildings and recreational facilities. It also provides a Regional Engineer to oversee day-to-day repair and construction projects and to maintain a working relationship with the Regional Director in identifying capital improvement priorities.

Bureau of Ranger Services

The Bureau of Ranger Services includes field ranger staff who provide outreach related to CMRs and public safety services.

Bureau of Forestry and Fire Control

The Bureau manages a variety of programs, including Management Forestry, Forest Fire Control, Forest Health, and Urban/Community Forestry, that provide technical assistance and services on forestry related issues to DCR parks, forests and reservations. The Forest Fire Control Program works with municipalities to fight wild land fires across Massachusetts.

Supplemental Staffing

Volunteers.

Volunteers can provide a variety of human and intellectual resources to support management and maintenance of the reservation. Volunteer services include park planning, invasive plant species control, clean-ups, trail maintenance, monitoring, botanical surveys, interpretive programming and others. Volunteers may be individuals or members of groups, businesses or organizations, and may be organized by DCR staff or partner organizations.

All volunteer activities must be conducted with prior approval and supervision of the DCR and in accordance with DCR standards and volunteer policy (DCR, 2011d), including documentation through a Volunteer Project Description form and/or Stewardship Agreement.

Two nonprofit organizations in the Concord-Lincoln area are ongoing partners with the DCR. The Thoreau Society, headquartered in Concord, works to “stimulate interest in and foster education about Thoreau’s life, works, legacy and his place in his world and in ours, challenging all to live a deliberate, considered life.” The Thoreau Society regularly sponsors interpretive services to the public and serves as the official friends group of the reservation. The Walden Woods Project (WWP), based in Lincoln, preserves the land, literature and legacy of Henry David Thoreau to foster an ethic of environmental stewardship and social responsibility. The WWP achieves this mission through the integration of five important core activities: conservation, scholarship, education, program activities, and advocacy/awareness. The WWP provides interpretive events that benefit the public’s understanding of the reservation’s natural resources. The WWP helps to organize a decennial Biodiversity Day to inventory natural resources in the greater Walden Woods area.

One volunteer group plays an important role in oversight of the reservation management. The Massachusetts Legislature created the Walden Pond Advisory Board in 1974 upon the transfer of management of the reservation to the state. The board, comprised of volunteer members, advises the DCR on the care, maintenance, development, and use of the reservation. There are presently five members on the board with two vacant positions. The DCR Commissioner appoints board members. The board typically meets once a month. Non-board members attend, including representatives from the Walden Woods Project and Thoreau Society. Meetings are open to the public. Other volunteer partners include school groups, advocacy groups, universities, and clubs.

Trail Crews

Trail crews from the Student Conservation Association (SCA) typically provide services to Walden Pond State Reservation each year with projects selected through a competitive application process. The SCA crew performs general trail maintenance, closures and repairs. Past projects have included the closure of unsanctioned trails, improving drainage systems, and constructing bridges. These crews work under the direction of DCR operations staff.

Researchers

Researchers from local colleges, universities, and friends groups have conducted research on the health of Walden’s natural and cultural resources, including recent studies showing a link between global climate change and the increase in invasive plant species (Miller-Rushing and Primack, 2008; Willis et al., 2010). Proposed research projects must be reviewed and approved by DCR staff.

Enforcement and Public Safety

DCR Rangers, whose duties include responding to emergencies, crowd and parking control, interpretive programming, and education, issue citations on the reservation for violations of DCR regulations. Fire control, police, and emergency medical response are provided by municipalities. DCR Rangers and lifeguards provide first aid.

Park Rule Enforcement

DCR Rangers and park staff issue citations for violations of various park rules. A summary of incident reports from 2010 and 2011 is provided in Table 3.3.2.

Table 3.3.2. Incident summary by type within Walden Pond State Reservation, 2010-2011.

Incident	Number
Injury	16
Illegal Dumping	16
Lost Person	15
Violation of DCR Regulations	12
Waterfront	12
Vehicle Accident	10
Personal Property Theft	7
Vandalism	5
Fight/Disorder	3
<i>Total</i>	<i>96</i>

Source: DCR, 2011f.

A summary of the 12 DCR regulation violations that occurred in 2010 and 2011 can be found in Table 3.3.3.

Table 3.3.3. Summary of DCR regulation violations, 2010-2011.

Incident	Number
Camping	2
Commercial Activity without Special Use Permit	2
Disorderly Conduct	2
Hours of Operation	2
Traffic/Parking	2
Dog Related Incident	1
Drinking Alcohol	1
<i>Total</i>	12

Source: DCR, 2012d.

Enforcement of existing regulations remains an ongoing challenge for park staff. There are many violations of department regulations that are likely unreported, particularly in the summer months. These violations include alcohol violations; entering the park and/or swimming outside hours of operations; and disorderly conduct, characterized by belligerence toward park staff during park closures. In addition, swimming outside of designated swimming areas is a common violation of existing park regulations in place at this writing. The agency does not have adequate resources to regulate swimming outside of designated swimming areas.

The Massachusetts State Police have provided invaluable assistance to DCR staff in law enforcement, traffic management, crowd control, and providing regular patrols of the reservation since the 1980s. No formal agreement exists that structures this assistance. In recent years, police patrol was assigned to Walden during the 2011 and 2012 recreation seasons. Assistance is crucial when reopening the park after a capacity closure.



State Police horse patrol. (Photo credit: DCR)

Other departments provide supplemental law enforcement. The Executive Office of Energy and Environmental Affairs' Office of Law Enforcement provides assistance with rule enforcement via Environmental Police Officers (EPOs). Local police provide additional law enforcement on the reservation, within their respective jurisdictions.

General Budgetary Information

A variety of funds support the operation, maintenance and capital improvement of DCR facilities.

Operating Budget

The annual operating budget supports the daily operation and maintenance of Walden Pond State Reservation including staff, utilities, supplies, equipment, administration and the maintenance and minor repair of facilities, vehicles and equipment.

In Fiscal Year 2011, funds allocated to Walden Pond State Reservation's operating budget, excluding personnel costs, were approximately \$21,500. These funds covered needs such as building and vehicle maintenance, and operational supplies and expenses.

Capital Budget

The DCR's capital budget supports projects (e.g., construction and major 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, accompanying costs to be funded by the DCR, and the year of the proposed implementation. Various DCR offices submit capital plans for approval. Ultimately, capital plans are reviewed and approved by the DCR Commissioner and submitted to the Secretary of the Executive Office of Energy and Environmental Affairs (EOEEA).

In October 2009, \$2.1 million was included in the capital plan for the study, design, and construction of a new visitor center for Walden Pond State Reservation. As of December 2012, the visitor center project is in a study phase. Upon approval of a draft study by the DCR and Massachusetts Division of Capital Asset Management (DCAM), the project will proceed to design. Additional

information on the Walden visitor center planning process can be found in Appendix U.

Deferred Maintenance

Deferred maintenance funds cover infrastructure repairs that exceed typical maintenance costs, but do not require a separate capital appropriation. The funds may also be used to address emergency capital projects for which funding has not been programmed. Each region is allotted deferred maintenance funds on an annual basis.

Supplemental Funding

Supplemental funding includes grants, earmarks, trust funds, dedicated property funds, retained revenues, and in-kind donations.

Grants

The DCR administers matching funding grants that are available to partnering organizations to support projects in DCR facilities. Due to its prominence, Walden Pond State Reservation may be a good candidate for various private and/or federal grants related to a variety of improvements, including natural and cultural resource preservation, universal access improvements, and retrofitting existing buildings with alternative energy sources.

Earmarks

Earmarks are funds directed to specific projects by the Massachusetts Legislature via the annual state budget. Such earmarks periodically provide funding for projects in specific parks. There have been no recent earmarks for Walden Pond State Reservation.

Conversation Trust Fund

This trust fund uses donations to support special initiatives above and beyond basic property maintenance. It is funded through charitable contributions to the DCR, including those donations placed into the “iron ranger” (a secure metal donation box) located in front of the park headquarters building. Between July 2010 and June

2011, donations to the Walden Pond iron ranger totaled \$358. With the recent Parks Unification effort, a single agency-wide trust fund will be established in the near future. As of February 2012, approximately \$45,344 was available in the fund for exclusive use at Walden Pond State Reservation.

Dedicated Funds

Some parks within the DCR system use dedicated property funds that are generated through a particular on-site use. These funds are retained for use at that particular facility, but cannot be used for personnel costs.

Under a past lease agreement with the Thoreau Society, dedicated funds were generated from an annual payment for the right to operate the bookstore, as well as a percentage of generated bookstore funds. The payment was made to the DCR solely for the benefit of the park (DEM, 2001*b*).

Retained Revenues

Retained revenues are exclusively used for DCR operating expenses and facility improvements on the property where they are generated. No retained revenues are generated and used in the Walden Planning Unit.

During Fiscal Year 2011, Walden Pond State Reservation generated approximately \$387,878, mostly in the sale of day-use parking passes.

The state’s general fund allows a portion of specific revenues generated by the DCR to be retained and used by the DCR, subject to an annual threshold set by the state budget. The Fiscal Year 2013 budget allows the DCR to retain a maximum amount of \$14,127,027, approximately \$5.4 million more than the previous fiscal year.

In-Kind Donations

In-kind donations involve the contribution of goods and services in lieu of monetary funds. There are no known in-kind donations to Walden Pond State Reservation.



The E-Ramp provides primary access to the beach, but does not conform to universal accessibility standards. (Photo credit: DCR)

SECTION 4. RECOMMENDATIONS

4.1. INTRODUCTION

The DCR has a broad and dynamic mission that encompasses resource protection, providing public access to recreational opportunities, and active forest management. This multi-faceted mission often results in complex management challenges. These responsibilities are central to the agency's mission and statutory charge.

To help meet this broad mission, the DCR has developed a two-tier system for guiding the management of all state forest and park properties under its care. The two systems, known as Landscape Designations and Land Stewardship Zoning, work in an integrated fashion to accommodate primary ecosystem services while recognizing and providing site-specific resource protection.

Application of Landscape Designations and Land Stewardship Zoning at Walden Pond is summarized below; for a more detailed description of Landscape Designations and Land Stewardship Zoning, please see Appendix V.

4.2. LANDSCAPE DESIGNATIONS

Applied statewide to assess and guide management activities throughout the DCR system, Landscape Designations are based on primary ecosystem services, and guide management decisions based upon these services. The designations also communicate the agency's landscape-level management objectives to the public.

As a result of a robust public process called Forest Futures Visioning, the DCR established the following designations for its properties under its jurisdiction:

Reserves provide backcountry recreation experiences and protect the least fragmented forested areas and diverse ecological settings. Successional processes are monitored to assess and inform long-term forest stewardship.

Woodlands demonstrate exemplary forest management practices for landowners and the general public while supporting the range of ecosystem services that sustainably-managed forests offer, including a diversity of native species and age classes and compatible recreational opportunities.

Parklands focus on providing public recreational opportunities while protecting resources of ecological and cultural significance.

Under the Landscape Designations process, the DCR designated Walden Pond State Reservation as parkland. This designation is consistent with the historic and recreational purposes for which the reservation was acquired, as well as the character of the reservation's resources. The management approach for forestry in parklands does not allow commercial timber harvesting. Vegetation management, including limited tree cutting, may be used to support recreational assets and activities, invasive species control, and to address public safety hazards.

Specific management guidelines for parklands are described in Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines (DCR, 2011g).

4.3. LAND STEWARDSHIP ZONING

Land Stewardship Zoning and the resource management planning process of which it is a part, addresses the agency's statutory responsibilities in M.G.L. Chapter 21: Section 2F. The legislation requires the DCR to prepare management plans that encompass all reservations, forests and parks; provide for the protection and stewardship of natural, cultural, and recreation resources under the agency's management; and ensure consistency between recreation, resource protection and sustainable forest management.

Land Stewardship Zoning Guidelines

Land Stewardship Zoning Guidelines define three types of zones to ensure resource protection based upon site-specific field data, and provides guidance for current and future management based upon resource sensitivities. Inventory and assessment of resources during the preparation of an RMP is factored into land use management and decision-making, and provides guidance for stewardship of these resources. The process results in zoning of areas and specific sites within DCR properties based on their sensitivity to recreation and management activities that are appropriate for each facility as recognized during the RMP process. In this way, the Land Stewardship Zoning system helps to ensure

that recreation and management activities do not degrade various resources and values.

The three land stewardship zones provide a general continuum to categorize resources (relative to potential degradation from human activities) from undisturbed sites with highly sensitive resources, through stable/hardy resources, to sites that have been developed and consistently used for intensive recreation or park administration purposes. The Land Stewardship Zoning system also includes Significant Feature Overlays that may be applied to highlight resource features that have been assessed and documented by professional resource specialists.

Below is a description on the various zones used for Land Stewardship Zoning:

Zone 1

Management Objective. Protection of sensitive resources from management or other human activities that may adversely impact the resources.

General Description. This zone encompasses areas with highly sensitive ecological and cultural resources that require additional management approaches and practices to protect and preserve the special features and values identified in the Resource Management Plan. Zone 1 areas are not suitable for future intensive development.

Examples. Examples identified as being highly sensitive to human activities include rare species habitat or natural communities, areas with concentrations of sensitive aquatic habitats, excessively steep slopes with erodible soils, and archaeological sites or fragile cultural sites, where stewardship of these resources must be the primary consideration when assessing management and recreational activities in these areas.

Zone 2

Management Objective. Provide for a balance between the stewardship of natural and cultural resources and recreational opportunities which can be appropriately sustained.

General Description. This zone encompasses stable yet important natural and cultural resources. Zone 2 is a very important component to the DCR's management responsibilities, because the protected landscape within this zone provides a buffer for sensitive resources, recharge for surface and

groundwater, and large areas where existing types of public recreational activities can be managed at sustainable levels.

Examples. Examples include areas of non-intensive use that contain diverse ecosystems, rare species habitat that is compatible with dispersed recreation and sustainable management practices, and cultural resources that are not highly sensitive to human activities.

Zone 3

Management Objective. Provide public access to safe and accessible recreational opportunities, as well as administrative and maintenance facilities that meet the needs of DCR visitors and staff.

General Description. This zone includes altered landscapes in active use, and areas suitable for future administrative, maintenance and recreation areas. The resources in this zone can accommodate concentrated use and require regular maintenance by DCR staff.

Examples. Examples of areas of concentrated use include park headquarters and maintenance areas, parking lots, swimming pools and skating rinks, paved bikeways, swimming beaches, campgrounds, playgrounds and athletic fields, parkways, golf courses, picnic areas and pavilions, and concessions. Examples of future use areas include disturbed sites with no significant ecological or cultural values and not suitable for restoration, identified through the RMP or in a Master Plan as being suitable for intensive recreation or park administration sites. Note that development would be preceded by detailed site assessments to ensure protection of natural and cultural resources.

Significant Feature Overlays

Management Objective. The purpose of the overlays is to provide precise management guidance in order to maintain or preserve the recognized resource features regardless of the zone in which they occur.

General Description. The three land stewardship zones may be supplemented with significant feature overlays that identify formally designated or recognized resources. These resource features have been recognized through research and assessment by professional resource specialists. Information on the significant features is brought into the RMP process

via review of previous research projects and associated designations.

Examples. A natural or cultural resource, recognized through professional inventory/research that cuts across more than one land stewardship zone, such as:

- National Register Historic District
- Areas subject to public drinking water regulations
- Priority Habitat for species that are sensitive to human activities
- Biomap2 Core Habitat
- Designated Areas of Critical Environmental Concern

A natural or cultural resource, recognized through professional inventory/research, which is located in an area characterized by intensive visitor use. In these cases, the Significant Feature Overlay is used to highlight the potential conflict between resource stewardship and ongoing visitor use, and provide mitigation strategies. Examples include:

- A NHESP Priority Natural Community associated with a summit that is also a popular destination for hikers.
- A barrier beach that provides habitat for rare shorebirds, and is subject to CZM barrier beach management guidelines and coastal wetlands regulations, but also supports thousands of visitors during the summer season.
- A significant cultural site such as Plymouth Rock that is subject to ongoing, intensive visitation.

Applied Land Stewardship Zoning

Application of the land stewardship zones to the reservation is the result of an analysis of natural and cultural resources in the context of compatible public recreation and park management activities. Zoning is applied only to lands that DCR owns in fee or has care and control responsibilities. Zoning is not applied to DCR-held Conservation Restrictions. Drawing on information in Sections 2 and 3 of this RMP, the following describes the application of the Land Stewardship Zoning system for resources within the reservation. See Figure 4.3.1 for the Walden Pond State Reservation Recommended Land Stewardship Zoning map.

Zone 1

The recommended area for Zone 1 is located in the southern part of Walden Pond State Reservation, west of Route 126, south of the Esker Trail. Application of Zone 1 to this area will help to ensure long-term protection of sensitive resources that include sensitive cultural resources, two vernal pools, Heywood's Meadow, an exemplary wetland that supports larch and black spruce, and the hemlock grove that was identified as a Representative Natural Area under the DEM's Wildlands Program.

Zone 2

On the western part of the reservation, Zone 2 areas are located north of the Esker Trail. These areas include the Pond Path, Wyman Meadow, and the Thoreau Cabin Site. Many of these areas are heavily used, particularly around the pond during the summer months. Areas within Zone 2 east of Route 126 include areas around Goose Pond, and an area that abuts adjacent conservation land associated with the Town of Lincoln's Pine Hill.

Zone 3

Zone 3 areas include existing areas associated with active recreation facilities and the administration of the reservation, including the park headquarters building, barn, maintenance area, current entrance road and parking lots. Zone 3 also includes the former Walden Breezes Trailer Park site.

Significant Feature Overlays

National Historic Landmark District. In 1965, the Secretary of Interior designated Walden Pond State Reservation as a National Historic Landmark with associated U.S. National Park Service preservation guidelines. Subsequently, the DCR acquired additional lands that are not included within the National Historic Landmark boundaries and are therefore not included within this significance overlay.

Pond Protection Overlay. The Walden and Goose pond ecosystems include the occurrence of two rare aquatic plants. Also, the Walden Pond water quality and clarity is exceptional considering the intensive use level that has been sustained over many decades. The significance overlay is applied to both ponds to highlight the potential conflict between visitor use

and the long-term effort that will be required to maintain water quality, protect the rare plant species and prevent the proliferation of invasive species.

4.4. MANAGEMENT RECOMMENDATIONS

Management Principle

Walden Pond State Reservation is an internationally acclaimed National Historic Landmark due to its association with Henry David Thoreau and his profoundly influential work *Walden, or Life in the Woods*. Simultaneously, the reservation is a heavily visited recreation facility as it provides a diverse set of recreational activities, including high demand water-based activities.

The DCR's management of Walden Pond State Reservation shall aim to achieve a balance between these potentially competing uses by ensuring sustainability of its cultural and natural resources, while providing quality and compatible recreational, educational, and interpretive opportunities for visitors of all abilities.

Management Goals

The following goals are deemed to be of equal importance:

Goal 1: Preserve the cultural resources of the reservation.

Goal 2: Provide quality, safe, diverse, and accessible recreational opportunities and facilities that are compatible with the reservation.

Goal 3: Facilitate the public's understanding and appreciation of the reservation, its past, and its significance.

Goal 4: Preserve, protect, and enhance water resources of the reservation, including vernal pools and wetlands.

Goal 5: Maintain and enhance habitats for native plants and wildlife.

Goal 6: Protect the reservation from overuse and misuse by the public.

Recommendations

The set of recommendations are grouped by the appropriate management goal in Table 4.4.1. Progress on implementation of the recommendations is proposed to be reviewed annually in concert with the Walden Advisory Board.

Place holder for Figure 4.3.1. Land Stewardship Zoning Map

Back of Figure 4.3.1. Land Stewardship Zoning Map

Table 4.4.1. Recommendations for Walden Planning Unit-wide resources.

#	Recommendation	Priority ^a	Resources ^b	Implementation ^c
Goal 1. Preserve cultural resources of the reservation.				
1-1	Consult DCR staff archaeologist/Office of Cultural Resources for all projects that involve ground disturbance to comply with MHC requirements.	H	1	P, R
1-2	Ensure future projects within the National Historic Landmark District Significant Feature Overlay be compatible with the Secretary of the Interior's Standards for the Treatment of Cultural Landscapes.	H	1	P
1-3	Create program for monitoring sensitive cultural sites including archaeological sites and the Thoreau House Site, to include monitoring for vandalism, looting, erosion, and compaction in accordance with the Office of Cultural Resources Best Management Practices.	H	1	P, R
1-4	Create simple educational signage for the public to communicate applicable federal, state, and local regulations regarding cultural resource protection, and appropriate reporting protocols to follow if cultural resource disturbance is observed.	H	2	B, O, P
1-5	Renew agreement with Salisbury State University (Maryland) that governs the loan of the Henry David Thoreau sculpture near the house replica; secure sculpture using appropriate methods.	M	1	L, R
1-6	Conduct training with field staff to monitor and protect archaeological resources using established Best Management Practices.	M	1	B, P, R
1-7	Work to preserve views of Walden Pond from the Thoreau Cabin Site.	M	2	O, F, P
1-8	Develop and implement, or where appropriate, permit specific interpretive treatments for cultural resources on the reservation, consistent with DCR regulations and policies.	M	2	O, R
1-9	Clarify ownership of the small cemetery off Fairhaven Road.	L	1	L
1-10	Limit vehicular traffic on forest roads to essential access only.	L	1	R
1-11	Monitor trails for illegal access of Off-Highway Vehicles (OHVs) and bicycles; take further enforcement action if necessary.	L	1	B, R
1-12	Conduct further research into design and integrity of the Shurcliff-designed features of the Main Beach, the memorial landscape and the Thoreau House Site memorial, which may be significant as designed, commemorative landscapes.	L	1	P, V
1-13	Repair the fieldstone retaining wall located between the Main Beach and boat ramp.	L	3	E
Goal 2. Provide quality, safe, diverse, and accessible recreational opportunities and facilities that are compatible with the reservation.				
2-1	Explore issues around open water swimming.	H	1	B, O, R
2-2	Work with MBTA to repair fence near its rail line, and review visitor safety provisions.	H	1	L, O, R
2-3	Install signage along western property boundaries abutting railroad lines to discourage public access across rail lines.	H	1	L, O, R
2-4	Study, design, and construct improvements at crosswalks across Route 126 in consultation with Town of Concord.	H	2	E, P
2-5	Construct landscape improvements that promote access between the visitor parking lots and new visitor center, and orient visitors directly to Route 126 crosswalks.	H	2	C, E, P

Continued on next page.

See end of this table on page 68 for explanation on codes used for the Priority, Resources, and Implementation columns.

Table 4.4.1. Recommendations for Walden Planning Unit-wide resources. (Continued)

#	Recommendation	Priority ^a	Resources ^b	Implementation ^c
Goal 2. Provide quality, safe, diverse, and accessible recreational opportunities and facilities that are compatible with the reservation. (Continued)				
2-6	Design and construct a universally accessible connection between the top of the E-Ramp at Route 126 and the bathhouse and Main Beach.	H	2	C, E, P
2-7	Educate/enforce specific user groups about no-running policy on the Pond Path.	M	1	B, R
2-8	Explore new communication technologies to check whether the reservation is open or closed.	M	2	P, X
2-9	Monitor trails near pond for erosion control, and use established Best Management Practices, consistent with DCR's Trails Guidelines and Best Management Practices.	M	2	P, R
2-10	Conduct and evaluate pilot reservations system at other DCR properties; consider using similar program at Walden Pond State Reservation during summer months if pilot program is successful.	M	2	O, P, X
2-11	Make site-appropriate improvements to Woods Path and other trails to create a universally accessible pathway system to the Thoreau House Site.	M	3	C, E, P
2-12	Remove filled catch basins on Pond Path near Thoreau Cabin Site.	L	1	R
2-13	Complete acquisition of 1.9-acre parcel owned by the Town of Lincoln adjacent to Route 126.	L	1	P, R
2-14	Provide trail map for users with suggestions for different user groups, e.g., hikers, people interested in cultural history, and runners.	L	1	O, R
2-15	Explore additional land acquisition opportunities for preservation or support of park operations.	L	3	P
2-16	In concert with the Town of Concord and MassDOT, conduct a feasibility assessment on providing an underpass and rerouting Route 126 that evaluates costs, safety benefits, and environmental impacts.	L	3	E, P
Goal 3. Facilitate the public's understanding and appreciation of the reservation, its past, and its significance.				
3-1	Design and construct an environmentally-sensitive visitor center and accompanying improvements that orient visitors to key sites of reservation, and interpret cultural and natural resources; the building will also provide a new park headquarters office space for Walden Pond staff.	H	1	C, O, P
3-2	In coordination with stakeholders, prepare a Comprehensive Interpretative Plan (CIP) for new visitor center and reservation; topics to consider in the CIP are: <ul style="list-style-type: none"> - Updating existing waysides; - Adding waysides to key sites including stories relevant to Walden Pond, such as Henry David Thoreau, environmentalism, transcendentalism, Native American land use, and former slave settlements; - Including interpretive media to brand the DCR and its properties. 	H	2	C, O, R
3-3	Use renewable energy sources to power visitor center and ultimately all buildings to reduce reservation's carbon footprint and become a teaching model of environmental sustainability.	H	2	C, E, P
3-4	Promote connections to historic resources in the larger Walden Woods complex, including Brister's Hill and Bear Garden Hill.	L	1	L, R
3-5	Promote collaboration between potential researchers and the DCR on review and approval of research projects, and dissemination of findings and results.	L	1	L, P

Continued on next page.

See end of this table on page 68 for explanation on codes used for the Priority, Resources, and Implementation columns.

Table 4.4.1. Recommendations for Walden Planning Unit-wide resources. (Continued)

#	Recommendation	Priority ^a	Resources ^b	Implementation ^c
Goal 3. Facilitate the public's understanding and appreciation of the reservation, its past, and its significance. (Continued)				
3-6	Remove the bank rehabilitation education signage at the Route 126 crosswalk, and replacement with orientation signage.	L	1	O, R
3-7	Replace the DEM welcome wayside east of Route 126 main crosswalk with one that meets DCR wayside standards.	L	2	O
3-8	Study what foreign languages, if any, could be targeted to supplement park communications.	L	2	P, X
Goal 4. Preserve, protect, and enhance water resources of the reservation, including vernal pools and wetlands.				
4-1	Conduct appropriate seasonal maintenance of permeable parking areas to ensure continued functionality as designed.	H	1	E
4-2	Continue boat monitoring program during summer months to inspect boats for aquatic invasive species.	H	2	W
4-3	Conduct a visitor education program to reduce potential impacts to water quality.	H	2	R, W
4-4	Construct new septic system associated with visitor center; site outside Walden Pond groundwater collection area.	H	2	C, E, P
4-5	Install signage at boat ramp identifying invasive aquatic weeds with instructions and reservation contact information.	H	2	O, P, W
4-6	Coordinate annual water sampling to monitor potential nutrient loadings, potential stormwater impacts, aquatic invasive species management, and effects of climate change.	H	3	W
4-7	Where practical, reroute trails away from vernal pools to direct paths away from sensitive wetland areas or close paths during breeding season.	M	1	P, R
4-8	Remove gullies to prevent continued erosion down gradient from Thoreau Cabin Site.	M	3	E, P
4-9	Implement portions of the 2007 East Bank Rehabilitation Study that relate to erosion and runoff controls, including removal of paved surfaces southeast of bathhouse, paved stairways, and re-grading boat ramp road and parking area to prevent surface runoff from entering Walden Pond.	M	3	P, R, W
4-10	Survey uncertified vernal pools on reservation and if applicable, apply to the NHESP for certification.	L	1	P, R
Goal 5. Maintain and enhance habitats for native plants and wildlife.				
5-1	Conduct training with park staff on environmental regulatory compliance, habitat protection, invasive plant species, and trail maintenance activities.	H	1	R, P
5-2	After an initial process of documentation and prioritization, develop an invasive plant species control plan for terrestrial and aquatic species, with attention to regulatory requirements for implementation.	H	1	F, P, V
5-3	Evaluate woolly adelgid control efforts in hemlock grove, including reintroduction of <i>Sasajiscymnus tsugae</i> ; implement efforts after developing preferred alternative.	M	2	F, R
5-4	Use citizen volunteer groups to identify dominant invasive plant species, provide training if necessary.	M	2	P, R, V

Continued on next page.

See end of this table on page 68 for explanation on codes used for the Priority, Resources, and Implementation columns.

Table 4.4.1. Recommendations for Walden Planning Unit-wide resources. (Continued)

#	Recommendation	Priority ^a	Resources ^b	Implementation ^c
Goal 5. Maintain and enhance habitats for native plants and wildlife. (Continued)				
5-5	Create fence enclosures to allow native wildflowers to bloom and re-seed without deer predation.	M	3	P, V
5-6	Participate in Route 2 wildlife corridor planning effort, if continued.	L	1	P, R
5-7	Address existing tree root damage in main parking lot that minimizes impacts on trees.	L	2	E, R, P
Goal 6. Protect the reservation from overuse and misuse by the public.				
6-1	Improve visitation estimates through various efforts, including incorporating walk-ins and bicyclists to estimates.	H	1	P, R
6-2	Study, design, and construct new park roadway entrance on former trailer park property and develop accompanying management provisions to ensure efficient and safe operation.	H	2	C, P
6-3	Continue to work with Town of Concord to discourage use of Concord- Carlisle High School and town conservation parking areas during summer months, particularly during park capacity closures.	M	2	O, R
6-4	Assess swimming areas on pond edge, avoiding sensitive areas on south side of pond.	M	2	O, R
6-5	Install “No Swimming” signage as needed.	M	2	O, R
6-6	Require and enforce reservations for bus groups, and communicate policy to bus tour companies.	M	2	R
6-7	Via the Commonwealth’s Accelerated Energy Program, install energy-efficient light fixtures in bathhouse and other reservation buildings including occupancy sensors and fluorescent light bulbs; and install low-flow toilets in bathhouse.	M	1	O, R, P
6-8	Continue to enforce capacity protocols, including the no drop-off policy, and no walk-in policy when the park is closed due to capacity; explore further enforcement arrangements with Massachusetts State Police/Environmental Police.	M	2	R, O
6-9	Promote use of available volunteer resources, such as area non-profit organizations and school groups, to complete projects beneficial to the reservation.	M	1	R, V
6-10	Conduct regular five-year boundary checks.	L	1	F, 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: B = Bureau of Ranger Services; C = Contractor or consultant; E = Division of Engineering; F= Bureau of Forestry and Fire Control; L = Legal Services; O = Other; P = Bureau Of Planning And Resource Protection; R = Regional and district staff; S = Department of Special Events; V = Volunteer or partner; W = Division of Water Supply Protection; X = Office Of External Affairs And Partnerships.

Appendix A. Plan Contributors

Name	Affiliation	Area of Expertise
<i>Department of Conservation and Recreation</i>		
Asen, Steve	Lakes and Ponds Program	Aquatic invasive species
Backman, Andy	RMP Program	Planning
Baecker, Jim	RMP Program	Planning
Berkland, Ellen	Office of Cultural Resources	Archaeology
Bertrand, Daniel	Office of the Commissioner	Legislative relations
Berry, Christine	Office of Land Protection Planning	Land acquisition
Briere, Gary	Bureau of Recreation	Recreation
Buls, Barbara	North Region	Interpretation
Carlson, Kent	Information Technology	Facility Asset Management Information System (FAMIS)
Cavanagh, Paul	RMP Program	Planning
Church, Peter	Bureau of Forestry and Fire Control	Operations/forestry
Crawford, Conrad	Office of External Affairs and Partnerships	Partnerships
Driscoll, Dan	Office of Recreational Facilities Planning	Planning
Faro, John	Walden Pond State Reservation	Management and operations
Fiesinger, Anne	Office of External Affairs and Partnerships	Outreach
Fisher, Sean	Office of Cultural Resources	Archival material
Flannery, Tom	Office of Water Resources	Invasive species
Forgione, Darryl	North Region	Engineering
Fox, Wendy	Office of External Affairs and Partnerships (former)	Media relations
Garcia, Kathryn	Metro West District	Operations and management
Garnett, Catherine	Ecology Program	Natural resources
Gooch, Ken	Bureau of Forestry and Fire Control	Forestry
Geigis, Priscilla	Division of State Parks and Recreation	State parks
Greene, Judy	Office of Cultural Resources	Historic maps and plans
Hamilton, Susan	North Region	Operations and management
Hoffmann, Peter	Walden Pond State Reservation	Operations and management
Hunt, Dan	Legislative Affairs	Legislative relations
Ingram, Jennifer	Walden Pond State Reservation	Interpretation
Jahnige, Paul	Greenways and Trails Program	Trail planning and maintenance
Karl-Carnahan, Kristin	Bureau of Ranger Services	Interpretive planning
Kimball, David	GIS Program	GIS
Kish, Patrice	Office of Cultural Resources	Cultural resources
Lloyd, Nathanael	GIS Program	GIS
Lowry, Kathleen	Universal Access Program (former)	Universal access
Martin, Julie	Visitor Services and Programming Unit	Visitor services
McCarthy, Tom	Universal Access Program	Universal access
Moran, Barbara	Office of External Affairs and Partnerships	Web content
Morrissey, Denise	Walden Pond State Reservation (former)	Operations and management
Orfant, Joe	Bureau of Planning and Resource Protection	Planning
Overton, Samantha	Division of State Parks and Recreation	State parks
Pearl, Wendy	Office of Cultural Resources	Historic landscapes
Pearly, Brian	Permits Program (former)	Use agreements
Penniman, Harris	Bureau of Forestry and Fire Services	Forestry
Plocinski, Loni	GIS Program	GIS/planning
Port, S.J.	Office of External Affairs and Partnerships	Media relations

Continued on next page.

Appendix A. Plan Contributors (Continued)

Name	Affiliation	Area of Expertise
<i>Department of Conservation and Recreation</i>		
Putnam, Nancy	ACEC/Ecology Program	Ecology
Rayworth, Tim	Visitor Services and Programming Unit	Interpretive planning
Rudge, Curt	Bureau of Ranger Services	Ranger operations
Scapicchio, Stephen	Finance	Revenue
Silva, Jason	Office of the Commissioner	Administration
Silva, Raul	Division of Engineering	Engineering
Stowe, Jennifer	Bureau of Ranger Services	Visitor safety and education
Straub, Jim	Lakes and Ponds Program	Pond ecology
Tipton, Nat	RMP Program	Planning
Warchalowski, Heather	Ecology Program (former)	Ecology
Woodward, Emily	Permits Program	Use agreements
Yeo, Jonathan	Division of Water Supply Protection	Water quality
<i>Other Affiliations</i>		
Allen, Linda	Walden Pond Advisory Board	Recreation
Anderson, Kathi	Walden Woods Project	Walden Woods advocacy
Bassett, Ken	Walden Pond Advisory Board	Landscape architecture
Benes, Francine	Walden Pond Advisory Board	Neighborhood input
Burne, Matthew	Walden Woods Project	Wildlife ecology
Colman, John	Walden Pond Advisory Board	Hydrology
Crosby, Deneen	Crosby, Schlessinger, and Smallridge, LLC	Landscape architecture
Cowell, David	BSC Group, Inc.	Natural resources
Frederick, Mike	Thoreau Society	History
Garrett, Jennifer	Natural Heritage and Endangered Species Program	Rare or endangered species
Harper, Lynn	Natural Heritage and Endangered Species Program	Endangered species
Hegemann, Ingeborg	BSC Group, Inc.	Natural resources
Lederer, Jason	BSC Group, Inc.	Natural resources
Primack, Richard	Boston University	Conservation biology
Reed, Peter	BSC Group, Inc.	Transportation
Schlessinger, Carole	Crosby, Schlessinger, and Smallridge, LLC	Planning
Shaw, Gordon	Concord Land Conservation Trust	Surrounding open space
Thompson, Maryann	Maryann Thompson Architects	Architecture
Tuchulan, Binu	Maryann Thompson Architects	Architecture
Veinotte, Amanda	Natural Heritage and Endangered Species Program	Endangered species
Walden, Diana	BSC Group, Inc.	Natural resources
Weinreb, Stu	Walden Pond Advisory Board	Landscape architecture

Appendix B. Summary of Public Outreach

In accordance with M.G.L. Chapter 21 Section 2F, the Resource Management Plan (RMP) for the Walden Planning Unit was developed in conjunction with a public participation process to ensure that interested parties had an opportunity to offer input in its development and review the draft RMP. This appendix identifies the public participation process used to inform and review this RMP.

B.1. THE PUBLIC PARTICIPATION PROCESS

Input into Development of the RMP

Public input into the development of the Walden Planning Unit RMP began in December 2010. A notice of a public meeting and of the DCR's intent to prepare a Resource Management Plan was published in the November 22, 2010 Environmental Monitor. Additional announcements were made on the DCR webpage, and press releases were provided to local newspapers.

An initial public meeting was convened at the Concord Town House on December 8, 2010. Fourteen members of the public attended the meeting, which ran from 6:30–8:00 P.M.

Additional meetings were held that provided input for the RMP, as well as a concurrent Visitor Services Master Plan. These meetings were:

- Visitor Services Workshop held on March 24, 2011 at the Hunt Recreation Center in Concord (36 members of the public attended the meeting)
- Visitor Services Recommendations held on November 17, 2011 at the Harvey Wheeler Community Center in Concord (21 members of the public attended the meeting)
- Interpretive Workshop held on March 27, 2012 at the Harvey Wheeler Community Center in Concord (24 members of the public attended the meeting)

Written input on the plan was solicited at the initial public meeting. Instructions were provided on how to submit written comments via the Environmental Monitor announcement, on the DCR webpage, and in press releases.

Public Comment on Draft RMP

A meeting to present the draft RMP was held at the Harvey Wheeler Community Center in Concord, on January 31, 2013 from 7:00–8:30 P.M. The DCR advertised the meeting by emailing a meeting notice to individuals and organizations on the Walden Planning Unit RMP contact list, and to area media outlets. The meeting notice was also posted on the DCR webpage. Twelve members of the public attended this meeting. Notice of the availability of the draft RMP for the Walden Planning Unit was published in the February 6, 2013 Environmental Monitor. The public comment period on the draft RMP ran from February 1, 2013 – March 4, 2013; five sets of written comments were received during this period.

B.2. CHANGES TO THE FINAL DRAFT OF THE WALDEN PLANNING UNIT RESOURCE MANAGEMENT PLAN

The DCR reviewed and gave consideration to all comments received during the public comment period. The comments received from the public touched on a variety of issues within the plan including natural resource protection, infrastructure improvements, and staffing. The one and only common remark raised by more than one commenter involves encouraging the agency to study a permanent solution to improve pedestrian safety across Route 126, either through re-routing Route 126 or constructing an underpass.

Changes made to the plan are summarized below by the relevant section of the plan. Note this list does not include customary editing activities such as clarification on references, formatting revisions, or correcting grammar.

Executive Summary

Additions/corrections were made to the Priority Action Plan table in the Executive Summary. These corrections reflect modifications to high priority recommendations made in Section 4.4. One correction reassigned a recommendation on creating a program to monitor sensitive cultural sites to Goal 1 (Preserve cultural resources of the reservation) from Goal 6 (Protect the reservation from overuse).

and misuse by the public). Details on the public comment period were added to the “Public Participation in Developing this Resource Management Plan” section.

Section 1. Introduction

1.3. The Planning Process. A statement clarifying the specific tasks performed by BSC Group in preparation of the RMP was added.

1.4. Recent Capital Improvements. The amount of money contributed by the Friends of Walden Pond toward bathhouse improvements was corrected (\$20,000 to \$25,000), as well as the time period (calendar year 2006 to Fiscal Year 2006).

Section 2. Existing Conditions

2.1. Introduction. A statement referencing a guiding condition reflecting the wishes of the donating families from the 1922 transfer deed was added: “preserving the Walden of Thoreau and Emerson”.

2.3. Regional Open Space Context. The category of “private homeowners” was added to the list of entities that protect land within Walden Woods.

2.4. Historical Context. An improvement recommended in the Gardiner report and implemented by the DEM (removal of two parking areas, and construction of one centralized parking area) was added.

2.4. Historical Context/Contact/Walden in Public Ownership/Transfer to State Management. A statement was added that clarifies the methodology used in the Gardiner report to generate alternatives for visitor limits is not known.

2.5. Natural Resources/Water Resources/Watersheds. The distance from Walden Pond to the Sudbury and Concord rivers was clarified.

2.5. Natural Resources/Vegetation. The existence of an open field formerly used for agriculture was identified, as well as the DCR’s management of the field that aims to maintain its open character.

2.6. Cultural Resources/Historic Resources/Landscapes/Main Beach–Day-Use Area Landscape. A statement was added to clarify the bathhouse could be retrofitted with low-flow toilets if desired (previously the sentence implied the

existing sinks/toilets themselves could be retrofitted, which is not the case).

2.8. Infrastructure / Buildings and Structures. The date that the Thoreau Society (1995) began operating the bookstore was added.

2.8. Infrastructure/Buildings and Structures. The sculptor of the Thoreau sculpture (Jo Davidson) was identified.

2.8. Infrastructure/Roads. An additional advantage was added to the list of benefits (elimination of stormwater impacts to Walden Pond water quality) in rerouting Route 126 away from Walden Pond. In addition, the reference to the source of Concord’s Pine Hill Reservoir was removed.

2.8. Infrastructure/Trails. The quantity of Walden Pond State Reservation trail mileage that co-aligns with the Bay Circuit Trail was clarified.

2.8. Infrastructure/Trails. Documentation of the Bay Circuit Trail markings were added, along with the location of BCT trail signs on or near the reservation.

2.8. Infrastructure/Trails. Recent changes in BCT management arrangements were added.

Figure 2.8.1. Infrastructure. The alignment of the Bay Circuit Trail was added to the map.

Section 3. Management Resources and Practices

3.2. Management Practices/Natural Resources. A sentence was edited to clarify that the DCR is required to regularly renew its Order of Conditions with the Concord Natural Resources Commission.

3.2. Management Practices/Natural Resources/Vegetation/Quillwort Protection. Additional information was added regarding whether NHESP review is necessary for trail maintenance activities for the three codes (red/yellow/green).

3.2. Management Practices/Natural Resources/Vegetation. A paragraph was added that describes the DCR’s management activities on an open field in the southern part of the reservation.

3.2. Management Practices/Infrastructure/Trails. The maintenance of the Bay Circuit Trail signs by volunteers was added.

3.2. Management Practices/Recreation Resources/Capacity Closures Visitation/1,000 People at One Time Limit. A summary of how the DCR estimates visitation was added.

3.2. Management Practices/Recreation Resources/Capacity Closures Visitation/1,000 People at One Time Limit. The implication of the 5,000 visitor per day average was clarified to specify its mention in the Gardiner report.

3.2. Management Practices/Infrastructure/Memorials and Markers. The stance of current regulations was clarified, such that memorials and markers would be treated as a sign and accordingly prohibited without the written permission of the Commissioner.

3.2. Management Practices/Interpretive Services. A sentence on volunteer entities that provide interpretive programs and activities was added.

3.3. Operational Resources/DCR Staffing. MassParks was added as an additional name for the Division of State Parks.

3.3. Operational Resources/DCR Staffing. The seasonal boat ramp monitor/environmental educator position was added to 2012 staff in the text and Table 3.3.1. In addition, an update was added on the hiring of a boat ramp monitor for the 2013 recreation season.

3.3. Operational Resources/DCR Staffing. Reference to the Bureau of Engineering was changed to the Division of Engineering.

Section 4. Recommendations

Section 4.4. Management Recommendations/Recommendations. A statement was added to clarify implementation of the plan will be reviewed annually with the Walden Pond Advisory Board.

Section 4.4. Management Recommendations/Recommendations. A statement is included at the bottom of each page in Table 4.4.1

to reference the appropriate page for an explanation on implementation codes.

Section 4.4. Management Recommendations/Recommendations/Table 4.4.1. An additional column was added to the recommendations table that assigns a unique number to each recommendation.

Section 4.4. Management Recommendations/Recommendations/Table 4.4.1. The recommendation for creating a program to monitor sensitive cultural sites was moved from Goal 6 to Goal 1. The recommendation is currently numbered as 1-3, and reads:

Create program for monitoring of sensitive cultural sites including archaeological sites and the Thoreau House Site, to include monitoring for vandalism, looting, erosion and compaction in accordance with the Office of Cultural Resources Best Management Practices.

Section 4.4. Management Recommendations/Recommendations/Table 4.4.1. The wording for recommendation 2-16 was modified with additional specificity. The revised recommendation reads:

In concert with the Town of Concord and MassDOT, conduct a feasibility assessment on providing an underpass and rerouting Route 126 that evaluates costs, safety benefits, and environmental impacts.

Appendices

Appendix A. Minor additions were made to include names and roles of those who contributed to the plan.

Appendix B. Additional details on the public meetings, and changes to the final draft RMP were added.

Appendix P. The trail names and length of sections that co-align with the Bay Circuit Trail were added.

Appendix W. References were modified as appropriate.

Appendix C. GIS Supplemental Information

C.1. METHODOLOGY

The following is a summary of the GIS methodology used by the Department of Conservation and Recreation (DCR) GIS Program to generate and present data within the Walden Planning Unit Resource Management Plan (RMP).

Property Boundaries

A DCR GIS Specialist extensively researched the digital boundaries of the Walden Planning Unit. As a result of this research, nearly all (70%) of the planning unit's boundaries were edited with highly accurate data, e.g. surveys and/or hydrographic or town boundaries. Approximately 16% of the digital boundaries were edited with reasonably accurate data, e.g. draft parcel data, georeferenced plans and/or orthophotography. Finally, the remaining portion of the planning unit's boundaries (14%) was edited with less than accurate data, e.g. a digital sketch or an undocumented source.

Demographics

The RMP's demographic information was generated using the following methodology within ArcGIS. First, Walden Pond State Reservation was buffered by ½, 1, 5 and 10 miles using the buffer tool. Next, the Massachusetts 2000 Census Block Group datalayer was analyzed to determine the characteristics of the population surrounding the Reservation. Each Census Block Group that intersected with the ½, 1, 5 or 10 mile buffer was selected using the select by location tool. The information for the selected Census Block Groups is summarized in Table C.1, below.

Table C.1. Summary of 2000 Census Block Groups within ½, 1, 5 and 10 miles of Walden Pond State Reservation.

	½ mi	1 mi	5 mi	10 mi
Sample Pop.	7,099	11,121	112,566	654,304
Households	2,787	4,316	40,672	248,474
<i>Age^{a, b}</i>				
M Children	818	1,306	15,082	77,443
M Adults	1,933	2,871	32,878	199,197
M Seniors	567	917	6,936	36,965
F Children	901	1,434	14,595	73,250
F Adults	2,167	3,291	34,198	212,739
F Seniors	713	1,302	8,877	54,710

	½ mi	1 mi	5 mi	10 mi
<i>Total</i>	1,719	2,740	29,677	150,693
<i>Children</i>				
<i>Total Adults</i>	4,100	6,162	67,076	411,936
<i>Total Seniors</i>	1,280	2,219	15,813	91,675
<i>Race</i>				
White	6,683	10,614	100,484	587,501
Black or African American	69	106	1,844	12,402
American Indian or Alaskan Native	0	0	120	810
Asian	247	270	7,604	36,924
Native Hawaiian or Other Pacific Islander	0	0	15	208
Some Other Race (Alone)	61	61	890	6,794
Two or More Races	39	70	1,609	9,665
<i>Language</i>				
English	2,411	3,768	33,529	200,227
Spanish	65	98	951	7,620
European	202	335	4,072	28,999
Asian	93	93	1,851	9,295
Other	16	22	269	2,333
<i>Income^c</i>				
Low	268	485	4,356	35,036
Medium	807	1,279	12,216	91,604
High	1,712	2,552	24,100	121,834
<i>Education^{a, d}</i>				
M Pop. >25	2,381	3,627	37,233	214,292
M < H.S.	87	104	1,838	16,202
M H.S.	205	329	4,574	36,658
M < Bach.	318	489	5,560	39,344
M Bach.	685	1,092	10,955	58,626
M > Bach.	1,086	1,613	14,306	63,462
F Pop. >25	2,811	4,467	40,218	243,423
F < H.S.	92	139	1,893	18,454
F H.S.	297	482	5,595	49,191
F < Bach.	503	882	8,041	53,171
F Bach.	799	1,395	12,606	65,898
F > Bach.	1,120	1,569	12,083	56,709

Table C.1. Summary of 2000 Census Block Groups within ½, 1, 5 and 10 miles of Walden Pond State Reservation. (Continued)

	½ mi	1 mi	5 mi	10 mi
Total >25	5,192	8,094	77,451	457,715
Total < H.S.	179	243	3,731	34,656
Total H.S.	502	811	10,169	85,849
Total < Bach.	821	1,371	13,601	92,515
Total Bach.	1,484	2,487	23,561	124,524
Total > Bach.	2,206	3,182	26,389	120,171

- a. M = male and F = female.
b. Children = <18; Adults = 18-64; and Seniors = 65 and older.
c. Annual income, where Low = <\$10K - \$24,999; Medium = \$25K - \$74,999; and High = \$75K - >\$200K.
d. The highest level of education is identified by the following codes: <H.S. = no school, < 11th grade, or 12th grade no diploma; HS = high school diploma; < Bach. = < 1 year of college, > 1 of college without a diploma, or an Associate's Degree; Bach. = Bachelor's Degree; and > Bach. = a Master's Degree, professional school degree, or PhD.

It is important to note that by using the select by location tool, an acceptable amount of error was introduced into the demographic information presented in the RMP. Census Block Groups that extended beyond each buffer, similar to what is depicted below in Figure C.1, were included in the analysis. As a result, the demographic information for each buffer likely includes individuals who live farther away from the forest than indicated.

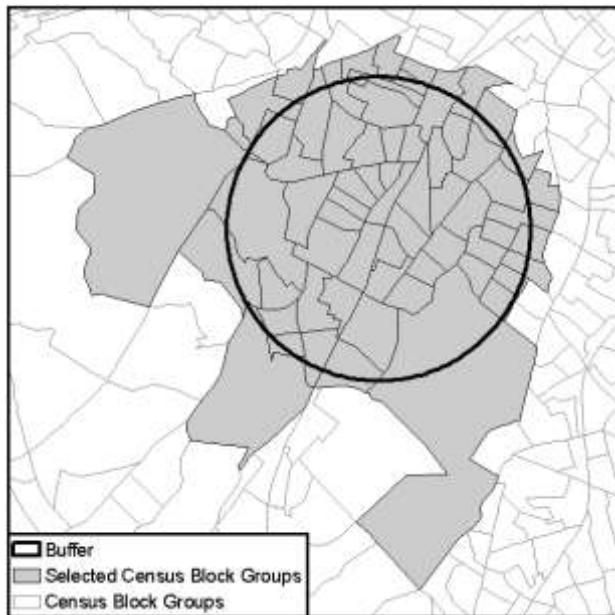


Figure C.1. Selected Census Block Groups.

Report-sized Maps

Figure 2.8.1 Infrastructure. A DCR GIS Specialist digitized the infrastructure points (e.g. contact station) and polygons/footprints (e.g. parking areas) in ArcGIS using field verified documentation of the resources and the 2008-2009 Color Orthophotography datalayer as references.

The historic resource data were collected by the DCR Office of Cultural Resources in the winter of 2010. A GPS application developed by the DCR GIS Program was used to inventory and standardize the data.

The Reservation's trail data were collected by consultants in the summer of 2006. A GPS application was developed by the DCR GIS Program in an attempt to standardize the data. However, it is important to note that several of the trails attributes are qualitative and subjective, e.g. trail width and condition. It is assumed that the individual collecting the data used their best judgment when populating these attributes.

Figure 4.3.1 Recommended Land Stewardship Zoning. A DCR GIS Specialist digitized the Zone 1, Zone 2, Zone 3 and Significant Feature Overlay datalayers in ArcGIS. The 2008-2009 Color Orthophotography and Trail datalayers were used as a guide for defining Zone 1 within the planning unit. The 2008-2009 Color Orthophotography datalayer was also used to determine the existing developed areas and in turn, the planning unit's Zone 3. Finally, the Natural Heritage and Endangered Species Program's (NHESP) Priority Habitats of Rare Species datalayer was used to delineate the Walden Pond Protection Overlay and a National Register of Historic Places Inventory Nomination Form, dated July 20, 1977, was used to delineate the National Historic Landmark District Overlay. Every attempt was made to use "on the ground features," such as trails or streams, as the boundary for each zone and/or significant feature overlay in an effort to make the areas easily identifiable for DCR field staff.

C.2. DATALAYERS

A summary of the GIS datalayers used by the DCR GIS Program to generate and display data within the Walden Planning Unit RMP is presented below, in Table C.2.

Table C.2. Summary of datalayers used to create the Walden Planning Unit RMP.

Datalayer Name	Source	Additional Information
100-Year Flood Zone	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/q3.html
2000 Census Block Groups	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/cen2000blockgroups.html
2008-2009 Color Orthophotography	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/colororthos2008.html
500-Year Flood Zone	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/q3.html
Aquifer (High and medium yield)	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/aquifers-.html
Elevation Contour	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/hp.html
Historic Resources	DCR GIS	
Hydrography	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/depwetlands112000.html
Infrastructure (Points and polygons)	DCR GIS	
Land Stewardship Zoning	DCR GIS	
MBTA Commuter Rail	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/trains.html
NHESP BioMap2 Core Habitat	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/biomap2.html
NHESP BioMap2 Critical Natural Landscape	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/biomap2.html
NHESP Certified Vernal Pool	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/cvp.html
NHESP Living Waters Critical Supporting Watershed	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/lwcsv.html
NHESP Potential Vernal Pool	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/pvp.html
NHESP Priority Habitat of Rare Species	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/prihab.html
Roads	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/eotroads.html
Significant Feature Overlay	DCR GIS	
Town Boundary	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/townsurvey.html
Trail	DCR GIS	
Walden Pond State Reservation	DCR GIS	
Watershed Boundary	MassGIS	http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/majbas.html

Appendix D. Significant Events in the Walden Planning Unit.

Year(s)	Event
~15,000 BP	Walden Pond is formed by a large block of ice left by retreating glaciers.
~12,000 BP	Native Americans arrive to region.
1635	Town of Concord established.
1754	Town of Lincoln established.
Late 1700s	A community of freed slaves settles in the vicinity of Walden Pond.
1844	A section of the Fitchburg Railroad is constructed on Walden Pond's western shore. The railroad provides quick and easy access for Frederic Tudor (the "Ice Baron") to harvest ice at Walden Pond.
1845	On July 4 th , Henry David Thoreau takes residence north of Walden Pond on land owned by fellow Transcendentalist Ralph Waldo Emerson to begin an experiment in simplicity and self-sufficiency.
1847	On September 6 th , Henry David Thoreau ends his residence at Walden Pond.
1854	<i>Walden; or, Life in the Woods</i> is published. The book becomes popular only after Thoreau's death in 1862.
1866	Fitchburg Railroad builds the Walden Lake Grove Excursion Park on both sides of the railroad tracks.
1902	A fire destroys the Walden Lake Grove Excursion Park. The park is not rebuilt.
1922	Walden Pond State Reservation is established through the donation of approximately 80 acres by the Emerson, Heywood, and Forbes families to the Commonwealth of Massachusetts. Management of the property was granted to Middlesex County.
1935	To bypass Concord center, Route 2 is rerouted to an area that passes within 750 feet of Walden Pond.
1941	The Thoreau Society is founded.
1945	Roland Wells Robbins, an amateur archaeologist, discovers and excavates the Thoreau House Site.
1947	"Public Convenience Station" constructed. The building serves as the bathhouse today.
1948	Thoreau Memorial installed at house site.
1957	Middlesex County bulldozes the slope above Red Cross Beach as part of a beach "improvement" project. A lawsuit is filed by the public, including members of the Thoreau Society.
1960	The Massachusetts Supreme Judicial Court rules the beach improvement project violates the intent of the transfer deeds and orders Middlesex County to halt its improvement project and restore the damage.
1965	National Park Service designates Walden Pond State Reservation as a National Historic Landmark.
1974	Management of the Reservation is transferred to the Massachusetts Department of Natural Resources (soon to become the Department of Environmental Management).
1976	DEM purchases the Walden Breezes trailer park, and grants life tenancy to remaining residents. The last remaining resident vacated the trailer park in 2009.
1980s	Based on recommendations in a 1974 Walden Pond Restoration Study (Gardiner and Associates, 1974), ongoing improvement projects are implemented. DEM removes a concrete swim pier, renovates the bathhouse and completes a shoreline restoration project.
1991	Walden Woods Project (WWP) is formed by musician Don Henley. WWP purchases Brister's Hill and Bear Garden Hill to prevent proposed development projects. DEM assists in property protection by purchasing conservation restrictions.
2002	A 26 acre property north of Goose Pond is purchased from the Town of Concord.
2005	DCR obtains care and control of a 3.57-acre parcel from the Massachusetts Highway Department bordered by Route 2 and the Fitchburg Railroad line.

Appendix E. Select Acts of the Massachusetts Legislature that Directly Address the Walden Planning Unit.^a

Year	Chapter	Title	Comments
1842	84	An Act To Establish The Fitchburg Rail-Road Company	Created the corporation of the Fitchburg Railroad Company, and authorized said corporation to locate, construct and complete a railroad in various locations including “southerly of Walden’s Pond.”
1922	499	An Act Establishing The Walden Pond State Reservation In The County Of Middlesex.	Authorized Middlesex County to accept gifted lands to establish Walden Pond State Reservation via the creation of the Walden Pond State Reservation Commission. The Act required title to the land remain with the Commonwealth of Massachusetts, but the land be subject to such restrictions and conditions imposed under the deeds.
1925	26	An Act Relative To The Powers Of The County Commissioners Of Middlesex County, Acting As The Walden Pond State Reservation Commission.	Authorized the Walden Pond State Reservation Commission to make rules and regulations regarding the “government and use of” Walden Pond State Reservation.
1925	163	An Act Authorizing The Walden Pond State Reservation Commission To Acquire From The Boston And Maine Railroad Certain Land In The Town Of Concord Adjacent To The Walden Pond State Reservation.	Authorized Middlesex County to acquire a piece of land owned by the Boston and Maine Railroad Company for \$200, for the purposes of adding to Walden Pond State Reservation. The act required that title to the land remain with the Commonwealth of Massachusetts.
1932	137	An Act Authorizing The County Of Middlesex To Pay Compensation For The Death Of John F. Weber, Caused By An Employee At The Walden Pond State Reservation.	Authorized the county of Middlesex to pay the parents of a minor who was accidentally killed by a motor boat operated by a county employee.
1945	123	An Act Relative To The Powers Of The County Commissioners Of Middlesex County, Acting As The Walden Pond State Reservation Commission.	Granted the Walden Pond State Commission certain powers to regulate the Reservation, including the ability to regulate motor boats and sail boats, and required the Commission to provide “reasonable access” for boats and canoes for use for fishing.
1946	50	An Act Authorizing The County Commissioners Of Middlesex County, Acting As The Walden Pond State Reservation Commission, To Appoint Police Officers For The Walden Pond State Reservation.	Authorized Middlesex County to appoint police officers for Walden Pond State Reservation.
1947	389	An Act Providing For Additional Toilets And For A Sewage Disposal System For The Walden Pond State Reservation.	Allowed Middlesex County to acquire land, by eminent domain or purchase, for the purposes of providing additional toilets or a sewage disposal system; and authorized the County to borrow no more than \$60,000 and issue bonds to do so.
1948	18	An Act Increasing The Amount That May Be Borrowed And Expended In Providing For Additional Toilets And For A Sewage Disposal System For The Walden Pond State Reservation.	Increased the borrowing limit referenced in Chapter 389 of the Acts of 1947 to \$100,000.
1949	17	An Act Authorizing The County Commissioners Of The County Of Middlesex To Provide Additional Beach Facilities At The Walden Pond State Reservation.	Authorized construction of additional beach front, and appropriated \$25,000 for these purposes.
1949	20	An Act Relative To Regulating The Parking Of Motor Vehicles At The Walden Pond State Reservation.	Allowed the Middlesex County to make regulations for regulating parking between Baker Bridge Road in Lincoln and Route 2 in Concord, to be enforced by the police officers referenced in Chapter 50 of the Acts of 1946.

Continued on next page.

Appendix E. Select Acts of the Massachusetts Legislature that Directly Address the Walden Planning Unit.^a (Continued)

Year	Chapter	Title	Comments
1955	566	An Act Relative To Walden Pond State Reservation.	Authorized and directed the Massachusetts Department of Natural Resources to acquire “that portion of land adjacent to Walden Pond State Reservation lying between said Reservation, highway Route 2, and the Boston and Maine railroad”; and authorized the Department of Natural Resources to accept a gift of 50 acres adjoining the Reservation from Raymond Emerson.
1956	554	An Act Authorizing The Department Of Natural Resources To Acquire Certain Land For The Purpose Of Enlarging Walden Pond State Reservation.	Authorized and directed the Massachusetts Department of Natural Resources to acquire by deed or to take by eminent domain, land adjacent to the Walden Pond State Reservation on the northeasterly side of highway Route 126 and such other land as may be necessary to provide for safer and more orderly use and enjoyment of said Reservation by the public.
1957	380	An Act Authorizing The County Commissioners Of County Of Middlesex To Provide Additional Beach Facilities And Improvements At The Walden Pond State Reservation.	Authorized the Middlesex County Commissioners to provide additional beach facilities and improvements at the Walden Pond State Reservation, and included an appropriation of \$50,000 for such purpose.
1960	726	An Act Authorizing The Department Of Natural Resources To Acquire Certain Land For The Purpose Of Enlarging Walden Pond State Reservation.	Authorized the Massachusetts Department of Natural Resources to acquire a 25 acre parcel in Lincoln and Concord to enlarge Walden Pond State Reservation.
1964	503	An Act Authorizing The Department Of Natural Resources To Sell Or Exchange Certain Land Acquired For The Purpose Of Enlarging Walden Pond State Reservation.	Authorized the Massachusetts Department of Natural Resources, with the approval of the governor and council, sell or exchange any land acquired under Chapter 726 of the Acts of 1960 which in the judgment of the commissioner of natural resources can no longer be advantageously used for the purpose of enlarging Walden Pond State Reservation.
1966	35	An Act Authorizing the Town of Concord to Acquire Land in the Town of Lincoln for Reservoir Purposes and Curtailing the Rights of the Town of Concord to Draw from the Waters of Sandy Pond for Municipal Water Supply Purposes.	Authorized the town of Concord to take land by eminent domain for the construction of a subsurface water reservoir on top of Pine Hill, and take or acquires rights and easements to install, repair, replace, renew, and maintain water rights, pipes, conduits, and other related equipment in and over land in the town of Lincoln.
1969	704	An Act Establishing A Governor's Cabinet.	Created the Executive Office of Environmental Affairs and placed the Walden Pond State Reservation Commission, established under Chapter 499 of the Acts of 1922 under control of the Massachusetts Department of Natural Resources.
1974	638	An Act Abolishing The Walden Pond State Reservation Commission And Transferring The Care And Maintenance Of The Walden Pond State Reservation To The Department Of Natural Resources.	This act abolished the Walden Pond State Reservation Commission, and transferred care and control of the Reservation from the Middlesex County Commissioners to the Massachusetts Department of Natural Resources. The Act also created a Board of Directors for Walden Board, consisting of seven residents of Middlesex County to advise Department of Natural Resources on the “care, maintenance, development, and use of Walden Pond.”
1974	806	An Act Establishing An Executive Office Of Environmental Affairs.	Repealed Chapter 499 of the Acts of 1922, and transferred Walden Pond State Reservation to the newly-formed Department of Environmental Management.
1980	578	An Act Providing For A Capital Outlay Program For The Commonwealth.	Appropriated \$600,000 for the construction of a bathhouse and development of a natural area for picnicking and for site development and establishment of a path system at Walden Pond State Reservation.

a. Does not include legislation that contains annual appropriations for Walden Pond State Reservation related to maintenance and operations.

Appendix F. Plants of the Walden Planning Unit.

The following plants have been identified from previous inventories in the Walden Planning Unit. The sequence of plants is presented alphabetically by family and scientific name. Taxonomy and common names follow United States Department of Agriculture (USDA 2011). Note this list is not intended to constitute a comprehensive inventory of plants within the Walden Planning Unit.

Family	Common Name	Scientific Name	MESA ^a	Invasive ^b	Source ^c
Aceraceae	Boxelder	<i>Acer negundo</i>			2
Maple Family	Red maple	<i>Acer rubrum</i>			1, 2, 5, 6
	Silver maple	<i>Acer saccharinum</i>			5
	Sugar maple	<i>Acer saccharum</i>			1, 2
Anacardiaceae	Winged sumac	<i>Rhus copallina</i>			6
Sumac Family	Smooth sumac	<i>Rhus glabra</i>			1
	Staghorn sumac	<i>Rhus typhina</i>			1, 2
	Eastern poison ivy	<i>Toxicodendron radicans</i>			1, 2
Araliaceae	Wild sarsaparilla	<i>Aralia nudicaulis</i>			1, 2
Ginseng Family					
Asclepiadaceae	Common milkweed	<i>Asclepias syriaca</i>			1, 2
Milkweed Family	Black swallow-wort	<i>Cynanchum louiseae</i>		I	2
Asteraceae	Common yarrow	<i>Achillea millefolium</i>			6
Aster Family	Field pussytoes	<i>Antennaria neglecta</i>			1
	Annual ragweed	<i>Ambrosia artemisiifolia</i>			1, 2, 6
	Common wormwood	<i>Artemisia vulgaris</i>			2, 6
	Smooth blue aster	<i>Aster laevis</i>			6
	Common boneset	<i>Eupatorium perfoliatum</i>			2, 5
	Spotted Joe pye weed	<i>Eutrochium maculatum</i>			2, 5
	Flat-top goldenrod	<i>Euthamia graminifolia</i>			2, 5
	Goldenrod	<i>Solidago</i>			1, 2, 6
	Rough goldenrod	<i>Solidago rugosa</i>			2, 5
	Slender fragrant goldenrod	<i>Solidago tenuifolia</i>			5
Baselinaceae	Jewelweed	<i>Impatiens capensis</i>			2, 5
Touch-Me-Not Family					
Berberidaceae	Japanese barberry	<i>Berberis thunbergii</i>		I	2, 4
Barberry Family					
Betulaceae	Speckled alder	<i>Alnus incana</i> ssp. <i>rugosa</i>			1, 2
Birch Family	Hazel alder	<i>Alnus serrulata</i>			1, 5
	White birch	<i>Betula alba</i>			2, 5, 6
	Yellow birch	<i>Betula alleghaniensis</i>			1, 2, 5
	Sweet birch	<i>Betula lenta</i>			1, 2, 5
	Paper birch	<i>Betula papyrifera</i>			1, 2
	Gray birch	<i>Betula populifolia</i>			1, 2, 5, 6
	American hazelnut	<i>Corylus americana</i>			1, 2
Caprifoliaceae	Northern bush honeysuckle	<i>Diervilla lonicera</i>			1
Honeysuckle Family	Morrow's honeysuckle	<i>Lonicera morrowii</i>		I	1, 2, 6
	Witherod	<i>Viburnum nudum</i> var. <i>cassinoides</i>			1
	Southern arrowwood	<i>Viburnum recognitum</i>			1, 2

Continued on next page.

Appendix F. Plants of the Walden Planning Unit. (Continued)

Family	Common Name	Scientific Name	MESA ^a	Invasive ^b	Source ^c
Celastraceae	Asiatic bittersweet	<i>Celastrus orbiculatus</i>		I	2, 4
Bittersweet Family	Winter creeper	<i>Euonymus fortunei</i>			7
Chenopodiaceae	Lambsquarters	<i>Chenopodium album</i>			6
Goosefoot Family					
Clethraceae	Coastal sweetpepperbush	<i>Clethra alnifolia</i>			1, 2, 5
Clethra Family					
Clusiaceae	Marsh St. Johnswort	<i>Triadenum virginicum</i>			5
Mangosteen family	Common St. Johnswort	<i>Hypericum perforatum</i>			6
Cornaceae	Alternatleaf dogwood	<i>Cornus alternifolia</i>			1
Dogwood Family	Silky dogwood	<i>Cornus amomum</i>			1, 2
	Bunchberry dogwood	<i>Cornus canadensis</i>			1
	Gray dogwood	<i>Cornus racemosa</i>			1, 2
	Redosier dogwood	<i>Cornus sericea</i>			2
	Black tupelo	<i>Nyssa sylvatica</i>			1
Cupressaceae	Eastern white cedar	<i>Chamaecyparis thyoides</i>			1, 21
Cypress Family	Common juniper	<i>Juniperus communis</i>			1
	Red cedar	<i>Juniperus virginiana</i>			1, 6
Cyperaceae	Sedge	<i>Carex</i> spp.			1, 2
Sedge Family	Broom sedge	<i>Carex scoparia</i>			2, 6
	Strawcolored flatsedge	<i>Cyperus strigosus</i>			2, 5
	Longbeaked bald-sedge	<i>Rhynchospora scirpoides</i>	X		8
	Wool grass	<i>Scirpus cyperinus</i>			2, 5
Dennstaedtiaceae	Brackenfern	<i>Pteridium aquilinum</i>			1, 2
Bracken Fern Family					
Dryopteridaceae	Sensitive fern	<i>Onoclea sensibilis</i>			2, 5
Wood Fern family					
Elaeagnaceae	Autumn olive	<i>Elaeagnus umbellata</i>		I	2
Oleaster family					
Ericaceae	Trailing arbutus	<i>Epigaea repens</i>			2
Heath Family	Black huckleberry	<i>Gaylussacia baccata</i>			1, 2, 6
	Sheep laurel	<i>Kalmia angustifolia</i>			1, 2
	Maleberry	<i>Lyonia lingustrina</i>			1
	Rhodora	<i>Rhododendron canadense</i>			2
	Pink azalea	<i>Rhododendron periclymenoides</i>			2
	Swamp azalea	<i>Rhododendron viscosum</i>			1
	Lowbush blueberry	<i>Vaccinium angustifolium</i>			1, 2, 5
	Black highbush blueberry	<i>Vaccinium atrococcum</i>			1
	Highbush blueberry	<i>Vaccinium corymbosum</i>			1, 2, 5
	Blue Ridge blueberry	<i>Vaccinium pallidum</i>			1, 6
Fabaceae	Black locust	<i>Robinia pseudoacacia</i>			1, 2
Pea Family	Groundnut	<i>Apios americana</i>			1
	Bird's-foot trefoil	<i>Lotus corniculatus</i>			2, 6
	Field clover	<i>Trifolium campestre</i>			2

Continued on next page.

Appendix F. Plants of the Walden Planning Unit. (Continued)

Family	Common Name	Scientific Name	MESA ^a	Invasive ^b	Source ^c
Fabaceae	White clover	<i>Trifolium repens</i>			1, 2
Pea Family (continued)	Bird vetch	<i>Vicia cracca</i>			1, 2, 6
Fagaceae	American chestnut	<i>Castanea dentata</i>			1, 2, 5
Beech Family	White oak	<i>Quercus alba</i>			1, 2, 6
	Scarlet oak	<i>Quercus coccinea</i>			1, 2
	Northern red oak	<i>Quercus rubra</i>			1, 2, 5
	Black oak	<i>Quercus velutina</i>			1, 2, 6
Hamamelidaceae	American witchhazel	<i>Hamamelis virginia</i>			1, 2
Witch-hazel Family					
Isoetaceae	Acadian quillwort	<i>Isoetes acadiensis</i>	E		3
Quillwort Family	Lake quillwort	<i>Isoetes lacustris</i>	E		3
Juglandaceae	Mockernut hickory	<i>Carya alba</i>			1
Walnut Family	Pignut hickory	<i>Carya glabra</i>			1, 2, 6
Juncaceae	Soft rush	<i>Juncus effusus</i>			5
Rush Family					
Lamiaceae	American water horehound	<i>Lycopus americanus</i>			5
Mint family					
Lauraceae	Sassafras	<i>Sassafras albidum</i>			1, 2
Laurel Family					
Lentibulariaceae	Common bladderwort	<i>Utricularia macrorrhiza</i>			1
Bladderwort Family					
Liliaceae	Canada mayflower	<i>Maianthemum canadense</i>			1, 2
Lily Family					
Lythraceae	Purple loosestrife	<i>Lythrum salicaria</i>		I	2, 4, 5
Loosestrife Family					
Monotropaceae	Indian pipe	<i>Monotropa uniflora</i>			2
Indian Pipe Family					
Myricaceae	Sweet fern	<i>Comptonia peregrina</i>			1, 2, 6
Bayberry Family	Northern bayberry	<i>Morella pensylvanica</i>			2
Oleaceae	White ash	<i>Fraxinus americana</i>			1, 2
Olive Family					
Onagraceae	Common evening primrose	<i>Oenothera biennis</i>			1, 2
Evening Primrose Family					
Orchidaceae	Moccasin flower	<i>Cypripedium acaule</i>			1
Orchid Family					
Orobanchaceae	Oneflowered broomrape	<i>Orobanche uniflora</i>			2
Broom-rape Family					

Continued on next page.

Appendix F. Plants of the Walden Planning Unit. (Continued)

Family	Common Name	Scientific Name	MESA ^a	Invasive ^b	Source ^c
Oxalidaceae Wood-Sorrel Family	Common yellow oxalis	<i>Oxalis stricta</i>			5, 6
Pinaceae Pine Family	Tamarack	<i>Larix laricina</i>			1, 2
	Pitch pine	<i>Pinus rigida</i>			1, 2, 6
	Eastern white pine	<i>Pinus strobus</i>			1, 2, 5, 6
	Eastern hemlock	<i>Tsuga canadensis</i>			1, 2, 5
Plantaginaceae Plantain Family	Common plantain	<i>Plantago major</i>			1, 2
Poaceae Grass Family	Poverty oatgrass	<i>Danthonia spicata</i>			6
	Meadow fescue	<i>Schedonorus pratensis</i>			6
	Little bluestem	<i>Schizachyrium scoparium</i>			6
	Panicgrass	<i>Panicum sp.</i>			2
Polygonaceae Buckwheat Family	Japanese knotweed	<i>Polygonum cuspidatum</i>		I	2
	Dock	<i>Rumex sp.</i>			1, 2
Pyrolaceae Shinleaf Family	American wintergreen	<i>Pyrola americana</i>			1, 2
	Waxflower shinleaf	<i>Pyrola elliptica</i>			2
Rhamnaceae Buckthorn Family	New Jersey tea	<i>Ceanothus americanus</i>			1
	Striped prince's pine	<i>Chimaphila maculata</i>			2
	Glossy buckthorn	<i>Frangula alnus</i>		I	1, 2, 5, 6
	Common buckthorn	<i>Rhamnus cathartica</i>		I	1, 2, 6
Rosaceae Rose Family	Common serviceberry	<i>Amelanchier arborea</i>			2
	Canadian serviceberry	<i>Amelanchier canadensis</i>			1
	Allegheny serviceberry	<i>Amelanchier laevis</i>			1
	Hawthorn	<i>Crataegus sp.</i>			1, 6
	Apple	<i>Malus sp.</i>			2, 6
	Red chokeberry	<i>Photonia pyrifolia</i>			1
	Pin cherry	<i>Prunus pensylvanica</i>			2
	Black cherry	<i>Prunus serotina</i>			1, 2, 5
	Multiflora rose	<i>Rosa multiflora</i>		I	2, 6
	Bristly dewberry	<i>Rubus hispidus</i>			1
	American red raspberry	<i>Rubus idaeus</i>			1
	Black raspberry	<i>Rubus occidentalis</i>			1, 2
	Allegheny blackberry	<i>Rubus allegheniensis</i>			2, 6
	Pennsylvania blackberry	<i>Rubus pensilvanicus</i>			1
	White meadowsweet	<i>Spiraea alba</i> var. <i>latifolia</i>			1
	Steeplebush	<i>Spiraea tomentosa</i>			1, 5
Rubiaceae Madder Family	Azure bluets	<i>Houstonia caerulea</i>			1
	Common buttonbush	<i>Cephalanthus occidentalis</i>			1, 5
	Partridgeberry	<i>Mitchella repens</i>			2
Salicaceae Willow Family	Cottonwood	<i>Populus deltoids</i>			5, 6
	Bigtooth aspen	<i>Populus grandidentata</i>			1, 2, 6
	Willow	<i>Salix sp.</i>			5

Continued on next page.

Appendix F. Plants of the Walden Planning Unit. (Continued)

Family	Common Name	Scientific Name	MESA ^a	Invasive ^b	Source ^c
Scrophulariaceae Figwort Family	Smooth yellow false foxglove	<i>Gerardia flava</i>			2
	Butter and eggs	<i>Linaria vulgaris</i>			2
	Common mullein	<i>Verbascum thapsus</i>			1, 2
Simaroubaceae Quassia Family	Tree of Heaven	<i>Ailanthus altissima</i>		I	2
Solanaceae Potato Family	Climbing nightshade	<i>Solanum dulcamara</i>			1
Thelypteris Marsh Fern Family	Eastern marsh fern	<i>Thelypteris palustris</i>			5
Typhaceae Cat Tail Family	Broadleaf cattail	<i>Typha latifolia</i>			2, 5, 6
Ulmaceae Elm Family	American elm	<i>Ulmus americana</i>			1, 2, 6
Vitaceae	Virginia creeper	<i>Parthenocissus quinquefolia</i>			1, 2
Grape Family	Fox grape	<i>Vitis labrusca</i>			1, 2
	Riverbank grape	<i>Vitis riparia</i>			1

a. Status of plants listed under the Massachusetts Endangered Species Act (MESA): E = Endangered; T = Threatened; and SC = Species of Special Concern.

b. These species have been evaluated by the Massachusetts Invasive Plant Advisory Group (MIPAG 2005) and determined to be invasive (I) or likely invasive (L).

c. Information in the Source field was compiled/collected from the following sources:

1. The list reflects information provided in the 1993 Walden Pond Goals Plan (DEM). Inventory relates to species near Walden Pond, or were planted during bank restoration projects.
2. BSC Group, 2011. Noted on field visits between April 2011 and 2012 during site visit.
3. NHESP, 2011.
4. Conway School of Landscape Design, 2009.
5. Baystate Consulting Group, 1995.
6. Mass Audubon, 2000.
7. Palmer, 2011.
8. NHESP, 2013.

Appendix G. Overview of the DCR RMP Program Coordination Process with the Massachusetts Natural Heritage and Endangered Species Program (NHESP).

A. Background. Since its inception, the DCR's RMP Program has actively sought and applied the expertise of the NHESP. In 2006, the NHESP and DCR established the Biodiversity Stewardship Project. The main purposes of this project were to:

- a. Develop a process by which the two agencies would work together to facilitate NHESP delivery of biodiversity information and provision of management recommendations for RMPs; and
- b. Guide DCR land managers in the on-site management of rare species habitat.

Between 2006 and 2008 the NHESP prepared 10 biodiversity assessments covering 17 DCR properties (Table 1). Information from available biodiversity assessments has informed the Existing Conditions and Recommendations sections of RMPs already adopted by the DCR Stewardship Council and has resulted in appropriate management recommendations for rare species. Information from the remaining biodiversity assessments will be used to inform future RMPs. The NHESP continues to provide guidance to the RMP Program and in 2009, the DCR and NHESP worked together to identify the actual and potential impacts of the DCR's trails and trail maintenance activities on rare species and their habitats. In addition, the NHESP informs and reviews RMPs on an ongoing basis.

Table 1. NHESP biodiversity assessments and reports prepared for the RMP Program.

<i>Biodiversity Assessments and Reports</i>	<i>Date</i>
Biodiversity Stewardship initiative: biodiversity data products and technical assistance for managing Massachusetts' forests, parks & reservations. Final report of the FY06 pilot project. [Includes Horseneck Beach State Reservation and Mohawk Trail State Forest]	2006
Biodiversity of Blue Hills Reservation	2007
Biodiversity of J. A. Skinner and Holyoke Range State Parks	2007
Biodiversity of Mt. Tom State Reservation and adjacent conservation lands	2007
Biodiversity of Mt. Sugarloaf State Reservation	2007
Biodiversity of Myles Standish State Forest	2007
Biodiversity of Lower Spectacle Pond, Sandisfield	2008
Biodiversity of Nickerson State Park and Hawksnest State Park	2008
Biodiversity of Bash Bish Falls State Park, Jug End State Reservation, Mt. Everett State Reservation, and Mt. Washington State Forest	2008
Biodiversity of Gilbert A. Bliss State Forest	2008
Recreational trail maintenance and biodiversity conservation. June 30, 2009	2009
Middlesex Fells Reservation: field surveys 2011. Prepared by the NHESP for Massachusetts Department of Conservation and Recreation. June 30, 2011	2011
Recreational Trail Maintenance and Biodiversity Conservation: Selected DCR Urban Parks. July 30, 2012	2012

B. Ongoing Coordination and Review. The DCR follows a standard approach to coordinate the preparation and review of RMPs with the NHESP. This approach may be modified in response to the particular circumstances associated with each RMP. This approach includes:

1. **Staff Coordination.** The NHESP has designated an official point of contact for RMPs and it is through this contact that all subsequent interaction with NHESP is coordinated.
2. **Advance Notice.** The DCR provides NHESP with a list of current and upcoming RMPs.
3. **Data Request.** Up to date information is formally requested by the DCR at the start of the planning process.
4. **Consultation.** Informal consultation regarding interpretation of data provided by the NHESP may occur following NHESP's response to data request.

5. **Application of Other NHESP Data.** Information and recommendations contained in biodiversity assessments, if applicable, are incorporated into the draft RMP early in the writing process.
6. **Formal Draft RMP Submission to the NHESP.** The draft RMP is submitted to the NHESP for formal review under the Massachusetts Endangered Species Act (MESA). This is done before a draft plan is released to the public.
7. **Response to Comments.** The NHESP provides comment letters on the draft RMP that distinguish between what must be done (i.e., actions required for compliance under MESA) and additional actions that may be taken to enhance rare species populations and habitats. As a rule, both types of recommendations are added to the revised draft. (*Note:* because the NHESP's recommendations are incorporated into RMPs, each RMP contains a *de facto* management strategy and guidance for all state-listed species within a planning unit.)
8. **Additional Coordination.** The NHESP is frequently consulted, in their roles as both regulator and subject matter experts, to discuss other (i.e., non-NHESP) rare species-related comments.

C. DCR-NHESP Coordination for the Walden Planning Unit RMP. Included in this appendix is a copy of the final official comment letter from the NHESP on the Draft Walden Planning Unit RMP. The observations, comments, and recommendations provided therein were presented to the DCR throughout the RMP development process and, as such, this RMP has already been edited and modified to account for the input provided by the NHESP.



Commonwealth of Massachusetts

Division of Fisheries & Wildlife

Wayne F. MacCallum, *Director*

May 24, 2011

David Cowell
BSC Group, Inc.
33 Waldo Street
Worcester MA 01608

RE: Project Location: Walden Pond Resource Management Plan
Town: CONCORD, LINCOLN
NHESP Tracking No.: 11-29613

To Whom It May Concern:

Thank you for contacting the Natural Heritage and Endangered Species Program ("NHESP") of the MA Division of Fisheries & Wildlife for information regarding state-listed rare species in the vicinity of the above referenced site. Based on the information provided, this project site, or a portion thereof, is located within Priority Habitat 1267 (PH 1267) as indicated in the *Massachusetts Natural Heritage Atlas* (13th Edition). Our database indicates that the following state-listed rare species have been found in the vicinity of the site:

<u>Scientific name</u>	<u>Common Name</u>	<u>Taxonomic Group</u>	<u>State Status</u>
<i>Isoetes acadensis</i>	Acadian Quillwort	Plant	Endangered
<i>Isoetes lacustris</i>	Lake Quillwort	Plant	Endangered

The species listed above is/are protected under the Massachusetts Endangered Species Act (MESA) (M.G.L. c. 131A) and its implementing regulations (321 CMR 10.00). State-listed wildlife are also protected under the state's Wetlands Protection Act (WPA) (M.G.L. c. 131, s. 40) and its implementing regulations (310 CMR 10.00). Fact sheets for most state-listed rare species can be found on our website (www.nhesp.org).

This evaluation is based on the most recent information available in the NHESP database, which is constantly being expanded and updated through ongoing research and inventory. If you have any questions regarding this letter please contact Amanda Veinotte, Regulatory Review Administrator, at (508) 389-6380.

Sincerely,

Thomas W. French, Ph.D.
Assistant Director

www.masswildlife.org

Division of Fisheries and Wildlife
Field Headquarters, North Drive, Westborough, MA 01581 (508) 389-6300 Fax (508) 389-7891
An Agency of the Department of Fish and Game



Division of Fisheries & Wildlife

Wayne F. MacCallum, *Director*

January 7, 2013

Nathaniel Tipton, MEPA Review Coordinator/Resource Mgmt. Planner
Massachusetts Department of Conservation and Recreation
251 Causeway Street, Suite 600
Boston, MA 02114

RE: Draft *Walden Planning Unit Resource Management Plan*

Dear Mr. Tipton:

The Massachusetts Natural Heritage & Endangered Species Program (NHESP) is pleased to offer comments on the December 7, 2012, draft of the *Walden Planning Unit Resource Management Plan*. In general, we support the Resource Management Plan as written, excepting a few minor concerns, and we appreciate DCR's attention to rare species issues. Our concerns are noted below, by page number of the draft.

2.5 Natural Resources

Page 15: There is now one more MESA-listed rare species documented at Walden Pond State Reservation: Long-beaked Bald-sedge (*Rhynchospora scirpoides*, Special Concern). This species was observed at Goose Pond in 2002, but the record was not submitted and approved by NHESP until 2012 (which probably explains why DCR was not aware of this rare species occurrence). Long-beaked Bald-sedge is an annual sedge that is usually associated with coastal plain pond shores in Massachusetts. The Goose Pond occurrence is disjunct from the rest of the known sites for this plant in the state; all other current records of this species in Massachusetts are in Plymouth and Barnstable Counties. Threats to this plant include development, trampling, and changes in water quality and quantity. DCR's plans for Goose Pond as outlined in the draft RMP do not appear to pose any threat to this sedge. A NHESP fact sheet on this plant can be found here:
http://www.mass.gov/dfwele/dfw/nhesp/species_info/nhfacts/rhysci.pdf

Page 17: While Northern Parula, Common Loon, and Northern Harrier are indeed all listed under MESA, NHESP only regulates breeding occurrences of these birds. It seems likely that these three have been identified on the Reservation or in the general area as migrants, not as breeding pairs. Furthermore, it is very unlikely that any of these would ever breed on the Reservation, although Northern Parula could feed there while migrating and Common Loons and Northern Harriers could be seen passing overhead during migration.

3.2 Management Practices

Page 40: NHESP recommends that DCR constrain annual additions of sand to Walden Pond to the existing beaches and to the minimum necessary to maintain the beaches in suitable condition for swimming. Excessive sand could smother the small, submerged plants of Lake Quillwort and Acadian Quillwort and cause a direct "take" of these MESA-protected species.

www.nhesp.org

Natural Heritage & Endangered Species Program

100 Hartwell Street, Suite 230, West Boylston, MA 01583 Tel: (508) 389-6360 Fax: (508) 389-7890

Help Save Endangered Wildlife!

Contribute to the Natural Heritage & Endangered Species Fund.

4.2 Landscape Designation

Page 52: NHESP agrees with DCR's designation of Walden Pond State Reservation as Parkland.

4.3 Land Stewardship Zoning

Page 54: NHESP agrees with DCR's recommendations for the placement of Zones 1, 2, and 3 at Walden Pond, but we recommend that an area around Goose Pond be designated a Significant Feature Overlay, because of the presence of Long-beaked Bald-sedge. Attached is a map showing our recommendation for that additional overlay area, along with GIS files for the overlay.

Table 4.4.1 Recommendations for Walden planning unit-wide resources

Page 58, Goal 4: NHESP agrees with DCR's recommendations towards Goal 4. Additional recommendations, if practicable, could include the following:

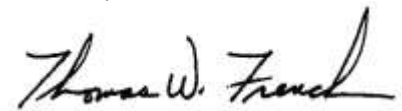
- Construction of a wash station (hose and gravel pad) to clean boats and waders of potential aquatic invasives before the equipment is used in the pond.
- Implementation of a swimmer education program, "Don't Pee in the Pond," to help prevent some of the nutrient-overload issues.
- Use of portable toilets directly adjacent to the pond, also to help reduce nutrient issues.
- Survey of Goose Pond for invasive plants, at the same time Walden Pond is surveyed.

Appendix H: Mammals of the DCR Walden Planning Unit

Page 77: Note that Eastern Pipistrelle (now called Tricolored Bat), Little Brown Myotis, and Northern Myotis (also called Northern Long-eared Bat) are all now listed as Endangered under MESA, as these species have been drastically and rapidly reduced in numbers by the white-nose syndrome fungus.

Thank you for allowing NHESP the opportunity to comment on the draft Resource Management Plan. If you have any questions regarding our comments, please contact Lynn Harper, Habitat Protection Specialist, in our West Boylston office at 508-389-6351.

Sincerely,



Thomas W. French, Ph.D.
Assistant Director
Natural Heritage & Endangered Species Program

Appendix H. Birds of the Walden Planning Unit.

This list includes species observed or may occur on the Walden Planning Unit. Family, common, and scientific names and the sequence in which they are presented follow American Ornithologists Union (2011).

Family	Common Name	Scientific Name	MESA ^a	Source ^b	BBA ^c
Anatidae	Canada goose	<i>Branta canadensis</i>		1	X
Geese, Swans, and Ducks	Mute swan	<i>Cygnus olor</i>			X
	Wood duck	<i>Aix sponsa</i>			X
	American black duck ^d	<i>Anas rubripes</i>			X
	Mallard	<i>Anas platyrhynchos</i>		1, 2, 3	X
Phasianidae	Wild turkey	<i>Meleagris gallopavo</i>		2	X
Pheasants and Turkeys					
Gaviidae	Common loon ^d	<i>Gavia immer</i>	SC		X
Loons					
Phalacrocoracidae	Double-crested cormorant	<i>Phalacrocorax auritus</i>			X
Cormorants					
Ardeidae	Great blue heron	<i>Ardea herodias</i>			X
Bitterns and Herons	Great egret	<i>Ardea alba</i>			X
	Green heron ^d	<i>Butorides virescens</i>			X
Cathartidae	Turkey vulture	<i>Cathartes aura</i>			X
American Vultures					
Pandionidae	Osprey	<i>Pandion haliaetus</i>			X
Osprey					
Accipitridae	Northern harrier ^d	<i>Circus cyaneus</i>	T		X
Kites, Eagles, Hawks, and Harriers	Cooper's hawk	<i>Accipiter cooperii</i>			X
	Broad-winged hawk ^d	<i>Buteo platypterus</i>			X
	Red-tailed hawk	<i>Buteo jamaicensis</i>		1, 3	X
Rallidae	Virginia rail	<i>Rallus limicola</i>			X
Rails, Gallinules, and Coots					
Charadriidae	Killdeer	<i>Charadrius vociferus</i>			X
Plovers and Lapwings					
Scolopacidae	Spotted sandpiper	<i>Actitis macularius</i>		3	X
Sandpipers and Allies	American woodcock ^d	<i>Scolopax minor</i>			X
Columbidae	Rock pigeon	<i>Columba livia</i>		1	X
Pigeons and Doves	Mourning dove	<i>Zenaida macroura</i>		1, 3	X
Cuculidae	Black-billed cuckoo	<i>Coccyzus erythrophthalmus</i>			X
Cuckoos and Allies	Yellow-billed cuckoo	<i>Coccyzus americanus</i>			X
Strigidae	Eastern screech-owl	<i>Megascops asio</i>			X
Typical Owls	Great horned owl	<i>Bubo virginianus</i>			X
	Barred owl	<i>Strix varia</i>			X
Apodidae	Chimney swift	<i>Chaetura pelagica</i>		3	X
Swifts					
Trochilidae	Ruby-throated hummingbird	<i>Archilochus colubris</i>			X
Hummingbirds					
Alcedinidae	Belted kingfisher	<i>Megasceryle alcyon</i>		1	X
Kingfishers					
Picidae	Red-bellied woodpecker	<i>Melanerpes carolinus</i>		1	X
Woodpeckers	Downy woodpecker	<i>Picoides pubescens</i>		1, 3	X

Continued on next page.

Appendix H. Birds of the Walden Planning Unit. (Continued)

Family	Common Name	Scientific Name	MESA ^a	Source ^b	BBA ^c
Picidae	Hairy woodpecker	<i>Picoides villosus</i>			X
Woodpeckers (continued)	Northern flicker	<i>Colaptes auratus</i>		1, 3	X
	Pileated woodpecker	<i>Dryocopus pileatus</i>			X
Tyrannidae					
Tyrant Flycatchers	Eastern wood-pewee	<i>Contopus virens</i>		3	X
	Willow flycatcher ^d	<i>Empidonax traillii</i>			
	Eastern phoebe	<i>Sayornis phoebe</i>		2	X
	Great crested flycatcher	<i>Myiarchus crinitus</i>			X
	Eastern kingbird	<i>Tyrannus tyrannus</i>		3	
Vireonidae	Yellow-throated vireo	<i>Vireo flavifrons</i>			
Vireos	Warbling vireo	<i>Vireo gilvus</i>		3	X
	Red-eyed vireo	<i>Vireo olivaceus</i>		3	X
Corvidae	Blue jay	<i>Cyanocitta cristata</i>		1, 3	X
Jays, Magpies, and Crows	American crow	<i>Corvus brachyrhynchos</i>		1, 3	X
Hirundinidae	Tree swallow	<i>Tachycineta bicolor</i>		1, 3	X
Swallows	Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>		3	X
	Barn swallow	<i>Hirundo rustica</i>		3	X
	Cliff swallow	<i>Petrochelidon pyrrhonota</i>			X
	Bank swallow	<i>Riparia riparia</i>		3	
Paridae	Black-capped chickadee	<i>Poecile atricapillus</i>		1, 3	X
Titmice	Tufted titmouse	<i>Baeolophus bicolor</i>		1, 3	X
Sittidae	Red-breasted nuthatch	<i>Sitta canadensis</i>		3	X
Nuthatches	White-breasted nuthatch	<i>Sitta carolinensis</i>		1, 3	X
Certhiidae	Brown creeper	<i>Certhia americana</i>			X
Creepers					
Troglodytidae	Carolina wren	<i>Thryothorus ludovicianus</i>			X
Wrens	House wren	<i>Troglodytes aedon</i>			X
	Winter wren	<i>Troglodytes hiemalis</i>			X
Regulidae	Golden-crowned kinglet	<i>Regulus satrapa</i>		3	
Kinglets					
Silviidae	Blue-gray gnatcatcher	<i>Poliophtila caerulea</i>			X
Gnatcatchers					
Turdidae	Eastern bluebird	<i>Sialis sialis</i>			X
Bluebirds and Thrushes	Veery	<i>Catharus fuscescens</i>			X
	Hermit thrush	<i>Catharus guttatus</i>		3	X
	Wood thrush ^d	<i>Hylocichla mustelina</i>			X
	American robin	<i>Turdus migratorius</i>		1	X
Mimidae	Gray catbird	<i>Dumetella carolinensis</i>		1, 3	X
Mimic Thrushes	Northern mockingbird	<i>Mimus polyglottos</i>		1, 3	X
Sturnidae	European starling	<i>Sturnis vulgaris</i>		1, 3	X
Starlings					
Bombycillidae	Cedar waxwing	<i>Bombycilla cedrorum</i>		3	X
Waxwings					
Parulidae	Blue-winged warbler ^d	<i>Vermivora cyanoptera</i>			X
Wood Warblers	Northern parula ^c	<i>Parula americana</i>	T		X

Continued on next page.

Appendix H. Birds of the Walden Planning Unit. (Continued)

Family	Common Name	Scientific Name	MESA ^a	Source ^b	BBA ^c
Parulidae	Yellow warbler	<i>Dendroica petechia</i>		1	X
Wood Warblers (continued)	Yellow-rumped warbler	<i>Dendroica coronata</i>		1	
	Black-throated green warbler	<i>Dendroica virens</i>			X
	Yellow-throated warbler	<i>Dendroica dominica</i>			X
	Pine warbler	<i>Dendroica pinus</i>		1, 3	X
	Palm warbler	<i>Dendroica palmarum</i>		1	X
	American redstart	<i>Setophaga ruticilla</i>			X
	Ovenbird	<i>Seiurus aurocapilla</i>		3	X
	Northern waterthrush	<i>Parkesia noveboracensis</i>			X
	Common yellowthroat	<i>Geothlypis trichas</i>			X
	Canada warbler ^d	<i>Wilsonia canadensis</i>			X
Emberizidae	Eastern towhee ^d	<i>Pipilo erythrophthalmus</i>		3	X
Towhees, Sparrows, and Allies	Chipping sparrow	<i>Spizella passerina</i>		1	X
	Field sparrow ^d	<i>Spizella pusilla</i>		3	X
	Savannah sparrow	<i>Passerculus sandwichensis</i>		3	X
	Song sparrow	<i>Melospiza melodia</i>		1, 3	X
	Swamp sparrow	<i>Melospiza georgiana</i>		3	X
Cardinalidae	Scarlet tanager	<i>Piranga olivacea</i>		3	X
Cardinals	Northern cardinal	<i>Cardinalis cardinalis</i>		1, 3	X
	Rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>			X
	Indigo bunting	<i>Passerina cyanea</i>		3	X
Icteridae	Bobolink	<i>Dolichonyx oryzivorus</i>			X
Blackbirds, Orioles, and Allies	Red-winged blackbird	<i>Agelaius phoeniceus</i>		1	X
	Common grackle	<i>Quiscalus quiscula</i>		1, 3	X
	Brown-headed cowbird	<i>Molothrus ater</i>		3	X
	Orchard oriole	<i>Icterus spurius</i>			X
	Baltimore oriole	<i>Icterus galbula</i>		3	X
Fringillidae	House finch	<i>Carpodacus mexicanus</i>		1, 3	X
Fringilline Finches	Pine siskin	<i>Spinus pinus</i>			X
	American goldfinch	<i>Spinus tristis</i>		1, 3	X
	Evening grosbeak	<i>Coccothraustes vespertinus</i>			X
Passeridae	House sparrow	<i>Passer domesticus</i>		1	X
Old World Finches					

a. Status of birds listed under the Massachusetts Endangered Species Act (MESA): E = Endangered; T = Threatened; and SC = Species of Special Concern.

b. Information on birds recorded on the Reservation was obtained from the following sources:

1. BSC Group, 2011. Noted on field visits during 2011 and 2012 during site visit.
2. Conway School of Landscape Design, 2009.
3. MassAudubon, 2000

c. Breeding Bird Atlas (BBA) data for the Maynard – 08 block (Patuxent Wildlife Research Center and the Massachusetts Audubon Society. 2011). All of the Reservation is located within this block. These birds were recorded on or near the planning unit during the 2007 – 2010 breeding seasons and represent species with the potential to breed on the Reservation.

d. This species has been designated a “Species in Greatest Need of Conservation” by MassWildlife (2006; Table 4).

e. Additional inventories for the Walden Woods area (constituting an area that is larger than Walden Pond State Reservation) are available from Walden Biodiversity Days, 1999 and Walden Biodiversity Days, 2009.

Appendix I. Mammals of the Walden Planning Unit.

The following mammals occur, or may occur, on the Walden Planning Unit. Family, common, and scientific names and the sequence in which they are presented follow Cardoza et al. (2009).

Family	Common Name	Scientific Name	MESA ^a	Status ^a
Didelphidae New World Opossums	Virginia opossum	<i>Didelphis virginiana</i>		Confirmed
Sciuridae Tree Squirrels and Marmots	Eastern gray squirrel	<i>Sciurus carolinensis</i>		Confirmed
	Red squirrel	<i>Tamiasciurus hudsonicus</i>		Confirmed
	Northern flying squirrel	<i>Glaucomys sabrinus</i>		Possible
	Southern flying squirrel	<i>Glaucomys volans</i>		Confirmed
	Eastern chipmunk	<i>Tamias striatus</i>		Confirmed
	Woodchuck	<i>Marmota monax</i>		Confirmed
Castoridae Beavers	American beaver	<i>Castor canadensis</i>		Confirmed
Dipodidae Jumping Mice	Meadow jumping mouse	<i>Zapus hudsonius</i>		Confirmed
Cricetidae Mice, Voles, and Lemmings	Meadow vole	<i>Microtus pennsylvanicus</i>		Confirmed
	Woodland vole	<i>Microtus pinetorum</i>		Possible
	Southern red-backed vole	<i>Myodes gapperi</i>		Possible
	Common muskrat	<i>Ondatra zibethicus</i>		Confirmed
	White-footed deer mouse	<i>Peromyscus leucopus</i>		Possible
	North American deer mouse	<i>Peromyscus maniculatus</i>		Possible
Muridae Old World Rats and Mice	House mouse	<i>Mus musculus</i>		Possible
	Brown rat	<i>Rattus norvegicus</i>		Confirmed
Erethizontidae New World Porcupines	North American porcupine	<i>Erethizon dorsatum</i>		Possible
Leporidae Hares and Rabbits	Eastern cottontail	<i>Sylvilagus floridanus</i>		Confirmed
	New England cottontail ^b	<i>Sylvilagus transitionals</i>		Possible
Soricidae Shrews	Northern short-tailed shrew	<i>Blarina brevicauda</i>		Possible
	Cinereus shrew	<i>Sorex cinereus</i>		Possible
Talpidae Moles and Shrew-moles	Star-nosed mole	<i>Condylura cristata</i>		Possible
	Hairy-tailed mole	<i>Parascalops breweri</i>		Possible
Vespertilionidae Vesper Bats	Big brown bat	<i>Eptesicus fuscus</i>		Possible
	Eastern red bat ^b	<i>Lasiurus borealis</i>		Possible
	Hoary bat ^b	<i>Lasiurus cinereus</i>		Possible
	Eastern pipistrelle	<i>Pipistrellus subflavus</i>	E	Possible
	Silver-haired bat ^b	<i>Lasionycteris noctivagans</i>		Possible
	Little brown myotis	<i>Myotis lucifugus</i>	E	Possible
	Northern myotis	<i>Myotis septentrionalis</i>	E	Possible
Felidae Cats	Domestic cat (feral)	<i>Felis catus</i>		Confirmed
	Bobcat ^b	<i>Lynx rufus</i>		Possible
Canidae Dogs, Foxes, and Wolves	Coyote	<i>Canis latrans</i>		Confirmed
	Domestic dog (feral)	<i>Canis lupus familiaris</i>		Confirmed
	Gray fox	<i>Urocyon cinereoargenteus</i>		Confirmed
	Red fox	<i>Vulpes vulpes</i>		Confirmed
Ursidae Bears	Black bear ^b	<i>Ursus americanus</i>		Possible

Continued on next page.

Appendix I. Mammals of the Walden Planning Unit. (Continued)

Family	Common Name	Scientific Name	MESA ^a	Status ^a
Mustelidae	North American river otter	<i>Lontra canadensis</i>		Confirmed
Weasels, Minks, Martens, and Otters	Fisher	<i>Martes pennanti</i>		Confirmed
	Ermine	<i>Mustela erminea</i>		Confirmed
	Long-tailed weasel	<i>Mustela frenata</i>		Confirmed
	American mink	<i>Mustela vison</i>		Confirmed
Mephitidae	Striped skunk	<i>Mephitis mephitis</i>		Confirmed
Skunks				
Procyonidae	Raccoon	<i>Procyon lotor</i>		Confirmed
Raccoons, Coatis, and Ringtails				
Cervidae	Moose	<i>Alces americanus</i>		Possible
Deer, Elk, and Moose	White-tailed deer	<i>Odocoileus virginianus</i>		Confirmed

- a. Status of reptiles listed under the Massachusetts Endangered Species Act (MESA): E = Endangered; T = Threatened; and SC = Species of Special Concern.
- b. Species classified as Confirmed have been recorded in the planning unit (Mass Audubon, 2000; UMass, 2007). Species classified as Possible are known to occur in appropriate habitat in eastern and/or northeastern Massachusetts (Cardoza et al. 2009) and may occur on the Reservation. This category includes mammals that: occur on the Reservation but have not yet been recorded; migrate through the Reservation (i.e., bats); are vagrant and dispersing on an irregular and unpredictable basis; or occur near, but not on, the Reservation.
- c. This species has been designated a "Species in Greatest Need of Conservation" by MassWildlife (2006; Table 4).

Appendix J. Reptiles of the Walden Planning Unit.

The following reptiles occur, or may occur, on the Walden Planning Unit. Family, common, and scientific names follow NatureServe (2010); the sequence in which they are presented follows Cardoza and Mirick (2009).

Family	Common Name	Scientific Name	MESA ^a	Status ^b
Chelydridae Snapping Turtles	Snapping turtle	<i>Chelydra serpentina</i>		Confirmed
Kinosternidae American Mud and Musk Turtles	Common musk turtle	<i>Sternotherus odoratus</i>		Possible ^c
Emydidae Pond Turtles	Northern painted turtle	<i>Chrysemys picta</i>		Confirmed
	Spotted turtle ^c	<i>Clemmys guttata</i>		Possible ^c
	Wood turtle ^d	<i>Glyptemys insculpta</i>	SC	Possible ^c
	Blanding's turtle ^d	<i>Emydoidea blandingii</i>	T	Possible ^c
	Eastern box turtle ^d	<i>Terrapene carolina</i>	SC	Possible
Trionychidae Softshell Turtles	Spiny softshell turtle	<i>Apalone spinifera</i>		Reported ^d
Colubridae Harmless Snakes	North American racer ^d	<i>Coluber constrictor</i>		Possible
	Ring-necked snake	<i>Diadophis punctatus</i>		Possible ^c
	Milksnake	<i>Lampropeltis triangulum</i>		Possible
	Northern watersnake	<i>Nerodia sipedon</i>		Confirmed
	Smooth greensnake	<i>Opheodrys vernalis</i>		Possible ^c
	Brownsnake	<i>Storeria dekayi</i>		Possible ^c
	Red-bellied snake	<i>Storeria occipitomaculata</i>		Possible
	Eastern ribbonsnake ^d	<i>Thamnophis sauritus</i>		Confirmed
	Common gartersnake	<i>Thamnophis sirtalis</i>		Confirmed

- Status of reptiles listed under the Massachusetts Endangered Species Act (MESA): E = Endangered; T = Threatened; and SC = Species of Special Concern.
- Species classified as Confirmed have been recorded on the Reservation (DEM, 1993; Conway School of Landscape Design, 2007). Species classified as Possible are known to occur in appropriate habitat in eastern and/or northeastern Massachusetts (Cardoza and Mirick 2009) and may occur on the Reservation. This category includes reptiles that: occur on the Reservation but have not yet been recorded; are vagrant and dispersing on an irregular and unpredictable basis; or occur near, but not on, the Reservation.
- This species has been designated a "Species in Greatest Need of Conservation" by MassWildlife (DFG, 2006; Table 4).
- Unconfirmed sightings at Walden Pond (DFG, 2011).

Appendix K. Amphibians of the Walden Planning Unit.

The following amphibians occur, or may occur, on the Walden Planning Unit. Family, common, and scientific names follow NatureServe (2010); the sequence in which they are presented follows Cardoza and Mirick (2009).

Family	Common Name	Scientific Name	MESA ^a	Status ^b
Ambystomatidae Mole Salamanders	Blue-spotted salamander	<i>Ambystoma laterale</i>	SC	Possible
	Spotted salamander	<i>Ambystoma maculatum</i>		Confirmed
	Marbled salamander	<i>Ambystoma opacum</i>	T	Possible
Salamandridae Newts	Eastern newt	<i>Notophthalmus viridescens</i>		Confirmed
Plethodontidae Lungless Salamanders	Dusky salamander	<i>Desmognathus fuscus</i>		Possible
	Redback salamander	<i>Plethodon cinereus</i>		Confirmed
	Four-toed salamander	<i>Hemidactylium scutatum</i>		Possible
	Northern two-lined salamander	<i>Eurycea bislineata</i>		Possible
Pelobatidae Spadefoot Toads	Eastern spadefoot ^c	<i>Scaphiopus holbrookii</i>	T	Possible
Bufonidae True Toads	American toad	<i>Bufo (Anaxyrus) americanus</i>		Confirmed
	Fowler's toad	<i>Bufo (Anaxyrus) fowleri</i>		Possible
Hylidae True Tree Frogs	Spring peeper	<i>Pseudacris crucifer</i>		Confirmed
	Gray treefrog	<i>Hyla versicolor</i>		Confirmed
Ranidae True Frogs	American bullfrog	<i>Rana catesbeiana</i> (<i>Lithobates catesbeianus</i>)		Confirmed
	Green frog	<i>Rana (Lithobates) clamitans</i>		Confirmed
	Pickering frog	<i>Rana (Lithobates) palustris</i>		Possible
	Northern leopard frog ^c	<i>Rana (Lithobates) pipiens</i>		Confirmed
	Wood frog	<i>Rana (Lithobates) sylvaticus</i>		Confirmed

a. Status of amphibians listed under the Massachusetts Endangered Species Act (MESA): E = Endangered; T = Threatened; and SC = Species of Special Concern.

b. Species classified as Confirmed have been recorded on the Reservation (DEM, 1993; Mass Audubon, 2000, BSC 2011). Species classified as Possible are known to occur in appropriate habitat in eastern and/or northeastern Massachusetts (Cardoza and Mirick 2009) and may occur on the Reservation. This category includes amphibians that: occur on the Reservation but have not yet been recorded; are vagrant and dispersing on an irregular and unpredictable basis; or occur near, but not on, the Reservation.

c. This species has been designated a "Species in Greatest Need of Conservation" by MassWildlife (DFG, 2006; Table 4).

Appendix L. Fish of the Walden Planning Unit.

The following fish are known to occur in Walden Pond. This list does not constitute a comprehensive inventory of fish within the Walden Planning Unit. Walden Pond was “reclaimed” in 1968 where all resident fish were killed. The current species are a result of restocking and management efforts. Family, common, and scientific names follow NatureServe (2010).

Family	Common Name	Scientific Name	MESA ^a	Status ^b
Centrarchidae				
Sunfish family	Pumpkinseed	<i>Lepomis gibbosus</i>		1
	Bluegill	<i>Lepomis macrochirus</i>		1
	Smallmouth bass	<i>Micropterus dolomieu</i>		1,3
	Largemouth bass	<i>Micropterus salmoides</i>		1,3
Cyprinidae				
Minnow family	Koi	<i>Cyprinus carpio</i>		Exotic ^c
Esocidae				
Pike family	Chain pickerel	<i>Esox niger</i>		1
Ictaluridae				
Catfish family	Brown bullhead	<i>Ameiurus nebulosus</i>		1
Osmeridae				
Smelt family	Rainbow smelt ^d	<i>Osmerus mordax</i>		1,2
Salmonidae				
Salmon family	Rainbow trout	<i>Oncorhynchus mykiss</i>		2
	Brown trout	<i>Salmo trutta</i>		2

- Status of fish listed under the Massachusetts Endangered Species Act (MESA): E = Endangered; T = Threatened; and SC = Species of Special Concern.
- Information in the Status field was compiled from the following sources:
 - Reproducing population per Massachusetts DFG, 1993.
 - Stocked population per Massachusetts DFG, 1993.
 - Other sources confirm presence including fish toxicity studies, SCUBA surveys.
- Per DCR staff discussion; Four individuals were placed by a Japanese dignitary. Two are still assumed alive with no known reproducing population.
- Massachusetts DFG, 1993 indicates the population was originally stocked and is supplemented as needed as a forage source for the salmonid species.

Appendix M. Management Recommendations from the Walden Pond State Reservation GOALS Plan (1993).

The following text is a summary of recommendations from the 1993 Walden Pond State Reservation GOALS Plan, and provides an update on the implementation of the management recommendation.

PUBLIC USE

(a) Attendance levels. For the past two summers, the daily capacity for use of Walden Pond has been limited to 1000 visitors. This “Carrying Capacity” should be used and monitored by the staff of Walden Pond, and the limit should be reduced if further staff cuts hinder the safety of visitors to this property. *Status: Implemented – visitor capacity continues to be constrained by parking lot size.*

(b) Visitor Orientation. The GOALS team recommends that the existing property headquarters continue as such. During the ten year life of this plan however, a new visitor orientation center should be designed and sited. Capital funding for this facility should be sought through legislative channels, and elsewhere as appropriate. *Status: Not implemented.*

(c) Enforcement. The team recommends that enforcement of regulations and policies at Walden Pond State Reservation be provided through an integrated approach. The property staff should continue to interpret rules to visitors, the local and state police should actively coordinate with Walden staff to help with violations and illegal access, and DEM Park Rangers should also be involved in these efforts. *Status: Implemented, subject to available staffing.*

(d) Safety. The Department is concerned with the safety of the visiting public. Recent staff cuts at DEM have stretched the Walden staff close to their limits. With the popularity of Walden remaining stable or increasing, safety will be an issue. The team recommends staffing commensurate with the demands on the property. An adequate number of lifeguards is essential, as are parking lot attendants to assist people. A flashing yellow caution light on Route 126 at the pedestrian crossway is needed. *Status: A flashing yellow caution light has not been installed to date. Visitor safety related to the Route 126 crossing remains of chief concern for the agency.*

The smooth operation of the Walden Pond boat ramp can be accomplished safely with trained staff. *Status: The boat ramp is effectively used by the public to transport boats in and out of the water. However, the boat ramp’s use to provide water access for individuals who rely on wheelchairs is not adequate. The boat ramp is regularly used as a starting point for universal access programming, including accessible boating. The rutted and uneven surface of the parking lot is a hazard.*

STRUCTURES, FACILITIES, UTILITIES

(a) Relocation of Route 126. The GOALS team recommends that DEM work with the towns of Concord and Lincoln (DPW’s) and with Mass. Highways, District 3 to design and fund the relocation of Route 126. Legislative support from both area state and federal lawmakers should also be a key part of this initiative. *Status: Not implemented.*

(b) Shoreline Restoration. The team recommends that the next phase of the Walden Pond shoreline restoration be fully funded and completed within the first several years of this plan. *Status: The Shoreline Restoration project was completed on the south, north, and west banks.*

Appendix M. Management Recommendations from Walden Pond State Reservation GOALS Plan (1993). (Continued)

(c) **Handicapped Access.** The existing and future structures at Walden should be designed to be accessible to visitors with disabilities. *Status: Provision of universal access from the Route 126 crosswalk to the bathhouse remains unfulfilled, and a critical issue for the agency to address. Future structures, including the Walden Pond Visitor Center, will be designed to be accessible for visitors with physical disabilities.*

(d) **Trailer Park.** The team recommends that the gradual phasing out of the Walden Breezes trailer park continue. Close coordination with the remaining residents is imperative. *Status: Implemented.*

(e) **Drainage.** The team and regional engineer have begun to take steps to filter and re-direct the drainage from Route 126. This should continue, with close monitoring of the catch basins, culverts, and drainage piping. *Status: Implemented.*

(f) **Maintenance.** A new structure should be developed to fully accommodate the maintenance standards necessary to care for Walden Pond. The Department should begin by conducting or funding a study to locate and design this maintenance facility. The parking lot will need re-paving within the next several years. *Status: Not implemented*

RECREATION – PROGRAMS AND ACTIVITIES

(a) **Interpretive Programs.** As one of the nation's most significant historic areas, Walden Pond should continue to feature cultural and natural resource programs. A full interpretive program is provided during summer months, including portrayals of Thoreau and assorted educational programs. *Status: Walden Pond State Reservation continues to offer cultural and natural resource programs.*

(b) **Swimming.** The team recommends that primary access to Walden Pond be permitted at the shoreline near the bathhouse. A secondary beach access will be allowed along the south-facing shore. (A new beach area has not been constructed on the south facing shore.) Swimming should be allowed in all portions of the pond. *Status: Allowing swimming in all areas of the pond conflicts with current DCR regulations, and poses a safety hazard for boaters.*

(c) **Fishing.** DEM must coordinate closely with the Department of Fisheries, Wildlife, and Environmental Law Enforcement (DFWELE) in regard to the management of fishing at Walden. As this plan goes to print, DFW and DEM have collaborated to realign fish stocking schedules, to restrict fishermen's access to fragile shoreline, and to limit publications which promote "trophy fishing" at Walden Pond. *Status: Massachusetts Department of Fish and Game stocks Walden Pond every spring with brook, brown, and rainbow trout, and occasionally the fall.*

(d) **Hiking and Walking.** The team recommends that protection of the shoreline is most important in managing hiking and walking at Walden Pond. The existing trail system should be enhanced and improved with trailhead upgrading, wayside exhibits, and appropriate trail maintenance. Eroded or unmanageable segments of pathways should be closed off or realigned, as part of shoreline restoration. Funds are also needed for property wide trails rehabilitation. *Status: Shoreline protection remains a goal of upmost importance, and of increased concern due to flooding in 2010. Several incremental projects have occurred since the 1993 GOALS plan to close duplicative trails.*

Appendix M. Management Recommendations from Walden Pond State Reservation GOALS Plan (1993). (Continued)

STAFFING & EQUIPMENT

The main text of the GOALS plan contains a detailed listing of the equipment and staffing levels necessary to operate the property with optimum effectiveness. From the Department's past experience, it is important to recognize that the Reservation staffing must be sufficient to maintain the integrity of Walden. Volunteers may be used to assist Reservation staff with some maintenance duties.

WALDEN WOODS

The GOALS team recommends that DEM continue to support the Walden Woods concept. The future uses of the town of Concord's public land including the landfill, relates to protecting the parcels of land adjacent to Walden Pond. DEM will coordinate with the town of Concord regarding the future restoration and management of that area. *Status: DEM was active in discussions with the Walden Woods Project and the town of Concord regarding securing a conservation restriction on the landfill property, and how such a restriction might provide recreational value. A conservation restriction has not been secured to date on the landfill.*

PUBLIC INPUT

Walden Pond State Reservation is of special concern to numerous local, regional, and national conservation and preservation groups. A Board of Advisors has provided suggestions to the Department for more than ten years. The team recommends continuing the Advisors, and adding people with varying interests and expertise to the group. During a 1991 Advisors' meeting at the property, it was suggested that each of the groups involved in protecting Walden provide a spokesperson for input to the Board. The Department supports that suggestion. Examples of organizations which would be represented on the revamped Committee are:

- Walden Woods
- Thoreau Country Conservation
- National Park Service
- Thoreau Society
- Walden Forever Wild
- Concord Historical Society

Status: The Walden Pond Advisory Board meets monthly and continues to advise DCR on the care, maintenance, and management of Walden Pond State Reservation. Membership of the Board has not been formally altered to include NGOs and advocacy groups.

ACQUISITION

If an opportunity for DEM to enhance and enlarge the reservation should occur, the Department should fully evaluate the proposed acquisition, easement, gift, or exchange through approval of the DEM lands Committee, Walden Advisory Committee, DEM leadership, and the Board of Environmental Management. *Status: The Reservation was last expanded in 2002 with a 26.4 acre purchase of property north of Goose Pond.*

Appendix N. Buildings of Walden Pond State Reservation.

Name	Year Constructed ^a	Building Condition ^b	Building Type ^c	Historic ^d	Status ^e	Utilities ^f
Barn	1960	3	WL	Y	U	E
Boat Ramp Contact Station	Unknown	-	WL	N	U	N
Comfort Station	1996	2	WL	N	U	E, W
Contact Station	1970	3	WL	N	U	E
Gallery Shed	1960	1	WL	Y	U	N
Garage East Side Of 126	1960	6	WL	Y	V	N
Garage West Side Of 126	1950	3	UM	Y	U	N
Garage/Workshop	1997	1	WL	N	U	E
Main Bathhouse	1947	2	WL	Y	U	E,S,W
Nature Center Shed	2001	1	WL	N	U	E
Recycling Center	1990	2	O	N	U	N
Park Headquarters /Bookstore	1960 ^h	2	WL	Y	U	C ^g , E, S,W
Thoreau House Replica	1985	2	WL	N	U	N

a. Year of construction, if known.

b. Building System and Equipment Condition Code as used in the Massachusetts Capital Asset Management Information System (CAMIS); the following codes are used: 1 = Excellent – Easily restorable to like new condition, minimal routine maintenance; 2 = Good – Routine maintenance required; 3 = Adequate – Some corrective and preventative maintenance required; 4 = Fair – Excessive corrective maintenance and repair required; 5 = Poor – Renovation needed; and 6 = Fail – Non-operational, replacement required. A dash (-) indicates a lack of information on condition.

c. Building Type refers to the construction materials. Possible materials include: CO = Concrete, poured at site; CP = Concrete, precast off-site; FE = Fencing (e.g., structures made from chain-link fence); ME = Metal; O = Other; UM = Unconsolidated masonry (i.e., brick, cement block, or stone and mortar); WL = Wood. Light Duty.

d. Entries in this column indicate if the building or structure is at least 50 years old and is eligible to be considered a historic resource. Y = Yes; N = No.

e. The status of buildings and structures are classified as C = under construction; U = in use; or V = vacant.

f. C= Clivus. E= Electric. N= None. S= Septic. W= Water

g. Downstairs toilet is serviced by a clivus system. Upstairs toilets tie to a septic system that is used by the bathhouse.

h. Date refers to construction of the initial park superintendent's residence, as provided by the DCR Facility Asset Management Information System (FAMIS). This date was not confirmed. This building was later joined with another residential structure in the late 1960s.

Appendix O. Parking Areas of Walden Pond State Reservation.

		HP Spaces	Restricted Spaces	Other Spaces	Total Spaces	Seasonal Restrictions?	Fee?	Notes
Main Parking Lot	Lot							
	Lot A	0	0	90	90	Yes		Closed during fall, winter, and spring. No snow removal occurs.
	Lot B	2	1	59	62	No		
	Lot C	0	0	54	54	No		
	Lot D	3	1	27	31	No		
	Lot E	0	0	47	47	No		
	Lot F	0	0	46	46	Yes		Not paved or striped. Septic tank for Reservation is below. No snow removal occurs.
	Total	5	2	323	330		Yes	Fee - \$5 day for cars/trucks. \$30 day for bus
	Boat Ramp	3	2	7	12	Yes	No	Restricted spaces for Not paved or striped
	Park Headquarters	0	10	0	10	No	No	10 striped spots are reserved for Thoreau Book Store visitors and DCR staff. Parking lot is blocked with a wooden saw horse during summer months.
	Grand Total	8	10	330	352			

a. Spaces are not marked. Number of spaces are approximate.

Appendix P. Trails of Walden Pond State Reservation.

Name	Total Length (Miles)	Bay Circuit Trail Length (Miles)
Bean Field Road	0.14	
Boundary Road	0.05	
Concord Fork	0.06	
Emerson's Cliff Trail	0.26	
Esker Trail	0.61	0.39
Esker Trail Loop	0.14	
Fairhaven Bay Road	0.20	
Fire Road	0.12	
Fire Road North	0.47	
Fire Road South	0.10	
Goose Pond Spur	0.37	
Goose Pond Trail	0.16	
Hemlock Path	0.24	
Heywoods Meadow Path	0.32	
Heywoods Meadow Road	0.43	0.12
Ice Fort Cove Road	0.25	0.01
Lower Ridge Path	0.11	
Old Concord Road	0.07	
Old County Road	0.32	
Pine Hill Spur	0.26	
Pine Ridge Trail	0.19	
Pond Path	1.60	0.44
Ridge Path	0.27	
Shanty Town Path	0.21	
Sherwood Trail	0.15	
Watertown Fork	0.06	
Woods Road	0.24	
Wyman Path	0.12	
Wyman Road	0.16	0.14
Unnamed ^a	5.49	0.20
Grand Total	13.15	1.29

Source: DCR GIS. Data from 2006 Trail/Forest Road Inventory. Excludes administrative roads.

a. 2.89 miles of unnamed trails were identified as Unauthorized.

Appendix Q. 2011 Walden Pond State Reservation Visitor Survey.

Introduction

As part of the RMP Process, DCR designed and implemented a visitor intercept survey for Walden Pond State Reservation. The goal of the survey effort was to collect background information on visitor characteristics that would inform policy and planning decisions at Walden Pond. Information on the following topics was targeted:

- Demographics (Age, Gender, Presence of Children in Household, Visitor Residence, Language Spoken at Home)
- Characteristics of Visit to Walden Pond (Why Visitors Came, Method of Transportation, Number of People in Group, Number of Hours Spent at Reservation, Locations Visited, Activities Performed)
- Previous Experience of Visitors at Walden Pond (Number of Previous Visits in Lifetime, Number of Previous Visits in Past Twelve Months by Season).

In addition, a general free response question was asked to elicit feedback on opinions regarding needed improvements to Walden Pond State Reservation.

Survey Design

The survey process was designed using a similar process as Loomis et al., 2008. The survey was designed to be filled out by the user, and to fit on a maximum of two pages to keep survey length to a minimum. DCR Planning staff created an initial draft of questions, in part based on a question catalog for recreation surveys (Hornback and Key, 1995; also see Hornback and Eagles, 1999). Additional modifications were made based on input from other DCR staff members, and the Walden Advisory Board. In order to collect information from visitors regardless of the stage of their visit (at the start versus at the end), questions on user activities were written in such a way to enable responses from all visitors. Survey forms were individually numbered to provide a reference point in case the survey form needed to be checked later. The survey form can be found later in this appendix.

Survey Methodology

The survey was implemented by seasonal staff as time was available. Staff were given instructions on how to conduct the survey, along with a script for conducting a typical survey. The following points were emphasized:

- Using a systematic process to uniformly implement the survey;
- Ensuring not more than one person in a particular group was asked to participate;
- Ensuring an individual did not fill out more than one survey during the survey season. Potential respondents were asked if they had previously

participated in the survey. If a respondent had previously filled out a survey, they were not allowed to participate again.

- For every survey session, filling out a tally sheet (see Attachment D of this appendix) that recorded the number of people who:
 - were asked to participate;
 - filled out a survey;
 - refused to participate;
 - did not participate due to language barrier
 - could not participate because they had previously filled out a survey.
- To choose whom to ask to participate, it was suggested that staff allow a preset number of visitors to pass by before asking an individual to participate (for example, asking every fourth visitor that passed by). This would ensure individuals were selected randomly and avoid selection bias.

Staff were also asked to conduct the survey in a location that was likely to receive a high proportion of representative visitors; that is, a location where a variety of Reservation user types would be encountered. Although this rule was generally followed, the survey was not distributed at the boat ramp. Because the boat ramp has a separate vehicular entrance, it is unlikely that any boat users would have been encountered during the survey effort.

A map of the Reservation was available for reference for Question #10, which asked respondents where in the Reservation the members of the party were planning to visit during their trip that day.

Results

A total of 185 people were asked to participate in the survey effort. Surveys were distributed by seasonal park staff on six days in July and August 2011¹. No rain was reported on these days, and temperatures were around between 80F° and 85F°. Survey sessions were conducted between one and two hours. A total of 131 responses were returned to park staff, resulting in a 70.81% response rate. Attendance at Walden Pond State Reservation on the days surveyed, measured by a car counter at the contact station, ranged between 3,000 and 4,000 people. Attendance on these days is slightly above average for attendance during July and August 2011.

¹ Note that any inferences drawn from the results of this survey can only be made to summer visitors.

Appendix Q. 2011 Walden Pond State Reservation Visitor Survey. (Continued)

The majority of the surveys were administered at the eastern side of the main crosswalk. Other locations included the top of the E-Ramp and the Thoreau House replica. Table 1.1 shows the responses to Question #1 of the survey regarding gender of respondent.

Table 1.1 Responses to Survey Question on Gender of Survey Respondent

Gender	Number	Percentage
Male	56	42.75%
Female	75	57.25%
Total	131	100.0%

Table 1.2 shows the responses to Question #2 regarding home residence.

Table 1.2 Responses to Survey Question on Whether the Respondent Lives in the United States

Response	Number	Percentage
Yes	128	97.71%
No ^a	3	2.29%
Total	131	100.0%

^a Two of these respondents reported their home country as Switzerland. The other reported Canada as their home country.

Information on home residence was collected for 113 respondents. 18 respondents who reported they lived in the United States did not provide a zip code. Zip codes were matched to the appropriate town/state using Geographic Information Systems (GIS). Table 1.2.1 shows the various zip codes and corresponding home residences of Massachusetts residents.

Table 1.2.1 Residence by Municipality of Massachusetts Residents

Number	Municipality	Mileage from Walden ^a
16	Cambridge	12
8	Boston	14
7	Lexington	6
7	Arlington	9
4	Wayland	6
4	Somerville	12
4	Reading	13
2	Acton	6
2	Waltham	6
2	West Newton	8
2	Belmont	9
2	Watertown	9
2	Winchester	10
2	Needham	12
2	Lowell	14
2	North Chelmsford	14
1	Concord	2
1	Sudbury	6
1	Maynard	6
1	Carlisle	6
1	Burlington	8
1	Woburn	10
1	Newton	10
1	Wellesley	10
1	Framingham	12
1	Marlborough	12
1	Medford	12
1	Chestnut Hill	12
1	Brookline	13
1	Groton	16
1	Milton	18
1	Lynn	19
1	Grafton	24
1	Whitinsville	28
1	South Dartmouth	62

^a Distance calculated by generating the "as the crow flies" mileage between Walden Pond and the centroid of the zip code provided from the respondent.

Appendix Q. 2011 Walden Pond State Reservation Visitor Survey. (Continued)

Table 1.2.2 shows the various home residences of non-Massachusetts residents.

Table 1.2.2 Residence of Non-Massachusetts Residents

Municipality	State	Miles from Walden Pond
Plaistow	NH	31
Wakefield	RI	71
Yorktown Heights	NY	149
Whippany	NJ	195
Mount Joy	PA	313
Carlisle	PA	344
Hampstead	MD	348
Columbia	MD	367
Dunkirk	MD	379
Washington	DC	385
Elizabeth	PA	467
Saint Clair	MI	569
Madison	WI	919
Duluth	MN	1064
Miami	FL	1282
Pocatello	ID	2075
Ogden	UT	2078
Portland	OR	2530
Irvine	CA	2579
San Pedro	CA	2599

The results support the notion that Walden Pond State Reservation receives a sizable amount of visits from out-of-state visitors.

Table 1.3 shows the results to Question #3 regarding the presence of children under the age of 18 in the respondent's household.

Table 1.3 Responses to Survey Question on Presence of Children Under the Age of 18 in Household

Response	Number	Percentage
Yes	51	39.53%
No	78	60.47%
Total	129	100.0%

Table 1.4 shows the results to Question #4 regarding the respondent's year of birth.

Table 1.4 Responses to Survey Question on Year of Birth

Years	Number	Percentage
1930 - 1939	3	2.36%
1940 - 1949	15	11.81%
1950 - 1959	44	34.65%
1960 - 1969	18	14.17%
1970 - 1979	28	22.05%
1980 - 1989	13	10.24%
1990 - 1999	3	2.36%
2000 - 2009	2	1.57%
Total	127	100.0%

Table 1.5 shows the results to Question #5 regarding the language spoken in the respondent's household.

Table 1.5 Responses to Survey Question on Primary Language Spoken at Home

Primary Language	Number	Percentage
English	121	92.37%
Non-English ^a	10	7.63%
Total	131	100.0%

^a Responses for primary language for "Non-English" respondents: French (2); German (1); Russian (2); Polish (1); Serbian (1); and Spanish (1). Two respondents who indicated English was not the primary language spoken at home did not specify what language is spoken at home.

Currently, all park-related communications (interpretive and regulation signage) are in English. The results suggest there is not a demonstrable need to complement park communications in another language than English.

Table 1.6 shows the results to Question #6 regarding why visitors came to Walden Pond.

Appendix Q. 2011 Walden Pond State Reservation Visitor Survey. (Continued)

Table 1.6 Responses to Survey Question on Why Visitors Came to Walden Pond

Method	Number of Visitors	Percentage of Visitors ^a
Association with HDT	34	26%
To Swim/Use the Beach	99	76%
To Walk in the Woods	48	25%
To Fish	4	2%
To Attend an Educational Program	1	1%
To Kayak/Canoe	0	0
To Picnic	9	1%
Other	7	1%

^a Percentage totals more than 100%, as visitors could pick more than one category. Results rounded to nearest percentage. 131 responses were provided to this question.

An analysis of responses to Question #6, based on Massachusetts-based residents versus non-Massachusetts-based residents, indicates differences in Massachusetts-based residents versus out-of-state residents. Massachusetts-based residents are more likely to come to Walden Pond to swim/use the beach; while out-of-state residents predominantly come to Walden because of its association with Henry David Thoreau. Table 1.6.1 shows the results to Question #6 from Massachusetts residents.

Table 1.6.1 Responses to Survey Question on Why Visitors Came to Walden Pond, by Resident Category

Method	Percentage of Mass. Residents (87)	Percentage of Out-of-State Residents (26)	Percentage of No Response on Residence (18)
Association with HDT	10%	85%	17%
To Swim/Use the Beach	89%	35%	72%
To Walk in the Woods	32%	54%	33%
To Fish	2%	4%	6%
To Attend an Educational Program	1%	0%	0%
To Kayak/Canoe	0%	0%	0%
To Picnic	8%	4%	6%
Other	8%	0%	0%

Table 1.7 shows the results to Question #7 on the number of people in the respondent's group. A similar study was conducted at the contact station under a separate effort that examined the amount of people per vehicle. For purposes of measuring overall attendance at Walden Pond State Reservation, results from the People-Per-Vehicle study should be used. The noted variation is possibly due to individual in visitor groups traveling in more than one vehicle.

Table 1.7 Responses to Survey Question on Number of Persons in Group of Respondent

Number of People	Number	Percentage
1	36	27.69%
2	42	32.31%
3	13	10.00%
4	19	14.62%
5 or more	20	15.38%
Total	130	100.0%
Average: 2.70 Persons		
Median: 2 Persons		

Appendix Q. 2011 Walden Pond State Reservation Visitor Survey. (Continued)

Table 1.8 shows the results to Question #8 on the number of people in the respondent's group. The table suggests that about 90% of summertime Walden Pond visitors drive to the Reservation. Some caution needs to be applied in drawing inferences, as Walden does not receive commercial tour bus traffic in the summer and no visitors reported coming to the Reservation via a commercial tour bus. However, the results demonstrate an overt reliance on the automobile for access to the Reservation. Given some of the external access issues that the Reservation is facing (traffic queues and pedestrian safety), DCR should work to reduce dependence on the automobile to the Reservation.

Table 1.8 Responses to Survey Question on Method of Transportation

Method	Number	Percentage
Private Automobile	111	84.38%
Rental Car	7	5.47%
Commercial Tour Bus	0	0.00%
Bicycling	11	8.59%
Walking	2	1.56%
Total	131	100.0%

Table 1.9 shows the amount of time that respondents planned to spend at Walden Pond State Reservation. This may or may not reflect the *actual time spent* by respondents to the Reservation. The mean amount of time reported by all visitors for their stay at the Reservation was 2.43 hours, or roughly 145 minutes.

Table 1.9 Responses to Survey Question on Number of Hours Planned to Be Spent at Reservation

Time	Number	Percentage
Under 1 Hour	29	22.14%
Between 1.01 and 2.01 Hours	49	37.40%
Between 2.01 and 3.01 Hours	23	17.56%
Between 3.01 and 4.01 Hours	15	11.45%
Between 4.01 and 5.01 Hours	12	9.16%
Over 5.01 Hours	2	1.53%
No Response	1	0.76%
Total	131	100.0%

Table 1.9.1 shows anticipated lengths of visits, categorized by transportation type. Survey respondents

who drove a car to Walden (either private automobile or rental car) is slightly higher at 2.56 hours or roughly 154 minutes. The median time for automobile drivers was 2 hours. Because sample sizes were low for bicyclists (7) and pedestrians (2), more research is needed to draw conclusions regarding length of stay for these groups. The results of the automobile group suggest that the current practice of re-opening the Reservation two or three hours after a capacity closure allows enough time for at least half of the spaces (175) in the parking lot to overturn.

Table 1.9.1 Length of Stay, by Transportation Type

Type	Sample Size	Average Length of Stay (Minutes)
Automobile	118	154
Bicyclist	11	83
Pedestrian	2	105
Total	131	145

Table 1.10 shows the locations within the Reservation that respondents went, or planned to go to, during their visit. The percentage given is for total locations, rather than by percentage of visitors, in order to assess total resource impacts.

Table 1.10 Locations Visited, Reported by Survey Respondents

Location	Number	Percentage
Main Beach	82	30.04%
Walk Around the Pond	55	20.15%
House replica	33	12.09%
Site of Thoreau's Cabin	29	10.62%
HQ/Book Store	21	7.69%
Red Cross Beach	16	5.86%
Wyman's Meadow	7	2.56%
Goose Pond	5	1.83%
Boat Ramp Parking Area	5	1.83%
Hemlock Path	5	1.83%
Picnic Area	4	1.47%
Emerson's Cliff	4	1.47%
Adjacent Conservation Land	4	1.47%
Heywood's Meadow	2	0.73%
Site of Thoreau's Beanfield	1	0.37%

Appendix Q. 2011 Walden Pond State Reservation Visitor Survey. (Continued)

Table 1.11 shows the number of lifetime visits to Walden that respondents reported.

Table 1.11 Responses to Survey Question on Number of Visits in Lifetime

Number of Visits	Number of Responses	Percentage
First Visit	30	22.90%
2 or 3 Visits	7	5.34%
4 or 5 Visits	4	3.05%
Between 6 and 10 Visits	9	6.87%
Over 10 Visits	80	61.07%
No Response	1	0.76%
Total	131	100.0%

Table 1.12 shows the responses to Question #11 from the survey that asked visitors to estimate the amount of visits they made to Walden Pond State Reservation in the past twelve months. This question was asked to determine whether summer visitors typically visit Walden year-round, or whether their use is confined to the summer. Similar questions have been asked to estimate year-round visitation in other park systems (see Twin Cities Metropolitan Council, 2012).

Respondents did not uniformly perceive the question the same, and thus a variety of responses were given. Some respondents did not realize the number of visits in a twelve month span by season was being asked, and instead answered yes/no.

Table 1.12 Responses to Survey Question on Number of Visits in Past Twelve Months, By Season

Number of Visits	Summer	Fall	Winter	Spring
No Visits ^a	0	47.33 %	74.05%	58.75%
One Visit	10.69%	7.63%	5.34%	5.34%
2 or 3 Visits	10.69%	10.69 %	6.11%	9.16%
4 or 5 Visits	5.34%	4.58%	3.82%	8.40%
Between 6 and 10 Visits	10.69%	8.40%	3.05%	5.34%
Over 10 Visits	24.43%	11.45 %	3.05%	6.11%
No Responses ^b	2.29%	2.29%	2.29%	2.29%
Yes ^c	20.61%	7.63%	2.29%	4.58%
Total ^d	100%	100%	100%	100%

^a "No Visits" category includes a range of answers, including where the respondent provided "0" as the response; and where the respondent answered for a single season, but left the rest blank.

^b "No Response" category only includes instances where the respondent did not fill in any answers on this question.

^c "Yes" Category includes the following responses: "✓", "x", "yes", "many", "a lot", and "all".

^d N= 131 responses

Question #13 asked a free response question on what improvements, if any, would the respondent suggest for the Reservation. Responses to this question were categorized by subject area, location, the noted problem, and suggested improvement.

Table 1.13 shows the responses, categorized by the subject area of the response. A list containing the responses to this question, and the category that the response was assigned to, can be found in Attachment E in this appendix.

Appendix Q. 2011 Walden Pond State Reservation Visitor Survey. (Continued)

Table 1.13 Responses to Free Response Question on Suggested Improvements to Walden Pond State Reservation

Response	Number	Percentage
Concession/Food Service	2	1.42%
Fees	2	1.42%
Infrastructure	31	21.99%
Management Goal	3	2.13%
Management Resources	2	1.42%
Miscellaneous	2	0.71%
Natural Resources	8	5.67%
Operations	22	15.60%
Orientation	2	1.42%
Positive Comment	28	19.86%
Rules/Enforcement	25	17.73%
Trails/Path	7	4.96%
Total	141	100.0%

Table 1.14 shows the responses to Question #14 on whether the respondent plans to return to Walden Pond. Approximately 93% of visitors indicated they plan on returning.

Table 1.14 Responses to Survey Question on Whether Respondent Plans to Return to the Reservation

Response	Number	Percentage
Yes	121	92.77%
No	8	6.11%
No Response	2	1.53%
Total	131	100.0%

Table 1.15 shows the responses to Question #15 that asked respondents to rate their perception of crowding at the Reservation, compared to the crowding they expected during their visit.

Table 1.15 Responses to Survey Question on How Crowded the Respondent Felt, Compared to Expectations




Response	Number	Percentage
No Expectations	6	4.58%
A Lot Less Crowded	30	22.90%
A Little Less Crowded	59	45.04%
About as Crowded as Expected	23	17.56%
A Little More Crowded	4	3.05%
A Lot More Crowded	3	2.29%
No Response	6	4.58%
Total	131	100.0%

Appendix Q. 2011 Walden Pond State Reservation Visitor Survey. (Continued)

Walden Pond State Reservation 2011 Visitor Survey

Thank you for agreeing to fill out this survey! Your participation will help DCR improve resource protection and visitor experience at Walden Pond State Reservation. If you have any questions, please ask the survey administrator.

In the following questions, please tell us about yourself.

1. Are you: _____ MALE _____ FEMALE
2. Do you live in the United States? (Please mark one)
_____ YES IF YES . . .  What is your home zip code? _____
_____ NO IF NO . . .  In what country is your permanent residence? _____
3. Do you have any children (under the age of 18) living in your household? _____ YES _____ NO
4. In what year were you born? _____
5. Is English the primary language spoken in your household?
_____ YES _____ NO IF NO . . .  What language is primarily spoken? _____

In the following questions, please tell us about your visit today to Walden Pond State Reservation.

6. Why did you come to Walden Pond State Reservation today? (please check all that apply)
_____ Its association with Henry David Thoreau _____ To swim/use the beach
_____ To go for a walk in the woods _____ To go fishing
_____ To attend an educational program _____ To kayak/canoe
_____ To picnic _____ Other (please specify) _____
7. How many people are in your personal group today? _____ PEOPLE
8. What form(s) of transportation did you and members of your group use to get to Walden Pond State Reservation today? (please check all that apply)
_____ Private Automobile/Truck _____ Rental Car
_____ Commercial Tour Bus _____ Bicycle
_____ Walking _____ Other _____
9. Approximately how much time do you plan to spend at the reservation today? _____ HOURS

Appendix Q. 2011 Walden Pond State Reservation Visitor Survey. (Continued)

- 10. Where in the reservation do you and members of your group plan to visit today? (Please check all that apply; see map if needed)**

___ Headquarters/Book Store	___ Replica of Thoreau's Cabin	___ Main Beach
___ Red Cross Beach	___ Site of Thoreau's Cabin	___ Goose Pond
___ Wyman's Meadow	___ Picnic Area	___ Heywood's Meadow
___ Boat Ramp Parking Area	___ Hemlock Path	___ Walked Around the Pond
___ Emerson's Cliff	___ Adjacent Conservation Land	___ Site of Thoreau's Beanfield

- 11. Including today, how many visits have you made to Walden Pond State Reservation in your lifetime? (Please check one)**

___ First visit ___ 2 or 3 Visits ___ 3 to 5 Visits ___ 6 to 10 Visits ___ More than 10 Visits

- 12. Of all of the visits you have made to Walden Pond State Reservation in the past twelve months, approximately how many occurred during each of the following seasons? (Write number of visits below)**

_____ Visits during the SUMMER (June - August)

_____ Visits during the FALL (September - November)

_____ Visits during the WINTER (December - February)

_____ Visits during the SPRING (March - May)

- 13. Walden Pond State Reservation is undergoing a planning process to improve visitor services and protect the reservation's resources. What improvements, if any, would you suggest for the Reservation?**

- 14. Do you plan to return to the Reservation? ___ YES (see #14a below) ___ NO**

14a. If you answered YES, what activities would you be likely to do during your return visit? _____

- 15. On a scale from 1 to 9, how crowded did you feel today compared to your expectations? (Circle a number)**

N/A	1	2	3	4	5	6	7	8	9
I really did not have expectations	A lot less crowded than I expected		A little less crowded than I expected		About as crowded as I expected	A little more crowded than I expected		A lot more crowded than I expected	

Appendix Q. 2011 Walden Pond State Reservation Visitor Survey. (Continued)

Survey #	Comment	Response Category
1	Limit visitors even more	Rules/Enforcement - Capacity
3	Replenish sand on beach	Infrastructure - Beach
3	Add dressing area in parking lot bathroom	Infrastructure - Beach
3	Refrain from ticketing my car between 7am and 8am when I've parked in the store lot (parking doesn't open until 8am)	Operations - Parking
7	Big sand beach	Infrastructure - Beach
7	Beach bathrooms should be open in the fall	Operations - Bathrooms, Hours
7	More sticks	Operations - Maintenance
8	Outdoor shower	Infrastructure - Beach
9	More beach space so is not so crowded	Infrastructure - Beach
9	No greasy stuff	Natural Resources - Water Quality
9	No oily sunscreen	Natural Resources - Water Quality
9	Taking care of erosion and clean h2o	Natural Resources - Water Quality
9	No motor boats	Rules/Enforcement - Motor Boats
11	Open the beach bathrooms more often- earlier in the day and year	Operations - Bathrooms, Hours
12	Larger main beach	Infrastructure - Beach
12	Make the path around the pond easier to travel (with stroller).	Trails/Paths - Universal Access
14	None, I had a really good experience	Positive
16	Forest maintenance cutting and cleaning outgrown bushes	Operations - Maintenance, Vegetation
16	Where is the picnic area?	Orientation
19	I would like to see wood fence to replace the metal one	Infrastructure - Fence
20	Post code against jogging or running	Rules/Enforcement - Jogging/Running
22	Keep it nice as it is	Positive
24	I really liked seeing the mounted policeman on a horse	Misc.
24	It's lovely here!	Positive
25	Picnic benches close to the swimming area	Infrastructure - Picnic
25	Recycle container	Infrastructure - Trash/Recycle
25	I just want to say thank you for nice area to visit	Positive
26	It would be great if you could extend the hours in the summer to 8:30pm so we could sit and watch the sunset (maybe just July)	Operations - Hours
27	More bike racks	Infrastructure - Bike
27	Bathrooms are always dirty	Operations - Maintenance
28	For visiting for exercising – bikers should be allowed to enter beach area to swim in pond when beach/parking is at capacity, if we do not intend to lay on beach /be there for more than an hour	Rules/Enforcement - Bicycling
29	Keep open later (for sunset)	Operations - Hours
30	Nutritious snacks available	Concession - Food Service
30	Naturalist signs on paths that identify flora or geological features	Interpretive
30	Literary references and signs to the writings of Emerson and Thoreau	Interpretive
30	I'd love to see some poems or short passages that added to the historical, literary and spiritual quality of this special location	Interpretive
31	I think it is best the way it is.	Positive
31	I found the place to be very family friendly.	Positive
31	I compared it to place in and around Westchester	Positive
31	NY - it is great the way it is.	Positive
33	Jez whiz - Why the rusting fence lining the trail around the pond. Thoreau might found too confining to enjoy the nature experience	Infrastructure – Fence

Appendix Q. 2011 Walden Pond State Reservation Visitor Survey. (Continued)

Survey #	Comment	Response Category
33	Thank you so much for the path restoration!	Positive
34	Do not expand parking lots.	Infrastructure - Parking
38	Control of pedestrian paths w/ no wire but plantings and guides	Trails/Paths - Access Controls
42	Maintain or increase controls over access to pond from trail.	Trails/Paths - Access Controls
42	Slightly wider (say 1-2') trail around pond.	Trails/Paths - Width
43	Looks great!	Positive
43	The limited access points to the pond is a great idea for shoreline protection!	Positive
44	Ensuring maintenance of native ecosystem	Natural Resources - Native Species
44	Ensuring stabilization and maintenance of shoreline quality.	Natural Resources - Water Quality
46	None, I love it here.	Positive
49	Trash barrels	Infrastructure - Trash/Recycle
51	I like it just the way it is. Thanks!	Positive
52	We mainly come to Walden to swim, sometimes walk, and have no complaints or suggestions.	n/a
52	Maybe a more detailed map of the trail network?	Orientation - Maps
55	I swim the length every day possible and thank WP for supporting my good physical and mental health.	Positive
55	Not to be a martyr, BUT limiting access to Pond last year was great- the water was so fresh and clean all summer	Rules/Enforcement - Capacity
57	It would be nice to have more beach area, but since that depends on water level, not sure how much that is under your control.	Infrastructure - Beach
58	I like it as it is.	Positive
58	This is a great place.	Positive
61	Enforce your regulations.	Rules/Enforcement - General
62	Large picnics in designated picnic area away from path.	Infrastructure - Beach
62	No visitor centre required. 3 in Concord	Infrastructure - VC
62	Only improvements – good maintenance, rubbish clearance	Operations - Maintenance
62	I like the pond as it is.	Positive
64	Repair infrastructure – such as stone walls	Infrastructure - Repair
64	Better parking information in summer	Rules/Enforcement - Communications
64	Maintain open swimming	Rules/Enforcement - Swimming
65	Rectify safety hazards! i.e. two garage building abandoned, swimmers accesses w/ hydraulic equipment on barges. Cost \$3 million or 1	Operations - Safety
66	Visitor Center and forgo safety	Operations - Safety
66	Some problems with people leaving aluminum cans in the woods; you might put more receptacles for trash.	Infrastructure - Trash/Recycle
66	Pretty good as is.	Positive
67	More ed. Programs for various ages!	Interpretive
69	Larger parking area for weekend trips. Came on a Saturday after 12 and no parking was available.	Infrastructure - Parking
70	Extended hrs.	Operations - Hours
71	Automated parking meter	Infrastructure - Parking
71	Expand offerings in bookstore re sustainability, greening, etc...	Interpretive
71	No P(h)o(so)rous (sic)	Natural Resources - Water Quality
71	Better open/close info	Rules/Enforcement - Communications
72	Publicize phone info on parking	Rules/Enforcement - Communications

Appendix Q. 2011 Walden Pond State Reservation Visitor Survey. (Continued)

Survey #	Comment	Response Category
73	Perhaps another beach area to ↓ crowding	Infrastructure - Beach
74	Water quality (sic)	Natural Resources - Water Quality
80	More staff	Management Resources
80	Bathroom hours at beach house. Current hours are so limited – users just foul the pond and area – counterproductive!	Operations - Bathrooms, Hours
83	Beautiful as is, but we look forward to visitor center	Positive
90	Showers for the bathhouse at the beach	Infrastructure - Beach
92	Café	Concession - Food Service
94	More parking	Infrastructure - Parking
94	More access during weekends	Operations - Capacity
95	Dock at the main beach to jump off	Infrastructure - Recreation
96	A sign near Thoreau's site – pack in pack out trash etc....	Infrastructure - Signage, Trash
96	Clarity on swimming and open spots to sit especially near cove where folks often jump the fence	Rules/Enforcement - Swimming
97	Love it as it is	Positive
98	N/A – First visit – I loved it	Positive
99	Protective plastic cups on the steel fence posts	Infrastructure - Fence
99	More encouragement for visitors to carry out their own trash	Infrastructure - Signage, Trash
99	Lifeguards need to learn to watch ahead of their boat to avoid running over swimmers	Operations - Safety
103	Changing rooms	Infrastructure - Beach
103	Longer hours	Operations - Hours
104	No insect repellent – sun lotion before swimming. Shower before	Natural Resources - Water Quality
104	Continue clean water policy – no motor boats	Rules/Enforcement - Motor Boats
104	Widen paths on west side	Trails/Paths - Width
105	Increase the price of the yearly parking pass to \$50	Fees - Increase
105	Keep gates open all year around until ½ hour before closing	Operations - Hours
105	No bikes on paths	Rules/Enforcement - Bicycling
105	Increase patrols to keep dogs out and increase those fines to \$100 (at least)	Rules/Enforcement - Dogs
106	Staff is always warm, friendly, and do a great job	Positive
106	Enforcement about users who violate restricted area	Rules/Enforcement - General
107	Provide other section for bike riders/triathletes who bring cars and then leave for bike rides and come back later for swim	Operations - Bicycling
108	Higher prices on entry to offset costs and care	Fees - Increase
109	Quieter gator vehicles – go electric!	Operations - Equipment
109	Better communication of closings, there was a twitter feed last year	Rules/Enforcement - Communications
110	Sometimes the orders on the megaphone come across as overly officious	Rules/Enforcement - Communications
111	A way to know ahead of time whether the reservation will be closed- I've driven out a few times only to be turned away	Rules/Enforcement - Communications
112	Parking for short term swimmers so we don't get locked out	Operations - Parking
113	Expand the main beach a little or make sure enough sand	Infrastructure - Beach
113	Keep stumps rocks at minimum	Operations - Maintenance
114	The pond is beautiful, I love the effort to keep it clean and not too crowded.	Positive

Appendix Q. 2011 Walden Pond State Reservation Visitor Survey. (Continued)

Survey #	Comment	Response Category
115	Consider a platform for sunbathers between the beach and boat ramp to keep people off the hillside	Infrastructure – Erosion
115	Upgrade the beach rest rooms- low flow toilets	Infrastructure - Green
115	Is there a Friends of Walden Organization? Encourage volunteer assistance!	Management Resources
115	Import sand to beach area so fewer people resort to odd locations	Operations - Beach
115	Consider making parts of the pond path one way and reroute some traffic to higher paths	Trails/Paths - Access Controls
116	Keep it natural.	Management Goal
116	It's great	Positive
116	Keep the pond open for cross pond swimming.	Rules/Enforcement - Swimming
117	Keep as natural as possible	Management Goal
117	Thx for all the cleanup	Positive
118	Update the website!	Rules/Enforcement - Communications
118	Protect it! We love it!	Positive
121	Informal STEM learning activities. Ideas @ www.christinanicolson.com	Interpretive
122	None	n/a
122	I've been swimming here for 30 years. The reservation and the pond are so friendly and dear to me.	Positive
122	I brought my d here to swim every summer for 18 yrs. When she comes home, we come back to swim!	Positive
126	Keep up the great work!	Positive
127	Enforce rule against running on pond path	Rules/Enforcement - Jogging/Running
128	More nature areas – less screaming kids!	Management Goal
133	Cleaner bathrooms and more	Operations - Maintenance
133	Another phone line	Rules/Enforcement - Communications
133	Notice on a website that expect to close in 1 hr (or whatever) and when expect to open again	Rules/Enforcement - Communications
133	More accessibility for people with disabilities	Trails/Paths - Universal Access
134	Have more public toys (beach balls, etc...)	Rules/Enforcement - Equipment
135	Fewer closing times on hot days	Rules/Enforcement - Capacity

Appendix R. Select Regulations Applicable to the Walden Planning Unit.^a

CMR ^a	Title	Comments
301 CMR 11.00	Massachusetts Environmental Policy Act (MEPA)	Requires the systematic review of any work or activity undertaken by an agency (e.g., the DCR) of the Commonwealth that meets or exceeds at least one threshold related to environmental impacts.
310 CMR 10.00	Wetlands Protection Act	Regulates work or activities in a coastal or inland jurisdictional wetland resource area; including treams, floodplains, lakes or ponds, their associated 100 ft. Buffer Zones and within Riverfront Area associated with perennial rivers and streams. Work or activities within Estimated Habitat for rare wetlands wildlife, designated by Natural Heritage and Endangered Species Program, is also regulated by the Wetlands Protection Act regulations.
314 CMR 4.00	Massachusetts Surface Water Quality Standards	These standards “secure to the Commonwealth the benefits of the Clean Water Act.” They designate the most sensitive uses for which the waters of the Commonwealth shall be enhanced, maintained and protected; prescribe minimum water quality criteria; and contain regulations necessary to achieve designated uses and maintain water quality. These standards include the identification and regulation of Outstanding Resource Waters.
105 CMR 445	Minimum Standards for Bathing Beaches (State Sanitary Code, Chapter VII)	Requires water quality testing of swim beaches for pathogens associated with fecal contamination, and specifies closure posting requirements (Main Beach and Red Cross Beach).
320 CMR 2.00	Public Access Facilities	Specifies management measures and restrictions for boat ramps managed by the Massachusetts Department of Fish and Game’s Office of Fishing and Boating Access.
321 CMR 2.00	Miscellaneous Regulations Relating to Division of Fisheries and Wildlife	Addresses a variety of fish and wildlife issues, including scientific collecting permits and the importation, liberation, and transportation of fish, amphibians, reptiles, birds, and mammals.
321 CMR 4.00	Fishing	Regulates the taking of freshwater fish in Massachusetts.
321 CMR 10.00	Massachusetts Endangered Species Act (MESA)	MESA protects rare species and their habitats by prohibiting the “Take” of any plant or animal species listed as Endangered, Threatened, or Special Concern. Activities that may alter rare species habitat (e.g., trail maintenance, vista pruning, digging archaeological test pits) are subject to regulatory review. On state-owned land, “all practicable means and measures shall be taken to resolve conflicts between the protection, conservation, and restoration of state-listed species...and other uses of such lands in favor of the listed species.”
333 CMR 10.00	Certification and Licensing of Pesticide Applicators	Requires that anyone applying herbicides, insecticides, or other pesticides on non-residential property (i.e., all DCR properties) must be certified and licensed.
521 CMR 19.00	Architectural Access Board; Recreational Facilities	Accessibility standards for rinks, pools, beaches, playgrounds, picnic areas, campsites, and other indoor and outdoor facilities. Requires that 5% of picnic facilities be accessible.
521 CMR 23.00	Architectural Access Board; Parking and Passenger Loading Zones	Specifies dimensional, pavement marking, and sign requirements for accessible parking spaces and passenger loading zones.
950 CMR 71.00	Protection of Properties Included in the State Register of Historic Places	Requires Massachusetts Historical Commission notification of projects undertaken, funded, or licensed by a state body.

- a. A variety of state regulations apply to both the operation of state parks and the behavior of visitors to these parks. This table includes only those regulations directly related to topics addressed in the main body of this RMP.
- b. The Code of Massachusetts Regulations, or CMR, “contains regulations promulgated by state agencies” (Massachusetts Trial Court Law Libraries 2010). These regulations “have the force and effect of law like statutes.”

Appendix S. Summary from March 27, 2012 Public Meeting on Interpretive Planning at Walden Pond State Reservation.

Question #1: What do you think makes Walden Pond a special place?

Place of Historical Value

Connection to HDT.

- Thoreau's Walden - Birthplace of conservation movement / stewardship narrative
- Foundation for American conservation writing
- Concord's literary history – Emerson, Hawthorne, etc...
- Symbol of social justice / civil disobedience
- Transcendentalism
- Internationally known

Historic place of human recreation

- railroad amusement park, public swimming area since 1920s

Connection to marginalized peoples / variety of people resided here

- African-American slaves / underground railroad
- Irish / other immigrants railroad workers
- Pre-contact Native American use of area

Natural History

- Created by glacier / pond's formation / kettle hole pond

Industrial / Commercial history

- Railroad construction
- Ice harvesting by Fredric Tudor
- Wood lot

Place of Ecological Value

- Vernal Pools
- Variety of Wildlife, birds bugs
- Connection to our understanding of climate change impacts /work by Primack
- Provides place to teach about nature / science

Place of Recreational Value

- Trailhead to conservation lands in and around Walden / Walden Woods
- Part of Bay Circuit Trail
- Public swimming areas
- Fishing
- Recreation for those in urban areas
- Being "quiet" is important / solitude

Appendix S. Summary from March 27, 2012 Public Meeting on Interpretive Planning at Walden Pond State Reservation. (Continued)

Question #2: What do you think are the main stories to communicate to visitors at Walden Pond?

Stories of Thoreau

- Thoreau's use of land as a beanfield
- Thoreau as person - Multifaceted + multitalented person, natural + philosophical emphasis
- Why Thoreau chose Walden + its relationship to his other avocations/journeys. Distill core experience
- Connection to Concord authors
- How Thoreau investigated/surveyed the pond (scientific method)
- What is the essence of Thoreau - history + related spin-offs

Stories of Walden's Past

- Natural history / limnology
 - Hydrology of Pond and Walden Woods
 - Story and history of kettle ponds, and implications for management
- Land use history - man's relationship to pond as uses change/evolve
 - Native American use – stopover on travels to nearby rivers
- Commercial Use – wood lot, ice harvesting
- Residential Use – marginalized people pushed to fringes of Concord (Irish, African-American freed slaves)
- Recreation (Amusement park)
 - modern technology – RR, all impact the land
 - swimming, boating, fishing, picnicking provision in deed
 - Public ownership – management philosophy to prioritize water based recreation over historic
 - Walden Pond before and after it became a state park – history of public ownership
- Creation of Cairn = House Site = Pilgrimage
- Emerson's family's role in protecting/conserving pond, outside of what HDT did and what he represents

Walden's Present

- Living things here now that were not here when Thoreau was there, evolving wildlife
 - Relevance with issues today e.g understanding of climate change
- Connecting universal themes to particular issues - Living laboratory
- Public resource – shared asset
- Use a three D model to explain the pond

Stories of Walden (Book and/or Place) Meaning

- How has Walden moved visitors to acts, engage, become advocates
- Social movements
- International = spiritual connection
- Spiritual Place; sacred
- Connection from protection of land, management and ongoing public use
- Conservation is a journey not a destination
- Sustainability
- Stories are all connected Land= changing use of land = social impact = interconnectedness
- History of engagement and advocacy that led to preservation of Walden as a broader lesson for stewardship of the earth.
- Connection that new visitors (students) are continuously developing

Appendix S. Summary from March 27, 2012 Public Meeting on Interpretive Planning at Walden Pond State Reservation. (Continued)

Question #3: How would you describe a “typical” visitor to Walden Pond?

Hard to categorize - They are international, local, urban --- list goes on ----, no ‘typical’ visitor
Could attract a whole new category of visitor with the slavery theme

Various User Groups

School Groups, including teachers w/o students; teacher training (HS and College)

Recreation

- Swimmers (both beach and cross –pond) - many from urban areas
- Picnickers
- Fisherman
- Canoers/ Kayakers,
- Walkers,
- Yoga
- Winter Activities

Families, particularly on weekends

Researchers

Cultural tourists that are on Concord/Lexington circuit

- large buses
- Some regional, from New England area
- Literary tourism

Art- sketching, photography, painting

Local residents – use for walks, and place to take out-of-town residents

International visitors

- many who don't speak English
- tend to have appreciation for Walden significance

Church groups (Unitarian)

Virtual Visitors

- Access through various tech media
- Aggregator of various resources-
- Someone who is writing a paper

Three categories of users (Richard Smith)

- Pilgrims – monks, students
 - General tourist to concord
 - Recreationist – have no idea about Walden and its significance
- These visitors represent opportunity to broaden awareness of history of Walden

Appendix S. Summary from March 27, 2012 Public Meeting on Interpretive Planning at Walden Pond State Reservation. (Continued)

Question 4 - What are the essential visitor experiences at Walden that DCR should aim to provide?

Experiences on Reservation

Address Existing Issues

- Safety – sense when crossing Route 126, vehicular traffic
- Interpretive signs could provide specific info and orientation
- Oriented and placed – clear sense of sites relationship within Walden Reservation
- Programmed recreation i.e. specific areas for swimming, still user friendly – not too overt in terms of signage
- Challenge of overuse – over exposure. Do not draw more people to reservation.

Subject Matter

- The facts re: Thoreau, why he was here, how long, basic historic significance
- Appreciation for natural history and pond formation
- Help recognize the international significance
- Sustainability – story on sustainable built features e.g. pervious pavement, composting toilets
- Help visitors “come to grips” with what Walden is
- Starts as an ice age kettle hole pond to present conditions to future of Pond (presented as big timeline)
- Educate visitors about history of recreation at Pond including swimming connection to deed of gift to state
- Former slave site – as connected to authors and other sites in town
- Means to understand all aspects of the park (not just the pond)

Activities

- Physical exercise - walk around the pond

User Types

Recognize and support short term visitors – Kodak moments

Emotional Reactions/Visitor Senses to Foster

- Quiet/Solitude
- Sense of Wonder
- Give visitors a sense of surprise about what/something/connection that they learned
- Connection to nature – the “Woods”
- Provide oasis from city and/or “everything”
- Physical and mental health benefits
- Things have changed over time between man and nature
- Opportunities to expand knowledge of Thoreau - bookstore, web research, make connections to other properties in area (including DCR Brook Farm)
- Create proper context – (de-program visitors)

Relate to Places/Site Off Reservation

Expand appreciation of Concord area

- Walden doesn't have to do it all

Communicate to visitors about other interesting places and aspects

Ex. –Beanfield

- o Landfill – habitat, birding
- o Brister's Hill connection (Connecting + orientating to local resources in Concord and Lincoln)
- o Channel visitors to other relevant threads – houses, museums, etc
- Help walkers understand nearby resources (across Route 2)
- Complementary with other cultural/recreational opportunities in the region
 - Collaborative with area destinations

Appendix T. Selected Interpretive Programs and Special Events at Walden Pond State Reservation.

Program Name	Type	Program Concept
Contemplative Walk	CP	Provides an opportunity for visitors to take a contemplative walk while learning about how eastern philosophy may have influenced Thoreau's writings.
Geology of Walden Pond – Cool Glaciers	CP	Provides the geological history behind the formation of Walden Pond .
Making of a Naturalist	CP	This program from the <i>Parks as Classrooms</i> curriculum introduces students to Thoreau, has a field observation component and a writing component.
Thoreau for Kids	CP	Theme of program is historical. Henry David Thoreau was a man ahead of his time. This program will introduce children to Henry David Thoreau
Thoreau Rambles	CP	Theme of program is historical. Henry David Thoreau's stay at Walden Pond has had a profound influence on American culture
Walden's Changing Forest	CP	The forest around Walden was changing during Thoreau's time and is still changing today. If we look carefully—i.e., for chestnut snags, pitch pine, beeches--we can see the landscape as Thoreau knew it. By looking at certain patches of white pine, birches and more, we can also see how the forest has changed and is changing, and how it may look in the future
Who was Henry David Thoreau?	CP	The program is an introductory program on Henry David Thoreau designed for general public audiences. The theme of the program is Henry David Thoreau marched to the beat of a different drummer and welcomed a diversity of ideas, opinions and actions
Crafts for Kids	SP	To provide children with entertainment and education through the creation of nature crafts.
Ice Harvesting	SP	Park staff provide background on Walden's unique history with ice harvesting.
Nature's Builders	SP	To inspire visitors to look more closely at the role the beaver plays in the natural world.
Seasonal Saunters	SP	In the spirit of Henry David Thoreau, park staff will offer a series of seasonal walks to explore some of the lesser known trails surrounding Walden Pond. Thoreau thought that he was born to walk and walked daily to exercise both the body and the mind.
Story Time	SP	To entertain our youngest visitors and educate them about nature, history and protecting the environment through the use of classic children stories.
Civil Disobedience	SE	A living history program and lecture featuring Thoreau scholars. This program discusses the historic legacy of Thoreau's most famous essay. Held on Martin Luther King's birthday.
Free Fishing Weekend	SE	Traditionally the first weekend in June statewide. Co-sponsored by Mass Wildlife.
Remembering Henry David Thoreau	SE	Celebrates the life and legacy of Henry David Thoreau on the anniversary of his death.
Universal Access Hiking / Paddling	SE	DCR's Universal Access program offers free recreation opportunities on Walden Pond to participants of all ages and abilities.
Winter Tracking	SE	An indoor slideshow and winter hike led by a professional wildlife tracker.

Source: DCR, 2011d.

Program Type are categorized as follows: CP = Core Program; SP= Seasonal Program; SE= Special Event

Appendix U. Planning Process for Walden Visitor Center.

The need for a new visitor center for Walden Pond State Reservation was first documented in a 1974 planning study entitled *Walden Pond Restoration Study*. Prepared by Richard Gardiner and Associates, the study was the key planning document to guide future improvements and restoration of the Reservation upon transfer of management responsibilities to the state. The study recognized the need for a simple visitor center to serve as a centralized launching point for visitors to begin their experience at the Reservation. Although enthusiasm for a new visitor was strong throughout the 1980s and 1990s, no monies were devoted toward the project.

In October 2009, \$2.1 million was included in DCR's capital plan for study, design, and construction of a new visitor center. In January 2011, DCR hired Crosby, Schlessinger, and Smallridge of Boston to prepare a Visitor Services Master Plan for Walden Pond State Reservation. The consultant team worked with DCR, the Walden Advisory Board, and the public to identify background issues related to public safety and visitor services, and propose solutions.

The study identified the following goals for the building:

- *Serve as a gateway to the reservation, introducing visitors to all aspects of Walden Pond – environmental, cultural and recreational;*
- *Provide the opportunity for all visitors to learn about the significance of Walden Pond to promote stewardship and potentially modify visitor behavior*
- *Orient visitors to the key resources of the Reservation;*
- *Provide easily accessible answers to common questions;*
- *Provide weather-protected space for interpretive programming;*
- *Provide administrative/operations space to replace the existing Headquarters Building.*

Working with Walden staff, the Walden Advisory Board, and input received at a public meeting held on March 24, 2011, the study outlines a draft

building program that identifies the following public uses of the building:

- Main Lobby/Exhibit Space/Reception;
- Temporary Exhibit/Conference/Multipurpose Room;
- Medium Sized Conference Room;
- Public bathrooms that would possibly replace the existing composting toilets in the parking lot;
- Bookstore/Gift Shop
- Covered Outdoor Classroom.

Staff office and meeting space was also included in the preliminary building program.

There was agreement that the design of the Visitor Center should be simple, blending with the natural character of the Reservation and Thoreau's focus on simplicity. There was also agreement that the building design should be consistent with sustainability principles, ideally resulting in a zero net energy building.

The consultant team organized a building site analysis, with five potential sites for consideration. Options 1-4 identified a 5,000 square foot building with park administration / office space. Option 5 proposed an open-air visitor center without park administration / office space.

- 1) On site of existing HQ building;
- 2) Near the Thoreau House Replica in the area of Parking Lot B;
- 3) South of the former Walden Breezes trailer park
- 4) West of Route 126 (on pond side) at the existing picnic area;
- 5) A 2,000 SF open-air visitor center near the Thoreau House Replica close the main parking entrance road.

Options 3, 4, and 5 were discounted, due to their low comparative scoring on convenience, site visibility, and necessary site alteration. Options 1 and 2 were both under consideration upon the building study phase.

Proposals to address site access and circulation limitations were included in the Master Plan, and were presented at a November 17, 2011 public meeting.

Appendix U. Planning Process for Walden Visitor Center. (Continued)

Vehicular Entrance/ Route 126 Traffic. The use of the Walden Breezes trailer park to site a new roadway for the reservation was explored in the Master Plan. Field staff asked this alternative be evaluated, as the site contains space to potentially remove cars off Route 126 and have them queue before the park is reopened after a capacity closure. Additional study is needed to develop protocols to achieve desired outcomes.

Pedestrian Access / Crossing Route 126. The Master Plan proposes installation of a product such as Imprint would provide both color and texture to the crosswalks, along with white stripes on both sides of the crosswalks. The improvement would help to alert motorists to pedestrian crossings. The vibration of driving over the imprints acts a mild traffic calming feature. Installation would require significant coordination with the town of Concord, who owns the roadway.

Universal Access. A ramp system was proposed to provide a direct connection between the Route 126 crosswalk and the beach / bathhouse. Some concerns were raised by the Walden Advisory Board and others of the potential aesthetic impacts of the ramp system. An additional accessible pathway was proposed to provide access to the Thoreau Cabin Site.

Directional Signage. Directional signage improvements were proposed in the parking area, to provide clear directions to the visitor center, house replica, crosswalks, path to Main Beach and Red Cross Beach, path to cabin site, and the path to Goose Pond.

Interpretive Services. A public meeting was held on March 27, 2012 with area stakeholders and interested groups on possible interpretive themes to consider for the new Visitor Center. A summary of input collected at this meeting is summarized in Appendix S.

Next Steps.

In June 2012, DCR hired Maryann Thompson Architects through the Designer Selection Board, an autonomous eleven-member board that selects designers for public building construction throughout the Commonwealth. The first step of the project was to complete a building study and submit it to the Massachusetts Department of Capital Asset

Management (DCAM). The study must include an identification of the funding sources for the project. At this writing, the study is awaiting submission to DCAM for approval.

Appendix V. Land Stewardship Zoning Guidelines, July 2012.

LAND STEWARDSHIP ZONING GUIDELINES

July 2012

The Department of Conservation & Recreation's Mission:

To protect, promote and enhance our common wealth of natural, cultural and recreational resources for the well being of all.

I. Authorization and Purpose

The Department of Conservation & Recreation (DCR) has a very broad and dynamic mission that encompasses protection of resources, providing the public with access to recreational opportunities, and active forest management. This multi-faceted mission sometimes results in complex management challenges. To help meet its mission, DCR has developed a two tier system for guiding the management of all state forest and park properties² under its care:

- 1) Landscape Designations - applied statewide to assess and guide management activities throughout the DCR state forest and park system; and
- 2) Land Stewardship Zoning, and the RMP process of which it is a part, addresses the agency's statutory responsibilities in M.G.L. Chapter 21: Section 2F to prepare management plans that: encompass all reservations, forests and parks; provide for the protection and stewardship of natural, cultural, and recreational resources under the agency's management, and ensure consistency between recreation, resource protection and sustainable forest management. Land Stewardship Zoning is applied to DCR state forest and park properties on an individual basis during the Resource Management Planning process, incorporating site specific information to guide management of specific areas within these properties.

These two systems, while applied at different levels – statewide scale vs. site specific scale – work in an integrated fashion to accommodate primary ecosystem services while recognizing and providing site specific resource protection. Table 1 illustrates how these two systems work together.

The DCR is committed to protecting important natural and cultural resources while simultaneously providing for sustainable public access and recreation across all properties. The DCR is also committed to complying with all state and federal regulations and policies and meeting all state health and building codes - responsibilities that are central to the agency's mission and statutory charge.

II. Landscape Designations

The Forest Futures Visioning Process, an advisory initiative undertaken in 2009 – 2010, recommended the establishment of three landscape designations to differentiate and prioritize ecosystem values at a statewide scale. Acting upon that recommendation, DCR undertook an effort in 2010-2011 to designate all of the facilities within the DCR State Parks System as either Reserves, Parklands, or Woodlands, as a means to establish the primary

² These management systems do not apply to DCR's Division of Water Supply Protection properties.

Appendix V. Land Stewardship Zoning Guidelines, July 2012. (Continued)

ecosystem services provided by these properties, guide management decisions based upon these services, and communicate the agency's landscape scale management objectives to the public.

The designations have been determined via the use of available GIS information drawing upon statewide resource databases, and incorporating extensive input from DCR field staff and the public. These designations are designed to provide a framework for overarching management guidelines that are applicable to properties within the state forest and park system.

The three landscape designations are:

- Parklands focus on providing public recreation opportunities while protecting resources of ecological and cultural significance.
- Woodlands demonstrate exemplary forest management practices for landowners and the general public, while supporting the range of ecosystem services that sustainably-managed forests offer, including a diversity of native species and age classes, and compatible recreation opportunities.
- Reserves provide backcountry recreation experiences and protect the least fragmented forested areas and diverse ecological settings. Successional processes will be monitored to assess and inform long-term forest stewardship.

III. Resource Management Plans and Land Stewardship Zoning

The Land Stewardship Zoning Guidelines defines three types of zones to ensure resource protection based upon site specific field data, and provides guidance for current and future management based upon resource sensitivities. Inventory and assessment of resources during preparation of a Resource Management Plan (RMP) is factored into land use management and decision making, and provides guidance for stewardship of these resources. The process results in zoning of areas and specific sites within DCR properties based on their sensitivity to recreation and management activities that are appropriate for each facility as recognized during the RMP process. In this way, the Land Stewardship Zoning system helps to “ensure that recreation and management activities do not degrade ecological, cultural, or experiential resources and values.”³

The three Land Stewardship Zones provide a general continuum to categorize resources (relative to potential degradation from human activities) from undisturbed sites with highly sensitive resources, through stable / hardy resources, to sites that have been developed and consistently used for intensive recreation or park administration purposes.

The Land Stewardship Zoning system also includes Significant Feature Overlays that may be applied to highlight resource features that have been assessed and documented by professional resource specialists. Information on the significant features is brought into the RMP process via review of previous research projects and associated designations. Significant Feature Overlays can be applied in any of the three Land Stewardship Zones. An example is a natural or cultural resource, recognized through professional inventory / research (such as an Area of Critical Environmental Concern or National Historic District), which cuts across more than one Land Stewardship Zone. Management and protection of these resource features is guided by specific management recommendations that have been developed by resource specialists. An expanded description of Significant Feature Overlays is provided at the end of Section VI.

³ *Capacity Reconsidered: Finding Consensus and Clarifying Differences.* Journal of Park and Recreation Administration, Spring 2011, Vol. 29, No. 1,

Appendix V. Land Stewardship Zoning Guidelines, July 2012. (Continued)

Application of the three-zone system, including Significant Feature Overlays, to individual DCR properties during the RMP process is facilitated by gathering available field data related to natural and cultural resources, recreational uses, and developed facilities, and reviewing available data sources including BioMap 2 and NHESP Priority habitat information. As a part of this approach:

- lands of special resource sensitivity and significance are identified and mapped, and
- resource and landscape features such as priority habitat areas, wetlands, streams and ponds are mapped,
- new information is brought into the RMP process through public input.

This type of mapping and data collection, based on the best information currently available, provides the basis for subsequent analysis and ultimately the development and application of appropriate management guidelines for specific resources, designed to provide greater protection to valuable natural or cultural assets. This process identifies specific areas for specialized resource management guidance beyond those protections already provided by standard best management practices and legal regulations, such as the agency's Old Growth policy, or Coastal Zone Management's Barrier Beach Management Guidelines. Highly sensitive ecological or cultural assets identified through this process may be found within any of the three Landscape Designations.

IV. Forest Resource Management Plans

Another key tool in DCR's land management activities are the Forest Resource Management Plans (FRMPs) that have been completed for large geographic areas within the western part of the state. The FRMPs identify silvicultural treatments for properties or portions of properties that have been identified through the Landscape Designation process as being suitable for active forest management. These plans will be amended for consistency with the final Landscape Designations. Information and data collected in the FRMPs related to forested areas is similar to what is gathered for an RMP and will be utilized in the development of RMPs for properties located in these areas. As DCR continues to develop RMPs for its properties, forest management planning will occur as a part of the RMP process. Forest management decisions and activity in designated Woodlands will be directed by the Landscape Designation Management Guidelines which lay out procedures that include the identification of different approaches to appropriate silvicultural treatments to ensure resource protection.

V. Planning Integration

With the two tier planning approach – a statewide scale and a site specific scale - it is critical to understand how they work together in an integrated fashion to provide overall guidance to resource management and assist with administrative decisions. Landscape Designations will be used to inform the RMP process and the application of LSZ zones. Specific management guidelines associated with each LSZ zone are intended to provide additional protection and stewardship for site-specific natural and cultural resources and to ensure consistency among the activities that are allowed in each property under the broad management guidelines described for each Landscape Designation.

In most cases, the Landscape Designation and the LSZ zoning systems will work in coordination with each other to set high-level land management priorities based on ecosystem services, and to supplement those priorities with site specific resource protection and management guidelines. RMPs identify and assess specific resources and site conditions at a finer scale than the Landscape Designation process. However, the vertical and horizontal integration of these two systems, as exhibited in Table 1, allows us to apply consistency across processes.

Appendix V. Land Stewardship Zoning Guidelines, July 2012. (Continued)

Table 1. Landscape Designation & Land Stewardship Zoning – A Land Management Framework

Landscape Designation Management Guidelines → *	Reserve – <i>The least fragmented forested areas where ecological processes will predominate and inform management, and where commercial timber harvesting is not allowed.</i>	Woodland – <i>Forested areas actively managed for forest health, resource protection, sustainable production of timber, and recreation.</i>	Parkland – <i>Areas providing public recreation opportunities, connections to nature, and protection and appreciation of natural and cultural resources.</i>
Land Stewardship Zones ↓ **			
Zone 1 – <i>Highly sensitive resources requiring special management approaches.</i>	Rare species habitat, natural communities, archaeological sites, or fragile cultural sites identified as being sensitive to / easily degraded by human activities.		
Zone 2 – <i>Resources that support recreational and management activities appropriate to the site.</i>	Large areas of natural vegetation and associated natural and cultural features, including rare species habitat, that is compatible with dispersed recreation.	Forest stands and associated natural and cultural features, compatible with dispersed recreation and active forest management intended to enhance species and age class diversity.	Stable / hardy natural and cultural landscapes, where a variety of outdoor recreation activities can be provided in a sustainable manner.
Zone 3 – <i>Intensive use areas such as recreational sites or maintenance areas.</i>	New zone 3s will not be established in Reserves. <u>Exception</u> – an RMP may identify existing intensive use areas missed during designation and not already captured in a Parklands designation area, in which case the application of a zone 3 may be considered.	Intensive recreation and park administration areas currently embedded within the forested landscape.	Areas that require regular maintenance by DCR staff, including altered landscapes in active use, intensive recreation areas, and park administration areas. Sites that may accommodate administrative or intensive recreation areas to meet future demands.

* See *Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines* for complete management guidelines for Reserves, Parklands and Woodlands.

** For a complete description of management guidelines for each zone, please see Section IV of this document.

Appendix V. Land Stewardship Zoning Guidelines, July 2012. (Continued)

VI. Land Stewardship Zones

Each of the three Land Stewardship Zones have general management guidelines that are intended to provide additional protection for natural and cultural resources and to ensure consistency among resource stewardship, recreation and sustainable forestry. In addition, specific management recommendations derived during the preparation of each individual RMP are designed to ensure that management practices are tailored to the resources within the facility, factor in and assess existing uses, and address site specific management challenges and opportunities.

Zone 1

Management Objective:

Protection of sensitive resources from management or other human activities that may adversely impact the resources.

A. General Description

This zone encompasses areas with highly sensitive ecological and cultural resources that require additional management approaches and practices to protect and preserve the special features and values identified in the Resource Management Plan. Zone 1 areas are not suitable for future intensive development.

B. Examples

Examples identified as being highly sensitive to human activities include rare species habitat or natural communities, areas with concentrations of sensitive aquatic habitats, excessively steep slopes with erodible soils, archaeological sites or fragile cultural sites, where stewardship of these resources must be the primary consideration when assessing management and recreational activities in these areas.

C. General Management Guidelines

- **Recreation and Public Access:** In general, recreation activities will be limited to dispersed, low impact, non-motorized recreation and dependent on assessment of specific resource sensitivity and stewardship considerations by resource specialists - e.g. NHESP, MHC, DCR Bureau of Planning and Resource Protection - in conjunction with field staff. Snowmobiles may be permitted on existing designated trails during the appropriate time of year and according to DCR policies and regulations. Existing trails will be evaluated for compatibility with resource protection goals. Trails will be discontinued if discontinuance furthers sensitive resource protection and does not compromise public safety. Proposals for new activities will be strictly evaluated, and management guidelines will be applied by resource specialists for the protection of resources and to address specific issues.
- **Vegetation Management:** Commercial timber harvesting is not permitted. Vegetation management may occur for public safety purposes, removal of invasives, stewardship of cultural sites, or historic vista maintenance.
- **Water and Soil:** Management will focus on erosion control to protect sensitive natural and cultural resources.

Appendix V. Land Stewardship Zoning Guidelines, July 2012. (Continued)

- **Habitat Protection:** Public access will be guided away from sensitive rare species habitat and sensitive Priority Natural Communities. Long-term protection strategies will be developed in consultation with the NHESP; Habitat Management Plans will be prepared in advance of proposed management activities.
- **Forest Health and Protection:** Spread of invasive species, forest pathogens and wildfires may be controlled if a threat to sensitive natural or cultural resources is identified.
- **Cultural Resources:** Public access will be guided away from archaeological or historic sites sensitive to human activity and reoriented to areas that can sustain appropriate recreational activities. Management activities will focus on protection of sensitive archaeological and historic sites. Use of metal detectors, artifact collecting and digging is prohibited.
- **Facilities and Transportation:** Existing roads may be maintained to assure continued administrative and/or emergency access according to either the DCR Historic Parkways Preservation Treatment Guidelines or guidelines associated with DCR Forest Road Classification System. Roads identified as unnecessary for administrative and/or emergency access will be evaluated for compatibility with resources, and discontinued if discontinuance furthers sensitive resource protection and only after consultation with local emergency services personnel.
- **Interpretation, Public Information and Outreach:** Interpretation and public information related to the sensitive natural and cultural resources may be provided through programs, kiosks and other outreach venues that will avoid impacts to the actual resources.
- **Monitoring, Enforcement and Research:** Professional research projects in support of sensitive natural and cultural resource protection may be permitted with approval of the Director of State Parks & Recreation and the Director of Forest Stewardship. Baseline conditions will be evaluated and monitoring will be conducted to document changes, dependent on capabilities and availability of operational resources for staff and outside experts.
- **Special Use:** In general, Special Uses other than research projects described above will not be permitted.

Zone 2

Management Objective

Provide for a balance between the stewardship of natural and cultural resources and recreational opportunities which can be appropriately sustained.

A. General Description

This zone encompasses stable yet important natural and cultural resources. Zone 2 is a very important component to DCR's management responsibilities, because the protected landscape within this zone provides a buffer for sensitive resources, recharge for surface and groundwater, and large areas where existing types of public recreation activities can be managed at sustainable levels.

Appendix V. Land Stewardship Zoning Guidelines, July 2012. (Continued)

B. Examples

Examples include areas of non-intensive use that contain diverse ecosystems, rare species habitat that is compatible with dispersed recreation and sustainable management practices, and cultural resources that are not highly sensitive to human activities.

C. General Management Guidelines

- **Recreation and Public Access:** Resources will be managed to support a variety of safe, sustainable recreation opportunities that are compatible with the long-term stewardship and character of natural and cultural resources. New public access may be allowed depending upon existing area trail densities, purpose and need, physical suitability of the site, and specific guidelines for protection of rare species habitat and archaeological resources, as reflected in DCR's *Trails Guidelines and Best Practices Manual*.
- **Vegetation Management:** Vegetation may be managed for public safety purposes, stewardship of cultural sites, vista maintenance, maintaining native biodiversity, protection of recreational assets and ecological management and restoration, provided that the management activities are consistent with the applicable Landscape Designation for the property. Commercial timber harvesting will be limited to properties designated as Woodlands.
- **Water and Soil:** Prevent soil erosion via BMPs for management and recreational activities. Maintain water quality of surface and groundwater resources with pollution prevention and holistic watershed management strategies.
- **Habitat Protection:** Maintain and where possible enhance habitat for rare species, Priority Natural Communities, and ecological diversity. Management activities in NHESP designated Priority Habitat areas must follow guidelines of an approved Habitat Management Plan.
- **Forest Health and Protection:** Potential for wildfires may be lessened through fire prevention strategies. Spread of wildfires will be controlled for public safety purposes. Forest stands may be managed to lessen adverse effects of forest pathogens. Invasive species that are degrading native ecosystems may be controlled depending on availability of operational resources and trained volunteers.
- **Cultural Resources:** Management will ensure long-term stewardship of archaeological and historic sites. Newly discovered sites will be documented and inventoried in consultation with MHC. All proposed projects must be reviewed by the DCR Bureau of Planning and Resource Protection Office of Cultural Resources during their planning stages to determine potential impacts to cultural resources. Use of metal detectors, artifact collecting and digging is prohibited.
- **Facilities and Transportation:** In Parklands and Woodlands, new roads necessary for recreation, administration or emergency use may be constructed if consistent with resource management goals, after review for impacts to natural and cultural resources. Existing roads that are not required for administrative or public safety purposes may be closed and restored to a natural condition after consultation with local emergency services personnel. Roads will be maintained according to either the DCR Historic Parkways Preservation Treatment Guidelines or guidelines associated with DCR Forest Road Classification System.

Appendix V. Land Stewardship Zoning Guidelines, July 2012. (Continued)

- **Interpretation, Public Information and Outreach:** Interpretation will be focused on enhancing the variety of environmental education opportunities, and on building public support for the long-term stewardship of natural and cultural resources.
- **Monitoring, Enforcement and Research:** Monitoring and research projects may be conducted as approved through the Special Use Permit process. Enforcement of prohibited or regulated activities is critical related to public safety, enjoyment of appropriate recreation activities and long-term stewardship of natural and cultural resources.
- **Special Use:** Special uses may be allowed, and will be evaluated on an individual basis as provided in DCR's Special Use Policies and Procedures.

Zone 3

Management Objective

Provide public access to safe and accessible recreational opportunities, as well as administrative and maintenance facilities that meet the needs of DCR visitors and staff.

A. General Description

This zone includes altered landscapes in active use, and areas suitable for future administrative, maintenance and recreation areas. The resources in this zone can accommodate concentrated use and require regular maintenance by DCR staff.

B. Examples

Examples of areas of concentrated use include park headquarters and maintenance areas, parking lots, swimming pools and skating rinks, paved bikeways, swimming beaches, campgrounds, playgrounds and athletic fields, parkways, golf courses, picnic areas and pavilions, and concessions. Examples of future use areas include disturbed sites with no significant ecological or cultural values and not suitable for restoration, identified through the RMP or in a Master Plan as being suitable for intensive recreation or park administration sites. Note: Development would be preceded by detailed site assessments to ensure protection of natural and cultural resources.

C. General Management Guidelines

- **Recreation and Public Access:** Intensive recreation areas will be managed to maintain public health and safety. Agency policies, resource protection and recreational goals will determine activities that are supported in individual properties.
- **Vegetation Management:** Commercial timber harvesting is not permitted. Native species will be used for landscaping. Trees and other vegetation may be removed or trimmed for public safety, vegetative health, protection of cultural resources, and aesthetic purposes.

Appendix V. Land Stewardship Zoning Guidelines, July 2012. (Continued)

- **Water and Soil:** Management will focus on maintaining water quality for water-based recreation, including implementation of strategies to prevent erosion and siltation and remediation of pollution sources. Employ Best Management Practices to capture, treat and recharge stormwater run-off.
- **Habitat Protection:** Management will focus on identifying, documenting and protecting rare species habitat, in consultation with the NHESP.
- **Forest Health and Protection:** Spread of forest pathogens and invasive species may be controlled if there is a threat to native ecosystems that surround the intensive recreation or park administration sites.
- **Cultural Resources:** Historic sites that are the focus of intensive public visitation will be managed to minimize degradation of the historic resource. Proposed projects must be reviewed by the DCR Bureau of Planning and Resource Protection's Office of Cultural Resources during the planning stages for potential impacts to historic and archaeological resources. Historic buildings, structures, objects, sites and landscapes will be preserved in original use or adaptively reused when appropriate for park uses or in compatible use, such as through the Historic Curatorship Program. Use of metal detectors, artifact collecting and digging is prohibited.
- **Facilities and Transportation:** Continue efficient use of existing facilities or employ appropriate reuse of existing facilities to minimize new impacts. Roads will be maintained according to either the DCR Historic Parkways Preservation Treatment Guidelines or guidelines associated with DCR Forest Road Classification System. New roads and facilities may be established as necessary for public and administrative use after review for potential impacts to natural and cultural resources. Adaptive reuse of historic resources for park or other appropriate uses is encouraged.
- **Interpretation, Public Information and Outreach:** Interpretive programs may be provided in association with intensive recreation sites or activities. Programs will be aimed at building public support for the long-term stewardship of natural and cultural resources.
- **Monitoring, Enforcement and Research:** Monitoring will focus on water quality related to water-based recreation activities. Enforcement of prohibited and regulated activities will be conducted to provide for public safety and enjoyment of appropriate recreation activities.
- **Special Use:** Special uses may be allowed, and will be evaluated on an individual basis as provided in DCR's Special Use Policies and Procedures.

Significant Feature Overlays

Management Objective

The purpose of the overlays is to provide precise management guidance in order to maintain or preserve the recognized resource features regardless of the zone in which they occur.

A. General Description

The three land stewardship zones may be supplemented with significant feature overlays that identify formally designated or recognized resources. These resource features have been recognized through research

Appendix V. Land Stewardship Zoning Guidelines, July 2012. (Continued)

and assessment by professional resource specialists. Information on the significant features is brought into the RMP process via review of previous research projects and associated designations.

B. Examples

A natural or cultural resource, recognized through professional inventory / research, which cuts across more than one land stewardship zone, such as:

- National Register Historic District
- Areas subject to public drinking water regulations
- Priority habitat for species that are not sensitive to human activities
- Biomap2 Core Habitat
- Designated Areas of Critical Environmental Concern

A natural or cultural resource, recognized through professional inventory / research, which is located in an area characterized by intensive visitor use. In these cases, the Significant Feature Overlay is used to highlight the potential conflict between resource stewardship and ongoing visitor use, and provide mitigation strategies. Examples include:

- A NHESP Priority Natural Community associated with a summit that is also a popular destination for hikers.
- A barrier beach that provides habitat for rare shorebirds, and is subject to CZM barrier beach management guidelines and coastal wetlands regulations, but also supports thousands of visitors during the summer season.
- A significant cultural site such as Plymouth Rock that is subject to ongoing, intensive visitation.

C. Management Guidelines

Specific management guidelines are provided by resource specialists and/or by the professional staff of the agency or NGO that assessed the significant resource feature or has a regulatory role for protection of the resource. Examples include MHC requirements for treatment of historic resources within National Register Historic Districts, and NHESP guidelines for Priority Natural Community habitat stewardship.

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