dcr
Massachusetts

Resource Management Plan
Otter River State Forest

Adopted by the DCR Stewardship Council Month, 2025

Massachusetts Department of Conservation and Recreation
Division of Conservation and Resource Stewardship
Office of Cultural Resources

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Purpose

Resource Management Plans (RMPs) are foundational documents that identify a park, forest, or reservation's defining natural, cultural, and recreational resources and identify potential threats and opportunities to guide DCR's continued stewardship of the property and to inform future decisions about the property in a way that celebrates and preserves its identity.

RMPs are prepared for "all reservations, parks, and forests under the management of the department" (M.G.L. c. 21, § 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." DCR finalizes RMPs following a public process and adoption by the DCR Stewardship Council. The contents of this RMP represent the best available information at the time of adoption by the Stewardship Council.

Mission and Core Principles

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, parkways, and over 100 National Register listed properties. 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.

DCR strives to be an exemplary leader in conservation and recreation. DCR's staff is passionate, dedicated, and continuously employs best practices, expertise, and a sense of place in carrying out the mission. The following core principles ground the agency in its work. For the benefit and well-being of all—people and the environment—DCR pledges to:

- Provide access to a diversity of outdoor recreational experiences and unique landscapes that is equitable, inclusive, and welcoming.
- Conserve lands, water, and forests by integrating science, research, and technical expertise into the management of our natural resources.
- Advance climate change mitigation and adaptation efforts by implementing sustainable practices and advancing resiliency across our infrastructure, assets, and resources.
- Support healthy communities by providing places for people to connect with nature and each other.
- Inspire generations of stewards by recognizing and honoring our legacy through partnerships, public engagement, and education.

Stewardship

DCR honors Indigenous peoples for their care, throughout many generations, of the land that DCR now stewards on behalf of the people of the Commonwealth. DCR embraces this legacy of stewardship, fostering a sense of shared responsibility by all people for protection of the waters, lands and living things for the enjoyment and appreciation of all.

To learn more about the DCR, its facilities, and programs please visit us at www.mass.gov/dcr. Contact us at mass.parks@mass.gov.

Otter River State Forest

https://www.mass.gov/locations/otter-river-state-forest

1. Property Overview

Characteristic	Value
Date Established	1917
Location	Royalston, Templeton, Winchendon
Ecoregion	Worcester Plateau
Watershed	Millers
DCR Region	Central
DCR District	Central Highlands
DCR Complex	Otter River
Management Forestry District	Mid-State
Fire Control District	North Worcester
Size (acres)	1,102.7
Boundary Length (miles)	15.6
Elevation - Minimum (feet)	830.4
Elevation - Maximum (feet)	1,049.0
Environmental Justice (acres)	0.0
Estimated Annual Attendance (2023)	Unknown
Interpretive Programs (# programs, 2023)	230
Interpretive Programs (# attendees, 2023)	900

2. Landscape Designations

Designation	Acres
Parkland	293.0
Reserve	0.0
Woodland	728.8
No Designation	150.4

3. Regulatory Designations

Designation	Acres
National Register Historic District	0.6
Priority Habitat (MESA)	884.2

4. Long-Term Agreements

Agreement	Expiration Year
Department of the Army lease for public park and recreational and fish and wildlife purposes.	2026
Massachusetts Department of Environmental Management sub-lease with Massachusetts Division of Fisheries, Wildlife and Environmental Law Enforcement, for fish and wildlife purposes.	2026
Supplemental Agreement No.3 between the Secretary of the Army and the Commonwealth of Massachusetts.	2026

5. Concessions

Concession Type
None

6. Partners & Friends

Group(s)
Coldbrook Snowmobile Club
North American Family Campers Association
US Army Corps of Engineers

7. Features of Interest

Feature
Beaman Brook
Beaman Pond
Wilder-McKenzie Nature Trail

8. Natural Resources

Resource	Value
Tree Canopy (acres)	1022.6
Rivers and Streams (miles)	3.6
Open Water (acres)	2.1
Wetlands (acres)	52.4
Certified Vernal Pools (#)	1
Potential Vernal Pools (#)	5
State-Listed Species (# Regulatory)	2
State-Listed Species (# Non-Regulatory)	0
Federally Listed Species (#)	0
Aquatic Invasive Plants (# known species)	0
Terrestrial Invasive Plants (# known species)	5

9. Forest Management (Since 2012)

Management Objective	Acres
Maintain and enhance species and structural diversity	242.0

10. History of Wildfires and Conditions Influencing Future Wildfires

Wildfire Attribute	Value or Characteristic
Number of wildfires on property; 2019–2023	1
Acres burned by wildfires on property; 2019–2023	0.2
Number of wildfires in Fire Control District; 2019–2023	294
Acres burned by wildfires in Fire Control District; 2019–2023	1169.6
Type of Wildland-Urban Interface	Intermix
Predicted rate of spread, based on Fire Behavior Fuel Model 13	Rapidly Spreading

11. Natural Hazards

Hazard Type	Acres
Flood (1.0%-chance)	80.7
Flood (0.2%-chance)	89.1
Hurricane Inundation (Cat. 1)	N/A
Hurricane Inundation (Cat. 4)	N/A

12. Climate Change (By 2070)

Type of Change	Amount of Change
Increase in annual days over 90° F	>30
Change in annual maximum daily rainfall (inches)	>10
Massachusetts Coastal Flood Risk Model area of inundation (acres)	N/A

13. Cultural Resources

Resource Type	#
Archaeological	0
Historic - Total MACRIS Listed	8
Historic - National Register Listed	0
Historic - National Historic Landmark	0

14. Recreation Resources

Resource	#
Basketball Court	1
Waterfront Area	2
Campground	1
Craft Center	1
Healthy Heart Trail	1
Pavilion	1
Picnic Area	1
Trail System	3
Volleyball Court	1
Basketball Court	1
Waterfront Area	2

15. Recreation Activities

Activity
Basketball
Bicycling, mountain
Camping
Canoeing/Kayaking
Dog walking, on-leash
Educational programs
Fishing, fin fish
Geocaching/Letterboxing
Hiking/Walking
Horseback riding
Hunting
Picnicking
Running/Jogging
Skiing, cross-country
Snowmobiling
Snowshoeing
Swimming/Sunbathing
Tetherball
Volleyball

16. ROADS AND TRAILS

Metric	Value
Roads - Unpaved (miles)	1.5
Roads - Paved (miles)	3.2
Forest Roads - Unpaved (miles)	8.1
Forest Roads - Paved (miles)	0.1
Trails - Unpaved (miles)	4.4
Trails - Paved (miles)	0.0
Trails - Unauthorized (miles)	1.5
Trail Density (miles/acre)	0.013
Area of Impact (acres)	691.2

17. PARKING

Parking Resources	#
Lots	2
Parking Spaces - Total	26
Parking Spaces - Accessible (HP)	4
Parking Spaces - Other	19

INTRODUCTION

Otter River State Forest (Otter River or the Forest) is located in central Massachusetts, approximately six miles south of the Massachusetts-New Hampshire Border and 30 miles northwest of Worcester. The Forest is located in the Towns of Royalston, Templeton, and Winchendon near the confluence of the Millers and Otter Rivers. Lake Dennison Recreation Area is located 0.3 miles north, and Templeton State Forest 2.6 miles south, of the Forest. Otter River is made up of three noncontiguous tracts; they are:

- **Beaman Pond Tract.** This tract is located in the southeast corner of Winchendon, along the Templeton town line. Route 202 (Baldwinville State Road) passes north-south through this tract, and Beaman Brook flows from east to west through the tract on its way to the Otter River. The Forest's administrative and operations infrastructure, and most of its recreation infrastructure is located on this tract. Nearly the entirety of this tract, with the exception of the Forest Headquarters and operations yard, has been designated Priority Habitat by the Massachusetts Natural Heritage and Endangered Species Program (NHESP). This tract is largely bordered on the north and west by the U.S. Army Corps of Engineers' (USACE) Birch Hill Dam property and New Boston Cemetery, on the south by low-density residential development, and on the east by a mixture of residential development and unprotected, undeveloped land. Portions of this tract are leased from the USACE.
- **Royalston Road Tract.** This tract, the largest in the Forest at approximately 577 acres, is located north of Royalston Road (Route 88) in the Towns of Templeton and Winchendon at the intersection of the Millers and Otter Rivers. A small network of forest roads and single-track trails is present. Nearly the entirety of this tract has been designated Priority Habitat by the NHESP. This tract is bordered to the north by a railroad right of way and the USACE's Birch Hill Dam property, on the west by the Massachusetts Division of Fisheries and Wildlife's (MassWildlife) Norcross Hill Wildlife Management Area (WMA), on the south by a combination of residential development and unprotected, undeveloped land, and on the east by the USACE's Birch Hill Dam property.
- **New Boston Road Tract.** This tract is located south of New Boston and Burgess Roads, on the Royalston-Winchendon town line. A small network of forest roads and single-track trails is present. The easternmost portion of this tract, approximately 2.6 acres, has been designated Priority Habitat by NHESP. The tract is bordered on the east and south by USACE's Birch Hill Dam property, on the north by Birch Hill WMA and unprotected, undeveloped parcels, and on the west by low-density residential development and Mount Grace Land Conservation Trust's (MGLCT) Guiney Memorial Forest.

The Forest is on land shaped by generations of Indigenous peoples and non-Indigenous inhabitants. Past and present Indigenous residents embody fluid, relational connections to the places and spaces now known as Otter River State Forest. Indigenous groups and individuals, including peoples known as the Wabanaki (Dawnland Confederacy), Pennacook, and N'dakina (Abenaki/Abenaquis), are recorded in available documentation (Native Land Digital 2023) as having relationships to this place over seasons and generations. European settlement began in Winchendon in 1752. By the time the Town was officially established in 1764, a grist mill and sawmill had already been built along the Millers River (DCR 2006). Otter River State Forest was purchased by the State Forest Commission in 1915 and formally designated in 1917, making it Massachusetts' first state forest. The Civilian Conservation Corps (CCC) established Camp S-63 at Otter River in 1934 and completed numerous projects in the Forest, including "a general recreation area on Beamen's (sic) Brook" that "embraces a dam, a pond, a parking area, 25 tent sites

(each with individual fireplaces), 5 fireplaces for day picnickers, two picnic groves" and "2 bathing beaches" (Department of Conservation (DOC) 1935: 23). These CCC-constructed features are still used for recreational activities today. In the early 1940s, federal actions along the Miller's River forever altered the Forest. The U.S. government constructed Birch Hill Dam, acquiring land in fee and easements to create the 3,200-acre Birch Hill Dam Reservoir Area. This area, which is normally empty, is capable of storing up to 16.3 billion gallons of water for flood control purposes (USACE 2021). As part of the creation of the reservoir area, the size of the Forest decreased from 1,882.51 acres in 1940 to 719.15 acres in 1944 (DOC 1941, DOC 1945), and the USACE was granted the right to flood portions of the Forest remaining in State ownership. DCR leases 4,207 acres of the Birch Hill Dam Reservoir Area from the USACE, and sub-leases 4,018 acres to MassWildlife. The remaining 189 acres of leased land is incorporated into two DCR properties, Otter River State Forest and Lake Dennison Recreation Area (see associated RMP). Because the boundaries between the DCR and MassWildlife lease areas are not mapped in detail, property boundaries used in this RMP are estimates based upon best available information. Prior to adoption of this Resource Management Plan (RMP), the Forest was managed under a regional Guidelines for Operations and Land Stewardship plan (i.e., GOALS plan) for the Northeastern Connecticut Valley Region (Department of Environmental Management 1997).

Otter River State Forest provides visitors to central Massachusetts with a pleasant day-use experience on the shore of Beaman Pond or an extended stay in a well-forested campground. Its trail systems allow for pleasant hikes through deciduous and evergreen forests, with views of rivers, brooks, and a variety of isolated and alluvial wetlands. The Beaman Pond Tract's Wilder-McKenzie Nature Trail connects Otter River's campground to the day use area at nearby Lake Dennison Recreation Area. The Forest's Beaman Pond and Royalston Road Tracts help protect the Commonwealth's biodiversity by providing habitat for two rare state-listed species.

PARK IDENTITY

Otter River State Forest is strongly identified with its wooded campground and day use area, and its location along the Otter River. The Forest exemplifies DCR's commitment to conserving important natural resources, preserving cultural resources, providing compatible recreation, and responsible forest management. The Forest is also part of a broader flood control landscape (i.e., the Birch Hill Dam Reservoir Area) along the Millers and Otter Rivers, and a multi-partner connected conservation landscape that extends from Route 2 northward to the New Hampshire border. Future activities and improvements should be consistent with the Forest's Parkland and Woodland Landscape Designations, ensure continued high-quality day-use and overnight recreation opportunities, stewardship of upland and riparian resources, protection of known and potential cultural resources, and responsible forest management.

DEFINING RESOURCES AND VALUES

Resources and values that define the Forest are related to its proximity to Otter River and its recreation infrastructure and opportunities. They include:

- Otter River State Forest carries the special recognition of being Massachusetts' first state forest. Today the Forest contributes to the protection of thousands of acres of conservation land, providing resource protection, recreation, and flood control for the area.
- Endangered or uncommon natural resources.

- The presence of two species protected under the Massachusetts Endangered Species Act (MESA), one of which is associated with a mixture of streams, wetlands, and uplands, and the other is associated with forested areas that experience regular disturbance events.
- The campground and day use area provide a recreational resource dense area, providing access to a waterfront area, picnic facilities, basketball court, interpretation center, and extensive trail network.
- The Civilian Conservation Corps played a large role in shaping Otter River State Forest, from design and construction of the day use area and campground to the forest roads and trees. Many resources built by the CCC can be seen today, either through standing structures or structural remnants (Berg 1998, 1999).
- Over 820 acres of Otter River State Forest are designated Priority Habitat, contributing toward conservation of habitat for rare and endangered species in Massachusetts.
- The property plays a crucial role in USACE flood management, with periodic intentional flooding to reduce downstream impacts during heavy rain events. This intentional flooding can result in the closure of some recreation facilities.

STATEMENTS OF SIGNIFICANCE

Statements of Significance describe the importance or distinctiveness of a place and its resources (National Park Service (NPS) 1998). These statements reflect current scholarly inquiry and interpretation and go beyond a simple listing of resources to include contextual information that makes the facts more meaningful. Significance statements may cover the following categories of information:

- The property's significance at the time of its establishment.
- How the property, or society's understanding of the property, has changed since its acquisition that makes it significant or unique within the state park system today.
- The property's role in recreation and its importance to the community it supports, particularly regarding activities that are unique to that property.

For park planning, these statements focus management actions on the preservation and enjoyment of those attributes that most directly contribute to the importance of the place. For interpretive planning, they comprise the information upon which the interpretive themes and overall program are built.

The following Statements of Significance have been identified for Otter River State Forest. The sequence of these statements does not reflect their level of significance.

- Otter River State Forest is the first State Forest in Massachusetts. With the creation of the state forests, the Commonwealth hoped to use scientific forestry principles to reforest the state and generate economic resources. At Otter River State Forest, this included the creation of a tree nursery, one of seven in the state. The CCC expanded the program through cuttings, plantings, and invasives control.
- Since the creation of the State Forest System, the goals of the program have expanded to include forest resiliency, water quality, diverse wildlife habitats, carbon sequestration and storage, and safety.
- The State Forester claimed that Winchendon offered a prime opportunity to show how "modern forestry" could benefit Massachusetts's towns. Otter River State Forest supported seven

manufacturers in the immediate area, providing them with a local source of wood. Forest staff milled some wood themselves and used the lumber for different projects on-site.

- Otter River played an important role in the Commonwealth's recognition of recreation as a fundamental value of the State Forest system. Though the original scope of the State Forests did not include recreation, less than a year after the creation of the State Forest, people clamored to be able to camp there, making it one of the oldest public campgrounds in MA. In 1918, the commissioners noted that state forests, "…had value also as recreation reserves." In the 1930s, the CCC expanded the site's recreational opportunities.
- Otter River State Forest is one of three properties that are almost completely classified as Priority Habitat (PH 1890). This area designates the known geographical extent of habitat for state-listed rare species, both plants, and animals. These species are either at risk, or may become at risk, of extinction.

UNIFYING THEME

The Unifying Theme is a statement that ties a property's stories together and shapes the overall interpretive message that DCR wants to share with visitors in their experience at the property. The theme provides an overarching conclusion for visitors to contemplate (Ham 2013) and answers the question "so what?" The theme guides all interpretation for the park, both personal (i.e., formal and informal interactions with visitors) and non-personal (e.g., exhibits, signage, brochures).

The Unifying Theme for Otter River State Forest is:

> The Massachusetts State Forest system, beginning with Otter River State Forest, was an idea that had an impact far beyond what its creators imagined.

VISITOR EXPERIENCE

Otter River State Forest provides a variety of visitor experiences, including the following:

- **Virtual Experience.** Potential visitors will find detailed information about Otter River on DCR's web site. The Forest has its own web page that provides potential visitors information needed to plan a visit. (https://www.mass.gov/locations/otter-river-state-forest)
- **Entering the Park.** Visitors enter the Forest through a formal gateway on Winchendon Road in Baldwinville. They travel approximately 0.4 miles down a paved road to the contact station at a fork in the road, where they are directed to either the campground or day use area. Day-use visitors pay a parking fee before beginning their day of adventures. A large parking lot awaits visitors ready to enjoy the day use area.
- **Campground.** This nicely wooded campground is in close proximity to the day use area. Campers choose from among 73 campsites (two accessible), three group sites, and four yurts, all reservable online through Reserve America. The comfort stations provide campers with access to facilities close to their sites. Each campsite provides a fire ring and picnic table for cooking and enjoying meals with friends and family. The campground also contains a smaller waterfront area, separate from the day use area's waterfront, for registered campers.
- **Day Use Area.** Visitors spend the day partaking in numerous activities at Otter River State Forest. The waterfront area allows day-use visitors to relax in the sun on a sandy beach and dip their toes in

the water. The reservable pavilion allows large parties to reliably use shelter spaces in the day use area. Additional picnic areas provide spaces for smaller, impromptu gatherings. Additional activities consist of:

- **Swimming.** Visitors often spend their day at the waterfront area at Beaman Pond swimming, sunbathing, and playing in the water. The waterfront area includes two small beaches, one north of Beaman Pond Dam (Camp Beach) and the other south of the dam. Both beaches are posted as unguarded, display beach regulations, and provide a throwable flotation device and rope. The beaches are open from Memorial Day to Labor Day, depending on water quality.
- **Picnicking.** A moderately-sized picnic area (i.e., fewer than 20 tables) is located near the shore of Beaman Pond. The picnic area is well shaded with views of the pond, drawing visitors to Otter River for a quiet picnic. Bathroom facilities are located adjacent to the picnic grove.
- **Sports.** A basketball court, volleyball court, and tetherball pole are located in a clearing in the day use areas. Visitors obtain game balls from the contact station for use on these courts. A small bike rack, for approximately 12 bikes, is located adjacent to the athletic courts for visitors arriving by bicycle.
- **Interpretive Programming.** An interpretive center located in the day use area is the starting point for the Forest's interpretive programming. A seasonal interpreter, based at Otter River, provides informative programming to visitors to Otter River and to visitors to nearby Lake Dennison Recreation Area.

- **Hunting.** The Forest is open to all legal hunting.
- **Trail-based Passive Recreation**. Visitors seeking other recreational opportunities may access a well-developed trails network. Over 10 miles of official forest roads and trails through woodlands, provide visitors with ample opportunities for exploring the Forest on foot, bicycle, and horseback. With easy access to trails at Birch Hill Wildlife Management Area and Lake Dennison Recreation Area, recreationists can extend their visit and explore more landscapes. In the winter, with appropriate snow cover, visitors use these same trails for snowshoeing and cross-country skiing.
- **Trail-based Motorized Recreation**. In winter, under appropriate snow conditions, visitors may use snowmobiles on the Forest's road network and on roads in the adjacent Birch Hill Dam property.

THREATS AND OPPORTUNITIES

The following information identifies potential threats to the park's natural and cultural resources and identifies opportunities to enhance their protection and stewardship. Although recreation is not considered a resource under statute (M.G.L. c. 21, § 2F), it is included below because recreation is an important part of the park-going experience, helps define a park's values, and is a key part of assessing the consistency of activities taking place in the Commonwealth's forests, parks, and reservations.

Threats and opportunities identified below are used to inform the development of management recommendations. Potential recommendations must meet prioritization criteria to be included in the Priority Recommendations table (Table 19, page 29).

Natural Resources

Threats

- Although there is limited information on the presence and distribution of invasive plants at Otter River, the following five species of terrestrial invasive plants have been identified in the Forest: glossy buckthorn, garlic mustard, Japanese barberry, Oriental bittersweet, and winged euonymus. Invasive species may negatively impact both the ecological integrity and biodiversity of the Forest.
- Access to the Royalston Road Tract is limited. Although the Forest does include frontage on Royalston Rd/Route 68, the forest road network in this tract is accessed through private property from Gavin Road. Lack of formal access may interfere with DCR's ability to manage natural resources at this tract.
- Portions of Otter River State Forest's boundaries are poorly known and require surveys to have their bounds accurately delineated and mapped.
- A potential encroachment may exist along the east side of the Beaman Pond Tract.
- There is at least one unapproved geocache in the Forest. Inappropriately located geocaches may threaten sensitive natural resources.
- Because the leased portion of the Beaman Pond Tract was not included in the Landscape Designation process (DCR 2012), the lack of Landscape Designations in this area may potentially impede proper management of natural resources.

Opportunities

- Accurately identifying and mapping the boundary of the lease area in the Beaman Pond Tract and applying Landscape Designations to this area would help ensure appropriate management of its natural resources.
- Some of the Forest's five potential vernal pools may "support rich communities of vertebrates and invertebrates" (MassWildlife 2009) and serve as important habitat components for other wildlife, including one of the Forest's state-listed species. Surveying and certifying these pools (DCR (n.d.) and MassWildlife (2009)), as appropriate, may help better protect these animals.
- Within the Forest are occurrences of two types of rare species habitat, Regulatory and Non-Regulatory. Regulatory habitat is based on verified records of state-listed species and has associated mapped Priority Habitat. Non-Regulatory habitat is based on the presence of suitable habitat for state-listed species; there is no associated mapped Priority Habitat. On state lands, both are protected under the Massachusetts Endangered Species Act (MESA; 321 CMR 10.00). Requesting pre-filing consultation with the Natural Heritage and Endangered Species Program (NHESP) for "all works, projects, or activities" in the Forest, regardless of location in or out of Priority Habitat, will ensure continued protection of this habitat and compliance with the MESA.
- There is an opportunity to enhance the Forest's ecological integrity and biodiversity through targeted removal of invasive plant species.
- Preparation of a statewide Forest Resource Management Plan would better guide forestry practices at Otter River State Forest.
- There may be opportunities to enhance restoration of inland barrens and fire-influenced woodlands at the Forest through forest management.

- Completing boundary marking for DCR's fee-owned tracts at Otter River State Forest will improve staff's ability to maintain forest lands, identify encroachments, and protect the integrity of the Forest.
- Obtaining an easement, right of way, or other legal instrument would permanently provide for crossing private property in order to access the Royalston Road Tract.
- provides for crossing private property in order to access the Holmes LotThe Forest is located within the Quabbin to Cardigan Initiative's (Q2C) project area. This initiative is a public-private collaborative effort to conserve the Monadnock Highlands of north-central Massachusetts and western New Hampshire. The Forest's location within the project area offers opportunities to participate in organizational partnerships, grants, and land acquisitions in support of DCR's and Q2C's mutual conservation and recreation goals (Q2C 2023).

Cultural Resources

Threats

- Use of picnic area at Beaman Pond appears to have damaged previously extant CCC stone fireplaces in the area.
- Beaman Pond Dam is showing signs of deterioration of its concrete structure, and stone walled channels downstream of the dam's spillways are becoming destabilized due to erosion and tree growth behind them (Pare Corporation 2021). Continued deterioration could threaten the historical integrity of the dam.
- Erosion due to natural weather events, forestry and other vegetation management activities in adjacent municipal cemetery and USACE's Birch Hill property, and recreational activities (e.g., hiking, mountain biking, and off-highway vehicle (OHV) use) have the potential to impact the Forest's archaeological resources.
- A portion of the Beaman Pond tract was subject to archaeological site examinations funded by the USACE and completed in 2011 (Donohue et al. 2011). Other portions of the Forest have not been archaeologically surveyed. A lack of knowledge concerning archaeological resources in the Forest threatens their effective management and protection.
- Approximately 7% of the park is within the 1.0%-chance flood zone and 8% is within the 0.2%-chance flood zone (Massachusetts Bureau of Geographic Information (MassGIS) 1997). Some known, including CCC structures, and unknown cultural resources may exist within these flood zones. (These data are derived from the FEMA's paper Flood Insurance Rate Maps, or FIRMS, dating to 1979. Because of their age, FIRMS may only be used to portray zones of uncertainty and possible risks associated with flooding, not the absolute delineation of flood boundaries.)
- There is at least one unapproved geocache in the Forest. Inappropriately located geocaches may threaten sensitive cultural resources.
- Because the leased portion of the Beaman Pond Tract was not included in the Landscape Designation process (DCR 2012), due to the lack of accurate boundary data, the lack of Landscape Designations in this area may potentially impede proper management of natural resources.

Opportunities

- Accurately identifying and mapping the boundary of the lease area in the Beaman Pond Tract and applying Landscape Designations to this area would help ensure appropriate management of its natural resources.
- As the first state forest established in Massachusetts, and with its recreational resources created by the CCC, Otter River is the ideal location to tell the story of the establishment, development, and use of Massachusetts' state forests. An opportunity exists to develop interpretive programming and materials to tell these stories.
- A 2021 Phase I Inspection/Evaluation of Beaman Pond Dam (MA01789) identified the dam as being in Fair condition with seven deficiencies noted (Pare Corporation 2021). Implementing the plan's nine recommendations would address these deficiencies (Pare Corporation 2021).
- There is an opportunity to improve management, protection, and interpretation of significant cultural resources in the Forest through completion of a Forest-wide cultural resources reconnaissance survey in partnership with municipal, tribal, and regional entities.

Recreation

Threats

- The Forest lacks trailhead signage and internal navigation signs at the New Boston Road Tract and Royalston Road Tract possibly contributing to a negative visitor experience.
- Approximately 7% of the Forest is within the 1.0%-chance flood zone and 8% is within the 0.2%-chance flood zone. The contact station, many campsites, and one campground comfort station are within this area. There is approximately 0.5 miles of trails system within the flood zones that may be damaged by flood events (MassGIS 1997). (These data are derived from the FEMA's paper Flood Insurance Rate Maps, or FIRMS, dating to 1979. Because of their age, FIRMS may only be used to portray zones of uncertainty and possible risks associated with flooding, not the absolute delineation of flood boundaries.)
- Current digitized and spatially referenced flood maps from FEMA do not cover Otter River State Forest. This limits DCR's ability to prepare for flood emergency operations and to identify potential threats from flood events to recreational resources in the Forest.
- Many pine trees in the campground have been affected by soil compaction, trunk and root wounds, and needle cast disease. These pine trees threaten the future use and usability of the campground.
- The areal extent of DCR's management responsibilities at the Beaman Pond Tract are not clearly known. Although the entirety of the Otter River Campground, which is on both land owned by DCR and land leased from USACE, is under the management of DCR, it is unclear how far westward DCR's management responsibilities extend. Based on input from field operations personnel, for the purposes of this RMP, DCR's operational responsibilities are presumed to extend westward from the campground to the Old Mainline Alignment (i.e., all of "Parcel No. 8" taken from the Commonwealth by the federal government). Uncertainty in the areal extent of DCR's management responsibilities makes it difficult to manage the Beaman Road Tract.
- Unauthorized OHV use within the Forest may negatively impact other recreational users' experiences.

- There are accessibility issues Forest-wide that are identified in the March 2020 Otter River State Forest, Winchendon, MA: Program Accessibility Assessment (Institute for Human Centered Design (ICHD) 2020). These accessibility issues threaten the access to and quality of experiences at the Forest for people with disabilities.
- There were 49 "single sample exceedances" of Enterococci at Camp Beach between 2018 and 2022, resulting in 315 days posted as closed to swimming, an average of 63 days of closures per year (Massachusetts Department of Public Health (DPH) 2019, 2020, 2021, 2022, 2023). During the same time period, the day use area beach recorded 51 exceedances and 266 days posted as closed. Water quality issues necessitating these closures deny visitors access to one of the Forest's most popular recreational resources.
- The interior forest roads are degrading, impeding adequate access to interior forest areas.

Opportunities

- Adding trailhead signage and internal navigation signs at the New Boston Road Tract and Royalston Road Tract could help increase property awareness and improve visitor experience at Otter River.
- DCR's Lakes and Ponds Program is implementing pilot projects at DCR freshwater beaches, including those at Beaman's Pond, that frequently fail to meet water quality standards for swimming. This effort will attempt to identify and mitigate/reduce bacteria levels, with the long-term goal of increasing swimming days available to the public (J. Straub, e-mail message, February 29, 2024). Information from these studies has the potential to enhance the visitor experience at Otter River.
- Continuing to remove declining pine trees in the campground areas and replacing them will improve public safety and aesthetics and ensure that the campground tree canopy is maintained into the future.
- Leases between DCR and the USACE and DCR's sublease to MassWildlife expire in January 2026. The opportunity exists for DCR to continue to provide public recreation opportunities at Otter River by entering into a new lease agreement with USACE. The lease renewal process also provides an opportunity to add detailed spatial information, including GIS data sets, on the boundaries of DCR's lease area. Addition of this information will allow for better management of Otter River.
- The Otter River campground is old, dating to the mid-1930s, and some of its amenities no longer meet visitor expectations. Upgrading numerous aspects of the campground, such as creating larger sites to accommodate modern recreational vehicles, adding electricity hook ups, and installing hot water at all bathrooms would enhance the camping experience.
- Although most of the recommendations from the Energy Audit Study of Lake Dennison/Otter River Complex (Rise Engineering 2017) have been implemented, an opportunity exists to implement the remaining recommendations and to address the items in "Other Measures Evaluated." These measures would increase visitor and staff comfort while helping the Commonwealth meet its targets for reductions in energy costs, energy consumption, and greenhouse gas emissions.
- An opportunity exists to decarbonize the Headquarters building's current oil based heating system with fossil fuel-free equipment.
- There is an opportunity to expand and improve the visitor experience of people with disabilities by addressing identified accessibility issues in the Forest (Institute for Human Centered Design (IHCD) 2020).

- Improving Beaman Pond and corresponding beaches would help improve visitor experience and maintain a primary recreation activity at Otter River State Forest.
- Improving the forest roads through vegetation management (e.g., "brushing back") and regrading would help improve access to interior forest areas for emergency response, as well as maintain a recreational resource for visitors.
- Increasing patrols by Environmental Police Officers and other staff presence may reduce unauthorized activities, such as OHV use, at Otter River.

CLIMATE CHANGE

Climate change impacts nearly every aspect of DCR's properties, from ecosystem health, to infrastructure, to recreation. (See DCR 2024 for an overview of these impacts.) The Department is actively working to mitigate and adapt to current and future impacts through such actions as forest management; decarbonizing DCR's buildings, vehicles, and power equipment; protecting wetlands; and using nature-based solutions to minimize stormwater impacts. Information on these, and other, efforts is incorporated into RMPs as available and appropriate.

Any discussion of climate change requires a shared understanding of terminology. Because of this, this RMP section adopts commonly accepted terms to the greatest extent possible. In general, climate-related technical terms used in this RMP are as defined in the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC 2021). Exceptions to this are the terms Adaptation, Risk, and Sensitivity, which are used as defined in DCR's Climate Change Vulnerability Assessment (CCVA; Weston and Sampson 2022).

DCR manages its forests to provide a range of ecosystem services such as recreation, clean water, wood commodities, and wildlife habitat (DCR 2020). For ecosystems under its management, DCR carefully considers both their vulnerability to climate change and their ability to mitigate the effects of climate change by storing carbon in ecosystems and harvested wood products. Several approaches are used to monitor DCR forests and to design forest management strategies to adapt to climate change and provide ecosystem services. (See Swanston et al. (2016) for information on adaptation strategies and approaches associated with DCR's forest management.) Established in 1957, DCR's Continuous Forest Inventory (CFI) system uses a network of more than 2,000 permanent plots on which repeated measurements are taken on an ongoing basis. The CFI measures the status, size, and health of over 100,000 trees; other vegetation; down woody material; and the forest floor. (See DCR 2022 for additional information on the CFI system.) This information helps DCR understand at a strategic scale the current character, condition, and trends of forest ecosystems under its care. DCR also uses operational inventory to help plan specific treatments and evaluate their outcomes. Using these different scales of information, remotely sensed data, and local and regional external expertise, DCR plans projects that help its stands, forests, and other lands adapt to climate change and mitigate greenhouse gas emissions. The conservation and science-based management of forest lands are an essential element to ensuring crucial carbon storage and advancing climate change resilience (Massachusetts Executive Office of Energy and Environmental Affairs (EEA) 2024). For additional information on the relationship between DCR's forest management practices and climate change, please see pages 77–85 in Massachusetts Forest Action Plan 2020 (DCR 2020) and Managing Our Forests…For Carbon Benefits (DCR 2023).

The Department is actively assessing and addressing the vulnerability of its properties and facilities to the impacts of climate change. In 2022, DCR conducted a Climate Change Vulnerability Assessment (Weston and Sampson 2022). Findings from this CCVA are being used by DCR to enhance park operations and maintenance, inform resilient investment, and provide a framework for hazard mitigation and climate adaptation for natural resources, cultural resources, recreational activities, buildings, facilities, and other infrastructure. Property-specific climate change information from the CCVA is included in the Climate Change (by 2070) table (Table 12) at the beginning of this RMP. An overview of the impacts of climate change on DCR facilities and operations is presented in the DCR Climate Impacts Story Map (DCR 2024).

Climate Exposure and Impacts

A summary of the ways in which the Commonwealth's natural, cultural, and recreational resources may be impacted by climate change is provided below. During the preparation of Resource Management Plans some resources may be identified as having particularly high exposure and/or sensitivity to the anticipated hazards or consequences of climate change. When this occurs, these resources and the projected impacts to them are described. In some instances, the potential impacts of climate change on a given resource are not well understood. When this occurs, only exposure is discussed.

Natural Resources—General Impacts

Climate change affects temperature, precipitation, and atmospheric and ocean chemistry, which in turn directly and indirectly affect the natural environment, including the plants, animals, and natural communities of DCR's forests, parks, and reservations.

Climate is known to influence the presence, absence, distribution, reproductive success, and survival of both native and non-native plants (Finch et al. 2021). Native northern and boreal species, including balsam fir, red spruce, and black spruce may fare worse under future conditions, but other species may benefit from the projected changes in climate (Janowiak et al. 2018). Some non-native invasive species will be affected by climate change while others will remain unaffected, and some non-invasive non-native species are likely to become invasive (Finch et al. 2021). In general, elevated temperature and CO_2 enrichment associated with climate change increases the performance of non-native plants more strongly than the performance of native plants (Liu et al. 2017). Climate change may result in the presence of new non-native invasive plants on a property, and changes to the distribution and/or abundance of invasives already present on a property.

Exposure to a changing climate affects wildlife in a variety of ways. For animals that live in or near aquatic environments, "changes in habitat and hydrological regimes are expected to shift their abundance and distribution" (Isaak et al. 2018: 89). Impacts to terrestrial animals are expected to be highly variable (Halofsky et al. 2018) but may be considered to fall into the following four categories: 1. habitat loss and fragmentation; 2. physiological sensitivities (i.e., innate characteristics that influence the ability to cope with changing temperature and precipitation conditions); 3. alterations in the timing of species' life cycles; and 4. indirect effects (e.g., disruption of ecological relationships) (Friggens et al. 2018). Although all Northeast wildlife are exposed to hazards associated with climate change, some groups, "including montane birds, salamanders, cold-adapted fish, and freshwater mussels, could be particularly affected by changing temperatures, precipitation, sea and lake level, and ocean processes" (MassWildlife 2015: 357). In addition, it is the position of the Massachusetts Natural Heritage and Endangered Species

Program that state-listed species and Priority Natural Communities are likely to be highly sensitive to climate change and that all state-listed species will be negatively affected by hydrologic changes, changes in water, soil, and air temperature, and changes in forest composition.

Natural Resources—Property-Specific Exposure and Impacts

Climate change may cause some vernal pools to dry earlier in the season than they have historically, potentially interfering with amphibian life cycles (Cartwright et al. 2022). Because of this, some of the Forest's pools and associated wildlife may be negatively impacted.

Cultural Resources—General Impacts

Climate change may negatively affect cultural resources, their preservation, and maintenance (EEA 2022; International Council on Monuments and Sites (ICOMOS) Climate Change and Cultural Heritage Working Group 2019; Rockman et al. 2016: 3, 18; United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Center 2007). In Massachusetts, cultural resources may be exposed to the following natural phenomena that are correlated with adverse impacts: higher annual average temperature (especially in winter), increased numbers of freeze-thaw cycles, increased precipitation intensity, higher relative humidity, higher wind speeds, an increase in severe storm events, increased numbers and severity of wildfires, more severe seasonal droughts, increase in number and severity of inland flood events, increased coastal flooding and erosion, increased probability of landslides, changes in groundwater levels, shifts in native and invasive species distribution, performance, and phenology; and changes in oceanic and atmospheric chemistry (Rockman at al. 2016; Commonwealth of Massachusetts 2023: 5.1-31–5.1-61).

The phenomena listed above may produce a variety of adverse impacts to Massachusetts' cultural resources. Sensitivity and potential impacts vary based on resource category (i.e., archaeological sites, cultural landscapes, ethnographic landscapes and sites, and buildings and structures). Resource-specific factors such as location, design, materials, condition, etc. will also influence sensitivity and consequent impacts. All categories of cultural resources may be subject to complete or partial destruction through wildfire, inland flooding, sea level rise, storm surge, or landslides. Additionally, these resource categories may be subject to other types of impacts, as follows. Archaeological sites may have site stratigraphy disrupted by changes in hydrography, may suffer accelerated decomposition of artifacts and features, and may be impacted inadvertently during disaster response. Cultural landscapes may lose plantings due to a variety of stressors (e.g., drought or flood, pests, soil salinity), may be infiltrated by invasives, may be eroded by surface runoff, may experience more rapid deterioration of hardscaping and site furnishings, and may be damaged by high wind or heavy snow events. Ethnographic landscapes, traditional cultural places, and associated communities (including Indigenous peoples) may suffer both tangible and intangible impacts such as loss or diminishment of natural species used for food, ceremony, or medicine; alterations in timing of hunts, etc.; increased difficulty of vulnerable subgroups (e.g., the elderly) to perform outdoor tasks; and a loss of cultural knowledge associated with resources and practices. Buildings and structures may be damaged or destroyed by high wind or heavy snow events, suffer accelerated deterioration through a variety of mechanisms (e.g., elevated humidity, chemical reactions, destructive pests and organisms), may be destabilized by hydrological changes, or be damaged by inadequate gutters or drainage systems (ICOMOS Climate Change and Cultural Heritage Working Group 2019: 73–89; Rockman et al. 2016: 20–24). (See Rockman et al. 2016: 19–24 for a detailed assessment of the potential impacts of climate change on cultural resources.)

Cultural Resources—Property-Specific Exposure and Impacts

The Forest's known cultural resources with high exposure to climate change hazards are some of the CCC-structures associated with Beamon Pond, which are within most recent FEMA 1.0%-chance flood zone (MassGIS 1997). (Precipitation changes due to climate change (see EEA 2022 and Weston and Sampson 2022) are not factored into FEMA flood plain modeling. Climate change may result in additional exposure to and impacts from flooding for cultural resources in the future. A FEMA-contracted report (AECOM 2013) finds that: "For the riverine environment, the typical 1% annual chance floodplain area nationally is projected to grow by about 45%, with very large regional variations ... approximately 70% of the 45% (or 31.5%) growth in the 1% annual chance floodplain is due solely to climate change" (AECOM 2013: ES6–ES7). Site-specific projections for future floodplain areas were not available at the time this RMP was prepared.)

Recreation—General Impacts

Outdoor recreation and park visitation are dependent on weather and climate and will be affected by a warming climate (Wilkins and Horne 2024). Higher temperatures positively affect participation in most outdoor activities, except snow-based activities (Wilkins and Horne 2024). "Winter is warming substantially faster than other seasons, and winter warming is especially pronounced in the...Northeastern United States" (Wilkins and Horne 2024: 15). Exposure to this climate change phenomenon is projected to significantly reduce the length of winter recreation seasons for downhill skiing, cross-country skiing, and snowmobiling, decreasing recreational opportunities and causing substantial economic impacts (Wobus et al. 2017). Whitewater rafting, primitive area use, and hunting are also projected to be negatively impacted by exposure changing weather patterns associated with climate change (Askew and Bowker 2024). Although "coldwater fishing habitat is expected to decline under a warming climate, which will likely result in fewer fishing days," overall fishing participation in the Northeast is projected to rise "due to the more favorable temperatures" (Wilkins and Horne 2024: 11). Horseback riding on trails, boating, swimming, and visiting interpretive sites are also expected to see higher participation in the Northeast under climate change (Askew and Bowker 2018). Temperature preferences of campers indicate that the "number of ideal days" for camping will also increase (Wilkins and Horne 2024: 13). Participation in biking is also projected to increase, especially in the winter and shoulder months (Wilkins and Horne 2024: 13). Climate change may also impact outdoor recreation through increased impacts to recreation infrastructure (e.g., flooding impacts), and increased exposure to disease vectors (e.g., mosquitoes and ticks), longer pollen seasons, and heat-related illnesses (O'Toole et al. 2019).

Recreation—Property-Specific Exposure and Impacts

Recreation activities at the Forest likely to be negatively impacted by exposure to weather changes resulting from climate change include hunting and snow-dependent sports (i.e., cross-country skiing, snowmobiling, and snowshoeing). Other recreation activities may see increased participation, especially those associated with the waters of Beamon Pond. Fishing, swimming, and other water-based activities may experience increased participation due to the anticipated increase in temperature (i.e., more than 30 additional days with temperatures over 90° F; Table 12).

Recreation infrastructure with exposure to increased precipitation and flooding associated with climate change include the contact station, many campsites, and at least one campground comfort station. Trail

segments located within the most recent FEMA flood zones (MassGIS 1997) are exposed to the anticipated increase in precipitation (i.e., a greater than 10-inch increase in maximum daily rainfall; Table 12). (As noted above, precipitation changes due to climate change are not factored into FEMA flood plain models and projections for future floodplain areas were not available at the time this RMP was prepared.)

APPLIED LAND STEWARDSHIP ZONING

DCR assesses the appropriate uses and stewardship of its properties at two spatial scales: the landscape level and the property level.

Landscape Designation

In 2012, DCR engaged in a comprehensive system-wide assessment of lands managed by its Division of State Parks and Recreation, designating them as Reserve, Woodland, or Parkland. (See Landscape Designations for DCR Parks & Forests: Selection Criteria and Management Guidelines (DCR 2012) for details.) Multiple Landscape Designations may apply to individual properties with diverse resources and levels of development. All of Otter River State Forest was designated Parkland or Woodland. Identification of Land Stewardship Zones within Otter River was performed in the context of the Parkland and Woodland Landscape Designations.

The following Land Stewardship Zoning is recommended to guide management and any future development. (See Figure 1. Land Stewardship Zoning Map, page 25.) Because accurate boundary data for the leased portion of the Beaman Pond Tract were unavailable at the time of preparation of this RMP, the following Land Stewardship Zoning should be considered preliminary. Zoning of the Beaman Pond Tract should be revisited once accurate boundary data are available.

Zone 1

Zone 1 areas have highly sensitive ecological and/or cultural resources that require additional management approaches and practices to protect and preserve these special features and their values (DCR 2012). The following areas of Otter River have been designated Zone 1.

- No areas within the park have been designated Zone 1.

Zone 2

Zone 2 areas provide for a balance between resource stewardship and recreational opportunities that can be appropriately sustained. They include stable yet important cultural and natural resources. These areas provide a buffer for sensitive resources, recharge areas for surface and groundwaters, and large areas where existing public recreation activities can be managed at sustainable levels (DCR 2012). The following areas of Otter River have been designated Zone 2.

- All areas not identified as Zone 3.

Zone 3

Zone 3 areas include altered landscapes in active use and areas suitable for future administrative, maintenance, and recreation areas (DCR 2012). The following areas of Otter River are currently developed, appropriate for potential future development, or intensively used for recreation. They have been designated Zone 3.

- Day use area and campground; existing developed area.
- Forest Headquarters; existing developed area.
- Storage area, to the existing tree line.

Significant Feature Overlay

Significant Feature Overlays provide precise management guidance in order to maintain or preserve recognized resources features regardless of the zone in which they occur. The following Significant Feature Overlays were developed for Otter River.

- **Presumed DCR Operational Area Overlay.** This overlay corresponds to land within the Beaman Pond Tract that is owned by USACE and managed by DCR as part of Otter River State Forest. The Presumed DCR Operational Area is a subset of land within the approximately 4,221-acre area that DCR leases from the Department of the Army for "public park and recreational and fish and wildlife purposes." Activities within, and management of, this area proceed in accordance with the following lease agreements:
  - Department of the Army lease for public park and recreational and fish and wildlife purposes. DACW33-1-77-6. Executed 13 May, 1977.
  - Massachusetts Department of Environmental Management sub-lease with Massachusetts Department of Fisheries, Wildlife, and Environmental Law Enforcement, for fish and wildlife purposes. Executed 18 October, 1988.
  - Department of the Army, New England District, Corps of Engineers, 696 Virginia Road, Concord, Massachusetts 01742-2571. Supplemental agreement No. 3 between the Secretary of the Army and the Commonwealth of Massachusetts. Lease No. DACW33-1-77-6, Birch Hill Dam Project, MA. Executed 13 November, 2014.

DCR Stewardship Map Tool

This RMP should be viewed in conjunction with DCR's Stewardship Map, a GIS-based tool that allows users to view a property's natural, cultural, and recreational resources. The Stewardship Map tool is dynamic, and information continues to be updated after adoption of an RMP. Guidance for using the tool, as well as Best Management Practices for resource stewardship, are located on the Stewardship Map site: https://dcrsgis-mass-eoeea.hub.arcgis.com/.

Because authorized trails are located within State-Listed Species Habitat on this property, managers should consult an additional GIS-based tool, the NHESP 2022 Guidance Codes for DCR Trail Maintenance Map. (https://mass-eoeea.maps.arcgis.com/home/item.html?id=cb252e8df40d408c81fe8fcf690e14f6) This tool allows users to select specific trail segments and identify restrictions and regulatory review associated with performing 10 common trail maintenance activities on these segments. Because site-specific rare species information is confidential under Massachusetts law (M.G.L. c. 66, § 17D), access to this tool is restricted.

Consistency Review

Resource Management Plans "shall ensure consistency between recreation, resource protection, and sustainable forest management" (M.G.L. c. 21, § 2F). For planning purposes, an activity is considered consistent with resource protection if it has no significant, long-term, adverse impact on resources. To

this end, a series of indicators were developed to evaluate the impacts of recreation and forest management on natural and cultural resources.

Many activities with the potential to negatively affect resources are already subject to agency and/or regulatory review (e.g., forest management activities, projects within Priority Habitat). For these activities, compliance with state regulations, regulatory authority guidance, DCR policies and processes, and Best Management Practices (BMPs) is considered an indicator of consistency between park use and resource protection. New indicators were generated for activities not subject to agency or regulatory review, and are based on available data, information readily identifiable via aerial imagery or site visits, assessments by DCR subject matter experts, or the property manager's knowledge of park conditions and use. (See Table 18, page 26.)

Indicators are applied during the RMP planning process in order to ensure a standardized assessment of consistency across all properties in the DCR system. Inconsistencies identified via the application of indicators are used to inform the development of management recommendations.

The status of indicators (Yes, No, Unknown, and N/A) were accurate at the time this RMP was prepared and were used for planning purposes. However, they represent a snapshot in time and may not reflect future conditions. In addition, the status of indicators will change as recommendations get implemented.

MANAGEMENT RECOMMENDATIONS

Thirteen priority management recommendations were developed for this property. They are presented in Table 19, page 29. All recommendations are of equal importance.

Priority management recommendations derive from Threats, Opportunities, and Consistency Assessment information presented in this RMP. For a recommendation to be considered a priority and listed in the table, it must meet one or more of the criteria listed below. Maintenance and management needs not meeting one or more of these criteria are not included in the table but are identified in the Threats and Opportunities sections.

The following types of recommendations are considered priority:

- Natural resource stewardship and restoration activities consistent with park identity and intended to improve ecological function and connectivity.
- Cultural resource management activities consistent with park identity and intended to prevent the loss of integrity of significant cultural resources.
- Improvements consistent with park identity that are needed to support intended park activities.
- Actions required for regulatory compliance or compliance with legal agreements.
- Activities that prevent or ameliorate threats to the health and safety of park visitors and employees.
- Activities that address inconsistencies among recreation, resource protection, and sustainable forest management, as identified through use of the Consistency Assessment checklist.

Progress toward implementing priority recommendations is tracked through the use of DCR's Capital Asset Management Information System (CAMIS). The property manager should enter each recommendation listed in Table 19 (page 29) into CAMIS as a separate work order, noting "*RMP" in the description field. Non-traditional work orders (e.g., volunteer trail work, posting of DPH Fish

Consumption Advisory posters, certification of vernal pools) should be closed out by the property manager, once the recommendation has been implemented.

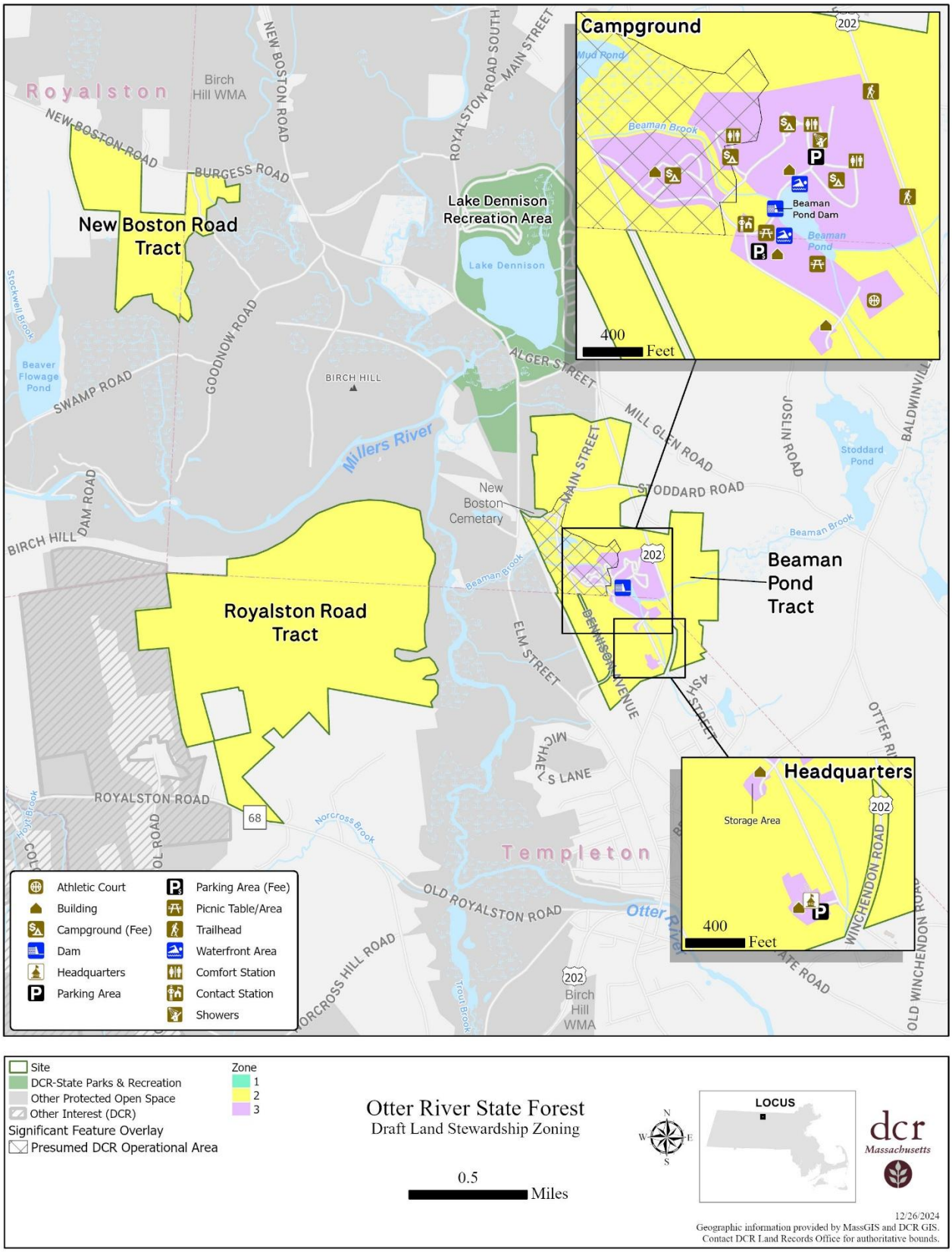

Figure 1. Land Stewardship Zoning Map.

Table 18. Consistency Assessment. This assessment represents a snapshot in time and may not reflect future conditions.

Category	Metric	Status
Landscape Designation	1. All development and uses of the park since 2012, or currently planned for the park, are consistent with its Landscape Designation(s).	Yes
Natural Resources	1. All projects (normal maintenance activities, special projects, volunteer projects) conducted within Priority Habitat were reviewed and approved through DCR's internal review process and by NHESP for potential impacts to rare species and their habitats.	Unknown
Natural Resources	2. All projects conducted within areas subject to state and/or federal wetlands or waterways regulations were reviewed and approved through DCR's internal review process; reviewed and approved through the appropriate, local, state, and/or federal review process; and were carried out in accordance with the terms of a valid permit.	Yes
Natural Resources	3. Sensitive resource areas, such as steep slopes, riverbanks, streambanks, pond and lakeshores, wetlands, and dunes are free of desire paths and other user-created trails.	No
Natural Resources	4. Aquatic areas adjacent to beaches, boat ramps and launches, roads, and hiking trails are free of eroded sediments.	No
Natural Resources	5. The extent of exposed soil in campground and/or picnic sites is stable or decreasing.	Yes
Natural Resources	6. The extent of native vegetation in campground and/or picnic sites is stable or increasing. (As assessed by property manager.)	No
Natural Resources	7. Area of trail impacts in Reserves is less than 50% of total area. (See Naughton (2021) for information on primary area of trail impacts.)	N/A
Natural Resources	8. Congregations of breeding, migratory, or wintering wildlife are protected from disturbance by temporary (e.g., seasonal) restrictions on recreational access.	Unknown
Natural Resources	9. Geocaches, letterboxes, orienteering control locations, and other discovery destinations are located outside sensitive natural resource areas and their locations have been reviewed and approved by park personnel. (As assessed by property manager.)	No
Natural Resources	10. Zone I wellhead protection areas are free of vehicle parking, chemical storage, or concentrated recreation.	N/A

Category	Metric	Status
Natural Resources	11. All boat ramps and launches have cleaning stations and/or educational signs and materials on preventing the spread of aquatic invasive organisms. (As assessed by property manager.)	N/A
Natural Resources	12. For each barrier beach there is a current, approved Barrier Beach Management Plan and all beach-related activities are conducted in accordance with this plan.	N/A
Cultural Resources	1. All maintenance activities and projects with the potential to cause sub-surface disturbance are being reviewed by the DCR archaeologist for potential impacts to archaeological resources.	Unknown
Cultural Resources	2. All maintenance activities and projects affecting historic properties (buildings, structures, and landscapes over 50-years-old) are being reviewed by the Office of Cultural Resources to avoid adverse impacts.	Unknown
Cultural Resources	3. Historic buildings, structures, and landscapes are being used, maintained, and repaired in a manner that preserves their cultural integrity and conveys their historic significance to park visitors.	Yes
Cultural Resources	4. Recreational activities such as hiking, biking, and boating are not eroding cultural properties such as archaeological sites or historic landscapes through creation of desire lines, rutting in the landscape, damage to historic built features, or excessive scouring (erosion) of coastal and shoreline areas.	Unknown
Cultural Resources	5. Geocaches, letterboxes, and other discovery destinations are located away from sensitive cultural resources, and their locations have been reviewed and approved by park personnel.	Unknown
Cultural Resources	6. Historic buildings, structures, landscapes, archaeological sites, and concentrations of historic resources are located outside of areas predicted to be subject to flooding, storm surge, or sea-level rise.	No
Recreation	1. Types of recreation, levels of recreational use, and types and extent of recreation infrastructure are consistent with the park's identity statement.	Yes

Category	Metric	Status
Recreation	2. Trail density is consistent with the park's Landscape Designation(s). (See Trails Guidelines and Best Practices Manual (DCR 2019) for density thresholds.)	Yes
Recreation	3. All authorized trail construction was performed in accordance with an approved Trail Proposal Form.	Yes
Recreation	4. Over 90% of the park's official trails network is classified as being in Fair or better condition.	Yes
Recreation	5. Recurring use by OHVs is restricted to authorized trails. (As assessed by property manager.)	No
Recreation	6. There is a high level of compliance with dog leash regulations and policies. (As assessed by property manager.)	No
Recreation	7. Athletic fields are free of recreation-caused impacts (e.g., bare spots) to turf. (As assessed by property manager.)	N/A
Recreation	8. Water-based recreation is consistent with "Uses Attained" designation as identified by MassDEP in its most current integrated list of waters (e.g., MassDEP 2023); DPH fish consumption advisories; and/or water quality testing at waterfront areas.	Yes
Recreation	9. Recreation facilities are located outside of areas subject to flooding, storm surge, or sea-level rise.	No
Sustainable Forest Management	1. Forestry activities are consistent with Landscape Designation and associated forestry guidelines.	Yes
Sustainable Forest Management	2. Forestry activities are consistent with current Forest Resource Management Plan.	N/A
Sustainable Forest Management	3. Tree cutting is performed in accordance with an approved cutting plan, if required under the Massachusetts Forest Cutting Practices Act (M.G.L. c. 132, §§ 40–46).	Yes

Table 19. Priority Recommendations for Otter River State Forest. All recommendations are of equal importance. When multiple agency parties are responsible for implementing a recommendation, the lead party, or parties, are identified parenthetically in the Implementation column. Property managers should enter these recommendations as work orders in CAMIS to ensure their tracking and implementation.

Category	Recommendation	Implementation
Natural Resources	Survey, document, and submit documentation to certify potential vernal pools that are in Woodland portions of the Forest, in accordance with DCR (n.d.) and MassWildlife (2009), as warranted.	Office of Natural Resources (Lead), Volunteers
Natural Resources	Resolve potential encroachments in accordance with draft Agency-wide guidance and Best Management Practices (DCR 2019b).	Contractor, Management Forestry (Lead), Office of the General Counsel, Park Operations
Natural Resources	Obtaining an easement, right of way, or other legal instrument would permanently provide for crossing private property in order to access the Royalston Road Tract.	Land Protection Program (Lead), Management Forestry, Park Operations
Cultural Resources	Conduct an archaeological reconnaissance survey (950 CMR 70) of Forest areas not previously surveyed in cooperation with municipal, tribal and non-profit partners, including the Towns of Winchendon, Royalston, and Templeton. Conduct additional surveys of Army Corps of Engineers archaeological survey areas as necessary for DCR management objectives. Complete appropriate Massachusetts Historical Commission archaeological site forms for identified archaeological resources.	Consultant, Office of Cultural Resources (Lead), Partners
Recreation	Create a Master Plan for the Otter River Campground to address the many threats and opportunities identified in this document.	Landscape Architecture Section (Lead)
Recreation	Work with the geocaching community to ensure that caches located in sensitive natural and cultural resources are relocated out of those areas and that locations of any new geocaches are placed outside of sensitive areas and with the approval of the property manager.	Office of Cultural Resources, Office of Natural Resources, Park Operations (Lead)
Recreation	Implement Key Recommendations from the 2020 Program Accessibility Assessment (IHCD 2020).	Architecture Section, Contractor, Universal Access Program (Lead)

Category	Recommendation	Implementation
Recreation	Implement measures to curb unauthorized off-highway vehicle (OHV) use, such as adding gates and other physical barriers, and erecting signage prohibiting OHV use.	Park Operations
Recreation	As funding allows, prioritize and implement recommendations and items from "Other Measures Evaluated" section of the AEP Report (Rise Engineering 2017).	Contractor, Facilities Engineering (Lead), Park Operations
Recreation	Increase the presence of Environmental Police Officers, DCR Rangers, and Forest operations staff, as appropriate and available, in areas with high off-highway vehicle use.	Ranger Bureau (Co-Lead), Regional Staff (Co-Lead), Park Operations
Recreation	Initiate discussions of a new lease agreement with the U.S. Army Corps of Engineers and MassWildlife. Ensure the lease renewal process includes the development of detailed spatial information on the boundaries of DCR's lease area.	GIS Program, Partner, Office of the General Counsel (Lead), Regional Staff
Recreation	Following the development of detailed spatial information on the boundaries of DCR's lease area, redo Landscape Designation(s) and Land Stewardship Zoning for Otter River State Forest.	Bureau of Fire Control and Forestry, GIS Program (Lead), Office of Cultural Resources
Recreation	Install trailhead signage and internal navigation signs at the New Boston Road Tract and Royalston Road Tracts, in accordance with DCR's Trail Guidelines and Best Practices Manual (DCR 2019).	Park Operations

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