



Camper arriving at Shawme-Crowell. (See Appendix G for photo information.)

SECTION 2. SHAWME-CROWELL STATE FOREST

2.1. INTRODUCTION

Shawme-Crowell State Forest is located in the towns of Bourne and Sandwich, south of the Cape Cod Canal. (Figure 2.1) It is accessed via Route 130 in Sandwich.

The history of Shawme-Crowell is one of early, rapid expansion followed by decades of reduction in area. Acquisition of forest lands began in 1909 and Shawme State Forest, as it was then known, was formally dedicated in 1922. By 1925 it had expanded to nearly 8,400 acres, making it the largest parcel of public land on Cape Cod at that time. The years leading up to World War II brought military training to the forest. Much of the forest’s acreage was eventually transferred to the Special Military Reservation Commission to create the Massachusetts Military Reservation, now called Joint Base Cape Cod. The construction of Route 6 and a variety of land transfers and easements for municipal and state projects has reduced Shawme-Crowell to its current size of 605 acres.

Today, Shawme-Crowell is best known as a campground from which visitors explore Cape Cod and southeastern Massachusetts. It is the only year-round campground in the Nickerson Complex.

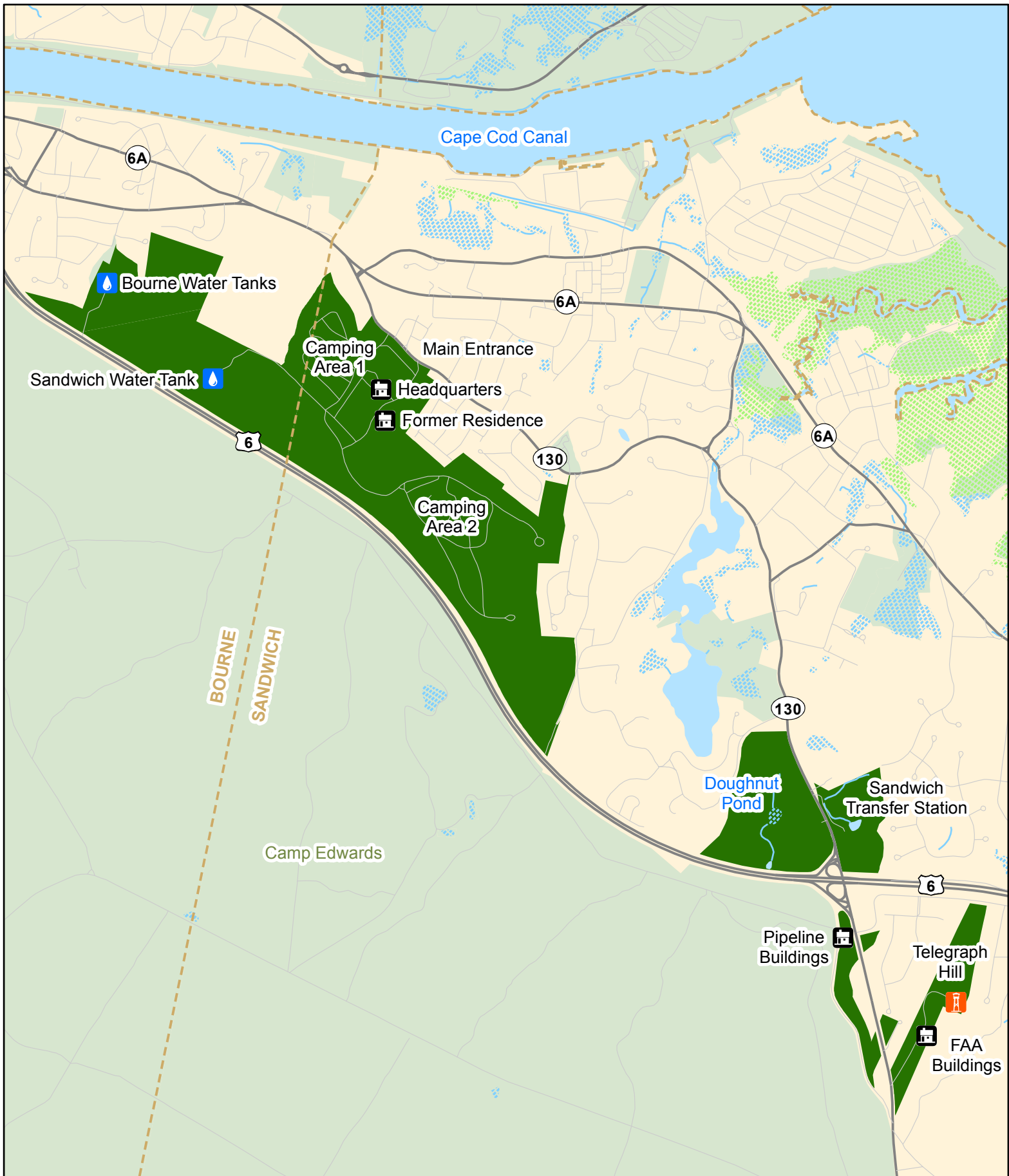
The forest’s physical, political, and regulatory attributes are summarized below. (Table 2.1.1)

Table 2.1.1. Physical, political, and regulatory settings of Shawme-Crowell State Forest.

Setting	Name or Metric
Location:	Bourne, Sandwich
Area (acres)^a:	605.47
Perimeter (miles)^a:	12.35
Landscape Designation(s)^b:	Parkland
Legislative Districts:	
House	Fifth Barnstable
Senate	Plymouth and Barnstable
Regulatory Designations:	
	Priority Habitat
	Old King’s Highway
	Regional Historic District

a. Calculated using a Geographic Information System (GIS).

b. For a summary of the DCR’s landscape designations, see <http://www.mass.gov/eea/docs/dcr/ld/ld-factsheet-final.pdf>.



- Building
- Water Tower
- Fire Tower
- Major Road
- Minor Road
- Hydrologic Connection

- Town Boundary
- Marsh
- Salt Marsh
- Open Water
- Shawme-Crowell State Forest
- Other Protected Open Space

Shawme-Crowell State Forest

Figure 2.1.

0 0.25 0.5
Mile

Geographic information provided by MassGIS and DCR GIS.



Associated Properties. Four additional DCR-owned properties, all reforestation lots, are associated with Shawme-Crowell State Forest. These properties, the Sandwich and Falmouth reforestation lots and the two parcels that comprise Barnstable State Forest, are managed by Shawme-Crowell personnel. They are addressed in detail in Section 14.

2.2. NATURAL RESOURCES

Physical Features

Shawme-Crowell is located atop the Sandwich Moraine, which runs east-west through the forest. It was formed when an advancing ice front overrode previously deposited sediments, pushing them upward and forward to form a large ridge, as if created by a bulldozer (Oldale n.d.). Elevations range from approximately 46 feet at Doughnut Pond to 292 feet at Telegraph Hill.

Water Resources

Shawme-Crowell has few water resources, with only one pond (i.e., Doughnut Pond) and little wetland acreage. (Table 2.2.1) Its elevation and distance from Cape Cod Bay result in low susceptibility to flooding, storm surge, and anticipated sea level rise. (Table 2.2.2)

Table 2.2.1. Water resources of Shawme-Crowell State Forest.

Water Resource	Name or Metric
Watershed:	Cape Cod
Aquifer:	Cape Cod SSA
Lens	Sagamore
Rivers and Streams (miles)	0.53
Vernal Pools	
Certified (#)	0
Potential (#)	2
Wetlands (acres)	1.39
Lakes and Ponds (acres)	0.82

Table 2.2.2. Potential impacts of flooding, hurricane inundation, and sea level rise to Shawme-Crowell State Forest.

Type of Impact	Acres	%
Flooding:		
100-year Storm	0.00	0.00
500-year Storm ^a	0.00	0.00
Hurricane Inundation:		
Category 1 Storm	0.00	0.00
Category 2 Storm ^b	0.00	0.00
Category 3 Storm ^b	0.00	0.00
Category 4 Storm ^b	0.00	0.00
Sea Level Rise	0.00	0.00

a. Cumulative value; includes 100-year storm impacts.

b. Cumulative value; includes impacts of all lower category storms.

Rare Species

State-listed Species

Five state-listed species are known from the state forest. (Table 2.2.3)

Table 2.2.3. State-listed species of Shawme-Crowell State Forest, as identified by the NHESP.

Species ^{a, b}	Type ^c	MESA ^d
Chain dot geometer	I	SC
Coastal swamp metarranthus	I	SC
Eastern box turtle	R	SC
Sandplain euchlaena	I	SC
Slender clearwing sphinx moth	I	SC

a. Presented alphabetically, by common name.

b. Fact sheets are available at: <http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/species-information-and-conservation/mesa-list/list-of-rare-species-in-massachusetts.html>.

c. Types of state-listed species include: B = Bird; I = Insect; and R = Reptile.

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

Priority Habitat

Most of Shawme-Crowell (73.50%) has been designated Priority Habitat under MESA. This includes all of the forest except that portion located north of Route 6, east of the intersection of Roads C and D, and west of Pocasset Road.

Vegetation

There have been no comprehensive surveys of the flora of Shawme-Crowell. However, the regular monitoring of forest inventory plots provides basic information on common species present.

Extensive plant inventories have been conducted at the nearby Camp Edwards. The camp's Integrated Natural Resources Management Plan identifies 556 taxa and also lists common species by natural community type (Massachusetts Army National Guard 2009). The flora of Shawme-Crowell State Forest is a sub-set of Camp Edwards' flora, and common plants of Camp Edwards likely occur within the same natural communities on the state forest.

Invasive Species

Five species of invasive or likely invasive plants have been incidentally observed. (Table 2.2.4) One of these, Japanese barberry, was planted as an ornamental shrub around comfort stations in Camping Area 1. Concentrations of invasives were noted in the operations area, former superintendent's residence area, and at leaf and wood piles west of the dumping station. Unidentified species of rose, olive, and honeysuckle occur at the former FAA building and at the former superintendent's residence. These plants may be invasive.

Table 2.2.4. Known invasive and likely invasive plants of Shawme-Crowell State Forest.

Species ^a	Status ^b
Black locust	I
Japanese barberry ^c	L
Norway maple	I
Oriental bittersweet	I
Spotted knapweed	I

a. Presented alphabetically, by common name.

b. Plants are classified as being either Invasive (I) or Likely Invasive (L) according to MIPAG (2005).

c. Barberry was planted as an ornamental at Area 1 comfort stations and the camp store. Because of this, they are part of these buildings' cultural landscapes.

Natural Communities

There have been no formal surveys of natural communities. However, some community types have been identified; all are common in Massachusetts. (Table 2.2.5)

Table 2.2.5. Known natural communities of Shawme-Crowell State Forest.

Community Type ^a	System ^b	State Rank ^c	Source ^d
Black Oak-Scarlet Oak Forest ^e	T	S3/S4	1
Cultural Grassland ^e	T	-	1
Mixed Oak Forest	T	S5	1
Pitch Pine - Oak Forest ^e	T	S5	1
Red Maple Swamp	P	S5	2
Shrub Swamp	P	S5	2

a. Classified according to Swain and Kearsley (2011).

b. E = Estuarine, P = Palustrine, T = Terrestrial.

c. The NHESP ranks communities from most rare (S1) to the most common (S5).

d. Information contained in this table was obtained from the following sources:

1. Incidentally observed by RMP Planner during site visits.
2. DEP Wetlands (1:12,000) data layer.

e. Plants and wildlife commonly associated with these community types on nearby Camp Edwards are presented in Tables 6-2, 6-4, and 6-6 of Massachusetts Army National Guard (2009).

Forests

Much of Shawme-Crowell (87.79%), including its campsites, is forested. Non-forested areas include power line rights-of-way, roads, and small sections of cultural grassland associated with buildings and the dumping station.

Common forest trees include pitch pine, black oak, white oak, and sassafras. Common understory and shrub species include teaberry, black huckleberry, sheep laurel, low-bush blueberry, northern arrowwood, and greenbrier. A few remnant plantations of non-native Norway spruce, Scots pine, and red pine also remain in the forest (DCR, unpublished CFI data). Major causes of tree loss include borers, winter moth, bark beetles, white pine weevil, and heart rot. A remnant stand of Chinese chestnut, planted in 1954, remains near the former superintendent's residence.

Wildlife

No formal surveys have been conducted; as a result, there is little information specific to the forest. However, the Integrated Natural Resource Management Plan for the nearby Camp Edwards includes information on the common and rare wildlife of this area (Massachusetts Army National Guard 2009).

2.3. CULTURAL RESOURCES

This section describes the known and potential cultural resource areas, including pre-Contact and post-Contact archaeological resources, and historic landscapes, buildings, structures, and objects. An overview of significant events in the history of Shawme-Crowell State Forest is presented in Table 2.3.1. Cultural resources are identified in Table 2.3.2.

Table 2.3.1. Significant events in the history of Shawme-Crowell State Forest.

Year(s)	Events
1909-1911	Reforestation lands acquired along the Sandwich-Bourne town line.
1922	Shawme State Forest is formally established.
1925	Area of state forest estimated at 8,372 acres.
1930s	Civilian Conservation Corps conducts forestry activities and creates water holes for fire fighting.
1935	Special Military Reservation Commission is established for “the purpose of establishing a camp site for the use and training of military forces of the Commonwealth.” The Massachusetts Military Reservation is created along the southern boundary of Shawme State Forest.
1936	The Massachusetts legislature authorizes the governor to “place under the jurisdiction and control of the Special Military Reservation Commission...such parts of Shawme State Forest within two thousand yards of the southern boundary thereof” between June 15 and September 15.
1938	Forest renamed Shawme-Crowell in honor of Lincoln Crowell, a Cape official of the State Forestry Division and an advocate for the establishment of the forest.
1941	Additional portion of Shawme State Forest placed under the Special Military Reservation Commission.
ca. 1950	Construction of the Mid-Cape Highway through former state forest lands.
1956	An additional 1,090 acres are transferred from the state forest to the Massachusetts Military Reservation.
1953	A 25-year lease is issued to Town of Sandwich for use of a portion of the state forest as a landfill. Similar leases follow.
1956-1960	Development of Area 1 campground; construction of current comfort stations.
1964	Development of Area 2 campground; construction of current comfort stations.
1981	Approximately 2.4 acres of state forest transferred to Department of Public Works for a maintenance depot.
1988	Sandwich Water District obtains easements through state forest. Additional easements are authorized in 1990.
2006	KeySpan Energy acquires easements through the state forest for a natural gas pipeline and buildings.
2015	Transfer of 13 acres of state forest land to MassDOT in exchange for 85 acres of land added to Scusset Beach State Reservation.

Table 2.3.2. Cultural resources of Shawme-Crowell State Forest.

Location and Resource ^a	Type ^b	Date ^c	Condition ^d	Integrity ^e	In Use ^f	Utilities ^g	MHC # ^h	Guidance ⁱ
Old King's Highway Regional Historic District	NRHD	17 th -19 th c.	-	-	-	-	SDW.R	-
Main Street – Route 130 Area	NRHD	18 th -19 th c.	-	-	-	-	SDW.1	-
Park Entrance	LA	1922-1960	-	H	-	-	-	1, 2
Camp Store – Mass. Forest Ranger Station	BU	ca. 1960	3	H	Y	E, S, W	SDW.509	3
Shawme State Forest Monument	OB	1922	-	H	-	-	-	1
Highway Boundary Markers	OB	-	-	U	-	-	-	1
Headquarters/Operations Area	LA	1914-1962	-	H	-	-	-	1
Administration Building – Building #356	BU	-	3	H	Y	E, H, I, S, T, W	-	3
Maintenance Garage – Building #355	BU	1962	4	M	Y	E, H	-	3
CCC Building – Building #347	BU	1914/1936	5	H	Y	E, H, S, T, W	-	3, 4
CCC Dynamite Bunker	ST	1934	4	M	-	-	-	1, 2
Former Superintendent's Residence Area								
Superintendent's House and Outbuildings	LA	Early 20 th c.	-	H	-	-	-	1, 2
Superintendent's House – Building #349	BU	1922	5	M	N	-	-	3, 4
Garage	BU	Early 20 th c.	5	L	N	-	-	3, 4
Calf Barn Foundation	BU	Early 20 th c.	6	L	N	-	-	3, 4
Chicken Coop	BU	Early 20 th c.	4	M	N	-	-	3, 4
Tool Shed	BU	Early 20 th c.	5	L	N	-	-	3, 4
Camping Area 1	LA	1936-1960	-	H	-	-	-	1, 2
CCC-built Retaining Walls	LA	1936-1941	3	M	-	-	-	1
Comfort Stations (4)	BU	1956-1960	4	H	S	E, S, W(S)	-	3
Camping Area 2	LA	1964	-	H	-	-	-	1, 2
Comfort Stations (5)	BU	1964	4	H	S	E, S, W(S)	-	3
455 Route 130, Sandwich								
Metal Building	BU	ca. 1960	4	M	N	-	-	3, 4
402 Route 130, Sandwich								
Former FAA Building	BU	-	4	H	N	E	-	3, 4
Additional Resources^j								
Indian Occupation Site	AR	-	-	U	-	-	-	5

a. Geographic sub-regions of the forest are identified in Figure 2.1.

b. Resource types include the following: AR = Archaeological; BU = Building; LA = Landscape; NRHD = National Register Historic District; OB = Object; and ST = Structure.

c. Date of construction provided, when known.

d. Preliminary condition assessment using the building system and equipment condition codes as used in the Massachusetts Capital Asset management Information System (CAMIS). The following codes are used: 1 = Excellent-easily restorable to like new condition; 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.

e. Integrity is a relative assessment of the condition of a resource's retention of its historic character-defining features; H = High; L = Low; M = Medium; and U = Unknown.

f. Use categories include: N = building is not in use; S = building is used on a seasonal basis; and Y = building is used year-round.

g. The following codes are used to identify utilities associated with buildings: E = Electric; H = Heat; I = Internet; S = Septic system; T = Telephone; W = Water; and W(S) = Water is available on a seasonal basis. This information is included for all buildings.

h. Massachusetts Historical Commission inventory number.

i. The following guidance is offered for the ongoing maintenance of these cultural resources:

1. Refer to Historic Landscapes - Built Features BMP (DCR n.d.g)
2. Refer to Vegetation in Historic Landscapes BMP (DCR n.d.h)
3. Refer to Historic Building Maintenance BMP (DCR n.d.i).
4. Refer to Mothballing Historic Buildings BMP (DCR n.d.j).
5. Refer to Archaeological Features BMP (DCR n.d.k).

j. Documented through the 1984/1985 Cultural Resources Evaluation Project but not yet field verified or confirmed.

Archaeological Resources

One pre-Contact site is located within the limits of the forest. However, four “find spots” are documented abutting the parcel. Seven systematic archaeological surveys have been conducted adjacent to/near the forest during the last 30 years. One small campsite was located just outside the forest limits, where the manufacture/maintenance of chipped stone tools appears to have been the primary on-site activity. Shawme-Crowell State Forest has not been systematically surveyed and has a high archaeological potential.

Historic Resources

European settlers from the 17th century forward practiced many of the same land uses as the Native Americans who had worked the land for centuries prior, including wood harvesting, hunting and charcoal making. The Old King’s Highway (i.e., Route 6A) was the major transportation and communication link for the towns of the Cape in the 18th century, and residential and small agricultural development grew along the route in the 19th century. The Old King’s Highway Regional Historic District overlays nearly all of the state forest.

The state forest rapidly expanded in size following its establishment in 1922. A major fire in 1923 led the Commonwealth to purchase hundreds of acres of burned land in Bourne and Sandwich for the purposes of fire management and prevention. The forest became the center of operations for District 1 Forest Fire Control and Suppression, which is still based there today.

The 1930s saw the emergence of two trends, the development of forest infrastructure and the transfer of forest lands to the military. Two CCC camps were located in the forest between 1933 and 1935. Major projects included fire prevention, road construction, and recreation infrastructure. Much of the CCC’s handiwork (e.g., water holes) now lies within Camp Edwards on Joint Base Cape Cod; few resources remain within Shawme-Crowell.

Recreation development expanded in the 1950s and 1960s, with the construction of camping areas 1 and 2. This infrastructure remains in use by campers and park staff.

Historic Landscapes

Most of Shawme-Crowell’s historic resources are concentrated in four areas: the Park Entrance Area; the Headquarters/Operations Area; the Former Superintendent’s Residence Area; and Camping Areas 1 and 2. (Table 2.3.2; Figure 2.1). The following information describes these landscapes and their contributing elements.

Park Entrance Area. The park’s current entrance on Route 130 was also its entrance during the CCC period. A triangular median splits traffic in two directions; this feature dates to the CCC era. West of the median is a stone bearing a metal plaque commemorating the park’s dedication in 1922.



Dedication plaque and ornamental plantings, part of the Park Entrance Area landscape. (See Appendix G for photo information.)

The original point of contact for visitors was most likely the park headquarters on Flat Rock Road. In the 1960s, a new contact station (now the camp store) was constructed at a new entrance west of the current location and closer to Camping Area 1. The date of construction for this building is recorded in the MHC inventory form as 1923, but the building and new entrance does not appear on a map until 1963 and the building’s materials and foundation suggest a 1960s construction date. Its distinctive Colonial Revival design matches that of the comfort stations built during the same period, and features a deep overhanging eave and a four-sided portico. It may have been influenced by the design of the CCC-designed contact station at Nickerson state park. The building also closely resembles the original design of the Sully Cottage, located at Nickerson. Although there is no longer access to Route 130 from this location, the split roadway around the former contact

station remains. The building is in good repair. In the 1980s, the current six-sided contact station was built in the parking area between the entrances, and traffic was once again directed through the CCC-era entrance. This entrance area was not designed to accommodate today's large motor homes and travel trailers, both of which have difficulty entering and exiting the park.



Shawme-Crowell's park store, the forest's former contact station. (See Appendix G for photo information.)

Both the present and former entries feature ornamental plantings, including rhododendrons, azaleas, white birch, arbor vitae, and red pine. Japanese barberry was included in plantings near the camp store. Some of the entrance area's plantings, most likely the rhododendrons at the current entry median, may have been introduced by the CCC; others were most likely introduced during the mid-century redesign. Regardless of origin, vegetation in this median partially obscures sight lines for traffic exiting the park.

The structures, plantings and road features create a landscape that retains integrity from three different periods of park management and recalls 75 years of welcoming visitors to Shawme-Crowell.

Headquarters/Operations Area. This area includes an eclectic mix of historic and non-historic buildings and structures. (See Section 2.5 for information on non-historic infrastructure.) The CCC building was constructed prior to the creation of Shawme State Forest and reconstructed by the CCC in the 1930s; it is the oldest building in the park. This building served as the initial park operations facility, around which the rest of the Headquarters/Operations Area developed. The CCC building is currently in use by the Massachusetts Division of Marine Fisheries

(DMF) and is in poor condition, with roof damage, water damage, and mold throughout.



The CCC building predates the state forest, it is currently in disrepair. (See Appendix G for photo information.)

Later buildings include the forest's headquarters and a 10-bay, L-shaped maintenance garage (buildings #355 and #356, respectively). Both were constructed in a regional shingled style. Building #356 retains much of its original integrity while #355 has been altered with more modern materials. Both buildings are currently in use. The main floor of the headquarters is divided into two separate offices; one for Mass Parks employees who administer Shawme-Crowell, and the second for Bureau of Forest Fire Control and Forestry personnel. The Bureau also occupies two bays of the maintenance garage.

The remaining historic resource in this area, a CCC dynamite bunker is located behind the maintenance garage. It is in poor condition.

The collection of rustic utilitarian structures from different periods set around a central lot represents a typical DCR park headquarters' landscape and connects the first days of the park's development in the 1930s to the present day management of the facility.



Forest headquarters showing regional architectural style. (See Appendix G for photo information.)

Former Superintendent's Residence Area. This area includes one main building (i.e., the residence) and multiple outbuildings. (Table 2.3.2) Although dates of construction are unknown, the style and construction methods suggest the 1920s or 1930s. The field stone faced foundations on the house and calf barn foundation are similar to that of the CCC building at the Headquarters/Operations Area (which predates the CCC period). This collection of buildings is in poor condition, but the repurposing of existing buildings for park management is a common theme in the history of park development. Through the arrangement of reused agricultural outbuildings around the residence and the presence of planted shrubs, perennials and annuals, the landscape retains integrity as a typical staff-occupied residential setting.



Former superintendents house at Shawme-Crowell, (See Appendix G for photo information.)

Camping Areas 1 and 2. Most of the forest's comfort stations were designed and constructed in

the 1960s, based on the same regionally influenced Cape Cod-style template, featuring wood shingles, simple wood trim and gable end roof forms. Although the buildings are simply constructed, this level of design consistency throughout a facility is rare at DCR facilities. Most have rot and insect damage; some also have woodpecker damage. The general layout of the camping area and road network retains its original design. A stone retaining wall, believed to have been constructed by the CCC, borders a portion of Road C in Camping Area 1.



Comfort station in Camping Area 2, showing Cape Cod-style architecture. (See Appendix G for photo information.)

Buildings

There are two historic buildings not associated with historic landscapes. Both are located off Route 130 in Sandwich; neither was constructed for park purposes. The first is a metal communications building purportedly associated with phone lines installed during and for the Kennedy administration. The other is a masonry block building formerly occupied by the Federal Aviation Administration (FAA). Both are in poor condition.

Structures

There are no historic structures that are not associated with historic landscapes.

Objects

Granite boundary markers, with the letters MHB (i.e., "Massachusetts Highway Boundary") carved into the side facing the road, border Route 130 near the park's entrance. It is unknown how many of these objects remain along the park's 1,300 feet of frontage on the state highway.

2.4. RECREATION RESOURCES

The most popular recreational activity at Shawme-Crowell is camping and nearly all the forest's infrastructure is dedicated to this activity. There are 285 camp sites arranged into two distinct areas. (Table 2.4.1; Figure 2.1) Both areas are open daily from early May through mid-October (i.e., camping season); area 2 is open Thursday through Sunday the remainder of the year (i.e., off-season).

Table 2.4.1. Summary of camping resources at Shawme-Crowell State Forest.

Camping Resource	Area 1	Area 2	Total
Camp Sites (total)	100	185	285
Host Camper sites ^a	6	7	13
Management sites ^b	7	12	19
Group sites	0	4	4
Yurts	0	6	6
Other sites	87	156	243
Comfort Stations (total)	4	5	9
Winterized	0	1	1
Non-winterized	4	4	8
Shower Houses	0	1	1

a. For additional information see:

<http://www.mass.gov/eea/agencies/dcr/massparks/recreational-activities/host-camping-program-generic.html>

b. Management sites are held in reserve in case of registration errors (e.g., double booking).

Nearly all camping takes place from spring through early fall. In 2013, 11,154 campers, 94.5% of the annual total, stayed at Shawme-Crowell during the camping season. Only 614 people camped there during the off-season. All site types are popular during the summer; the most popular winter types are RV and group camping. (Table 2.4.1)

Table 2.4.2. Campsite occupancy rates, by type and season, for Shawme-Crowell State Forest.

Campsite Type	Summer ^a	Winter ^b
Group	36.8	48.5
Host	0.0	0.0
Pop-up Tent	25.8	0.9
RV/Trailer, non-electric	31.4	28.6
Standard non-electric	42.7	15.6
Tent only	30.5	10.2
Yurt	62.2	0.0
Total	35.43	15.13

Campers are primarily from Massachusetts and neighboring states and provinces. (Table 2.4.3)

Table 2.4.3. Common geographic origins of campers staying at Shawme-Crowell State Forest.^a

Geographic Origin	Summer ^b	Winter ^c
Massachusetts	64.7	75.4
Quebec	6.8	2.8
New York	4.9	1.2
Connecticut	4.3	1.6
Rhode Island	3.5	3.2
Unknown	2.3	2.4
New Hampshire	2.2	1.6
Ontario	1.5	-
Vermont	1.4	1.6
Maine	-	3.6
New Jersey	-	1.9
Total	91.6	95.3

a. Only states and provinces with one or more percent of total camping registrations are included.

b. Early May through mid-October 2013.

c. Mid-October 2013-early May 2014.

Accessible and partially accessible camp sites were established in both camping areas. This included 25 sites with accessible picnic tables; 10 of which also had accessible cooking grills. Many of these tables and grills are no longer usable due to a combination of age and vandalism. As a result, the forest's campsites do not meet the 5% accessibility minimum required under the Massachusetts Architectural Access Code (521 CMR 19.5.1). The shower house is equipped with ADA compliant showers; they do not work.

Between camping areas 1 and 2 is the forest's dumping station. It is used for dumping waste from self-contained campers (i.e., RVs) into a tight tank.

Two recreation resources, a playground and the Friends' of Shawme-Crowell (henceforth "Friends") pavilion area are located in Camping Area 2. The playground includes three features: a play ship, a climbing dome; and swings. Some of the climbing dome's bolts are rusted and protrude into the interior of the dome. The swings' chains and "s"-hooks are uncovered. The Friends' pavilion area includes a pavilion with picnic tables, storage shed, grill, outdoor sink, fire ring, six benches, two bike racks, and a locking bulletin board. It is used by the Friends for social events and fundraisers.



Two play features in the Shawme-Crowell playground; climbing dome is in foreground. (See Appendix G for photo information.)

In addition to camping, the following non-facility based recreational activities (i.e., those activities not requiring a building, rink, court, recreation field, or other constructed venue) take place at Shawme-Crowell:

- Dog walking
- Geocaching (11 caches as of March 2015)
- Hiking
- Horseback riding
- Hunting
- Ice hockey/Ice skating (Doughnut Pond)
- Letterbox (1 cache as of March 2015)
- Mountain biking
- Nature study
- Skiing, cross-country
- Sledding

Campers at Shawme-Crowell are provided free access to nearby Scusset Beach State Reservation, Sandwich, for the purposes of access to Cape Cod Bay and the Cape Cod Canal.

2.5. INFRASTRUCTURE

Property Boundary

Most of the park lies within an area delineated by Routes 6, 6A, and 130. Numerous private properties also occur in this area; many about the forest. Several isolated parcels occur along Route 130; one borders Camp Edwards on Joint Base Cape Cod. This is the only portion of the forest that is contiguous with other protected open space. The forest's boundary is not marked.

Buildings and Structures

Most of Shawme-Crowell's buildings and structures are historic. (Table 2.3.2) With a few notable exceptions (i.e., the shower house, comfort station, Friends' pavilion), recent DCR construction has focused on sheds and other temporary buildings (e.g., contact station). (Table 2.5.1; Figure 2.1) Recent major construction in the park has largely been by the federal government (i.e., the FAA Remote Command Air Ground (RCAG) facility), water companies, or utility companies. A new park contact station is scheduled to be built later in 2014.

Most DCR-owned buildings, both historic and non-historic) are in use by forest personnel or park visitors. The most notable exceptions are the buildings located at the former superintendent's residence; none of which are in use. One building, the six-bay garage, is in use by the DMF (five bays) and the Bureau of Forest Fire Control and Forestry (one bay). The DMF has proposed construction of a combined office, laboratory, and storage building adjacent to the six-bay garage.

Utilities vary among buildings. (Tables 2.3.2 and 2.5.1) The headquarters and CCC buildings are heated with oil. All other heated buildings are heated with propane. Propane is also used to heat domestic water in all area 1 comfort stations, and the Comfort Station 1 and the shower house in area 2. All water is provided by the Sandwich Water District.

There are 13 active septic systems; they discharge to groundwater. These are associated with the forest's 10 comfort stations, shower building, headquarters, and camp store. There are two inactive septic systems; one at the CCC building and the other at the former superintendent's residence. Waste from recreational vehicles is discharged into a "tight tank" via the dumping station. Two outdoor sinks, one at the break shed and the other adjacent to the Friends' shed, discharge to dry wells. An unsealed floor drain located at the bottom of the stairs leading to the headquarters' basement has been previously identified as out of compliance and needing to be sealed (Gannet Fleming, Inc. 1998a).

A CNG filling station is located at the entrance to the operations yard; it has been out of service for several years.

Table 2.5.1. Non-historic buildings and structures of Shawme-Crowell State Forest.

Location and Infrastructure^a	Date^c	Condition^b	In Use^d	Utilities^e
Park Entrance				
Contact station	1982	3	Y	E, H, I, T
Break shelter	-	2	S	E, W(S)
Interpreter shed	1987	2	Y	E
Wood shed	1996	2	Y	-
Headquarter/Operations Area				
CNG filling station	-	3	N	E
Six-bay garage	1968	3	Y	-
Bundled wood storage shed	ca. 2012	1	Y	-
Eversource (i.e., NStar) Station 919 ^f	-	-	Y	E
Former Superintendent's Residence Area				
Air quality ("sniffer") shed ^f	-	-	Y	E
Air quality("sniffer") platform ^f	-	-	Y	E
Pig shed	-	6	N	-
Dumping Station Area				
Dumping station and tight tank	-	2	Y	E, S, W
Recycling shed	1999	2	Y	-
Camping Area 2				
Comfort station	-	2	Y	E, H, S, W
Shower house	-	3	Y	E, H, S, W
Friends' pavilion	2005	2	S	E
Friends' shed	ca. 2005	2	Y	E, W(S)
Water towers				
Sandwich Water District tower ^f	1990	-	Y	E, W
Bourne Water District tower 1 ^f	-	-	Y	E, W
Bourne Water District tower 2 ^f	-	-	Y	E, W
455 Route 130, Sandwich				
Algonquin Gas/KeySpan building 1 ^f	2007	-	Y	E
Algonquin Gas/KeySpan building 2 ^f	2007	-	Y	E
402 Route 130, Sandwich^g; FAA Remote Center Air Ground (RCAG) Site				
FAA building ^f	ca. 1999	-	Y	E, H, I, S, T, W
FAA shed ^f	ca. 1999	-	Y	-
FAA outdoor classroom ^f	ca. 1999	-	S	-
Confined-space training structure ^f	ca. 1999	-	S	-
Antenna towers (3) ^f	ca. 1999	-	-	-

a. Geographic sub-regions of the forest are identified in Figure 2.1.

b. Preliminary condition assessment using the building system and equipment condition codes as used in the Massachusetts Capital Asset Management Information System (CAMIS). The following codes are used: 1 = Excellent-easily restorable to like new condition; 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.

c. Date of construction provided, when known.

d. Use categories include: N = building is not in use; S = building is used on a seasonal basis; and Y = building is used year-round.

e. The following codes are used to identify utilities associated with buildings: E = Electric, H = Heat; I = Internet; S = Septic system; T = Telephone; W = Water; and W(S) = Water is available on a seasonal basis. This information is included for all buildings.

f. Infrastructure located on DCR property, but not owned or controlled by the DCR. Its condition is not assessed.

g. The Telegraph Hill Fire Tower is also located here; see Chapter 15 for information on this tower.

Roads

There are more than six miles of roads. (Figure 2.1) The conditions of these roads are summarized in Table 2.5.2. Recent potholes and broken pavement in the camping areas are not reflected in this condition assessment. Potholes are now common throughout Camping Area 1 and near the shower house and yurt area in Camping Area 2.

Table 2.5.2. Condition and length of roads at Shawme-Crowell State Forest.^a

Road Condition	Paved (Miles)	Unpaved (Miles)
Good	4.03	1.25
Fair	0.00	1.06
Poor	0.00	0.00
Total	4.03	2.31

a. Based on field assessment; all distances calculated using GIS.

Paved roads are associated with the forest's headquarters and two camping areas. (Figure 2.1) Each camping area has a network of paved roads, with each road identified by a letter of the alphabet ranging from B to E. These camping areas connect to each other, and to the entrance area, via Road A.

Flat Rock Road runs from the park entrance, approximately southward, to Road A. Its use is restricted to official vehicles, and DCR and DMF employee's personal vehicles, and vehicles used by consultants to access air monitoring equipment.

A little-used access road, which connects Camping Area 2 to Route 130, is located between 88 Main Street and 2 Pine Street. There is no access gate and the road bed is indistinct, blending in with ornamental landscaping from abutting properties.

Parking

Parking is almost exclusively associated with campsites. Campers are allowed up to two vehicles per site. Additional vehicles, including boats on trailers, may be parallel parked on the paved shoulders of the park entrance road.

There are relatively few additional public parking spaces; none are HP accessible. (Table 2.5.3; Figure 2.1) Only those at the contact station have pavement markings. There is no formal parking at the playground; campers park their vehicles among the trees along Road E.

Table 2.5.3. Number of public parking spaces, by location and type, at Shawme-Crowell State Forest.

Location	HP	Other	Total
Contact station ^{a, b}	0	11	11
Camp store ^c	0	5	5
Shower building, area 2 ^c	0	23	23
Friends' pavilion ^c	0	2	2
Total	0	41	41

a. Number of spaces is based on pavement markings.

b. There is room for an additional 28 vehicles to parallel park along the road shoulder.

c. Number of spaces is based on the number of potential 9-foot-wide spaces.

Employees park in the operations yard and along the entrance road adjacent to the contact station.

Trails

Shawme-Crowell lacks a formal, planned trail system. However, the combination of trails, forest roads, and utility corridors provides access to the entire park. The numbers of miles of trails, by condition, are presented in Table 2.5.4. There is no forest-wide trail map; a guide exists for the nature trail loop. (See Section 2.6.)

Table 2.5.4. Condition and length of official trails at Shawme-Crowell State Forest.

Trail Condition	Length (Miles)
Good	7.63
Fair	2.05
Poor	0.25
Total	9.93

Kiosks and Signs

There are two kiosks; both have DCR statewide property maps and announcements of interest to park visitors (e.g., hunting season dates). The first kiosk is located near the contact station and the second is located at the shower house parking lot in Camping Area 2. There are also two message boards. The first is located adjacent to the camp store and the second is located on a traffic island in Camping Area 2, at the intersection of Roads A and B. These boards, which were purchased by the Friends, are used to advertise events (e.g., pancake breakfasts).

Iron Ranger

There is no iron ranger.

Memorials and Markers

There are six known markers. The Shawme State Forest dedication plaque and monument are located near the current park entrance. All remaining markers are associated with the Friends (e.g., memorial bench plaque).

2.6. INTERPRETATION

There were no formal interpretive programs offered in 2013. Ranger-led hikes take place on January 1 (i.e., First Day hikes), on Park Serve Day, and as requested by campers. These hikes include an interpretive component.

A self-guided nature trail is located adjacent to the recycling shed dumping station. It includes 11 numbered points of interest that correspond to interpretive information provided on laminated trail guides.

2.7. MANAGEMENT RESOURCES

Staffing

DCR Personnel

Shawme-Crowell State Forest is managed by Mass Parks staff. There are three year-round personnel. (Table 2.7.1) Seasonal employees provide additional staffing during the peak use period (i.e., Memorial Day through Columbus Day). There is no information on past staffing levels.

Table 2.7.1. Mass Parks personnel assigned to Shawme-Crowell State Forest.

Job Title	Number of Positions 2014
<i>Year-round Personnel</i>	
Forest and Park Supervisor III	1
Laborer II	2
<i>Seasonal Personnel</i>	
Clerk II	0
Forest and Park Supervisor I	4
Laborer I (Short-term)	1
Laborer I (Long-term)	4
Laborer II	2
Summer Worker	3 ^a

a. Only one of these positions was filled in 2014; the employee did not stay for the full term of employment.

Two Bureau of Forest Fire Control and Forestry personnel, a Fire Warden and Patrolman, are based at Shawme-Crowell on a year-round basis.

Partnerships and Volunteers

The Friends provide the majority of volunteer hours. Typical activities include aiding and assisting campers, trimming brush along roads, trail maintenance, and assisting with First Day hikes and Park Serve Day. Additional volunteer support comes from Boy and Girl scouts whose community service projects have included performing trail work, constructing benches, and creating a nature trail map. Scouting projects tend to be one-time activities, while the Friends' activities are ongoing.

Public Safety

The Sandwich Fire Department provides fire response and emergency services.

Funding

Conservation Trust Fund

There are no funds in the Conservation Trust Fund dedicated to Shawme-Crowell.

Retained Revenue

The summer 2013 camping season generated approximately \$192,200 in retained revenue; an additional \$5,700 was generated in the off-season. The camp store concession generated an additional \$250.

Other Revenues

A portion of Shawme-Crowell is leased to the Town of Sandwich for use as a landfill, and later a transfer station. Fees associated with this lease are held in a dedicated fund for use at the park.

The Friends raise funds to support the park through events such as ice cream socials, hot dog socials, and pancake breakfasts held during the busy summer months. They also pursue grants and donations for their activities. Their efforts have resulted in the purchase of a pavilion, shed, and playground equipment.



Message board used to advertise fund raising activities in the forest. (See Appendix G for photo information.)

2.8. MANAGEMENT PRACTICES

Management of DCR properties is guided by a variety of regulations, policies, BMPs (e.g., Table 2.3.2), legal agreements, and institutional knowledge. This section describes those practices unique to the management of Shawme-Crowell State Forest. Legal agreements unique to the forest are listed in Table 2.8.1.

Table 2.8.1. Key legal agreements for the use of Shawme-Crowell State Forest.

Party and Subject of Agreement	Type ^a	Expiration Date ^b
<i>Existing Agreements</i>		
Algonquin Gas/Keyspan Energy Siting of pipeline and buildings.	E	None
MassDOT Land transfer to facilitate site clean-up.	U	None
William K. Earl Concession for camp store.	-	2013
Mass Division of Marine Fisheries Use of existing building.	A	-
Mass Division of Marine Fisheries Permission to construct new building.	A	-
Federal Aviation Administration Siting of buildings at Telegraph Hill. License No. DOT-FA77NE-0665.	L	None
<i>Unknown Status^c</i>		
Genon Canal, LLC (formerly Mirant) Siting of air monitoring equipment.	-	-

- Agreement types include: A=Memorandum of Agreement; E=Easement; L=Lease; and U=Memorandum of Understanding.
- Year that agreement expires. Permanent agreements are indicated by an expiration date of "None."
- Unknown status includes uses for which there is no agreement and uses for which an agreement exists but was not located during the preparation of this RMP.



Air monitoring equipment and associated shed; an agreement for this equipment was not located during the preparation of this RMP. (See Appendix G for photo information.)

Key management and guidance documents are identified in Table 2.8.2.

Table 2.8.2. Key management and guidance documents for Shawme-Crowell State Forest.

Author and Document	Year
Gannett Fleming, Inc. Environmental Audit Report: Shawme-Crowell State Forest, Sandwich, Massachusetts.	1998 ^a

Annual Maintenance

Ongoing management practices typically follow a regular schedule. Common activities, and the desired frequency with which they occur, are identified in Table 2.8.3.

Table 2.8.3. Annual cycle of management activities at Shawme-Crowell State Forest.

Activity	Spring ^a	Summer ^a	Fall ^a	Winter ^a
Bathroom-Open for season	1	N/A	N/A	N/A
Bathroom-Winterize	N/A	N/A	1	N/A
Cleaning - Bathroom(s)	AN	AN	AN	AN
Cleaning-Campsites	AN	AN	AN	AN
Cleaning - Walkways	AN	AN	AN	AN
Litter removal-Recreation areas	AN	AN	AN	AN
Litter removal - Trails	AN	AN	AN	AN
Maintenance - Picnic sites, fences, etc.	AN	AN	AN	N/A
Mowing and trimming	AN	AN	AN	N/A
Mulching and fertilizing	AN	AN	AN	N/A
Playground inspection	AN	AN	AN	AN
Pruning - Trees and shrubs	AN	AN	AN	AN
Sweeping - Walkways	AN	AN	AN	AN
Trash - Empty - Barrels	AN	E7	AN	AN
Trash-Empty-Bathroom	D1	D1	D1	D1
Weeding - Flower beds and grassy areas	N/A	AN	N/A	N/A
Weeding - Paved areas	N/A	AN	N/A	N/A

a. Frequency codes are: AN = As needed; D = Daily, # times; E = Every # days; N/A = Not applicable.

Natural Resources

Water Resources

The Groundwater Discharge Permit (#860-0) for the forest's 13 Subsurface Sewage Disposal Systems (SSDSs) specifies monitoring and maintenance activities. This includes pumping and formally inspecting all septic tanks at least once every three years, and sampling and analyzing groundwater from up- and down-gradient monitoring wells on a quarterly basis. These activities are performed under contract for the DCR. See the most recent Groundwater Discharge Permit for full monitoring and reporting requirements. When issued, this permit had an expiration date of April 16, 2014; it was automatically extended four years under the Permit Extension Act (Section 173 of Chapter 240 of the Acts of 2010).

Septage accumulated in the dumping station's tight tank is transported off-site for treatment and disposal. This takes place approximately 8–10 times during peak camping season.

Rare Species

There are no activities unique to this property.

Invasive Species

There are no monitoring or management activities.

Vegetation

Lawn mowing and weeding takes place on an as needed basis at the park entrance, adjacent to comfort stations and park headquarters, and at the dumping station. Fertilizer spikes are used, in accordance with manufacturer's instructions, when planting ornamental trees. Utility companies are responsible for vegetation management along their rights-of-way. Under the terms of their lease, the FAA has the right to maintain vegetation within their RCAG facility, as well as a 10-foot buffer outside their fence.

Air Quality

Genon Canal, LLC monitors particulate emissions from its canal plant with sampling equipment located at the air quality shed and air quality monitoring platform. An environmental consultant visits the site and monitors the equipment at least once per week on a year-round basis.

Cultural Resources

Portions of the forest north of Route 6 are within the Old Kings Highway Regional Historic District. Changes in the exterior of buildings, structures, fences; new construction; and demolition are subject to review by the Old King's Highway Historic District Committee. See the Committee's web page for additional information (<http://www.townofbarnstable.us/OldKingsHighway/>).

Recreation Resources

The Friends provide ongoing maintenance of the playground area, including maintaining the wood chip ground covering.

The park's recycling center provides containers for a variety of recyclable materials (e.g., glass, metal cans) and empty propane tanks, and dumpsters are provided for solid waste. During peak camping season an additional dumpster is placed at the park entrance. Dumpsters are emptied twice per week during peak camping season and once per week the rest of the year. Recycling is transported to the Sandwich transfer station as needed. Litter is picked up and disposed of as needed.

The camp store is operated in accordance with terms identified in an annual permit agreement between the DCR and the concessionaire. (Table 2.8.1)

Infrastructure

Buildings

Forest employees perform major repairs (e.g., roofing a building) when materials are made available by the Regional Office. In the past, the Friends have used their funds to hire private contractors to perform repairs or upgrades (e.g., installing electric lights and outlets in the Friends' pavilion).

There are two agreements with the DMF for their use of buildings on Shawme-Crowell. (Table 2.8.1) The first is for their current use of the CCC building and the second is to allow the DMF to construct a new building in the Headquarters/Operations Area. Under these agreements, the DMF is "solely responsible for maintaining" their premises in a "clean and orderly manner."

Utility and public service companies with facilities in the state forest are solely responsible for the maintenance of their buildings and structures.

An agreement with Genon Canal, LLC could not be located during the preparation of this RMP. It is presumed that they are solely responsible for the operation and maintenance of their air quality monitoring facility.

Roads

Dirt roads are repaired by either park staff or easement holders, depending on the location of the needed repair. The Sandwich Water District maintains the roads between its water tower and the intersection of Bayview Road and Road A. The Bourne Water District is responsible for maintaining access to its water towers from Route 6. Eversource, formerly NStar, is responsible for maintaining vehicle access along its utility line right-of-way. Algonquin Gas and Keyspan Energy are responsible for maintaining access roads along their easement, for their use.

State forest personnel plow snow on the following roads: the main entrance road; Road A to Camping Area 2; portions of roads A and B, and all of roads C and D in Camping Area 2 (i.e., roads associated with those camp sites open in winter); Flat Rock Road from the forest entrance to the former superintendent's residence; and the travel lane through the operations yard.

Utility companies and the FAA are responsible for providing winter access to their facilities.

Parking Areas

State forest personnel provide minor repairs (i.e., filling potholes) and snow removal to the shower house's parking lot, and paved areas adjacent to the operations area's buildings.

Trails

Trails are maintained by volunteers, including members of the Friends.

Kiosks and Signs

Park employees are responsible for updating the content of kiosks. The Friends are responsible for updating their message boards and the bulletin board near the pavilion.

2.9. RECOMMENDATIONS

Introduction

This section provides recommendations for the near- and long-term management of Shawme-Crowell State Forest. Applied Land Stewardship Zoning recommendations provide general guidance for managing Shawme-Crowell. Future activities and projects should be checked against the zoning map (Figure 2.2) for consistency. Management recommendations for Shawme-Crowell are all high-priority, and should be addressed as soon as resources become available.

Applied Land Stewardship Zoning (Figure 2.2)

The following Land Stewardship Zoning is recommended for Shawme-Crowell State Forest.

Zone 1

- No sections of Shawme-Crowell have been designated Zone 1.

Zone 2

- Most of the forest has been designated Zone 2. This keeps most currently undeveloped areas undeveloped. It also maintains a forested buffer between the two camping areas and Route 6, and the two camping areas and residences that abut the state forest.

Zone 3

Most areas designated Zone 3 are currently developed. This includes:

- Entrance Area
- Headquarters/Operations Area
- Former Superintendent's Residence Area
- Camping Area 1
- Camping Area 2

- Dumping station and recycling area
- Bourne Water District towers
- Sandwich Water District tower
- Sandwich transfer station
- MassDOT operations yard
- Algonquin Gas/Keystone Energy buildings
- FAA RCAG facility
- Telegraph Hill fire tower and former FAA building area

The only currently undeveloped area designated as Zone 3 is located immediately southeast of Camping Area 2. Roads C and D were previously extended south from area 2 to allow for the future expansion of camping. Designating this area Zone 3 preserves the potential for future campground development, as previously envisioned. No expansion is proposed at this time.

Significant Feature Overlay

There are no Significant Feature Overlays.

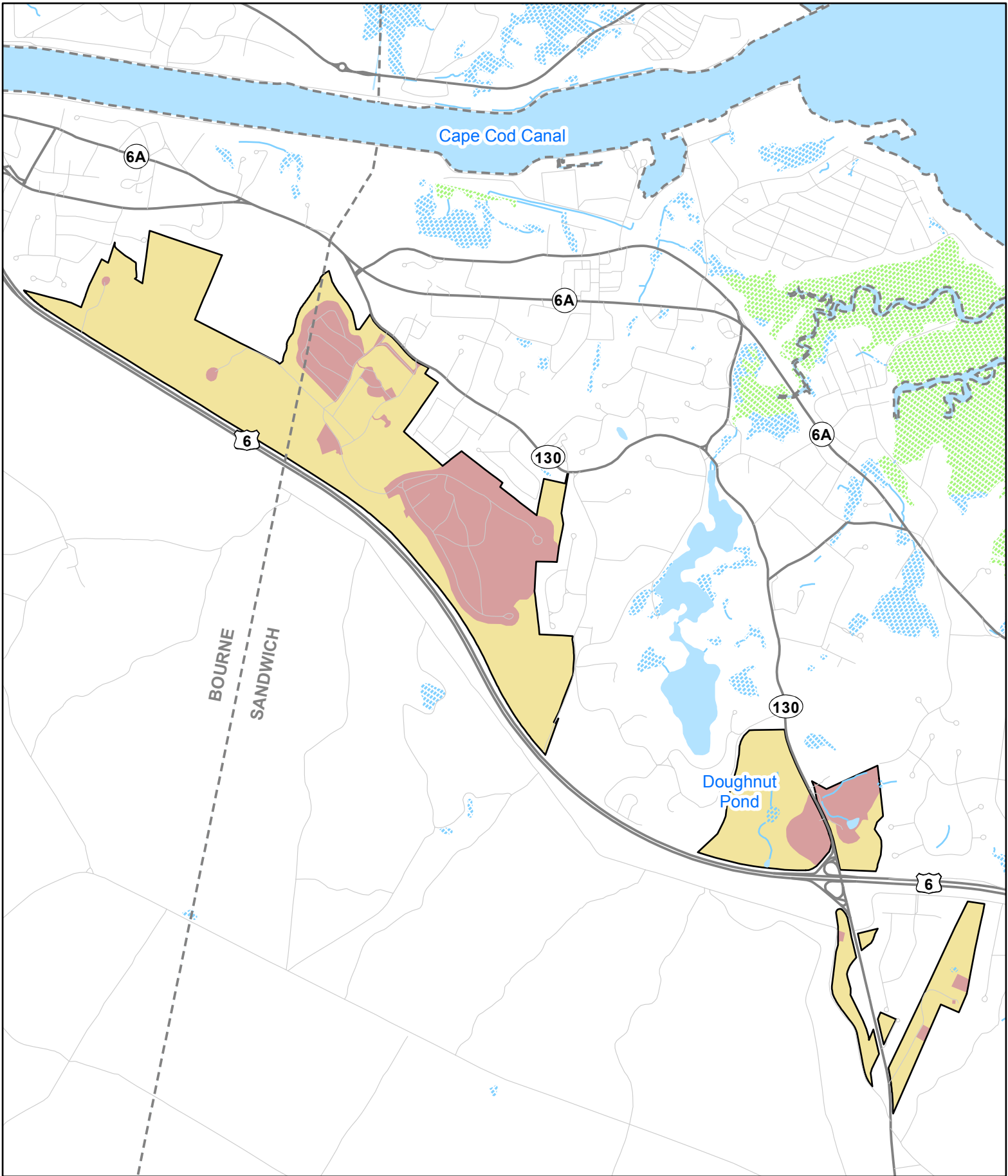
Management Recommendations

Seventeen priority management recommendations were developed for Shawme-Crowell State Forest. (Table 2.9.1) For a recommendation to be considered priority it must address one or more of the following criteria:

- Regulatory compliance or compliance with legal agreements.
- Threats to the health and safety of park visitors and employees.
- The imminent loss of a natural, cultural, or recreation resource.

Additional maintenance and management needs observed during the preparation of this RMP, but not meeting one or more of the above criteria, are not included in this plan.

All recommendations are of equal priority.



Major Road
Minor Road
Hydrologic Connection
Town Boundary

Marsh
Salt Marsh
Open Water

Land Stewardship Zoning
Zone 2
Zone 3

Shawme-Crowell State Forest

Figure 2.2. Recommended Land Stewardship Zoning

0 0.25 0.5
Mile

Geographic information provided by MassGIS and DCR GIS.

North Arrow

dcr
Massachusetts

Table 2.9.1. Priority recommendations for Shawme-Crowell State Forest.

Recommendation	Implementation^a
Install an external sink on the comfort station near the Friends' pavilion; remove current temporary sink from near the pavilion.	R, V
Seal the floor drain in the basement stairwell of the park headquarters and install an alternative drainage system to prevent flooding.	C, E, R, O
Trim vegetation at the park entrance to improve traffic sight lines while maintaining this historic landscape's cultural integrity.	R, P
Perform a structural analysis of the former superintendent's residence and associated outbuildings to determine whether they can be reasonably rehabilitated. Assess for eligibility in Historic Curatorship Program and, if appropriate, seek possible addition to enabling legislation.	C, E, P
Rehabilitate all 1950s and 1960s vintage comfort stations in a manner that provides campers current bathroom amenities while maintaining the existing regionally-influenced design standard.	C, E
Evaluate and re-roof the CCC building; mothball it until a park-related use can be identified.	C, P, O
Clear vegetation from the CCC dynamite bunker and evaluate for masonry repairs.	C, P
Continue existing maintenance practices for the administration building (# 356); no alteration to the exterior should take place without consultation with the OCR.	R
Secure and mothball former FAA building to prevent access, identify ownership and, if appropriate, demolish the building.	C, E, O
Address safety issues in playground equipment and increase frequency of inspections.	E, R
Ensure that at least 15 camp sites have accessible tables and grills.	R, U
Repair ADA accessible showers in the shower house.	C, E, R
Investigate potential encroachment along Main and Pine Streets and resolve with abutters if warranted.	L, R
Repair or replace damaged pavement in camping area roads.	C, E
Develop and distribute a Shawme-Crowell trails map to allow visitors to safely navigate the forest's trail system.	B
Locate and review the agreement for the presence of air monitoring structures and equipment in the park, and for consultant access to this equipment.	L, R
Provide at least one accessible space, access aisle, and proper pavement markings and signs in each of the following parking lots: contact station, camp store, shower building, and Friends' pavilion.	C, E

- a. The following codes identify the party or parties responsible for implementing the recommendations: B = Bureau of Ranger Services; C = Contractor; E = Division of Engineering; F = Bureau of Forest Fire Control and Forestry; L = Legal Services; O = Other; P = Bureau of Planning, Design & Resource Protection; R = Regional and district staff; U = Universal Access Program; V = Volunteer or partner; and X = Office of External Affairs and Partnerships.