

## MANAGEMENT ZONING AND CARRYING CAPACITY MONITORING

### NATIONAL SEASHORE MANAGEMENT ZONING

In accordance with NPS *Management Policies*, all lands and waters within Cape Cod National Seashore's boundary are zoned to provide for user experience and resource protection. Management zoning is a required component of a management plan. The more specific management zoning actions would not override, but would be consistent with, the remaining elements of this plan. Management zones have been delineated based on the national seashore's purpose, significance, management philosophy and objectives, and natural and cultural resources. Zoning assists managers in focusing on protecting natural processes and cultural heritage while accommodating compatible human uses. Research is appropriate in any management zone as an important component of managing resources.

Management zoning applies directly to NPS lands. Properties owned by other agencies or private landowners are not subject to NPS management zoning. Adjacent landowners may wish to work with the Park Service to protect resources in a similar manner. The Management Zones map shows approximate management boundaries, but should not be viewed as a specific boundary document.

### PRINCIPAL MANAGEMENT ZONES

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Management zoning is based on designating areas in one of the following four zones:

- Natural zone** — This zone includes most of the national seashore where the primary experience is one of being in natural surroundings, such as in the woods or along a beach. This zone extends along the entire coast. Where natural coastal processes erode or accrete the coastline, the natural zone will continue to occupy the coastal area within national seashore boundaries.
- Historic zone** — This zone includes areas with archeological remains, historically significant districts, sites, and cultural landscapes.
- Developed zone** — This zone includes highly developed areas for public use or information dispersal, such as visitor centers, roads, bicycle trails, staging areas, parking lots, and changing rooms or comfort stations.
- Special use zone** — This zone includes areas that are used primarily for residential, administrative, or operational purposes. While not all houses in the rural settlement subzone are shown on maps, the structures themselves are considered to be part of this zone, while adjacent land will be considered part of the surrounding zone.

Subzones within each of these zones further define desired experiences and management strategies, including the setting, examples of areas or sites within that subzone, and the desired experience and management practices.

The zones help guide intervention in problem areas. User conflicts, safety needs, or resource protection requirements may result in areas being closed.

Unless public safety concerns are immediate, affected stakeholders will normally be consulted regarding potential long-term closures. If operational/nonhistoric facilities in any zone were destroyed, severely damaged, required excessive capital reinvestment, or for any other reason went beyond the point of reasonable repair, then development in those areas will not automatically be replaced. Relocated facilities will be placed in areas away from sensitive areas or areas subject to rapidly changing coastal processes. Decisions not to repair or relocate facilities will be made in consultation with the affected towns. Walking trails will be acceptable development in all zones, except where there will be a notable conflict with private property. Important vistas may also occur in any subzone and will be managed appropriately.

## NATURAL SUBZONES

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### *Concentrated Use Subzone*

The concentrated use subzone is characterized by natural areas that are easily accessible, including recreational beaches, ponds, forested areas, and areas that may require designated access to ensure resource protection, like the white cedar and red maple swamps. Facilities providing comforts and conveniences are usually nearby. Opportunities to interact with the natural environment are offered along trail corridors or at beaches. Infrastructure includes hardened trails, boardwalks, staging areas, and parking lots.

Examples of this subzone include the beech forest, the white cedar swamp, Pilgrim Heights, and recreation beaches.

**Desired Experience:** Travel will often be restricted to hardened trails, beaches, or boardwalks to protect adjacent resources. Vehicles will be evident only in parking lots, self-contained camping areas, and along nearby roadways.

Minimal to moderate physical exertion will be required. The probability of encountering individuals or groups will be moderate to high, and NPS staff presence will be low to moderate. Because of seasonal variations, experiences may be solitary during the off-season or crowded during the peak use season. The need for outdoor skills will be minimal.

Interpretive information will be provided at trailheads and wayside exhibits and through brochures and bulletin cases. Personal services may be offered.

**Management:** Resources may be manipulated or modified to control or correct problems resulting from public use, as long as changes do not unduly affect the setting, protected species, or other sensitive resources. A moderate to high level of trail management may be required to protect resources and ensure public safety (for example, trail hardening, boardwalks, trail delineators). Maintenance will be performed more frequently than in other natural subzones; the purpose will be to leave the setting as natural as possible. Resources within the trail corridor (defined as the trail and a 5' buffer area on either side) may be mowed, cleared, planted, or otherwise altered for public safety or viewing of adjacent resources, or to eliminate social trails. Monitoring to identify resource standards and indicators (see pages 117–122) will occur outside trail corridors.

### *Dispersed Use Subzone*

The dispersed use subzone is characterized by primarily undeveloped areas, which are natural settings in remote locations. Some areas may have no facilities or improvements. Trails may lead to specific destinations or may pass

through a variety of resource settings. Resource modifications other than sand roads, rural homes, utility corridors, and trails are not evident.

Examples of this subzone include Griffin and Bound Brook Islands, land south of the Marconi area, and Race Point.

**Desired Experience:** This subzone will provide people a sense of being immersed in a natural landscape, where they may feel distant from most comforts and conveniences. Uses include hiking, fishing, swimming, mountain biking, horseback riding, ORV driving, and picnicking, with numerous opportunities to interact with the natural environment. Private residential neighborhoods will be seldom seen.

The probability of encountering individuals, groups, and NPS staff will be low to high, depending on the season and the time of day. At times, experiences may be solitary. Challenge and opportunities for adventure will be moderate to high. Physical exertion may be required, depending on whether one is hiking, riding, or driving. The need for some outdoor skills will be important.

Trails, boardwalks, ungated sand roads, and beaches will be the primary ways of access. Vehicle use will only be permitted along ungated sand roads or within designated corridors.

Information, regulations, and interpretive media within this subzone will be provided at visitor contact points and trailheads; however, some onsite information or regulatory signs may be provided for vehicle use. Some site-specific media or personal programs may be provided.

**Management:** The management intent within this subzone will be to minimize resource damage within moderated use limits. Hiking areas will be managed primarily for resource protection and visitor safety. Designated horseback-riding trails will be moderately to intensively managed to protect resources and minimize user conflicts. Sand roads and beaches open to ORVs will be intensively managed to protect resources, minimize user conflicts, and promote safety.

Onsite controls and restrictions will be subtle (for example, sand fences) and will be used only to protect resources or ensure safety. Areas may be closed as resource protection measures or because of inclement weather or high tides. Long-term decisions regarding changes in management or the regulation of public or designated ways recognized for a long period of time will be discussed with the affected stakeholders.

### ***Low Use Subzone***

The low use subzone is characterized by remote natural areas with little evidence of settlements or people. Trails, gated sand roads, utility corridors, and isolated houses/structures are the only facilities present. Backcountry camping and equestrian use may be permitted in designated areas. Access is only by trail, gated sand road, or along beaches. No recreational mechanized or motorized use is permitted. Vehicle access is restricted to permit holders, dune tour taxi operators, and NPS staff for public safety, law enforcement, resource protection, and other administrative purposes. Efforts will be made to avoid intruding on the core experience of solitude and isolation in this subzone.

Examples of this subzone include Great Island, the inner dunes of the Province Lands, and the south beach at Chatham.

**Desired Experience:** The experience in this subzone will be one of being completely immersed in a natural landscape. Opportunities for independence, closeness to nature, and tranquillity will be moderate to high. The need for

some outdoor skills will be important. People encountered will primarily be hikers, or those fishing, swimming, or picnicking; there will be a low probability of meeting other groups or NPS staff. Private residences will rarely be seen.

Information, regulations, and interpretive media will be provided at initial contact points and trailheads. Interpretive programs will be infrequent.

**Management:** Management actions will be primarily to protect resources and ensure public safety. Needed controls and restrictions will be subtle. Resource modification will be minimal. Few facilities will be provided.

### ***Marine / Intertidal Subzone***

The marine / intertidal subzone includes all estuarine, open ocean, and bay waters and the land under the ocean, bays, estuaries, and portions of rivers that are tidally influenced. These areas include submerged historic resources such as shipwrecks along the coast. Physical access and viewpoints are usually along stretches of land-based subzones like beaches, dunes, and cliffs or by boat. The ownership of submerged lands within the national seashore boundary varies.

Where ownership is not federal, management will be addressed with partners.

Examples of this subzone include Cape Cod Bay, Nauset Marsh, Hatches Harbor, the Atlantic Ocean, and the Herring River estuary.

**Desired Experience:** The primary recreational experiences within this subzone will include boating, swimming, shellfishing, fishing, and combing the tidal flats. Swimming will primarily be from designated beaches and close to shore. Boating activities, including fishing and recreational boating, often depend on the time of year and weather conditions. Close contact with other boats/groups will vary from site to site, with experiences ranging from large gatherings to opportunities for solitude. Specialized outdoor skills and abilities will often be necessary and may involve specialized equipment.

Information, state and federal regulations, and interpretive media within this subzone will be provided mainly at visitor contact stations, beach parking lots, and viewpoints.

**Management:** Generally, management actions will be of low intensity except where designated areas are closed to protect nursery habitat, to allow ecological restoration, or to reduce user conflicts. Actions will focus on protecting marine and tidal resources, including fish and shellfish habitat and shipwrecks, as well as providing a wide spectrum of recreational opportunities. Fishing and shellfishing activities will be managed by the appropriate agency or agencies, in accordance with applicable federal, state, or local regulations. Where land is not federally owned, management will be addressed with nonfederal landowners, as necessary.

The management of swimming will vary, depending on beach ownership and season. NPS beaches will be moderately to intensively managed during summer, while some expanses of beach will not be managed at all or patrolled infrequently. Motorized activities such as boating and use of personal watercraft will not be permitted in designated lifeguard-protected areas where conflicts with swimmers may occur, or in other areas where prohibited. New mechanized activities that may increase safety hazards or impact resources will be less compatible with desired experiences in this subzone and may need to be regulated.

Resource modifications (groins, jetties, seawalls, and revetments) for coastal protection will not be permitted in this subzone. Previous modifications such as groins or armoring will either be removed or left subject to coastal processes.

## **HISTORIC SUBZONES**

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### ***Structures and Landscape Subzone***

Within the structures and landscape subzone are historic buildings and structures, cleared fields, and agricultural lands. Settings are primarily formal and involve housing patterns and manipulated landscapes. The character is often defined by groupings of historic elements such as buildings or districts that are surrounded by cultural or natural landscapes. Many sites are completely manipulated landscapes, with boundaries defined by historic and other cultural resources. Parking and other visitor services are available at often-visited sites. All sites/districts are listed on or are eligible for listing on the National Register of Historic Places. Individual historic sites may also be included under other subzones and will be managed consistently with surrounding lands. Zone boundaries may change as nominations for protection are further refined. Examples of this subzone include the Fort Hill/Penniman house, Highland Historic District, and the Pamet cranberry bog.

**Desired Experience:** This subzone will provide a sense of being in a historical area and seeing something that adds to the historical and cultural character of Cape Cod. Areas will range widely in terms of visitation; how people get to support facilities; the number of contacts with other individuals, groups, or NPS staff; and commitments of time and physical exertion.

Interpretive programs will be provided both at visitor contact points and at individual sites, often at scheduled times.

**Management:** Intensive management will often be required to protect resources and to ensure public safety. Examples include designating paths, building fences, and restricting sizes of groups. Cultural landscapes will be managed to perpetuate a particular historical, cultural, or agricultural scene. Modifications in these areas will have to be in harmony with the period of significance and will be confined to those necessary to protect the historic resources and manage the appropriate levels of public use at each site. Some historic structures may be leased by the National Park Service. Management strategies will be consistent with the reason for historic designation.

### ***Natural Settings Subzone***

The natural settings subzone includes historical areas surrounded primarily by a natural setting, such as isolated dune shacks or archeological remains in a forest. Access to parking and other visitor facilities is infrequent or unavailable. The zoning boundaries for such areas are often defined by the natural resources within the viewshed (see glossary) of the structures, which may change over time. Boundaries may also change as nominations for the National Register of Historic Places are refined. All of the sites/districts are either national landmarks or are listed on or are eligible for nomination to the national register. Individual historic sites may also be included under other subzones and will be managed consistently with surrounding lands.

Examples include the dune shacks of the Peaked Hill Bars Historic District, Long Point, Fresh Brook Village, and the Nauset Marsh National Historic Landmark District.

**Desired Experience:** Like the structures and landscape subzone, this subzone will provide the opportunity to be reminded of both the historic and prehistoric activities that shaped the character and local culture of the Cape. The experience will depend primarily on the character of the natural resources surrounding each site and the character of the site itself, such as the structural remains of Civil War batteries at Long Point. Such areas are often isolated and generally have low visitation, with limited access to support facilities or contact with other individuals, groups, or NPS staff. Visiting these areas will require varying amounts of time and physical exertion.

A variety of interpretive programs may be provided both at visitor contact points and at the individual sites, often at scheduled times.

**Management:** Management actions will be primarily to protect natural and cultural resources. Access may be limited by physical means or restricted to certain times. Modifications will be confined to those needed to protect the resource from human impacts, manage the level of use, and provide for public safety. Modifications will have to harmonize with historic and natural surroundings. Some historic structures, such as the dune shacks, may be leased by the National Park Service for continued use.

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## DEVELOPED SUBZONES

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### *Visitor Facility Subzone*

The visitor facility subzone is characterized by a developed environment, although the surrounding setting may be natural or historic. Facilities within the subzone include visitor centers, comfort stations, bathhouses, educational centers, utilities, vistas, paved areas, mowed areas, and associated infrastructure. A large number of users can be expected, both onsite and in nearby areas.

Examples include the Salt Pond and Province Lands visitor centers, the Coast Guard Beach complex, and privately managed campgrounds.

**Desired Experience:** This subzone will primarily offer a facility-dependent experience directed to orienting the public, interpreting resources, or providing other public services. Sites will be easily accessible and safe. Users will not need special outdoor skills or abilities. Sights and sounds of people and vehicles will be very evident.

Numerous orientation and interpretive programs will be concentrated at visitor centers.

**Management:** Intensive maintenance will be required. The placement of fences, walkways, vegetative barriers, and boardwalks, as well as the active management of recreation, will help ensure resource protection and public safety. Resources will be modified for public use and operational needs. The cost-effectiveness of repairing facilities or developing new facilities in areas subject to coastal storms and erosion will need to be evaluated carefully.

### *Motorized Corridor Subzone*

In the motorized corridor subzone roads typically pass through natural settings and offer views of forests, marshes, ponds, dunes, and other natural areas within the national seashore. Many roads lead to residential areas, as well as historic resources such as lighthouses and beaches. The roads are paved, signed, striped, and often have pullouts and vista points.

Consistent with public safety and resource protection measures in adjacent zones, short trails may provide easy access to viewpoints, small picnic areas,

and nearby attractions that are convenient and easily accessible. Parking areas for trailhead access may be provided for access to other zones.

Examples of routes in this subzone include U.S. 6, Race Point Road, Province Lands Road, Chequesset Neck Road, and Ocean View Drive.

**Desired Experience:** Scenic driving opportunities will be the primary experience, as well as bicycling and walking. Observing the natural setting and historic elements will be important, and while there may be a sense of adventure, there will be little need for special outdoor skills or abilities. Large numbers of people may be present. Interpretive information will primarily be offered at wayside exhibits and viewpoints.

**Management:** Corridors within the national seashore will be intensively managed by the Park Service, as well as state and local jurisdictions, for public safety and resource protection purposes (e.g., erection of guardrails, active enforcement, restrictions on activities), depending on ownership. Resources will be modified for essential public use and operational needs.

Along primary routes (such as a state or U.S. highway) and secondary roads, the area of management will be within the road right-of-way.

#### ***Nonmotorized Corridor Subzone***

The nonmotorized corridor subzone includes paved or improved trails and sand roads for bicycling and walking. Trails typically pass through natural settings such as dunes, forests, and marshes and often provide access to specific natural or historic areas within the seashore. Public attractions are easily accessible and usually close to the trails. Parking areas are available. Limited support facilities such as comfort stations may be provided at trailheads. Resource modifications are evident but harmonize with the natural environment.

Examples of this subzone include bicycle trails in the Province Lands, Nauset, and Head of the Meadow (National Park Service), and the Cape Cod Rail Trail (Massachusetts Department of Environmental Management).

**Desired Experience:** Observing the natural setting along trails will be important. There may be a sense of adventure, but little need for special outdoor skills or abilities. Signs will blend with the natural environment. The probability of encountering individuals, groups, and NPS staff will be low to moderate.

Interpretive information will be provided through brochures, bulletin cases, and wayside exhibits, primarily at trailheads. Personal services will be infrequent.

**Management:** Trails will be managed and maintained by the Massachusetts Department of Environmental Management and the National Park Service. NPS management for resource protection, trail function, education, and safety will be moderate to high. Vegetation within 5' of either side of the paved trail will be intensively managed, including mowing and selective removal of nonnative or hazardous vegetation. The removal of vegetation will be judicious and will be subject to standard environmental review practices, including consultations with others, where necessary.

### **SPECIAL USE SUBZONES**

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#### ***Rural Settlement Subzone***

Residential settlements within the national seashore contribute to the richness and diversity of experiences. Homes within the rural settlement subzone, often with maintained landscapes, are surrounded by natural areas. Building density is moderate, with clusters of houses and outbuildings separated by open spaces.

Privacy is important, and limited access is by private roads/drives that vary from well-maintained paved surfaces to narrow, unpaved surfaces periodically graded for two-wheel-drive vehicles. No visitor support facilities are provided. Included in this subzone are historic houses recorded by the Historic American Buildings Survey, such as those along Pamet Point Road, that are considered eligible for the National Register of Historic Places.

Examples of areas in this subzone are Wellfleet by the Sea, the vicinity of Gull Pond, settlements along the Pamet River, Pamet Point, Long Nook, and Higgins Hollow Roads.

**Desired Experience:** The experience will usually be in a vehicle, from a bicycle, or on foot on the way to another feature or attraction. Interaction among visitors and residents will be low. Sights and sounds of people, houses, and vehicles will be common, although large numbers of people will usually not be encountered.

Public services or interpretive information will be rarely provided.

**Management:** NPS areas will be managed to protect natural and cultural resources, to help provide privacy for residents, and to ensure safety. Active enforcement of regulations to protect the rights of residents by the Park Service and local authorities will occur. Private properties will be subject to town zoning bylaws and NPS oversight. When structures or landscapes must be modified, private homeowners will be encouraged to make changes that are architecturally compatible with the original structure and sensitive to adjacent natural processes and resources. Some nonhistoric structures will be removed, where appropriate. The existing NPS use-and-occupancy policy may continue. Nonhistoric houses that were built after 1959 and that have been subsequently acquired by the Park Service may be considered for adaptive use or demolished.

#### ***Administration / Operations Subzone***

The administration/operations subzone contains a wide spectrum of utilitarian buildings, uses, and ownership. Resources have been modified for federal agency or municipal operational needs. Access may be controlled because of operational and safety concerns and would be subject to consultation if local communities were affected.

Examples of this subzone include NPS maintenance areas and research facilities, Federal Aviation Administration communication towers, town solid waste management areas, Nauset Regional High School, and Provincetown Municipal Airport. Another example of this subzone is the former North Truro air force station, which is being considered for adaptive reuse for both national seashore operations and public educational functions. All isolated properties that are under use-and-occupancy reservations and that are located in other zones will be considered part of this subzone for consistent treatment.

**Desired Experience:** No desired experience will be defined. These areas will not be interpreted.

**Management:** Management will be according to agency and operational needs and constraints, including NPS and other entities having jurisdiction. NPS operational areas will be managed to minimize impacts on the surrounding natural resources. Landscaping within the operational areas will include screening with native vegetation where appropriate. Security and protection for national seashore facilities will be provided concurrently by the Park Service and local jurisdictions, under memoranda of understanding.

## **PUBLIC EXPERIENCE AND RESOURCE PROTECTION PROCESS (CARRYING CAPACITY)**

### **ANALYSIS**

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One of the requirements of a general management plan is the identification of and implementation of commitments for carrying capacity, which is required by federal law (PL 95-625). To comply with this mandate, a process known as visitor experience and resource protection has been developed within the National Park Service. This process looks at carrying capacity as it relates to desired ecological and social conditions, not to the maximum number of people that can be accommodated in a particular area.

The resource mapping and management solutions are directly linked to the management zones for the national seashore. Standards were defined for each zone in consultation with the public to give seashore managers an indication when a problem must be addressed before it becomes a major concern. The qualitative standards that have been developed for each subzone as part of the public experience and resource protection process are shown in table 1. The desired experience and standards would be applied throughout the national seashore gradually over time as funding and time permit or as issues arise. With this information as a base, indicators and standards for resource conditions and the experience of the public will be tailored for specific areas, such as beaches and kettle ponds, and will be continually monitored by NPS staff over the life of the approved general management plan. The following steps will allow seashore managers to determine when desired conditions are not being achieved and to take corrective action:

- *Select quality indicators and specify associated standards for each zone/subzone* □ Measurable physical, social, and ecological variables will be identified for each zone and subzone to indicate whether or not a desired condition is being met. Monitoring techniques for each subzone will also be selected.
- *Compare desired conditions to existing conditions* □ A monitoring program will be established for each subzone to identify any discrepancies with the desired resource and social conditions.
- *Identify the probable causes of discrepancies*
- *Identify management strategies to address discrepancies* □ Public use or resource management prescriptions will likely start with the least restrictive measures that will accomplish the objective and move toward more restrictive measures if needed, subject to discussion with stakeholders. For example, use patterns may be changed, or infrastructure (e.g., roads, parking areas, trails) may be provided to remedy the problem.

Long-term monitoring is essential for providing periodic, systematic feedback to seashore managers to ensure that desired resource and public experience conditions continue to be achieved over the long term. It is a way of objectively evaluating the effectiveness of individual management actions and the overall effectiveness of the seashore's program.

This analysis process helped determine that improved visitor distribution and more careful management of natural and cultural resources and understanding the concerns of local communities and residents, rather than overall limits on

numbers of visitors, should accomplish the seashore's management needs during the life of this plan.

## **A MONITORING PROGRAM FOR RESOURCE CONDITIONS AND PUBLIC EXPERIENCE**

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Cape Cod National Seashore is now engaged in an intensive inventory and monitoring program that has been developed jointly between the National Park Service and the U.S. Geological Survey's Biological Resources Division. This program is part of an ongoing process of scientific data gathering and evaluation that will further the ongoing application of monitoring for resource conditions and public experience within the national seashore.

Resource conditions and the public experience can be continually monitored by national seashore staff based on the seashore's important resources and public experiences, proposed management zones and subzones, and the associated range of desired resource and social conditions. Resource indicators measure impacts on the biological or physical resources of a park unit, while social indicators measure impacts on park users that are caused by interactions with other users or with NPS or concession employees. Standards are quantitative or highly specific measures that provide a base for judging if conditions are acceptable. Standards are triggers for management actions when conditions become unacceptable.

### ***Example Resource Indicators and Standards***

Previous research has identified several consistent resource indicators that can be monitored in parks, including the following:

- ***Relative soil compaction levels*** — This indicator measures the degree to which trampling affects soil density and permeability. Increased compaction is detrimental to ecosystems because it disrupts nutrient and hydrologic cycles. Soil compaction is easily and accurately measured, sensitive to visitor use, and responds to reductions in trampling.
- ***Soil characteristics (percentage clay/sand/silt, acidity, amount of organic matter, and macro- and micronutrients)*** — Soil characteristics are greatly altered by use and trampling, in turn affecting nutrient and hydrologic cycles. Over time this will affect plant and animal communities. Measuring these soil characteristics will tell managers if visitors are adversely affecting the soil's physical or biological functions.
- ***Cover and frequency of vascular plants (by species)*** — Measuring plant cover and frequency will establish the effects of visitor use on vegetative communities, which in turn affect animal communities. Specifically, this indicator can be monitored to determine if use or trampling is resulting in at least three adverse effects: introduction of exotics, reduction in vegetative cover, and conversion of vegetation from perennials to annuals.
- ***Elemental tissue content of dominant plants*** — Research has shown that trampling affects the nutrient levels in plants and plant growth. Plants in trampled areas become less nutritious for wildlife.
- ***Ground cover (percentage cover and frequency of litter, mosses and lichens)*** — Trampling affects the ground cover, which is important for soil stability and properly functioning nutrient cycles.

- **Density of social (unofficial) trails** — This indicator is an effective measure of off-trail use and shows how much of an area away from designated trails is being used or trampled by people.
- **Road widenings** — This indicator measures impacts resulting from widening road tracks caused by visitors driving their vehicles around obstacles, passing each other, or driving cross-country.

As an example, a resource indicator and standard for the low use natural subzone might be:

*Indicator:* Density of social trails.

*Standard:* The standard is exceeded when 10% or more additional linear feet of social trail per square mile are created than were present in 1996.

The selection of appropriate standards for the resource indicators in each subzone will be based on the relative tolerance for resource impacts and will be based on the judgment of park planners and resource managers about the minimum degree of “naturalness” needed to maintain the desired experience.

#### **Example Social Indicators and Standards**

The National Park Service has not traditionally emphasized the use of the social sciences as a means of determining the quality of a user’s experiences.

Additional research is needed to determine what user expectations are in parks. Research done in other park units is useful for helping to organize what will be needed for Cape Cod National Seashore. The social research compiled in the 1994 “Cape Cod National Seashore Visitor and Resident Study” (Manning) is extremely helpful as a starting point and can be used for framing additional research that might be needed. Sociologists and local communities would be consulted as necessary in determining standards.

Indicators may include:

- **The number of people at one time at major attractions or on trail segments** — This indicator is an important factor in the user’s experience at high use areas and can be easily and accurately monitored.
- **The number of different parties seen while traveling on or off trails or roads** — This indicator is an important factor in the user experience at low use areas and can be monitored fairly easily through observation and public surveys.
- **Traffic congestion on major paved roads within the seashore** — Traffic congestion can be easily measured, and depending on the type of road, ownership, and level of use, various actions can be taken to let the public know about alternative routes or attractions such as beaches.
- **The numbers and density of people using designated beaches** — The social expectations on beaches are different from backcountry experiences because in certain instances the experience is enhanced, not diminished, for some users by the presence of others, until a certain threshold is reached.

For example, a social indicator and standard for the low-use natural subzone might be:

*Indicator:* Number of different parties seen on a trail or from a trail per hour during peak hours of peak months.

*Standard:* The standard is exceeded when five or more parties per hour are seen during 10% or more of the time during peak hours of peak months.

Standards will need to be selected based on the point where the level of service is no longer consistent with the desired user experience described for each subzone.

***Interim Carrying Capacities for Beach Facilities***

The 1994 “Visitor and Resident Study” (Manning) surveyed selected aspects of Cape Cod National Seashore carrying capacity by evaluating indicators (variables that reflect the quality of the public experience) and standards (that define the quantitative and measurable condition of indicator variables). The six national seashore ocean beaches are well used and enjoyed. Due to their popularity and potential for crowding at this time, a carrying capacity analysis was undertaken.

Indicators of the quality of natural and historical resources included (1) wild-life, (2) sand dunes, (3) vegetation, (4) water quality, (5) litter, (6) general quality of the environment, (7) natural beauty, (8) number of people, and (9) quiet/solitude. Indicators of the quality of the visitor experience included (1) litter, (2) number of people, (3) traffic, (4) general quality of the environment, (5) adequate visitor facilities, and (6) cleanliness of visitor facilities. Survey respondents reported on the maximum number of visitors seen at beaches, their perceived level of crowding, and the maximum number of visitors and most intense spacing pattern they felt could be accommodated without feeling too crowded.

The following carrying capacities were determined for the protected (or lifeguarded) portions of those beaches.

Herring Cove, Race Point, and Marconi Beach □ 500 people

Head of the Meadow Beach □ 300 people

Nauset Light Beach □ 400 people

Coast Guard Beach □ 900 people

Monitoring of the efficacy of establishing such carrying capacities will be performed once a routine inventory and monitoring process has been established. Capacity problems at town beach facilities within the seashore are not known. Managers of these town beaches are expected to address any management issues of concern.

Most other locations or facilities, including the Salt Pond visitor center, may occasionally have parking problems, such as full parking lots during special events or tours. The Province Lands visitor center parking lot is oversized to meet demand and does not have capacity problems. Parking areas at Great Island, the Highland Historic District, and the Marconi site do not experience overuse problems.

There are some capacity problems at Fort Hill in Eastham, which is the third most popular nonbeach site in the national seashore, with over 300,000 visits per year. The estimated peak public use capacity for Fort Hill is limited by existing parking and is approximately 65 people at one time or about 700 people per day. If parking was not the limiting factor, 165 people or about 1,200 people per day could be accommodated. It is estimated that parking capacity is exceeded 40–60 times per year. Efforts to improve the situation include exploring alternative transportation options and some additional parking, and revising the scheduling of special tours.

Intersections along U.S. 6 both inside and outside the national seashore boundary are congested between July 4th and Labor Day. Road volumes are monitored, and road capacities are established by the Cape Cod Commission and

other agencies; the National Park Service also monitors volumes at some high public use locations within the seashore. Regional transportation planning initiatives, with the National Park Service as a partner, are expected to address any resultant public safety concerns from road capacity problems; due to traffic capacity concerns, a key component of long-range planning will continue to be regional growth management.

**TABLE 1: QUALITATIVE CHARACTERISTICS FOR MANAGEMENT ZONES  
CAPE COD NATIONAL SEASHORE**

ZONE CHARACTERISTICS	NATURAL ZONE				HISTORIC ZONE		DEVELOPED ZONE			SPECIAL USE ZONE	
	Concentrated Use Subzone	Dispersed Use Subzone	Low Use Subzone	Marine/ Intertidal Subzone	Structures and Landscape Subzone	Natural Setting Subzone	Visitor Facility Subzone	Motorized Corridor Subzone	Nonmotorized Corridor Subzone	Rural Settlement Subzone	Administration/Operations Subzone
Challenge and Adventure of Experience	Low	Moderate to high	Moderate to high	Moderate to high	Low	Low to high	Low	Low	Low to moderate	N/A	N/A
Dependence on Roads, Trails, or Other Facilities	Moderate	Low	Low	Low	High	Low to moderate	High	High	High	High	N/A
Visitor Encounter Expectations	Moderate	Low to high	Low	Low to high	Low to high	Low	High	High	Low to moderate	Low	N/A
NPS Staff Encounter Expectations	Moderate	Low to high	Low	Low	Low to high	Low	High	Low	Low to moderate	Low	N/A
Highest Standard for Road Corridor	Paved	Unsurfaced up to 10' wide	N/A	N/A	Paved	Unsurfaced up to 10' wide	Paved	Paved	N/A	Paved	Paved
Highest Standard for Trail Corridor	Surfaced up to 6' wide	Unsurfaced up to 3' wide	Unsurfaced up to 2' wide	N/A	Surfaced up to 6' wide	Unsurfaced up to 2' wide	Surfaced up to 10' wide	Surfaced up to 6' wide	Paved up to 10' wide	N/A	Surfaced up to 6' wide
Management Action for Resource Protection and Safety	Moderate to high	Moderate	Low	Low to high	High	Low to moderate	High	High	Moderate to high	Moderate (at NPS sites only)	High
Tolerance for Resource Degradation	Low	Low	Low	Low	Low	Low	High	Moderate	Low	Moderate	High
Opportunity for Solitude	Low to moderate	Moderate to high	High	Low to high	Low to moderate	High	Low	Low	Moderate	Low	N/A
Noise Level	Moderate	Low	Low	Low to high	Low	Low	High	Moderate to high	Moderate	Moderate	Moderate

N/A □ not applicable.

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