


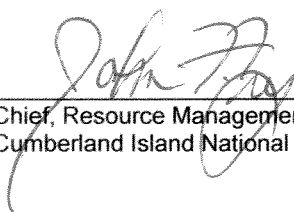
Cumberland Island National Seashore



**Fire Management Plan
January 2015**

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1. INTRODUCTION

1.1 Purpose and Need for the Fire Management Plan

In accordance with National Park Service policy (*Director's Order #18: Wildland Fire Management*, <http://www.fire.nps.gov/fire/policy/do18/do18.htm>), Cumberland Island National Seashore is required to have an approved Fire Management Plan (FMP):

“Each park with burnable vegetation must have an approved Fire Management Plan that will address the need for adequate funding and staffing to support its fire management program. Parks having an approved Fire Management Plan and accompanying National Environmental Policy Act (NEPA) compliance may utilize wildland fire to achieve resource benefits in predetermined fire management units. Parks lacking an approved Fire Management Plan may not use resource benefits as a primary consideration influencing the selection of a suppression strategy, but they must consider the resource impacts of suppression alternatives in their decisions.”

The FMP serves as a detailed and comprehensive program of action to implement fire management policy principles and goals, consistent with the unit's resource management objectives. This plan outlines the fire management program at Cumberland Island National Seashore (hereinafter referred to as the “Seashore” or by NPS alpha code “CUIS”).

The CUIS fire management program, guided by federal policy and the seashore's resource management objectives, will serve to accomplish the following:

- Protect life, property, and natural and cultural resources
- Provide consistent planning and operational guidance to the Superintendent and Fire Management Officer for all fire related activities
- Provide stakeholders with a concise description of why and how fire will be managed in the park
- Provide park managers a concise communications tool for understanding actions, roles and responsibilities
- Provide the connection between park wide goals and objectives and incorporate them into the fire management actions and decisions.
- Document fire program logic and objectives

The preceding CUIS Fire Management Plan was completed and approved in 2004, and supported by National Environmental Policy Act (NEPA) compliance. The Seashore is updating that FMP for two basic reasons; 1) research and knowledge of Seashore lands and resources indicate more active management of vegetation is necessary to protect, maintain, and perpetuate Seashore values, and 2) as of 2015 the NPS will no longer base management actions on the Hazardous Fuels Categorical Exclusion (CE) which will invalidate many of the activities in the 2004 FMP. The NPS includes more active fire management strategy activities in this new FMP such as prescribed burning, wildfire managed for resource objectives (i.e., in limited areas and under certain conditions), and targeted herbicide use. The new FMP will better protect island visitors, residents, structures, facilities, and natural and cultural resource values; address the need to restore fire to its natural role in the ecology of Cumberland Island; and will update language in the plan to follow National Fire Policy terminology changes. Seashore fire management includes planning, preparedness, prevention, suppression, restoration and rehabilitation,

and education; all are conducted on an interagency basis and frequently involve cooperators and partners.

1.2 General Description of the Park

1.2.1 Background

Cumberland Island National Seashore was created by Congress in 1972 (Public Law (PL) 92-536, codified at 16 U.S.C. 459i et seq. (the Act) “to provide for public outdoor recreation use and enjoyment of certain significant shoreline lands and waters of the United States and to preserve related scenic, scientific, and historical values”. Section 6 of the Act states that “Except for certain portions of the seashore deemed to be especially adaptable for recreational uses... the seashore shall be permanently preserved in its primitive state”. On September 8, 1982, much of the northern half of Cumberland Island was designated as wilderness or potential wilderness to be managed as part of the National Wilderness Preservation System (PL 97-250, as amended by PL 108-447, 16 U.S.C. 113).

Cumberland Island is the southernmost barrier island along the Georgia coastline in Camden County, and is bounded by the Cumberland River on the west, St. Andrew’s Sound on the north, the Atlantic Ocean on the east, and Cumberland Sound on the south (Figure 1). The island is 17.5 miles long, ranging from just over a half mile to three miles wide, and totals 36,415 acres of which 16,850 are marsh, mud flats, and tidal creeks. There are no roads or bridges that connect the island with the mainland; access is solely by boat or, on a more uncommon basis, aircraft. In addition to Cumberland Island, Little Cumberland Island is included within the legislated boundaries of the Seashore. However, all land on Little Cumberland is privately owned, fee-simple property and is not managed by the NPS. The NPS also has facilities on the mainland in St. Marys, Georgia, including the visitor center, ferry landing, headquarters building, and museum/curatorial building.

Cumberland Island supports multiple diverse ecosystems of which all are fire adapted. Island vegetation includes marshlands, live oak forests, pine stands, palmetto, swamps, and coastal scrub-shrub species. Visitors have the opportunity to see white-tailed deer, raccoon, river otter, bobcat, alligators, manatees, and an impressive variety of birds. The island provides excellent nesting habitat for loggerhead sea turtles. The Seashore’s undeveloped natural areas attract visitors for activities such as swimming, camping, backpacking, fishing, hiking, bird and wildlife watching and beachcombing.

For more than 4,000 years human visitors and residents have interacted with and relied on the natural resources of Cumberland Island. Numerous shell middens throughout the island provide the most conspicuous clues to a complex American Indian population that once prospered here. Buildings, landscape features, structural ruins, artifact and archival collections, and archeological sites depict a historical record of the island through colonial times, the plantation era, the estate period, and to the present day. These pieces of the past provide a compelling backdrop to the island that draws visitors into the stories of this remote place



Figure 1: Cumberland Island National Seashore and Vicinity

1.2.2 Management Environment

1.2.2.1 Land ownership, significant resources, mission, and management direction

The Seashore is a complex mix of management areas and ownership that includes Wilderness, National Register historic districts, private property, reserved estate property, and land owned by other federal entities or the State of Georgia. The majority of the Seashore's upland acreage is owned and administered by the NPS.

The Cumberland Island Wilderness is located in the northern half of the island and encompasses approximately 9,886 acres that are legislatively designated as wilderness and an additional 10,500 acres authorized as potential wilderness. In total, approximately 20,386 acres at the Seashore are managed to protect wilderness character, which represents approximately 56% of the upland and marsh within the Seashore's boundary. The Cumberland Island wilderness legislation mandates that the Seashore's designated wilderness will be permanently preserved in its wilderness condition. The wilderness area includes most of the Seashore north of Stafford Plantation, with the exception of the central and eastern portions of the High Point-Half Moon Bluff Historic District and the uplands on Little Cumberland Island (figure 1). In 2004, legislation excluded three 25-foot-wide road corridors from the wilderness along the Main Road, Plum Orchard Spur, and North Cut Road. Congress directed that these corridors be maintained for continued vehicle use.

In addition to Wilderness lands the Seashore also includes seven properties listed on the National Register of Historic Places (NRHP): Dungeness Historic District, Stafford Plantation Historic District, Plum Orchard Historic District, Table Point Archeological District, Rayfield Archeological District, High Point – Half Moon Bluff Historic District, and Main Road (figure 4). Greyfield, a privately owned tract, is also on the NRHP. The historic districts are dispersed throughout the island and include features such as archeological sites, cultural landscapes, historic structures, and structural ruins. All of the Historic Districts are within the wildland-urban interface.

Land ownership on Cumberland Island includes fee-simple, private properties held by nine different entities with individual tracts ranging from 10 acres to 210 acres. These parcels are generally concentrated in the area between Sea Camp and Little Greyfield as well as the Stafford area. One of the parcels is a 210-acre tract owned by The Nature Conservancy. In addition to the Cumberland Island tracts, all of the property on Little Cumberland Island is privately held and is not managed by the NPS. All of the activities and operations on the smaller island are under the direction of the Little Cumberland Island Home Owners Association. The Georgia Forestry Commission and Camden County Fire and Rescue share fire protection responsibilities on Little Cumberland and CUIS serves as a cooperating agency as needed in the event of fire. The private tracts on both islands contain residences and other structures and are within the wildland-urban interface.

Cumberland Island also contains areas that constitute what are often referred to as reserved estates or reserved properties. The park's enabling legislation contained a provision that in the process of NPS acquisition of improved properties, as a condition of the acquisition, the previous owner(s) were permitted to retain a right of use and occupancy for residential purposes. Cumberland Island has ten retained rights agreements remaining in place and they are all life estates. These properties are scattered throughout the island and range in size from one-third of an acre to 186 acres. All of the tracts include residences and other structures and are within the wildland-urban interface.

Other property interests on the island include the State of Georgia, which owns extensive marsh land on the west side of the island, all saltwater creeks, and all land below the mean high-tide line (which would include the beach). In addition, the U.S. Navy owns Drum Point Island which is west of Cumberland off of Sea Camp. And the U.S. Army Corps of Engineers owns the marsh area west of Beach Creek and includes Raccoon Keys.

With respect to significant resources, mission, and management direction, the Seashore's 2013 Foundation Document sets the benchmarks through the defined Park Purpose, Park Significance, and Fundamental Resources and Values:

Park Purpose: Cumberland Island National Seashore maintains the primitive, undeveloped character of one of the largest and most ecologically diverse barrier islands on the Atlantic coast, while preserving scenic, scientific, and historic values and providing outstanding opportunities for outdoor recreation and solitude.

Park Significance:

- Cumberland Island National Seashore is one of the Atlantic Coast's most ecologically diverse barrier islands, where local variations in environmental conditions create extensive and unique communities across the island; from the beach and dune system on the east, through the interdune, freshwater wetland, and upland forest habitats in the interior, to the salt marsh on the west.
- Cumberland Island National Seashore contains a rich concentration of cultural resources that recount 4,000 years of human habitation and include a remarkable diversity of ethnic and social backgrounds. These pieces of the past – archeological features, landscapes, architecture, artifact collections, people - cast a compelling backdrop to the island that draws visitors into the stories of this remote place.
- With almost 18 miles of pristine beach and one of the largest oak maritime forests remaining in the United States, Cumberland Island provides an unparalleled visitor experience.
- Cumberland Island National Seashore protects the largest designated wilderness area on an East Coast barrier island.
- Cumberland Island National Seashore's physical isolation provides visitors opportunities to experience outdoor recreation in an uncrowded, undeveloped setting. Moreover, this isolation helps to preserve and protect the island's fragile natural and cultural resources.

Fundamental Resources and Values:

- National register archeological districts and other significant archeological resources
- National register historic districts and their contributing features
- Intact barrier island system driven by coastal geological and biological processes
- Live oak maritime forests
- Pristine beach
- Wilderness
- Primitive and undeveloped character
- An uncrowded setting that provides opportunities for both passive and active outdoor recreation

1.2.2.2 Overview of Physical and Biotic Characteristics of the Park

1.2.2.2.1 Soils

Fine sand soils dominate Cumberland Island, with the exception of the silty clay soils of the salt marsh. Upland/interior soils can be broken into three major drainage classes: xeric (dry), mesic (moist), and hydric (wetland) (Figure 2). The driest, most xeric sites are underlain by Cainhoy fine sand soils totaling approximately 2,104 acres. These sites are found on the flat to slightly rolling topography of the bluffs overlooking the Intracoastal Waterway, and on elevated north-south ridges in the center of the island. Mesic sites encompass about 7,536 acres on the island and are composed of Mandarin fine sand and Pottsburg sand soils. These soils occur on broad flats and depressions up and down the island interior. Rutlege fine sand (1,321 acres) is found in depressions and drainages that form wetland areas. The ridge and swale system that spans the length of the island's east side is composed of the Fripp-Duckston soil complex (4,401 acres). The xeric dune ridge component of the complex is made up of Fripp fine sands and Duckston sands are found in the poorly drained swale features.

1.2.2.2.2 Air Quality

The Seashore is designated as a class II air shed under the 1977 amendments to the Clean Air Act. Under class II, modest increases in air pollution are allowed beyond baseline levels for particulate matter, sulfur dioxide, nitrogen and nitrogen dioxide, provided that the national ambient air quality standards, established by the Environmental Protection Agency (EPA), are not exceeded.

Cumberland Island does not have an air quality (AQ) monitoring station in any capacity and no site specific data is available. However, there are monitoring sites with varying capabilities in Brunswick and Okefenokee National Wildlife Refuge in Georgia, as well as Jacksonville, Florida. NPS air quality reporting for Cumberland Island is based on and interpolated from these and other regional sites. The most recent NPS condition assessments for four key air quality indicators are based on data collected from 2005-09, and the trend assessments are based on 2000-09 data:

Air Quality Parameter	Condition	Trend
Visibility	Significant concern	Improving
Ozone	Moderate concern	No discernible trend
Sulfur wet deposition	Significant concern	Not available
Nitrogen wet deposition	Moderate concern	Not available

Potential sources of air pollutants in the vicinity of the park include wood pulp and paper industries in Fernandina Beach, Florida and Brunswick, Georgia, as well as the major metropolitan center of Jacksonville, Florida. Areas that could be affected by smoke from wildland fires in the park include the Intracoastal Waterway, Kings Bay Naval Submarine Base, adjacent population centers of various sizes, and nearby Interstate 95, a major route for north-south traffic.

CUIS has three monitoring stations that collect weather data to some extent. These include the Remote Automatic Weather Station (RAWS) near High Point on the island's north end, the NOAA Climate Reference Network station located mid-island at Stafford Field, and the USGS Real-Time Water Quality station located at the Sea Camp Dock on the south end. Monitoring parameters vary from site to site and may/may not include air temperature, precipitation, wind speed and direction, solar radiation, humidity, and more (RAWS fire weather).

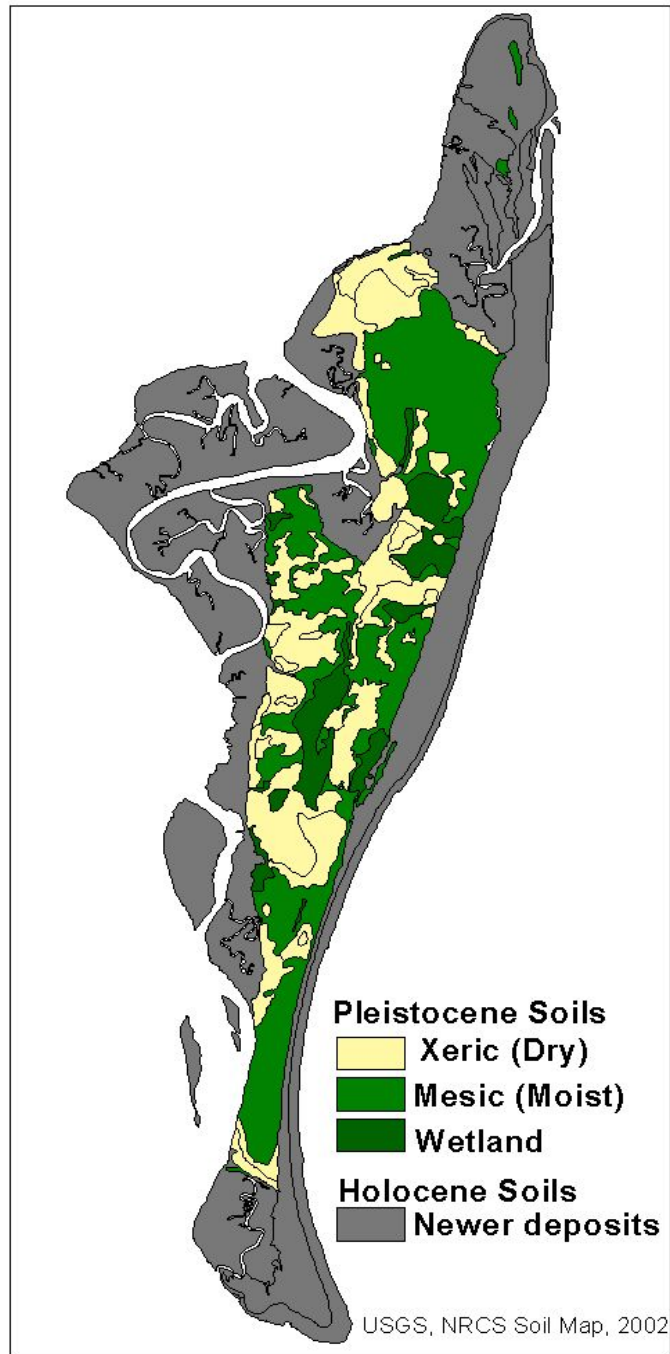


Figure 2: Soils of Cumberland Island

1.2.2.2.3 Water Resources

Cumberland Island has the largest and most diverse system of wetlands on any of Georgia’s barrier islands (Hillestad and others, 1975). In addition to more than 16,500 acres of salt marshes, mud flats, and tidal creeks, there are more than 2,500 acres of freshwater wetlands that range from permanent and semi-permanent ponds to seasonal wetland areas including emergent, scrub/shrub, and forested palustrine areas. Many of the wetlands on Cumberland Island, as well as those on other large barrier

islands of the southeastern and Gulf coasts of the U.S., are associated geomorphically with dune and swale topography (Odum and Harvey, 1988). These interdunal wetlands are present where (1) dune and swale topography has persisted since at least the middle to late Holocene (2,000 to 5,000 years before present), (2) a lens of fresh ground water intersects the bottoms of the swales, and (3) extensive flooding by seawater is infrequent (Odum and Harvey, 1988). Many of these freshwater wetlands are in swales between dunes and result from trapping rainwater in the narrow areas between dunes (Hillestad and others, 1975) or from ground-water discharge into closed or nearly closed surface depressions (Hillestad and others, 1975). Other major freshwater wetlands on Cumberland Island include those associated with low-lying areas in interior portions of the island and areas adjacent to estuaries on the northern and southern portions of the island (figure. 2). Intertidal emergent wetlands on the western side of the island are the most extensive wetlands on Cumberland Island.

Freshwater wetlands increase biodiversity on barrier islands by providing habitat for animals such as frogs, salamanders, water snakes, turtles, and aquatic mammals—all of which are largely absent from barrier islands lacking freshwater habitats (Bellis, 1995). Barrier-island freshwater wetlands commonly provide the only dependable source of water for upland fauna such as whitetail deer and feral horses and hogs. In addition, wetlands provide habitat for aquatic plants, aquatic invertebrates, and fishes, as well as nesting, feeding, and roosting areas for wading and shore birds. Several Federally listed animals, including Brown Pelicans (endangered), Wood Storks (endangered) and the American Alligator (delisted in 1987), are known to use freshwater aquatic habitats on Cumberland Island for portions of their life cycle (Hillestad and others, 1975).

Freshwater wetlands on Cumberland Island occur in a range of physical settings, with varying degrees of permanence and connectivity to seawater. Odum and Harvey (1988) indicated that freshwater interdunal wetlands are rare and fragile resources, occur on a number of barrier islands in the southeastern U.S., and are sufficiently varied and limited in total area to warrant preservation and management. The integrity and viability of interdunal wetlands and ponds are dependent on protection of the dune and swale systems from erosion and direct alteration and protection of the barrier island's surficial aquifer. Plant communities, wildlife, and aquatic animals are closely linked to the island's wetlands, which provide habitats to some protected species.

Surface-water features and wetlands on Cumberland Island represent a broad range of hydrologic and biologic conditions that may be related to different successional stages. Water-level fluctuations, fire, and changes in salinity due to seawater inundation and to evaporation are perturbations that affect wetland extent, characteristics, and biologic conditions (Hillestad and others, 1975). These somewhat regular perturbations help prevent or slow successional processes that lead to wetlands infilling and disappearing (Hillestad and others, 1975).

Much of the variation in water-quality constituents among studied water bodies on Cumberland Island may be attributed to (1) proximity to the ocean and the relative degree of tidal influence; (2) the amount and type of ground-water and surface-water interactions; and (3) recent and long-term rainfall patterns. Large variations in many constituents including dissolved oxygen, specific conductance, magnesium, potassium, sodium, bromides, chlorides, and sulfates have been observed at Whitney outflow, Lake Retta outflow, and South End Ponds. Variations in water quality at the two outflows were most likely the result of intermittent inflow or inundation by saline water from the Atlantic Ocean. Similarly, variations in water quality of South End Ponds were probably from temporary inundation by saline to brackish water from Cumberland Sound. Maximum concentrations for many ions were measured in water samples collected from the outflows just after Hurricane Floyd (September, 1999) had produced

storm surges and coastal flooding along the eastern U.S.—including Cumberland Island. In contrast to the low-lying, tidal- and storm-surge-affected sites, water from North Cut Ponds, an interior wetland, was markedly more dilute than water from the two outflows and South End Pond 3, and yet quite similar to rainwater.

Water bodies that are more frequently inundated by saline or brackish water from the Atlantic Ocean or Cumberland Sound—such as the beach outflows and South End Ponds—tend to have water compositions more similar to seawater (with high concentrations of total dissolved solids, sodium, chloride, and sulfate) than water bodies where the primary oceanic influence is from salt aerosols. The relative abundance of major ions and total-dissolved-solids concentrations in surface-water samples collected from water bodies on Cumberland Island provide some insight into potential sources of water and influences on water quality. Major-ion chemistries of water samples from Whitney Lake, Willow Pond, and South End Pond 3 were sodium-chloride dominated, probably indicating influence from direct inundation of marine waters or input from salt aerosol. The remaining wetlands sampled had relatively low total-dissolved-solids concentrations and mixed major-ion chemistries—North Cut Ponds was magnesium–sodium–chloride–sulfate dominated and Lake Retta and the two beach outflows were sodium–calcium–bicarbonate–chloride dominated. The higher percentage of calcium and bicarbonate in surface waters and relatively low total-dissolved-solids concentrations suggest a greater proportion of the water originates from ground-water discharge. In contrast, the major-ion chemistries of wetlands with a higher percentage of sodium and chloride are probably more directly influenced by the ocean via inundation, input from salt aerosol, or rainwater.

1.2.2.2.4 Vegetation

Approximately 500 plant species have been identified on the island, encompassing 22 distinct plant communities and 34 vegetation classifications. Vegetation within seashore boundaries is closely related to soil type, past land use, and fire history. Dry soils on Cumberland Island support vegetation in various stages of succession from open pine stands to mixed oak and pine, to xeric oak hammock. Large hardwoods, particularly live oak (*Quercus virginiana*) and laurel oak (*Q. laurifolia*), occur on many of these sites. Remnant slash pine (*Pinus elliottii*) and longleaf pine (*P. palustris*) still occur in their historic natural densities in numerous areas. Loblolly pine (*P. taeda*) grows in higher densities where it was planted and on old field sites. Where soil has not been disturbed by agricultural tilling, understory species including piney woods dropseed (*Sporobolus junceus*), *Aristida* spp., Wavy-leaf Noseburn (*Tragia urens*), *Asclepias longifolia*, and *Stipa* spp. are scattered.

Mesic upland sites are dominated by either oak scrub or live oak hammock, depending on fire history. Oak scrub grows on an expansive area of Mandarin fine sand on the north end of the island, which burned in high intensity fires in 1934, 1954, 1981, 2008, and which partially burned in 1993. A smaller area of scrub grows on Table Point, where severe fires burned most of the point in 1924, 1963, and 1977, with portions of the area burned in 1980. Similar soils on the narrow south end of the island, where there have not been large wildland fires, are vegetated by mesic hammock. Both scrub and hammock vegetation types contain live oak (*Q. virginiana*), sand live oak (*Q. geminata*), slash pine (*P. elliottii*), pond pine (*P. serotina*), lyonia (*Lyonia* spp.) saw palmetto (*Serenoa repens*), red bay (*Persea borbonia*), tarflower (*Befaria racemosa*), and blueberry (*Vaccinium* spp.). Where hammock vegetation is well developed, epiphytic Spanish moss (*Tillandsia usneoides*) and resurrection fern (*Pleopeltis polypodioides*) grow on the branches of oaks reaching three and four feet in diameter. Cumberland

Island's scrub is very similar to the scrub and scrubby flatwoods vegetation found on Florida's central ridges and panhandle (Davison 1984).

Diverse wetlands, surrounded by saw palmetto (*Serenoa repens*) and inkberry (*Ilex glabra*), support various vegetation types including sawgrass (*Cladium jamaicense*), cordgrass (*Spartina* spp.), and red bay (*Persea borbonia*). Saltwater marshes of saltmarsh cordgrass (*Spartina alterniflora*) flank the western edge of the island.

Expansive dunes dominated by wax myrtle (*Myrica cerifera*), cordgrass, sedges, sea oats (*Uniola paniculata*), and cabbage palm (*Sabal palmetto*) run the length of the east side of the island.

1.2.2.2.5 Wildlife

The seashore encompasses both marine and terrestrial communities. Examples of seashore fauna, some of which are federally- and/or state-listed species, follow.

Thirty-five (35) species of mammals are found on CUIS, including white-tailed deer, bobcat, opossum, raccoon, otter, mink, armadillo, bat, mole, shrew, squirrel, and several species of rats and mice. Feral animals include horses and swine. Coyotes appeared on the island circa 2003. Dolphins, manatees, and several species of whales occur in offshore waters.

Over 60 species of reptiles (44 species) and amphibians (19 species) inhabit the park, including the central newt, southern cricket frog, southern toad, eastern narrowmouth toad, green treefrog, pine woods treefrog, squirrel treefrog, spring peeper, little grass frog, pig frog, southern leopard frog, eastern spadefoot toad, Florida softshell turtle, common snapping turtle, mud turtle, Florida red-bellied turtle, yellow-bellied slider, alligator, green anole, six-lined racerunner, broadhead skink, eastern glass lizard, ground skink, eastern diamondback rattlesnake, cottonmouth, coachwhip, black racer, rat snake, banded water snake, ribbon snake, and garter snake. Five (5) of the world's six sea turtle species either migrate past or nest on Cumberland's beaches annually. The loggerhead sea turtle is the primary nesting species on Georgia's coast. Leatherback and green sea turtles nest on CUIS and the Georgia coast annually, but in minimal numbers. The gopher tortoise occurs in several locations on the island and in varying colony sizes. This species is known to inhabit two Georgia barrier islands, Cumberland being one, and was likely introduced by man in both cases.

More than 300 bird species have been documented on CUIS, including full time residents, nesters, and winter migrants. Cumberland's 18+ miles of undeveloped beach offer important habitat to winter migratory shore- and wading birds. The 2012 mid-winter shorebird survey tallied 30,958 birds and 37 species. The beach and associated dunes provide attractive nesting habitat in the spring/summer months to American Oystercatchers, Least Terns, Wilson's Plovers, and Willets.

Cumberland's uplands provide beneficial habitat to a variety of songbirds and neotropical migrants year-round. The island's extensive marshes offer nesting habitat for birds including Clapper Rails and Marsh Wrens. The marsh is also used by shore and wading birds for foraging throughout the year. Raptors, including the Bald Eagle and Peregrine Falcon, use the marsh to hunt for food.

Cumberland Island is located in the Atlantic Flyway for waterfowl. The island can support a variety of duck species, depending on annual rainfall and habitat availability. Major species of this flyway include

the scaup, mallard, gadwall, baldpate, canvasback, pintail, green- and blue-winged teal, and shoveler. Migratory goose populations are minimal in the Atlantic Flyway, especially in the southeastern U.S.

Eighty-nine (89) species of fish have been identified in the fresh, brackish, and saltwater habitats of Cumberland.

1.2.2.2.6 Threatened and Endangered Species

Table 1: Federal and State Listed Species Known to Occur in Camden County, GA.

Species	Federal Status	State Status	Habitat	Threats
Mammal				
Humpback whale <i>Megaptera novaeangliae</i>	E	E	Coastal waters during migration	Entanglement in commercial fishing gear and collisions/disturbance associated with boats and barges
Right whale <i>Eubalaena glacialis</i>	E	E	Mate and calve in shallow coastal waters; critical habitat designated from the mouth of Altamaha River south to Sebastian Inlet, FL (from shoreline east 5-15 nautical miles)	Initial decreases probably due to overharvesting. Slow population growth after exploitation halted may be due to collisions/disturbance associated with boats and barges, inbreeding, inherently low reproductive rates, or a reduction in population below a critical size for successful reproduction.
Round-tailed muskrat <i>Neofiber alleni</i>	No Federal Status	T	Bogs and ponds; creates pyramid-shaped nest in vegetation	Habitat loss from human activities and natural succession. Loss of bog/floating mat vegetation-type habitat due to man's suppression of wildfires.
West Indian manatee <i>Trichechus manatus</i>	E	E	Coastal waters, estuaries, and warm water outfalls	Initial decreases probably due to overharvesting for meat, oil and leather. Current mortality due to collisions with boats and barges and from canal lock operations. Declines also related to coastal development and loss of suitable habitat, particularly destruction of sea grass beds.
Bird				
Bachman's warbler <i>Vermivora bachmanii</i>	E	E	Probably extinct; last seen in Georgia in 1976	

Kirtland's warbler <i>Dendroica kirtlandii</i>	E	E	Varying habitats during late spring and fall as the bird migrates between Michigan and wintering grounds in the Bahamas.	Habitat degradation as a result of wildfire suppression, and incubation and hatchling competition from brown-headed cowbirds are major threats for this species.
Bald eagle <i>Haliaeetus leucocephalus</i>	No Federal Status	T	Inland waterways and estuarine areas in Georgia. Two active eagle nests were documented on Cumberland in 2008.	Major factor in initial decline was lowered reproductive success following use of DDT. Current threats include habitat destruction, disturbance at the nest, illegal shooting, electrocution, impact injuries, and lead poisoning.
Peregrine Falcon <i>Falco peregrinus</i>	No Federal Status	R	Extreme north Georgia is the southern limit of the historic nesting range. Peregrines are commonly seen along the Georgia coast during winter migration.	Major factor in initial decline was lowered reproductive success from DDT concentrations. While DDT use in South America is still a concern, expansion of human population and subsequent loss of undisturbed nesting habitat and foraging areas is a factor currently.
Gull-billed tern <i>Sterna nilotica</i>	No Federal Status	T	Nests in colonies on sandy sites; forages over salt marsh, dunes and other grassy areas for insects, spiders, and other invertebrates	Nest disturbance and loss of habitat to beach-front development are the major threats to this species.
Piping plover <i>Charadrius melodus</i>	T	T	Winter on Georgia's coast; prefer areas with expansive sand or mudflats (foraging) in close proximity to a sand beach (roosting)	Habitat alteration and destruction and human disturbance in nesting colonies. Recreational and commercial development has contributed greatly to loss of breeding habitat.
Wilson's Plover <i>Charadrius wilsonia</i>	No Federal Status	T	Atlantic Coast breeding populations range from New Jersey to northern South America. Nesting habitat includes beaches, sand flats and spits.	Loss of nesting habitat from human development; predation from wild, feral, and domestic animals; and human disturbance in the form of pedestrians and vehicles are primary threats to this species.
Least Tern <i>Sterna antillarum</i>	Not listed in GA; interior U.S. populations Endangered	R	Atlantic Coast breeding populations range from Massachusetts to Florida. Nesting colonies have been documented in all Georgia coastal counties.	Human disturbance of nesting colonies is the primary threat to this species' success. Predation also is a concern.
American Oystercatcher <i>Haematopus palliatus</i>	Not Listed	R	Nests on marsh islands, upland dunes, beaches, and dredge spoils. Atlantic Coast population nests from	Human disturbance, loss of nesting habitat to development, and predation are known threats to this species' success.

			Massachusetts to southern Florida.	
Black Skimmer <i>Rynchops niger</i>	Not Listed	R	Atlantic Coast population nests on barrier island beaches and man-made dredge spoil islands primarily in the mid-Atlantic states. Winters in southern U.S. and Caribbean.	Main threats include loss of nesting habitat due to beachfront development and human disturbance at nesting colony sites.
Red Knot <i>Calidris canutus</i>	Not Listed	R	Nests in the Arctic and winters on southern tip of South America. Georgia coast serves as a stopover for winter/early spring migrants.	Reduction in population is thought to be related to lack of preferred food sources during migration and subsequent decline in body condition.
Red-cockaded woodpecker <i>Picoides borealis</i>	E	E	Nest in mature pine with low understory vegetation (<1.5m); forage in pine and pine hardwood stands > 30 years of age, preferably > 10" dbh	Reduction of older age pine stands and encroachment of hardwood mid-story in older age pine stands due to fire suppression
Wood stork <i>Mycteria americana</i>	E	E	Primarily feed in fresh and brackish wetlands and nest in cypress or other wooded swamps. Active rookeries were located in Camden County 1991-2002.	Decline due primarily to loss of suitable feeding habitat, particularly in south Florida. Other factors include loss of nesting habitat, prolonged drought/flooding, raccoon predation on nests, and human disturbance of rookeries.
Reptile				
Eastern indigo snake <i>Drymarchon corais couperi</i>	T	T	During winter, den in xeric sand ridge habitat preferred by gopher tortoises; during warm months, forage in creek bottoms, upland forests, and agricultural fields	Habitat loss due to uses such as farming, construction, forestry, and pasture and to over collecting for the pet trade
Gopher tortoise <i>Gopherus polyphemus</i>	Not listed in GA; federally threatened in portions of its range in AL, MS, and LA.	T	Well-drained, sandy soils in forest and grassy areas; associated with pine over story, open understory with grass and forb groundcover, and sunny areas for nesting	Habitat loss and conversion to closed canopy forests. Other threats include mortality on highways and the collection of tortoises for pets.
Green sea turtle <i>Chelonia mydas</i>	T	T	Rarely nests in Georgia; migrates through Georgia's coastal waters	Exploitation for food, high levels of predation, loss of nesting habitat due to human encroachment, hatchling disorientation due to artificial lights on beaches, and

				drowning when trapped in fishing and shrimping nets
Hawksbill sea turtle <i>Eretmochelys imbricata</i>	E	E	Migrates through Georgia's coastal waters	Primary causes of population decline are development and modification of nesting beaches and exploitation for the shell. Secondary causes include egg consumption, use of the skin for leather, and heavy predation of eggs and hatchlings.
Kemp's ridley sea turtle <i>Lepidochelys kempii</i>	E	E	Migrates through Georgia's coastal waters	Overharvesting of eggs and adults for food and skins and drowning when caught in shrimp nets
Leatherback sea turtle <i>Dermochelys coriacea</i>	E	E	Rarely nests in Georgia; migrates through Georgia's coastal waters	Human exploitation, beach development, high predation on hatchlings, and drowning when caught in nets of commercial shrimp and fish trawls and long line and driftnet fisheries
Loggerhead sea turtle <i>Caretta caretta</i>	T	E	Nests on Georgia's barrier island beaches; forages in warm ocean waters and river mouth channels	Loss of nesting beaches due to human encroachment, high natural predation, drownings when turtles trapped in fishing and shrimping trawls, and marine pollution
Fish				
Shortnose sturgeon¹ <i>Acipenser brevirostrum</i>	E	E	Atlantic seaboard rivers	Construction of dams and pollution, habitat alterations from discharges, dredging or disposal of material into rivers, and related development activities.
Plant				
Climbing buckthorn <i>Sageretia minutiflora</i>	No Federal Status	T	Calcareous rocky bluffs, forested shell middens on barrier islands, and evergreen hammocks along stream banks and coastal marshes. Recorded from 5 counties in Georgia.	
Hartwrightia <i>Hartwrightia floridana</i>	No Federal Status	T	Peaty muck of pine flatwoods, sedge meadows, and wettest parts of poorly drained ditches/sloughs; often with water-spider orchid (<i>Habenaria repens</i>). Recorded from 3 counties in Georgia.	

Pondspice <i>Litsea aestivalis</i>	No Federal Status	R	Margins of swamps, cypress ponds, and sandhill depression ponds and in hardwood swamps. Recorded from 13 counties in Georgia.	
Wagner spleenwort <i>Asplenium heteroresiliens</i>	No Federal Status	T	Marl outcrops, damp limestone ledges, and tabby masonry. Recorded from 3 counties in Georgia.	

Key: E = Endangered; T = Threatened; SC = Species of Concern; R = Rare

Source: U.S. Fish and Wildlife Service Georgia Ecological Service Field Office
Georgia Dept. Natural Resources, Protected Species List

1.2.2.2.7 Cultural Resources

Cumberland Island National Seashore contains a rich concentration of cultural resources that recount 4,000 years of human habitation and include a remarkable diversity of ethnic and social backgrounds. These pieces of the past – archeological features, landscapes, architecture, artifact collections, people – reflect periods of American Indian life, Spanish missions, colonial fortifications, agricultural plantations, military occupation, enslaved Africans, vacation retreats, African American communities, remote lifestyles, maritime endeavors, and grand estates. Cultural features and remnants may be found throughout the island, with the most pronounced being within the island’s five historic districts and two archeological districts that are listed on the National Register of Historic Places (NRHP).

Dungeness Historic District: Located near the southern end of the island, the district contains more than 29 structures (ranging from foundations to ruins to occupied), cultural landscape features, three cemeteries, and two archeological zones. The district encompasses approximately 260 acres. The majority of the features are associated with the Carnegie Estate period, with remnants of the Greene-Miller era also present as well as archeological sites from Native American habitation and the Spanish mission period. The district is a primary visitor and interpretive setting for the island and also supports numerous operational and residential functions for the Park Service. The district is generally characterized by large, open lawns and field with scattered, mature trees. However, some structures and features are adjacent to or located within heavily forested areas.

Stafford Plantation Historic District: Located in the center of the island, the district encompasses three sub-areas. (1) Stafford Place, which includes nine structures, cultural landscape features, and a cemetery. (2) Ruins of slave quarters known as The Chimneys. (3) Stafford (or House) Field, which contains an archeological site. The district encompasses approximately 250 acres and includes features dating to Native American habitation, the Plantation Era, and the Carnegie Estate period. There is a mixture of land ownership across the district to include reserved estate property, fee simple private ownership, and NPS land. The occupied structures within the district, which includes three non-historic structures, are used for private residential purposes under a reserved property agreement. The district is generally characterized by open lawns and large fields with scattered, mature trees. However, some structures and features are adjacent to or located within heavily forested areas.

Plum Orchard Historic District: Located at approximately the island's mid-point along the western shoreline, the district contains 16 structures (ranging from foundations to ruins to occupied), cultural landscape features, a cemetery, and a large archeological site. The district encompasses approximately 60 acres. The majority of the features are associated with the Carnegie Estate period, with remnants of the antebellum period also present as well as archeological remains from Native American habitation. The southern half of the district is under full NPS management and is a primary visitor and interpretive setting, centered on the restored Plum Orchard Mansion. The northern half of the district, which encompasses the former estate's support area, is broken into two reserved property agreements and is used for private residential purposes. The district is generally characterized by open lawn areas. However, some isolated structures located within heavily forested areas and the entire district is surrounded by forest.

High Point-Half Moon Bluff Historic District: Located on the island's northern end the district encompasses approximately 700 acres. It contains two structural complexes, a cemetery, three archeological sites, and an archeological zone on Terrapin Point. These sites reflect Native American habitation, colonial occupation, an African American community, and hotel/retreat periods on Cumberland Island. The High Point complex encompasses approximately 45 acres and contains at least 14 structures (some non-historic). The tract is under a reserved property agreement and is used for private residential purposes. The Half Moon Bluff complex, more commonly referred to as The Settlement, contains 14 structures (some non-historic) ranging from ruins to occupied. The Settlement is a visitor and interpretive destination on the island. It also contains a reserved estate tract used for residential purposes. To the east of The Settlement are three other private residential tracts which are held under reserved property agreements as well. The High Point complex is characterized by a large, open lawn. However, numerous structures are located within close proximity to the surrounding dense forest, some within 50 feet. The Settlement is somewhat open but, its close proximity to dense forest and encroaching vegetation make it vulnerable to wildfire. The tracts to the east of The Settlement are set in the forest with vegetation encroaching very close to the structures.

Greyfield Historic District (private): A privately held fee simple property owned by Greyfield, Ltd., and includes the Greyfield Inn as well as residences. Located on the island's southern end, the district encompasses approximately 200 acres. The district dates to the Carnegie Estate period and includes ten contributing (historic) features as well as nine noncontributing features. The district is generally characterized by open lawns and large fields with scattered, mature trees. However, some structures and features are adjacent to or located within heavily forested areas.

Table Point Archeological District: The district includes approximately 40 acres and contains one of the largest areas of prehistoric cultural accumulations remaining on Cumberland Island. Location data is restricted for protection. The district is located in a heavily forested area with dense underbrush.

Rayfield Archeological District: The district includes approximately 6 acres and includes 16 slave cabins dating from the early Rayfield plantation era. Location data is restricted for protection. The district is located in a heavily forested area with dense underbrush.

Additional Cumberland Island listings on the NRHP include the Main Road and the Duck House. The Main Road is the major transportation artery on the island that extends approximately 13 miles from the

Dungeness Mansion on the south end to the Cumberland Wharf on the north end. The Duck House dates to the Carnegie Estate period and is located near the east end of Duck House Trail, which runs west from Plum Orchard. It was destroyed by fire and all that remains is ruins. There are additional cultural features on the island that are not located within the boundaries of any historic district including: Dungeness Beach House, Stafford Beach House, Plum Orchard Beach House, and the Stafford Silos.

Cumberland Island contains at least 60 known archeological sites, which are primarily located along the western shoreline or close proximity. These sites provide evidence of the island's past extending from Native American inhabitation through Spanish Missions, colonial fortifications, extensive plantation development, shipwrecks, resorts/retreats, and estate periods. A 1975 cultural resource inventory of the island was conducted but, it was not exhaustive. While the island was not densely populated at any one time, use and development did occur prehistorically and historically island-wide, particularly during the agricultural activities of the Plantation period. New discoveries are made from time to time and unknown, undocumented cultural features are likely present, most notably obscured landscape features and archeological sites.

The National Seashore's curatorial collection is primarily stored in the Museum Building on the mainland in downtown St. Marys. However, some of the collection is stored or on exhibit in the Dungeness Historic District or the Plum Orchard Mansion.

With respect to fire management all of the island's historic districts are considered WUI (Wildland Urban Interface). These areas will receive high priority when managing fire in the park and identifying fuels treatments. The majority of structures in these districts have shake shingle roofs, wood siding, and open eaves, all of which can propagate fire from a fire brand. Structures and ruins differ in their states of defensibility. Structure assessments are needed to identify future fuels treatment to ensure they are defensible in the event of a wildfire.

There are three large mansions (Plum Orchard, Stafford, and Greyfield) within the districts along with the ruins of a fourth (Dungeness). There are also numerous frame and/or stucco buildings. Portions of the grounds surrounding these structures are mowed to maintain their historic or aesthetic character. Additional areas are being cleared of encroaching vegetation to restore the historic landscape. Elsewhere, palmetto and other vegetation is encroaching on structures in some areas and treatment has been implemented or is planned to provide additional protection from wildfire. The Dungeness and Stafford Districts contain remnant fields and pastures that are targeted for maintenance through prescribed fire. A number of other important historical features such as cemeteries, gardens, support buildings, and plantings are located throughout the island and vegetation around them will be managed to protect them from wildfire. All historic districts and structures within the parks boundary require protection from wildland fire. Fuels reduction treatments have occurred in the past and will need to future maintenance treatments to provide adequate protection.



Historic Districts



1.5 0.75 0 1.5 3 4.5
Miles

Map By: Cumberland Island Fire Management
June 2014

Figure 3: Historic Districts

1.2.2.2.8 Real Property

For the purposes of this fire management plan real property is considered to be structures and activities related to infrastructure such as primary transportation assets, utilities, residences, park operations, recreation, and visitor activities. Many of these assets are considered to be in the Wildland Urban Interface. Descriptions of real property below will be delineated running north to south on the island (with the exception of transportation and utility assets).

Transportation:

The Main Road is the primary artery on the island running from Dungeness on the south end to Cumberland Wharf on the north. North Cut Road and High Point Road are the main east-west arteries on the north end of the island, running from Cumberland Wharf over to the beach. Both routes run through forest their entire length with underbrush varying from sparse to very dense. There are four wooden bridges on the Main Road, all located between Plum Orchard and Cumberland Wharf. These routes are maintained to provide escape routes to residents during wildfires.

The beach can be used for vehicle access but, the level of use should be coordinated with a Resource Advisor to mitigate impacts on wildlife and other natural resources. Beach driving closures are in place from sundown to sunup (May 1 – October 31) during the sea turtle nesting season.

There are five primary docks on Cumberland Island, all located on the western shoreline. There are additional docks directly associated with residential areas.

- Hawkins Creek Dock (Reserved Property) north of Brickhill is used by private residents only. The upland parking area for the dock is in a pine forest and regularly occupied with numerous vehicles.
- Plum Orchard (NPS) is on the south end of the historic district and is used by residents and NPS operations. Vehicles, including a fuel tank, may be located in the nearby wooded parking lot.
- Old House Creek Dock (NPS) is located approximately one mile south of Stafford. The dock is not open to the public and, although it sees little use, vehicles may be parked in the adjacent woodland.
- Sea Camp Dock (NPS) is one of two primary stops for the concessioner ferry and is adjacent to the Sea Camp Ranger Station. The dock is also used by NPS and private boats.
- Dungeness Dock (NPS) is located in the historic district and is the other primary stop for the ferry. The dock is also used by NPS and private boats and an adjacent ramp is used for transshipment of vehicles and equipment.

Utilities:

Electrical power comes onto the island above ground between Table Point and Plum Orchard. The above ground lines run approximately ¼-mile to the Table Point Road where it is sent underground and is distributed that way throughout the island as well as north to Little Cumberland Island. Above ground right-of-way is maintained by power company. Above ground junction boxes are located at various points along the underground network and may be obscured by vegetation.

Water is supplied largely through wells within Plum Orchard developed areas. There is a primary NPS well located at Nightingale, immediately north of Dungeness, which serves NPS facilities from Sea Camp to Dungeness via underground lines. All waste water on the island is treated through individual septic systems.

Real Property:

High Point (Reserved Property) - See description in section 1.2.2.2.7 above for High Point-Half Moon Bluff Historic District.

Stafford RAWS (Remote Automated Weather Station) - Located on the High Point Road, 0.5 miles WNW of High Point, in pine-oak scrub forest.

The Settlement & Half-Moon Bluff (NPS & Reserved Property) - See description in section 1.2.2.2.7 above for High Point-Half Moon Bluff Historic District.

Brickhill Bluff Campground – Backcountry campground located between the large bend of the Brickhill River and the Main Road. No facilities or designated sites other than a water well pump. Situated in mixed oak-pine forest.

Morris Tract (Reserved Property) - Eight-acre tract within the Wilderness area containing a large residential structure and outbuildings. Property is located due west of the South Cut trailhead at the Main Road, in mixed pine-oak forest. Occupant has done work to maintain defensible space by clearing underbrush.

Table Point Co. (Perkins) Tract (Reserved Property) - 186-acre tract encompasses a small peninsula west of the Main Road situated between branches of Malkintooth Creek. Located within the Wilderness in an area of pine-oak forest. Property contains at least two residential structures and a dock on the northwest side (creek/marsh front).

Toonahowie (NPS) - Property is no longer occupied. Located in the Wilderness area on the west side (creek/marsh front) of Table Point, 1.25 miles north of Plum Orchard. Consists of one residential structure and a dock that are planned for removal/demolition. Mixed pine-oak forest with open understory.

Bullard Tract (Reserved Property) - Ten-acre tract located in the Wilderness area on the west side (creek/marsh front) of Table Point, 0.8 miles north of Plum Orchard. Consists of a single residential structure situated within mixed oak-pine forest.

Plum Orchard (NPS & Reserved Property) - See description in section 1.2.2.2.7 above for Plum Orchard Historic District.

Yankee Paradise Campground - Backcountry campground located near the intersection of Duck House and Yankee Paradise Trails, approximately 1 mile east of Plum Orchard. No facilities or designated sites. Situated in mixed oak-pine forest. Artesian well hydrant located on Yankee Paradise Trail between Yankee Paradise and Hickory Hill Campgrounds.

Richards Tract (Reserved Property) - 3.3-acre tract north of Duck House Trail, 2.25 miles east of Plum Orchard. Located within the Wilderness in a mixed oak-pine wooded area of the interdune. Consists of a single residential structure.

Hickory Hill Campground – Backcountry campground located near the intersection of Willow Pond, Yankee Paradise, and Parallel Trails. No facilities or designated sites. Situated in oak-mixed hardwood forest. Artesian well hydrant located on Yankee Paradise Trail between Yankee Paradise and Hickory Hill Campgrounds.

Serendipity (Private Fee Simple) – North of Stafford Mansion area. Consists of multiple residential structures (cottages to multiple unit), a barn, and outbuildings. Located in mixed oak-pine forest with a generally open, maintained understory.

Stafford (Reserved Property, Private Fee Simple, NPS) - See description in section 1.2.2.2.7 above for Stafford Plantation Historic District.

Stafford Beach House (NPS) - Located 1.2 miles east of Stafford Mansion on the dune ridge. Consists of three small cottage type structures with a large deck. On the interface between oak forest and interdune shrub thicket.

Stafford Climate Reference Network Station - Located in Stafford Field, consists of scientific monitoring equipment.

Stafford Campground - Backcountry type campground located 0.4 miles east of the southeast corner of Stafford Field, off of Long Field Road. Facilities include a bathhouse, well house, and ten designated sites. Situated in oak-palmetto forest immediately adjacent to an abandoned pine plantation.

Schwartz/Jenkins Tract (NPS) - Property is no longer occupied. Located 0.5 miles west of the Main Road on the marsh front between Stafford and Greyfield. Consists of three residential structures that are planned for removal/demolition. Situated in mixed oak-pine-palmetto forest.

Nancy's Fancy (NPS) - Property is no longer occupied. Located 0.25 miles east of the Main Road between Stafford and Greyfield, on the dune ridge interface between oak-palmetto forest and interdune shrub thicket. Consists of one elevated, residential structure that is planned for removal/demolition.

Davisville (NPS) - Group of six residential structures plus outbuildings located to the west of the Main Road in the Little Greyfield area. Northern drive serves two residences and southern drive the other four. Residences are used for NPS required occupants. Situated in mixed oak-pine forest.

Greyfield (Private Fee Simple) - See description in section 1.2.2.2.7 above for Greyfield Historic District.

Rockefeller Tracts (Private Fee Simple) - Four parcels totaling approximately 255 acres immediately north of Sea Camp. Approximately five residential structures, two docks, and additional outbuildings. Varying understory conditions.

Sea Camp Ranger Station - A primary visitor contact site, ferry debarkation point, office space, and an apartment. Situated on the west side of the island in oak-palmetto forest.

Sea Camp Campground - Front country type campground located in oak-palmetto forest just west of the primary dune line. The campground consists of 16 individual camp sites, two group sites, and a bathhouse.

Nightingale Well House - Located immediately north of the Dungeness Historic District in mixed oak-palmetto forest that has been treated for defensible space. Includes well/water treatment/shop/office building and equipment shed for wildfire trucks/apparatus.

Dungeness Historic District - See description in section 1.2.2.2.7 above for Dungeness Historic District. A variety of functions occur within the buildings and grounds: housing for temporary and permanent personnel, visitor activities, a museum, offices, maintenance shops, material and equipment storage, fire cache, etc.

1.2.2.3 Role of Fire in the Park

1.2.2.3.1 Current and Desired Role of Fire in the Park

The Seashore vegetation is fire adapted and needs fire to rejuvenate and maintain a healthy ecosystem. Research has been conducted on the fire history of Cumberland Island. Reports by Frost (2011) and Turner (1985) provide good information on the fire history of the island. Frost's report in particular describes in depth historical fire regimes and fire supported vegetation communities found on Cumberland Island.

Under the 2004 CUIS FMP, all fire was suppressed and no prescribed burning was allowed. Mechanical fuels treatments were used to provide protection to structures within the park. Conversely, with this FMP, the park hopes to restore fire to its natural fire regime through managed wildland fire, prescribed fire, and mechanical treatments. Fuels treatments to include mechanical vegetation removal, prescribed fire, and chemical treatments will be utilized to protect structures and private property within the park boundaries. Prescribed fire will also be used to reduce heavy vegetative fuel loading, improve freshwater habitat, and to help maintain cultural landscapes.

1.2.2.3.2 Past Role of Fire

Fire has played a role on Cumberland Island throughout its existence. Lightning fires have maintained the landscape for centuries while man has used fire to alter the landscape dating back to pre-1500's (Pyne 1983). Native Americans used fire to clear land for agriculture and other uses on Cumberland. Other eras saw fire being used to clear land for cultivation purposes and for protection. During the plantation era, fire was used to clear land to create cotton fields. During the estate era of Cumberland Island, fire was used to clear the sloughs that were found throughout the island (Turner 1983). This opened up travel corridors between the lake complexes on the island. Island residences also used fire to burn off swamps and ponds to create wetland habitat for hunting grounds. Swamp field near the center of the park, was often burned to improve forage for livestock and wildlife.

Natural fire has always played a role in the park. This can be noted by the presence of fire adapted vegetation. Fire history has been studied in depth in the park (see figure 5). Frost recently conducted a

study on pre settlement vegetation and natural fire regimes. Information from his report provided valuable data to piece together historical fires and fire adapted ecosystems in the park. Turner produced a report on the fire history of Cumberland Island between 1900 and 1983. This report also touches on history of fire as far back as aboriginal occupation of the island. There are also NPS fire records as far back as 1984.



Figure 4: Fire History Map

The north end of the island has seen numerous large fires throughout history. This is likely due to the vegetation type in conjunction with soil types. Fire occurrence is also tied to drought and rainfall amounts for the coastal island. Storms in the summer produce lightning which can ignite fires in dry vegetation. Some vegetation is more susceptible to sustaining fire than others. For instance, pine stands with grass and needle understory are more likely to carry fire than a live oak hammock with leaf litter.

Fire on Cumberland Island has proven difficult to suppress, especially on the north end of the island. Access to large parts of the park is limited for equipment and personnel. Vegetation is very thick and fuel loadings in most fuel types are very high. These plus the lack of good safety zones and available suppression resources, increase the difficulty of suppressing fires on the island.

The seashore plans to use fire to maintain several cultural landscapes, to include periodic burning of fields within the park boundaries. There are several fields at risk of encroachment throughout the park where fire may be used to maintain the aesthetics and historic character of the landscape.

The Swamp Fields located in the mid-section of the park are large wetland areas that had been drained by a canal and secondary ditches during the Plantation and Carnegie periods. This area is in need of fire to maintain the ecological characteristics that provide valuable habitat for wildlife, particularly for waterfowl.

There is an old canal system that connects Lake Whitney to the Willow Pond. This slough was historically burned in the spring or fall to keep the canal open for canoe travel (Turner 1983). This is an area that may be maintained by fire to enhance the cultural resource component of the area.

1.3 Environmental Compliance

In accordance with the requirements of National Environmental Policy Act, the Environmental Assessment (EA) for the Cumberland Island National Seashore Fire Management Plan was prepared and released in October, 2013. Requirements of Section 7 of the Endangered Species Act (ESA) and the Wilderness Act have also been addressed. During the planning process and EA development public input was sought through the external scoping process, which extended from October 16 – November 30, 2012 and included a public meeting in St. Marys and another on Cumberland Island. The EA was open for public review and comment from October 25 through November 29, 2013. A Finding of No Significant Impact for the EA was signed by NPS Southeast Regional Director. With respect to Section 7 of the ESA, a letter from the U.S. Fish and Wildlife Service indicated their review and concurrence with the NPS determination that the selected FMP EA alternative would have long term, minor to moderate beneficial effects for the identified federally-listed species or their habitats. The letter further stated that FWS considered Section 7 requirements satisfied save any significant changes.

In accordance with Section 106 of the National Historic Preservation Act, an Assessment of Actions Having an Effect on Historic Properties was prepared for the FMP. The assessment was submitted for consultation to the Georgia State Historic Preservation Office (SHPO), with a NPS determination of No Adverse Effect to cultural resources. A SHPO letter indicated concurrence with the no adverse determination. Compliance documentation for this FMP, including mitigation measures, can be found in Appendix D.

2 Policy, Land Management, Planning & Partnerships

Authorities for Implementing Fire Management Plan

Authority for fire management at the Seashore originates with the Organic Act of 1916. The Organic Act established the National Park Service “to promote and regulate the use of the Federal areas known as national parks, . . . which purpose is to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.” The 1978 “Redwood amendment” to the General Authorities Act of 1970 expands upon the provisions of the Organic Act, stating that, “. . . the protection, management, and administration of these [NPS] areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established. . . .” As an NPS program that by design is tiered to the respective park unit’s general and resource management objectives, fire management is an effective way of accomplishing the mandates of the above legislation, policies and procedural guidance.

The organizational structure of this FMP follows the June 2010 template that is an update to chapter 4 of *Wildland Fire Management Reference Manual-18* (January 1, 2008), hereinafter referred to as *RM-18* (website <http://www.fire.nps.gov/fire/policy/rm18/index.htm>). This FMP will guide the Seashore in implementing federal fire management policy, as well as resource and fire management goals as defined in the *2001 Federal Fire Policy; Managing Impacts of Wildfires on Communities and the Environment, and Protecting People and Sustaining Resources in Fire-Adapted Ecosystems—A Cohesive Strategy*; and *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy Implementation Plan*.

2.1 Federal Fire Policy

The National Park Service Management Policies 2006, states “Environmental and cultural resource compliance documentation developed in support of the plan will consider the effects of fire on air quality, water quality, and human health and safety. It will also discuss the influence of fire, fire management, and the potential consequences and effects of fire exclusion on the ability of the park to meet its natural and cultural resource management objectives.” It further states that “All wildland fires will be effectively managed through application of the appropriate strategic and tactical management options as guided by the park’s fire management plan. These options will be selected after comprehensive consideration of the resource values to be protected, firefighter and public safety, costs, availability of firefighting resources, weather, and fuel conditions.”

Additional guidance stems from the *2001 Federal Fire Policy* and the *2009 Guidance for Implementation of Federal Wildland Fire Management Policy*, which are products of a collaborative effort involving the Department of the Interior, the Department of Agriculture, the Department of Energy, the Department of Defense, the Department of Commerce, the Environmental Protection Agency, the Federal Emergency Management Agency, and the National Association of State Foresters. The directives recognize the role that fire plays as a critical natural process, as well as the detrimental effects of its absence in fire-adapted ecosystems. Furthermore, *2001 Federal Fire Policy* states that “. . . successful implementation of [the policy] depends on the development and implementation of high-

quality Fire Management Plans by all land managing agencies.” The National Cohesive Wildland Fire Management Strategy defines three national goals:

1. Restore and Maintain Landscapes: Landscapes across all jurisdictions are resilient to fire-related disturbances in accordance with management objectives.
2. Fire Adapted Communities: Human populations and infrastructure can withstand a wildfire without loss of life and property.
3. Wildfire Response: All jurisdictions participate in making and implementing safe, effective, efficient risk-based wildfire management decisions.

Other sources of authority and policy are found in the following:

1. United States Department of the Interior, Departmental Manual
2. The National Park Service Management Policies 2006
3. Director’s Order #18: Wildland Fire Management
4. Director’s Order #28: Cultural Resource Management
5. Director’s Order #41: Wilderness Management
6. Director’s Order #77: Natural Resource Management
7. Review and Update of the 1995 Federal Wildland Fire Policy, January 2001
8. Interagency Strategy for Implementation of Federal Wildland Fire Policy, June 2003
9. Interagency Standards for Fire and Fire Aviation Operations
10. National Interagency Mobilization Guide
11. Interagency Incident Business Management Handbook
12. Interagency Prescribed Fire Planning and Implementation Procedures
13. Reference Guide
14. Wildland Fire Use Implementation Procedures Reference Guide
15. Interagency Fire Program Management Qualifications Standards and Guide

2.1.1 Managing Impacts of Wildfires on Communities and the Environment, and Protecting People and Sustaining Resources in Fire Adapted Ecosystems—A Cohesive Strategy

The *Cohesive Strategy* was developed by the U.S. Department of the Interior, USDA National Forest Service, and the National Association of State Foresters. It provides an overall framework for implementing fire management and forest health programs, and is based upon the following operating principles:

- Firefighting Readiness: Increase firefighting capability and capacity for initial attack, extended attack, and large fire support that will reduce the number of small fires becoming large, to better protect natural resources, to reduce the threat to adjacent communities, and reduce the cost of large fire suppression.
- Prevention through Education: Assist state and local partners to take actions to reduce fire risk to homes and private property through programs such as FIREWISE.
- Rehabilitation: Focus rehabilitation efforts on restoring watershed function, including the protection of basic soil, water resources, biological communities, and prevention of invasive species.

- **Hazardous Fuel Reduction:** Assign highest priority for hazardous fuels reduction to communities at risk, readily accessible municipal watersheds, threatened and endangered species habitat, and other important local features, where conditions favor uncharacteristically intense fires.
- **Restoration:** Restore healthy, diverse, and resilient ecological systems to minimize uncharacteristically intense fires on a priority watershed basis. Methods will include removal of excessive vegetation and dead fuels through thinning, prescribed fire, and other treatment methods.
- **Collaborative Stewardship:** Focus on achieving the desired future condition on the land in collaboration with communities, interest groups, and state and federal agencies. Streamline process, maximize effectiveness, use an ecologically conservative approach, and minimize controversy in accomplishing restoration projects.
- **Monitoring:** Monitor to evaluate the effectiveness of various treatments to reduce unnaturally intense fires while restoring forest ecosystem health and watershed function.
- **Jobs:** Encourage new stewardship industries and collaborate with local people, volunteers, Youth Conservation Corps members, service organizations, and Forest Service work crews, as appropriate.
- **Applied Research and Technology Transfer:** Focus research on the long-term effectiveness of different restoration and rehabilitation methods to determine those methods most effective in protecting and restoring watershed function and forest health. Seek new uses and markets for byproducts of restoration.

2.1.2 A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy Implementation Plan

In August of 2001, the Secretaries of Interior and Agriculture joined the Western Governors Association, National Association of State Foresters, National Association of Counties, and the Intertribal Timber Council to endorse *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy*.

The four goals of the *10-Year Comprehensive Strategy* are:

1. Improve fire prevention and suppression
2. Reduce hazardous fuels
3. Restore fire-adapted ecosystems
4. Promote community assistance

Its three guiding principles are:

1. Priority setting that emphasizes the protection of communities and other high-priority watersheds at risk
2. Collaboration among governments and broadly representative stakeholders
3. Accountability through performance measures and monitoring for results

2.2 Park/Resource Management Planning

2.2.1 General Management Plan Objectives

The park's 1984 General Management Plan (GMP) was developed to provide overall management direction for Cumberland Island for the foreseeable future (stated at that time as approximately 5-10 years). The 1984 document is still the GMP of record for the park. However, the GMP states that the National Park Service is committed to routinely evaluating the effectiveness of its operations at Cumberland Island and to modifying its plans as necessary, with any significant changes requiring public involvement. This fire management plan expounds on the objective and directives of the GMP, and is compatible with that plan. In circumstances where modifications may have occurred they were evaluated through the FMP's NEPA process, to include public involvement.

The GMP primarily addresses "Fire Control" in the Natural Resource Management section. The guidelines are outlined below, some of which specify requirements for a fire management plan:

- Wildfires that endanger life, unusual habitats, or improvements will be contained and extinguished.
- Other natural wildfires that appear to be restricted in their effects to small areas will be permitted to burn until the fuel is consumed—if the fires are similar to those that have given the island part of its character by their periodic interruption of succession in selected habitats.
- No larger wildfires will be allowed to burn unchecked unless a fire management plan has been prepared that substantiates the desirability of the burn in a given area.
- No prescribed burning will take place unless it is substantiated by related studies and a fire management plan.

Other objectives and management guidelines directly or indirectly related to fire management within the GMP are:

- Protect and enhance the natural and recreational values of the park by encouraging environmentally compatible park activities.
- Manage the seashore, to the extent possible, in ways that enhance the natural geological processes of the barrier island system and mitigate human impacts on these processes.
- Perpetuate the marsh and freshwater pond environments and forested areas in ways that promotes natural ecological succession and minimizes the adverse impacts of man's activities.
- Upland forests, freshwater and saltwater marsh vegetation, and dune vegetation will be maintained in a natural condition, with a special emphasis on maintaining habitat of endangered species.
- Wildlife management will be directed toward the maintenance of natural populations.
- Endangered and threatened species will be preserved by implementation of management and development programs sensitive to the habitat needs of these species.
- Preserve and make available as appropriate significant cultural resources.
- Protect, preserve, and utilize significant above ground structures (historic/cultural resources) in sound condition.
- Significant archeological resources will be protected and preserved.
- Provide visitor's safe and reasonable access and promote visitor safety in their use of the island resources.

2.2.2 Foundation Document

Each unit of the national park system is to have a foundation document that will provide basic guidance for planning and management decisions. The Cumberland Island National Seashore Foundation Document was completed in February, 2014, and it includes core components that direct and support this fire management plan. Among the fundamental resources and values defined in the document are several that have direct or indirect necessity for a fire management plan to ensure their preservation and/or protection:

- Intact barrier island system driven by coastal geological and biological processes
- Live oak maritime forests
- Wilderness
- National register archeological districts and other significant archeological resources
- National register historic districts and their contributing features

2.2.3 Resource Management Plan Objectives

Cumberland Island's 1994 Resource Management Plan (RMP) includes the following natural and cultural resource management objectives that are directly or indirectly pertinent to fire management:

- Protect and restore natural processes in the wilderness, potential wilderness, and environmental protection areas with minimal deviations allowed for fire (as defined in approved Fire Management Plan) and endangered species management.
- Discourage uses incompatible with wilderness values in the potential wilderness area and natural processes in the environmental protection areas.
- Preserve the historic buildings, landscape features, and ruins on Cumberland Island.
- Protect all archeological sites, including those in retained right holdings, from human damage and erosion.

The RMP states that the National Park Service and the Georgia Forestry Commission agreed to divide the responsibility for fire control on Cumberland Island. The Georgia Forestry Commission was given the responsibility of protecting privately owned lands on both islands, whereas protection of United States Government lands on Cumberland Island was placed under the jurisdiction of the National Park Service on Cumberland Island.

2.3 Partnerships

CUIS collaborates on fire management activities with its interagency partners, state and local cooperators, and members of the public. Interagency partners include Okefenokee National Wildlife Refuge, Timucuan Ecological & Historic Preserve (TIMU), and Osceola National Forest. Collaboration also occurs with Camden County Fire and Rescue, Saint Mary's Fire Department, and Georgia Forestry Commission (GFC). Outreach and coordination with the public including reserved estate holders, private landowners, island residents, and other interested public figures occurs through public meetings, mailings, and informal contact.

CUIS is a partner in the Tri-Agency Agreement which includes the National Park Service (CUIS and TIMU), the U.S. Fish and Wildlife Service (Okefenokee NWR), and the U.S. Forest Service (Osceola

NF). The Tri-Agency Agreement provides mutual assistance to each agency for all fire management needs. CUIS is also a member of the Southeast Georgia - Northeast Florida Fire Planning Unit (FPU) under the interagency fire program analysis (FPA). Other members of the FPU include Okefenokee NWR, Banks Lakes NWR, TIMU, Fort Frederica National Monument (FOFR), Fort Caroline National Monument (FOCA), and Osceola National Forest.

3 PARK-WIDE & FIRE MANAGEMENT UNIT CHARACTERISTICS

A Fire Management Unit (FMU) is any land management area definable by objectives, management constraints, topographic features, access, values-to-be-protected, political boundaries, fuel types, or major fire regime groups, etc., that sets it apart from management characteristics of an adjacent unit. The primary purpose of developing FMUs in fire management planning is to assist in organizing and evaluating information in complex landscapes. The process of creating FMUs divides the landscape into smaller geographic areas to more easily describe physical/biological/social characteristics, and depict associated planning guidance based on these characteristics. The information contained in the following sections may also be used for incident decision support (e.g. WFDSS), and incident management. The organization and presentation of information should be concise and easily locatable for those purposes.

The seashore's fire management goals will follow and incorporate CUIS's strategic direction and overall management objectives as well as previously-discussed federal fire management policy principles and goals, including firefighter and public safety, collaboration, and accountability.

Firefighter and public safety is our first priority. This Fire Management Plan and activities defined within reflect this commitment. The commitment to and accountability for safety is a joint responsibility of all firefighters, managers, and administrators. Individuals must be responsible for their own performance and accountability. Every supervisor, employee, and volunteer is responsible for following safe work practices and procedures, as well as identifying and reporting unsafe conditions. All firefighters, fire line supervisors, fire managers, and agency administrators have the responsibility to ensure compliance with established safe firefighting practices.”

3.1 Park-wide Fire Management Considerations

3.1.1 CUIS Park-wide Fire Management Goals:

- Consider firefighter and public safety first (always the highest priority)
- All actions defined in the Fire Management Plan will conform to safety policies defined in agency and departmental policy, including, but not limited to:
 - A) *Interagency Standards for Fire and Fire Aviation Operations* (NFES 2724).
 - B) *NPS Director's Order 18*.
 - C) *NPS Reference Manual 18*, Standards for Operations and Safety chapter.
 - D) *Interagency Response Pocket Guide (IRPG)* (NFES 1077)
- Protect private property, structures, and cultural resources.
- Manage all wildland fire in a cost-effective manner, consistent with resource objectives, and values to be protected.
- Consider use of all response tactics that FMUs allow. (i.e. managing fire for resource benefits, modified suppression tactics, straight suppression, monitoring, etc.)
- Recognize the historical role that fire has played within the park and the ecological benefits it provides.

- Incorporate minimal impact suppression tactics (MIST) into all suppression operations providing for safety first.
- Adhere to Wilderness Fire Management Policies when responding to fire in the Cumberland Island Wilderness.
- Use prescribed fire and non-fire applications to create and/or maintain defensible space around seashore buildings, and to reduce hazardous fuels in and around Wildland Urban Interface (WUI) areas.
- Use prescribed fire to restore fire back into fire adapted ecosystems and to reduce hazardous fuels where FMU characteristics permit.
- Create and maintain defensible space along private property boundaries and park structures.
- Identify, create, and maintain fire breaks throughout the park.
- Manage all wildland fire incidents in accordance with accepted interagency standards, using appropriate management strategies and tactics, and maximizing efficiency via interagency coordination and cooperation.
- Coordinate with federal, state and local fire management agencies in order to facilitate close working relationships and mutual cooperation regarding fire management activities.
- Provide NPS employees, federal, state, and local cooperators with quality fire operations training and experience so as to develop and maintain fully-qualified personnel commensurate with the normal fire year workload.
- Develop and conduct a monitoring program with recommended standard monitoring levels commensurate with the scope of the fire management program, and use the information gained to continually evaluate and improve the fire management program.
- Integrate knowledge gained through natural resource research into future fire management decisions and actions.
- Maintain the highest standards of professional and technical expertise in planning and safely implementing an effective fire management program.
- Plan and conduct all fire management activities in accordance with all applicable laws, policies and regulations.
- Foster a greater public awareness of fire ecology and sound fire management practices.

CUIS fire management objectives at CUIS include:

- Firefighter and public safety will have the highest priority
- Protection of private and NPS structures, buildings, and infrastructure.
- Manage wildland fire for resource benefit where applicable and FMU's characteristics permit.
- Identify, create, and maintain defensible space around private property and park structures.
- Identify, create, and maintain fire breaks to enable the management of fire in FMUs
- Utilize prescribed fire to reduce the heavy fuel loads and maintain fire adapted ecosystems in FMUs that allow the use of prescribed fire.
- Utilize mechanical fuels treatments in areas where prescribed fire is not applicable or where the FMU does not allow.

Program objectives include:

- A minimum of 20% and a maximum of 75% of fire adapted communities in the park will be maintained within their known fire return interval by 2025.
- Fire breaks will be maintained on a 1-3 year rotation.
- 90% of unplanned and unwanted ignitions will be aggressively contained in the first burning period each year.
- 60% of unplanned ignitions each year that have the potential for achieving resource benefits will be managed under a strategy that maximizes benefits consistent with firefighter, public safety, and values at risk.
- CUIS Fire Management Program should continue to seek opportunities to grow as a program including actively seeking to obtain at minimum fire personnel to staff one type 6 engine, seek opportunities to create a dispatch, and allocate a work space to host a minimum of five fire program staff.
- Work closely with park residents, reserved estate owners, visitors, and adjacent communities to better understand fire management actions in the park.
- Work with Georgia Forestry Commission and island residents to obtain Firewise status for Cumberland Island.
- Create a functional communication system within the park that is compatible with all radios that are commonly used in the federal fire arena.

- Continue to work with Federal, State, and local cooperators and foster professional relations, training, and cooperation throughout the life of the CUIS Fire Management Program.
- Enhance education of internal and external customers on Firewise concepts, prevention of unwanted fire, and benefits of fire in fire adapted ecosystems.

Resource Management objectives include:

- Protect cultural resources to include structures, infrastructure, features, and sites of significant historical value.
- Restore fire back into fire dependent ecosystems where FMU characteristics permit.
- Restore 20% of park back to the historical fire regime over 15 years.
- Assist maintenance of cultural landscape sites with the use of fire and non-fire applications.
- Restore wetlands within the park that are being encroached upon with fire and non-fire applications.

3.1.2 Wildland Fire Management Actions

CUIS will implement a combination of fire management tools. These tools include aggressive suppression, management of fire for resource benefit, management of fire for multiple objectives, prescribed fire, non-fire applications, and prevention methods. Prescribed fire will be used in FMU where the unit’s characteristics allow for that treatment, with units being pre-identified at minimum the year before treatment. Non-fire treatments (mechanical) will be used in and around the WUI within the park boundaries and to pretreat units before a prescribed fire. Mechanical treatments can be directly next to structures, around private property, within historic districts, and be used to create and maintain fire breaks in pre-identified areas. Chemical application of herbicides may follow mechanical treatments to ensure objectives are met, ensure longevity of project, and to maintain treatment.

3.1.2.1 Preparedness Activities

NPS policy requires that every unit with a fire management program incorporate preparedness considerations into its fire management plan (*RM-18*, chapter 5 provides guidelines). Preparedness involves planning and implementing activities prior to wildland fire ignitions to keep the unit in a state of fire-readiness. It includes routine actions completed prior to fire season as well as incremental actions conducted during fire season in response to increasing fire danger. The CUIS fire management officer or fire management coordinator (hereinafter referred to as the “park FMO”) is responsible for coordinating and completing preparedness tasks, and ensuring that the park has access to additional fire resources as needed. CUIS preparedness will include:

- Maintaining a cache of supplies, materials, and equipment sufficient to meet normal fire year requirements. The park FMO will maintain the fire cache, which is located in the Dungeness Historic District, to the minimum standard of a 10-person cache. Fire management-related

supplies will be inventoried and restocked as necessary prior to the advent of fire season. Firefighter-qualified employees will be issued initial attack gear and personal protective equipment from the cache.

- CUIS maintains a Type-3 engine/water tender and one four-wheel-drive Type-6 engine. Both apparatus are housed at Nightingale Well, just north of the Dungeness area. The engines will be maintained in a state of fire-readiness throughout the year. During periods of high fire danger, an additional fire cache may be put into service at the north end of the island at The Settlement. Location of Type-6 engine can change due to fire danger location on the island.
- Offering training to park and cooperator employees in yearly refresher training and advanced wildland fire classes.
- Maintaining fully qualified staff commensurate with the normal fire year workload.
- Preparing a step-up plan based upon staffing classes derived from the National Fire Danger Rating System (see section 4.2.2.4).
- Maintaining fire records, weather data, maps and other associated information. The park FMO will submit CUIS data annually, including daily situation reports during fire events, to the Georgia Interagency Coordination Center (GICC). FMO will enter fire reports into the appropriate reporting system including Wildland Fire Decision Support System (WFDSS) and Wildland Fire Management Information (WFMI). The park FMO will utilize other system options as appropriate to maintain data on employee qualifications, hazard fuels, FIREPRO, etc.
- Preparing a pre-season risk analysis.
- Maintaining detection capabilities including communications systems and cooperative agreements.
- Maintaining communication with park personnel, Camden County 911 dispatch, Georgia Forestry Commission dispatch, concessionaires, and neighboring landowners to ensure fires are reported to Park Rangers via the Park's radio repeater frequency.
- Ensuring that Park staff, concessionaires, visitors, adjoining landowners, and cooperating agencies are educated about the 911 emergency fire dispatching process to ensure that detected fires are reported to park staff.
- Maintaining cooperative agreement with Georgia Forestry Commission to enable the request of GFC fixed-wing detection planes for Park fires.
- Maintaining Tri-Agency Agreement with Timucuan Ecological & Historic Preserve (TIMU), Okefenokee National Wildlife Refuge, and Osceola National Forest to enable the direct ordering of their exclusive use contract helicopters and other resources.

- Maintaining communications with Southern Area Coordination Center (SACC) to enable resource ordering of local Call When Needed contract fixed-wing, rotor-wing aircraft, and other resources.
- Providing a dispatch system for mobilizing park fire management resources to local and out-of-area incidents, in order to facilitate rapid and efficient mobilization:
- The park FMO will maintain a list of available firefighter-qualified staff in the Resource Ordering and Status System (ROSS).
- All firefighter-qualified staff will be provided approved personal protective equipment and assigned park radios.
- Response to fire will take priority over routine, scheduled work projects. Meeting park fire suppression needs will take priority over off unit fire assignments.
- Staff will receive specific travel, transportation and incident information at the time of mobilization. Dispatch and mobilization guidelines and procedures are provided in the *National Interagency Mobilization Guide* and the *Southern Interagency Mobilization Guide*.
- The park FMO will conduct an annual preseason fire readiness inspection, as outlined in the *Interagency Fire Readiness Review Guide*. The inspection will address detection, communication, dispatch, and response capabilities. It will also serve to determine whether or not CUIS's current training levels, equipment, and organizational structure meet NPS and National standards.
- Maintaining Stafford RAWS

3.1.2.2 Safety Program

Firefighter and public safety is the first priority in every fire management activity. Agency administrators at all levels must stress that firefighter and public safety *always* take precedence over property and resource loss. This policy will be emphasized throughout all fire management operations at CUIS. The CUIS fire program will meet all requirements set by national policy to include the current year version of *Interagency Standards for Fire and Fire Aviation Operations* (Red Book), *RM-18* Chapter 3, and will utilize the *Incident Response Pocket Guide* (IRPG) for reference. The national program "6 Minutes for Safety" will be a part of the daily briefing for fire staff. An ICS-206 Medical Plan form will be used for any wildland fire operation including projects within the park boundary.

3.1.2.3 Management of Unplanned Ignitions

This plan identifies Fire Management Units (FMUs) within the park boundary. Each FMU has specific information on how unplanned fire will be handled. Any FMU that specifies fire as undesired will require suppression actions commensurate to the values at risk and location of the fire. Any unplanned ignition that is determined to be a human start will require a suppression action. FMUs that allow for a full range of suppression options for unplanned ignitions will receive a broad consideration of those options at time of size up. FMO will consider seasonal timing, values at risk, weather conditions,

available resources, ecological benefits, and fuel conditions. Once a management direction is proposed, FMO will discuss with Agency Administrator and decide on allowing a fire to provide resource benefits or take full suppression actions.

FMU descriptions can be found in Section 3.2.

3.1.2.4 Management of Planned Fuels Treatments

Prescribed fire and non-fire applications can be used as part of the CUIS fire management program. FMUs describe what type of fuels treatments can be implemented within that unit. Non-fire fuels treatments (mechanical) can be used in the WUI, around structures, to create and maintain fuel breaks, and to pretreat prescribed fire units. Chemical treatments can be used to prolong the life of mechanical treatments within the park. The main focus of these treatments will be in the WUI and along fuel breaks.

FMU descriptions can be found in Section 3.2 and Appendix E has a 5-year fuels treatment plan.

3.1.2.5 Communications, Education, Prevention, Mitigation

Communications will be stressed, with the local park frequency used for initial attack and a formal communications plan established for extended fire. The park's repeater system is a Motorola system and there are some challenges with getting Bendix King radios cloned to provide positive radio communications. The park fire management program will continue to identify and remedy communications problems associated with the existing repeater system. The park fire program will continue to try to identify a way to create a dispatch center with a dispatcher for wildfire and prescribed fire incidents. Education of internal and external partners includes press releases, signs, posters, bulletin boards, and face-to-face contacts with visitors, all of which facilitate public awareness, understanding, and support. Mitigation includes closing the seashore to campfires and open flames during high fire danger; restricting location, type, and size of fires; creating and maintaining defensible space around seashore buildings; creating and maintaining fuel breaks; and reducing hazardous fuel in and around wildland-urban interface areas.

3.2 Fire Management Units – Specific Considerations

3.2.1 FMU Snapshot

CUIS has been divided into three fire management units (FMUs) to facilitate the achievement of fire management objectives (see figure 5). A description of each individual FMU follows.



Fire Management Units

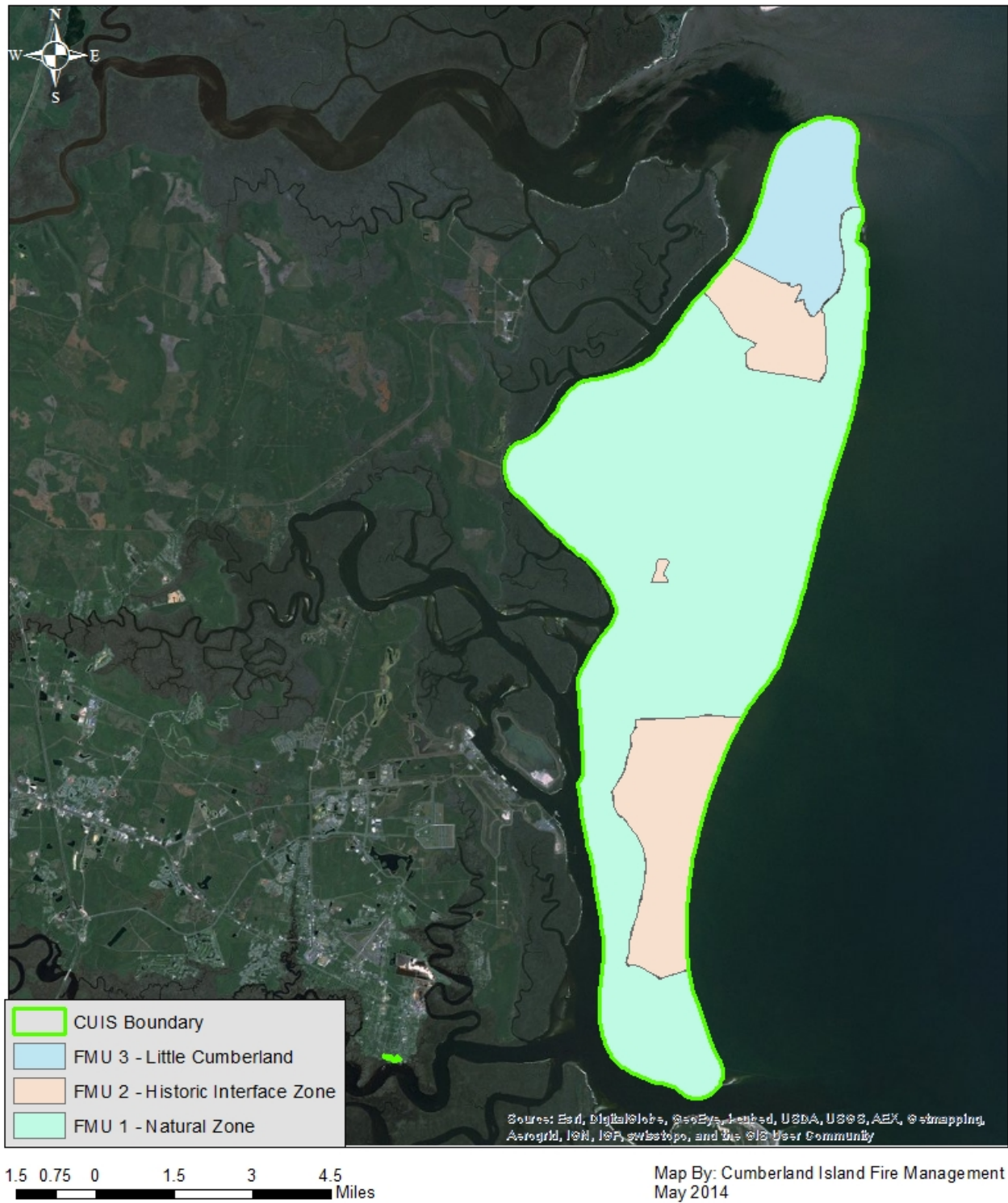


Figure 5: Cumberland Island National Seashore Fire Management Units (FMUs)

3.2.2 FMU Specific Information

3.2.2.1 Fire Management Unit #1: Natural Zone (Figure 6)

The Natural Zone FMU takes up the majority of the island and covers 27,160 acres (see figure 6). It encompasses marshland, dune, hammock, and uplands. The zone captures all of the designated wilderness and most of the potential wilderness. It also contains areas of real property and significant cultural resources. The FMU is accessible by boat, vehicle, foot, limited ATV, and limited 4x4 vehicles.



Figure 6: FMU-1 Natural Zone

Table 2: FMU-1 Snapshot

FMU Name	1-Natural Zone
FMU Identifier	FMU-CIP-1
Defining Characteristics	FMU is generally undeveloped areas of the island to include the wilderness area, marsh, and undisturbed uplands
Acres	27,160
Approved Fire Mgmt. Strategies	<ul style="list-style-type: none"> • Wildland fires will be a low priority for suppression action. • Natural fire starts should be considered for use as fire for resource benefit, commensurate with human safety and property in all instances. • Emphasis on prevention, detection, rapid response, size up, and use of appropriate suppression techniques and tools. • Fixed wing air tankers can be used. • Retardant can be used only with park superintendent permission. • Helicopters with brackish water buckets can be used. • Use Minimum Impact Suppression Tactics (MIST) to reduce negative effects of suppression. • Prescribed fire can be used. • Non-fire fuel treatments can be used including chemical control of vegetation. • Fuel breaks can be created and maintained using road and trail systems as outlined in the 5-Year Treatment Plan.
Constraints	<ul style="list-style-type: none"> • Safety zones are limited in this FMU • Access is limited to the interior of this FMU • Use of heavy equipment and/or retardant requires specific permission from the superintendent for each event • Avoid unnecessary use of brackish water for bucket drops.
Associated Wx Station(s)	NOAA-Brunswick 29S , Stafford RAWS #099902
Dominant Vegetation or Fuels	Marsh grass, mixed oak hammock, pine stands, southern rough, coastal scrub.
Lat/Long of Centroid (NAD 83)	LAT: N30 51' 29.53" / LONG: W81 26' 16.30"

3.2.2.1.1 Safety Considerations

Safety concerns for FMU #1 include:

- Fuel loading is considered high throughout the FMU with an abundance of light flashy fuels.
- Fuel breaks in the interior of this unit are limited.
- Snags are present.
- Reptiles such as alligators and venomous snakes are present.
- Emergency evacuation can be time consuming due to access.
- Lack of good safety zones throughout the FMU.
- Communication can be challenging in the FMU. Consider the use of human repeater.
- 4X4 vehicle required for dune crossings and beach access.
- Access for emergency vehicles can be limited and challenging.
- Shoreline landing via boat may be necessary and can be challenging.
- Tidal fluctuations.
- Smoke on the Intracoastal Waterway during wildfire and prescribed fire events.

3.2.2.1.2 Desired Conditions/Goals/Objectives

- Considering firefighter and public safety (always the highest priority).
- Return 40% of uplands in FMU#1 to its historical fire regime within 15 years.
- Manage natural fire for resource benefits.
- Use prescribed fire as a tool to restore fire to its historical regime.

- Create and maintain fuel breaks using road and trail systems as outlined in the 5-Year Treatment Plan.
- Restore wetlands in the FMU with the use of fire to control encroachment.
- Burn debris pile on Raccoon Key annually.

3.2.2.1.3 Approved Management Tools/Strategies

CUIS will implement a combination of fire management tools to include wildland fire suppression, management of wildland fire for resource benefit, prescribed fire, limited non-fire mechanical fuels treatments, and limited chemical control of vegetation. The use of helicopters can be used. Use of fixed wing air tanker can be used. Use of retardant should only be used in close proximity of structures and for the protection of life and property, and can only be used with the permission of the Superintendent. Heavy equipment may be used for the protection of life and property with the permission of the Superintendent. Use enhanced education of public on benefits of fire in fire adapted ecosystems.

3.2.2.1.4 Fire Environment

GIS data shows that this FMU is diverse in fuel types. Fuel types include a large amount of mixed hardwoods and oak hammocks. Marsh grass is very abundant in this FMU and includes freshwater wetland areas in the interior of the unit. Pine stands are present as well as vast amounts of southern rough and pocosin. The east edge of the unit consists of coastal scrub associated with dune lines that run south to north. Grass is also present in the FMU.

This FMU has the highest fire frequency of the park. Research has shown that pre-settlement fire regimes were between 7 and 15 years in the pine and mixed pine stands. Pre-settlement fire regimes in the partially sheltered oak hammocks were 15 years (Frost 2011). Fire history maps show the majority of recorded fires in the northern third of the FMU.

Access to the interior of this FMU is limited and roads and trails are not adequate to serve as fire breaks. It is possible for a fire to smolder and gather heat for a few burn periods before detection occurs. Once fire is established it has proven difficult to attack and control. Fire behavior can be extreme as pine stands, southern rough, and grass come in alignment with dominant afternoon sea breezes or thunderstorm down drafts. Containment of wildfires to this FMU on the north boundary will be difficult until fire breaks are created and maintained.

There are reserved estate and park service structures and infrastructure located within the boundaries and adjacent to this FMU. Any fire management action should consider the effects on these structures and properties.

Water sources are extremely limited for engine fill and bucket work in this FMU. One good freshwater source is located at the Old River Trail south of Plum Orchard.

3.2.2.1.5 Resource Values/Management Constraints

Significant cultural and natural resources are present in FMU-1 and a resource adviser should be notified when planning any fire management action in the FMU. Development/infrastructure within and/or adjacent to this FMU includes the High Point – Half Moon Bluff Historic District, Table Point Archeological District, Rayfield Archeological District, Plum Orchard Historic District, Stafford

Historic District, and Dungeness Historic District, and other reserved estate structures. Archeological sites and other cultural resources are found scattered throughout the FMU. Real property within the unit includes the Hawkins Creek dock, four bridges on the Main Road, electrical utility infrastructure, the Morris tract, the Table Point Co. (Perkins) tract, the Bullard Tract, the Richards tract, and three backcountry campgrounds. All of these features, assets, and properties have the potential to be affected by fire management actions in this FMU.

The Cumberland Island Wilderness is situated within FMU-1 and wilderness character and values must be considered when planning any fire management action in that area. This includes the use of mechanical equipment. The main road has a right of way on both sides that can be considered outside of the wilderness. Most trails are foot travel only unless a Minimum Tool Requirement authorizes the use of other means. Minimum Tool Requirement worksheets will be created on a project specific basis. Beyond the wilderness, the remainder of the FMU is generally undeveloped and preserved in its primitive state. All fire management actions should respect those conditions and minimize disturbance.

Use of aircraft in the FMU is allowed but, wilderness characteristics need to be considered. Water supplies are very limited and it may be necessary to use brackish water drawn from Cumberland Sound/River for helicopter bucket drops. Fixed-wing aircraft are authorized for use, but retardant drops should be limited to the protection of life and property. If fixed-wing air tanker drops are necessary, consider the use of water or a mixture of water and foam.

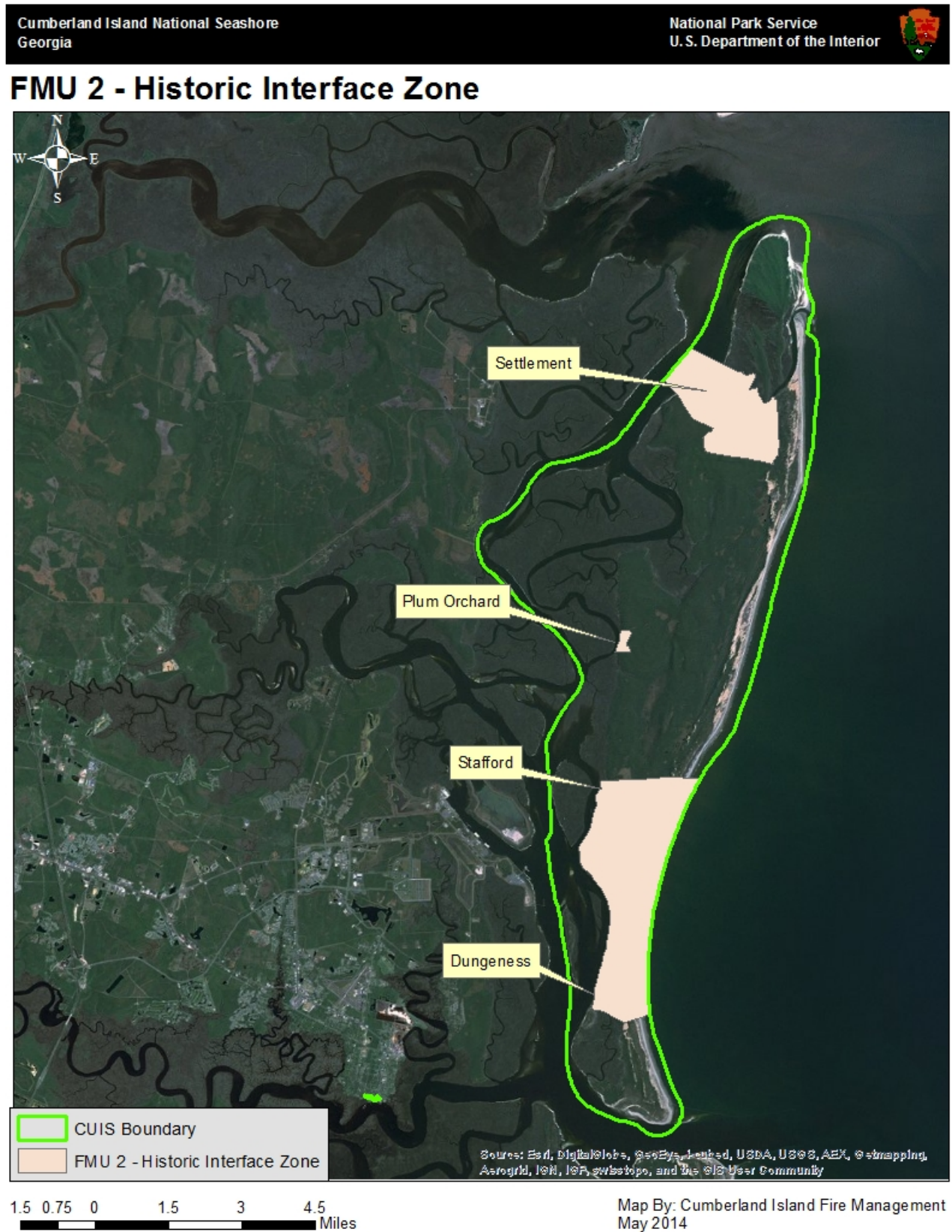
The Intracoastal Waterway is immediately west and south of this FMU and Interstate 95 is located approximately ten miles to the west. Kings Bay Naval Submarine Base; St. Marys, Georgia; Fernandina Beach, Florida; and Jekyll Island, Georgia, are all less than six miles from the FMU. Smoke management needs to be coordinated with the Camden County, St. Marys, Ga, Georgia Forestry Commission, Kings Bay Naval Base, U.S. Coast Guard, Fort Clinch State Park, Fernandina Beach, FL, and Nassau County FL Fire and Rescue.

3.2.2.2 Fire Management Unit #2: Historic Interface Zone

The Historic Interface FMU is divided into three separate areas of the island and takes in approximately 6,286 acres (see figure 7). A northern segment of the unit encompasses the High Point, Half Moon Bluff, Settlement, and Cumberland Wharf areas of the High Point – Half Moon Bluff Historic District. A central segment covers the Plum Orchard Historic District. A southern segment covers the Stafford Plantation Historic District, the Greyfield Historic District (private), the Rockefeller Tracts (private), Sea Camp, and the Dungeness Historic District. There are multiple operational docks within FMU-2, with the main ones located at Dungeness, Sea Camp, Plum Orchard, and Greyfield (private and used by permission only). The FMU has numerous roads and trails throughout it.

The southern component of this FMU has the most visitor occurrence on the island. Visitor destinations include the Dungeness Historic District, Sea Camp ranger station and campground, Greyfield Inn, and Stafford Campground. Additional visitor activity can also be expected at Plum Orchard and The Settlement. Overall, the FMU also supports the vast majority of operational, storage, and residential activity (NPS and private) on the island, particularly the southern component.

Figure 7: Historic Interface Zone FMU 2



Significant areas within FMU-2 (north to south) include:

High Point – Half Moon Bluff Historic District includes The Settlement and Half Moon Bluff areas, which contain the First African Baptist Church and four residential tracts. Daily guided tours bring visitors to the site. The High Point area of the district is a reserved estate tract containing nine residential structures and occupancy can be high at times. Other cultural resources found within the district include the High Point Cemetery and the Cumberland Wharf ruins.

Plum Orchard Historic District includes a historic mansion, boat dock, and the park’s hunt camp. There are additional residential and support buildings (both NPS and reserved estate properties). Visitors tour the mansion and grounds throughout the day.

Stafford Historic District includes a historic mansion, numerous other buildings, a cemetery and The Chimneys, a significant archeological site. Primary activity is residential use associated with reserved estate property. Private residential area of Serendipity is just north of the district and Stafford Campground is on the southeast edge.

Greyfield Historic District is privately owned and includes a full-service inn, support buildings, a dock, and several residences. Occupancy can be high at times.

The Rockefeller tract is a privately owned area with approximately five residential structures, two docks, and additional outbuildings. Occupancy can be high at times.

The Sea Camp area includes the Ranger Station and ferry dock on the west side and the front country campground on the east side, which includes 16 sites (maximum capacity 60 people) and two group sites (15-20 people).

Dungeness Historic District contains numerous historic structures many of which have been adapted for park operational, logistical, or residential use. District also supports concentrated visitor services and activities. District includes the ruins of the Dungeness Mansion and the nationally significant Tabby House.

Table 3: FMU-2 Snapshot

FMU Name	2-Historic Interface
FMU Identifier	FMU-CIP-2
Defining Characteristics	FMU encompasses the developed areas and Historic Districts of the Seashore
Acres	6,286
Approved Fire Mgmt. Strategies	<ul style="list-style-type: none"> • Wildland fires will be a high priority for suppression action. Natural Fire starts should be suppressed commensurate with human safety and property in all instances. • Natural fire starts should be suppressed in a cost effective way using existing fuel breaks, roads and trails where possible. • Prescribed fire can be used • Non fire treatments can be used including limited chemical treatment of vegetation. • Fuel breaks can be created and maintained using road and trail systems. • Emphasis on prevention, detection, rapid response, and size up. • Fixed wing air tankers can be used. • Retardant can be used only with park superintendent permission. • Helicopter can be used for bucket work • Equipment such as tractor plow, bulldozer, or similar may be used for the protection of life and property with the permission of the park superintendent • Use Minimum Impact Suppression Tactics to reduce negative effects of suppression.

Constraints	<ul style="list-style-type: none"> • Use of heavy equipment and/or retardant requires specific permission from the superintendent for each event. • Avoid unnecessary use of brackish water for bucket drops. • Multiple cultural resources in the FMU. Consult with resource advisor.
Associated Wx Station(s)	NOAA-Brunswick 29S, Stafford RAWWS # 099902
Dominant Vegetation or Fuels	Mixed oak hammock, southern rough, pine stands, coastal brush, marsh grass
Lat/Long of Centroid (NAD 83)	LAT: N30 47' 42.57" / LONG: W81 27' 42.46"

3.2.2.2.1 Safety Considerations

Safety concerns for FMU #2 include:

- Lack of safety zones once you depart main road
- Communications can be limited in this FMU. Consider using a human repeater for radio traffic.
- 4x4 vehicles required for dune crossing and beach access
- Docking boats
- Tidal fluctuations
- WUI
- Potential hazardous material associated with buildings
- Snags are present
- High fuel loadings
- Light flashy fuels
- Limited water supply until a portable tank gets established
- Reptiles such as alligators and venomous snakes are present
- Smoke on the Intracoastal Waterway during wildfire and prescribed fire events.

3.2.2.2.2 Desired Conditions/Goals/Objectives

- Return 35% of upland in FMU 2 to historical fire regime within 15 years.
- Consider firefighter and public safety (always the highest priority).
- Suppress all wildland fire in a cost-effective manner, consistent with resource objectives, and values to be protected.
- Create and/or maintain defensible space around private and seashore buildings.
- Reduce hazardous fuels within the FMU using prescribed fire and non-fire treatments according to the 5-year fuels treatment plan.
- Create an interpretative site/exhibit to better educate visitors and the public about the benefits of fire.
- Work with park, private, and reserved estate owners to adopt Firewise practices for this FMU.

3.2.2.2.3 Fire Environment

FMU #2 has a mix of fuel types. These include hardwood closed canopy forest, coastal scrub, palmetto, pine stands, and grass. Fire behavior can be expected to change drastically and unexpectedly with any change in fuel type.

WUI makes this FMU complex in management. There have been little to no fuels reduction projects completed. Fuel loading is considered high throughout the FMU. Coupled with the lack of high capacity water sources, this will create problems when managing fire in the WUI.

3.2.2.2.4 Approved Management Tools/Strategies

CUIS will implement a combination of fire management tools to include wildland fire suppression, prescribed fire, and non-fire mechanical fuels treatments including limited chemical control of vegetation. The use of heavy equipment can be considered, but should only be used in the event of protection of life and property. Heavy equipment should only be used in nearby proximity to structures and private properties. Use of heavy equipment must have permission from park superintendent. Use of fixed wing air tanker can be used. Use of retardant should only be used in close proximity of structures and in the protection of life and property. Helicopters with buckets may be used in this FMU

3.2.2.2.5 Resource Values/Management Constraints

FMU# 2 has considerable constraints to fire management. This FMU is the most developed within the park. It hosts five historic districts with associated cultural resources such as historic structures, cultural landscapes, archeological sites, cemeteries, and other features. Residential locations range in occupancy from a single full-time time resident to a full-service inn to seasonal occupancy that can be relatively high. The areas within the FMU constitute the most active visitor sites on the island. Dungeness and Sea Camp docks are within the FMU and are the gateway for park visitors.

3.2.2.3 Fire Management Unit #3 Little Cumberland

Little Cumberland Island is located north of the larger Cumberland Island, with Christmas Creek separating the two. While Little Cumberland is within the Seashore boundaries, it is privately owned throughout and is managed by its own homeowners association. In consideration of its ownership, management, and jurisdiction Little Cumberland has been designated as a distinct FMU, encompassing approximately 3,437 acres (figure 8). The boundaries of the FMU are Christmas Creek to the south, Cumberland River on the west, St. Andrews Sound on the north, and the Atlantic Ocean on the east. The NPS is considered a cooperator to Camden County and Georgia Forestry commission for fire management of this FMU. Access to Little Cumberland Island is extremely difficult with limited locations for boat landings. Once on the island there are no agency vehicles so travel is by foot or private landowner.

3.2.2.3.1 FMU Operational Guidance

Camden County Fire and Rescue and the Georgia Forestry Commission are the lead agencies for fire management on Little Cumberland Island. CUIS will assist Camden County and the Georgia Forestry Commission according to annual operating plans and requests from the lead agencies. A unified command structure is suggested for incidents within this FMU.



FMU 3 - Little Cumberland

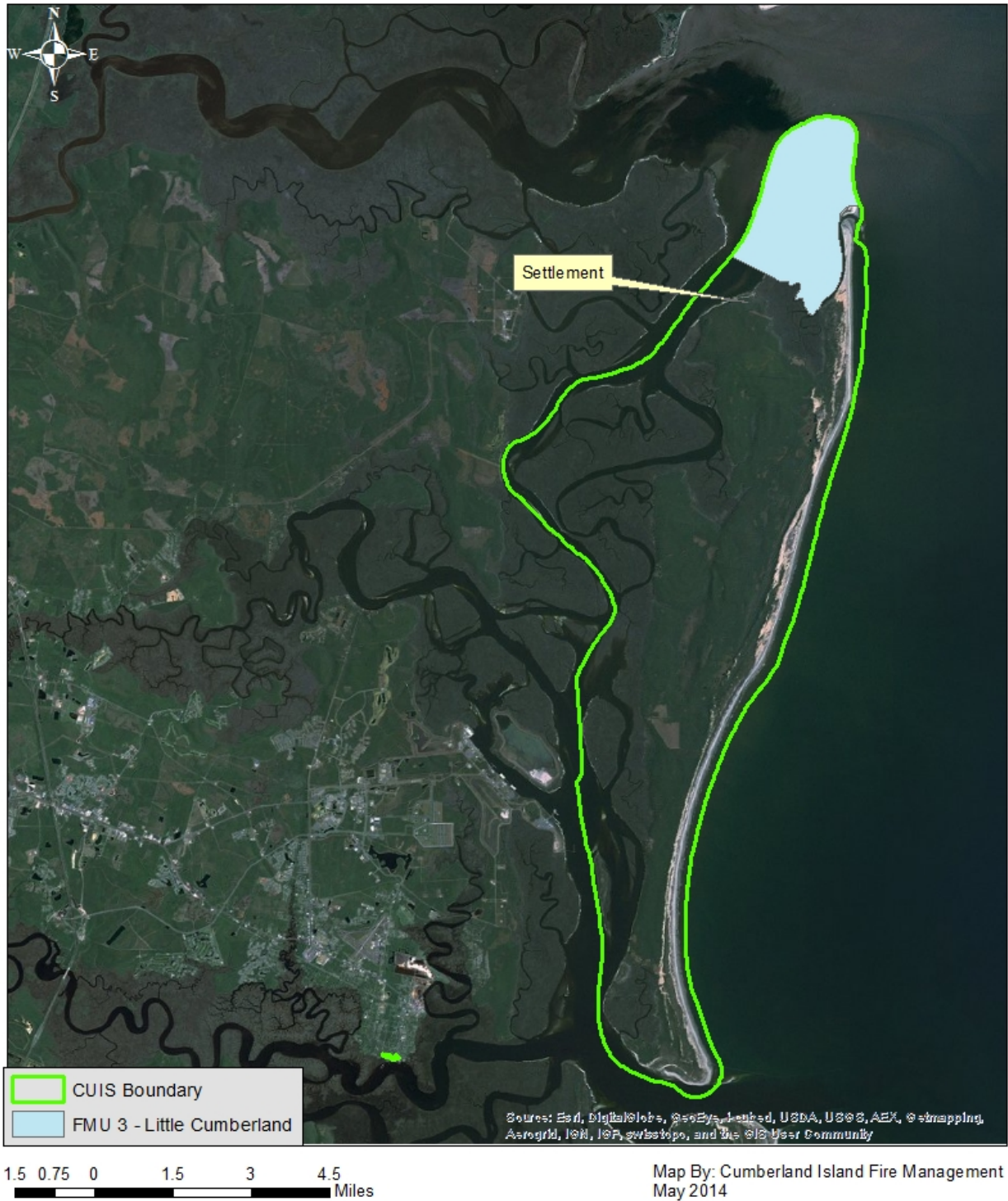


Figure 8: Little Cumberland FMU 3

4 WILDLAND FIRE OPERATIONAL GUIDANCE

4.1 Safety

The safety of firefighters and the public is Cumberland Island National Seashore's first priority. This FMP and the activities defined within reflect CUIS's commitment to safety. Moreover, safety is the responsibility of all firefighters, managers, and administrators. Individuals are responsible for their own performance and accountability. Every supervisor, employee, and volunteer is responsible for following safe work practices and procedures, as well as identifying and reporting unsafe conditions. All firefighters, fireline supervisors, fire managers, and agency administrators have the responsibility to ensure compliance with established safe firefighting practices.

All actions defined in this FMP will conform to safety guidelines defined by current agency and departmental policy, including, but not limited to, the current versions of the documents listed below:

- National Interagency Fire Center Interagency Standards for Fire and Aviation Operations, or Red Book, current version (NIFC 2014)
- NPS DO-18 Wildland Fire (NPS 2008b)
- NPS RM-18 Chapter 3, Standards for Operations and Safety (NPS 2008c)

4.1.1 Firefighter Safety

Firefighter and public safety is the first priority in every fire management activity. Agency administrators at all levels must stress that firefighter and public safety *always* takes precedence over property and resource loss. This policy will be emphasized throughout all fire management operations at CUIS.

Human health and safety: Firefighter and public safety is the highest priority in every fire management activity:

- Only fully qualified employees will be assigned fire management duties, i.e. meeting NPS and NWCG qualifications as well as accepted interagency knowledge, skills and abilities for the assigned fire job (unless assigned as trainees, in which case they will be closely supervised by an individual fully qualified for the given position).
- No fire management operation will be initiated until all personnel involved have received a safety briefing describing known hazards and mitigating actions (LCES), current fire season conditions, and current and predicted fire weather and behavior. Hazards specific to the seashore include:
 - Lack of safety zones throughout all FMUs.
 - Dead spots in radio communication systems.
 - Compatibility of Motorola and Bendix King radios.
 - Time consuming emergency evacuation.
 - Lack of access points.
 - Unnatural fuel loadings that can be considered high to extreme.
 - Volatile fuels that preclude direct attack.
 - Snags and dead trees with weak root systems.

- Stinging/biting insects, ticks, alligators, and venomous snakes
 - Dehydration, heat exhaustion and heat stroke.
 - Boat transport.
- Wildland fire incident commanders will minimize firefighter exposure to heavy smoke by incorporating the recommendations outlined in the publication *Health Hazards of Smoke* (Sharkey 1997), available from the Missoula Technology and Development Center.
 - Seashore neighbors, visitors and local residents will be notified of all fire management events that have the potential to impact them.
 - The CUIS Superintendent or designee may, as a safety precaution, temporarily close parts of the seashore to the visiting public.

The NPS wildland fire training, qualification, and certification system meets or exceeds all National Wildfire Coordinating Group (NWCG) standards. Only fully qualified employees will be assigned fire management duties, i.e. meeting NPS and NWCG qualifications as well as accepted interagency knowledge, skills and abilities for the assigned fire job (unless assigned as trainees, in which case they will be closely supervised by an individual fully qualified for the given position). All personnel (including emergency hire firefighters) engaged in fireline operations must have completed the S-130/190 class including the modules on basic firefighting, basic fire behavior, and standards for survival. The seashore Fire Management Officer will coordinate at least eight hours of mandatory annual safety refresher training for all firefighter-qualified CUIS staff.

Refresher training will concentrate on local conditions and factors, NWCG Refresher Training topics of the year, the 10 Standard Fire Orders, 18 Watch Out Situations, LCES (Lookouts, Communication, Escape Routes, Safety Zones), and common denominators of tragedies and near-miss situations. NWCG courses such as Standards for Survival, Lessons Learned, and Look Up, Look Down, Look Around, meet the firefighter safety refresher training requirement. Hands-on fire shelter inspection and deployment practice *will* be included as part of the annual refresher. Efforts should be made to vary the training from one year to the next. It can be presented in an eight-hour block or in increments. The seashore FMO will enter or submit all pertinent employee data to the Southeast Regional Office FMO for entry into IQCS (or the appropriate reporting system)

All seashore fire management personnel will be equipped with approved personal protection equipment (PPE), and trained in its proper use. Operational personnel on the fireline are required to use the PPE. Mandatory PPE includes:

- 8” high, laced, leather boots with lug soles
- Fire shelter
- Hard hat with chin strap
- Goggles/safety glasses
- Ear plugs
- Nomex shirt and trousers
- Leather gloves

The NPS *Wildland Fire Qualification System Guide* contains a supplemental list of PPE. Special PPE and hazard analysis is required for operations involving fuel gelling agents, fireline explosives, aircraft, and chainsaws.

Prior to and throughout all fire management field operations at the seashore, fireline supervisors will cover safety factors with incident personnel via operational briefings beforehand, and safety briefings that occur during the incident. No NPS employee, contractor, or cooperator will ever be intentionally exposed to life-threatening conditions (see *RM-18*, chapter 3, for further safety-related planning and operational guidelines).

NPS policy requires that all personnel (including emergency firefighters) engaged in suppression and prescribed fire duties meet the physical fitness standards set by the NWCG. Physical fitness/work capacity levels will be determined by the Work Capacity Test (WCT). Descriptions of the three work capacity levels (light, moderate and arduous), as well as medical and physical fitness requirements and procedures are outlined in the Interagency Standards for Fire and Aviation Operations (current year version). The seashore FMO will annually administer (or coordinate the administration of) the pack test to CUIS firefighter-qualified staff, and maintain up-to-date records of employee qualifications.

The seashore will annually update job hazard analysis (JHA) and keep a data base for reference. Known jobs that fire management activities may conduct will require a JHA.

Most fire management activities including suppression, prescribed fire, and fuels treatments will receive an after action review (AAR). AAR's should allow participants to offer honest evaluation of events of an incident without intent to point fingers or to place blame on an individual. The purpose of the AAR should be to learn things that went well and identify areas where proficiencies can be improved. A format for an AAR to follow can be found in the front of the Incident Response Pocket Guide (IRPG).

CUIS will follow work/rest, incident review, critical stress debriefing, and serious accident guidelines that are found in the Interagency Standards for Fire and Fire Aviation Operations (current year version).

Any incident employee has the right to a safe work environment. Any safety issue will be taken seriously by fire management personnel and by the agency administrator. All efforts will be taken to identify and mitigate safety concerns. If a person assigned to an incident at CUIS decides that a safety concern cannot be mitigated, they have the right to refuse the assignment. A guideline on how to properly refuse risk can be found in the IRPG (yellow section) and the Red Book. Incident managers will take refusal seriously and actively attempt to mitigate the safety hazard or change tactics.

4.1.2 Public Safety Issues/Concerns, and Mitigation Procedures

Under no circumstances will an individual be permitted near a wildland fire at CUIS without the appropriate training and required personal protective equipment (PPE). Members of the press may be allowed in the vicinity of a fire only if they are determined to meet the standards established for the light fitness rating, wear the required PPE, and are escorted by a trained, qualified firefighter who can assist them.

In the case of a wildland fire or during times of extraordinary fire danger the CUIS superintendent or designee may, as a safety precaution, temporarily close parts of the seashore to the visiting public. Every effort will be made to inform the general public of the situation and evacuate the area if

necessary. If a fire threatens to escape seashore boundaries, adjacent authorities and landowners will be given as much advance warning as possible so that they may take appropriate action.

Evacuation of park staff, island residents, and members of the public will be made by incident personnel. Island staff not assigned to the incident, Georgia Forestry Commission, or county officials may assist in evacuation notifications. Notifications of island residents will be made by a visit to their residence or a phone call. All possible means to notify residents absent from the island will be attempted. Evacuation locations will vary with conditions of the emerging incident, with the first priority to get people to a safe location and the second priority getting them off of the island.

While smoke on roads within the seashore boundary is a concern, smoke impacts to the Intracoastal Waterway are a major concern. Fire managers will work with the U.S. Coast Guard station in Brunswick, Georgia to inform them of potential impacts to the waterway. Consideration of impacts on the waterway will be identified in fire management actions.

Public hazards post incident include snags and falling trees from compromised roots. Attempts will be made to mitigate snag hazards that may affect roadways and trails before close out of an incident. It is still possible that hazards will exist well after the incident and seashore staff will monitor road and trail systems to identify and mitigate hazards.

4.2 Preparedness

Preparedness activities provide detailed procedures and standards of wildland fire operations, including pre-season and ongoing activities throughout the fire season. It also includes pre-planned procedures for initial response and incident management. NPS policy requires that every unit with a fire management program incorporate preparedness considerations into its fire management plan (*RM-18*, chapter 5, provides guidelines). Preparedness involves planning and implementing activities prior to wildland fire ignitions to keep the unit in a state of fire-readiness. It includes routine actions completed prior to fire season as well as incremental actions conducted during fire season in response to increasing fire danger. The CUIS fire management officer is responsible for coordinating and completing preparedness tasks, and ensuring that the seashore has access to additional fire resources as needed.

Specific preparedness activities for CUIS include:

- Maintain a 10-person cache of supplies, materials, and equipment sufficient to meet normal fire year requirements.
- Maintain Type-3 water tender.
- Maintain Type-6 engine.
- Maintain qualified staff of collateral duty fire fighters commensurate with the normal fire year workload.
- Prepare a step-up plan based upon staffing classes derived from the National Fire Danger Rating System (see section 4.2.2.5).
- Maintain fire records, weather data, maps and other associated information.
- Assure training for park fire fighters and FMO are completed and qualifications are documented.
- Prepare a pre-season risk analysis.
- Maintain cooperative agreements with Camden County, Georgia Forestry Commission, Tri-Agency partners, and the National Weather Service in Jacksonville, Florida.

- Provide a dispatch system for mobilizing park fire management resources to local and out-of-area incidents, which will facilitate rapid and efficient mobilization.

The park FMO or Regional FMO will organize an annual preseason fire readiness inspection of the fire management program at CUIS. The interagency template for readiness reviews can be found at, http://www.nifc.gov/policies/pol_ref_NPS_prgrmRvw.html. The inspection will address general readiness for the upcoming fire season. It will also serve to determine whether or not CUIS's current training levels, equipment, and organizational structure meet the standards described in this FMP.

4.2.1 Coordination and Dispatching

CUIS is dependent on other federal agencies and local cooperating agencies for fire management activities due to the lack of staffing of qualified personnel at the park. CUIS has Memorandums of Understanding (MOU), Annual Operating Plans (AOP), and/or other agreements with multiple agencies to enhance the capabilities of the park to manage fire. The NPS has a central MOU with the Georgia Forestry Commission (GFC) at the regional level and an AOP at the local level. This agreement provides for the sharing of resources and equipment during an emerging incident. CUIS also has a MOU with Camden County that needs to be updated annually. CUIS is a partner in the Tri-Agency Agreement with Okefenokee National Wildlife Refuge, Osceola National Forest, and Timucuan Ecological & Historic Preserve that streamlines the sharing of resources and equipment between local federal agencies. This agreement requires annual updates and signatures of agency administrator.

Dispatching and ordering of CUIS resources is currently completed by the Georgia Interagency Coordination Center (GICC) in Gainesville, Georgia. Coordination with the Southern Area Coordination Center (SACC) is necessary for off-unit and NPS specific orders. In the event of an incident on the park, a dispatch center will be established either on the mainland or at the Captain's House on the island and it will be staffed with an initial attack dispatcher. The initial attack dispatcher will coordinate FMO/incident commander's needs with local agencies and the GICC as well as keeping a communication log. If a wildfire is reported on Little Cumberland Island FMU #3 Camden County and GFC must be notified as they are the lead agency for response to this FMU.

Mandatory notifications of a wildfire at CUIS include:

- Camden County 911 (courtesy call and ask to notify duty officer)
- GFC Camden Unit (912) 576-6970
- GICC (770) 297-3036
- SACC (678) 320-3000

4.2.2 Preparedness Activities

Wildland fire preparedness activities include a wide range of readiness activities and program elements that are essential to dealing with unplanned ignitions and fuels treatments. CUIS preparedness activities will include:

- Obtain and update Delegation of Authority from Park Superintendent annually. (Red Book, Chapter 3)
- Maintain a 10-person cache of supplies, materials, and equipment sufficient to meet normal fire year requirements. Cache is located in the Dungeness Historic District but may be moved at any

time. Cache items will be inventoried and restocked as necessary prior to the advent of the fire season. Firefighter-qualified employees will be issued initial attack gear and personal protective equipment from the cache.

- Maintain and keep in a state of readiness Type-3 water tender currently located at the Nightingale well house.
- Maintain and keep in a state of readiness Type-6 engine currently located at the Nightingale well house.
- Maintain all mechanized fire equipment (pumps, chainsaws, leaf blowers) in a state of readiness throughout the fire year.
- Maintain qualified staff of collateral duty fire fighters commensurate with the normal fire year workload.
- Prepare a step-up plan based upon staffing classes derived from the National Fire Danger Rating System (see section 4.2.2.4).
- Maintain fire records, weather data, maps and other associated information.
- Assure training for park fire fighters and FMO are completed and qualifications are documented.
- Prepare a pre-season risk analysis.
- Maintain various agreements with Camden County, Georgia Forestry Commission, Tri-Agency partners, and the National Weather Service in Jacksonville, Florida.
- Review dispatch procedures.
- Update JHA's and maintain JHA file in FMO office.
- Agency administrator will ensure Agency Administrator Guide to Critical Incident Management (NFES 1356) is available and in a known location.
- Update incoming resource briefing packet
- Review CUIS size up card and update if necessary.
- Prepare a list of available firefighter-qualified personnel at the beginning of the fire season.
- Facilitate readiness review of CUIS fire program

4.2.2.1 Annual Training Needs of Fire Staff

NPS fire management training meets the criteria specified within the training curriculum approved by the National Wildland Coordination Group (NWCG), which is tiered to positions described in the NWCG *Wildland Fire Qualifications*, *Prescribed Fire Job Qualifications*, and *Incident Command System Wildland Fire Job Performance* guides. The seashore FMO will conduct an annual training need analyses, and coordinate training courses as appropriate. Courses identified will be based upon employee needs (as reflected in individual employee development plans), seashore fire management needs, and regional priorities. Training will be conducted on an interagency basis and be made available to local cooperators to the greatest extent possible. Any firefighter-qualified seashore staff will receive at least eight hours of annual safety refresher training. The FMO will coordinate a minimum of one Annual Firefighter Refresher class and one Work Capacity Test per year. All CUIS Cooperators will be provided the opportunity to attend these trainings, as will other NPS personnel in the region.

The FMO will document and file all training records for any employee that is red-carded at CUIS. FMO will enter training and yearly experience into IQCS or arrange for SACC to complete inputs into IQCS. FMO will ensure that all individuals that have received annual training and are qualified in an ICS capacity will receive red cards. Firefighter records will be kept on file in the FMO office.

4.2.2.2 Annual Equipment and Supply Readiness Procedures

CUIS maintains a cache of supplies and equipment sufficient to meet normal fire year requirements for up to ten people. The fire cache is located in the Dungeness Historic District, inside the Carpenters Shed. Table 2 lists activities that will be performed to ensure the fire readiness of seashore personnel, supplies, and equipment, as well as the month(s) that each should be accomplished.

Table 4: Annual Fire Readiness Activities

Activity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Maintain state of fire readiness as per step-up plan.	x	x	x	x	x	x	x	x	x	x	x	x
Review/update Cooperator MOU's and AOP's	x	x										x
Review/update interagency agreements.	x	x										
Review FMP and fire program.	x	x										
Inventory fire cache; restock as necessary.	x						x				x	
Equip firefighter-qualified staff with PPE as needed.	x	x									x	x
Update CUIS firefighter qualifications.	x			x						x		
Fitness test CUIS staff.	x	x										x
Complete CUIS training analysis.										x	x	
Coordinate fire training.	x									x	x	
Provide annual refresher training and Work Capacity Test.	x	x										x
Issue updated qualification cards.	x	x		x								
Review/update Service and Supply Plan	x											
Review/update Park red carded list	x											
Review/update JHA's									x	x	x	
Host preseason informative meeting (risk, hazard rating, outlooks, etc.)			x									

4.2.2.3 Fire Weather and Fire Danger

4.2.2.3.1 Weather Station

CUIS hosts a RAWS (Remote Automated Weather Station) fire weather station located on the north end of the island near the High Point complex. The station name is Stafford and the station number is 099902. The station was installed in 2005. The seashore has recently got the station on the BLM National Maintenance Contract and as of June 2013 most attributes have been repaired or replaced. This station needs to be maintained annually and the contract states that April 1st is the date to start annual maintenance.

The National Oceanic and Atmospheric Administration has established and maintains a Climate Reference Network (CRN) station in Stafford Field. The station has been in operation since December of 2004 and is identified as GA Brunswick 23S. While it is not devoted specifically to fire weather data, the station provides usable data for the middle of the island including surface air temperature, precipitation, solar radiation, and wind speed. Real-time data from the station can be obtained via the web at <http://www.ncdc.noaa.gov/crn/station.htm?stationId=1120>.

4.2.2.3.2 National Fire Danger Rating System (NFDRS)

The National Fire Danger Rating System (NFDRS) enables a land management unit to determine fire danger based upon an evaluation of the upper limit of predicted fire behavior. Calculations of fire behavior are based on fuels, topography, and weather. NFDRS outputs give relative ratings of potential wildland fire growth and behavior, thereby allowing a unit to systematically correlate its readiness level to the predicted fire problems of the day. CUIS uses the burning index (the NPS standard) as its primary day-to-day indicator of the potential amount of effort needed to suppress a single fire in a particular fuel type within a given area. The Keetch-Byram Drought Index is used as the primary drought indicator. The Energy Release Component (ERC) is the index that CUIS uses as its step up plan indicator. All of these indices influence decisions regarding prevention activities, initial attack, and extended attack. CUIS interacts with the Georgia Interagency Coordination Center (GICC) and GFC for daily NFDRS ratings and forecasts.

Burning Index

The burning index (BI) is a number on an open-ended scale (although typically between 0 and 100), expressing the potential amount of effort needed to suppress a single fire in a particular fuel type within a given area. BI is based upon fuel model, fuel moisture, and current and forecasted weather parameters. As the BI increases, expected fire intensity increases. The higher the expected fire intensity, the more effort that will be necessary for fire suppression.

Keetch-Byram Drought Index (KBDI)

The KBDI is a mathematically-calculated drought indicator relating to the amount of moisture in the top seven inches of soil or duff. It ranges from 0-800, with 0 being saturated and 800 indicating maximum drought. Drought directly influences the flammability of all fuel/vegetation complexes (as drought progresses the upper soil layers dry, increasing the amount of dead and cured live fuels available for consumption), which in turn influences fire behavior and control efforts.

Energy Release Component (ERC)

The Energy Release Component (ERC) is a NFDRS (National Fire Danger Rating System) index related to how hot a fire could burn. It is directly related to the 24-hour, potential worst case, total available energy (BTUs) per unit area (in square feet) within the flaming front at the head of a fire. The ERC can serve as a good characterization of fire season as it tracks seasonal fire danger trends well. The ERC is a function of the fuel model and live and dead fuel moistures. Fuel loading, woody fuel moistures, and larger fuel moistures all have an influence on the ERC, while the lighter fuels have less influence and wind speed has none. ERC has low variability, and is the best fire danger component for indicating the effects of intermediate to long-term drying on fire behavior (if it is a significant factor) although it is not intended for use as a drought index.

4.2.2.4 Step-Up Staffing Plan

As previously stated, CUIS uses the burning index (BI) to indicate the potential amount of effort needed to suppress a single fire in a particular fuel type within a given area. This, in turn, determines the staffing class. Staffing classes range from 1 to 5 (lowest to highest). As BI increases, the staffing class level increases, with corresponding actions intended to mitigate the predicted difficulty of containing a wildland fire.

Table 5 below illustrates the correlation between ERC and step-up staffing class levels and actions. Break points were established via a Fire Family Plus analysis, with weather inputs from the park’s Stafford Weather Station (ID number 099902). Staffing classes 4 and 5 were calculated at the 90th and the 97th percentiles, respectively. (Conditions meeting the staffing class 4 parameters should occur only 10% of the time, and staffing class 5 parameters should occur only 3% of the time.) NFDRS fuel model G was utilized for step-up staffing purposes.

The energy release component/staffing class correlation should be validated based upon day-to-day observation and experience. As park managers have the opportunity to track indices influencing fire occurrence and size, the step-up staffing plan can be refined to better reflect large fire probability in the future.

Table 5: Staffing Class Levels and Step-Up Actions

Staffing Level	ERC	Activity
1	0-7	Maintain fire-readiness of Type-6 engine, Type-3 water tender, weather station, and island communications system. FMO or duty officer is scheduled to complete daily weather analysis to determine current and predicted staffing level, and obtain daily weather briefing. Available initial attack IC is not pre-identified, but a list of qualified local ICs is maintained.
2	8-15	Same as SL 1, additional duty hours may be assigned to ensure availability of suppression staff and for specialized personnel to make emergency equipment repairs and provide logistical boat support for fire preparedness activities.
3	16-31	Same as SL 2, but IC must be Type 4 qualified. Suppression resources may be pre-positioned to enable more rapid initial attack response times. Aerial reconnaissance detection flights may be requested from cooperators.
4	32-36	Same as SL 3, plus duty officer will notify superintendent of high fire danger and maintain contact with cooperators to determine helicopter and other initial attack suppression resource availability. Additional suppression resources may be brought in or staged at the Park. Additional prevention activities including landowner contacts and briefings to visitors will be conducted. Additional duty hours may be assigned for fire detection patrols and prevention activities. If aircraft are not available from cooperators, a fixed wing aircraft may be hired for a detection flight. Duty officer should start analyzing need for severity package to be prepared for Regional FMO
5	37 or greater	Same as SL 4, plus additional duty hours may be assigned for personnel to staff an additional Type 6 engine. Severity resources may be requested.

If KBDI is 500 or above and lightning is predicted increase staffing level by one

Emergency preparedness funds are available from the Southeast Regional Office (SERO) to accomplish approved step-up activities for staffing class levels 4 and 5. Park level funding may be made available for staffing class levels 2 and 3. If severity funding is necessary, the seashore FMO will submit a written assessment of the current and potential situation, including a description of mitigating actions and costs to the SERO.

4.3 Management of Unplanned Ignitions

RM-18 defines wildland fire suppression as “an appropriate management response to wildland fire that results in curtailment of fire spread and eliminates all identified threats from the particular fire. This may include confinement within natural or pre-existing boundaries. All wildland fire suppression activities provide for firefighter and public safety as the highest consideration, but minimize loss of resource values, economic expenditures, and/or the use of critical firefighting resources.”

Wildland fire resulting from unplanned ignitions will be managed by FMU specific strategies. Consideration will be given to weather, fuel conditions, seasonal timing, and available resources in all management decisions. Human-caused fires will require an investigation and report by law enforcement or a wildland fire investigator.

A. Preparing for Unplanned Ignitions

1. Objectives

- Provide for fire fighter and public safety.
- Create and maintain a fire management program suitable to meet the needs of this FMP. Continue to recruit, train, and retain red carded employees to assist with fire management responsibilities within the park. Explore ideas to reconfigure the park and adjacent NPS units to create a fire unit that represents a cluster of parks and will achieve improved fire management activities and cost saving benefits to the Southeast Region of the NPS.
- Bring the CUIS fire management program from one employee to a minimum of four employees to cover staffing needs for one type-6 engine during fire season and to conduct fuels treatments.
- Ensure MOU's and AOP's are current and meet the needs of all cooperators of CUIS.
- Maintain firefighting equipment to a state of readiness and keep fire cache in a state to outfit the needs of a 10 person crew.
- Conduct all fire operations in designated wilderness in accordance with the Minimum Tool Analysis and Minimum Impact Suppression Tactics (MIST).
- Manage fires using the full range of management strategies to protect, restore or maintain resources within the Park.
- Prepare a pre fire season risk assessment and examine the current condition and fire danger.
- Conduct morning briefings with fire personnel on current weather, drought conditions, local and national situation report, and safety topics.

2. Risk Assessment

A pre fire season risk assessment for CUIS will be compiled to describe the state of fire behavior and potential. When an unplanned ignition occurs, a size-up will be obtained by the first person on the scene of the incident. The CUIS FMO will analyze the size-up information, complete an incident complexity analysis, plot the incident into the correct FMU, enter the incident into WFDSS, and make an informed decision on the fire management action for the incident. After analyzing the information, the FMO will discuss the applicable information with the Park Agency Administrator and determine a course of action.

When determining the level of risk for an unplanned ignition, FMO or Duty Officer will consider long term drought conditions, seasonal timing, current and expected weather conditions, current fuel conditions, current ERC/BI indices, location of ignition, resources and property at risk, and availability of resources both locally and nationally.

3. Implementation Procedures

In expectation of unplanned ignitions, the FMO and Park Agency Administrator will complete the preparedness pre fire season checklist to ensure the Park is ready for fire management activities (see Table 4 Annual Preparedness Activities). The FMO and Agency Administrator will conduct preseason WFDSS training to ensure all parties involved in unplanned ignitions can navigate WFDSS, which is the system CUIS uses to assist with decision making and reporting of fires. The FMO or Duty Officer will initiate the WFDSS record for each incident and the Park Agency Administrator will review and validate decisions as needed. An incident will also need to be created in WFMI for record keeping purposes.

Every unplanned ignition will have an incident size-up conducted by the first person on scene. The FMO or IC will conduct an incident complexity analysis to determine level of incident command necessary. The FMO will coordinate getting a dispatch system set up for incidents that exceed a Type 5 incident. If possible and if a qualified dispatcher is available, an initial attack dispatch will be set up locally within the park. Preferred locations are the Captain's House on the island or the Bachlott House on the mainland. It is important the initial attack dispatcher has access to a base station radio, computer, and land line telephone. The FMO will coordinate all resource orders through the GICC and SACC and keep the geographic dispatch centers up to date on the situation.

CUIS has weather monitoring capabilities throughout the island. The Park maintains a RAWS (Remote Automated Weather Station) station located on the north end of the island just off of Candler Road, west of the High Point complex. The station is named Stafford, its WIMS ID is 099902, and station data can be accessed on the internet at http://raws.wrh.noaa.gov/cgi-bin/roman/meso_base.cgi?stn=NCIG1&time=GMT.

NOAA maintains a CRN station on the southern end of Stafford Field, identified as GA Brunswick 23S. While not devoted specifically to fire weather data, the station provides usable data for the middle of the island including surface air temperature, precipitation, solar radiation, and wind speed. Real-time data from the station can be obtained on the internet at <http://www.ncdc.noaa.gov/crn/station.htm?stationId=1120>.

GFC maintains a RAWS station located just to the west of Brunswick, Georgia, and is approximately 20 miles northwest of Cumberland Island. This RAWS station has representative weather data for the north end of the island including FMU 3. Station data can be found at http://raws.wrh.noaa.gov/cgi-bin/roman/meso_base.cgi?stn=STRG1&time=GMT.

CUIS uses the NFDRS fuel model D as the primary fuel model for decision making and analysis. Standard fuel models that are used at CUIS include FM 7, FM 4, FM9, and FM2.

4. Staffing

The park has a full time FMO who works under the Resource Management Division. The FMO is the point person for all fire management activities at CUIS. CUIS also

currently has eight red-carded individuals that have qualifications as FFT2, dispatch, and/or PIO (T). The Maintenance Division has employees that can assist with fire management activities such as boat operations, drivers, camp set-up, logistics, etc. The park needs to continue to develop, recruit, and train employees to assist with fire management activities. During normal fire seasons, a minimum of one ICT4, ENGB, and dispatcher should be on staff and available for fire assignment.

If an incident in the park exceeds a Type-4 command system, draw down on park employees will occur and all divisions within the park will need to assist fire operations until incoming resources are obtained and briefed. The use of the step up plan based on current fire danger can assist with obtaining severity funding for additional resources during times of elevated fire danger.

It is important that the park continues exploring ways to expand the staffing of the CUIS fire management program. Additional positions will be required within the park to successfully implement the objectives and duties described in this FMP. A future fire management organization should have the following positions to implement this FMP:

- FMO
- AFMO Fuels
- Administration Assistant/GIS Specialist
- Engine Captain
- Assistant Engine Captain
- Fire Fighter

The park should continue to explore ideas on clustering adjacent NPS units to improve staffing and efficiencies in fire management activities. Clustering of NPS units will provide a local IC for the respective units, provide a force account fuels crew, assist with planning and implementation of fuels projects, and increase cost efficiencies of implementing all fire management activities.

5. Information

All CUIS information/education will follow the guidance in RM-18 Chapter 21 Communication and Education. Through press releases issued by the park's Public Information Officer, CUIS will make an effort to fully inform the public of the risks associated with wildfires and the roles and cooperative efforts of the Park in fighting wildfires and protecting life and property as well as the role/benefits of wildland fire. The park PIO will gather information for all fire management activities and put together a press release that will include local media, stakeholders, island residents, property owners, and cooperators. The park PIO maintains an up to date list of contacts that press releases are to be sent to.

6. Record Keeping

All wildland fires at CUIS will be fully documented and entered into WFMI and WFDSS. Fire records are to be kept in the FMO office in a file cabinet, or if file is large, it should be kept with archival records in the curatorial facility on the mainland. All records will be archived on a five year basis.

At minimum the documentation should include;

- Size up report
- Delegation of Authority
- Approved planning document that guided management actions (e.g. WFDSS report). Include all amendments and revisions.
- Monitoring reports and summaries of findings, along with a summary of all monitoring activities including a monitoring schedule (level 1 and 2 monitoring).
- Revalidation and certification documents.
- All documentation including ICS 214
- Funding codes and cost accounting.
- Project maps. Permanently map and archive all fires greater than 10 acres, using GIS whenever possible. Park units without local access to GIS should draw upon regional resources. See RM 18 Information and Technology Management chapter for more information about GIS and data standards.
- Other information as appropriate for the situation, such as photo points.
- Explain the funding/fiscal tracking of costs associated with the incident.
- AAR report.
- IMT transition documentation.
- Daily IAP's

B. Expected Fire Behavior

Fire behavior experienced at CUIS can run the entire range of attributes depending on fuel types, topography, and environmental conditions. Fire behavior can range from short duration with high rates of spread in light, flashy fuels up to long duration with extreme fire behavior characteristics in the mixed palmetto-brush and savannah of the northern wilderness area. Fire season at CUIS can run year round but, a typical season tends to run from April to September. Environmental conditions can drastically alter fire behavior from year to year. Extended drought years and low water levels can significantly affect fire potential and behavior. Active tropical seasons can also have a significant effect on fire potential and behavior. Critical thresholds for CUIS are updated annually within the NFDRS Operating Plan, and on the pocket cards that are a product of that plan. More information on general fire behavior characteristics can be found within specific FMU descriptions in Chapter 3.

C. Initial Response Procedures

Initial attack forces comprise the first suppression personnel to arrive at a fire, as well as any reinforcements (which may include firefighters from the GFC, Camden County Fire and Rescue, U. S. Forest Service, and the U.S. Fish and Wildlife Service) that arrive during the first burning period. The incident commander (IC) will develop an appropriate initial attack response to the incident, brief all resources, organize and direct the fire resources on hand toward safe and efficient implementation of that response, monitor the effectiveness of the suppression tactics, and adjust strategy and tactics accordingly. If the IC is not qualified for the existing or predicted level of complexity, she/he will be replaced by a qualified IC at the first opportunity. The IC

will be responsible for the fire until it is out or until she/he is relieved of that duty via a formal command change.

Initial response to a wildfire incident can consist of multiple options. These options include monitoring, aggressive suppression, confine and contain using existing fuel breaks, or allowing fire to be used for resource benefits. FMU descriptions in chapter three describe in outline the suppression options that are available for fire managers in a specific FMU.

Firefighter and public safety is the highest priority for all responses. Responses will be dictated by current and expected weather conditions, location of report, time of season, resource availability, values at risk, and other considerations. Each response to a reported fire will receive one or more management strategies approved by the FMO, Duty Officer and/or Park Superintendent. Strategies are based on safety, weather, fuels, location, capability to accomplish objectives, and biological, cultural, or political constraints.

Every fire start will get an initial size up and the FMO or Duty Officer will plot the incident into the proper FMU. Once the incident is plotted FMO or Duty Officer will analyze the situation, discuss with the Agency Administrator, and determine a course of action. This information will be relayed to the IC.

Every incident will be initiated in WFDSS. This program will assist in the determination and documentation of the course of action to take for the incident. When an incident is established in WFDSS, the default choice for the “Course of Action” tab is “follow the pre-planned response”. The pre-planned response at CUIS will be to locate, size up, and suppress the fire using FMU specific management tools available. If this initial attack course of action is followed and is successful, then a WFDSS document is not required for submittal through the approval process. Once the fire has been called out, that date and time can be entered into WFDSS and the record closed out, thereby requiring no further actions to be taken.

If initial attack is not successful, or different strategies are applied, then a new course of action may be required. If a smoke report is to be monitored by ground resources or aerial resources, or an incident moves to a monitor status, the second of the two choices, “monitor the incident”, may be utilized.

All fires that undergo extended attack or are managed for multiple objectives, including resource benefit, are required to be taken through each tab within WFDSS, creating a document that requires Superintendent approval and a periodic assessment.

1. Information needed to Set Initial Attack Priorities

Incident Commanders will give incident size-up information to the FMO or the Duty Officer using the CUIS Incident Organizer. The information gathered using this organizer is the initial step in compiling data needed for setting initial response priorities. If more information is needed by either the FMO or Duty Officer, that information will be requested and utilized to support prioritization.

Information needed for analysis and determination of initial response includes:

- Location of incident
- Latitude and Longitude

- FMU
- Size of incident
- Current fire behavior
- Current and expected weather
- Proximity to the Wildland Urban Interface
- Fuel Type
- Proximity to wilderness
- Cultural resources
- Wildlife concerns
- Natural resource concerns

CUIS has the following preplanned dispatch strategies:

- Size up Incident
- Aggressive suppression
- Confine/Contain tactics
- Monitor

2. Incident Documentation and Reporting

Every confirmed wildfire will be entered into the WFDSS database. This system is intended to assist fire managers and analysts in making and documenting strategic and tactical decisions for fire incidents. Prior to each fire season, the designated data managers should determine if any edits or updates to the FMP need to be incorporated into the WFDSS database.

CUIS fire staff is required to complete a fire report for all natural and human-caused fires that occur in the park and for any incidents to which park personnel provide support. A fire report, completed within ten days after the fire is declared out, is entered into the Fire Occurrence Reporting Module of the Wildland Fire Management Information System (WFMI) by FMO, Duty Officer, or delegated individual. Data is used to assist national and local funding priorities and staffing levels, and to maintain a national and local historical fire occurrence database. Hazardous fuel reduction projects including prescribed fire, wildfires managed for multiple objectives, and manual/mechanical fuel reduction projects are also reported in the National Fire Plan Operations and Reporting System (NFPORS). This reporting system assists regional and national offices in tracking accomplishments and costs associated with regionally or nationally funded projects. Elements of this reporting system also include restoration, rehabilitation, and community assistance projects.

A file of every incident will be kept in the FMO office or if file is large it will be kept with the archival records in the mainland curatorial facility. All records will be archived on a five year basis.

This file will include printed copies of the WFDSS documentation, WFMI fire report, CUIS incident organizer for incident, location of GIS files, finance records, unit logs, AAR documentation, and transition documentation.

3. Criteria for Appropriate Initial Attack Response

The appropriate initial attack response will be determined from an analysis of the given situation, and must be consistent with the seashore's FMP, GMP, and resource management objectives. Factors dictating the appropriate management response include firefighter and public safety, fire location, current and predicted fire weather/fire behavior, seashore values at risk, FMU location, cost-effectiveness, and potential adverse effects of both the fire and suppression efforts. The appropriate initial attack response will vary from fire to fire, and sometimes even along the perimeter of the same fire. Options range from monitoring with minimal on-the-ground disturbance, using fire for resource benefit, confine and contain using existing fuel breaks, or aggressive suppression actions along the entire fire perimeter.

4. Response Times

Response times vary for each incident at CUIS. The Park has limited personnel that are fire fighter qualified and a variety of logistical issues can delay response. Typical first response will be by the FMO, red-carded park employees, or park law enforcement employees. The GFC or Camden County Fire and Rescue may respond to or assist seashore firefighters in the suppression of wildland fires at CUIS.

Fire response time at the seashore can vary greatly, primarily due to the location of the Park and access from the mainland. If additional resources from the mainland are needed it can take in excess of two hours to get individuals and equipment to the island. The Park has one landing craft that is suitable to move limited equipment from the mainland to the island but, is restricted to offloading on the island at mid to high tide. Boat transportation for personnel and equipment will almost always be necessary for any incident.

If seashore firefighters are not immediately available, the GFC, Camden County Fire and Rescue, U.S.F.S., or U.S.F.W.S. can respond under authority of MOU's and AOP's but response time is between two and four hours according to their location, tide tables, and availability of boat operators. Okefenokee National Wildlife Refuge has a Type-3 helicopter stationed at the refuge during fire season. Typical response time for the helicopter when available is 45 minutes.

5. Management Requirements and Restrictions

In general mechanical equipment will only be used in the wilderness area under the authority of a Minimum Tool Requirement or with the Superintendent's authorization. Aircraft have been approved for use in all FMUs however, wilderness characteristics must be considered when using aircraft in that area. The use of brackish water from helicopter buckets should be limited to the WUI and the holding of priority firelines. Fireline explosives are not authorized for use at the Park. Retardant from fixed-wing aircraft requires the Superintendent's authorization and cannot be used within 300 feet of water resources.

Management requirements and restrictions are outlined in detail in Chapter 3.

6. Other Special Issues or Concerns

Logistics in fire management activities can be challenging at CUIS. If an incident requires multi-day management, Park staff and equipment can get stretched thin. Tides can fluctuate up to nine feet on a daily basis, which makes it challenging to get equipment to the island via the park landing craft. All logistical actions need to be thoroughly thought out before implementing. It is suggested for a Logistics Section Chief of any IMT to confer with a Park employee on the best course of action for obtaining logistical resources. There are local vendors available that can be contracted to transport equipment and personnel via barge and ferry.

It is suggested to house and feed incident personnel on the mainland if possible. This takes a big logistic challenge off of the IMT. The local area has a large variety of hotels and restaurants for employees to consider. A ferry can be contracted to transport personnel to and from the mainland and have radar capability to operate at night so shift production is not effected. This will require a small fleet of rental vans or similar to transport personnel from the mainland dock to hotels and restaurants.

D. Transition to Extended Response and Large Fire

1. Criteria for Transition

The NWCG Complexity Analysis and Organizational Needs Assessment should be completed by appropriate interdisciplinary staff. This will aid in determining risk assessment and the possible need to move to an extended response and/or order an Incident Management Team (IMT). There are many factors that may influence the need for an IMT including:

- Firefighter and public safety impacted by fire or fire management activities
- Current and expected fire behavior projected to increase
- Current and expected environmental conditions contribute towards problematic fire behavior
- Social/political concerns are high priority
- Course of action requires a large or complex organization
- Multiple incidents on the same unit
- Expecting a long duration incident
- Complex or extended logistical support expected

All wildfires where initial actions prove unsuccessful will have an updated decision support document completed guiding extended attack strategies and objectives.

2. Implementation Plan Requirements and Responsibilities

Incidents with long duration expectations require constant time and attention in order to execute the required periodic assessments and maintain accurate documentation to support decisions. The CUIS FMO or Duty Officer should remain an integral part of the decision support process and keep resource specialists, park rangers, the unit public information officer, and the Superintendent involved throughout the planning process. The FMO will also help determine how stakeholders, partners, and cooperators will be kept updated and informed on strategies that may impact those

individuals. The CUIS Agency Administrator will remain engaged in an ongoing incident and be available to assist with decisions and validation of courses of action.

3. Delegation of Authority

When an incident management team (IMT) is mobilized to a CUIS incident, the Park FMO will coordinate the transition of authority for suppression actions during the team's time on the incident. The seashore Superintendent will execute a written limited delegation of authority to the incoming incident commander, which will be included in the briefing package provided to the incoming IMT team. The Superintendent will also conduct the eventual close-out and evaluation of the team.

4.4 Burned Area Emergency Response

Chapter 19 of RM-18 provides policy and direction for all activities associated with the management of Burned Area Emergency Response (BAER) in the NPS. The BAER program encompasses the immediate actions taken to minimize post-wildfire threats to life and property and to prevent unacceptable resource degradation resulting from a wildfire. BAER consists of two funding activities, Emergency Stabilization (ES) and Burned Area Rehabilitation (BAR). When required, ES and BAR plans will be completed at CUIS and sent to the Southeast Regional Office for guidance and support. Funds for post-wildfire treatments and activities will only be allocated for actions identified in approved ES or BAR plans. ES plans can be approved up to \$500,000 at the regional level while ES plans over \$500,000 require approval from the NPS Fire Director. All BAR plans require approval from the NPS Fire Director.

BAER management activities are prescribed as a result of a wildfire when (1) the actions are essential to the protection of human life, personal property, and critical natural and cultural resources, and (2) when they further the accomplishment of the NPS mission. Critical resources are those defined in law, for example, the Endangered Species Act or National Historic Preservation Act. The BAER program consists of the collective actions of ES and BAR as defined below.

The NPS Fire Management BAER Program is dedicated to protecting lives, property, and resources while promoting the restoration and maintenance of healthy ecosystems. The BAER program determines the need to prescribe and implement emergency treatments to meet the following objectives:

- Minimize threats to life or property
- Stabilize and prevent further unacceptable degradation to natural and cultural resources resulting from the effects of a fire
- Repair or improve lands damaged directly by a wildfire
- Rehabilitate or establish healthy, stable ecosystems in the burned area

Natural recovery after a wildfire is preferable if immediate stabilization and rehabilitation needs have been met or are assessed to not be necessary. The repair of damage due to fire suppression activity is not the responsibility of the BAER program. Such actions are planned and performed primarily by the suppression incident organization as soon as possible prior to demobilization. However, some actions may need to be conducted by the local unit following containment and IMT demobilization. For fires where the local agency administrator delegates the authority for fire suppression repair to an IMT, the

IMT must document fire suppression activity repair actions, including those still needed, to ensure all planned actions are completed during transition back to the local unit.

CUIS will continue to utilize the least intrusive and least resource damaging methods to manage wildfire, and the least intrusive and least resource damaging BAER actions required to mitigate actual or potential damages caused by wildfire. It is not the intent of the BAER program to stop all erosion or eradicate all non-native species that may appear following wildfire. Erosion following wildfire is an element of natural landscape change, and should not necessarily be viewed as a deleterious effect, especially in natural areas. For example, erosion should be reduced only when it threatens values to be protected, such as the domestic water supply or cultural and natural resources, or where it is unnaturally severe due to unnatural changes in fire regimes.

4.4.1 Minimum Impact Suppression Tactics (MIST)

NPS policy requires fire managers and firefighters to select management tactics commensurate with a wildland fire's existing or potential behavior but, which cause as little impact to natural and cultural resources as possible. All suppression activities at CUIS will therefore incorporate the minimum impact suppression tactics policy, to the greatest extent feasible and appropriate for the given situation. Examples of minimum impact suppression tactics that will be implemented include:

- Limiting the use of heavy equipment.
- No use of fireline explosives.
- Using existing natural fuel breaks and human-made barriers, wet line, or cold trailing the fire edge in lieu of handline construction whenever possible.
- Keeping fireline width as narrow as possible while still meeting objectives.
- Avoiding ground disturbance within known natural (e.g. T&E species habitat) and archeological/cultural/historic resource locations.
- Using water or type A (biodegradable) foam in lieu of fire retardant whenever possible. If retardant must be used, bodies of water are to be avoided.
- Using sprinklers or foggers in mop-up; avoiding boring and hydraulic action when possible.
- Minimizing cutting of trees while still meeting objectives.

Minimum impact suppression tactics guidelines are provided in RM-18, chapter 2. The park FMO and the park chief of resource management will provide input in the selection and implementation of minimum impact suppression tactics for any wildland fires that go into extended attack.

4.4.2 Burned Area Emergency Response

Burned area emergency stabilization and rehabilitation actions are intended to protect public safety, stabilize and minimize unacceptable change to biotic communities and imminently threatened cultural resources, and repair or replace minor facilities damaged or destroyed by a wildland fire. The Interagency Burned Area Emergency Stabilization and Rehabilitation Handbook provides treatment guidance and standards.

Fire rehabilitation involves short-term actions (generally 0-6 months) to stabilize a burned area and mitigate the effects of fire suppression activities. Immediate rehabilitation actions to prevent further land degradation or resource loss, or to ensure safety, may be undertaken as part of the incident. The incident commander is responsible for immediate rehabilitation action, which typically includes

mitigating damage from all incident locations and along the fireline. In wooded areas it may also involve flush-cutting stumps created by suppression activities on the incident, redistribute brush and litter back over constructed firelines, and breaking up slash piles. The Seashore's Chief of Resource Management will plan major rehabilitation efforts, which cannot be undertaken during or immediately after an incident, for implementation as soon as feasible.

4.4.3 Emergency Stabilization

Emergency Stabilization (ES) is an extension of emergency actions and consists of planned actions taken to minimize threats to life or property resulting from the effects of a wildfire. These actions may also include stabilization, repair, replacement, or construction of physical improvements in order to prevent unacceptable degradation to natural and cultural resources. The objectives of ES are to first determine the need for emergency treatments, and then to prescribe and implement the treatments. Life and property are the first priority. Cultural and natural resources treated through ES should be unique and immediately threatened. As necessary, a site-specific ES plan will be written by incident assigned Resource Advisors or the unit Chief of Resource Management.

ES treatments are projects requiring immediate action. They are therefore funded for only one year from the containment date of the wildfire. However, ES funding may be used to repair or replace ES structures or treatments for up to three years following containment of a wildfire where failure to do so would imperil resource functionality or result in serious loss of resource values. Monitoring ES treatments for up to three years is also allowable. ES funding cannot be used to continue seeding, plantings, or for invasive plant treatments beyond one year.

4.4.4 Burned Area Rehabilitation

BAR consists of non-emergency efforts undertaken to repair or improve wildfire-damaged lands unlikely to recover naturally, or to repair or replace minor facilities damaged by wildfire. The objectives of BAR are to:

- 1) Evaluate actual and potential long-term post-wildfire impacts to critical cultural and natural resources and to identify those areas unlikely to recover naturally from severe wildfire damage
- 2) Develop and implement cost-effective plans to emulate historical or pre-wildfire ecosystem structure, function, diversity, and dynamics consistent with approved land management plans, or if that is infeasible, to restore or establish a healthy, stable ecosystem in which native species are well represented
- 3) Repair or replace minor facilities damaged by wildfire.

As necessary, a site specific BAR plan will be written by incident assigned Resource Advisors or the unit Chief of Resource Management.

Funding for BAR treatments and activities is provided for no more than three years following containment of a wildfire. All BAR plans are approved at the national office because the funding is interagency and competitive. Parks will submit the plans to the regional director, and the regional office will make a recommendation of approval. BAR plans will be written as separate plans, independent of ES plans. The BAR plan will specify the non-emergency treatments and activities that are to be carried

out within three years following containment of a wildfire. BAR plans must be consistent with approved land management plans.

4.5 Management of Planned Fuels Treatment

CUIS will use both fire and non-fire fuels treatments to meet the goals and objectives of this FMP. The Park FMO will coordinate planning, design, and implementation of all fuels treatments within the Park. Fuels treatments will be used as tools to meet goals and objectives of both reducing hazardous fuels, restoring fire back to its historical range, and providing fire adapted ecosystems the ecological benefits of fire.

4.5.1 Fuels Planning and Documentation

The CUIS fuels management program will adhere to fire management policies as defined in Section 2 to achieve resource management and fire management goals. CUIS has developed and annually updates a 5-year fuels treatment plan (Appendix E). This fuels treatment plan helps managers plan for future needs such as funding requests, resource survey requirements, pre-implementation work, developing implementation plans, etc. Although the 5-year plan lays out a treatment plan, situations such as funding availability, environmental conditions, and changing priorities determined by the local, regional, and national fire management offices may require treatments to shift. Therefore, the fuels treatment schedule will remain dynamic.

Each fuels project will have a treatment plan whether prescribed fire or mechanical to assist with guiding all project staff for successful implementation of the project. The format of these specific plans will follow current policy. All plans will include maps of the project area.

A. Identify Participants

Fuels treatment plans are reviewed by an established interdisciplinary team consisting of the following positions:

- FMO
- Superintendent
- Chief of Resource Management
- Wildlife Biologist
- Cultural Resources Specialist

Other agencies and stakeholders that may be consulted in fuels treatments plans include:

- Georgia Forestry Commission
- Camden County Fire and Rescue
- Private property owners
- Reserved estate shareholders

All plans will be submitted to the CUIS Chief of Resource Management and Superintendent for a review and comment. The Resource Management staff and Superintendent will submit comments back to the plan designer for clarification/resolution. The plans will then require signatures by the plan designer, FMO, Superintendent, and by a technical reviewer if it is a prescribed fire plan.

B. Identify Candidate Projects

FMO or fire staff will analyze and identify potential projects with input from the Chief of Resource Management and Wildlife Biologist. Fire staff will use information obtained for individual structure assessments, fuel loading analysis, GIS information, ignition potential, and proximity to historical starts to identify prescribed fire and non-fire projects in the WUI. This information will also assist with the need to create and maintain fuel break fuels projects within the Park.

Research on historical fire regimes, condition class, fuel loadings, cultural landscape locations, and GIS data will assist with identifying larger prescribed fire projects that will assist with restoring fire back into the ecosystem of the Park and maintain cultural landscapes.

Projects in the WUI and any fuel breaks that are created will need to be maintained on a schedule that will be included in the 5-year fuels treatment plan.

C. Project Prioritization Criteria

CUIS FMO or fire staff will submit annual funding requests for the upcoming fiscal year into the NFPORS database for regional approval. Once projects have been submitted in NFPORS, fire managers must then submit a prioritized list of treatment and activities to the regional fuels specialists. Elements that may weigh into the fuels request prioritization process conducted by CUIS fire staff may include the following:

- Proximity to values at risk, (i.e., WUI versus Non-WUI)
- Type and amount of compliance activities completed or required to be completed
- Fire regime
- Extent of departure from natural fire processes
- Extent of departure from defined desired conditions
- Fire versus non-fire treatments
- Fuel loading
- Project sequence
- Maintenance cycle
- Cost of project
- Availability of funding
- Coordination with adjacent land managers
- Chances of success for completion

D. Updating the Fuels Treatment Plan

The FMO will update, edit, and extend the 5-year fuels treatment schedule annually or as needed when treatments are adjusted. Revisions and updates are submitted for approval to the Chief of Resource Management and Superintendent. Fire regimes, fuel loading, and defined desired conditions will be considered for planning future fuels treatment projects.

Identification of future non-fire treatments will be based on protection of critical infrastructure within the Park (such as public safety zones, communications sites, water/utilities sites) and for creating fuels breaks.

4.5.2 General Fuels Management Implementation Procedures

A. Guidance

Prescribed fire planning and implementation will be in accordance with RM-18, Chapter 7, Fuels Management.

Each fuels treatment project will require an implementation plan (e.g., burn plans and mechanical treatment plans). These plans will be developed by FMO or fire staff and all prescribed fire plans will have a technical review. If the plan being developed is a burn plan, all policies and regulations will be adhered to as stated in the Interagency Prescribed Fire Implementation Guide.

B. Annual Actions

CUIS will review annually the 5-year treatment plan and determine the feasibility of treating identified areas analyzing compliance, fuel conditions, unit prep work needed, weather patterns, availability of resources, and budgetary restraints. It will also determine if planned goals can still be met in current conditions. If conditions are in alignment and all constraints are met, then the treatment plan will be implemented. The seashore FMO or fire staff will coordinate all prescribed fire actions with either regional NPS assets or a cooperating agency to assist with prep work and implement needed actions.

C. Implementation Standards

Activities proposed in the FMP will be planned and implemented in accordance with RM-18, Chapter 7, Fuels Management, and the Interagency Standards for Fire and Fire Aviation Operations.

The responsibility for implementing the prescribed fire program and meeting all required implementation standards lies with the FMO or delegated burn boss. All prescribed fires at CUIS will be implemented under the supervision of a Prescribed Fire Burn Boss who is qualified under requirements of the NWCG Wildland and Prescribed Fire Qualifications System Guide. All prescribed fires will be staffed by certified personnel in positions for which they are qualified. The burn boss will determine the number and types of positions for prescribed fire operations based on an approved burn plan in conjunction with local fire staff.

Prior to implementation of a prescribed fire project (other than pile burns), the FMO will ensure that a press release is sent out at least 48 hours before possible implementation. This press release is intended to provide information to internal and external cooperators and stakeholders of goals and objectives, potential impacts, or concerns created by the forthcoming project. Information provided will cover goals and objectives, anticipated date and/or duration, project location, and mitigation measures, if any, identified to reduce impacts or concerns to cooperators. In addition to the press release, the Prescribed Fire Burn Boss or FMO will host a pre-burn meeting with members of the prescribe fire project's organization to discuss needs and site specific tactics. A daily site-specific briefing will also be conducted for all project participants. This briefing will follow the briefing checklist found with the project plan or the checklist found on the Incident Response Pocket Guide.

D. Planning & Reporting Requirements

Details outlining planning and reporting requirements, timelines for declarations, and notification list for escaped fires will be detailed within each prescribed fire burn plan and will follow guidance stated in RM-18, Chapter 4, Wildland Fire Operational Guidance; Interagency Standards for Fire and Aviation Operations; and Interagency Prescribed Fire Implementation Guide.

All documentation from fire and non-fire treatments, including implementation plans, unit logs, weather forecasts, maps, finance information, monitoring data, photo records, and incident action plans, will be collected and filed in a project folder and located in the office of the FMO. All documentation requirements listed in the Interagency Prescribed Fire Planning and Implementation Guide will be followed.

NFPORS is the official fuels treatment and activity recording database and is used to both request funding and report accomplishments. Funding is requested on a fiscal year basis. Requests are entered into NFPORS for submission to the Southeast Regional Fuels Specialist. Efforts will be made to submit and prioritize requests by collaborating with the Chief of Resource Management. Natural and cultural resource survey activities will also be requested and recorded in NFPORS. Approval of these requests is on a case-by-case basis and is subject to approval by the Southeast Region Fuels Specialist.

At the completion of each planned project, NFPORS will be updated to reflect acreage treated and costs. The close-out of each project is the responsibility of the FMO, Duty Officer, or delegated Burn Boss. Fire management officers will also identify and report all non-FIREPRO funded projects within the park that can help meet CUIS and Southeast Region fuel reduction targets. All accomplished projects will also be entered into the Wildland Fire Management Information System.

E. Monitoring

Refer to the Wildland and Prescribed Fire Monitoring Plan (Appendix F) and section 5.2 of this FMP for information on the monitoring program at CUIS.

F. Historical Treatment Map

CUIS does not currently have a dedicated GIS specialist. The FMO or fire staff will attempt to create a historical treatment map. SERO employees a fire GIS specialist that will receive any treatment shape files and therefore have a record to re-create a historical treatment map.

4.5.3 Prescribed Fire Treatments

A. Guidance

Prescribed fire planning and implementation will be in accordance with Chapter 7 of RM-18, Interagency Standards for Fire and Fire Aviation Operations, and the Interagency Prescribed Fire Implementation Procedures Reference Guide. DO-18 states the basic principles and strategic guidelines governing the management of wildland fire by the NPS.

Individual project plans will be prepared following the guidelines contained in RM-18 and the Interagency Prescribed Fire Planning and Implementation Procedures Guide. Prescribed fires are defined as all fires on park lands that are management ignited and have specific objectives. Prescribed fire is planned, scheduled, organized, and implemented according to a rigorous protocol based on policy, the purpose of which is the safe and efficient accomplishment.

The overall scope of the prescribed fire program at CUIS includes:

- The reduction of hazardous fuels accumulations
- The utilization of fire as a tool to accomplish ecological and protection objectives
- The utilization of fire as a tool to maintain cultural landscapes

The structure and composition of native plant communities have been severely altered over the past century in many upland areas of the park. Restoration of these systems through the reintroduction of natural fire regimes, while also protecting life and park resources, will require a significant investment in time to achieve.

The goals of the prescribed fire program are to: decrease risks to life, safety, property, and resources from future wildfires; hazard fuel reduction; restore fire in fire adapted ecosystems; reintroduce fire as an ecological process; mimic natural fire events; maintain cultural landscapes; and reduce negative wildfire impacts to historic structures, archeological sites and sensitive natural resources.

DO-18, Section 6.2, Interagency Coordination states:

- A. The Superintendent of each park will comply with the current version of the Interagency Standards for Fire and Fire Aviation Operations (Red Book).
- B. The Superintendent of each park will comply with the National Interagency Mobilization Guide in all applicable aspects for wildland fire management.
- C. The Superintendent of each park will pursue mutual assistance agreements with nearby fire management units of Federal, state, local, and tribal agencies.

NPS Wildland Fire Management Policy RM-18 directs the park to ensure that provisions for interagency and intra-agency pre-burn coordination are implemented, including, when applicable, public involvement and burn day notification to appropriate individuals, agencies, and the public. Specific coordination actions are addressed within each prescribed fire burn plan and in accordance with Elements 11 and 12 of the Interagency Prescribed Fire Planning and Implementation Procedures Guide (NPS 2008b). When planning for prescribed fire and fuels management projects, coordination efforts may begin years before project implementation.

The following coordination activities should be considered when planning prescribed fire projects:

- Coordinate planning and mitigation actions with specialists from the CUIS Resource Management Division according to location, treatment objectives, and protection objectives for each project
- Coordinate planned public safety activities with CUIS law enforcement personnel
- Coordinate with affected private property owners, reserved estate owners, and cooperators
- Coordinate with external park regulators as the project dictates

B. Treatment Review

Prescribed fire treatments involve accomplishing resource and protection objectives while providing for safety first. The best means by which objective success can be measured is through a disciplined and rigorous program of monitoring. Monitoring is used to measure treatment success for vegetation and fuel objectives, promote program improvements and adaptive management, and identify any issues before they become troublesome. Therefore, each project plan involving the use of prescribed fire will contain monitoring guidance that details the immediate, short-term, and long-term information necessary to adequately quantify if goals and objectives are being met. Evaluating monitoring data is a joint responsibility shared by CUIS Fire Staff, CUIS Resource Management Staff, and SERO Fire Ecology Staff. More guidance can be found in section 5.2 of this FMP.

Every prescribed fire treatment will have a documented AAR that consists of all staff that assisted with implementation of the project. AAR's are a proven way of discussing what went right, wrong, or what can be done better in the future. Guidance for AAR's can be found in the IRPG.

4.5.4 Non-Fire Fuel Treatments

Non-fire fuels treatment will use the following methods to achieve the desired fuel load reductions, fuel breaks, and defensible space:

- mowing
- bush hogging
- hand tools
- chainsaw work
- mulching/grinding machines (mastication)
- mechanized shears
- chemical use post-treatment

Note: The above list is not all inclusive, and other methods may be used depending on the need or as they are tested and become available.

A. Guidance

The planning and implementation of non-fire fuels management projects will be in accordance with RM-18, Chapter 7, Fuels Management. Thinning standards (accomplished by manual or mechanical means) for WUI are found in National Fire Protection Association (NFPA) Codes, Chapter 4, Assessing Wildland Fire Hazards in the Structure Ignition Zone (www.nfpa.org). Additional guidelines can be found in the 2006 International Wildland-Urban Interface Code available at www.nwccg.gov/pms/docs/PMS310-1-january-2006.pdf

- Thin up to a 12-foot canopy clearance, removing trees up to ten inches dbh
- Limb trees four-to-six feet above the ground to reduce ladder fuels
- Remove up to 60% of dead-and-down woody debris 3–12 inches dbh
- Remove up to 50% of dead-and-down woody debris larger than 12 inches dbh
- Flush-cut all stumps as low to the ground as possible
- Slash from thinning operations may be removed, lopped, and scattered for a future broadcast burn; piled and burned in place; or chipped on or offsite
- Modifications to degree of thinning may occur in the Historic Landmark District or adjacent to individually listed National Register of Historic Places

All treatments will follow criteria determined in the goals and objectives of each project specific treatment plan.

B. Planning

All non-fire fuel treatment plans require Superintendent's approval and will meet all required elements as stated in RM-18, Chapter 7. The CUIS fire staff has adapted and utilizes the interagency prescribed fire template for preparing non-fire fuels treatment plans. This is not a requirement as any plan template that addresses the required elements will suffice.

Non-fire treatment plans at minimum should include:

- Signature page
- Executive summary

- Description of fuels treatment area
- Goals and objectives
- Cost estimate
- Scheduling
- Statement of work
- Protection of sensitive features
- Public and personnel safety
- Interagency coordination and public information
- Monitoring
- Post project rehabilitation
- Post project reports
- Maps

C. Treatment Review

Prior to implementing any non-fire treatments, reviews of any past projects should be considered when preparing and implementing new projects. This use of adaptive management helps incorporate lessons learned from past projects, new knowledge, modernization, and the best available science into each future project.

4.6 Prevention, Mitigation, & Education

Prevention efforts are directed toward reducing human caused ignitions and the understanding of fires natural role in the ecosystem. Past CUIS prevention efforts have been limited and the responsibility has historically been with the interpreters. CUIS has had a limited amount of human starts historically with no campfires currently allowed in backcountry campgrounds. Park law enforcement rangers also provide consistent patrols that aid in wildfire prevention.

Park responsibilities for wildland fire prevention include the following:

- Wildland fire prevention and education will be integrated into all management functions, including interpretation, visitor protection, maintenance, and administration
- The need for wildland fire prevention and education training will be assessed, coordinated, and facilitated
- Wildfire prevention and education programs and/or literature will be provided to the public
- CUIS fire staff will attempt to offer fire prevention programs at local schools and events

Public education about the natural role of fire on the landscape and the prevention of unwanted wildfires has become increasingly important as communities continue to encroach into wildland areas. While it is important to raise awareness of the risks associated with wildland fire, it is also important to:

- Promote the overall mission of the NPS Fire Management Program
- Increase public understanding of fire as a natural part of the ecosystem and a forest restoration tool
- Reduce hazardous fuels as a tool to minimize damages and personal exposure to unsafe conditions and situations.

4.6.1 Prevention

Per RM-18 and Interagency Standards for Fire and Aviation Operations, NPS units that do not experience more than 26 human-caused fires per 10 year period and do not experience problems with human-caused fires are not required to conduct a wildland fire prevention analysis or have a prevention plan. Based on historical data derived from Wildland Fire Management Information System (WFMI), from May, 2003 through May, 2013, CUIS recorded 9 human-caused wildfires with the majority being unattended or illegal campfires. Based on the current data, CUIS will not develop a dedicated wildfire prevention plan.

Prevention at CUIS generally consists of an orientation of visitors by an interpretive ranger before boarding the ferry to travel to the island. The briefing includes campfire policies on the island and a brief word on the daily weather and fire danger. There is fire danger material located at the Sea Camp Ranger Station to advise visitors. Seashore rangers routinely patrol and interact with the public and answer questions in regards to fire policy at the park.

CUIS hopes to begin installing a limited amount of wayside exhibits to provide visitors with a better understanding of the natural role of fire and the benefits of fuels treatments that occur in the park.

4.6.2 Communication/Education

Public information and education are the cornerstones of a successful fire management program. Policy direction provided in DO-18 states that "...the NPS will administer its wildland fire program in a manner that will...educate employees and the public about the scope and effect of wildland fire management, including fuels management, resource protection, prevention, hazard/risk assessment, mitigation and rehabilitation, and fire's role in ecosystem management."

CUIS is developing a Fire Information Plan to assist information officers during incidents and non-fire fuel reduction projects. In addition, NWCG's Best Practices in Communication Planning can be a good source of information (www.nwcg.gov/teams/wfewt/bp/commplanning.pdf).

a. Program Capabilities

The FMO is responsible for implementing the overall information program as described in this section. Additionally, there is a NPS Southeast Regional Fire Communications and Education Specialist position that is currently vacant, but is to be filled in the future. This position supports CUIS amongst other parks, and can be tasked to support annual updates to park programs/documents or to provide support during on-going wildfire activity. CUIS has a park Public Information Officer that assists with public information needs for the fire management program on a daily basis when available. The park fire managers should anticipate the need to request an Information Officer from local cooperators or order it through the GICC as wildfires or periods of extreme fire danger warrants.

The park Public Information Officer will develop and annually update a Fire Communications Plan that delineates situations, objectives, audience, messages, strategies, tactics, and timelines.

Activities designed to increase support and understanding of the fire program should include the following:

- Incorporate the principles of fire's role in the CUIS ecosystem into interpretive programs, exhibits, videos, and park periodicals

- Educate interagency and intra-agency partners, cooperators, and other stakeholders about the CUIS fire management program
- Coordinate fire-related press releases with the park Public Information Officer
- During prescribed and wildfires provide public briefings before visitors board the ferry, position roadside signs, and post kiosk briefing sheets for announcements
- During fire incidents assign public information personnel to key visitor contact points, and coordinate with CUIS interpreters and rangers to setup public information stations along the high visitor use areas and mainland visitor's center
- Participate in the daily situation reporting through GICC
- Participate in local school and public events to further educate the public

1. Contact List

CUIS has an extensive contact list due to interest in Park operations and past wildfire activity. This list is located with the Public Information Officer for the Park as he/she ensures all park information is released to the appropriate audience. Typical audience for a fire management event includes:

- Park staff
- Regional NPS staff
- Local cooperators
- U.S. Coast Guard
- Kings Bay Naval Submarine Base
- Private property owners
- Reserved estates shareholders
- Smoke sensitive receptors
- Media outlets

2. Materials

Materials that may be useful to support public information needs include:

- Electronic and hardcopy media releases
- Brochures describing positive aspects of fires
- Firewise brochures and information
- General and project specific maps
- Road signs
- Information kiosks

3. Press Kit

The Park Public Information Officer has an established press kit. For a fire management activity, the press kit should be augmented to include the following information:

- Project specific goals and objectives
- IAP
- Project fact sheet
- Project specific maps
- Incident personnel profiles (e.g. IMT, FMO, Superintendent, etc.)

4. Online Resources

Online resources have become a valuable tool for disseminating incident information. Individuals responsible for distributing information should utilize the websites listed below to

support information dissemination. Reference the CUIS Fire Information Plan for more information.

- inciweb.org
- <http://www.nps.gov/cuis/index.htm>
- geomac.usgs.gov
- www.firewise.org
- www.nifc.gov/fire_info.html

b. Communications Step-Up Plan

As wildfire incidents, fuels treatment, and fire weather dictates, CUIS fire management communications may need to “step-up” in its scope. Events that could initiate increasing communication capabilities include, escalating fire danger, severe drought conditions, wildfire activity, fuels projects, smoke impacts, and public or media scrutiny. Activities that are associated with increasing capabilities include additional PIO’s, increased media releases, additional signage, and additional fire management briefings to visitors before boarding the ferry.

4.7 Air Quality/Smoke Management

4.7.1 Air Quality

CUIS is designated a class II air shed under the 1977 amendments to the Clean Air Act. Under class II, modest increases in air pollution are allowed beyond baseline levels for particulate matter, sulfur dioxide, nitrogen and nitrogen dioxide, provided that the national ambient air quality standards, established by the Environmental Protection Agency (EPA), are not exceeded. Sources of air pollutants in the park vicinity include a two paper products plants in Fernandina Beach, Florida, which produces odor and atmospheric particles; and nearby Interstate 95, a major route for north-south traffic.

4.7.2 Smoke Management

Smoke as a result of fire management activities will be closely planned and monitored. Prescribed fire plans will include a preferred wind direction and a smoke monitoring section. All prescribed fires and wildfires used for resource benefit will have a Fire Effects Monitor Officer (FEMO) in the organization with a duty of monitoring smoke production. A public information statement will be released before any prescribed fire or as soon as possible after a wildfire is allowed to be used for resource benefits to get information to the public about smoke potential. If smoke production becomes unacceptable to a receptor, ignitions will cease and mop up will occur to minimize smoke concerns.

Smoke sensitive areas of concern include:

- I-95
- City of Saint Mary’s, Georgia
- City of Fernandina Beach, Florida
- Kings Bay Naval Submarine Base
- Intracoastal Waterway
- Fort Clinch State Park

CUIS will work with the U.S. Coast Guard and Kings Bay Naval base on smoke concerns in the Intracoastal Waterway and any impacts to the navy base. Signs may be put up on roadways on both

mainland and island roads warning of smoke potential. If smoke impacts island residents, FMO or IC will coordinate with PIO or Park law enforcement to get information to residents.

CUIS currently gets a burn permit for prescribed fires from the Camden Unit of GFC. The burn permit addresses smoke concerns. The IC and Burn Boss will also request a spot weather forecast from the National Weather Service in Jacksonville. The spot weather webpage shows any other burns or wildfires that are in the forecasting area and enables fire managers to see where other agencies may be producing smoke and determine if the impacts from all projects may be adverse.

4.8 Data & Records Management

CUIS Fire personnel will follow the regulations and direction set forth in the current version of the Interagency Incident Business Management Guide (NWCG 2009) for all incident business management functions except where specific NPS legal mandates, policies, rules, or regulations direct otherwise. FMP updates and revisions are accomplished on an annual basis and are the responsibility of the FMO. Updates and revisions are approved by the Superintendent.

Budget requests and submissions for fuels activities, treatments, and staffing are due each year by March 15 for the upcoming Fiscal Year. The FMO will be responsible for submissions on behalf of the Park. Funding for preparedness activities and staffing are formulated by the FMO and requested through the Chief of Resource Management. The FMO will be responsible for annual funding requests and will obtain the Chief of Resource Management's concurrence.

The FMO is responsible for ensuring accuracy and timeliness of fire reports entered into WFMI and WFDSS. Every wildfire, support action, and prescribed fire requires a report. Temporary and permanent records related to WFMI and WFDSS reports, are retained and archived in compliance with the NWCG's Incident Management Records (www.nwcg.gov/policies/records/index.html) and are stored in the FMO office or in the museum if files are large. FMO should review the records annually to determine what can be removed and what must be retained. All records will be archived on a five year basis.

CUIS does not currently have a Geographic Information System Specialist. Therefore, the FMO is responsible for data and records management of GIS layers including fire history (point locations and perimeters for both wildfire and prescribed fire), burn severity, and manual/mechanical fuels treatments. Metadata related to all GIS layers are required to meet standards identified by the Federal Geographic Data Committee (www.fgdc.gov/metadata).

In order to facilitate timely and accurate data transfer from field personnel to the database, the following procedures will be followed by all individuals collecting data:

- A GIS specialist should be ordered for any fire that an IMT is being ordered.
- The FMO gathers ignition locations for wildfires from WFDSS. Incident Commanders and FMOs need to ensure that accurate information is loaded into WFDSS.
- All wildfires need to have the location of the fire's origin located and documented.
- Fires with a perimeter less than five acres can be recorded as a point, fires greater than five acres need to have a mapped perimeter. Fires that exhibit measurable growth should be mapped periodically, this will be accomplished by the most practical means, e.g., aerial perimeter mapping vs. ground perimeter mapping.

- GPS devices should be set to: WGS84, Latitude/Longitude (degrees decimal minutes).
- Perimeters and information related to manual/mechanical treatments, including prescribed fire boundary preparation and WUI thinning projects, will be recorded to the database.

The Incident Qualifications and Certifications System (IQCS) is the database used for tracking NPS wildland firefighter's qualifications, certifications, and training. CUIS works through the Southern Area Coordination Center NPS representative to update IQCS information. The FMO is responsible for establishing and coordinating new accounts and updating and maintaining existing accounts for CUIS personnel. New employees are required to submit IQCS New Responder Forms to have an account established. All active individuals participating in any wildland fire training or incidents will submit an IQCS Responder Update Form at the end of each calendar year to the FMO. This form documents training attended, training instructed, medical clearance, physical fitness completion, and qualified and trainee position performed. This information is required to generate Incident Qualification Cards (red cards) and connect availability through the Resource Ordering and Status System. All red-carded individuals will submit a fire experience record to the FMO by the beginning of November so that the FMO can coordinate updating all red-carded individuals' fire experience.

4.9 Organizational & Budgetary Parameters

The Cumberland Island FMO coordinates all aspects of the fire management program for the Park. The FMO is supervised by the Chief of Resource Management. This FMP will challenge time management for the FMO in its implementation. It is highly recommended that the Park continue to explore ways to expand the staffing of the CUIS fire management program. To successfully implement the additional duties described in this FMP, additional positions will be required. The CUIS fire management program is currently funded through the Park's base operations funding source (ONPS). The Park should explore avenues to get into the Regional FIREPRO system for funding of preparedness activities and acquiring additional staffing to implement this plan.

A future fire management organization should have the following positions to implement this FMP:

- FMO
- AFMO Fuels
- Administration Assistant/GIS Specialist
- Engine Captain
- Assistant Engine Captain
- Fire Fighter

All financial activities will meet NPS requirements as well as Interagency Fire Business Management Standards in accordance with RM-18, the Interagency Incident Business Management Handbook (NWCG 2009), and any supplemental regional business rules. The FMO will be responsible for programming and implementing his/her program's funding accounts. The FMO will program an organization and program of work within their authorized funds at the beginning of each fiscal year. CUIS budget personnel will provide monthly status of funds throughout the fiscal year to the FMO.

5 ADAPTIVE MANAGEMENT STRATEGY

Nationwide, the NPS Fire Management Program is committed to applying adaptive management in all aspects of fire management activities. Therefore, it is a cornerstone of this FMP. Adaptive management is a cyclic process of setting management practices based on clearly identified outcomes and continual evaluation of management outcomes. If outcomes are not met, park management facilitates management changes that will best ensure outcomes are met. NPS guidance directs NPS units to use the adaptive management process to plan, implement, and evaluate fire management activities (USDI NPS, 2003). More information can be found at <http://www.doi.gov/initiatives/AdaptiveManagement/whatis.html>.

Adaptive management focuses on learning and adapting through partnerships of managers, scientists, and other stakeholders who learn together how to create and maintain sustainable ecosystems. Adaptive management:

- Helps managers maintain FLEXIBILITY in their decisions, knowing that uncertainties exist and provides managers the latitude to change direction
- Will improve UNDERSTANDING of ecological systems to achieve management objectives
- Is about taking ACTION to improve progress towards desired outcomes

The CUIS Fire Management program employs the adaptive management process to evaluate and adjust both programmatic and individual treatment activities. At the smallest temporal scale (i.e., hours) real-time monitoring data is used to assess whether treatment-level objectives are being met and to adjust the tactical approach to a treatment or wildfire. During the first five years following treatments, short term monitoring data is used to evaluate both treatment and programmatic objectives and to adjust future treatment objectives, implementation strategies, and monitoring design. Programmatic goals, desired conditions, and strategies are evaluated every five years and necessary adjustments are made to the program as a whole.

5.1 Fire Management Objectives

The development of management objectives is vital for the planning of fire management activities. These activities can include prescribed fire, mechanical fuel reductions, suppression tactics, and others. CUIS will continually develop a fire program that is safe and productive, suppressing unwanted ignitions, and utilizing fire as a tool in the safest, most cost effective manner. Section 3.1.1 describes fire management goals and objectives in depth. Fire planning and activities at CUIS are designed to implement the goals and objectives of this FMP.

CUIS has not formally developed desired future conditions (DFC) at this time; therefore, fire management is working with local resource management and regional fire staff to develop fire-related desired resource conditions in order to have an effective adaptive management process (figure 9).

The FMO and Chief of Resource Management have identified a short term desired condition (see section 3.1.1). The desired conditions were derived from recent fire regime and historical vegetation research (Frost, 2011), GMP, RMP, GIS files, and location of structures to vegetation. Long-term goals and objectives can be found within the Cumberland Island Fire Monitoring Plan (USDI NPS, 2013).

Clear and measureable objectives are needed for a fire management program to be successful once desired conditions are determined. Through the adaptive fire management processes, program activities

are planned and executed by fire management staff in order to meet these objectives. These specific objectives are listed in section 3.1 of this plan, and are included in all burn plans.

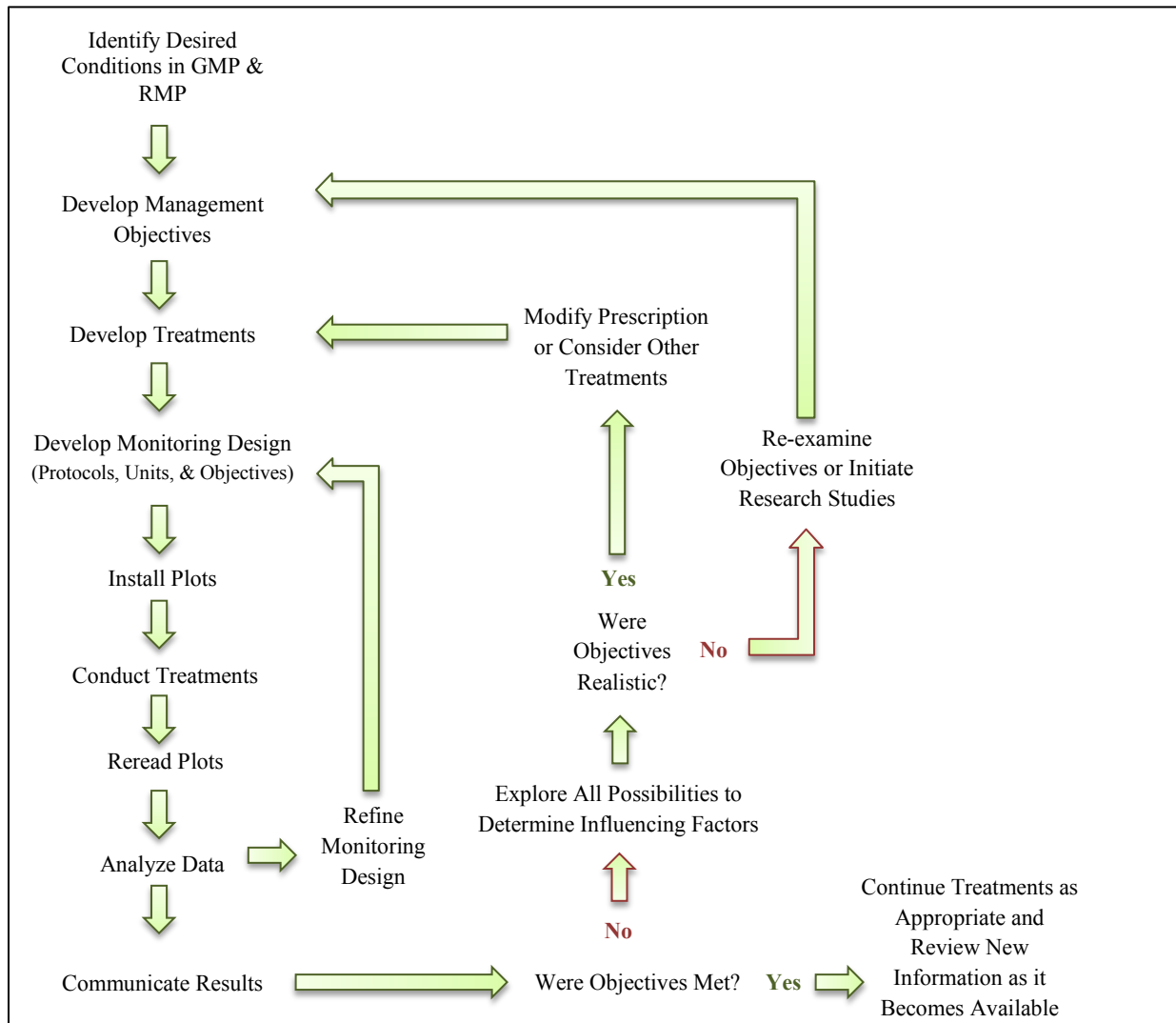


Figure 9: Adaptive Management Process

5.2 Monitoring

National Park Service Management Policies require that appropriate NPS staff monitor all wildland fires, both wild and prescribed (USDI NPS, 2006, pp. 49-50). Monitoring is not only part of the adaptive management process, but also a fundamental NPS management policy to be fulfilled. Monitoring and evaluation procedures will be professionally conducted to ensure the fire management program and projects are implemented to achieve management/project objectives, and such results are utilized to improve quality of the program and future projects.

Normally monitoring is a joint effort between NPS research and resource management. Initial and baseline monitoring is defined as level 1 & 2 monitoring (USDI NPS, 2003, pp. 7-16). Short- and long-term monitoring (levels 3 & 4) at CUIS follows the guidelines established in the National Park Service

Fire Monitoring Handbook (FMH). The fire-monitoring program described in the FMH allows park managers to document basic information, to detect trends, and to ensure that each park meets its fire and resource management objectives. From identified trends, park staff can articulate concerns, develop hypotheses, and identify specific research studies to develop solutions to problems (USDI NPS, 2003). The FMH defines and establishes levels of monitoring activity relative to fire and resource management objectives and fire management strategies.

Environmental and Fire Observation Monitoring are mandatory for all fires and generally carried out by a CUIS fire staff, NPS Wildland Fire Module (WFM) or Fire Effects Module (FEM), and/or other qualified fire management personnel.

All prescribed fire monitoring activities will follow the guidelines in the NPS's Fire Monitoring Handbook (2003). The Resource Management Division, in consultation with the designated FEM and the Barrens to Bayous Fire Monitoring Network, will determine the appropriate monitoring technique to be used to sample permanent plots. All plots will be sampled prior to treatment and will be sampled after the treatment to gather data for both short-term and long-term effects. As the program grows, a monitoring plan will be developed and will become part of this plan.

5.2.1 Fire Monitoring Plan

Fire monitoring is described in RM-18 Chapter 8 and the NPS Fire Monitoring Handbook (USDI NPS, 2008; USDI NPS, 2003). All NPS units applying prescribed fire, using wildland fire use, or altering the arrangement of wildland fuels for the purpose of modifying fire behavior must prepare a Fire Monitoring Plan. The park's monitoring plan is used to characterize monitoring for particular fire events or fuel treatment as well as landscape-level objectives.

5.3 Evaluation

In order for the fire management program at CUIS to be successful, reviews of the program should take place annually and all wild and prescribed fire incidents should be thoroughly documented and evaluated (USDI NPS, 2008). All wildland fires and fire-related incidents will be reviewed in accordance with Reference Manual 18, Chapter 17, Wildland Fire and Program Reviews and the Interagency Standards for Fire and Fire Aviation Operations (USDI NPS, 2008; USDI & USDA, 2006).

During annual reviews of the program, CUIS Resources Management staff, GRSM WFM staff, Barrens to Bayous Fire Monitoring Network staff, and/or university staff should present new knowledge gathered from research and monitoring collected from multiple sources. This evaluation process will allow for the identification and correction of outdated procedures and confirm effective actions. Evaluating incidents and the program regularly will also assist with identifying additional park needs and maintain the cost effectiveness of CUIS fire management.

During a wildfire incident, continual evaluation of tactics, goals, and objectives will occur. These evaluations will be documented by the IMT and turned back over to the park during the transition meeting. All fires will have an AAR with key personnel. These AAR's will be documented by the leader and become part of the documentation for the incident. All fuels treatment projects will receive a formal AAR with personnel assigned to the project. FMO will review the AAR and adjust methods if deemed necessary. The FMO will analyze all documentation, including AAR's and FEM reports, to determine what if any changes need to occur in the future.

During a wildfire incident, continual evaluation of tactics, goals, and objectives will occur. These evaluations will be documented by the IMT and turned back over to the park during the transition meeting. All fires will have an AAR with key personnel. These AAR's will be documented by the leader and become part of the documentation for the incident. The FMO will analyze all documentation including AAR's, and FEM reports to determine what if any changes need to occur in the future.

5.3.1 Fire Management Plan Review

The CUIS FMO will review this FMP annually to identify any changes that should be made to improve the effectiveness of the plan and update any information as needed. This will be a good time to take note of any changes to policy, tactics, goals, or objectives and start compiling a record of potential changes to be made. The CUIS Superintendent will approve significant changes to the body of the plan (excluding grammatical corrections, minor procedural changes, deletions, corrections, and additions to the appendices). The FMO will forward copies of all changes to the Southeast Regional Office FMO for review and comment. Changes requiring approval will be submitted with a new cover sheet for signatures and dates, which will replace the original cover sheet.

A substantial, formal review of this FMP will be conducted every five years, and the plan revised to incorporate any policy changes that have occurred in that five-year period. In addition, the FMO will coordinate any new information that has arisen since the formulation of the FMP and provide it to the review team. The five year review will provide an opportunity to analyze whether goals, objectives, and implementation of the FMP have been successful or if changes need to be made. If changes are suggested, the FMO will engage with the Chief of Resource Management and the Superintendent for concurrence.

5.3.2 Fire Effects & Ecology Annual Report

The Barrens to Bayous Fire Monitoring Network will produce monitoring documents annually for the NPS Fire Management Program Center. This annual report summarizes general short- and long-term monitoring analysis for all NPS units within a broad geographic range. The FMO and Chief of Resource Management will also receive this document and determine if additional information is needed. These reports will be evaluated to ensure if treatment goals and objectives are being met. If changes are needed to treatment implementation, plans will be updated to show those changes.

5.4 Fire Research

The incorporation of research findings into management actions and treatment objectives is critical in the development of fire management goals and objectives. Research assisting with the development of the FMP and EA has already been conducted.

One research item that has been identified is the need for specific vegetation objectives for CUIS. Specific targets or desired future conditions are needed in order for management activities to meet maintenance targets for this park. Other important research that affects fire management can be found referenced in the CUIS FMP EA 2013.