
Morristown National Historical Park

Wild Land Fire Management Plan 2005

Morristown National Historical Park
Morristown, New Jersey

National Park Service
U.S. Department of the Interior

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Executive Summary

The wildland fire management policies of the National Park Service (NPS) support Morristown National Historical Park's resource management goals. The overriding goal is:

The significant landscapes, structures, features, archeological resources, and collections of Morristown NHP are protected, preserved, and maintained in good condition. They are managed within their broad cultural and ecological contexts. (reference: GMP, page 27, Resource Preservation).

Also important are providing for firefighter and public safety and protection of natural and cultural resources, and protection of human developments from unwanted wildland fire.

This Wildland Fire Management Plan contains the following program direction:

- To guide the decision-making process where safety, social, political, and resource values are evaluated, and appropriate management response strategies are identified for wildland fires.
- To provide a framework for fuels management strategies through the use of prescribed fire and mechanical treatments.
- To provide a basis from which to cooperate more fully in planning and implementing a wildland fire program across agency boundaries.

Program operations included in the plan are:

1. preparedness
2. prevention
3. suppression
4. fuels management.

Applicable resource goals and objectives are derived from approved agency resource and general management plans.

The plan is organized to combine the latest scientific knowledge, including regional and local studies, with policy direction from the National Park Service, the Departmental of the Interior, the Federal Wildland and Prescribed Fire Management Policy and Program Review (USDI/USDA 1995), and other Federal Government level wildland fire policies to accomplish resource and fire management goals and objectives. The intent of the plan is primarily operational in nature.

This plan complies with the requirements found in the National Environmental Policy Act (NEPA). These requirements ensure a prudent assessment and balance between a federal action and any potential effects of that action, leading to consensus between fire managers, agency resource specialists, and the public. Any constraints or limitations imposed on the fire management program are also included.

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I. Introduction

A. The Fire Management Plan

National Park Service (NPS) wildland fire management activities are essential to the protection of human life and property, the protection and management of irreplaceable natural and cultural resources, and to the accomplishment of the NPS mission. The Morristown National Historical Park (Morristown) Wildland Fire Management Plan (FMP) is the primary planning document directing park wildland fire management activities at Morristown. These activities include preparedness planning and activities, fire staffing and training, prevention, suppression, and the use of mechanical fuel treatments to achieve management and resource management objectives.

The FMP meets the requirement of Director's Order-18 (DO-18) that all NPS park units with burnable vegetation have a wildland fire management plan approved by the superintendent.

Morristown will review and update the fire management plan annually. Annual review is essential to ensure that the plan continues to conform to current laws, objectives, procedures and strategies. A comprehensive plan revision, and National Environmental Policy Act (NEPA) compliance review, is required every five years. Morristown NHP will provide a digital copy of each approved Fire Management Plan and all subsequent amendments to the NPS Fire Management Program Center (FMPC), located at the National Interagency Fire Center (NIFC), in Boise, Idaho.

B. Collaborative Processes Used to Develop the Plan

The Morristown NHP General Management Plan (2003), Resource Management Plan (1999), and the Fire Management Plan are all developed with input from neighboring communities and other NPS program management areas. The activities covered by the FMP have been given due consideration in balance with other NPS unit management activities.

The superintendent is responsible for assuring policy compliance and the technical and operational soundness of the wildland fire management plan before he or she approves it. Before approving the plan, the superintendent sought the review and advice of park staff, area and regional staff, and other fire professionals.

C. Implementation of Federal Fire Management Policy

This Fire Management Plan will implement fire management policies and help achieve resource management and fire management goals as defined in:

1. 2001 Federal Wildland Fire Management Policy and Program Review (USDA/USDI 2001)
2. Managing Impacts of Wildfires on Communities and the Environment, and Protecting People and Sustaining Resources in Fire Adapted Ecosystems-A Cohesive Strategy (USDI/USDA, 2002)
3. A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy Implementation Plan (2001)
4. The Wildland and Prescribed Fire Management Policy: Implementation Procedures and Reference Guide (USDI, 1998)
5. National Fire Plan (2001)

6. National Park Service Management Policies (2001)
7. Morristown National Historical Park General Management Plan (2003)
8. Morristown National Historical Park Resource Management Plan (1999)

D. Environmental and Cultural Compliance

Wildland fire suppression is conducted within Morristown NHP as an emergency action (fire preparedness and suppression actions are generally exempt from the regulatory requirements of the National Environmental Protection Act [NEPA]). Other elements of this plan associated with wildland fire management (prescribed fire, fuel management, burned area rehabilitation, etc.) are non-emergency actions. These activities are subject to the requirements of NEPA, the National Historic Preservation Act (NHPA) and other applicable regulations.

This plan meets National Environmental Policy Act and National Historical Preservation Act requirements for all activities described in the plan. The FMP incorporated a programmatic approach to the National Environmental Policy Act that covers all activities described in the fire management plan.

Because the Morristown staff has chosen a suppression-only policy for the park, it has been determined that this policy meets the requirements for a categorical exclusion. This categorical exclusion (MORR CE. # 04-02) is included in Appendix E.

E. Authorities for Implementation of Fire Management Plan

The authority for fire management is found in the National Park Service Organic Act (Act of August 25, 1916), which states that the Agency's purpose:

"... is to conserve the scenery and the natural and historic objects and the wild life 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."

This authority was further clarified in the National Parks and Recreation Act of 1978:

"Congress declares that...these areas, though distinct in character, are united...into one national Park system.... The authorization of activities shall be construed and the protection, management, and administration of these 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, except as may have been or shall be directly and specifically provided by Congress."

Additional statutory authorities are:

- The General Authorities Act of 1970
- Public Law P.L. 72-409, 47 Stat. 1421 (Morristown NHP Enabling Legislation, 1933)
- The Clean Air Act, Clean Water Act
- The Endangered Species Act of 1973
- The Antiquities Act (1906).

II. Land Management Planning and Fire Policy

A. NPS Management Policies as Related to Fire Management

The *National Park Service Management Policies (2001)* is the basic Service-wide policy document of the National Park Service. It is the highest of three levels of guidance documents in the NPS Directives System. *National Park Service Management Policies* is designed to provide NPS management and staff with clear information on NPS policy, required and/or recommended actions, and other information to help them manage parks and programs effectively. Appendix B contains a summary of elements relating to compliance with the 2001 Federal Wildland Management Policy.

National Park Service Management Policies includes the following guidance related to the preparation of fire management plans and the management of fire on national park sites:

Park fire management programs will be designed to meet park resource management objectives while ensuring that firefighter and public safety are not compromised. (NPS Management Policies, 2001, Chapter 4.5).

Each park with vegetation capable of burning will prepare a fire management plan and will address the need for adequate funding and staffing to support its fire management program. The plan will be designed to guide a program that responds to the park's natural and cultural resource objectives; provides for safety considerations for park visitors, employees, neighbors, and developed facilities; and addresses potential impacts to public and private property adjacent to the park. Preparation of the plan will include collaboration with adjacent communities, interest groups, state and federal agencies, and tribal governments. (NPS Management Policies, 2001, Chapter 4.5).

All fires burning in natural or landscaped vegetation in parks will be classified as either wildland fires or prescribed fires. All wildland fires will be effectively managed through application of the appropriate strategic and tactical management options. These options will be selected after comprehensive consideration of the resource values to be protected, firefighter and public safety, and costs. Prescribed fires are those fires ignited by park managers to achieve resource management and fuel treatment objectives. Prescribed fire activities will include monitoring programs that record fire behavior, smoke behavior, fire decisions, and fire effects to provide information on whether specific objectives are met. All parks will use a systematic decision-making process to determine the most appropriate management strategies for all unplanned ignitions, and for any prescribed fires that are no longer meeting resource management objectives. (NPS Management Policies, 2001, Chapter 4.5)

There may be situations in which an area may be closed to visitor use to protect the natural resources (for example, during an animal breeding season) or for reasons of public safety (for example, during a wildland fire). Such closures may be accomplished under the superintendent's discretionary authority and will comply with applicable regulations (36 CFR 1.5 and 1.7). (NPS Management Policies, 2001, Chapter 4.1)

The second level of NPS guidance documents (under *NPS Management Policies*) are Director's Orders. Director's Orders provide operational policies and procedures that support and supplement Management Policies. Director's Orders are often further supported with a third level of guidance consisting of reference manuals or handbooks. Specific guidance to the NPS on wildland fire is contained in Directors Orders (DO-18) and attendant Reference Manual (RM-18), and "The Wildland and Prescribed Fire Management Policy: Implementation and Reference Guide" (1998).

Director's Order 18 – Wildland Fire Management (1998) and Reference Manual 18 – Wildland Fire Management are the documents that provide National Park Service units with specific guidance on the preparation of wildland fire management plans and on wildland fire and prescribed fire management. DO-18 states:

Wildland fire may contribute to or hinder the achievement of park management objectives. Therefore, park fire management programs will be designed to meet resource management objectives prescribed for the various areas of the park and to ensure that firefighter and public safety are not compromised. Each park with vegetation capable of burning will prepare a fire management plan to guide a fire management program that is responsive to the park's natural and cultural resource objectives and to safety considerations for park visitors, employees, and developed facilities.

The NPS is committed to protecting park resources and natural ecological processes; but firefighter and public safety must be first priority in all fire management activities.

RM-18 states that the paramount considerations of each park fire management program will be:

1. Protection of life, both employee and public
2. Protection of facilities and cultural resources
3. Perpetuation of natural resources and their associated processes
4. Perpetuation of cultural and historic scenes.

These priorities are further emphasized in RM-18 (chapter 3, page 1) with the following language:

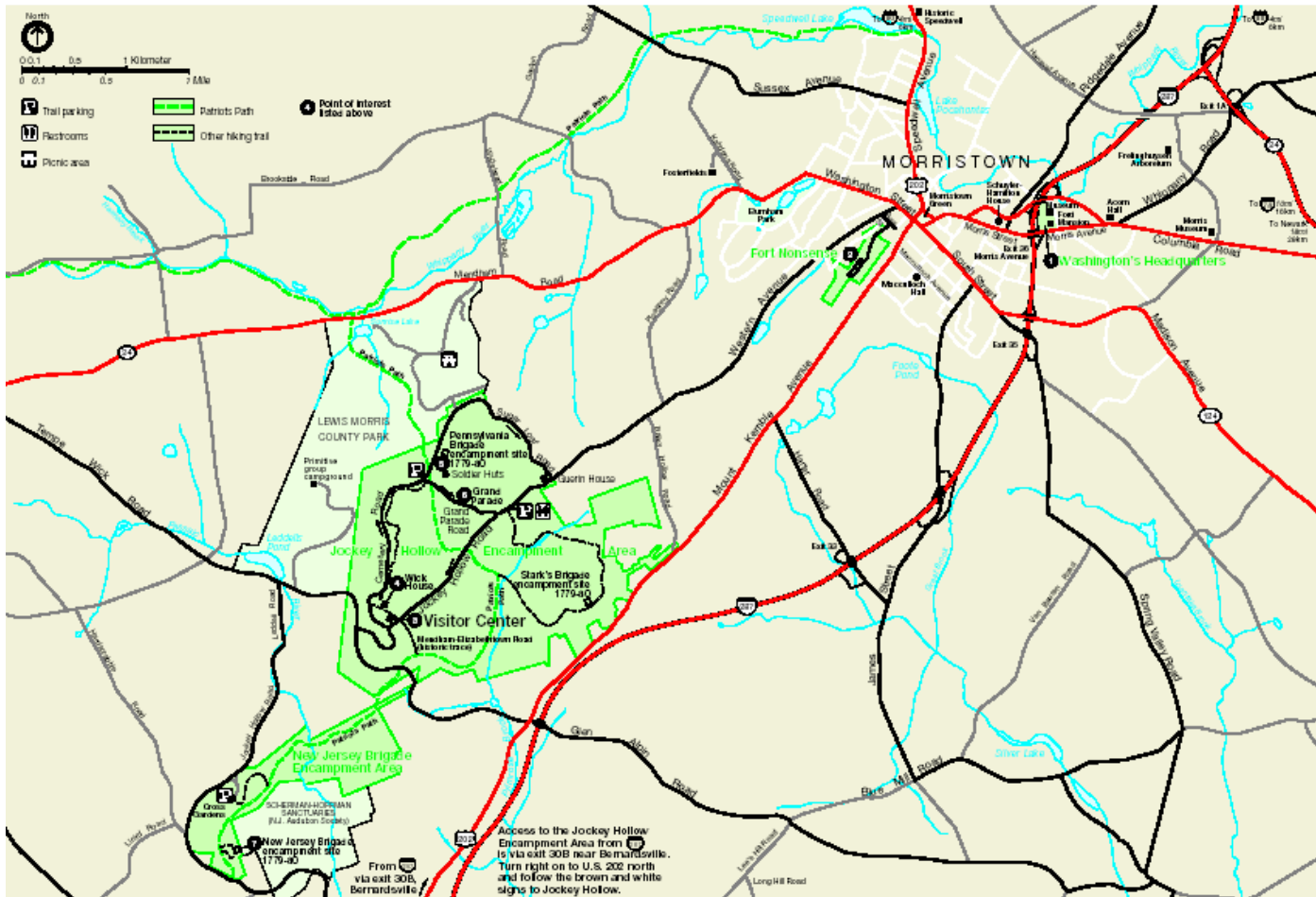
Safety is the responsibility of everyone assigned to a wildland or prescribed fire incident. The safety of employees and visitors alike must be of prime concern during fires. Agency administrators at all levels need to stress that firefighter and visitor safety always takes precedence over property and resource loss.

B. Morristown NHP Enabling Legislation

Morristown National Historical Park was established by an act of the 72nd Congress via Public Law P.L. 72-409 Stat. 1421 in 1933.

Morristown National Historical Park, the first national historical park in the national park system, was established to preserve the lands and features associated with the 1777 and 1779-80 winter encampments of the Continental Army during the War for Independence. Morristown is significant because:

- General George Washington chose Morristown for the main quarters for his troops because of its strategic advantages, including its location between Philadelphia and New York.
- At Morristown, Washington demonstrated his superb leadership, by holding the army together despite seemingly insurmountable difficulties, and his officers and men demonstrated their fortitude and dedication.
- Morristown NHP provides an early example of the nation's historic preservation movement in the 19th century. It encompasses a large assemblage of historic structures, landscapes, archeological resources, artifacts, and archives associated with the activities of General Washington and the Continental Army at Morristown.
- The creation of the park was important in the National Park Service's development as an agency with equal responsibility in administering the nation's scenic and historic treasures.



C. Morristown NHP General Management Plan

The main function of a General Management Plan (GMP) is to identify desired resource conditions and visitor experiences to be achieved by the park over a 10 to 20 year period. The desired resource conditions and visitor experiences ultimately determine the strategies, programs and actions the park will utilize.

All parks within the National Park System are required by law to operate under approved general management plans. This ensures that park managers carry out the mission of the NPS and the individual park unit as effectively and efficiently as possible.

The GMP provides a foundation to guide and coordinate all subsequent park planning and management. Other park planning documents, including fire management plans and resource management plans, must follow the management direction of the GMP.

The decisions made when controlling any fire on the site must not contradict Morristown's purposes and goals as stated in the GMP. The important purposes of Morristown National Historical Park, as described in its enabling legislation and reflected in the GMP, which direct the Morristown FMP are:

"Morristown NHP preserves, protects, and maintains the landscapes, structures, features, archeological resources, and collections of the Continental Army winter encampments, the headquarters of General George Washington, and related Revolutionary War sites at Morristown for the benefit and inspiration of the public."

Morristown NHP's present policy, as articulated in the General Management Plan (2003), is to suppress all fires due to concerns for visitor safety and the proximity of adjacent homes.

D. Morristown NHP Resource Management Plan

Morristown NHP has a Resource Management Plan, which was finalized in 1999. The Resource Management Plan makes no direct references to wildland fire or fire suppression; however, it does emphasize the following critical needs:

- Preserve the integrity of park resources
- Perpetuate the natural and ecological conditions through management planning to restore to the degree possible and 18th century forested landscape
- Develop and maintain an understanding of the status and trends of populations, communities and ecosystems.

The National Park Service is in the final stages of developing a new resource activity management software system called RAMS. RAMS will assist parks in tracking park resource management from planning stages through the budget process, through work and compliance scheduling, execution and performance to accomplishments. It is a joint effort between Cultural Resources and Natural Resources directorates designed for parks to provide full accountability for park resource management.

E. Meeting GMP and RMP Goals through the Plan

The Fire Management Plan is a detailed program of action to implement fire management policies and objectives. Implementation of the Morristown National Historical Park Fire Management Plan will help meet the objectives of the General Management Plan and Resource Management Plan by:

- Contributing to the protection, preservation, and maintenance, and rehabilitation of historic landscapes;
- Protecting historic, cultural, and natural resources; and
- Ensuring human health and safety throughout fire management programs and activities

III. Wildland Fire Management Strategies

All fires that are not ignited by park managers for specific purposes are defined as wildland fires. All wildland fires will receive management actions appropriate to the safety of firefighters and the public, the resources and values to be protected, the condition of fuels, current and predicted fire behavior, weather, and topography to accomplish the specific objectives for that individual fire. These management actions, termed "appropriate management responses," will vary from fire to fire and may vary within an individual fire.

A. General Management Considerations

The primary goals of the wildland fire management program at Morristown are to protect human health and safety, protect property, enhance community protection, diminish risk and consequences of severe wildland fires, and to the extent possible, increase (improve), the health of the ecosystem.

To accomplish these goals, wildland fires at Morristown will normally be managed through suppression strategies. Fire managers will balance the potential impacts of wildland fire with the potential impacts of fire suppression activities in choosing the appropriate management response.

Important values to be protected at Morristown include:

- Many unique and valuable cultural resources; those dating to the period of the Continental Army encampments are outstanding. These resources include:
 - Structures, such as the Ford Mansion and Wick House, which are directly associated with the Continental Army at Morristown.
 - Archeological resources, including the remnants of log huts, are present in the Jockey Hollow and New Jersey Brigade units.
 - The museum collection of 350,000 objects related to the encampments, George Washington, the War for Independence, and other themes is particularly valuable.
- Robust natural resources of considerable diversity. These resources include:
 - Mature forest stands, somewhat similar in appearance to the 18th century forest encountered by the Continental Army, are present in the Jockey Hollow and New Jersey Brigade units
 - Surface waters of remarkably high quality are represented in the Passaic River and Primrose Brook.
 - Good air quality in the Jockey Hollow and New Jersey Brigade units.
 - A variety of wildlife -birds, mammals, amphibians, reptiles, and fish -are present.

Values to be protected, and their susceptibility to damage or loss by fire, are discussed in more depth in the description of the Fire Management Unit (section III.D. of this plan).

Preplanned decisions based on historical fire behavior indices will be considered in selecting appropriate management responses for suppression. The park will not use wildland fire for resource benefit. The park's use of wildland fire as a management tool is prohibited by the lack of fire management staff, the small size of the park, the adjacent wildland/urban interface, and the insignificant role that fire has historically had in the park's natural resources.

Wildland fires at Morristown NHP are managed with the support of local community fire departments. This community-based approach to wildland fire management involves partnership, cooperation, and collaboration between the Bernardsville Fire Department (volunteer), New Vernon Volunteer Fire Department, Morristown Fire Bureau, and the New Jersey Forest Fire Service.

Additional fire planning support and collaboration is provided by the Mid-Atlantic Fire Management Area Fire Management Officer (Area FMO) located at Delaware Water Gap National Recreation Area. The Area FMO provides technical assistance to the park on all fire management matters, including fire management programs such as the Weather Information Management System (WIMS), the NPS Wildland Fire Computer System, the National Fire Danger Rating System (NFDRS), the resource ordering system (ROSS), the Incident Qualification and Certification System (IQCS), Fire Program Analysis (FPA), and FIREPRO budgeting. The Area FMO also

assists with the park's wildland fire qualification and certification program, coordination of fire training and mobilizations, development of cooperative agreements with local and state agencies, administration of Rural Fire Assistance Program grants to local fire departments, and developing fire prevention, preparedness, and suppression operational plans.

The park, in accordance with NPS policy, uses Minimum Impact Suppression Tactics (MIST) in all fire suppression activities. MIST is defined as the application of techniques that effectively accomplish wildland fire management objectives while minimizing the impacts to cultural and natural resources commensurate with ensuring public and firefighter safety and effective wildland fire control. Examples of MIST include using existing natural or constructed barriers to contain wildland fires, mowing firebreaks in grassland, and using pumps and hoses to apply water to suppress fire activity and reduce fire spread.

B. Wildland Fire Management Goals

These goals provide the programmatic direction for the wildland fire program. They are intended to provide safe and effective implementation of the fire management plan. The goals are derived from direction in the Morristown General Management Plan and the Morristown Resource Management Plan. They reflect federal fire policy and contribute to accomplishing the *10-Year Comprehensive Strategy Implementation Plan (2001)*, which outlines goals and actions in four fire management program areas: oversight and accountability, wildland fire preparedness, wildland fire operations, and fire protection capabilities of rural fire districts.

- **Goal 1:** Make firefighter and public safety the highest priority of every fire management activity.
- **Goal 2:** Suppress all wildland fires, regardless of ignition source, to protect the public, private property, and natural and cultural resources of Morristown National Historical Park.
- **Goal 3:** Manage wildland fires in concert with federal, state, and local air quality regulations.
- **Goal 4:** Facilitate reciprocal fire management activities through the development and maintenance of cooperative agreements and working relationships with pertinent fire management entities.
- **Goal 5:** Reduce wildland fire hazard around developed areas and areas adjacent to cultural and historic sites.
- **Goal 6:** Educate employees and the public about the scope and effects of wildland fire and wildland fire management.

C. Wildland Fire Management Options

The following wildland fire management options are available for use at Morristown:

- **Wildland Fire Suppression:** Historically, all wildland fires have been suppressed at Morristown. Under this plan, the park will continue to suppress all wildland fires using the most appropriate management action. Determination of the most appropriate management action will consider human safety, threat and potential damage to property, resources, and cost effectiveness. Suppression will assist in the preservation of the park's cultural and natural resources.
- **Prescribed Fire:** Though a program of using prescribed fire at Morristown is not fully considered in this plan, individual burns may be used in the future for protection of cultural resources, especially historic scene restoration and maintenance, hazard fuel reduction, and natural resource objectives. If a

determination is made that a specific prescribed fire is required, that prescribed fire will be subject to the requirements of NEPA, the NHPA and other applicable regulations.

Fire may be used to dispose of natural vegetative debris deemed infeasible or impractical to remove mechanically in a non-wildland fuel environment (parking lot, storage yard, gravel pit, snow-covered area, etc.). The debris may be generated from routine maintenance activities, piled debris generated from construction activities, and removal of hazard trees. Debris burned in a non-wildland environment does not require a prescribed fire burn plan. Debris burned in a wildland environment (including on snow-covered ground) requires a prescribed fire burn plan. Any material being burned for debris disposal must be classified as permissible to burn under applicable Federal, State, Tribal, and Local regulations.

The park will follow all applicable guidance and regulations when using fire for debris disposal. NPS guidance on debris burning is found in RM-18.

- **Wildland Fire Use:** Wildland fire use will not be used at Morristown. This option was rejected due to the small size of the park, the significant degree of wildland urban interface along the park boundary, and the lack of available qualified fire personnel required to manage these fires.

- **Non-Fire Applications:** The reduction or removal of fuels by mechanical means is an option that may be used for objectives such as protection of resources, historic scene restoration and maintenance, protection of private property located in the wildland/urban interface, invasive species control, or other natural resource objectives.

D. Description of Wildland Fire Management Strategies by Fire Management Unit

Morristown National Historical Park encompasses 1,697.55 acres in north central New Jersey, approximately 30 miles west of New York City. The park contains four geographically separate units; each is associated with the 1777 and/or 1779-80 winter encampments of the Continental Army.

- **Washington's Headquarters** (10 acres), located in the town of Morristown, contains the Ford Mansion (1772), which served as General George Washington's headquarters during the winter of 1779-80, and the separate park museum building.
- **Fort Nonsense** (35 acres) is located on a prominent hill approximately one mile west of Washington's Headquarters overlooking the town of Morristown. In 1777, on the orders of George Washington, soldiers dug trenches and raised embankments to fortify this strategic site.
- **Jockey Hollow** (1,320 acres) lies approximately three miles southwest of Fort Nonsense. It was the site of more than 1,000 log huts occupied by soldiers during the winter of 1779-80. Other features of the unit include the Grand Parade field, the Wick House, visitor center, loop tour road, and numerous hiking trails. The landscape consists of rolling hills covered with mature second growth deciduous forests.
- **New Jersey Brigade** (321 acres) preserves the archeological sites of the New Jersey Brigade's 1779-80 encampments. Located about one mile southwest of Jockey Hollow, the landscape in this unit is principally rolling hills supporting a mature hardwood forest.

1. Morristown National Historical Park Fire Management Unit

Morristown is divided into the units for administrative purposes. Due to their relatively small size, similar characteristics, and identical fire management strategies, these four units will be considered a single fire management unit (FMU).

a) Physical and Biotic Characteristics

- **Topography/Geology/Soils:** The park straddles two of the four geological provinces found in New Jersey. Most of the park lies in the Highlands Physiographic Province, with the transition to the Piedmont Physiographic Province occurring abruptly along the southeast boundary of the Jockey Hollow Unit. The Jockey Hollow and New Jersey Brigade Units of the park consist of several broad, rounded or flat-topped ridges that border generally narrow valleys. The valleys are mostly long and narrow, but a few broad, flat places along the streams exist. The Mount Kemble ridge runs from the Jockey Hollow Unit approximately three miles northeast to the Fort Nonsense Unit

Four soil series are represented in the park; are all derived from granitic gneiss bedrock. Soil scientists (Eby 1976; Kirkham 1976) have classified soils in the area of Morristown National Historical Park as the following:

- **Edneyville-Parker-Meckesville:** Deep, moderately well drained to somewhat excessively well drained, gently sloping to very steep, gravelly, stony and rocky soil. These soils are formed on bedrock uplands in the western part of the New Jersey Brigade Unit.
- **Edneyville-Parker-Califon:** Deep, excessively drained to somewhat poorly drained, gently sloping to steep, gravelly, and stony sandy loams. These soils formed over granitic gneiss on uplands that are glacial deposits or weathered bedrock in the central and northern part of the Jockey Hollow Unit.

- **Parker-Edneyville:** Deep, excessively drained and well drained, steep to very steep, gravelly and sandy loams. These soils also formed over granitic gneiss on uplands of glacial material or weathered bedrock in the western, southern, and eastern parts of the Jockey Hollow Unit, as well as in the eastern portion of the New Jersey Brigade Unit and the western portion of the Fort Nonsense Unit.
- **Riverhead-Urban:** Deep, well drained to somewhat poorly drained, nearly level to strongly sloping, gravelly and sandy loams formed on outwash plains and terraces. These soils include all of the Washington's Headquarters Unit, and the eastern part of the Fort Nonsense Unit.

■ **Elevation:** The hills in the park are generally between 580 and 700 feet (175- 215 meters) in elevation. The lowest elevations, approximately 360 feet (110 meters) are along Indian Grove Brook and the Passaic River. Elevations range from 375 feet at the Washington's Headquarters Unit to 595 feet in the Fort Nonsense, Jockey Hollow and New Jersey Brigade Units.

■ **Hydrology:** The Jockey Hollow and New Jersey Brigade units of the park are largely located within the upper reaches of the 55.6 square-mile Great Swamp Watershed (a sub unit of the Upper Passaic River Basin). The park protects the headwaters of the Primrose Brook as its feeder springs surface within the park. The headwaters of the Jersey Brook are also located within the park's boundaries. Portions of Indian Grove Brook and the Upper Passaic River flow through the park and are designated as "Wild Trout Streams" by the State of New Jersey. Upon leaving the park, the waterways eventually flow into the Great Swamp National Wildlife Refuge. The swamp woodlands, hardwood ridges, cattail marshes and grasslands of Great Swamp NWR provide for diverse and extensive wildlife habitat. The park monitors water quality on a monthly basis at eleven locations.

■ **Vegetation:** Morristown National Historical Park contains many different plant communities, including mature and successional forests, open fields, cultivated sites and wetland vegetation. A 1995 inventory identified 291 species of herbaceous plants, as well as 22 species of ferns.

The forests within the park consist primarily of native hardwood species, with a lesser number of introduced species. The most abundant canopy species include yellow poplar, black birch and beech. Up to 100 acres of secondary, old growth tulip trees, ranging in age from 150 to 220 years, are located in the Jockey Hollow unit. Other common canopy species are hickories, yellow birch, red, white, black and chestnut oak, white ash and red maple. Flowering dogwood is the most common understory species. Invasive nonnative plants have begun to dominate the forest understory in all of the parks units. Prevalent invasive species include Siebold's viburnum (*Viburnum sieboldii*), Japanese wiregrass (*Microstegium vimineum*), Japanese barberry (*Berberis thunbergii*), and oriental bittersweet vine (*Celastrus orbiculatus*). Refer to Appendix D for more complete vegetation list.

Fifteen fields totaling 122 acres within the park. These fields were originally used for agricultural purposes, but now serve to retain a historic appearance. Field vegetation includes grasses and herbaceous and woody plants that attract numerous species of birds, insects, and other animals. The fields are currently maintained through mowing. There may be potential for the use of prescribed fire in the park's fields, however, research is needed to determine whether any ecological and appearance benefits would be an improvement over mowing.

Three hundred years of human and natural disturbance have altered plant communities throughout the park and adjacent landscapes. Cultivated communities include:

- The Wick Orchard: contains apple trees that are a mixture of modern and heirloom varieties.
- The Landscaped Grounds: informal plantings of trees, shrubs and lawns common throughout the park along walkway and around buildings.
- The Gardens: two formal gardens are in the park. The herb garden at the Wick Farm contains a collection of annuals and perennials from the colonial period and the Cross Estate Garden is a walled garden containing ornamental and native plants.

■ **Wildlife:** Morristown NHP supports a wide variety of animal life. White-tailed deer are abundant in the park. Common smaller mammals include red and gray squirrel, rabbit, skunk, raccoons and several species of bats including the big brown bat, red bat, little brown bat and northern long-eared bat. Coyote, black bear, and red fox are seen occasionally.

The park is home to more than 120 bird species at various times of the year and contains important breeding habitat for a variety of species. Commonly found birds include the turkey vulture, red-tailed hawk, Pileated woodpecker, mourning dove, downy woodpecker, hairy woodpecker, northern flicker, black-capped chickadee, white-breasted nuthatch, Northern mockingbird, yellow-rumped warbler, scarlet tanager, chipping sparrow, song sparrow, common grackle, and American goldfinch.

A reptile and amphibian inventory, conducted in 2000, identified seven salamander species, six frog species, four species of snakes, and five species of turtles.

Park waters support a diverse and balanced fish community. Eleven fish species have been documented, including slimy sculpin, blacknose dace, tessellated darter, creek chub, brook trout, brown trout, and rainbow trout. Brown and rainbow trout are considered invasive, non-native species.

Refer to Appendix D for a more complete list of wildlife species.

■ **Species of Special Concern:** Several species may be expected to utilize areas around or within the park are on the New Jersey State list or the federal list of threatened or endangered species.

- The bog turtle (*Clemmys muhlenbergii*) is federally listed as threatened and is known to have been observed within 1.5 miles of the park. The bog turtle has not been observed in the park possibly due to a lack of suitable habitat.
- The Indiana bat (*Myotis sodalis*) is federally listed as endangered and is known to inhabit Morris County. The closest known hibernacula are located within approximately 10 miles of the park. No bats have been observed in the park but the park's large expanse of contiguous forested upland habitat, traversed by forested wetland stream corridors, is highly suitable habitat for foraging and roosting bats.
- The bald eagle (*Haliaeetus leucophalus*) is federally listed as threatened and has occasionally been observed within the vicinity of the park.
- State of New Jersey birds of special concern observed in the park during an inventory conducted in the park in 2002 and 2003 include the veery (*Catharus fuscescens*), gray-cheeked thrush (*Catharus minimus*), black-throated green warbler (*Dendroica virens*), cerulean warbler (*Dendroica cerulea*), Kentucky warbler (*Oporonis formosus*, and Canada warbler (*Wilsonia canadensis*).
- The wood turtle (*Clemmys insculpta*), a state-listed threatened species has been observed on several occasions in the park around the Passaic River within the last few years.

- State of New Jersey threatened plants recorded in the park by Rutgers University in 1995 included rattlesnake plantain (*Goodyera repens*), twinleaf (*Jeffersonia diphylla*), slender pinweed (*Lechea tenuifolia*), strict blue-eyed grass (*Sisyrinchium montanum*), and oak fern (*Gymnocapium dryopteris*). A more recent study conducted by Rutgers did not verify the presence of these state listed species in the park

■ **Air Quality:** Morristown National Historical Park is located approximately 30 miles from New York City in one of the most densely populated areas in the country. High levels of ozone are frequent during the summer months. The air quality standard for the park is designated as Class 2, and moderate increases in air pollution are allowed. Vegetation has been cleared from the Fort Nonsense Unit to create historic vistas. Poor visibility at the overlook during certain weather conditions may be related to regional haze, automobile and truck emissions and industrial sources.

■ **Cultural Resources:** The historic structures, archeological resources, museum collections and archives, and the historic and designed landscapes comprise Morristown's most vital resources.

- **Historic:** The primary historic structures relating to the park's 18th century historical themes are the Ford Mansion, Wick House and Guerin House, all of which are on the National Register of Historic Places. The park's structural inventory lists 71 buildings, of which 38 meet the criteria of historical significance and eligibility to the National Register.
- **Archeological:** Archeological research from the 1930s through the 1980s concentrated on locating or confirming the location of sites associated with the encampment period. There are 15 major archeological sites in the park. The sites of some documented Continental Army encampments have not yet been identified. A number of archeological sites exist reflecting the later 19th and 20th century land use of the park, although these have never been formally surveyed or assessed. In the process of locating encampment period sites, several Native American sites have been found in the park, but they have not been systematically investigated.
- **Historic Landscapes:** All four units at Morristown NHP contain significant historic landscape resources. While all four of the units have a primary goal of landscape preservation based on the appearance of the Revolutionary War period, each unit also includes historic landscape elements reflecting later periods of land use and site history. These historic landscapes consist of both natural and human-altered or design features. The park identifies three historic landscapes: Washington's Headquarters, Fort Nonsense, and Jockey Hollow/New Jersey Brigade. The Wick Farm and Cross Estate are component landscapes of Jockey Hollow/New Jersey Brigade. In addition, the contiguous lands and view sheds outside of the park contribute to and sometimes detract from the historic scene

b) Strategic and Measurable Fire Management Objectives

The entire park is designated as a single fire management unit (FMU) with a single set of management goals and objectives applying to the entire park. These goals and objectives are listed below:

- **Goal 1:** Maintain firefighter and public safety. Firefighter and public safety is the highest priority of every fire management activity.
 - *Objective: 100 percent of wildland fire operations are conducted so that they cause no injuries to the public and no serious preventable injuries to firefighters.*
- **Goal 2:** Suppress all wildland fires regardless of ignition source to protect public health and safety, real property, and the natural, cultural, and historic resources of the park.

- *Objective: 100 percent of wildland fires are controlled within 24 hours and wildland fires are limited to less than 5 acres.*
 - *Objective: Protection of park resources is actively considered in 100 percent of all wildland fire planning and fire management activities.*
 - *Objective: Consideration of resource protection will be described in 100 percent of all wildland fire planning and management documents (FMP, WFIP WFSAs, BAER Plan, etc.).*
 - *Objective: 100 percent of all wildland fire suppression actions will be managed so that rehabilitation costs are less than 25% of suppression costs.*
- **Goal 3:** Manage wildland fires in concert with federal, state, and local air quality regulations.
- *Objective: 100 percent of all wildland fires, prescribed fires, and debris burning will be conducted consistent with all Federal, State, and local smoke management regulations.*
- **Goal 4:** Facilitate reciprocal fire management activities through the development and maintenance of cooperative agreements and working relationships with pertinent fire management entities.
- *Objective: Cooperative agreements will be developed and maintained with all appropriate local, regional, and national fire management organizations.*
 - *Objective: All cooperative agreements will be reviewed annually to ensure that they are consistent with management and resource management goals.*
- **Goal 5:** Reduce wildland fire hazard around developed areas and areas adjacent to cultural and historic sites.
- *Objective: 100 percent of known hazardous fuel accumulation that could contribute to the damage of primary park resources or the properties of neighboring landowners will be reduced by mechanical treatment or prescribed fire.*
- **Goal 6:** Educate employees and the public about the scope and effects of wildland fire and wildland fire management.
- *Objective: All Morristown NHP employees will be able to provide basic fire information to visitors or direct them to a park employee who is able to provide it.*
 - *Objective: All park staff with fire management responsibilities will receive sufficient training to bring them to the appropriate level of knowledge, skill, and certification and to maintain that certification.*
 - *Objective: When fire danger is very high or extreme, park staff will contact at least 70% of park visitors with a fire prevention message through signage, handouts, interpretive activities, or personal contact*
 - *Objective: 95% of property owners immediately adjacent to the park will be informed of the threat posed by living in the wildland urban interface and the steps that can be taken to minimize those risks.*

c) Management Considerations

These constraints, considerations, or decision criteria will influence all fire management activities within the fire management unit.

- **Health and safety**

All fire management actions will have firefighter and public safety as its top priority. All park firefighters will adhere to applicable NPS policy relating the training, certification, and performance of NPS wildland firefighters.

- **No unacceptable impacts to cultural resources.**

All appropriate steps necessary to protect the park's cultural resources will be taken as long as those steps do not endanger firefighter and public safety.

- **Ensure socio-political economic impacts, including those involving the wildland urban interface (WUI), are considered in developing implementation plans.**

The effects of any fire management activity on the neighboring communities, with emphasis on the wildland/urban interface component of those communities will be considered during planning and implementation of those activities.

- **Ensure that the public, organizations, and cooperating agencies are aware of any fire management operation that may have an impact on them.**

To ensure good relations with park neighbors, local organizations and governments, cooperating agencies and the public, every effort will be made to keep these parties informed about significant fire management actions that might affect them or their interests.

d) Historic Role of Fire

There is no record of a major forest fire in the region for the past 70 years. Since 1950, there have been 31 fires in the park, 19 of them occurring in or on the boundary of the Jockey Hollow unit, 11 of them occurring in or on the boundary of the Fort Nonsense unit, and one occurring in the New Jersey Brigade unit. Of these fires, 20 have been under 0.5 acre - many were small spots, and 11 have been up to 10 acres in size. Only one of the fires was caused by lightning, while the remaining fires were either human caused or unknown. At present, due to concerns for visitor safety and the proximity of adjacent homes, it is the policy of the park to suppress all fires. See Table 1, Appendix H.

The park's Eastern deciduous forests typically have a relatively low fuel load. However, downed trees are prevalent in many areas of the park. Damage from wind and ice storms contribute to the fuel load. The oaks that dominate the park's forests are naturally fire resistant. Other tree species commonly found in the park, such as red maple, are very fire-sensitive and would have been eliminated if fires were common.

Historical evidence indicates that, after the Wisconsin Ice Age, the area in which Morristown NHP is now located was characterized by a boreal forest. Approximately 9,000 years ago, as the post-glacial climate extended southward, the central hardwood forest became established and gradually became the dominant vegetation of the region. Prior to the arrival of the Native Americans, natural fires undoubtedly played a variety of roles in the natural ecosystems that existed within both the boreal forest type and the central hardwood forest type. Native American fire use and land cultivation practices, which continued for thousands of years, had a major affect on species composition and forest structure within the central hardwood forest, and the natural fire regime was supplanted by an anthropogenic fire regime. Unlike the

earlier Natural Fire Regime in which lightning-caused fires were infrequent and of low intensity the Native American anthropogenic fire regime resulted in frequent fires of low intensity. Anthropogenic fire regime peaked about the time that European settlement of the New World began, and was replaced by a Euro-American anthropogenic fire regime. This latter anthropogenic fire regime evolved to meet the land-clearing needs of subsistence farming.

Natural and anthropogenic fire once played a significant role in maintaining the northern New Jersey central hardwood oak-hickory forest type that is found in this area. However, years of fire prevention and fire control have radically changed the composition of this forest type. As has been previously noted in this document, in the absence of fire the rapid proliferation of shade-tolerant and fire-intolerant tree species interfere with the oak regeneration process. Human impacts on the second growth forest that have affected fire management include land development, fire prevention and fire control, wildlife management, and the introduction of non-native insect, disease organisms, and plant species such as the gypsy moth, chestnut blight, and Japanese Barberry.

There is still much to be learned about the fire regimes that are currently found in the central hardwood forest. Much of the existing data is incomplete, and requires additional research on the timing, intensity, and frequency of the wildland fires, which occur in the various ecosystems, and their effects on these ecosystems.

e) Wildland Fire Management Situation

■ Historic Weather Analysis

The climate in Morristown NHP is characterized by the cool temperatures of northern New Jersey, but also by higher rainfall than any other part of northern or central New Jersey. The park is dominated by air masses moving down from the northwest during winter, and up from the southwest during summer. The winter air is mostly cold and dry, while the summer air alters between cold, dry polar air and warm, wet tropical air. The northeast trending ridges permit some microclimate differentiation, but because the prevailing winds parallel the ridges, and because there are few north-south facing slopes, there is less climatic variability than might otherwise be expected in such hilly terrain.

The average temperature in January ranges from 24 to 26 degrees Fahrenheit. The average temperature in July ranges from 72-74 degrees. Morristown NHP receives an average of 46-48 inches of annual precipitation.

■ Fire Season

The park is divided into a split fire season. The spring season usually runs from March through May; the fall season runs through October and November. Fires may occur at other times during drought conditions.

■ Fuel Characteristics

There are two basic fuel types within the park:

1. "Typical" Eastern Hardwood Forest (FBFM¹ 8/9)
2. Open fields consisting primarily of perennial grasses (FBFM 1) without mowing.

Within these fuel types, we would expect the following range of fire behavior according to conditions present:

1. "Typical" Eastern Hardwood Forest (FBFM¹ 8/9)

- During the fire season (FBFM 9) in a normal fire conditions, average rates of spread of approximately 7-8 cph², with average flame lengths of 2-3 feet, would be anticipated.
- During the fire season (FBFM 9) in an extreme fire conditions, average rates of spread in excess of 10 cph, with average flame lengths in excess of 4 feet, would be anticipated.

2. Open fields consisting primarily of perennial grasses (FBFM 1) without mowing.

- During the fire season (FBFM 9) in a normal fire conditions, we would anticipate average rates of spread of approximately 75-85 cph, with average flame lengths of 3-4 feet.
- During the fire season (FBFM 9) in an extreme fire conditions, we would anticipate average rates of spread in excess of 90 cph, with average flame lengths in excess of 5 feet.

¹ FBFM= Fire Behavior Fuel Model

² cph: chains per hour

■ Fire Regime Alteration and Condition Class

The park and surrounding areas have been found to be in condition class 2. The park has a historic fire return interval of low severity fires with a frequency of 0 to 35 years (GTR-RMRS-87). Fire regimes on these lands have been moderately altered from their historical return level by either increased or decreased fire frequency. A moderate risk of losing key ecosystem components has been identified on these lands. To restore historical fire regime these lands may require restoration by prescribed fire, mechanical, or chemical treatments and the subsequent reintroduction of native plants.

■ Control Problems & Dominant Topographic Features

Individual houses and roads in a semi-rural setting surround the park. While these developments are good access for suppression resources, they also increase the values at risk and the probability of an ignition.

Control problems could range from low to extreme depending on site specifics and burning conditions. Under normal fire season conditions control problems could be expected to be low to moderate.

The general topography of the park is a sequence of hills and valleys. Some developments whose boundary is adjacent to the park slope downhill, others are situated on flat terrain, but none are uphill from the park. Most neighboring landowners have the park's forests adjacent to their property.

■ Other Management Considerations

Because the purpose of Morristown is to preserve the lands and features associated with the 1777 and 1779-80 winter encampments of the Continental Army during the War for Independence, all wildland fire management actions will emphasize the preservation of the historic structures and landscapes on the site. Other considerations are the wildland urban interface, as well as developing and maintaining good relations with assisting agencies, the community and with park neighbors.

IV. Wildland Fire Management Program Components

A. General Implementation Procedures

Implementation of the components of the wildland fire management program at Morristown NHP will be consistent with the park's fire management capabilities and will consider the current and predicted conditions affecting fire behavior. When possible, preplanned decisions, based on historical fire behavior indices will be considered in *Stage I Wildland Fire Implementation Plan* development to select an appropriate management response.

A Wildland Fire Implementation Plan (WFIP) will be initiated for all wildland fires. This plan will provide the framework for determining the appropriate management response. The WFIP Stage I: Initial Fire Assessment will be the responsibility of the Incident Commander or Morristown NHP's Wildland Fire Management Coordinator. Since the Fire Management Plan requires suppression of all wildland fires, the requirement for a decision checklist as a part of the Stage I analysis can be considered met. Subsequently, Stage I analysis may be satisfied at the programmatic level in the Fire Management Plan through determinations made by combinations of values to be protected and/or fire behavior thresholds. A copy of the WFIP Stage I form can be found in Appendix G.

B. Wildland Fire Suppression

1. Range of Potential Behavior

Morristown NHP has a low incidence of wildland fire. Since 1950, there have been 31 reported wildland fires. Of these fires, 21 have been under 0.25 acre – many were small spots, and 10 of them have been up to 10 acres in size.

Wildland fires most often occur during the normal fire season of March 1 to May 31 and October 1 to November 30. Fire Behavior Fuel Models 1 (grass), and 8/9 (hardwood forest) are present at Morristown. Fuel Model 1 probably poses the greatest threat for intense fire behavior, but it is found infrequently in the park landscape. An evenly distributed average rainfall of about 48 inches, couple with a relatively high water table throughout two units of the park, further discourages the threat of extreme fire behavior. Wildland fires would not likely travel far before reaching barriers such as roads, trails, wetlands, or rivers.

In Fire Behavior Fuel Model 9 (leaf-off hardwoods), fires run through the surface litter faster than Model 8 (Leaf-on hardwoods) at a rate of spread of 7.5 chains/hour as opposed to 1.6 chains per hour and have longer flame lengths, averaging 2.6 feet as opposed to 1.0 feet. Fall fires in hardwoods are predictable, but high winds can actually cause higher rates of spread than predicted because of spotting caused by rolling and blowing leaves. Concentrations of dead-down woody material will contribute to possible torching out of trees, spotting, and crowning.

2. Preparedness Actions

Preparedness" refers to activities that lead to a safe, efficient, and cost-effective fire management program in support of land and resource management objectives through appropriate planning and coordination. Preparedness includes planned activities for the development and implementation of the wildland fire management program. These activities include staffing, training, fire prevention activities, education, provision and maintenance of support facilities, purchase of and contracting for equipment, supplies, support, planning and coordination, policy development and oversight, research, and interagency coordination."

Departmental policy requires that all personnel engaged in wildland fire suppression and prescribed fire duties meet the standards set by the National Wildfire Coordinating Group (NWCG, *PMS-310-1*). Morristown NHP will conform strictly to the requirements of the NPS wildland fire management qualification and certification system.

Although Morristown NHP has no specific wildland firefighter positions, employees will be encouraged to become qualified as wildland firefighters in order to support the park's fire management program. The park Wildland Fire Management Coordinator (WFMC) will be responsible for obtaining the training required to meet park needs for qualified wildland firefighters. When advanced or specialized training is necessary, the park WFMC will work through the Area Fire Management Officer to obtain funding and enrollment. The park WFMC will coordinate the park's fire training needs with those of other nearby parks, cooperating agencies, and the region. Park wildland firefighters will attend an annual wildland firefighter safety refresher.

a) Fire Prevention, Education, and Community Assistance

The park will use a number of strategies, including environmental education and interpretation, to reduce the occurrence of preventable wildland fire.

■ **Fire Prevention Plan:** Morristown is committed to preventing human-caused fires through information and education. A fire prevention assessment of the park was conducted in order to create an effective fire prevention plan. The Fire Prevention Assessment and Action Plan is attached to this plan as Appendix I. This appendix contains detailed prevention actions for the park. It will be reviewed annually and updated if changes occur which alter the identified Risks, Hazards, or Values.

■ **Education:** Park staff will be familiar with the park's Fire Prevention Assessment and Action Plan and will be able to explain it to other interested parties.

Fire prevention is a major focus of the park Safety Committee, especially when conducting building and other site inspections.

Interpretation programs will include a fire prevention component during times of very high to extreme fire danger. Camp or cooking fires are not permitted in the park, except by the interpretive staff for special cooking demonstrations. These demonstrations will be at a minimum during times of very high to extreme fire danger.

■ **Community Assistance:** Morristown's fire prevention and education program may be implemented in conjunction with other fire management and public safety agencies to increase awareness of fire prevention, develop understanding of the dangers and benefits of fire, protect human life and property, and prevent damage to cultural resources, real property, and natural resources.

The program of public education regarding wildland fire prevention, potential fire benefits and dangers will be conducted as appropriate to help support FMP goals. Visitor contacts, bulletin board materials, handouts, and interpretive programs may be used to increase visitor and park neighbor awareness of fire hazards and benefits. The Regional Fire Prevention and Education Specialist may provide assistance to the park for its fire prevention, education and community assistance programs.

Park employees will be provided with information about fire prevention, the wildland/urban interface, the objectives of the fire management program, and the dangers and benefits of prescribed fire and wildland fire. Employees will be kept informed about changes in the fire situation throughout the fire season.

Park staff will work with the local fire departments and other agencies with fire management and public safety responsibilities to establish common protocols and procedures, identify training needs, conduct joint training, and develop strategies for safer and more efficient fire management operations.

b) Annual Training Activities

Department of the Interior and National Park Service policies require that all personnel engaged in fire suppression duties meet the standards set by the National Wildfire Coordinating Group (NWCG). All employees dispatched or assigned to wildland fires will be qualified, unless assigned as trainees.

Annual training activities consist of a needs determination for fire-qualified personnel, completion of an annual 8-hour fire safety refresher, and work capacity test for all firefighters. As needs determine and funding allows personnel may attend other regional and national training sessions to maintain or improve their fire qualifications.

c) Presuppression Readiness

- March 1: Complete annual wildland fire fighter safety refresher and fitness testing for red cards.
- April 15: Schedule seasonal firefighter training.
Report personnel qualifications to Regional FMO.
- May 30: Complete inventory of all fire equipment.
Update call-out list and distribute to all participants.
Issue fire packs to employees for out-of-park fires assignments.
Fire tools and equipment are ready; chain saws operational.
Fresh fuel mixed and labeled.
- August 20: Training requests for in-park fire courses due in the regional office.
- November 15: Note equipment deficiencies and prepare requisitions for replacement equipment.
Review and, if necessary, revise Fire Management Plan.

d) Fire Weather and Fire Danger

Morristown has an established fire weather station (#280501). Weather observations, when they are made, are used to confirm observations taken at the New Jersey Forest Fire Service Graystone Fire Tower.

Fire weather forecasts are generated by the National Weather Service's Mount Holly Office. Weather data can be found at <http://www.erh.noaa.gov/phi/fir.html>.

A specific daily fire danger rating is not generated for the park. The park will utilize the fire danger rating generated by the New Jersey Forest Fire Service for the region in which the park is located. This rating can be obtained at <http://www.state.nj.us/dep/parksandforests/fire/firedanger.html>.

e) Step-Up Staffing Plan

The burning index determines the park's fire pre-suppression staffing and equipment level on a given day. Because Morristown NHP is not in an area of high, historical wildland fire occurrence a very simple step-up plan is employed. The step-up plan (Table 1) is based on the National Fire Danger Rating System (NFDRS) Burning Index, computed in 1982 from a Fire Family Report. The following actions will be taken to ensure adequate fire preparedness based upon the daily fire danger rating for the general area surrounding the park. Actions are progressive and include those in previous classes.

Table 1: Step-Up Staffing Plan			
Staffing Class	Fire Danger Rating	Burning Index	Step-Up Action
1	Low	0-11	■ Normal tour of duty for protection personnel.
2	Moderate	12-23	■ Normal tour of duty for protection personnel.
3	High	24-47	■ Normal tour of duty for protection personnel. ■ Increase the number of vehicle, foot, and horse patrols.
4	Very High	48-58	■ Post notice of high fire danger at the visitor center and museum. ■ Protection personnel must be in a response ready mode and may be called in for extended hours. ■ Suspend all black powder demonstrations.
5	Extreme	59+	■ One additional red-carded firefighter on duty between 1300-1900 hours. ■ Suspend all black powder and cooking demonstrations.

3. Pre-Attack Plan

No written or formal pre-attack plan exists for Morristown. Volunteer fire departments have developed their own protocols and procedures for initial attack of fires within the park. Historic structures receive the highest priority with regard to any suppression action. The measures currently being taken to prevent the damage or destruction of these structures by fire include keeping the grass mowed in at least a four-foot radius around each of these structures.

4. Initial Attack

a) Priority setting during fire occurrences

- Protecting historic structures
- Vegetative cover

b) Criteria for appropriate initial attack response consistent with GMP/RMP objectives

- Public and firefighter safety.
- Protection of cultural, historic, and natural resources.
- Protection of improvements and private property.
- Minimum fire-line construction and use of Minimum Impact Suppression Tactics (MIST).
- Available suppression resources and response times.
- Fire behavior as determined by fuels, weather, and topography.

- Use aircraft and mechanized equipment only where necessary to support above-listed criteria.

c) Confinement as a Strategy

- Confinement may be used to minimize resource damage and to provide for firefighter safety.
- A confinement strategy may be selected for initial attack as long as it is not being used solely to meet resource management objectives.
- Resource benefits may be a by-product, but the strategy must be based upon the criteria listed above.
- A confinement strategy may also be selected in the WFSA process when initial attack has failed to contain a wildland fire. This strategy may also be used to minimize resource damage and to provide for firefighter safety.

d) Response Times

Response time for initial attack ground resources is approximately fifteen minutes or less depending on proximity, accessibility, and other such variables. Extended attack resources should be able to respond in two to six hours, again depending on proximity and availability.

e) Restrictions and Special Concerns

These general constraints apply to all fire operations in the park unless specifically excepted:

- Dozers and other soil moving heavy equipment will not be used without the expressed written approval of the Superintendent, designated acting, or the Chief of Protection.
- Use of vehicles off established paved roads, fire roads/trails, and firebreaks will be subject to approval by the Chief of Protection on a case-by-case basis.
- Clearing of vegetation for helispots will be kept to a minimum.
- Suppression actions, such as line construction will be conducted in such a way as to minimize long-term environmental impacts.
- Sites impacted by fire suppression or by fire will be rehabilitated as necessary, based on an approved course of action for each incident.

f) Local Issues

Morristown depends on local volunteer fire departments for initial and extended attack. This close alliance requires that Morristown work closely with these agencies in planning, training, preparedness, and other fire management issues.

Municipal fires departments from Morristown, Bernardsville, and New Vernon respond to wildland and structural fire in the park. A cooperative agreement is in place with the State of New Jersey Forest Fire Service for responses to fires in the park and mutual aid for fires outside of park boundaries.

5. Extended Attack and Large Fire Suppression

a) Extended Attack Needs:

Extended attack needs will be determined by considering the following:

- Threats to life, property, and park resources
- Availability of suppression forces

b) Implementation Plan Requirements – Wildland Fire Situation Analysis (WFSA) Development:

When a fire escapes initial attack, a new strategy must be developed to suppress the fire. This selection process is accomplished through the development of a WFSA.

The WFSA is a decision process that employs a systematic and reasonable approach to determine the most appropriate management strategy for a particular situation. Reasonable management alternatives are identified, analyzed, and evaluated, and are consistent with the expected probability of success /consequences of failure. The Superintendent shall approve the WFSA and any revisions. Evaluation criteria include firefighter safety, anticipated costs, resource impacts, and social, political, and environmental considerations. The evaluation of alternatives becomes the triggering mechanism for re-evaluation of the WFSA. An electronic version of a WFSA can be found at the U. S. Forest Service website at <http://www.fs.fed.us/fire/wfsa/>.

c) Incident Management Transition:

Transition to an incident management team requires a briefing by the Superintendent and a limited delegation of authority for the suppression of the fire(s). The briefing should address agency specific concerns, priorities, firefighter and public safety, economic and resource concerns, and other topics or issues of importance and relevance to the suppression effort.

6. Exceeding WFIP and New Strategy Selection

A WFIP has been exceeded when a fire cannot be suppressed during initial attack suppression actions, or when a prescribed fire becomes an escaped fire. Then, a Wildland Fire Situation Analysis must be developed. When completed, the WFSA will develop a new strategy by which the fire should be managed.

7. Minimum Impact Suppression Tactics

- All fire management activities in Morristown NHP will rely on tactics, which do a minimum amount of resource damage while maintaining the safety of firefighters, personnel, and the public as the highest priority.
- Fireline construction will be minimized by taking advantage of natural barriers, rock outcrops, trails, roads, streams, and other existing fuel breaks.
- Limbing along the fireline will be done only as essential for the suppression effort and for safety.
- Unburned material may be left within the final line.
- Clearing and scraping will be minimized.
- Snags or trees will be felled only when essential for control of the fire or for safety of personnel.

8. Rehabilitation Guidelines

When a suppression action is taken, rehabilitation may be necessary. The most effective rehabilitation measure is prevention of impacts through careful planning and the use of minimum impact suppression tactics. The

Incident Commander will initiate immediate rehabilitation actions. Rehabilitation will be directed toward minimizing or eliminating the effects of the suppression effort and reducing the potential damage and hazards caused by the fire.

These actions may include:

- Construct waterbars to prevent erosion.
- Place “boneyards” of cut vegetation in a natural or random arrangement.
- Position cut ends of logs to be inconspicuous to visitors and camouflage where possible.
- Flush cut stumps, camouflage with soil and moss.
- Restoration of natural ground contours.
- Remove handline berms.

If revegetation or seeding is necessary, only native plant species will be utilized, and the Natural Resource Specialist will be consulted for approval of the species chosen. Rehabilitation efforts should be initiated as soon as they can be safely implemented, which may be before the fire is declared controlled.

If extensive emergency rehabilitation is needed or if rehabilitation is needed to reduce the effects of a wildland fire then the park can request appropriate funding through the Burned Area Emergency Rehabilitation (BAER) fund. The BAER fund is administered through the NPS Branch of Fire and Aviation Management at the National Interagency Fire Center. The specifics of the policy can be found in 620 DM 3 DOI BAER Policy (2001). BAER project requests totaling \$300,000 or less can be approved by the Regional BAER Coordinator. Submissions over this amount are reviewed at the regional level, and forwarded to the Fire Management Program Center for approval. Requests for BAER funding must be made to the Area Fire Management Officer within 72 hours of control of the fire.

9. Records and Reports

The park Wildland Fire Management Coordinator is responsible for all fire related records and reports except the WFIP. This responsibility may be delegated to an incoming Incident Commander for any fire within the park. An Individual Fire Report DI-1202 will be completed and entered into SACS within 10 days of the fire being declared out. The Area Fire Management Office will be given timely notice of the fire occurrence.

The park maintains a record for each fire incident on file in the protection office and forwards these reports to the Area Fire Management Office. These records and all weather data are critical elements of the park’s historical database and will be maintained permanently.

C. Wildland Fire Use

This option was rejected due to the smaller size of the park, the significant degree of wildland urban interface along the park boundary, and the lack of available qualified personnel required for managing these fires. All unscheduled wildland fires in Morristown will be suppressed using the most appropriate management action.

D. Prescribed Fire

Currently no prescribed fires are planned in the park. Though a program of using prescribed fire at Morristown is not fully considered in this plan, individual burns may be used in the future for protection of cultural resources, especially historic scene restoration and maintenance, hazard fuel reduction, and natural resource objectives. If a determination is made that a specific prescribed fire is required, that prescribed fire will be subject to the requirements of NEPA, the NHPA and other applicable regulations. All prescribed fire operations will adhere to NPS prescribed fire policies and procedures found in RM-18.

1. Planning and Documentation

a) Annual Activities.

In the event that a prescribed fire is to be implemented, the following actions will occur. If no burn is planned, then there will be no annual activities. An approved burn plan will identify need resources, individual responsibilities, and timelines. All planning will be coordinated through the Area Fire Management Office. These activities include scheduling of resources, coordination with neighboring agencies and communities, obtaining necessary permits, and completion and approval of the burn plans.

b) Long-Term Prescribed Fire Strategy

The purpose of prescribed burning at Morristown would be to protect and preserve the cultural resources of the park, manage vegetation (specifically invasive plant species), and reduce fuel loading. Prescribed fire objectives will be to:

- Manage vegetation to maintain vistas and to promote the growth of native grasses and control woody vegetation.
- Assist with the establishment and maintenance of the historic scene.
- Reduce invasive species populations and promote native species regeneration.
- Reduce accumulated hazardous fuel conditions.

c) Needed Personnel

Morristown NHP does not have sufficient personnel trained to manage a prescribed fire. Personnel needed for a specific burn will be identified in the project's burn plan. The park will participate in a coordinated approach to mutual prescribed fire programs with partners to be determined at the time of the burn.

d) Fire Weather, Effects, and Behavior Monitoring

Monitoring of prescribed fires at Morristown is intended to provide information for quantifying and predicting fire behavior and its ecological effects on park resources while building a historical record. Monitoring measures the parameters common to all fires: fuels, topography, weather, and fire behavior. In addition, ecological changes such as species composition and structural changes will be monitored for several years after a fire. This information will be very useful in adjusting the prescribed fire program to meet short and long-term resource objectives more effectively.

During prescribed burning, monitoring will include mapping, weather, site and fuel measurements, and direct observation of fire characteristics such as flame length, rate of spread, and fire intensity. Operational monitoring provides a check to insure that the fire remains in prescription, and serves as a basis for

evaluation and comparison of management actions in response to measured, changing fire conditions, and changes such as fuel conditions and species composition.

All prescribed fires will be monitored regardless of size. The park Wildland Fire Management Coordinator will establish specific fire information guidelines for each fire to update intelligence about the fire. The Regional Fire Ecologist may be utilized to coordinate the monitoring.

The park Wildland Fire Management Coordinator will assure that assigned qualified personnel are used to monitor the behavior of prescribed fires. By being able to assess fire's potential, characterize and quantify its effects, and determine if it is within prescription, an efficient and flexible monitoring program will result.

Morristown will use the fire monitoring protocols with adaptations described in NPS Fire Monitoring Handbook. Fire monitoring support will be coordinated with the Area Fire Management Officer.

e) Prescribed Fire Project Critique

The Superintendent may convene a review committee for any prescribed fire. A report detailing the actual burn will accompany any recommendations or changes deemed necessary in the program. The report will be submitted to the Superintendent, the Area Fire Management Officer, and the Regional Fire Management Officer for review.

f) Reporting and Documentation Requirements

All prescribed fire forms will be completed as outlined by the park Wildland Fire Management Coordinator. A fire monitor will be assigned to collect all predetermined information and complete all necessary forms prior to, during, and after the fire. All records will be archived in Morristown NHP's fire records for future use and reference.

The park Wildland Fire Management Coordinator will prepare a final report on the prescribed fire. Information will include a narrative of the fire operation, a determination of whether objectives were met, weather and fire behavior data, map of the burn area, photographs of the burn, number of work hours, and final cost of the burn.

The forms necessary for documenting prescribed fire activities are outlined in RM-18. The Individual Fire Report, DI-1202, and the Incident Record, is the responsibility of the park Fire Coordinator and documents all personnel and equipment costs involved in the burn.

g) Historic Fuel Treatment Map

Because prescribed fires have not been used at Morristown NHP in the past, no historic fuel treatment map exists.

h) Local Prescribed Burn Plan Requirements

All prescribed fire plans must meet the requirements as set forth in RM 18, Chapter 10. Once the plan has been drafted, it will be submitted to qualified agency personnel for technical review. After review and approval by the technical reviewer(s), the plan will be submitted to the applicable state agency for review and comment. It will then be submitted to the Chief of Protection and Biologist for review and signature before being forwarded to the Superintendent for final review and approval. Only after all of the above

steps have been completed will the plan be considered as having been approved for implementation in keeping with the prescription.

2. Exceeding Prescribed Fire Burn Plan

If the prescribed fire escapes the burn unit and immediate efforts at control are not successful, it will be declared a wildland fire and suppressed. A Wildland Fire Situation Analysis (WFSA) will be completed and additional personnel and resources ordered as determined by the Incident Commander. If the fire continues to burn out of control, additional resources will be called from the local and volunteer fire departments. An incident management team or other non-local resources may be requested to assume command of the fire.

3. Air Quality and Smoke Management

a) Air Quality Issues:

Morristown is located in a Class II air quality area. The Fire Management Plan will comply with the Clean Air Act. The objectives for smoke management and compliance with the Clean Air Act are similar to those for fire management: to encourage a natural process so long as it does not endanger public health and safety. Smoke levels become unacceptable when they impair visibility to such a degree that they detract from visitor enjoyment of the primary park resource with emphasis on the vistas of Morristown. Dense smoke within Morristown is generally unacceptable; however, it may be tolerated for short periods if the winds assure good mixing. Morristown will also evaluate the forecasted impact of smoke on local communities and visitor safety. All of these considerations are difficult to quantify, monitor, and evaluate, and there will exist considerable room for discretion.

It may be necessary to aggressively control fires when smoke affects a sensitive area or creates a significant public response. All fire activities may have to be curtailed when an extended inversion or air pollution episode is in effect. Traffic control measures will be undertaken in conjunction with local law enforcement agencies when such episodes occur. Complaints regarding smoke will be documented and communicated to the Superintendent.

b) Smoke Mitigation:

Morristown will notify the surrounding assisting agencies, at the time of any fire ignition. Thereafter, smoke characteristics will be evaluated regularly. A process will be developed for implementation to determine if adverse impacts to air quality and visibility are occurring from management decisions.

To minimize the effects of smoke the following guidelines will be considered when planning a prescribed fire. Burning will be conducted only when:

- visibility exceeds 5 miles;
- the fire weather forecast indicates the presence of an unstable air mass;
- wind vectors push smoke away from sensitive areas;
- allowed by the New Jersey Forest Fire Service and when;
- the fire weather forecast predicts fair or better dispersion.

4. Debris Burning

Fire is occasionally used to dispose of natural vegetative debris deemed infeasible or impractical to remove mechanically in a non-wildland fuel environment (parking lot, storage yard, gravel pit, etc.). The debris may be generated from routine maintenance activities, piled debris generated from construction activities, removal of hazard trees, discarded building and administrative materials. Any material being burned for debris disposal must be classified as permissible to burn under applicable federal, state, tribal, and local regulations.

Debris burned in non-wildland environments do not require a prescribed burn plan. Debris burned in a wildland environment, including snow-covered ground, requires a prescribed fire plan.

The park follows all applicable guidance and regulation when using fire for debris disposal.

Parameters for debris burning are:

- Temperature: Less than or equal to normal average high temperature for the month.
- Wind Speed: Less than 10 mph.
- Relative Humidity: Greater than 40%.
- Fine Fuel Moisture: Surrounding fuels greater than 20%.
- Smoke Dispersal: Mixing heights equal to or greater than 500 meters.

E. Non-Fire Fuel Treatment Applications

1. Mechanical Treatments

a) Annual Activities

Hazard fuels at Morristown are typically managed through mowing (grasses and other herbaceous vegetation), raking or vacuuming (fallen leaves), cutting and chipping (woody vegetation), or other mechanical or cultural means.

Fuels around buildings, boundaries, roads, trails, picnic areas and other sites occasionally accumulate sufficient fuel density to create a hazard to real property, historic resources, or human health and safety.

Firebreaks are maintained around most structures in the park. These firebreaks are typically re-mowed every two to four weeks during the growing season depending on the growth of vegetation, importance of the resource, the amount of visitation in the area, and the availability of staff and equipment.

Heavy equipment including industrial mowers, large trucks, and trailer-mounted wood chippers are often used in mechanical fuel removal. Heavy equipment except mowers should usually be confined to existing roads and trails. In all cases, tracked and wheeled vehicles should only be used off roads and on trails under conditions where they will not significantly disturb soils, compact soils, or break up vegetative cover.

b) Required Monitoring

Monitoring will be done to determine if the project objectives were met. Monitoring may include the use of photo plots, vegetation transects, or a visual assessment.

c) Critique Format

Accomplishment of objectives, methodology, cost effectiveness, safety issues, and resource damage are some of the topics to be discussed. A written project completion report incorporating the findings of the critique will be forwarded to the Area Fire Management Officer.

d) Funding and Cost Accounting

FIREPRO funding requests for individual projects may be submitted to the Area Fire Management Officer. Documentation of individual project costs will be submitted to the Area Fire Management Officer for review. Expenditures will not exceed the authorized project amount.

e) Reporting and Documentation

All project forms will be completed as outlined by the park Wildland Fire Management Coordinator. All records will be archived with the park's fire records for future use and reference. A completion report will be forwarded to the Area Fire Management Officer.

The park Wildland Fire Management Coordinator is responsible for preparing a final report on each project. Information will include a narrative of the project operation, a determination of whether objectives were met, map of the area, photographs of the site, number of work hours, and final cost of the project.

f) Annual Planned Project List

Proposed projects may be submitted to the park Wildland Fire Management Coordinator by any division chief. The park Wildland Fire Management Coordinator will compile a list of these projects and submit them to the Superintendent for approval and prioritization.

F. Emergency Rehabilitation and Restoration

On January 19, 2001, the Department of the Interior issued new policy on burned area emergency stabilization and rehabilitation. The specifics of the policy can be found in 620 DM 3 DOI BAER Policy (2001). The park Fire Coordinator and the Natural Resource Specialist, subject to review by the park Fire Committee, will jointly formulate a rehabilitation plan for each fire. The BAER plan will be submitted to the Regional BAER Coordinator (Regional Prescribed Fire Specialist), through the Area Fire Management Officer, for approval within 72 hours of the date the fire is declared controlled. BAER project requests totaling \$300,000 or less can be approved by the Regional Baer Coordinator. Submissions over this amount are reviewed at the regional level and forwarded to the NPS Fire Management Program Center for approval.

V. Organizational and Budgetary Parameters

A. Organizational Structure of the Fire Management Program

This section discusses areas of responsibility for implementation of the fire management program by specific park position. There may be instances that the same person functions in two areas of responsibility. The purpose of this section is to clearly define areas of responsibility, provide clear direction and accountability, and further the development of a responsive fire management program.

Morristown National Historical Park is a small park with a small permanent staff. The Resource Management and Visitor Protection Division and the park Wildland Fire Management Coordinator (WFMC) have the primary responsibility for all fire management activities in the park. Specific responsibilities assigned to staff positions are described as follows:

1. Superintendent

Fire management at Morristown NHP is the responsibility of the Superintendent, with technical duties and accompanying responsibilities delegated to staff members. The Superintendent will be responsible for management of the program within Departmental and National Park Service policy, Director's Order 18: Wildland Fire Management (DO-18), and all relevant laws and regulations.

- Ensures that a comprehensive fire management program is adequately planned, staffed, implemented, and that the Fire Management Plan is reviewed annually and revised as necessary.
- Maintains and facilitates public and media relations pertaining to both suppression and prescribed fire.
- Approves prescribed fire plans.

2. Chief of Protection

- Oversees the fire management program and ensures coordination with resource management and other park programs.
- Responsible for short- and long-range planning, and implementation of the park wildland fire management program.
- Serves as the Incident Commander on park fire suppression efforts in the absence of the park WFMC or other NPS personnel with higher levels of fire training.
- Responsible for reporting all personnel costs resulting from suppression efforts to the Administrative Officer.
- Approves and implements any fire-related use restrictions.
- Monitors visitor safety and implements evacuation as necessary.
- Facilitates the flow of fire information to the media and the public or assigns an individual to that task as needed.
- Conducts reviews of park fires as specified in this plan.
- Assists in the investigation of and provides enforcement for all human-caused fires.
- Assists the WFMC in developing staff fire qualifications
- Provides for the development of employee fire qualifications and makes qualified personnel available during on-going park fires.
- Manages budgets for both allocated and emergency fire accounts.
- Manages equipment assigned to the fire management program.

3. Wildland Fire Management Coordinator (WFMC)

- Implements the park's fire management program.
- Ensures readiness of fire equipment during the fire season.
- Oversees initial and extended attack operations and arrange for logistical support as needed.
- Procures supplies and training for wildland fire personnel.
- Conducts fitness testing and maintain fire personnel records.
- Retrieves daily weather and forecast fire danger rating from WIMS.
- Prepares annual fire program funding proposals (FIREPRO and cyclic).
- Communicates with area and regional FMOs.

4. Biologist

- Develops and updates short-range fire management plans.
- Coordinates fire research efforts, and serves as the primary resource advisor for project fires or prescribed fires.
- Develops natural resource objectives for prescribed fire.
- Plans and coordinates prescribed fires, and non-fire hazard fuels and wildland/urban interface treatment projects.

5. Chief of Interpretation

Manages visitor information programs and services, including operation of the visitor center and daily programs. Major fire management duties include:

- Provides for the development of employee fire qualifications and makes qualified personnel available during on-going park fires.
- Provides assistance in the closure of roads, trails, and other facilities.
- Serves as park public affairs officer.

6. Chief of Maintenance

Manages the maintenance of park buildings, comfort stations, roads, trails, vehicles, and utilities. Major fire management duties include:

- Provides for the development of employee fire qualifications and makes qualified personnel available during on-going park fires.
- Provides assistance in the closure of roads, trails, and other facilities.

7. Administrative Officer

- Maintains fire personnel time sheets.

- Reports timekeeping information to other parks or agencies whose personnel may have participated in fire suppression efforts in the park.
- Provides for the development of employee fire qualifications and makes qualified personnel available during on-going park fires.
- Provides emergency procurement assistance for on-going park fires.

8. Area Fire Management Officer

The Area Fire Management Officer is the FIREPRO funded Fire Management Officer (FMO) for Delaware Water Gap National Recreation Area (DEWA).

The Area FMO provides the first level of technical assistance to the park for all fire management planning, and implementation activities. This includes assistance for managing the park's use of fire management programs such as the National Fire Danger Rating System, the Weather Information Management System (WIMS), the NPS Wildland Fire Computer System (SACS), the resource ordering system (ROSS), the Incident Qualification and Certification System (IQCS), Fire Program Analysis (FPA), FIREPRO budgeting, etc.

The Area FMO assists with the park's wildland fire qualification and certification program, fire monitoring, fire training and mobilizations, development of preparedness, suppression, wildland/urban interface, fuels management and prescribed fire operational plans, development of cooperative agreements with local and state agencies, and administration of Rural Fire Assistance Program grants to local fire departments.

Park requests for assistance from the Area FMO will be coordinated through the park Wildland Fire Management Coordinator. Requests should be made as far in advance as is practical.

The Area FMO will assist the park in acquiring needed resources and equipment, and in preparing FIREPRO funding requests.

The Area FMO may be requested to serve on an incident management team as an agency representative regarding fire management operations.

The Area Fire Management Officer and the DEWA fire staff will play a key role in the planning and implementation of any prescribed fire operations in the park. In most cases, the Area Fire Management Officer would serve as burn boss.

Morristown National Historical Park has an inter-park agreement with Delaware Water Gap National Recreation Area to provide the park assistance with fire management operations through the Area FMO. A copy of the agreement is located at the park.

9. Regional Fire Management Officer

The Regional Fire Management Officer (Regional FMO) has delegated authority for the management of the region's fire management program. The Regional FMO is responsible for planning, training, technical assistance, budget prioritization, coordination, and interagency issues for units of the National Park Service in the Northeast Region. The Regional FMO assures that the regional fire management program is conducted accordance to established policy and procedures and that FIREPRO funds are used appropriately.

The Regional FMO represents the parks in the region to the NPS Fire Management Program Center, the Eastern Interagency Coordination Center (EICC), the Northeastern Fire Coordination Center (NECC), and other regional and national fire management organizations.

10. Regional Fuels/Fire Ecology Program Manager

The Regional Fuels/Fire Ecology Program Manager provides technical assistance to the park on fire ecology, prescribed fire and fuels treatment matters. In addition, this individual manages and coordinates hazardous fuels, wildland urban interface, and research related activities and funding.

11. Regional Fire Education, Prevention and Information Specialist

The Regional Fire Education, Prevention and Information Specialist (Regional FEPIS) is the FIREPRO funded FEPIS position for all parks in the Northeast Region. The Regional FEPIS provides assistance to the park in conducting fire prevention and education programs. The Regional FEPIS can also assist the park in evaluating park structures for wildland/urban interface issues and with an outreach interface program to park neighbors and local governmental bodies and agencies.

12. NPS Fire Management Program Center

The NPS Fire Management Program Center (FMPC) is located in Boise, Idaho and provides national leadership, direction, coordination and support for NPS fire, aviation and incident management. The primary purposes of the FMPC are:

- Providing the NPS with oversight and policy on both a national and regional level to ensure that departmental goals and objectives are met. In addition, Fire and Aviation Management is very involved in the interagency arena, working with federal and nonfederal partners on a daily basis.
- Achieving national mandates for firefighter, NPS employee and visitor safety.
- Protecting natural and cultural resources.
- Maximizing partnerships with federal, state, local and tribal entities, in order to achieve the greatest benefit for park resources.
- Achieving and maintaining the highest standard of professionalism, using state-of-art concepts, technologies and practices.

Annual wildland fire management appropriation provides FIREPRO funding for necessary expenses for fire planning and oversight functions, along with budgeted activities necessary to prepare for the normal fire season, and for the development and implementation of the wildland fire emergency suppression, emergency rehabilitation, and hazard fuels reduction program.

B. FIREPRO Funding

The park is not a base funded FIREPRO park and does not have FIREPRO funded positions. FIREPRO funding is available for approved fire training, prevention, preparedness, suppression, prescribed fire, wildland/urban interface, fuels treatment, and burned area emergency stabilization and rehabilitation projects. Related equipment, personal protective equipment and supplies may be acquired with FIREPRO funding. Financial

grants may be provided to qualifying local fire departments through the Rural Fire Assistance Grant Program (RFA).

All FIREPRO funding requests are made through the Area Fire Management Officer.

C. Fire Management Organization

Appendix F includes a chart showing the park's organizational structure. Positions that are currently involved with the fire management program are highlighted. There is an ongoing effort to get more employees, both permanent and seasonal, from all divisions trained as basic fire fighters.

D. Wildland Fire Use Certification

The park has rejected the strategy of wildland fire use. This option was rejected due to the smaller size of the park, the significant degree of wildland urban interface along the park boundary, and the lack of available qualified personnel required for managing these fires.

E. Interagency Coordination

Interagency cooperation is vital to the full realization of NPS fire management program objectives. The ability of a single agency to implement a fire management program of any complexity is limited without coordination with and assistance from other organizations. Interagency cooperation and the coordination of shared resources and common activities are critical to the success of the park's fire management program.

1. Local Coordination

Morristown has a written agreement with the New Jersey Forest Fire Service for wildland fire suppression within the park and surrounding areas. The park also has verbal agreements for wildland fire suppression with the fire departments of the Bernardsville Fire Department (volunteer), New Vernon Volunteer Fire Department (volunteer), and the Morristown Fire Bureau. The park plans to develop written agreements with these organizations in the near future. These fire departments offer significant support to the park fire management program.

2. Area Coordination

Through an inter-park agreement with Delaware Water Gap National Recreation Area, Morristown National Historical Park is a member of the Mid-Atlantic Fire Management Area (MAFMA). MAFMA is comprised of 13 NPS units in eastern Pennsylvania, northern New Jersey, and southern New York State. The Delaware Water Gap National Recreation Area FMO serves as the Mid-Atlantic Area FMO. The Area FMO coordinates fire management needs between the Mid-Atlantic Area parks and with the Northeast Region Fire Management Office, the Eastern Interagency Coordination Center (EICC) and the Northeastern Fire Coordination Center (NECC).

3. Regional Coordination

The NPS Northeast Region is an associate member of the Northeast Fire Compact. Federal and state agencies have agreed to share fire resources through this compact. Mobilization and dispatch of fire resources (staff,

equipment, and supplies) is through the Northeastern Coordination Center (NECC) via the Area FMO. A list of available resources and detailed procedures for requesting assistance are documented in the Northeast Region Fire Mobilization Plan. The mobilization plan is updated annually.

4. National Coordination

The National Park Service is a member of the Interagency Cooperative Fire Agreement and the National Wildfire Coordinating Group (NWCG). Participating members of the agreement include the U.S. Forest Service of the Department of Agriculture, the Bureau of Indian Affairs, Bureau of Land Management, National Park Service, and U.S. Fish and Wildlife Service of the Department of the Interior. Through additional agreements, state forestry and wildland fire agencies, private forestry companies, the Association of State Foresters, and many states participate in this agreement.

The principle objective of the Interagency Cooperative Fire Agreement is the cooperative and cost effective sharing of fire resources during national and regional emergencies. Through this agreement, a wide variety of fire resources and support services can be made available to units of the National Park Service. All requests for assistance through this agreement are directed to the Northeastern Fire Coordination Center (NECC) through the Area FMO.

VI. Monitoring and Evaluation

A. Monitoring Programs

The park will implement long and short term monitoring to assess accomplishments, and determine the effects of fire management activities on cultural and natural resources.

The park will work closely with the Area FMO and Regional Fuels/Fire Ecology Program Manager in developing and implementing a fire monitoring program. Assistance in conducting fire monitoring activities, including the establishment and sampling of monitoring plots, will be coordinated through the Area FMO.

B. NPS Fire Monitoring Handbook

This handbook will serve as the source document providing monitoring needs with minor adaptations made for local situations and conditions. An electronic copy can be found at <http://www.nps.gov/fire/fmh/FEMHandbook.pdf>

C. Fire Monitoring Plan

A Fire Monitoring Plan, based upon the protocols found in the *NPS Fire Monitoring Handbook* will be developed as part of the implementation of this Fire Management Plan.

VII. Fire Research

Research is a necessary element in the fire management program at Morristown NHP. The primary objective of fire research is to provide information for making fire management decisions. Fire research will be coordinated through the Natural Resource Specialist of the park.

As the park's Fire Management Plan is implemented and tested, additional research will inevitably be needed. Research will be identified for such purposes as refining prescriptions, improving the understanding of fire behavior and fire effects, refining monitoring protocols, defining fire return cycles, describing fuels dynamics, describing the impacts on cultural resources, and other information needed for operational fire and resource management.

Monitoring will be a part of all prescribed fires conducted in the park. Monitoring will help to define the effectiveness of the fire management program by assessing the vegetative effects of fire. The monitoring protocols found in the *NPS Fire Monitoring Handbook* will be adapted and used by the park.

VIII. Public Safety

A. Public Safety Issues and Concerns

Firefighter and public safety is the first priority in every fire management activity and is the responsibility of everyone assigned to a wildland or prescribed fire incident. Agency administrators at all levels must stress that firefighter and public safety *always* takes precedence over property and resource loss.

The Superintendent may close all or a portion of the park (including roads and trails) when elevated fire danger, wildland fire, or a prescribed fire pose an imminent threat to public safety. The Chief of Protection has overall responsibility for enforcing park closures.

B. Mitigation Safety Procedures

The park will implement a notification system to inform visitors, neighbors, and political audiences of all fire activity through normal communication channels. A fire activity report will be updated, as significant changes occur to inform park personnel of potential fire threats. Areas of fire activity will be clearly signed at the visitor center. Residents adjacent to the park will be notified in advance of any prescribed fire. If any fire poses a threat outside the park's boundaries, the park will notify law enforcement agencies.

IX. Public Information and Education

A. Public Information Capabilities and Needs

The park is committed to keeping the public informed of its fire management program and activities. The occurrence of a wildfire within a national park often arouses media attention. Any requests for information, emanating from the news media, concerning wildland fire incidents will be referred to the Superintendent or other fire information personnel as appointed by the Superintendent or Incident Commander. All reasonable efforts will be made to allow for media access, as long as public safety or that of firefighting personnel is not compromised.

The Regional Fire Education, Prevention and Information Specialist is available to the park as a resource for consultation, support, and assistance.

B. Step-Up Public Information Activities

Information and education are important processes in public acceptance of the managed fire program at Morristown. The Wildland Fire Management Coordinator (WFMC) will provide the Superintendent with accurate information regarding current fire situations and management activities. The public information program will be developed as follows:

- Concepts of the prescribed fire program will be incorporated, as appropriate, in park publications, brochures, and handouts.
- The fire management program will be incorporated into visitor contacts, interpretive talks, walks, and tour programs. Particular attention will be given when fires are conspicuous from roads or visitor use areas.

- The public information outlets of neighboring and cooperating agencies, the area fire management office and the regional office will be provided with all fire management information.
- The role of the fire management program at the park will be developed and discussed, as appropriate, in off-site programs and talks.
- The fire management program will be discussed in informal talks with employees of all divisions, contractors, volunteers, residents, and park neighbors.

Emergency closures or restrictions may become necessary during periods of elevated or extended fire danger. Such closures will necessitate additional coordination and communication with the public and the media.

X. Protection of Sensitive Resources

A. Cultural and Historic Resources Needing Protection

The greatest resource concerns are the historic buildings and landscapes located in the park. Resource protection is focused on prohibiting any activity that causes damage to the structures, the artifacts that are housed by these structures, and the landscapes. As funding permits, defensible space will be maintained. Prescribed fires will be conducted a safe distance from any of the historic structures.

Historic Resources: The four units of the park contain numerous historic features and structures needing protection. Thirty-eight meet the criteria of historical significance and eligibility for the National Register. The Ford Mansion, Wick House, and Guerin House are the primary structures relating to the park's 18th century historic themes and all are on the National Register. Because many of the structures have wooden shingle roofs, they face a potential threat from embers from a nearby wildfire, but little risk from a classic wildland-urban interface fire sweeping through as a crown or running surface fire. A fire hose is located in the Wick House smoke house for fire prevention purposes for the Wick House.

Archeological Sites/Historic Landscapes: Morristown's archeological resources are extensive; there are 15 major archeological sites located in several areas throughout the park. None of the sites has been identified as needing any special protection from fire; on the contrary, fire suppression activities are likely to result in unwanted disturbance. Only a small percentage of the park has been thoroughly surveyed for archeological sites. It is possible that sites requiring specialized fire protection will be found in the future.

The park's historic and designed landscapes (hills, streams, roads, fence lines, farmsteads, and woodlots) are among its most significant resources.

The greatest threat to park resources would be the use of heavy equipment and the construction of fireline to control a wildfire. These activities could damage archeological and cultural resources. These impacts will be mitigated through use of minimum impact suppression tactics (described in Section IV). Upon detection of a fire, a member of the curatorial operation will be consulted to identify sensitive archeological or cultural resources that have the potential to be affected by the fire or by fire management actions. He or she will provide recommendations on the implementation of appropriate mitigation measures.

B. Natural Resources Needing Protection

Species of Special Concern: Several species may be expected to utilize areas around or within the park are on the New Jersey State List or the federal list of threatened and endangered species:

- The bog turtle (*Clemmys muhlenbergii*) is a federally threatened species known to occur within 1.5 miles of the park. The bog turtle has not been observed in the park possibly due to a lack of suitable habitat.
- The Indiana bat (*Myotis sodalis*) is a federally endangered species known to inhabit Morris County. The closest known hibernacula are located within approximately 10 miles of the park. No bats have been observed in the park but the park's large expanse of contiguous forested upland, traversed by forested wetland stream corridors, is highly suitable habitat for foraging and roosting bats.
- Bald eagles (*Haliaeetus leucophalus*), a federally listed endangered species, have occasionally been observed within the vicinity of the park.
- State of New Jersey birds of special concern observed in the park during an inventory conducted in the park in 2002 and 2003 include the veery (*Catharus fuscescens*), gray-cheeked thrush (*Catharus minimus*), black-throated green warbler (*Dendroica virens*), cerulean warbler (*Dendroica cerulea*), Kentucky warbler (*Oporornis formosus*), and Canada warbler (*Wilsonia canadensis*).
- The wood turtle (*Clemmys insculpta*), a state listed threatened species has been observed on several occasions in the park around the Passaic River within the last two years.
- State of New Jersey threatened plants recorded in the park by Rutgers University in 1995 included rattlesnake plantain (*Goodyera repens*), twinleaf (*Jeffersonia diphylla*), slender pinweed (*Lechea tenuifolia*), strict blue-eyed grass (*Sisyrinchium montanum*) and oak fern (*Gymnocapium dryopteris*). A more recent study conducted by Rutgers did not verify the presence of these state listed species in the park. These species are not known to be adapted to disturbance. Information about their sensitivity to fire is needed.

Park resource management staff will coordinate with FWS to ensure that the park has the most current information regarding sensitive, proposed, and listed species, as well as any proposed or designated habitat areas.

Wetlands/Riparian Areas: Wetlands and riparian areas in the park for the most part are small and are associated with streams and minor tributaries. Wetland acreage is estimated at approximately 64 acres. The most extensive riparian areas flank Primrose Brook. Two small marshes are found near the East and West branches of Primrose Brook. In the New Jersey Brigade Unit, a small, forested wetland lies at the intersection of Indian Grave Brook and a small feeder stream that runs southwest from Patriot's Path. High intensity fires could threaten wetland ecology. Wetland areas on the park property will be protected from fire when possible and monitored if disturbed by fire.

Air Quality: The ambient air quality standard for the park is designated as Class 2, and a moderate increase in air pollution is allowed. There is not a special concern for air quality.

C. Developments, Infrastructure, and Improvements Needing Protection

In addition to the historic structures noted above, park development and infrastructure includes the visitor center, park headquarters, ranger station, utility (maintenance area), housing units, the Cross Estate, a picnic area, and hiking trails. A small private inholding contains a private cemetery.

As funding allows, defensible space will be maintained around buildings, structures, and other improvements in the park.

XI. Fire Critiques and Annual Plan Review

The Incident Commander or the Burn Boss will initially critique wildland and prescribed fires. This critique should take place with those directly involved in the management of the fire.

The Superintendent should convene a committee to review prescribed and wildland fires of significant size or cost, or where minor safety issues or minimal levels of public concern occur. These findings should be forwarded to the Area Fire Management Officer.

Prescribed or wildland fires involving an Incident Management Team or significant political, safety, or public issues should be reviewed by the Area Fire Management Officer. If a fire generates a major political or public concern, involves multiple serious injuries, or a fatality, the Regional Fire Management Officer and the NPS Fire Management Program Center should participate in the review.

The park Biologist will review the fire management plan annually for currency and incorporate changes into the appendix. Changes to the appendices require approval of the Superintendent and the Chief of Protection. The fire management plan is subject to formal review every five years.

XII. Consultation and Coordination

The following people were involved in the formulation and preparation of this fire management plan:

- Deborah Nordeen, Park Ranger, Delaware Water Gap National Recreation Area, Bushkill, Pennsylvania.
- Cliff Lively, Area Fire Management Officer, Mid-Atlantic Fire Management Area, Delaware Water Gap National Recreation Area, Bushkill, Pennsylvania.
- Robert Masson, Biologist, Morristown National Historical Park, Morristown, New Jersey
- Douglas Wallner, Regional Fuels/Fire Ecology Program Manager, National Park Service, Philadelphia, Pennsylvania

Agencies Consulted:

- US Fish and Wildlife Service
- New Jersey Forest Fire Service
- Bernardsville Fire Department (volunteer),
- New Vernon Volunteer Fire Department (volunteer)
- Morristown Fire Bureau

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Appendix A: References Cited

National Park Service, Management Policies (2001).

National Park Service, Director's Order 12 (DO 12), Conservation Planning, Environmental Impact Analysis and Decision Making (2001) and accompanying Handbook.

DO 18, The Wildland and Prescribed Fire Management Policy: Implementation and Reference Guide, (1998) and accompanying Reference Manual (RM-18).

Federal Wildland Fire Management Policy and Program Review.

National Park Service, Organic Act, August 25, 1916.

National Park Service, Public Law 72-409, 47 Stat. 1421, establishing Morristown National Historical Park.

National Park Service, Morristown National Historical Park General Management Plan (2003).

National Park Service, Morristown National Historical Park Resource Management Plan (1999).

Appendix B: 2001 Federal Wildland Fire Management Policy Compliance

1. SAFETY

Firefighter and public safety is the first priority. This Fire Management Plan and all activities described within reflect this commitment.

2. FIRE MANAGEMENT AND ECOSYSTEM SUSTAINABILITY

The full range of fire management activities will be used to help achieve ecosystem sustainability, including its interrelated ecological, economic, and social components.

3. RESPONSE TO WILDLAND FIRE

The 2001 Federal Wildland Fire Management Policy considers fire a critical natural process to be integrated into land and resource management plans and activities on a landscape scale, and across agency boundaries. The response to wildland fire presented in this Fire Management Plan is limited to suppression activities only.

4. USE OF WILDLAND FIRE

The 2001 Federal Wildland Fire Management Policy states that wildland fire will be used to protect, maintain, and enhance resources and, as nearly as possible, be allowed to function in its natural ecological role. This Fire Management Plan does not allow the use of wildland fire for resource benefit.

5. REHABILITATION AND RESTORATION

Rehabilitation and restoration efforts will be undertaken to protect and sustain ecosystems, public health, and safety, and to help communities protect infrastructure.

6. PROTECTION PRIORITIES

The protection of human life is the single, overriding priority. Setting priorities among protecting human communities and community infrastructure, other property and improvements, and natural and cultural resources will be based on the values to be protected, human health and safety, and the costs of protection. Once people have been committed to an incident, these human resources become the highest value to be protected.

7. WILDLAND URBAN INTERFACE

The operational roles of federal agencies as partners in the Wildland Urban Interface are wildland firefighting, hazardous fuels reduction, cooperative prevention and education, and technical assistance. Structural fire suppression is the responsibility of tribal, state, or local governments. Federal agencies may assist with exterior structural protection activities under formal Fire Protection Agreements that specify the mutual responsibilities of the partners, including funding.

8. PLANNING

Every area with burnable vegetation must have an approved Fire Management Plan. Fire Management Plans are strategic plans that define a program to manage wildland and prescribed fires based on the area's approved land management plan. Fire Management Plans must provide for firefighter and public safety; include fire management strategies, tactics, and alternatives; address values to be protected and public health issues; and be consistent with resource management objectives, activities of the area, and environmental laws and regulations.

This Fire Management Plan is a strategic plan that provides for firefighter and public safety, addresses values to be protected, public health issues, is consistent with resource management activities, activities of the area, and is consistent with environmental laws and regulations.

9. SCIENCE

Fire Management Plans and programs will be based on a foundation of sound science. Research will support ongoing efforts to increase our scientific knowledge of biological, physical, and sociological factors. Information needed to

support fire management will be developed through an integrated interagency fire science program. Scientific results must be made available to managers in a timely manner and must be used in the development of land management plans, Fire Management Plans, and implementation plans.

This Fire Management Plan is based upon, and it utilizes, the best available science and relevant research.

10. PREPAREDNESS

Agencies will ensure their capability to provide safe, cost-effective fire management programs in support of land and resource management plans through appropriate planning, staffing, training, equipment, and management oversight.

This Fire Management Plan provides guidance for safe, cost-effective fire management, supporting land and resource management plans through appropriate preparedness activities.

11. SUPPRESSION

Fires are suppressed at minimum cost, considering firefighter and public safety, benefits, and values to be protected, consistent with resource objectives.

12. PREVENTION

Morristown NHP will work together and with its partners and other affected groups and individuals to prevent unauthorized ignition of wildland fires.

13. STANDARDIZATION

Agencies will use compatible planning processes, funding mechanisms, training and qualification requirements, operational procedures, values-to-be-protected methodologies, and public education programs for all fire management activities.

Morristown NHP is an active participant in, and contributor to, interagency planning processes, funding mechanisms, training and qualification requirements, operational procedures, values-to-be-protected methodologies, and public education programs for all fire management activities employed in the Fire Program Analysis (FPA) New Jersey 17 interagency Fire Planning Unit (FPU).

14. INTERAGENCY COOPERATION AND COORDINATION

Fire management planning, preparedness, prevention, suppression, fire use, restoration and rehabilitation, monitoring, research, and education will be conducted on an interagency basis with the involvement of cooperators and partners.

Morristown NHP is an active participant in, and contributor to, interagency planning processes, funding mechanisms, training and qualification requirements, operational procedures, values-to-be-protected methodologies, and public education programs for all fire management activities employed in the Fire Program Analysis (FPA) New Jersey 17 interagency Fire Planning Unit (FPU).

15. COMMUNICATION AND EDUCATION

Agencies will enhance knowledge and understanding of wildland fire management policies and practices through internal and external communication and education programs. These programs will be continuously improved through the timely and effective exchange of information among all affected agencies and organizations.

Morristown NHP is an active participant in, and contributor to, interagency planning processes, funding mechanisms, training and qualification requirements, operational procedures, values-to-be-protected methodologies, and public education programs for all fire management activities employed in the Fire Program Analysis (FPA) New Jersey 17 interagency Fire Planning Unit (FPU).

16. AGENCY ADMINISTRATOR AND EMPLOYEE ROLES

Agency administrators will ensure that their employees are trained, certified, and made available to participate in the wildland fire program locally, regionally, and nationally as the situation demands. Employees with operational, administrative, or other skills will support the wildland fire program as necessary. Agency administrators are responsible and will be held accountable for making employees available.

17. EVALUATION

Agencies will develop and implement a systematic method of evaluation to determine effectiveness of projects through implementation of the 2001 Federal Fire Policy. The evaluation will assure accountability, facilitate resolution of areas of conflict, and identify resource shortages and agency priorities.

Morristown NHP is an active participant in, and contributor to, interagency planning processes, funding mechanisms, training and qualification requirements, operational procedures, values-to-be-protected methodologies, and public education programs for all fire management activities employed in the Fire Program Analysis (FPA) New Jersey 17 interagency Fire Planning Unit (FPU).

Appendix C: Definition of Terms

Chain: A unit of measure equal to 66 feet.

Control Line: A comprehensive term for all the constructed and natural fire barriers and treated fire edges used to control a fire.

Direct Method: A method of suppression that treats the fire as a whole, or all its burning edges, by wetting, cooling, smothering, or chemically quenching the fire, or by mechanically separating the fire from unburned fuel.

Fire Weather: Weather conditions that influence fire ignition, behavior, and suppression.

Fire Management Plan: A strategic plan that defines a program to manage wildland fires. This plan is supplemented by operational procedures such as preparedness, preplanned dispatch burn plans and prevention.

Flame Length (FL): The length of a flame measured from the base of the flame to its tip and parallel to the length of the flame. Flame length is measured on a slant when the flame is tilted due to the effects of wind and slope.

Fuel Model: A simulated fuel complex for which all fuel descriptions required by the mathematical fire spread model have been specified.

Fuel Type: An identifiable vegetative association of fuel elements of distinctive species, form, size, arrangement, or other characteristics.

Hazard Fuels: Fuels that, if ignited, have significant potential to threaten human life and safety, real property, park resources, or carry fire across park boundaries.

Indirect Attack: A method of suppression in which the control line is located along natural firebreaks, favorable breaks in topography, or at considerable distance from the fire.

Initial Action: Action taken by the first resources to arrive at a wildland fire to meet protection and fire use objectives.

Minimum Impact Suppression Tactics (MIST): The application of techniques that effectively accomplish wildland fire management objectives while minimizing the impacts to cultural and natural resources commensurate with ensuring public and firefighter safety and effective wildland fire control.

National Fire Danger Rating System (NFDRS): A multiple index scheme designed to provide fire control and land management personnel with a systematic means of assessing various aspects of fire danger on a day-to-day basis.

Planned Ignition: A fire ignited by management actions to meet specific objectives.

Preparedness: Activities that help to provide a safe, efficient and cost effective fire management program in support of land and resource management objectives through appropriate planning and coordination.

Prescribed Fire: A fire ignited by park managers under known conditions of fuel, weather, and topography to achieve specific objectives. An approved prescribed fire plan must be completed and NEPA requirements must be met prior to ignition.

Prescription: Measurable criteria that guide selection of appropriate management strategies and actions. Prescription criteria may include economic, public health, environmental, geographic, administrative, social or legal considerations.

Rate of Spread (ROS): The time it takes the leading edge of a flaming fire front to travel a known distance. Rate of spread is commonly measured in chains/hour and meters/second.

Suppression: Management actions intended to protect identified values from a fire, extinguish a fire, or alter a fire's direction of spread.

Unplanned Ignition: A wildland fire not ignited by management actions.

Wildland: Any area under fire management jurisdiction of a land management agency.

Wildland Fire: Any fire, other than prescribed fire that occurs in the wildland.

Wildland Fire Situation Analysis (WFSA): A decision-making process that evaluates alternative management strategies against selected environmental, social, political, and economic criteria.

Weather Information Management System (WIMS): An interactive computer system designed to accommodate the weather information needs of all federal and state natural resource agencies.

Appendix D: Species Lists

Trees

Norway Spruce	<i>Picea abies</i>
Pitch Pine	<i>Pinus rigida</i>
White Pine	<i>Pinus strobus</i>
Eastern Hemlock	<i>Tsuga canadensis</i>
Eastern Red Cedar	<i>Juniperus virginiana</i>
Black Willow	<i>Salix nigra</i>
Pignut Hickory	<i>Carya glabra</i>
Shagbark Hickory	<i>Carya ovata</i>
Red Hickory	<i>Carya ovalis</i>
Mockernut Hickory	<i>Carys tomentosa</i>
Black Walnut	<i>Juglans nigra</i>
Yellow Birch	<i>Betula lutea</i>
Black Birch	<i>Betula lenta</i>
Gray Birch	<i>Betula populifolia</i>
American Hornbeam	<i>Carpinus caroliniana</i>
American Chestnut	<i>Castanea dentata</i>
American Beech	<i>Fagus grandifolia</i>
White Oak	<i>Quercus alba</i>
Red Oak	<i>Quercus borealis</i>
Scarlet Oak	<i>Quercus coccinea</i>
Pin Oak	<i>Quercus palustris</i>
Black Oak	<i>Quercus velutina</i>
American Elm	<i>Ulmus americana</i>
Slippery Elm	<i>Ulmus rubra</i>
White Mulberry	<i>Morus alba</i>
Yellow Poplar	<i>Liriodendron tulipifera</i>
Umbrella Magnolia	<i>Magnolia tripetala</i>
Sassafras	<i>Sassafras albidum</i>
American Sycamore	<i>Platanus occidentalis</i>
Hawthorne	<i>Crataegus sp.</i>
Sweet Cherry	<i>Prunus avium</i>
Black Cherry	<i>Prunus serotina</i>
Black Locust	<i>Robinia pseudoacacia</i>
Tree of Heaven	<i>Acer altissima</i>
Red Maple	<i>Acer rubrum</i>
Sugar Maple	<i>Acer saccharum</i>
Basswood	<i>Tilia americana</i>
Flowering Dogwood	<i>Cornus florida</i>
Blackgum	<i>Nyssa sylvatica</i>
White Ash	<i>Fraxinus americana</i>
Black Ash	<i>Fraxinus nigra</i>
Siebold's Viburnum	<i>Viburnum Sieboldii</i>
Chinese Chestnut	<i>Castanea mollissima</i>

Shrubs and Small Trees

Speckled Alder	<i>Alnus rugosa</i>
Smooth Alder	<i>Alnus serrulata</i>
Japanese Barberry	<i>Berberis thunbergii</i>
Hazelnut	<i>Corylus americana</i>
Witch-Hazel	<i>Hamamelis virginiana</i>
Smooth Sumac	<i>Rhus glabra</i>
Spicebush	<i>Lindera benzoin</i>
Mock Orange	<i>Philadelphus cornarius</i>
Black Raspberry	<i>Rubus occidentalis</i>

Raspberry
Lowbush Blueberry
Privet
Elderberry
Maple Leaf Viburnum
Arrow Wood
Tart Honeysuckle

Vines

American Bittersweet
Oriental Bittersweet
Virginia Creeper
Poison Ivy
Catbriar
Summer Grape
Fox Grape

Rubus strigosus
Vaccinium vacillans
Ligustrum vulgare
Sambucus canadensis
Viburnum acerifolium
Viburnum dentatum
Lonicera tartarica

Celastrus scandens
Celastrus orbiculatus
Parthenocissus quinquefolia
Rhus radicans
Smilax glauca
Vitis aestivalis
Vitis labrusca

Mammals

Shorttail Shrew
Least Shrew
Smoky Shrew
Star-nosed Mole
Eastern Mole
Opossum
Big Brown Bat
Northern Long-Eared Bat
S. Flying Squirrel
Red Bat
Little Brown Bat
Woodchuck
Striped Skunk
Meadow Vole
House Mouse
Meadow Jumping Mouse
White-footed Mouse
Longtail Weasel
Eastern Pipistrel
Raccoon
Norway Rat
Eastern Gray Squirrel
Red Squirrel
Eastern Cottontail
Eastern Chipmunk
Gray Fox
Red Fox
Whitetail Deer

Blarina brevicauda
Cryptotis parva
Sorex fumeus
Condylura cristata
Scalopus aquaticus
Didephis virginianus
Eptesicus fuscus
Myotis septentrionalis
Glaucomys volans
Lasiurus borealis
Myotis lucifugus
Marmota monax
Mephitis mephitis
Microtus pennsylvanicus
Mus musculus
Zapus hudsonius
Peromyscus leucopus
Mustela frenata
Pipistrellus subflavus
Procyon lotor
Rattus norvegicus
Sciurus carolinensis
Tamiasciurus hudsonicus
Sylvilagus floridanus
Tamias striatus
Urocyon cinereoargenteus
Vulpes fulva
Odocoileus virginianus

Amphibians

Spotted Salamander
Eastern american toad
N. Dusky Salamander
Red-spotted Newt
Two Lined Salamander
Gray Treefrog
Red-backed Salamander
Slimy Salamander
Red Salamander
Bullfrog
Green Frog
Pickerel Frog
Wood Frog

Ambystoma maculatum
Bufo americanus
Desmognathus fuscus
Diemictylus viridescen
Eurycea bislineata
Hyla versicolor
Plethodon cinereus
Plethodon glutinosus
Pseudotriton ruber
Rana catesbeiana
Rana clamitans
Rana palustris
Rana sylvatica

Fish

Blacknose Dace
Bluegill
Brook Trout
Brown Trout
Creek Chub
Golden Shiner
Slimey Sculpin
Spottail Shiner
Rainbow Trout
Tesselated Darter
White Sucker

Rhynchithys atratulus
Lepomis macrochirus
Salvelinus fontinalis
Salmo trutta
Semotilus atromaculatus
Notemigonus chrysoleucas
Cottus cognatus
Notropis hudsonius
Ocorhynchus mykiss
Etheostoma olmstedii
Catostomus commersoni

Reptiles

Eastern Garter Snake
Northern Ringneck Snake
edwardsii
Northern Water Snake
EasternMilk Snake
Eastern Box Turtle
Eastern Painted Turtle
Snapping Turtle
Common Musk Turtle
Wood Turtle

Thamnophis sirtalis
Diadophis punctatus
Nerodia sipedon
Lampropeltis triangulum
Terrapene carolina
Chrysemys picta
Chelydra serpentina
Sternotherus odoratus
Clemmys insculpta

Birds

Great Blue Heron
Green Heron
Mallard
Turkey Vulture
Sharp-shinned Hawk
Coopers Hawk
Broad winged Hawk
Red-tailed Hawk
Mourning Dove
Yellow-billed Cuckoo
Barn Owl
Great Horned Owl
Eastern Screech Owl
Common Nighthawk
Whip-poor-will

Ardea herodias
Butorides virescens
Anas platyrhynchos
Cathartes aura
Accipiter striatus
Accipiter cooperii
Buteo platypterus
Buteo jamaicensis
Zenaida macroura
Coccyzus americanus
Tyto alba
Bubo virginianus
Otus asio
Chordeiles minor
Caprimulgus vociferus

Chimney Swift
Belted Kingfisher
Downy Woodpecker
Hairy Woodpecker
Northern Flicker
Eastern Wood Pewee
Least Flycatcher
Eastern Phoebe
Great Crested Flycatcher
Eastern Kingbird
Barn Swallow
Tree Swallow
Blue Jay
American Crow
Black-capped Chickadee
Tufted Titmouse
White-breasted Nuthatch
House Wren
Eastern Bluebird
Wood Thrush
American Robin
Catbird
Northern Mockingbird
Cedar Waxwing
European Starling
Yellow-throated Vireo
Red-eyed Vireo
Blue-winged Warbler
Yellow-rumped Warbler
Common Yellowthroat
Black and White Warbler
Ovenbird
Yellow-breasted Chat
Scarlet Tanager
Cardinal
Rose-breasted Grosbeak
Indigo Bunting
Rufous-sided Towhee
Chipping Sparrow
Field Sparrow
Grasshopper Sparrow
Song Sparrow
Red-winged Blackbird
Eastern Meadowlark
Common Grackle
Brown-headed Cowbird
Baltimore Oriole
Purple Finch
American Goldfinch

Chaetura pelagica
Megaceryle alcyon
Picoides pubescens
Picoides villosus
Colaptes auratus
Contopus virens
Empidonax minimus
Sayornis phoebe
Myiarchus crinitus
Tyrannus tyrannus
Hirundo rustica
Tachycineta bicolor
Cyanocitta cristata
Corvus brachyrhynchos
Parus atricapillus
Parus bicolor
Sitta carolinensis
Troglodytes aedon
Sialia sialis
Hylocichla mustelina
Turdus migratorius
Dumetella carolinensis
Mimus polyglottos
Bombcilla cedrorum
Sturnus vulgaris
Vireo flavifrons
Vireo olivaceus
Vermivora pinus
Dendroica coronata
Geothlypis trichas
Mniotilta varia
Seiurus aurocapillus
Icteria virens
Piranga olivacea
Cardinalis cardinalis
Pheucticus ludovicianus
Passerina cyanea
Pipilo erythrophthalmus
Spizella passerina
Spizella pusilla
Ammodramus savannarum
Melospiza melodia
Agelaius phoeniceus
Sturnella magna
Quiscalus quiscula
Molothrus ater
Icterus galbula
Carpodacus purpureus
Carduelis tristis

Appendix E: Categorical Exclusion

XIV. Categorical Exclusion Form

Project Number – MORR-0502

Date-05/04/05

Describe project, including location (reference the attached Environmental Screening Form, if appropriate):

Morristown National Historical Park-Wildland Fire Management Plan 2005

Describe the category used to exclude action from further NEPA analysis and indicate the number of the category:

516 DM 2 1.12

Hazardous fuels reduction activities using prescribed fire not to exceed 4,500 acres, and mechanical methods for crushing, piling, thinning, pruning cutting, chipping, mulching and mowing, not to exceed 1,000 acres. Such activities shall be limited to areas 1) in wildland-urban interface and 2) Condition Classes 2 or 3 in Fire Regimes 1, II, or III, outside the wildland-urban interface; shall be identified through a collaborative framework as described in "A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment—10-year Comprehensive Strategy Implementation Plan", Shall be conducted consistent with Agency and Departmental procedures and applicable land and resource management plans; Shall not be conducted in wilderness areas or impair the suitability of wilderness study areas for preservation as wilderness; Shall not include the use of herbicides or pesticides or the construction of new permanent roads or other new permanent infrastructure; and may include the sale of vegetative material if the primary purpose of the activity is hazardous fuel reduction.

Describe any public or agency involvement effort conducted (reference the attached ESF):

Adjacent landowners contacted by mail concerning preparation of the plan. Draft fire mgt. plan made available to public on park website.

On the basis of the environmental impact information in the compliance file, which I am familiar, I am categorically excluding the described project from further NEPA analysis. No exceptional circumstances (e.g. all boxes in the ESF are marked "no") or conditions in the section 3-6 apply, and the action is fully described in section 3-4 of NPS-12.

Randy Turner

5/18/05

Park Superintendent or Designee

Date

Park Superintendent

Title

Robert Masson

Biologist

NPS Contact Person

Title

Appendix F: Supplemental Information

1. Morristown NHP Fire Call-Up List

a) Park Staff

Name	Title	Qualification	Telephone
Steven Cape	Acting Chief of Protection	FFT2	908-766-6841
Rob Hipp	Park Ranger	FFT2	908-766-6841
Robert Masson	Biologist	FFT2	908-766-6841
Randy Turner	Superintendent		908-766-8224

b) NPS and Interagency

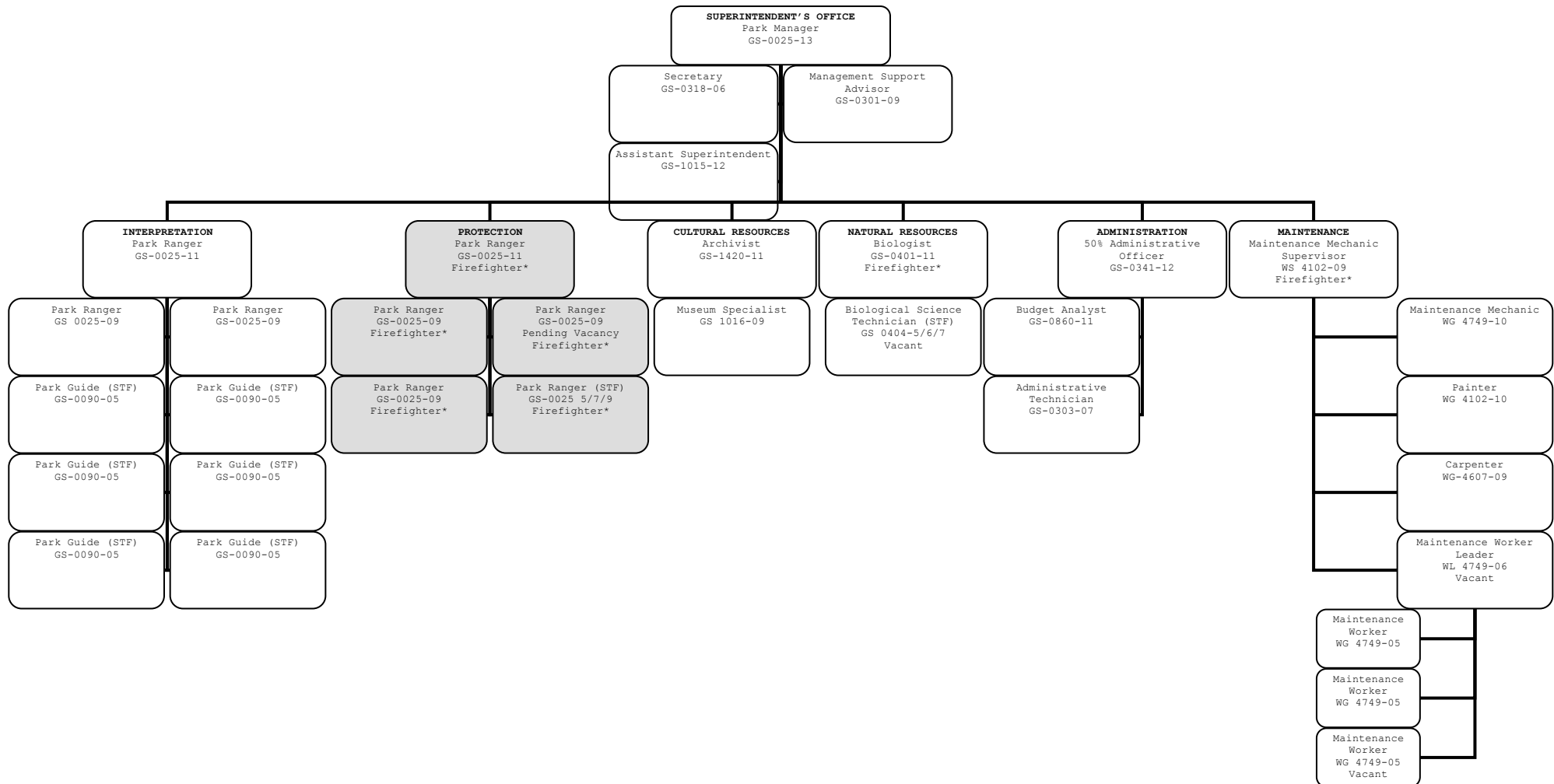
Name/Organization	Telephone
Cliff Lively, Area FMO, Mid-Atlantic Fire Management Area	570-588-1845
New Jersey Forest Fire Service Graystone Fire Tower	973-827-6100
Bernardsville Fire Department)	908-766-9552
New Vernon Volunteer Fire Department	973-538-1277
Morristown Fire Bureau	973-292-6602
Mendham Township Fire Department	973-543-7213

Appendix F: Supplemental Information

2. Morristown NHP Organizational Chart 2004 (Fire)

Shaded boxes indicate positions with firefighter requirement in position description

* Depending on training



Appendix F: Supplemental Information

3. Fire Equipment Inventory (as of 05/04)

Clothing			
Description	Quantity	Description	Quantity
Pants, green, old-style, female, size 10-12	5	Shirt, yellow, size small	5
Pants, green, old-style, male, size 32x34	6	Shirt, yellow, size medium	8
Pants, green, old-style, male, size 34x34	2	Shirt, yellow size large	10
Pants, green, old-style, male, size 36x34	1	Shirt, yellow, size x-large	3
Pants, green, old-style, male, size 38x34	1		
Pants, green, new-style BDU, size 32-34x34	2		
Personal Protective Equipment			
Description	Quantity	Description	Quantity
Headlamps, complete	9	Fire Shelter, Training w/carrier	2
Gloves, white, leather, adjustable wrist, size small	4	Carrier, yellow, fire shelter	2
Gloves, white, leather, adjustable wrist, size medium	6	Liner, plastic, fire shelter	2
Gloves, white, leather, adjustable wrist, size large	2	Water Bottle, plastic w/screw top	11
Gloves, white, leather, adjustable wrist, size x-large	1	Carrier, water bottle	30
Goggles, safety style	11	Helmet, yellow plastic, NFPA approved	6
Goggles, Bouton style w/extra lens	4	Shroud/Neck Protector, yellow	3
First Aid Kit, Large	2	Chaps, Chainsaw, green	2
First Aid Kit, Personal	10	Blanket, gray wool	4
Fire Shelter, Complete w/liner and carrier	2		
Packs and Personal Gear			
Description	Quantity	Description	Quantity
Red Pack, FSS issue	4	Belt Bag, yellow	4
Yellow Pack, FSS issue, complete w/webbing	4	Sleeping Bag, yellow, FSS issue	5
Yellow Pack, FSS issue, w/o webbing	2	Fireline Handbook	8
Tent, Portable, FSS issue	1		
Tools			
Description	Quantity	Description	Quantity
Fire Rake	2		
Pulaski	5		
Shovel	6		

*Note: There are many unserviceable items in the cache that do not meet current standards established by the NFPA, OSHA, and NWCG, have become unserviceable due to normal wear from field use, or are extraneous to wildland fire

operations. As a result, they are not included as part of this inventory and should be disposed of either through donation to a cooperating agency or destruction according to policy.

Appendix F: Supplemental Information

4. Cooperative Agreements

There are currently no cooperative agreements with any local fire agencies. Agreements will be established with the following agencies:

- 1) New Jersey Forest Fire Service
- 2) Harding
- 3) Morristown
- 4) Morris Township
- 5) Bernardsville
- 6) Mendham

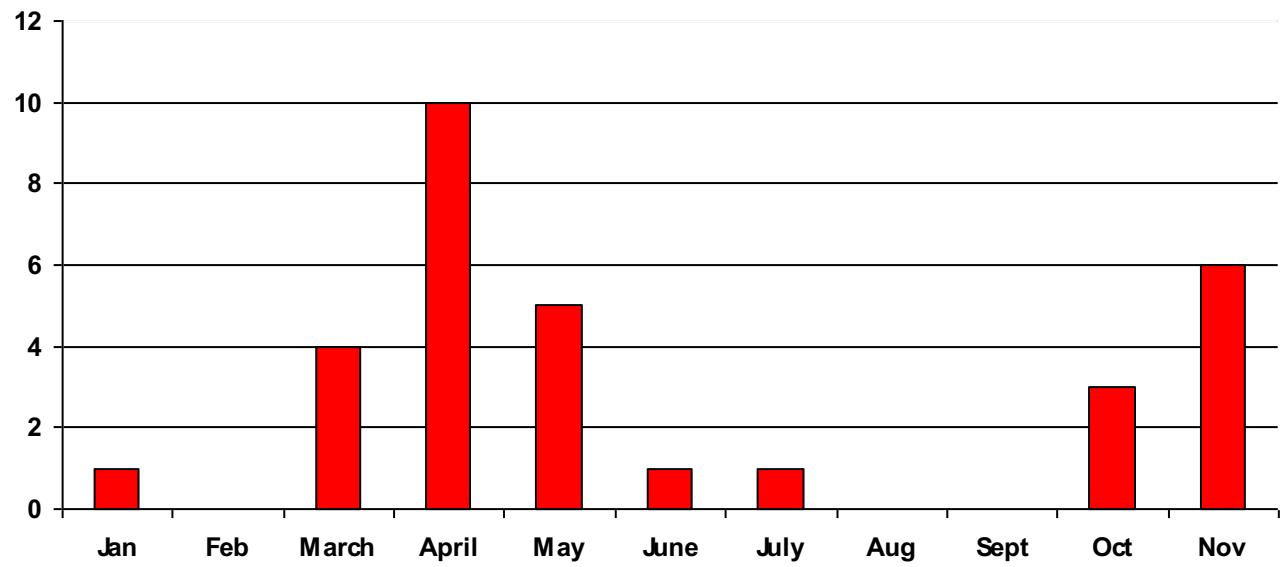
Appendix F: Supplemental Information

5. Tables

a) Table 1: Summary of Fires in Morristown National Historical Park, 1950-2004

Year	Month/Day	Area or Name	Acreage
1950	July 03	Jockey Hollow	.01
1952	October 31	Jockey Hollow	.01
1952	November 01	Jockey Hollow	.01
1952	November 06	Jockey Hollow	.01
1952	November 07	Jockey Hollow	.01
1952	November 07	Jockey Hollow	.01
1952	November 12	Jockey Hollow	.01
1953	April 30	Fort Nonsense	.015
1957	March 23	Fort Nonsense	.25
1957	June 11	Jockey Hollow	2.00
1958	April 03	Fort Nonsense	.25
1958	May 13	Fort Nonsense	1.00
1960	April 24	Jockey Hollow	.25
1961	April 22	Jockey Hollow	.01
1963	April 10	Fort Nonsense	2.76
1965	May 01	Jockey Hollow	.40
1966	March 31	Fort Nonsense	.10
1966	October 29	Fort Nonsense	.20
1966	October 31	Fort Nonsense	.10
1966	November 07	Fort Nonsense	.20
1968	March 31	Jockey Hollow	2.00
1977	April 04	Fort Nonsense	.10
1977	April 12	Fort Nonsense	3.00
1979	May 11	Lone Range	2.00
1980	April 21	Sugar Loaf	1.00
1981	April 10	Sugarloaf 3	2.00
1982	May 11	Cemetery	1.00
1987	March 28	Ski Hill	.50
1988	April 21	NY Brigade	1.50
1992	May 03	Lydell	.20
1999	January 31	Thill	8.00
Total Fires	31	Total Acreage	28.905

b) Table 2: Total Wildfires by Month, 1950-1992



Appendix G: MORR Wildland Fire Implementation Plan - Stage 1

Fire Name					
Fire Number					
Jurisdiction(s)					
Administrative Unit(s)					
FMP Unit(s)		MORR			
Geographic Area					
Accounting Code					
Start Date/Time					
Discovery Date/Time					
Current Date/Time					
Current Size					
Location:	Legal Description(s)	T.	R.	Sec.	Sub.
	Latitude				
	Longitude				
	UTM:				
	County:				
	Local Description				
Cause					
Fuel Model/Conditions					
Current Weather					
Predicted Weather					
Availability of Resources					
Wild land fire use is not applicable at MORR. All wildland fires are to be suppressed					
Signature		Date			

Appendix H: Fire Prevention Assessment and Action Plan

In order to determine the necessary components of an effective Fire Prevention Plan for Morristown National Historical Park, an assessment was conducted of three fire-related variables, as they exist in the park.

- **Risks** consider those human uses or activities likely to ignite a fire.
- **Hazards** are the fuels and topography that help determine the degree of difficulty expected in suppressing a certain fire.
- **Values** concern those areas in a park where loss of certain resources to fire would be unacceptable.

Various base maps showing these variables are maintained at the Protection Office; overlay maps have not been prepared.

Following is an analysis of the four Morristown administrative units:

Jockey Hollow

- **Risk – High** – The existence of many roads and heavy visitation throughout the unit makes the potential for human-caused wildland fire high. Cigarettes dropped on the ground by visitors or thrown from passing motor vehicles pose a threat. Past historical fire data shows 65% of park fires occurred in this unit. Potential for wildland/urban interface fire is also high in this unit.
- **Hazard – Moderate** – Much of this unit is mixed deciduous forest with mowed and unmowed fields. During the fire season, the fuel is capable of supporting wildland fires of low to moderate intensity. Because of the presence of a myriad of roads, trails, and natural barriers, any wildland fire would not be expected to spread very far. Many of the valley bottoms are relatively wet and would be mostly unsupportive of a fire. Some of the dryer fields with high grasses would support fire during the curing stage.
- **Value – High** – The unit is full of valuable historic resources, structures, and archeological sites. Many of the historic structures are wooden or have wood shingle roofs, such as the Wick House, Guerin House, Quarters #10, Soldier Huts, and barn.

Fort Nonsense

- **Risk – High** – Moderate visitation, but the proximity of this unit to the center of Morristown makes it a prime spot for adolescents to visit. Previous evidence of illegal campfires, portable charcoal grills, and numerous cigarette butts dropped on the ground or thrown from passing motor vehicles makes the potential for human-caused fires high. Past historical fire data shows 38% of park fires occurred in this unit. Potential for wildland/urban interface fire is very high.
- **Hazard – Moderate** – The predominant fuel in this unit is a mixed deciduous forest. During the fire season, the fuel is capable of supporting wildland fires of low to moderate intensity, especially due to the sloping topography. Because of the presence of the road and trails, and the relatively small size of the unit, any wildland fire would not be expected to spread very far.
- **Value – Low** – This unit contains a stone outline of an 18th century historic site, which would suffer little damage from a wildland fire.

Ford Mansion/Museum

- **Risk – High** – The existence of many roads, a large parking lot, and high visitor density within this unit make the potential for human-caused wildland fire high.
- **Hazard – Low** – This unit is almost entirely mowed lawn with scattered mature oak trees. There are small patches of deciduous trees in between residences, which would be incapable of supporting wildland fire for more than a brief time.
- **Value – High** – The Ford Mansion is of great historical significance.

New Jersey Brigade

- **Risk – Moderate** – This unit of the park is mostly undeveloped and has a low-moderate visitation rate. The presence of roads and trails surrounding this unit makes the potential for human-caused fires to be moderate. The potential for a wildland/urban interface fire would also be moderate.
- **Hazard – Moderate** – The predominant fuel model within this unit is a mixed deciduous forest. During the fire season, the fuel is capable of supporting wildland fires of low to moderate intensity. Because of the fire roads, trails, and natural barriers, any wildland fire would not be expected to travel very far.
- **Value – High** – The Cross Estate, which is in this unit, serves as both office space and as dormitory housing. The loss would be of high historical significance.

SPECIFIC ACTIONS

1. On-going program to clear 30-100 foot defensible zones around all historic structures.

Responsible Person:	Fire Management Coordinator	On-going
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2. Camp or cooking fires are prohibited in the park, except for interpretive demonstrations.

Responsible Person:	Chief of Protection	On-going
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3. Park Safety Committee presents training on wildfire prevention and incorporates urban-interface protection concepts into building and other site inspections.

Responsible Person:	Park Safety Coordinator	On-going
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4. High Visibility patrols are conducted at times of high visitation, especially in areas prone to fire-related problems.

Responsible Person:	Chief of Protection	On-going
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5. A guideline for black powder use exists to ensure its safe use during interpretive demonstrations. Demonstrations are suspended during periods of high fire danger.

Responsible Person:	Fire Management Coordinator	On-going
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6. Work with the local fire warden to conduct fire prevention programs at the park for the visiting public and area residents. Incorporate fire prevention messages into information media (bulletin boards) and interpretive programs during period of high fire danger.

Responsible Person:	Fire Management Coordinator	On-going
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7. Conduct annual fire inspections of all fire extinguishers and park structures.

Responsible Person:	Structural Fire Coordinator	On-going
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8. Inspect and clean chimneys within park structures and wood stoves on an annual basis.

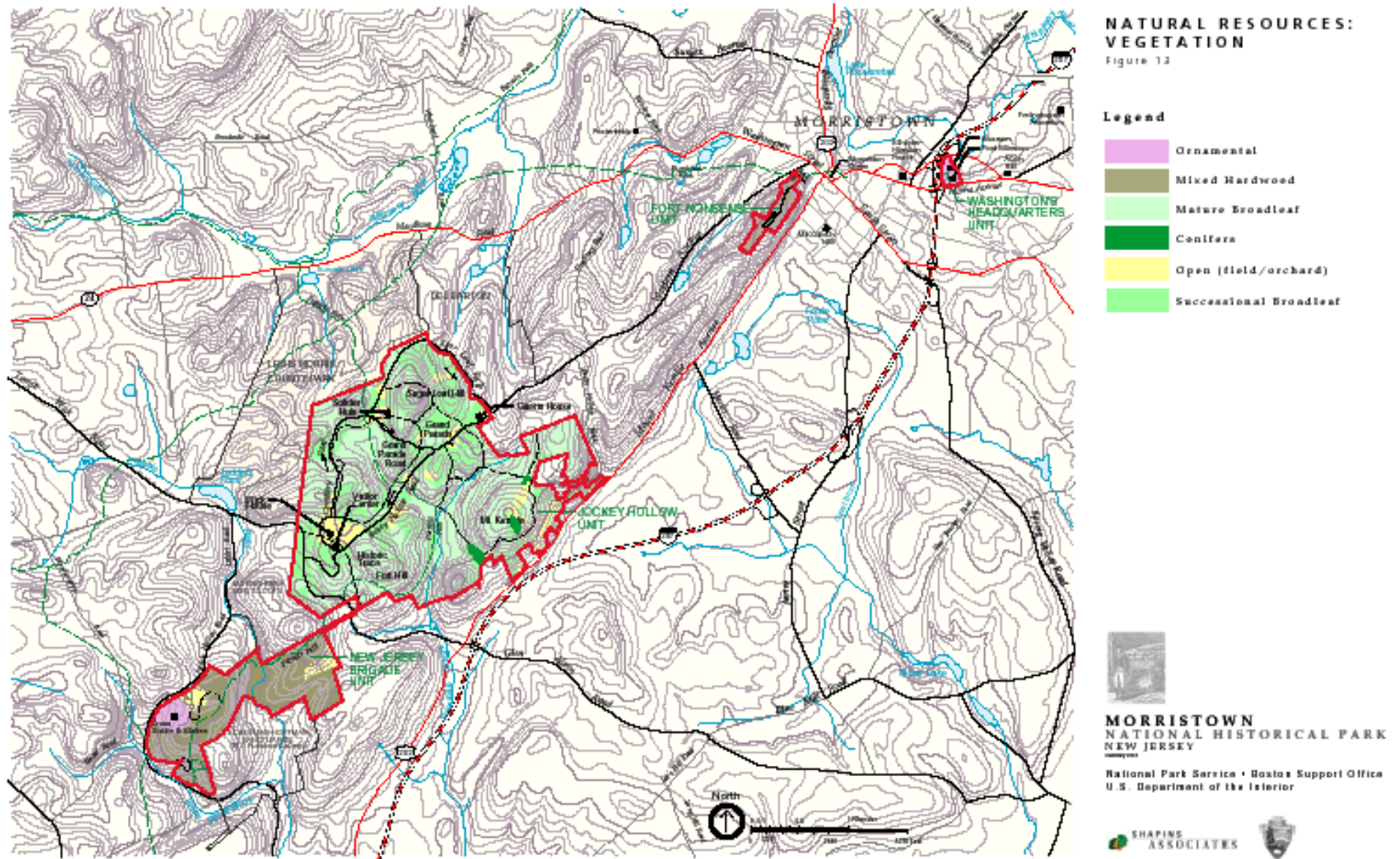
Responsible Person:	Chief of Maintenance	On-going
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9. Protect all publicly accessible and historic structures within the park with fire detection systems.

Responsible Person:	Structural Fire Coordinator	On-going
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10. Strictly enforce all fire regulations under Title 36 CFR.

Responsible Person:	Chief of Protection	On-going
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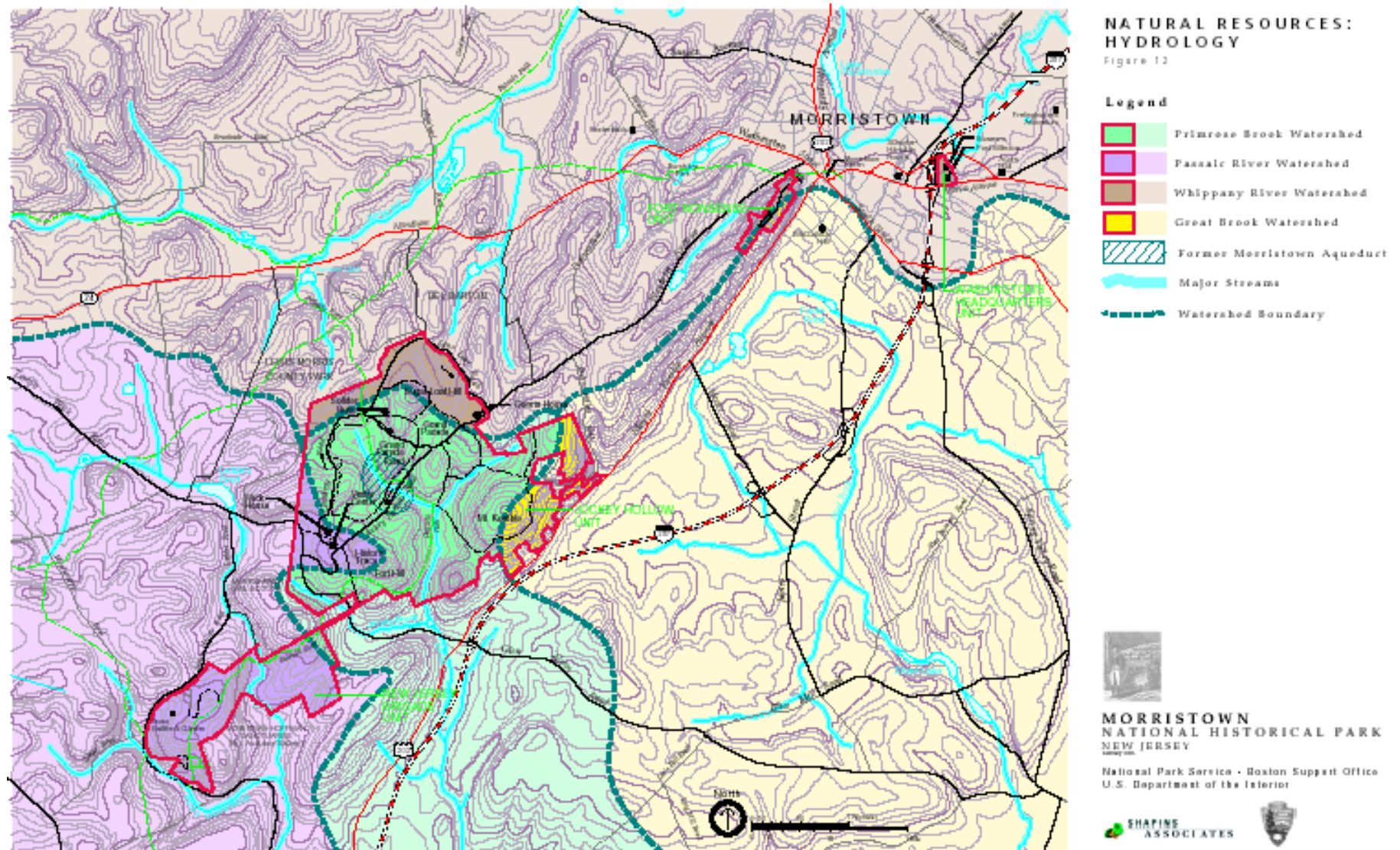
Appendix I: Maps

1. Vegetation



Appendix I: Maps

2. Hydrology



3. Archeological Resources Map -Park Copy Only

Appendix J: Lists of Park Structures

1. Classified Structures

Number	Name	Number	Name
01	Museum	42	Cross Estate - Root Cellar
01A	Washington's Headquarters - Pathways	43	Cross Estate - Garage/Apartment
02	Ford Mansion	44	Cross Estate - Gardener's Residence
03	Caretaker's Cottage	44A	Cross Estate - Gardeners Residence Retaining Wall
08	Guerin House	45	Cross Estate - Chalet
08A	Guerin House - Wood Fence	46	Cross Estate - Main House
08B	Guerin House - Pathways	48	Cross Estate - Water Tower
09	Guerin House - Garage	49	Cross Estate - Garage
10	Quarters 10	50	Cross Estate - Blacksmith Shop
12	Quarters 10 Garage	51	Cross Estate - Ruins
13	Fort Nonsense Monument	51A	Cross Estate - Chimney Ruins
14	Stark's Brigade Monument	52	Cross Estate - Red Barn
15	Bettin Oak Monument	53	Cross Estate - Chalet - Chicken House Ruins
20	Old Camp Road	54	Cross Estate - Chalet - Ruins
21	Mendham - Elizabethtown Road	55	Cross Estate - Pump House
23	Wick House	56	Cross Estate - Chalet - Garage
23A	Wick Farm - Stone Walkways	57	Cross Estate - Chalet - Workshop
23B	Wick Farm - Split Rail Fence	58	Cross Estate - Chalet - Barn
23C	Wick Farm - Worm Fence	59	Cross Estate - Chalet - Wall
24	Wick Farm - Well Head	59A	Cross Estate - Chalet - Retaining Wall
25	Wick Farm - Privy	60	Cross Estate - Chalet - Gate
26	Wick Farm - Smoke House	65	Hartshorne House
28	Wick Farm - Pig Sty, Sheep Byre & Cow Shed	65A	Hartshorne House - Retaining Wall
29	Wick Farm - Barn Foundation	68X	Patriot's Path Stone Wall
31	Cemetery Site Marker		
41A	Cross Estate - Pergola		
41B	Cross Estate - Formal Garden Paths		
41C	Cross Estate - Formal Garden Walls		
41D	Cross Estate - Main House Terrace		
41E	Cross Estate - Lawn Retaining Wall		

2. Non-Classified Structures

Number	Name	Number	Name
4	Rustic Bridge#1	35	Quarters#35-Mission 66 House
5	Rustic Bridge#2	36	Pennsylvania Line Soldiers Hut #1
6	Rustic Bridge#3	37	Pennsylvania Line Soldiers Hut#2
7	Rustic Bridge#4	38	Pennsylvania Line Soldiers Hut#3
11	Quarters#10 Sign Shop	39	Pennsylvania Line Soldiers Hut#4
16	Utility Area Repair Shop	40	Pennsylvania Line Officers Hut
17	Utility Area Carpenter Shop & Equipment Storage	41	Cross Estate Garden
18	Utility Area Utility Building	47	Dick House
19	Utility Area Oil Shed	61	Quarters 62 Shed
27	Wick House Herb Garden	62	Weig House
30	Wick House Orchard	62A	Quarters#62 Pump House
33	Wick House Pit Privy	63	Jockey Hollow Visitor Center
34	Caretaker's Cottage Garage	64	Jockey Hollow Comfort Station
		66	Washington's Headquarters Maintenance Shed