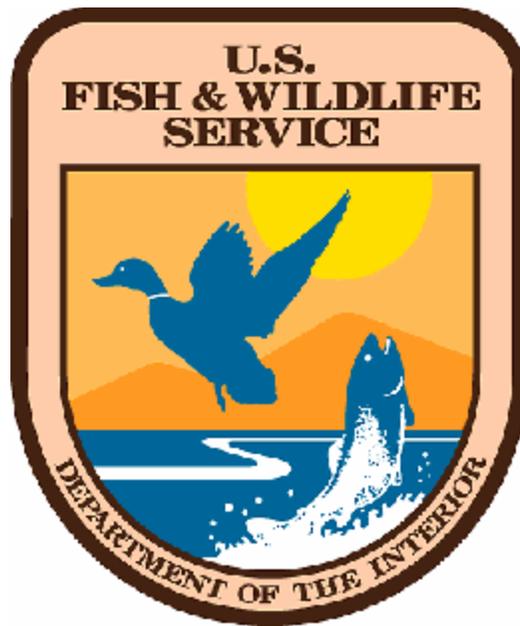


**WILDLAND FIRE MANAGEMENT PLAN**  
**HURON ISLANDS NATIONAL WILDLIFE REFUGE**



2003



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## INTRODUCTION

This document establishes a Fire Management Plan (FMP) for Huron Islands National Wildlife Refuge. As no new Federal actions that would affect the environment are included in this plan, the plan is deemed a categorical exclusion and requires no additional environmental documentation under the National Environmental Policy Act (NEPA). An informal Section 7 consultation will be conducted to ensure no adverse effects on Federally threatened or endangered (T&E) species. The Lighthouse and Keeper's Quarters on Huron Island are on the National Register of Historic Places. An Historic Structures Report is being completed by the Huron Islands Lighthouse Preservation Society that will address the remaining support buildings on Huron Island. No other surveys of historic structures have been conducted.

This plan is written as an operational guide for managing the Refuge's wildland fire program. It defines levels of protection needed to ensure (1) safety of employees and visitors, and (2) protect resources, given current understanding of the complex relationships in natural ecosystems. It is written to comply with a Service-wide requirement that units with burnable vegetation develop a fire management plan (620 DM 1).

This FMP outlines a program of most cost efficient and ecologically responsible suppression of all wildland fires. There will be no prescribed fires on the Refuge. Lands comprising the Refuge were originally set aside by Executive Order 7795 on January 21, 1938 as "a refuge and breeding grounds for migratory birds and other wildlife."

The Huron Islands National Wildlife Refuge is a satellite unit of Seney National Wildlife Refuge and is located approximately 125 highway miles west of Seney. The islands lie approximately 3 miles off the south shore of Lake Superior. Suppression forces from the Michigan Department of Natural Resources (MIDNR) would normally be the responding agency. While is a slight possibility of aerial resources (air tankers and helicopters) being used, MIDNR is not generally equipped for water borne operations, suppression operations, as appropriate, would be by Fish and Wildlife Service staff from Seney.

## COMPLIANCE WITH USFWS POLICY

The Refuge was established by Executive Order 7795 on January 21, 1938. All of the islands are designated Wilderness by Public Law 91-504 of 1970 and are subject to the provisions of 50 CFR 35 Subpart A and additional refuge regulations found under the section entitled **Description of the Refuge, Special Conditions**.

While there are no current Environmental Assessments (EA) addressing management actions on the Huron Islands, only limited planned actions are considered in this plan. Some hazard reduction with associated pile burning may be scheduled to protect the Lighthouse and Keeper's Quarters which are on the National Register of Historic Places and other structures not currently listed but eligible for listing. As this activity would occur only occasionally (every 3-5 years) and affect less than 1 acre each cycle, actions under this plan would be a Categorical Exclusion from the full NEPA process.

In accordance with the methods prescribed in 36 CFR part 800, the refuge will work towards establishing a memorandum of agreement with the State Historic Preservation Officer and the Advisory Council to document steps taken to minimize the potential adverse effects that wildland fires may have on the historic structures. Until such a memorandum is prepared, the actions described in this Wildland Fire Management Plan describe the good faith efforts that the Service will undertake to avoid, minimize or mitigate the potential adverse effects of wildland fire to the historic structure.

Authority and guidance for implementing this plan are found in:

- Protection Act of September 20, 1922 (42 Stat. 857; 16 U.S.C.594): authorizes the Secretary of the Interior to protect from fire, lands under the jurisdiction of the Department directly or in cooperation with other Federal agencies, states, or owners of timber.
- Economy Act of June 30, 1932: authorizes contracts for services with other Federal agencies.
- Reciprocal Fire Protection Act of May 27, 1955 (69 Stat. 66, 67; 42 U.S.C. 1856, 1856a and b): authorizes reciprocal fire protection agreements with any fire organization for mutual aid with or without reimbursement and allows for emergency assistance in the vicinity of agency lands in suppressing fires when no agreement exists.
- Disaster Relief Act of May 22, 1974 (88 Stat. 143; 42 U.S.C. 5121): authorizes Federal agencies to assist state and local governments during emergency or major disaster by direction of the President.
- Federal Fire Prevention and Control Act of October 29, 1974 (88 Stat. 1535; 15 U.S.C.2201): provides for reimbursement to state or local fire services for costs of firefighting on federal property.
- Wildfire Suppression Assistance Act of 1989. (P.L. 100-428, as amended by P.L. 101- 11, April 7, 1989).
- Departmental Manual (Interior), Part 620 DM, Chapter 1, Wildland Fire Management: General Policy and Procedures (April 10, 1998): defines Department of Interior fire management policies.
- Service Manual, Part 621, Fire Management (February 7, 2000): defines U.S. Fish and Wildlife Service fire management policies.
- National Wildlife Refuge System Administrative Act of 1966 as amended by the National Wildlife Refuge System Improvement Act of 1997, 16 U.S.C. 668dd et seq.: defines the National Wildlife Refuge System as including wildlife refuges, areas for the protection and conservation of

fish and wildlife which are threatened with extinction, wildlife ranges, game ranges, wildlife management areas and waterfowl production areas. It also establishes a conservation mission for the Refuge System, defines guiding principles and directs the Secretary of the Interior to ensure that biological integrity and environmental health of the system are maintained and that growth of the system supports the mission.

- National Environmental Policy Act of 1969: regulations implementing the National Environmental Policy Act encourage the combination of environmental comments with other agency documents to reduce duplication and paperwork (40 CFR 1500.4(o) and 1506.4).
- Wilderness Act of 1964 (P.L. 88-577, 16 U.S.C. 1131-1136, 78 Stat. 890) signed September 3, 1964.
- Omnibus Wilderness Act, (P.L. 91-504, 84 Stat 1104) January 2, 1970.
- Clean Air Act (42 United State Code (USC) 7401 et seq.): requires states to attain and maintain the national ambient air quality standards adopted to protect health and welfare. This encourages states to implement smoke management programs to mitigate the public health and welfare impacts of Wildland and prescribed fires managed for resource benefit.
- Endangered Species Act of 1973.
- U.S. Fish & Wildlife Service Fire Management Handbook.

This plan meets NEPA/NHPA compliance and will be implemented in coordination with the Endangered Species Act of 1973, as amended, under Section 7 provisions for programmatic review, and will take appropriate action to identify, and protect from adverse effects of fire, any rare, threatened, or endangered species and associated habitat. A copy of the NEPA decision document and concurrence by the State Historic Preservation Officer will be included in Appendix D.

The authority for funding (normal fire year programming) and all emergency fire accounts is found in the following authorities:

Section 102 of the General Provisions of the Department of Interior's annual Appropriations Bill provides the authority under which appropriated monies can be expended or transferred to fund expenditures arising from the emergency prevention and suppression of wildland fire.

P.L. 101-121, Department of the Interior and Related Agencies Appropriation Act of 1990, established the funding mechanism for normal year expenditures of funds for fire management purposes.

31 US Code 665(E)(1)(B) provides the authority to exceed appropriations due to wildland fire management activities involving the safety of human life and protection of property.

Authorities for procurement and administrative activities necessary to support wildland fire suppression missions are contained in the Interagency Incident Business Management Handbook.

## **FIRE MANAGEMENT OBJECTIVES**

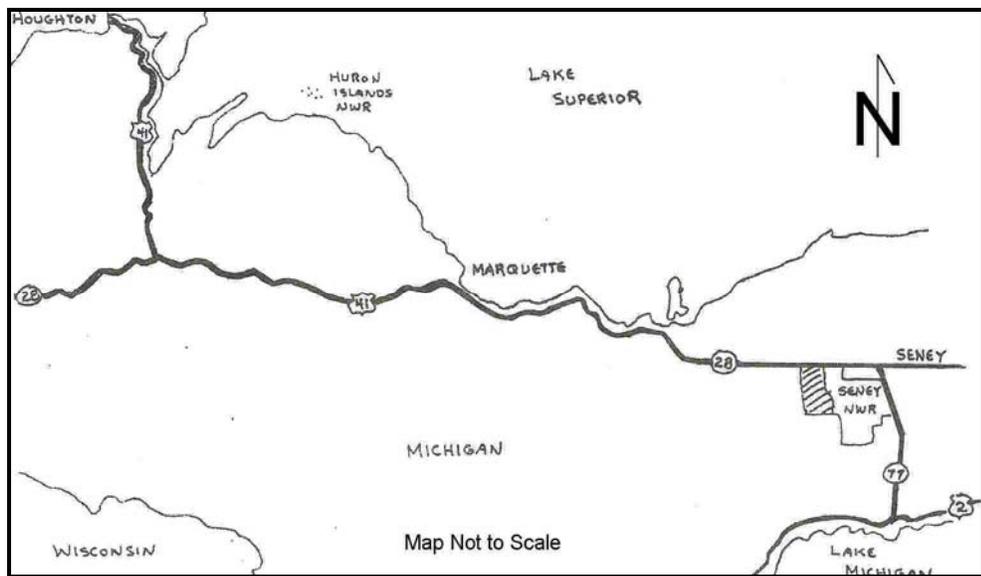
The overall objective for fire management is to promote a program to ensure firefighter and public safety while maintaining Wilderness character, providing appropriate suppression response capability to meet expected wildland fire complexity. Specific fire management objectives are:

- Promote a fire management program and initiate appropriate management response to wildland fires.
- Protect life, natural resources, and historic structures from wildland fires at costs commensurate with values at risk.
- Use suppression tactics and strategies that minimize long-term impacts of suppression actions and are consistent with wilderness management guidelines in 50 CFR 35.
- Protect threatened and endangered species and their associated habitats from the adverse effects of wildland fire.

### DESCRIPTION OF THE REFUGE

Huron Islands National Wildlife Refuge is a satellite of Seney National Wildlife Refuge, and is located approximately 125 highway miles west of Seney (Figure 1). The Refuge is made up of 8 islands situated 3 miles off the south shore of Lake Superior (Figure 2). Four islands are vegetated, the remainder are barren outcrops of granite. West Huron, or Lighthouse Island, is the site of the Huron Lighthouse, a National Historic Site entered in the National Register of Historic Places September 2, 1975. East Huron Island is under a reservation by the U.S. Army Corps of Engineers for potential quarry operations to support the construction of breakwaters. Acreage for the four largest islands is shown in Table 1.

**Figure 1 – Location Map**



Public Law 91-504 (1970) designated the entire refuge a wilderness area.

**Table 1 – Huron Islands Acreage**

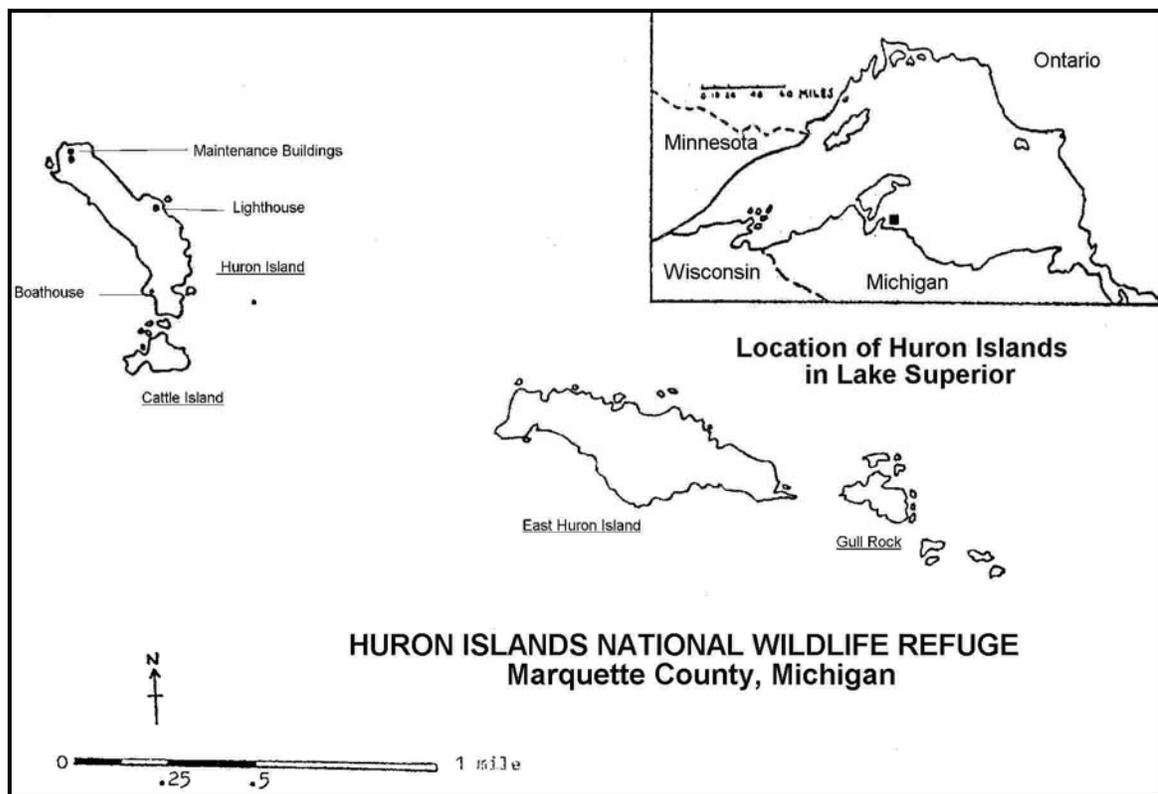
Island	Acres	Wilderness
Huron (Lighthouse)	40.0	Yes
East Huron	77.0	Yes
Cattle	12.0	Yes
Gull Rock	15.0	Yes
Unnamed Islands	3.0	Yes
<b>Total Acres</b>	<b>147</b>	

## CULTURAL RESOURCES

The primary cultural resources on the Refuge are the Huron Island Lighthouse and Keeper's Quarters. Originally constructed in 1868 as a navigational aid, in 1972 an automated facility was installed and the Lighthouse, Keeper's Quarters and other facilities were abandoned. The Lighthouse and Keeper's Quarters were placed on the National Register of Historic Places September 2, 1975. Other buildings may be eligible for the National Register include the boathouse and generator building. A barracks dating from about 1960 is also present.

There are no known archeological sites on the islands. However, no surveys have been done and there is some potential for archeological site discovery.

**Figure 2 – Huron Islands NWR**



## FISH AND WILDLIFE

Most wildlife use involves waterfowl and other birds. A late summer survey in 1985 indicated 31 birds species present. Including other surveys (Corin, 1976), a total of 79 avian species have been reported on the islands. Mammal populations are extremely limited. In 1985, meadow voles (*Microtus pennsylvanica*) and what was believed to be a deer mouse (*Peromyscus maniculatas*) were sighted. In addition, pellets and grass clippings indicative of snowshoe hare (*Lepus americanus*) were noted. Bats were also seen in the vicinity of the lighthouse and are believed to be *Myotis spp.* although no roosts were found. A 1976 survey reported red bats (*Lasiurus borealis*) (Corin, 1976). Both Federal and state listed

T&E species that may be found in mainland Marquette County, and potentially on the islands, are found in Tables 5 and 6 in Appendix F. A list of birds reported on the islands compiled from Corin (1976) and refuge records is found in Table 7 in Appendix F. Mammals seen on the islands (or evidence of their presence) is found in Table 8, Appendix F. Reference material is available in the Seney Refuge Office and is not reproduced in this plan.

## VEGETATION

The vegetated islands are generally characterized by shallowly rooted trees and exposed granite. Vegetation is a boreal transition type made up of balsam fir (*Abies balsamea*), white pine (*Pinus strobus*), red pine (*Pinus resinosa*), white spruce (*Picea glauca*), red maple (*Acer rubrum*), bigtooth aspen (*Populus grandidentata*), and paper birch (*Betula papyrifera*). The understory contains cherry species (*Prunus spp.*), balsam regeneration, Canada yew (*Taxus canadensis*), various woody shrubs, grasses and forbs. Figure 3 shows the vegetation below the lighthouse complex on Huron Island.

**Figure 3 – Vegetation on Huron Island**



Much of the balsam fir is decadent and contributes to a significant fuel loading on Huron Island. There are a few areas on East Huron that contain small sphagnum bogs with an occasional black spruce (*Picea mariana*) not found on the other islands.

Only Huron, East Huron, Cattle and Gull Rock Islands have vegetation in quantities sufficient to burn.

## PHYSICAL RESOURCES

Physiographically, the islands are similar, varying chiefly in size and elevation. They portray an ecological sequence from the small bare rock islands to East Huron covering 77 acres, rising to about 160 feet above lake and mostly covered with vegetation. The islands are pink and gray granite upthrusts left after the last Wisconsin Ice Age.

Soils are generally well drained sand and gravel. Vegetated islands show some additional soil structure as vegetation has been present for long enough to have contributed organic material to the upper soil horizons.

The topography of Huron and East Huron is steep, with cliffs on the southerly sides. Remaining islands are generally domed in appearance rising 10-50 feet above the average lake level. There are no permanent streams on the islands. Some calderas on the two large islands collect and hold water following rains.

The area is rated as Class II air quality. This means that actions under the plan will be designed to prevent significant deterioration in air quality.

### STRUCTURES AND FACILITIES

Huron Island is the only island with structures: two on the National Register of Historic Places and the remainder formerly supported operation of the Lighthouse. The Lighthouse itself and the Keeper's Quarters are on the National Register. Both are situated in an area that had been cleared when the light was active. Vegetation has encroached on the Keeper's Quarters. Figure 4 is a view of the Keeper's Quarters from the Lighthouse showing the encroachment of hazard fuels. The Lighthouse is granite with an asbestos cement shingle roof, the Keeper's Quarters is typical wood frame construction with an asphalt shingle roof.

Other buildings on the island include a Boathouse, concrete block Barracks, brick fog signal building as well as several other support buildings.

Additional facilities that were associated with lighthouse operations prior to automation include: a 1 mile long footpath, 750 feet of which are cement walkway, stairs, a 300 foot tramway and 2 footbridges.

Table 2 lists real property on Huron Island. There are no structures on the other islands. Values of the barracks, boathouse and generator building are salvage estimates. It is unlikely that any of these buildings would be replaced if destroyed as they are no longer necessary to Coast Guard operations.

**Table 2 – Huron Islands Real Property**

Description	Value
1862 Lighthouse/Keeper's Quarters Complex	456,000
Barracks	25,000
Boathouse	25,000
Fog Signal Building	100,000

Generator Building	25,000
<b>Total</b>	<b>631,000</b>

**Figure 4 – Keeper's Quarters**



**SPECIAL CONDITIONS**

The entire Refuge is designated Wilderness. This designation was part of Public Law 91-504 passed October 23, 1970. Under refuge wilderness regulations, only Huron Island is open to the public during daylight hours for hiking and nature study. All other refuge islands are closed except by Special Use Permit for approved studies. Current regulations include the following:

- Only West Huron Island (Lighthouse Island) is open to the public, during daylight hours, for hiking and nature study.
- All remaining islands are closed to the public, except by Special Use Permit to biologists, botanists, or other qualified persons in conjunction with approved studies. Exceptions are emergency landings by boats in distress.
- Camping is prohibited on all islands, except that biologists, botanists and other qualified applicants may be permitted prescribed primitive-type camping only on West Huron Island (Lighthouse Island) by Special Use Permit, in conjunction with approved studies.

## **WILDLAND FIRE MANAGEMENT SITUATION**

### **HISTORIC ROLE OF FIRE**

There is no fire history for the islands. The small size, and existing vegetation on the islands, indicates fire from either lightning or anthropogenic sources would be a rare occurrence. Lightning scars are present but have not resulted in wildland fires of any measurable consequence in recent (1972 – 2002) years.

### **Pre-settlement Fire History**

The natural fire interval is unknown. Fire from any cause was likely to be rare. Based on the vegetation of the islands, it is likely that the historic fire regime could be considered Class 5, (long return interval crown fires and severe surface fires in combination (100 to 300 year return intervals)) Heinselman (1981).

### **Post-settlement Fire History**

No lightning-caused fires are known to have occurred since Refuge establishment. The remote location makes detection virtually impossible and reporting unlikely. There are no known records or indications of fire on the Islands since European settlement of the nearby mainland in the mid-1800's.

### **Prescribed Fire History**

No prescribed fire has been applied to the area since establishment.

### **RESPONSIBILITIES**

The Project Leader at Seney NWR is responsible for planning and implementing the fire management program on the islands. A Zone Fire Management Officer (Zone FMO) located at Leopold Wetland Management District, Portage, WI is responsible for fire management program oversight.

Preparedness planning and work is accomplished by the Refuge Fire Management Officer (FMO) with resources and guidance provided by the Zone FMO. Emergency fire management actions will be handled by Seney staff providing conditions are safe for boat transport to the islands. Response times from the Refuge will run from 5-10 hours depending on staff availability, equipment location and boating conditions on the lake. The Zone FMO will be immediately notified of all emergency actions.

### **Project Leader (PL)**

Is responsible for implementation of all fire management activities within the unit and will ensure compliance with Department and Service policies.

- Selects the appropriate management responses to wildland fire.
- Identifies preparedness projects and biological objectives to FMO and notifies FMO of project constraints.
- Acts as the primary refuge resource management specialist during fire management planning and operations.

### **Fire Management Officer (FMO)**

- Responsible for all fire-related planning and implementation for the refuge. Integrates biological objectives into all fire management planning and implementation.

- Solicits program input from the PL.
- Supervises preparedness project planning.
- Is responsible for implementation of this Plan.
- Is responsible for preparation of fire reports following the suppression of wildland fires and for preparedness projects requiring such.
- Prepares an annual report detailing fire occurrences and preparedness activities undertaken in each calendar year. This report will serve as a past year's fire management activities review, as well as provide documentation for development of a comprehensive fire history record for the refuge.

#### **Zone Fire Management Officer (Zone FMO)**

- Submits budget requests and monitors FIREBASE funds.
- Maintains records for all personnel involved in suppression and preparedness activities, detailing the individual's qualifications and certifications for such activities.
- Updates all fire qualifications for entry into the Fire Management Information System.
- Nominates personnel to receive fire related training, as appropriate.

#### **Incident Commander**

Incident Commanders (of any level) use strategies and tactics as directed by the Project Leader and WFSA where applicable to implement selected objectives on a particular incident. A specific Limited Delegation of Authority (Appendix C) will be provided to each Incident Commander prior to assuming responsibility for an incident. Major duties of the Incident Commander are given in the National Wildfire Coordinating Group (NWCG) Fireline Handbook, including:

- Brief subordinates, direct their actions, and provide work tools.
- Ensure that safety standards identified in the Fire Orders, the Watch Out Situations, and agency policies are followed at all times.
- Personally scout and communicate with others to be knowledgeable of fire conditions, fire weather, tactical progress, safety concerns and hazards, condition of personnel, and needs for additional resources.
- Order resources to implement the management objectives for the fire.
- Inform appropriate dispatch of current situation and expected needs.
- Coordinate mobilization and demobilization with dispatch and the Collateral FMO.
- Perform administrative duties, (i.e., approving work hours, completing fire reports for command period, maintaining property accountability, providing or obtaining medical treatment, and evaluating performance of subordinates).
- Assure aviation safety is maintained to the highest standards.

#### **Initial Attack Modules**

An initial attack module will be assembled at Seney NWR for all wildland fires reported on the Islands. The module would usually consist of three qualified firefighters, one of whom would be qualified at the initial attack incident commander level (ICT5). At least one individual would meet Service requirements for a boat operator.

Employees participating in any wildland fire activities on Fish and Wildlife Service or cooperators' lands will meet fitness requirements established in PMS 310-1, except where Service-specific fitness requirements apply.

## **INTERAGENCY COORDINATION**

The State of Michigan has primary responsibility for wildland fire suppression under state law. As the Michigan DNR has no local capability to travel to the islands with necessary suppression equipment, appropriate suppression actions will be undertaken by the Fish and Wildlife Service (FWS).

Seney National Wildlife Refuge will use the Incident Command System (ICS) as a guide for fireline organization. Qualifications for individuals is per DOI Wildland Fire Qualifications and Certification System, part of NIIMS and the National Wildland Fire Coordination Group (NWCG) Wildland and Prescribed Fire Qualification Guide (310-1).

## **PROTECTION OF SENSITIVE RESOURCES**

### **Wildlife**

It is unlikely that any wildlife resources will be directly affected more than temporarily by smoke and the flame front. Vegetation may be affected by fire; the effects will depend on fire intensity, rate of spread, condition of fuels and other factors.

### **Cultural/Archeological**

Cultural resources at risk include the Lighthouse and Keeper's Quarters. Under existing conditions, a wildland fire on the island could not be reached in time to prevent the total loss of the Keeper's Quarters. The Lighthouse could be damaged superficially, but would not likely suffer catastrophic damage. Figure 4 is a view of the Keeper's Quarters taken from the Lighthouse. As can be seen, the Quarters is a typical frame building, close to wildland fuels and subject to destruction from a wildland fire.

Preparation for prescribed fires such as constructing fire lines are subject to Section 106 of the National Historic Preservation Act. The procedures in the Notice dated December 8, 1999, "Historic Preservation Responsibilities," apply to the planning and preparation for conducting prescribed fires.

Efforts to control wildland fires (including prescribed fires that get out of control) are also subject to Section 106 of the National Historic Preservation Act. We will meet our obligations under this act in the following ways:

When the land covered by a wildfire has been inventoried to identify cultural resources, and the cultural resources have been evaluated for significance according to the criteria for the National Register of Historic Places, the Fire Management Officer will direct ground disturbing fire suppression efforts around (will avoid impacting) historic properties. Nevertheless, evidence of a previously undetected cultural resource may be encountered. The project leader shall immediately notify the Regional Historic Preservation Officer (RHPO). The RHPO will take immediate steps to have the cultural resource evaluated and protected, as appropriate, to the extent required by law and policy. This may require arranging for a qualified professional to visit and evaluate the site's importance and recommend a course of action. An evaluation and decision on the disposition of the cultural resource should be made within 48 hours of the discovery unless the project's schedule allows greater flexibility.

When the land covered by a wildfire has *not* been inventoried for cultural resources and wildfire suppression activities do result in ground disturbing activities, we will take the following action. Soon

after fire control, the project leader will contact the RHPO to arrange for an archeologist to investigate the disturbed areas to determine if sites were affected.

Refuge operations and maintenance funds (subactivity 1261) will pay the cost of these activities unless the action is an emergency archeological and historic property survey in unstable areas prone to further degradation (i.e., erosion) following a wildland fire or in association with an emergency fire rehabilitation treatment. Emergency archeological and historic property surveys in unstable areas prone to further degradation (i.e., erosion) following a wildland fire or in association with an emergency fire rehabilitation treatment, and archeological, historic structure, cultural landscape, and traditional cultural property resource stabilization and rehabilitation can be funded with emergency rehabilitation funding.

Impacts by fire to archeological resources vary. The four basic sources of damage are (1) fire intensity, (2) duration of heat, (3) heat penetration into soil, and (4) suppression actions. Of the four, the most significant threat is from equipment during line construction for wildland fire holding actions.

The following actions will be taken to protect archeological and cultural resources:

#### Wildland Fires

- Minimum impact fire suppression tactics will be used to the fullest extent possible.
- Foam will not be used.
- Resource Advisors will inform Fire Suppression personnel of any areas with cultural resources and should contact the Regional Historic Preservation Officer and/or his/her staff for more detailed information.
- The location of any sites discovered as the result of fire management activities will be reported to the Regional Historic Preservation Officer.
- Rehabilitation plans will address cultural resources impacts and will be submitted to the Regional Historic Preservation Officer for review.

## WILDLAND FIRE ACTIVITIES

Fire program management describes the operational procedures necessary to implement fire management at Huron Islands National Wildlife Refuge. Program management includes: fire prevention, preparedness, emergency preparedness, fire behavior predictions, step-up staffing plan, fire detection, fire suppression, minimum impact suppression, minimum impact rehabilitation, and documentation.

All fires will be appropriately suppressed. As the Islands have no fire history since designation as a Refuge, a full suppression response will be the usual practice.

Records from MIDNR show that the mainland fire season is typically from mid-April to late May or early June with a possible season in the fall from mid-September to snowfall, usually mid-November. Depending on the specific weather of any particular year, the seasons may be shorter or longer and, therefore, may start earlier or last longer. Most fires reported during the typical season are expected to be related to human causes.

Lightning-caused fires are more likely to occur during the July to mid-September period which also generally the time of year with most precipitation. (See Figure 6).

## FIRE MANAGEMENT STRATEGIES

Although resource impacts of suppression alternatives must always be considered in selecting a fire management strategy, managing fire for resource benefit will not be the primary consideration. The remote location and difficulty of access precludes providing adequate resources to manage wildland fires in accordance with Service policy. Additionally, BEHAVE runs indicate that under drought conditions, most fires would cover 80-90% of an island before fire personnel could get on site. Appropriate suppression action will be taken to ensure firefighter safety, public safety, and protection of refuge resources, historical structures, and threatened and endangered species..

Critical protection areas, such as nesting trees for bald eagles or ground nesting habitats and the great blue heron rookery on Gull Island, will receive priority consideration in fire suppression efforts. In all cases, the primary concerns of fire suppression personnel shall be safety, and if needed, all individuals not involved in the suppression effort may be evacuated.

Suppression strategies are limited by the equipment that can be carried by boat from the mainland. Generally tools will be hand tools and pumps that can be used from the shoreline. These tools should meet the desired objectives inflicting the least impacts upon natural and cultural resources. Minimum impact suppression tactics (MIST) will be employed to protect all resources. Natural and artificial barriers will be used as much as possible for containment. When necessary, fire line construction will be conducted in such a way as to minimize long-term impacts to resources. Sites impacted by fire suppression activities or by the fire will be rehabilitated as necessary, based on an approved course of action for each incident.

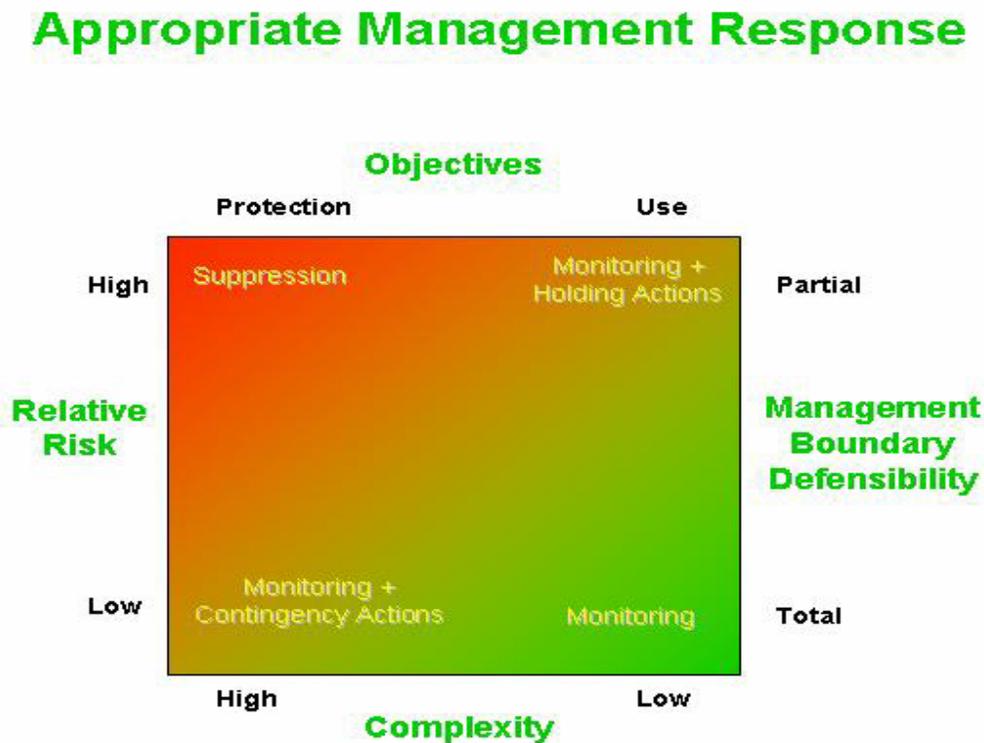
Specific fire management strategies for Huron Islands NWR are:

- All wildland fires receive an appropriate management response which considers safety, natural and cultural resources, and economics and may range from full suppression to monitoring.

- Priority will be given to the protection of critical Refuge habitats including bald eagle nesting trees and the heron rookery.
- Known cultural resource areas will be excluded from all fire management activities including fire line location, retardant use, and adverse fire effects.
- Foam or other retardants will not be used due to the proximity of open water and concern for shoal fisheries.

Figure 5 provides a graphic method of determining alternative responses.

**Figure 5 – Appropriate Management Response**



**PREPAREDNESS**

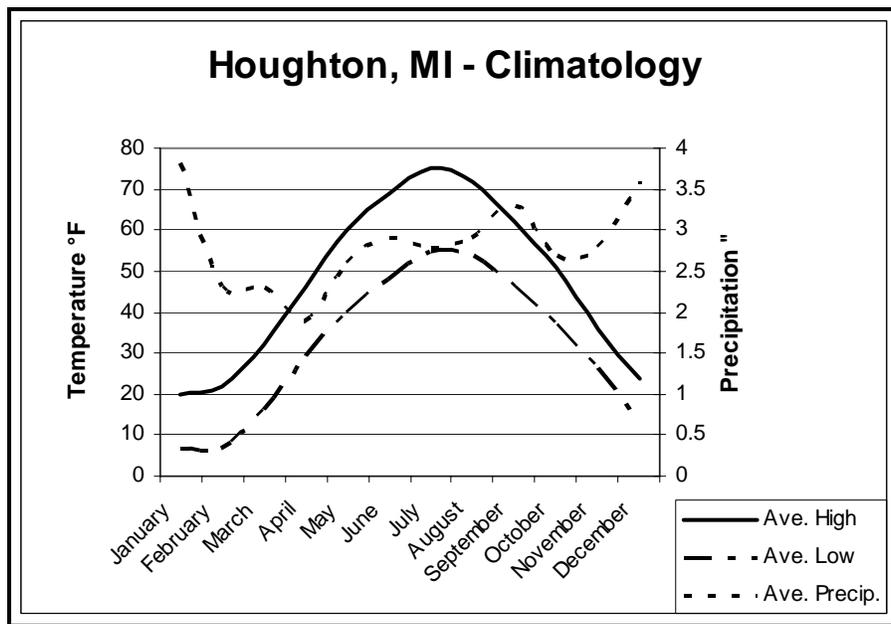
Preparedness is the work accomplished prior to fire occurrence to ensure that the appropriate response, as directed by the Fire Management Plan, can be carried out. Preparedness activities include: budget planning, equipment acquisition, equipment maintenance, dispatch (Initial Attack, Extended, and Expanded), equipment inventory, personnel qualifications, and training. The preparedness objective is to have a well trained and equipped fire management organization to manage all fire situations within the refuge. Preparedness efforts are to be accomplished in the time frames outside the normal fire season dates.

**Historical Weather Analysis**

There is no weather station on the islands. Weather history (Figure 6) comes from National Oceanic and Atmospheric Administration (NOAA) records at Houghton, MI approximately 35 miles northwest of the

islands. Due to the position of the islands in the lake, it expected that both high and low temperature averages would be moderated compared to the mainland figures. In other words, high temperatures could be expected to be 2-6 degrees lower than the mainland, while low temperatures would be 2-4 degrees higher than the mainland.

**Figure 6 – Houghton, MI Climatology**



**Fire Prevention**

As the Islands are not staffed, fire prevention activities will be conducted on an “as-needed” basis. Activities could include signage and occasional law enforcement patrols to enforce existing regulations including those related to camping and fires.

During periods of extreme or prolonged fire danger, emergency restrictions regarding island use, or area closures may become necessary. Such restrictions, when imposed, will be consistent with those implemented by MIDNR and in addition to the existing wilderness restrictions based on 50 CFR 35.

**Hazard Reduction for Structure Protection**

The primary structures of concern are the two listed on the National Register. As the Keeper’s Quarters is of typical wood frame construction, hazard fuel reduction is a high priority. It is estimated that removal of fuels to a distance of 50-75 feet from the building will offer a reasonable level of protection from wildland fire. The clearing distance is greater than recommended (30 feet, Fire Management Handbook 1.3.3) based on the fuels and topography surrounding the structures. Similar hazard reduction will be considered for other eligible buildings on the Island. Deliberate arson is also possible; however, there is no protection against this action.

As needed, fuels reduction projects will be entered in the FIREBASE system. Fuel management will be a recurring need with an estimated 5 year span between treatments. The project will require mechanical removal and pile burning as necessary.

### **Staffing Priority Levels**

As no weather station is present and there is no staff on the Islands no staffing “Step-up” actions are considered in this plan.

### **Training**

Departmental policy requires that all personnel engaged in suppression and prescribed fire duties meet the standards set by the National Wildfire Coordinating Group (NWCG). Seney National Wildlife Refuge will conform strictly to the requirements of the wildland fire management qualification and certification system and USFWS guidelines.

Basic wildland fire training refreshers are offered annually for “red-carded” firefighters and records are kept in a centralized database. Additional training is available from surrounding agencies in pump and engine operation, power saws, firefighter safety, fire weather and fire behavior, and helicopter safety. On-the job training is encouraged and will be conducted at the field level. Whenever appropriate, the use of fire qualification task books will be used to document fire experience of trainees. The FMO will coordinate fire training needs with those of other nearby FWS units, cooperating agencies, and the RO.

In addition to fire related refresher training, an adequate number of fire qualified employees will maintain boat operator qualifications to ensure safe access to the islands for suppression purposes.

Fire suppression is an arduous duty. Poor physical condition of crew members can endanger safety and lives during critical situations. Personnel performing fire management duties will maintain a high level of physical fitness. This requires successful completion of a fitness pack test. Appendix K contains a brief explanation of the physical testing requirements.

### **Supplies and Equipment**

Suppression tools and equipment will be taken from the Seney NWR fire cache to deal with reported fires. Refuge staff will use assigned personal protective equipment.

### **DETECTION**

Fires are expected to be detected by passing vessels, or possibly visitors. Reports are likely to be made to either the Coast Guard, MIDNR or operators of launch facilities. These organizations would then contact Seney NWR.

The Fire Management Plan does not discriminate between human-caused and lightning caused fire. All wildland fires will be suppressed. However, initial attack shall include a determination of fire cause. Moreover, human-caused fires will require an investigation and report by law enforcement personnel. For serious human-caused fires, including those involving loss of life, a qualified arson investigator will be requested. Qualified investigators are available from either MIDNR or FWS.

### **COMMUNICATIONS**

All communications are based on the Seney NWR communications system. Due to the distance from Seney’s base, most communication would be expected to be through cellular phones. Some communication may be possible through the Coast Guard, using marine radio frequencies.

## **PRE-ATTACK PLAN**

Upon discovery of a fire, all subsequent actions will be based on the following:

- The Incident Commander (IC) will locate, size-up, and coordinate suppression actions.
- Provide for public safety.
- Considering the current and predicted fire conditions, the Incident Commander will assess the need for additional suppression resources and estimate the final size of the fire.
- The Incident Commander will assess the need for law enforcement personnel for investigations and make the request to the FMO.
- Document decisions and complete the fire report (DI-1202).
- Should a wildland fire move into an extended attack with incident management from outside FWS, a Delegation of Authority will be issued by the Project Leader. A sample Limited Delegation of Authority is in Appendix C.

## **FIRE MANAGEMENT UNITS**

There is only one Fire Management Unit (FMU) on the refuge. It encompasses all islands.

Due to staff limitations, relatively small land area, and long response times, this plan does not recommend wildland fire managed for resource benefit as an option on the islands. Wildland fires will be suppressed using the appropriate suppression response. Suppression actions are expected to be minimal due to the isolated location of the Refuge and concern for the safety of firefighters.

Fire effects are expected to be limited due to the generally maritime weather conditions found on the Islands. Effects on forest vegetation are not expected to be severe unless significant drought conditions are present. The area on Huron Island with heavy accumulations of dead balsam fir would be an exception. Areas that are grass-covered would recover within a growing season or less depending on the season of fire occurrence.

### **Fire Effects**

Fires on the two large islands could be expected to be relatively fast moving as a result of the steep topography. Smaller mammals and reptiles may be more subject to fire because of limited mobility. Most reptiles would be in wetter areas or burrows where temperatures are cooler. Effects on small mammals would be more pronounced in the grass fuels and in the ecotone between grass and forest or brush fuels where escape is difficult (Kelleyhouse, 1979). Small mammals usually have high reproductive rates and with regeneration of their normal habitat populations will likely recover within two or three years (Schramm, et al, 1983).

### **Fuel Types**

Fuels on the islands are a mix of conifers and northern hardwoods - this type is best represented by Northern Forest Fire Laboratory (NFFL) Fuel Model 10. This fuel covers most of Huron and East Huron Islands and consists of litter and understory growth with a 65 to 90% crown closure. There is a significant component of dead balsam fir, providing both vertical and horizontal fuel continuity on Huron Island.

### **Fire Behavior**

Normal fire behavior in the forest fuels on the islands would be fast moving with 2-5' flame lengths on the steeper, southwest facing slopes. Grass areas would see flame lengths of 1-3' with a rapid spread component depending on the stage of curing. Along the ridgetops flame lengths would range from 1-3' in forest fuels. Areas with a large amount of dead balsam fir would show greater flame lengths, potential for crown fire and high fire intensities. Average condition calculations using BEHAVE 4.4 software and NFFL Fuel Model 10 indicate that, with a 6 hour response time, either large island would likely have most fuels consumed.

Extreme fire behavior would cause flame lengths of 4-8' with potentially rapid spread depending on the season and condition of the litter layer. Again, the long response time would virtually assure that the majority of fuels would be consumed prior to arrival of Refuge staff.

Fires on Gull Rock or Cattle Island would likely be out well before Refuge staff could arrive regardless of size at discovery or travel time to the islands.

**Table 3 – Fire Behavior – FM 10**

<b>NFFL Fuel Model 10</b>			
<b>Inputs</b>		<b>Outputs</b>	
1 hour fuel moisture	10%	Rate of Spread	7 ch/hr
10 hour fuel moisture	12%	Fireline intensity	145 BTU/ft/sec
100 hour fuel moisture	15%	Flame Length	4.4 feet
Mid-flame Wind Speed	5 mph	Size @ 6 hours	65 acres
Slope	25%		

**Suppression Tactics**

Suppression involves a wide range of possible tactics from the initial attack to final control. To this end, all wildland fires will receive an appropriate management response applied in a safe, and cost-effective manner to produce efficient action with minimal resource damage. As noted in the Fire Behavior section, it is unlikely that fire on any of the islands would be active on arrival.

Typical Initial Attacks will consist of 2-3 individuals with hand tools and portable pumps. All fires will be assessed by the on-scene incident commander and attacked using minimum impact fire suppression tactics. Natural barriers will be used as much as possible to reduce fireline construction. Unnecessary cutting and bucking should be replaced with alternative actions whenever possible. Back-fires and burnout operations should consider fire intensities and attempt to avoid overheating the soil.

As Refuge staff will be the initial attack force, the Refuge Biologist should be present to fill the need for a Resource Advisor, documenting protection and rehabilitation needs. The Incident Commander will make all on-the-ground tactical suppression decisions.

There will be only one Incident Commander responsible to the project leader. The Incident Commander will designate all overhead positions on fires requiring extended attack. If an Incident Commander from outside the refuge is assigned, a Limited Delegation of Authority (Appendix C) should be issued by the Project Leader.

### **Suppression Conditions**

A suppression alternative was selected for the islands which requires an appropriate management response for all wildland fires. All suppression actions will be accomplished using Minimum Impact Suppression Techniques (MIST) with hand tools due to the Wilderness designation.

### **Wildland Fire Situation Analysis**

For fires that cannot be contained in one burning period, a Wildland Fire Situation Analysis (WFSA) must be prepared. The Project Leader, in conjunction with the FMO, will prepare the WFSA. Approval of the WFSA resides with the Project Leader.

The WFSA allows consideration of alternatives by which a fire may be controlled. Damages from the fire, transportation issues, suppression costs, safety, and the probable character of suppression actions are all important considerations.

With the small land areas and long response times, most fires are expected to have burned out by the time Refuge staff can reach the scene. It is highly unlikely that a fire would enter a second burning period uncontained except, perhaps, on Huron or East Huron Island.

### **Aircraft Operations**

Aircraft may be used in all phases of fire management operations. All aircraft must be Office of Aircraft Services (OAS) or Forest Service approved. An OAS Aviation Policy Department Manual may be obtained from OAS.

Helicopters may be used for reconnaissance, bucket drops, and transportation of personnel and equipment. Any helicopter used for island fire operations must be equipped with floats as specified by OAS. Helispot construction on the islands will not be allowed due to the Wilderness designation. There is one marginal helispot on Huron Island used by the Coast Guard to service the automated light and associated equipment.

As in all fire management activities, safety is a primary consideration. Qualified aviation personnel will be assigned to all flight operations.

### **REHABILITATION AND RESTORATION**

There are 3 types of fire rehabilitation, Suppression, Burn Area, and Emergency Stabilization. Suppression rehabilitation is to restore and repair property and resources from direct suppression activity damage, (i.e. cut fences, dozer lines, and campsites). Burn area rehabilitation and emergency stabilization is to restore resources and property damaged or otherwise impacted from the fire, (i.e. burned waterlines, denuded hill sides, etc).

#### *Suppression Rehabilitation*

In the event of a wildland fire, rehabilitation of fire suppression damage should be accomplished immediately. An appropriate time is within 7 days after the fire is controlled unless the Regional Fire

Management Coordinator grants an extension. Funding for suppression rehabilitation is from the specific fire cost account established for suppression operations. The Incident Commander, as agreed to by the Project Leader, will initiate suppression rehabilitation. Rehabilitation will be directed toward minimizing or eliminating the effects of the suppression effort and reducing the potential hazards caused by the fire.

These actions may include:

- Backfill control lines, scarify, and seed\*.
- Install water bars and construct drain dips on control lines to prevent erosion.
- Restore natural ground contours, which were altered.
- Remove all flagging, equipment and litter.
- Completely restore camping areas and improved helispots.
- Re-vegetation to restore sensitive impacted areas due to suppression actions\*.

\*If re-vegetation or seeding is necessary, locally procured seeds of native plant species will be preferred.

A written suppression rehabilitation plan may be appropriate on larger incidents. Contractors or equipment may be hired to accomplish specialized work.

#### ***Emergency Stabilization Versus Rehabilitation***

Emergency stabilization is the use of appropriate emergency stabilization techniques in order to protect public safety and stabilize and prevent further degradation of cultural and natural resources in the perimeter of the burned area and downstream impact areas from erosion and invasion of undesirable species. Rehabilitation is the use of appropriate rehabilitation techniques to improve natural resources as stipulated in approved refuge management plans and the repair or replacement of minor facilities damaged by the fire.

Total "rehabilitation" of a burned area is not within the scope of the Emergency Rehabilitation funding. Emergency Rehabilitation funding can be used to begin the rehabilitation process if other funding is committed to continue the rehabilitation throughout the life of the project (beyond the initial 3 years of Emergency Rehabilitation funding). Major facilities are repaired or replaced through supplemental appropriations of other funding.

#### ***Burned Area Emergency Stabilization and Rehabilitation (ESR) Plan***

The goal of the ESR Plan is to protect public safety and stabilize and prevent further degradation of natural and cultural resources, and to rehabilitate the stability, productivity, diversity, and ecological integrity of refuge lands after a wildland fire as described in approved refuge management plans. The ESR Plan is tiered to the Refuge Comprehensive Conservation Plan and Fire Management Plan. Development of ESR Plan objectives is guided by resource management objectives, general management practices, and constraints identified in approved plans.

If Burned Area Emergency Stabilization and Rehabilitation is required to reduce the effects of a wildland fire, then the refuge should request appropriate funding through the Burned Area Emergency Stabilization and Rehabilitation (ESR) fund. The Service representative at the National Interagency Fire Center administers the ESR fund. A rehabilitation and restoration survey, plan, and request must be prepared and submitted according to agency guidelines. Due to the small size of the islands, incidents may only need simple plans prepared by local staff. The Project Leader and FMO will review all ESR Plans. The final plan will be submitted to the Region for review prior to submission to the WO. Direction on ESR

guidelines can be found in the Interagency Burned Area Emergency Stabilization and Rehabilitation Handbook.

### **REQUIRED REPORTING**

The IC will be responsible for documenting decisions and providing information to the Project Leader to complete the fire report (DI-1202). The FMO will be responsible for any additional required reports.

### **FIRE INVESTIGATION**

Fire management personnel will attempt to locate and protect the probable point of origin and record pertinent information required to determine fire cause. They will be alert for possible evidence, protect the scene, and report findings to the fireline supervisor.

Prompt and efficient investigation of all suspicious fires will be carried out. However, fire management personnel should not question suspects or pursue the fire investigation unless they meet federal standards for federal investigators. All fire investigations should follow the guidelines outlined in 4.1-2 of the Fire Management Handbook (2000).

## **FIRE RESEARCH**

No fire related research is occurring on the islands. There are several potential fire related research projects on the islands.

- Dendrochronology fire history on the larger islands.
- Fuel surveys on West Huron, East Huron and Gull Islands.
- Literature review of fire effects on the fuels found on the Islands.

## **PUBLIC SAFETY**

FWS is dedicated to ensuring the safety of each visitor to the refuge. Huron Islands NWR is designated Wilderness. Public use on Huron Island should be in accordance with Refuge regulations available from the Project Leader, Seney NWR. All other islands are closed to public use without a permit. The only exception is for a boating emergency.

As Refuge staff only visits the islands 2-3 times annually, restricting public access and protecting the public in case of a wildland fire is virtually impossible.

A first aid kit will be on-site for wildland fires. Emergency medical evacuation of visitors or employees would likely require Coast Guard assistance as they have the equipment, staffing and experience to handle over water rescues.

## **PUBLIC INFORMATION AND EDUCATION**

The public information program will be developed as follows:

- The fire management program, including fire ecology, will be incorporated into visitor information.
- News releases will be distributed to the media as appropriate.
- The public information outlets of cooperating agencies and the regional office will be provided with all fire management information.
- The fire management program will be discussed in informal talks with all employees and volunteers.
- The Huron Islands Lighthouse Preservation Association will be informed of, and encouraged to, “spread the word” on the importance of fire prevention.

During unwanted wildland fire events, on-site information will be provided to alleviate visitor concern about the apparent destruction of resources by fire or the impairment of views due to temporary smoke.

As outlined in the prevention section, emergency closures or restrictions may become necessary during periods of extreme or extended fire danger.

## **FIRE CRITIQUES AND ANNUAL PLAN REVIEW**

### **FIRE CRITIQUES**

Fire reviews will be documented and filed with the final fire report. The FMO will retain a copy for the refuge files.

### **ANNUAL FIRE SUMMARY REPORT**

The FMO will be responsible for completing an annual fire summary report. The report will contain the number of fires by type, acres burned by fuel type, cost summary, personnel utilized, and fire effects.

### **ANNUAL FIRE MANAGEMENT PLAN REVIEW**

The Fire Management Plan will be reviewed annually. Necessary updates or changes will be accomplished prior to the next fire season. Any additions, deletions, or changes will be reviewed by the Project Leader to determine if such alterations warrant a re-approval of the plan.

### **CONSULTATION AND COORDINATION**

The following agencies, organizations and/or individuals were consulted in preparing this plan.

Corace, Greg, Forester, Seney National Wildlife Refuge  
Gale, Cal, Program Analyst, RS Staffing, Inc.  
Tansy, Mike, Biologist, Seney National Wildlife Refuge.

#### **Other Public Contacts**

The following public notices were issued. Comments received are available in the files at Seney NWR.

## APPENDICES

### APPENDIX A: REFERENCES CITED

- Corin, C.W. 1976. The land vertebrates of Huron Islands, Lake Superior. *The Jack-Pine Warbler* 54:138-147.
- Heinselman, Miron L. 1981. "Fire Intensity and Frequency as Factors in the Distribution and Structure of Northern Ecosystems", USDA Forest Service General Technical Report WO-26, Proceedings: Fire Regimes and Ecosystem Properties, 1981.
- Kelleyhouse, David G. 1979. Fire/wildlife relationships in Alaska. In: Hoefs, M.; Russell, D., eds. *Wildlife and wildfire: Proceedings of workshop; 1979 November 27-28; Whitehorse, YT.* Whitehorse, YT: Yukon Wildlife Branch: 1-36.
- Schramm, Peter; Willcutts, Brian J. 1983. Habitat selection of small mammals in burned and unburned tallgrass prairie. In: Brewer, Richard, ed. *Proceedings, 8th North American prairie conference; 1982 August 1-4; Kalamazoo, MI.* Kalamazoo, MI: Western Michigan University, Department of Biology: 49-55.
- USDA-USDI. 2002. *Interagency Burned Area Emergency Stabilization and Rehabilitation Handbook.* 151 pp.
- US Fish and Wildlife Service. 2002. *Fire Management Handbook.* 402 pp.

## **APPENDIX B: DEFINITIONS**

Agency Administrator. The appropriate level manager having organizational responsibility for management of an administrative unit. May include Director, State Director, District Manager or Field Manager (BLM); Director, Regional Director, Complex Manager or Project Leader (FWS); Director, Regional Director, Park Superintendent, or Unit Manager (NPS), or Director, Office of Trust Responsibility, Area Director, or Superintendent (BIA).

Appropriate Management Action. Specific actions taken to implement a management strategy.

Appropriate Management Response. Specific actions taken in response to a wildland fire to implement protection and fire use objectives.

Appropriate Management Strategy. A plan or direction selected by an agency administrator which guide wildland fire management actions intended to meet protection and fire use objectives.

Appropriate Suppression. Selecting and implementing a prudent suppression option to avoid unacceptable impacts and provide for cost-effective action.

Bureau. Bureaus, offices or services of the Department.

Class of Fire (as to size of wildland fires):

- Class A - 3 acre or less.
- Class B - more than 3 but less than 10 acres.
- Class C - 11 acres to 100 acres.
- Class D - 101 to 300 acres.
- Class E - 301 to 1,000 acres.
- Class F - 1,001 to 5,000 acres.
- Class G - 5,001 acres or more.

Emergency Fire Rehabilitation/Burned Area Emergency Rehabilitation (EFR/BAER). Emergency actions taken during or after wildland fire to stabilize and prevent unacceptable resource degradation or to minimize threats to life or property resulting from the fire. The scope of EFR/BAER projects are unplanned and unpredictable requiring funding on short notice.

Energy Release Component (ERC) A number related to the available energy (BTU) per unit area (square foot) within the flaming front at the head of a fire. It is generated by the National Fire Danger Rating System, a computer model of fire weather and its effect on fuels. The ERC incorporates thousand hour dead fuel moistures and live fuel moistures; day to day variations are caused by changes in the moisture content of the various fuel classes. The ERC is derived from predictions of (1) the rate of heat release per unit area during flaming combustion and (2) the duration of flaming.

Extended attack. A fire on which initial attack forces are reinforced by additional forces.

Fire Suppression Activity Damage. The damage to lands, resources and facilities directly attributable to the fire suppression effort or activities, including: dozer lines, camps and staging areas, facilities (fences, buildings, bridges, etc.), handlines, and roads.

Fire effects. Any consequences to the vegetation or the environment resulting from fire, whether neutral, detrimental, or beneficial.

Fire intensity. The amount of heat produced by a fire. Usually compared by reference to the length of the flames.

Fire management. All activities related to the prudent management of people and equipment to prevent or suppress wildland fire and to use fire under prescribed conditions to achieve land and resource management objectives.

Fire Management Plan. A strategic plan that defines a program to manage wildland and prescribed fires and documents the Fire Management Program in the approved land use plan. The plan is supplemented by operational procedures such as preparedness plans, preplanned dispatch plans, prescribed fire plans and prevention plans.

Fire prescription. A written direction for the use of fire to treat a specific piece of land, including limits and conditions of temperature, humidity, wind direction and speed, fuel moisture, soil moisture, etc., under which a fire will be allowed to burn, generally expressed as acceptable range of the various fire-related indices, and the limit of the area to be burned.

Fuels. Materials that are burned in a fire; primarily grass, surface litter, duff, logs, stumps, brush, foliage, and live trees.

Fuel loadings. Amount of burnable fuel on a site, usually given as tons/acre.

Hazard fuels. Those vegetative fuels which, when ignited, threaten public safety, structures and facilities, cultural resources, natural resources, natural processes, or to permit the spread of wildland fires across administrative boundaries except as authorized by agreement.

Initial Attack. An aggressive suppression action consistent with firefighter and public safety and values to be protected.

Maintenance burn. A fire set by agency personnel to remove debris; i.e., leaves from drainage ditches or cuttings from tree pruning. Such a fire does not have a resource management objective.

Natural fire. A fire of natural origin, caused by lightning or volcanic activity.

NFDRS Fuel Model. One of 20 mathematical models used by the National Fire Danger Rating System to predict fire danger. The models were developed by the US Forest Service and are general in nature rather than site specific.

NFFL Fuel Model. One of 13 mathematical models used to predict fire behavior within the conditions of their validity. The models were developed by US Forest Service personnel at the Northern Forest Fire Laboratory, Missoula, Montana.

Preparedness. Actions taken seasonally in preparation to suppress wildland fires, consisting of hiring and training personnel, making ready vehicles, equipment, and facilities, acquiring supplies, and updating agreements and contracts.

Prescribed Fire. A fire ignited by agency personnel in accord with an approved plan and under prescribed conditions, designed to achieve measurable resource management objectives. Such a fire is designed to produce the intensities and rates of spread needed to achieve one or more planned benefits to natural resources as defined in objectives. Its purpose is to employ fire scientifically to realize maximize net benefits at minimum impact and acceptable cost. A written, approved prescribed fire plan must exist and NEPA requirements must be met prior to ignition. NEPA requirements can be met at the land use or fire management planning level.

Prescription. Measurable criteria which guide selection of appropriate management response and actions. Prescription criteria may include safety, public health, environmental, geographic, administrative, social, or legal considerations.

Prevention Activities directed at reducing the number or the intensity of fires that occur, primarily by reducing the risk of human-caused fires.

Rehabilitation (1) Actions to limit the adverse effects of suppression on soils, watershed, or other values, or (2) actions to mitigate adverse effects of a wildland fire on the vegetation-soil complex, watershed, and other damages.

Suppression. A management action intended to protect identified values from a fire, extinguish a fire, or alter a fire's direction of spread.

Unplanned ignition. A natural fire that is permitted to burn under specific conditions, in certain locations, to achieve defined resource objectives.

Wildfire. An unwanted wildland fire.

Wildland Fire. Any non-structure 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 safety, environmental, social, economical, political, and resource management objectives as selection criteria.

Wildland/urban interface fire A wildland fire that threatens or involves structures.

## **APPENDIX C: SAMPLE DELEGATION OF AUTHORITY**

### **Huron Islands National Wildlife Refuge Seney, MI**

#### **Limited Delegation of Authority**

As of 1800, May 20, 2001, I have delegated authority to manage the Huron Island fire, number 3102, Huron Islands National Wildlife Refuge, to Incident Commander, John Doe and his Incident Management Team.

The fire which originated as an arson fire on May 18, 2001, is burning in habitat valuable to nesting bird species and neat the lighthouse. My considerations for management of this fire are:

1. Provide for firefighter safety.
2. I would like the fire managed in such a manner that suppression actions will cause little environmental damage as possible.
3. Key features requiring priority protection are: the lighthouse (National Register of Historic Places site), other buildings, eagle nest trees and other important habitat features.
4. Key resource considerations are: minimize disturbance to nesting species on or near the shore and access points to the island.
5. Restrictions for suppression actions are no foam or retardant use within 200 feet of island shoreline.
6. Minimum tools for use are pumps and chainsaws.
7. My agency advisor will be the Refuge Biologist.
8. Managing the fire cost-effectively for the values at risk is a significant concern.

---

Tracy Casselman  
Project Leader Seney National Wildlife refuge  
May 20, 2001

**APPENDIX D: NEPA/NHPA DOCUMENTATION**

This plan does not support any activities that would constitute a new Federal action under the National Environmental Policy Act. It only documents the current situation which has been in existence since 1938. It is eligible for Categorical Exclusion status and this is reflected in the Finding of No Significant Impact. A copy of the Finding of No Significant Impact is attached. Also in this appendix is a copy of the concurrence letter from the State Historic Preservation Officer.  
(documents to be added as received/approved)

**APPENDIX E: ANNUAL UPDATE DOCUMENTS**

**Cache Equipment Inventory**

No cache or fire equipment is maintained on the Islands. Cache inventory is found with Seney NWR FMP.

**Cooperator Contacts**

**Table 4 – Cooperator Contacts**

<b>Name</b>	<b>Phone Number</b>
Michigan Department of Natural Resources, Baraga Field Office	(906) 353-6651
Michigan Department of Natural Resources, Marquette Regional Office	(906) 228-6561
U.S. Coast Guard, Marquette	(906) 226-3312
U.S. Coast Guard, Hancock	(906) 482-1520

**Adjacent Land Owner Contact List**

There are no adjacent landowners.

**Cooperative Agreements**

No cooperative agreements are currently in force.

## Wildland Fire Dispatch Plan

### *Huron Islands National Wildlife Refuge Dispatch Plan*

*When report of smoke or fire is received get as much information as possible from the caller. The following list should be filled in.*

*Location of smoke or fire:*

*Location of caller:*

*Name and telephone number of caller:*

*Color of smoke:*

*Size of fire:*

*Type of Fuel:*

*Character of fire (running, creeping, etc.):*

*Anyone on the fire:*

*See anyone in the area or boats leaving the area:*

- 1. Check map location*
- 2. Notify Project Leader*
- 3. Maintain log of all telephone communications.*
- 4. Remain on duty.*

### *DIRECTORY*

#### *Regional Office*

*Brian McManus*

*Fire Mgt. Coordinator Office (612) 713-5366  
Home (507) 263-8878*

*Nita Fuller*

*Chief, Division of Office (612) 713-5401  
Refuges*

*NIFC*

*Phil Street* *FWS Coordinator* *Office* (208) 387-2595

*MIDNR - Baraga Field Office* *Office* (906) 353-6651  
427 U.S. Highway 41 North, Baraga, MI 49908  
After hour pager (906) 222-3670  
Jim Haapapuro after hours (906) 482-4648  
UP Duty Officer (906) 249-1497  
UP Duty Officer pager (906) 222-2624

*MIDNR - Regional Office* *Office* (906) 228-6561  
1990 U.S. Highway 41 South, Marquette, MI 49855

*Other Services*

*Hospital*

*Baraga County Memorial Hospital* (906) 524-3300  
770 N. Main Street, L'Anse, MI 49946

*Ambulance*

*Bay Ambulance* (906) 353-6789  
Baraga, MI 49908

*Sheriff* 911

*State Police* 911

*U.S. Coast Guard* (906) 482-1520  
100 Navy Street, Hancock, MI 49930  
(Emergency Helicopter Evacuation)

*U.S. Coast Guard* (906) 226-3312  
400 Coast Guard Road, Marquette, MI 49855

**APPENDIX F: HURON ISLANDS SPECIES LISTS**

A partial bird list is available for the Refuge. Table 5 contains the list of those Federally protected species with potential to be found on Refuge islands.

**Federal Threatened or Endangered Species**

**Table 5 – Federally Listed Threatened or Endangered Species**

<b>Common Name</b>	<b>Scientific Name</b>	<b>Status</b>
<b>BIRDS</b>		
Bald Eagle	<i>Haliaeetus leucocephalus</i>	T
Piping Plover	<i>Charadrius melodus</i>	E
<b>INSECTS: BUTTERFLIES &amp; MOTHS</b>		
Karner Blue Butterfly	<i>Lycaeides melissa samuelis</i>	E
Mitchell's Satyr Butterfly	<i>Neonympha mitchellii mitchellii</i>	E
<b>PLANTS</b>		
American hart's-tongue fern	<i>Asplenium scolopendrium var. americanum</i>	T
Dwarf lake iris	<i>Iris lacustris</i>	T
Eastern prairie fringed orchid	<i>Platanthera leucophaea</i>	T
Fassett's locoweed	<i>Oxytropis campestris</i>	T
Houghton's goldenrod	<i>Solidago houghtonii</i>	T
Lakeside daisy	<i>Hymenoxys herbacea</i>	T
Michigan monkey-flower	<i>Mimulus glabratus var. michiganensis</i>	E
Pitcher's thistle	<i>Cirsium pitcheri</i>	T
Small whorled pogonia	<i>Isotria medeoloides</i>	T

**Michigan State Threatened or Endangered Species**

The table below is derived from the Michigan Natural Features Inventory and includes those state T&E species reported in, or reasonably expected to be found in, Marquette County.

**Table 6 – State Listed Threatened or Endangered Species – Marquette County**

<b>Common Name</b>	<b>Scientific Name</b>	<b>Status</b>
<b>BIRDS</b>		
Bald eagle	<i>Haliaeetus leucocephalus</i>	T
Common loon	<i>Gavia immer</i>	T
King rail	<i>Rallus elegans</i>	E
Kirtland's warbler	<i>Dendroica kirtlandii</i>	E
Osprey	<i>Pandion haliaetus</i>	T
Peregrine falcon	<i>Falco peregrinus</i>	E
<b>PLANTS</b>		
Big-leaf sandwort	<i>Arenaria macrophylla</i>	T
Blunt-lobed woodsia	<i>Woodsia obtusa</i>	T
Calypso or fairy-slipper	<i>Calypso bulbosa</i>	T
Canada rice-grass	<i>Oryzopsis canadensis</i>	T
Dwarf bilberry	<i>Vaccinium cespitosum</i>	T
Farwell's water-milfoil	<i>Myriophyllum farwellii</i>	T
Fragile prickly-pear	<i>Opuntia fragilis</i>	E
Green spleenwort	<i>Asplenium trichomanes-ramosum</i>	T
Lake cress	<i>Armoracia lacustris</i>	T
Lake Huron tansy	<i>Tanacetum huronense</i>	T
Limestone oak fern	<i>Gymnocarpium robertianum</i>	T
Moor rush	<i>Juncus stygius</i>	T
Narrow-leaved gentian	<i>Gentiana linearis</i>	T
New England violet	<i>Viola novae-angliae</i>	T
Northern oak fern	<i>Gymnocarpium jessoense</i>	E
Northern reedgrass	<i>Calamagrostis lacustris</i>	T

Northern woodsia	<i>Woodsia alpina</i>	T
Pearlwort	<i>Sagina nodosa</i>	T
Pine-drops	<i>Pterospora andromedea</i>	T
Round-leaved orchis	<i>Amerorchis rotundifolia</i>	E
Sedge	<i>Carex atratifomis</i>	T
Small yellow pond-lily	<i>Nuphar pumila</i>	E
Small blue-eyed mary	<i>Collinsia parviflora</i>	T
Western dock	<i>Rumex occidentalis</i>	E
Wild chives	<i>Allium schoenoprasum</i>	T

**Table 7 – Huron Islands Bird List**

<b>Huron Islands Bird List</b>	
<b>Common Name</b>	<b>Scientific Name</b>
American Kestrel	<i>Falco sparverius</i>
American Redstart	<i>Setophaga ruticilla</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Barn Swallow	<i>Hirundo rustica</i>
Black Duck	<i>Anas rubripes</i>
Black-and-white Warbler	<i>Mniotilta varia</i>
Blackburnian Warbler	<i>Dendroica fusca</i>
Black-capped Chickadee	<i>Parus atricapillus</i>
Blackpoll Warbler	<i>Dendroica striata</i>
Black-throated Green Warbler	<i>Dendroica virens</i>
Blue Jay	<i>Cyanocitta cristata</i>
Bobolink	<i>Dolichonyx oryzivorus</i>
Canada Goose	<i>Branta canadensis</i>
Canada Warbler	<i>Wilsonia canadensis</i>
Cardinal	<i>Cardinalis cardinalis</i>
Caspian Tern	<i>Hydroprogne caspia</i>
Cedar Waxwing	<i>Bombycilla cedrorum</i>
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>

<b>Huron Islands Bird List</b>	
<b>Common Name</b>	<b>Scientific Name</b>
Chimney Swift	<i>Chaetura pelagica</i>
Chipping Sparrow	<i>Spizella passerina</i>
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>
Common Crow	<i>Corvus bachyrhynchos</i>
Common Grackle	<i>Quiscalus quiscula</i>
Common Loon	<i>Gavia immer</i>
Common Merganser	<i>Mergus merganser</i>
Common Nighthawk	<i>Chordeiles minor</i>
Common Raven	<i>Corvus corax</i>
Double-crested Cormorant	<i>Phalacrocorax auritus</i>
Downy Woodpecker	<i>Picoides pubesens</i>
Eastern Kingbird	<i>Tyranus tyrannus</i>
Eastern Phoebe	<i>Sayornis phoebe</i>
Eastern Wood Peewee	<i>Contopus virens</i>
Golden Crowned Kinglet	<i>Regulus satrapa</i>
Great Blue Heron	<i>Ardea herodias</i>
Great Crested Flycatcher	<i>Myiarchus crinitus</i>
Green-winged Teal	<i>Anas crecca</i>
Herring Gull	<i>Larus argentatus</i>
House Wren	<i>Troglodytes aedon</i>
Indigo Bunting	<i>Passerina cyanea</i>
Killdeer	<i>Charadrius vociferous</i>
Least Flycatcher	<i>Empidonax minimus</i>
Magnolia Warbler	<i>Dendroica magnolia</i>
Mallard	<i>Anas platyrhynchos</i>
Merlin	<i>Falco columbarius</i>
Mourning Warbler	<i>Oporonis Philadelphia</i>
Nashville Warbler	<i>Vermivora ruficapilla</i>
Northern Parula	<i>Parula Americana</i>

<b>Huron Islands Bird List</b>	
<b>Common Name</b>	<b>Scientific Name</b>
Osprey	<i>Pandion haliaetus</i>
Ovenbird	<i>Seiurus aurocapillus</i>
Peregrine Falcon	<i>Falco peregrinus</i>
Pileated Woodpecker	<i>Dryocopus pileatus</i>
Pine Siskin	<i>Spinus pinus</i>
Pine Warbler	<i>Dendroica pinus</i>
Purple Finch	<i>Carpodacus purpureus</i>
Purple Martin	<i>Progne subis</i>
Red-breasted Merganser	<i>Mergus serrator</i>
Red-breasted Nuthatch	<i>Sitta canadensis</i>
Red-eyed Vireo	<i>Vireo olivaceus</i>
Red-necked Grebe	<i>Podiceps grisegena</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Robin	<i>Turdus migratorius</i>
Ruby crowned Kinglet	<i>Regulus calendula</i>
Ruby-throated Hummingbird	<i>Archilochus colubris</i>
Slate-Colored Junco	<i>Junco hyemalis</i>
Solitary Vireo	<i>Vireo solitarius</i>
Song Sparrow	<i>Melospiza melodia</i>
Spotted Sandpiper	<i>Actitis macularia</i>
Swainson's Thrush	<i>Catharus ustulata</i>
Tennessee Warbler	<i>Vermivora peregrine</i>
Tree Swallow	<i>Iridoprocne bicolor</i>
White-throated Sparrow	<i>Zonotrichia albicollis</i>
White-winged Crossbill	<i>Loxia leucoptera</i>
Wilson's Phalarope	<i>Steganopus tricolor</i>
Winter Wren	<i>Troglodytes troglodytes</i>
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>

<b>Huron Islands Bird List</b>	
<b>Common Name</b>	<b>Scientific Name</b>
Yellow-rumped Warbler	<i>Dendroica coronata</i>
Yellow-Shafted Flicker	<i>Colaptes auratus</i>
Common yellowthroat	<i>Geothlypis trichas</i>

**Table 8 – Huron Islands Mammal List**

<b>Huron Islands Mammal List</b>	
<b>Common Name</b>	<b>Scientific Name</b>
Red bat	<i>Lasiurus borealis</i>
Black Bear	<i>Ursus americanus</i>
Raccoon	<i>Procyon lotor</i>
Coyote	<i>Canis latrans</i>
Snowshoe hare	<i>Lepus americanus</i>
Meadow vole	<i>Microtus pennsylvanicus</i>
Red-backed vole	<i>Clethrionomys gapperi</i>
Woodland deer mouse	<i>Peromyscus maniculatus gracilis</i>

### **APPENDIX G: HISTORIC FIRE SEASON ANALYSIS**

No unwanted wildland fires have been recorded on the Islands since initial designation or acquisition. An analysis may be completed in future revisions if sufficient fire activity occurs.

**APPENDIX H: STEP-UP PLAN**

As there is no staff on the Islands, the “Step-up Plan” only address public and visitor information needs. Adjective class will be obtained from MIDNR at the Baraga Field Office.

<b>Adjective Class</b>	<b>Step up Actions</b>
Low	No special public information efforts
Moderate	No special public information efforts
High	No special public information efforts
Very High	Broadcast information and coordination with MIDNR will be utilized to increase visitor awareness of fire hazards.
Extreme	During periods of extreme or prolonged fire danger emergency restrictions or area closures may become necessary. Such restrictions, when imposed, will be consistent with those implemented by MIDNR.

### **APPENDIX I: COMMUNICATION PLAN**

As the Refuge has no radio system on site and the base station at Seney NWR is too distant to be of use, a communication plan is not necessary. Cellular phones and marine radio bands will be used as necessary. Cooperators will use their own systems with appropriate frequency sharing agreements in place.

## APPENDIX J: SAMPLE WILDLAND FIRE SITUATION ANALYSIS

### Wildland Fire Situation Analysis

#### WFSA Information

**WFSA Number:** 1

**Jurisdiction(s):** USFWS

**Fire Name:** Huron 1

**Geographic Area:** EACC

**Incident Number:** 3312

**Unit:** Huron Islands (Seney NWR)

**Date/Time Prepared:** 07/16/02 0859

**Management Code:** 31510-926-3312

#### Fire Situation

**Start Date/Time:** 7/3/02 1000

**Current Fire Size:** 4 acres

#### Fuel Conditions:

1 hr = 10%

10 hr = 12%

100 hr = 16%

#### Fire Behavior -Current and Forecast:

Currently creeping into decadent balsam fir stand.

Forecast to continue into fir with potential for crown fire.

#### Weather- Current and Forecast:

Current- dry, sunny, 76F, RH 26%, wind WNW @ 7

Forecast. more of same for 48 hours

#### Suppression Resource Availability:

Lack of boat transport limits number of firefighters that can be sent to island to 4 w/gear at a time depending on weather. Round trip to island from Big Bay is about 1.5 hours depending on weather and lake conditions.

WFSA No.1

Huron 1

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**Objectives**

<b>Objective</b>	<b>Priority</b>	<b>Weight</b>	<b>Contribution</b>
<b>Safety</b>	<b>10</b>	<b>0.45</b>	
Firefighter Safety	10	0.67	0.303
Provide safe transport for crew personnel, maintain clear access to safety zones on shore.			
Public Safety	5	0.33	0.152
Maintain lookout to ask public to leave as island is closed to use until fire is declared contained			
<b>Economic</b>	<b>1</b>	<b>0.05</b>	
Wilderness	3	1.00	0.136
Protect wilderness characteristics to degree possible considering topography and difficulty of landing on the island.			
<b>Environmental</b>	<b>2</b>	<b>0.09</b>	
Visual	5	0.56	0.051
Avoid "tunnel" effect of fireline appearance. Keep visible impacts at a minimum along shore areas.			
Fuels	2	0.22	0.020
Fuels should not be piled up along fireline, scatter as much as possible			
T&E Species	2	0.22	0.020
T&E species on the island are primarily birds and mobile enough at this time to escape the fire.			
<b>Social</b>	<b>7</b>	<b>0.32</b>	
Public Concern	4	0.33	0.106
As much as possible, keep groups interested in restoration of lighthouse informed as to status of fire and degree of threat to the lighthouse.			
Cultural	8	0.67	0.212
Protection of lighthouse and keeper's quarters is second in priority to firefighter safety.			

## Alternatives

### Alternative A Minimize Firefighter Exposure

Work access corridor to fire from shore using water from pumps on shore creating wetline. Utilize sprinkler setup for historic building protection. Work wetline around fire when structure protection is in place.

#### Target Outcome

Utilize crew of 5, boat and 2 pumps with associated equipment to wetline the fire.

#### Worst Case Outcome

Loss of keeper's quarters and heat and smoke damage to lighthouse. Potential to burn entire island including other abandoned buildings. Would result in need for additional personnel to demolish damaged structures to insure visitor safety.

Probability: 75%  
Final Fire Size: 25 acres  
Time to Contain: 2 days  
Time to Control: 2 days

Probability: 25%  
Final Fire Size: 40 acres  
Time to Contain: 3 days  
Time to Control: 3 days

WFSA No.1

Huron 1

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### **Suppression Costs**

#### **Alternative A Minimize Firefighter Exposure**

Target Outcome

1 Local Crew 2 day  
1 Boat, 18' 22 hour  
Suppression cost: \$4,300

Worst Case Outcome

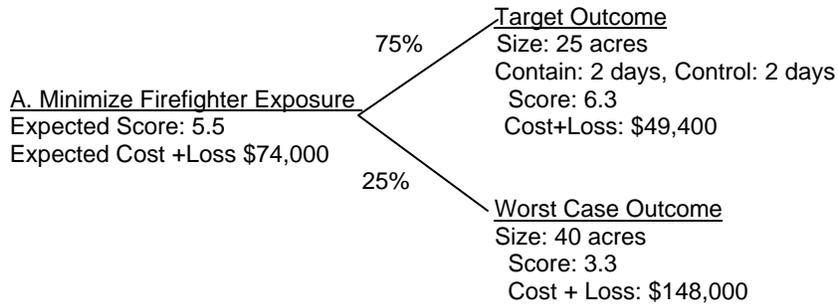
Suppression cost: \$8,000

**Impact on Resource Values**

**Alternative A Minimize Firefighter Exposure**

<b>Item</b>	<b>Target Outcome</b>	<b>Worst Case Outcome</b>	<b>Expected Impact</b>
Recreation - Wilderness	-125	-200	
Abandoned Buildings	-5,000	-40,000	
Historic Structures	-40,000	-100,000	
Total	\$-45,100	\$-140,000	\$-68,800

### Decision Tree



### **Decision Summary**

**Strategy:**

Minimize Firefighter Exposure

**Description**

Create safety corridor from shore to lighthouse using pumps on shore. Set up sprinkler system for historic building protection. Use pumps and wetline for fireline due to shallow, rocky, soil.

**Rationale**

Due to the distance to the island from Seney (6-8 hours), over ½ of the island acreage is expected to be burned by containment. Damage to natural resources (vegetative cover) would be extensive regardless of type of response.

**Special Considerations**

Firefighter safety on the line is of primary importance. Protection of the lighthouse and keeper's quarters is high priority. Natural resources at risk are not of controversial value. Abandoned buildings should be noted but no heroic effort made to protect them.

**Information Policy**

Information will be handled locally by the refuge utilizing local media outlets and contacts with special interest groups.

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Agency Administrator Signature

Date/Time



## Incident Complexity Analysis

**Incident Complexity Rating:** Type 4

**Rationale:** Predicted conditions will not worsen and crew will be protected by water handling equipment, additional day should see containment.

NO YES FACTOR

**A. Fire Behavior**

Burning index predicted to be above the 90% level.  
Potential exists for "blowup" conditions (fuel moisture, winds, etc.).  
Crowning, profuse or long range spotting.

X Weather forecast indicating no significant relief or worsening conditions.

**B. Resources Committed**

200 or more personnel assigned.  
Three or more divisions.  
Wide variety of special support personnel.  
Substantial air operation which is not properly staffed.  
Majority of initial attack resources committed.

**C. Resources Threatened**

Urban interface.  
Developments and facilities.  
Restricted, threatened or endangered species habitat.

X Cultural sites.

X Unique natural resources, special designated zones or wilderness.  
Other special resources.

**D. Safety**

Unusually hazardous fire line conditions-  
Serious accidents or fatalities.  
Threat to safety of visitors from fire and related operations.  
Restrictions and/or closures in effect or being considered.

X No night operations in place for safety reasons.

**E. Ownership**

Fire burning or threatening more than one jurisdiction.  
Potential for claims (damages).  
Different or conflicting management objectives.  
Disputes over suppression responsibility.  
Potential for unified command.

**F. External Influences**

Controversial wildland fire management policy.  
Pre-existing controversies/relationships.  
Sensitive media relationships.  
Smoke management problems.  
Sensitive political interests.

X Other external influences.

**G. Change in Strategy**

Change to a more aggressive suppression strategy.  
Large amounts of unburned fuel within planned perimeter.  
WFSA invalid or requires updating.

**H. Existing Overhead**

Worked two operational periods without achieving initial objectives.

Existing management organization ineffective.

Overhead overextended themselves mentally and/or physically.

Incident action plans, briefings, etc. missing or poorly prepared.

## APPENDIX K: PACK TEST BACKGROUND

### WHAT IS THE "PACK TEST?"

Work capacity tests are used to qualify individuals for the three levels of wildland firefighting duty:

- ARDUOUS
- MODERATE
- LIGHT

The work capacity tests measure:

- Aerobic capacity
- Muscular strength
- Muscular endurance

**All wildland firefighters must meet minimum levels of fitness requirements for the type of duties they are assigned:**

**Arduous:** involves field work calling for above-average endurance and superior conditioning. All firefighters are required to perform arduous duty.

**Moderate:** involves field work requiring complete control of physical faculties and may include considerable walking, standing, and lifting 25-50 lbs. Safety officers and fire behavior analysts are examples of moderate duty positions.

**Light:** involves mainly office-type work with occasional field activity. Examples include staging area and helibase managers.

Testing wildland firefighters for work capacity is important for several reasons:

- Personal safety and health
- Co-worker safety
- Improved operations

### About Arduous Work

Wildland firefighting demands a high level of fitness to safely perform physically demanding work in difficult environments.

Firefighters, strike team leaders, line scouts, and others assigned arduous duty must be prepared to work in steep terrain and in extreme temperatures, altitude, and smoke, while maintaining reserve work capacity to meet unforeseen emergencies.

**Prior** to reporting for work, applicants are **strongly encouraged** to train for arduous-level work capacity.

## WORK CAPACITY TEST TRAINING

Training for the test is important. Start training at least four to six weeks before you are scheduled to take the test. To be in shape for work duty, you may want to train in the footwear or boots you will wear during the test. Footwear should be ankle-high and protect the ankles.

Begin training before you report for work. Start by walking. Train for the test level you will need to pass for the duties you will be required to perform.

Start training without a pack. Gradually increase distance and for arduous and moderate duty begin carrying appropriate weight. Increase the weight until you can meet the requirement for arduous or moderate duty.

The table below provides test criteria for arduous, moderate, and light duty performance:

**Table 9 – Physical Testing Criteria**

Physical Level	Test Name	Distance Covered	Weight Required	Maximum Time
<b>ARDUOUS</b>	Pack Test	3-miles	45 lb.	45 min.
<b>MODERATE</b>	Field Test	2-miles	25 lb.	30 min.
<b>LIGHT</b>	Walk Test	1-mile	no pack	16 min.

### MORE ON TRAINING:

Before you begin to train for testing or substantially increase your level of activity, consult your physician. This is especially important if you are over 40 and have been inactive, have a history of a heart condition or chest pain or loss of balance, or have a joint or bone problem that could be made worse by a change in physical activity.

Once you are cleared to begin training, here's what you'll need:

- Adequate footwear that will cover and protect feet and ankles while testing
- Comfortable clothing
- A pack. The type of pack is a personal choice, but it must weigh either 45 or 25 lbs., depending on whether you are testing for arduous or moderate duty
- An accurately measured, safe, and level course

### TAKING THE TEST:

Testing will be monitored and any problems should be brought to the attention of the test monitors.

- No jogging or running is permitted
- The test is Pass/Fail only
- Bring your own pack, or a standard firefighter backpack pump will be provided
- Packs will be weighed before and after testing

**FOR MORE INFORMATION:**

Personal health, physical fitness, and work capacity all work toward making conditions safer for firefighters and the people they protect. Ask your local fire management office for more information.