

WILDLAND FIRE MANAGEMENT PLAN
MICHIGAN WETLAND MANAGEMENT DISTRICT



2003

WILDLAND FIRE MANAGEMENT PLAN
MICHIGAN WETLAND MANAGEMENT DISTRICT
GREAT LAKES-BIG RIVERS REGION

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INTRODUCTION

NEED AND REASON FOR FIRE MANAGEMENT PLAN

This document establishes a Fire Management Plan (FMP) for the Michigan Wetland Management District (WMD). The plan is written as an operational guide for managing the WMD's wildland fire program. It defines levels of protection needed to (1) ensure safety of employees, visitors, and adjacent landowners and (2) protect resources, given current understanding of the complex relationships in natural ecosystems. It is written to comply with both Departmental and Service-wide requirements 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 is some potential for the use of prescribed fires on the WMD. Waterfowl Production Areas (WPA) comprising the WMD were purchased under the Waterfowl Production Area Program as authorized by Congress in 1958 by amendment to the Migratory Bird Hunting Stamp Act.

Management oversight is provided by the Michigan Private Lands Office with day-to-day management provided by Michigan Department of Natural Resources (MIDNR) under a Memorandum of Understanding (MOU). Although only two WPAs are currently owned, the original concept agreed to by MIDNR and U.S. Fish and Wildlife Service (FWS) involved potential acquisition of 30,000 acres of threatened wetlands.

HOW FMP ACHIEVES LAND MANAGEMENT PLAN OBJECTIVES

The suppression aspects of this plan will provide habitat protection on the WPAs. Primary beneficiaries are the waterfowl and migratory birds that use the areas. By providing protection, wildlife-dependent public use of the lands will continue. Application of prescribed fire to the WPAs if possible will more closely duplicate historic influences on wetlands and grasslands involved.

MEETING REGULATORY REQUIREMENTS

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). It is the policy of the FWS to provide opportunities for public participation in management planning. This document will be available for a thirty day comment period following completion of the draft plan.

An informal Section 7 consultation will be conducted to ensure no adverse effects on Federally threatened or endangered (T&E) species that may be present. Table 3 listing Federal T&E species is found in Appendix D.

There are no historic buildings located on the WPAs. No known surveys of cultural sites have been conducted on either existing WPA. Concurrence with this plan by the State Historic Preservation Officer will be obtained.

Documentation showing compliance with these and any other requirements are found in Appendix C.

COLLABORATIVE DEVELOPMENT PROCESS FOR LMP AND FMP

Although the Wetland Management District manages the WPAs, the Comprehensive Conservation Plan (CCP) for Shiawassee National Wildlife Refuge (NWR) contains the guiding principles for management of the involved lands. During formulation of the CCP the State of Michigan was involved. The FMP has received input from MIDNR and the local governments involved. In addition, the MOU for management

between FWS and MIDNR involves regular communication to insure the use of optimum management strategies.

Continuing opportunities also exist for future collaboration in acquisition and management planning of additional WPAs.

AUTHORITIES FOR FMP DEVELOPMENT

Authority and guidance for developing and 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).
- 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.
- National Fire Plan, Departments of Interior and Agriculture, 2001.
- 10-Year Comprehensive Strategy Implementation Plan, Departments of Interior and Agriculture, 2002.

- Draft Cohesive Strategy for Protecting People and Sustaining Resources in Fire-Adapted Ecosystems, Departments of Interior and Agriculture, 2001.

RELATIONSHIP TO LAND MANAGEMENT PLANNING/FIRE POLICY

AGENCY SPECIFIC FIRE MANAGEMENT POLICY

Fish and Wildlife Service fire management policy is based on the Departmental Manual (620 DM 1) and the 2001 Federal Wildland Fire Policy. **Firefighter and public safety is the first priority.** All Fire Management Plans and activities must reflect this commitment. With the possible exception of instances where the life of another is threatened, no Service employee, contractor, or cooperators will be purposely exposed to life-threatening conditions or situations (See 241 FW 7).

Only trained and qualified people will be assigned to fire management duties. Fire Management personnel will meet training and qualification standards established or adopted by the Service for the position they occupy. Agency Administrators will meet training standards established or adopted by the Service for the position they occupy. Employees who are trained and certified will participate in the wildland fire management program as the situation demands. Non-certified employees with operational, administrative, or other skills will support the wildland fire management program as needed. Agency Administrators will be responsible, be held accountable, and make employees available to participate in the wildland fire management program.

Fire management planning, preparedness, wildland and prescribed fire operations, monitoring, and research will be conducted on an interagency basis with the involvement of all partners when appropriate. Every area with burnable vegetation must have an approved Fire Management Plan. Fire Management Plans must be consistent with firefighter and public safety, values to be protected, and land, natural, and cultural resource management plans, and must address public health issues. Fire Management Plans must also address all potential wildland fire occurrences and may include the full range of appropriate management responses. Fire Management Plans must be coordinated, reviewed, and approved by the responsible agency administrator, to ensure consistency with approved land management plans.

Fire, as an ecological process, will be integrated into resource management plans and activities on a landscape scale, across jurisdictional boundaries, and will be based upon best available science. All use of fire for natural and cultural resource management requires an approved plan which contains a formal prescription. Wildland fire will be used to meet identified resource management objectives when appropriate.

The Service will employ prescribed fire whenever it is an appropriate tool for managing Service resources and to protect against unwanted wildland fire whenever it threatens human life, property and natural/cultural resources. Once people have been committed to an incident, these human resources become the highest value to be protected. If it becomes necessary to prioritize between property and natural/cultural resources, this is done based on relative values to be protected, commensurate with fire management costs.

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

Management actions taken on wildland fires must consider firefighter and public safety, be cost effective, consider benefits and values to be protected, and be consistent with natural and cultural resource objectives. Refuges will work with their local cooperators and the public to prevent unauthorized ignition of wildland fires on Service lands.

Structural firefighting is not the functional responsibility of the Service. Service assistance in structure protection should only be performed on an emergency basis to save lives. (See Fire Management Handbook, 1.5.4) Fire management policies and procedures for safety, training and equipment are mandatory. See 241 FW 7 (Safety Operations - Firefighting), 232 FW 6 (Firefighting Training), and 241 FW 3 (Personal Protective Equipment).

Further clarification and interpretation of policy may be found in Section 1.1.2 of the FWS Fire Management Handbook.

RELATIONSHIP OF FMP TO ENABLING LEGISLATION AND PURPOSE OF UNIT

The Waterfowl Production Area Program is intended to acquire valuable wetlands prior to drainage or other destructive modifications, thus preserving waterfowl production habitat. The Program carries out the intent of the legislation by managing wetlands and associated uplands with the purpose of providing high quality waterfowl production habitat.

This plan provides a framework for protection of wetland and grassland communities. It also provides an opportunity to manage and, as necessary, restore wetland vegetation using fire while current management often requires herbicide applications and mechanical treatments to reduce woody vegetation.

SUMMARY OF SIGNIFICANT RESOURCES AND VALUES

From the WPA program standpoint, wildlife use of the wetlands and adjacent uplands is the most significant value of the Michigan WPAs. The WPAs provide nesting, brood rearing, and resting habitat for waterfowl and other migratory birds in a landscape dominated by production agriculture and development. Other values derived from the wetlands include water absorption and slowed run-off, thus reducing erosion and high stream flows. With only two units in place, the effects on water flow and quality are minimal and localized.

BROAD MANAGEMENT PLAN DIRECTION PERTINENT TO FMP

Management will continue to focus on providing high quality wetlands and grasslands to benefit waterfowl and other migratory birds. Fire management, particularly the use of prescribed fire, can contribute to this management direction by managing and restoring these communities using the more natural process of fire.

Land Management Goals

Maintenance of wetland-grassland complexes for waterfowl production is the primary land management goal for the WMD. As a secondary benefit the program also helps to restore a grassland component to the regional landscape. Grasslands were a component of the pre-settlement landscape in southern Michigan.

Land Management Objectives

Objectives in support of the above goals include: (1) provide improved habitat conditions to support waterfowl and other migratory birds; (2) provide improved opportunities for both consumptive and non-consumptive public use; (3) re-establish the wetlands program to reach the original 30,000 acre goal.

Desired Future Condition

According to the CCP, the desired future condition is a mixture of high quality wetlands and grasslands that benefit waterfowl and migratory birds. Species composition would consist predominantly of native species of vegetation.

WILDLAND FIRE MANAGEMENT STRATEGIES

GENERAL MANAGEMENT CONSIDERATIONS

Area-wide Considerations

Interagency Relationships

There is an ongoing MOU between MIDNR and FWS for management of the existing WPAs. This relationship is expected to continue and may be strengthened if additional acquisition funding becomes available. As these parcels are not in areas normally bothered by fire due to the presence of surrounding agricultural lands, local cooperative efforts have been negligible.

Regional Strategies

No regional strategies related to fire management exist.

Other Collaborative Processes

Some opportunities will result from NEPA requirements while others derive from local user groups. This plan was placed out for public review and input for a thirty day period to insure local concerns were addressed and any misconceptions cleared.

10 Year Comprehensive Strategy Core Principles

Collaboration

For this FMP, collaboration at the local level includes the MIDNR, county and town governments. Adjacent landowners (representative stakeholders) will also be involved.

Collaboration beyond the local level is not likely as individual WPAs are generally less than 640 acres and not adjacent to each other.

Priority Setting

Project proposals (either prescribed fire or wildland fire oriented) will be rated locally for initial priorities. Overall priorities for funding fuel management projects on the WMD will be established at the federal regional level with appropriate input from state and local officials in the immediate refuge area.

Accountability

Accountability for achieving objectives developed in this plan will be accomplished by reporting results of projects or activities to the National Fire Plan Operations and Reporting System (NFPORS) as it is implemented. For objectives related to suppression, the annual report of fire activity, available from the Zone Fire Management Officer at Leopold WMD in Portage, WI will document results of suppression or prescribed fire actions taken on the WMD.

WILDLAND FIRE MANAGEMENT GOALS

Fire Management Goals in Context of LMP

The primary fire management goal on the WMD is to protect wildlife habitat from degradation as a result of unwanted wildland fire. A secondary goal is the reestablishment of fire as the management tool of choice to maintain and enhance existing wetland and grassland communities. Accomplishing the second goal would also reestablish the expected fire regime and maintain affected communities in a Condition Class 1. Tables explaining fire regimes and condition class are found under the Fire Management Unit (FMU) descriptions on page 8.

FMP Contribution to Achieve LMP Goals

Effective wildland fire suppression actions, taken quickly, will reduce potentially extensive damage (i.e. loss of preferred vegetation to invasive species or loss of soil organic components, etc.) to wetlands and grasslands. The application of prescribed fire will safely and effectively work to achieve stated management goals.

Contribution of Wildland Fire Goals to Regional/National Plans

National Fire Plan

Due to the small size of the individual WPAs and lack of fire history since acquisition, wildland fire operations will not contribute significantly to any of the National Fire Plan goals.

Restore Fire-Adapted Communities

Prescribed fire application would be beneficial in restoring the role fire in maintaining the natural habitat conditions. Current acreages are insignificant in the southern part of Michigan to have any measurable effect on National Fire Plan Goals.

10 Year Comprehensive Strategy

Priorities to Protect Communities and High Risk Watersheds

There are no communities or high risk watersheds near WPAs in this wetland management district.

Collaboration among Governments and Representative Stakeholders

Collaboration will occur between the MIDNR, county and local governments and adjacent landowners (representative stakeholders).

Performance Measures and Results Monitoring

The primary performance measure applicable to the WMD involves effective protection of life, property and existing habitat conditions. Once application of prescribed fire is established, a second measure is the restoration of fire to its traditional role in the affected communities.

Cohesive Strategy Elements (Draft from USFS accepted by Interior agencies)

Institutional Objectives and Priorities

There are numerous refuge units in the Great Lakes-Big Rivers Region of FWS that support large fire-adapted communities. These areas will receive priority attention. Michigan WMD needs will be addressed when it reaches a higher priority.

Program Management Budgets and Authorities

At the present time, with no fire history, and its status as a small un-staffed unit, the WMD fails to generate any support from the FIREBASE fire planning and budgeting tool.

Social Awareness and Support

Due to the small size of the WPAs and their scattered nature, the areas are mostly known only to local residents. While support is good from local residents, no attempt has been made to generate extensive public support for WMD operations.

WILDLAND FIRE MANAGEMENT OPTIONS

Wildland Fire Management Options to be Implemented

Due to the scattered nature and small size of the WPAs and the proximity of adjacent landowners and improvements, full suppression is the wildland fire management option of choice. Firefighter safety and that of neighbors and visitors is of primary concern.

Use of foam or retardants will be in accordance with the guidelines found in Appendix B. This will protect any fisheries present and wetland water quality. In addition, mechanized equipment, when used, will produce the least environmental damage possible.

Rationale for Strategies to be Applied to Each FMU

With the scattered locations of WPAs, suppression is the reasonable fire management strategy. Actual suppression tactics could range from full, aggressive, suppression to containment between plowed agricultural fields. Wildland fire use is not an option.

DESCRIPTION OF WILDLAND FIRE MANAGEMENT STRATEGIES BY FMU

FMU Descriptions

All WPAs will be treated as one FMU. Three different fuel complexes exist: upland forest, wetlands and grasslands. Topographically the unit is generally flat to gently rolling. Most of the upland forest is hardwood falling in fire regime V (as defined in the 10-Year Comprehensive Strategy, see Table 1). Both the grasslands and wetlands are in Fire Regime Group I. Additional physical and biological descriptive information for the WMD is found in Appendix D.

Table 1 – Fire Regime Groups

Fire Regime Group	Frequency (Fire Return Interval)	Severity
I	0-35 years	low severity
II	0-35 years	stand replacement severity
III	35-100+ year	mixed severity
IV	35-100+ year	stand replacement severity
V	>200 years	stand replacement severity

The WPAs are generally considered to be 60% Condition Class 1 and 40% Condition Class 2, as defined in Table 2. Lightning is not normally a factor in the southern half of Michigan's Lower Peninsula. Fire occurrence is likely to result from human causes. On WPAs, public use, particularly careless or illegal users, is the most likely cause for wildland fires.

Table 2 – Condition Class Explanation

Condition Class	Fire Regime Example Management Options
Condition Class 1	Fire regimes are within an historical range and the risk of losing key ecosystem components is low. Vegetation attributes (species composition and structure) are intact and functioning within an historical range. Where appropriate, these areas can be maintained within the historical fire regime by treatments such as fire use.

Condition Class	Fire Regime Example Management Options
Condition Class 2	Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components is moderate. Fire frequencies have departed from historical frequencies by one or more return intervals (either increased or decreased). This results in moderate changes to one or more of the following: fire size, intensity and severity, and landscape patterns. Vegetation attributes have been moderately altered from their historical range. Where appropriate, these areas may need moderate levels of restoration treatments, such as fire use and hand or mechanical treatments, to be restored to the historical fire regime.
Condition Class 3	Fire regimes have been significantly altered from their historical range. The risk of losing key ecosystem components is high. Fire frequencies have departed from historical frequencies by multiple return intervals. This results in dramatic changes to one or more of the following: fire size, intensity, severity, and landscape patterns. Vegetation attributes have been significantly altered from their historical range. Where appropriate, these areas may need high levels of restoration treatments, such as hand or mechanical treatments, before fire can be used to restore the historical fire regime.

FMU Objectives, Standards, Guidelines or Desired Future Condition with Strategies

The primary fire management objective for this FMU is the protection of existing habitat from wildland fire to benefit waterfowl and migratory birds. Wildland fire suppression is the strategy to be applied.

Prescribed fire application will be accomplished using standards described in the FWS Fire Management Handbook Chapter 2.

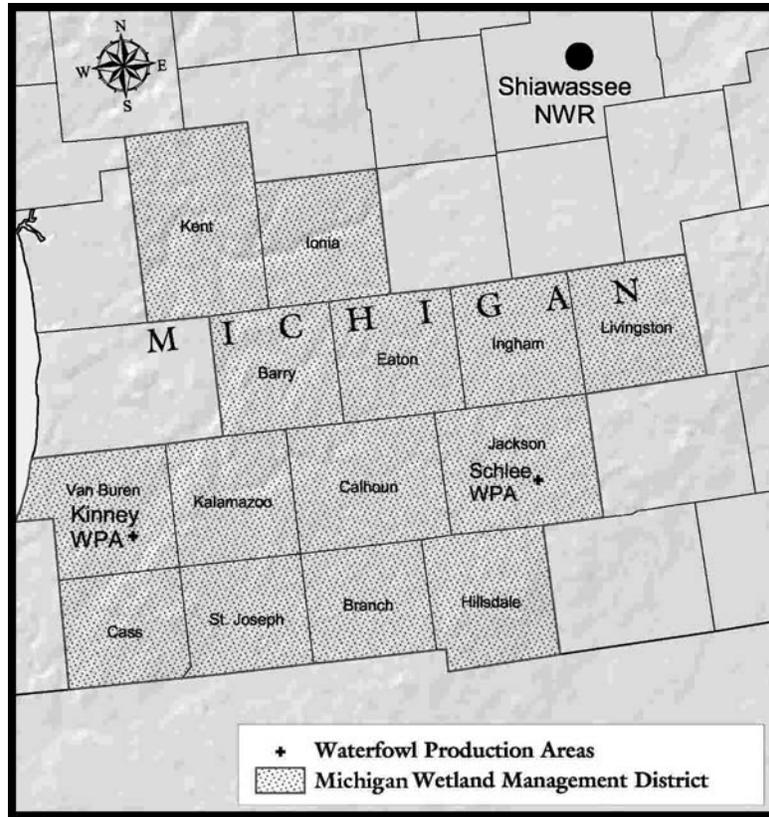
WILDLAND FIRE MANAGEMENT COMPONENTS

WILDLAND FIRE SUPPRESSION

Program Direction

Because this WMD is widely scattered across southern Michigan, initial attack suppression action will be provided by local fire departments or MIDNR. Figure 1 shows the relative location of these units.

Figure 1 – Michigan Wetland Management District Location Map



Preparedness

Prevention and Community Education

Prevention and community education will not be undertaken solely by FWS. Any efforts will be coordinated with MIDNR or local fire departments. They have the contacts and local infrastructure to deliver programs of this type.

Community Assistance and Grant Programs

When additional lands are purchased consideration will be given to providing access to both assistance and grant programs.

Training and Qualifications

Departmental and FWS policy requires that all personnel engaged in suppression and prescribed fire duties meet the standards set by the National Wildfire Coordinating Group (NWCG). As suppression will be supplied by either MIDNR or local fire departments, their qualification requirements will be accepted in accordance with existing national level agreements/guidance.

Readiness

As no suppression can be furnished by FWS, readiness will be the responsibility of either MIDNR or local fire departments providing that protection.

Detection

With the proximity of adjacent landowners and public roads, detection is expected to be by means of public contact with appropriate authorities. A lack of fire history in the approximately twenty years since initial acquisition indicates wildland fire is a rare occurrence and additional detection means are not necessary.

Initial Attack

Initial attack operations would be undertaken by either MIDNR or local fire departments. The wetland nature of the properties limits effectiveness of local fire department equipment.

Extended Attack

With the relatively small size of the existing parcels, it is not likely that active suppression operations would exceed the initial burning period. Second burning period operations would generally be mop-up operations.

Other Management Considerations

Clean Air Act

The areas where the existing WPAs are located are Class II air quality areas. Wildland fires are expected to be of short duration with minimal effects on long-term air quality.

Endangered Species Act

No known threatened or endangered species are found on the current WPAs.

Other Legislation or Codified Rules

There have been no cultural resource surveys conducted on the WPAs. Should suppression operations uncover sites with potential, FWS personnel will be notified and the regional direction found in Appendix A will be followed.

WILDLAND FIRE USE

There will be no wildland fire use on the Wetland Management District.

PRESCRIBED FIRE

Long-Term Program Objectives

The primary program objective is the maintenance of existing vegetative communities. Prescribed fire is the tool that most closely mimics the natural process. Current management involves the use of mechanical biomass removal, which is not as effective biologically as prescribed fire application would be. Based on experience with fire use in other, similar, grassland systems, a conversion to prescribed fire use would be beneficial to the vegetative communities while having minimal adverse effects on wildlife or local residents.

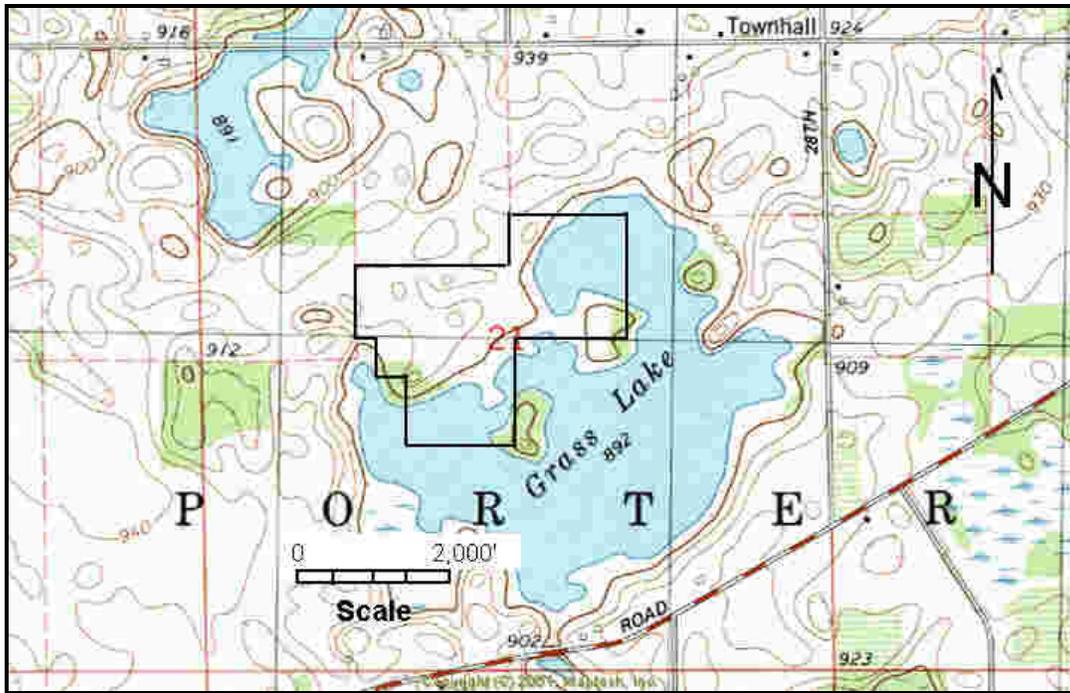
Annual Preparation

Planning for each burn season begins the year prior to that season. Prescribed fire projects will be planned by the unit's biologist with assistance from the Zone FMO based on the goals and objectives in this plan and the land management objectives in the CCP. Input will be solicited from the local MIDNR wildlife biologist and fire officer as well. Budget requests will be prepared and submitted, by assigned

deadlines, into FIREBASE. The Prescribed Burn Boss will conduct a field reconnaissance of the proposed burn location with the FMO, and appropriate staff to discuss objectives, special concerns, and gather all necessary information to write the burn plan. After completing the reconnaissance, a Prescribed Burn Boss qualified at the expected level of complexity will write the prescribed burn plan.

Both neighbors and cooperators will have opportunities for input into the planning process. As can be seen in Figure 2, the Kinney WPA does not have residences adjacent to the boundary. The Schlee WPA (Figure 3) has residences along the south boundary and at the southwest and southeast corners.

Figure 2 – Kinney WPA



Required Staffing

Personnel needed to conduct the prescribed fires on the WPAs will come from other FWS units, possibly Ottawa NWR, Shiawassee NWR or Big Oaks NWR. In addition, certain MIDNR staff members have training, experience, resources, and local contacts to conduct, or assist with, a prescribed fire. As part of the planning process, the prescribed burn boss will determine for each individual burn, the numbers and types of positions required. Depending on qualifications and the nature of current and future cooperative agreements or MOUs, both MIDNR and local fire department personnel may be participants.

Sensitive Resource Considerations

There are no known cultural or historic sites on the WPAs. The reconnaissance conducted as part of the planning process will identify potential cultural sites and they will be surveyed in accordance with Regional Office guidance found in Appendix A.

No Federally listed or State listed threatened or endangered species (T&E) are known to existing on the WPAs. Should the pre-burn reconnaissance indicate T&E presence, a Section 7 consultation will be initiated. Efforts will be made to determine fire effects on any T&E species present using literature searches, biological consultation and review of existing on-line databases. The Federal list of T&E species found in Michigan is found Table 3 in Appendix D.

Prescription Requirements

Prescription elements in each individual prescribed fire plan should describe in detail the acceptable ranges of fire behavior and parameters of weather and fuel moisture content or other site variables. Smoke management requirements including duration of production and dispersal patterns are also required. The use of fire behavior and smoke management prediction aids (e.g., BEHAVE, RXWINDOW, nomograms, SASEM) is recommended. Measures of desired results should also be included, i.e. percent of litter removed, number of brush stems killed etc.

Figure 3 – Schlee WPA



Prescribed Fire Plan Elements

The prescribed fire plan is a site specific action plan describing the purpose, objectives, prescription, and operational procedures needed to prepare and safely conduct the burn. The treatment area, objectives, constraints, and alternatives will be clearly outlined. No burn will be ignited unless all prescription parameters of the plan are met. Fires not within those parameters will be suppressed. As part of the plan, minimum contingency resources will be listed.

Prescribed Fire Plans will follow the format contained in the FWS Fire Management Handbook. This format is reproduced in Appendix C. Each burn plan will be reviewed by the Biologist, Zone FMO, and Burn Boss. The Project Leader has the final authority to approve the burn plan. The term burn unit refers to a specific tract of land to which a prescribed burn plan applies. Smoke management will be addressed in accordance state regulations.

Documentation and Reporting

Effects Monitoring

Monitoring of prescribed fires is intended to provide information for quantifying and predicting fire behavior and its ecological effects on refuge resources while building a historical record. Monitoring measures the parameters common to all fires: fuels, topography, weather and observed fire behavior. In addition, ecological changes such as species composition and structural changes in vegetation will be monitored after a fire. This information will be very

useful in fine-tuning the prescribed burn program. During prescribed burning, monitoring should 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. Monitoring actions are addressed in the Prescribed Fire Plan as illustrated in Appendix C.

Cost Accounting

All costs of planning, implementation and first order, post-fire, monitoring will be charged to the appropriate cost code. This data may be tracked in several locations including FIREBASE, the National Fire Plan Operations and Reporting System as well as the Federal Financial System. Detailed cost tracking provides for constantly improving cost estimates for budget purposes.

Public Information/Interaction

In order to support and improve the efficacy of the prescribed fire program, it is necessary to insure that the surrounding public is well informed as to the purposes of prescribed fire activities. Early contact with local residents, community leaders and neighbors and providing an opportunity for planning process input through public meetings and review goes a long way towards reducing burn day questions and concerns.

NON-FIRE FUEL TREATMENTS

Long-term Program Objectives

The primary program objective is the maintenance of existing wildlife habitats. Current management involves the use of mechanical biomass removal (haying) which is not as effective as prescribed fire application would be. A local farmer under Special Use Permit treats approximately $\frac{1}{3}$ of the grassland areas annually. Under the permit, the cut portions are typically top dressed with potash to replace lost nutrient values.

Annual Preparation

There is little preparation needed for the mechanical treatments. Haying operations are timed for early summer after many ground nesting birds have fledged. Until a conversion to prescribed fire use, mechanical treatment is expected to continue.

Required Staffing

No specific staffing is needed from FWS as haying operations are conducted under permit.

Sensitive Resource Considerations

Mowing does not disturb the ground so no effects are expected on potential, undiscovered, cultural sites.

No T&E species are known to use the WPAs. Haying operations are timed after many ground nesting birds have fledged to avoid adverse effects on those species.

Air quality is not affected by mowing operations.

Restrictions

Equipment

There are no restrictions on equipment used. Common agricultural tractors with mowers and balers are used for all operations.

Seasonal

The only seasonal restriction involves delay of operations until ground nesting is essentially complete.

Documentation and Reporting

Effects Monitoring

Monitoring of mechanical operations is intended to provide information for quantifying and predicting ecological effects on refuge resources while building a historical record. In addition, ecological changes such as species composition and structural changes in vegetation should be monitored after each operation. Operational monitoring provides a basis for evaluation and comparison of management actions. Possible monitoring actions addressed in the Prescribed Fire Plan as illustrated in Appendix C are usable for mechanical operations as well.

Cost Accounting

All costs of planning, implementation and first order, post-operation, monitoring will be charged to the appropriate cost code. This data may be tracked in several locations including FIREBASE, the National Fire Plan Operations and Reporting System as well as the Federal Financial System. Detailed cost tracking provides for constantly improving cost estimates for budget purposes.

Public Information/Interaction

Current operations have been in place since the mid-1980's and are considered routine by local residents and officials. As needed, opportunities for public input should be made available to allow continued operations with minimal public anxiety.

EMERGENCY REHABILITATION AND RESTORATION

Burned Area Emergency Stabilization and Rehabilitation Handbook

While wildland fire may occur on the WPAs, the flat to rolling topography is not likely to require stabilization or rehabilitation. There is potential for damage to access roads during suppression operations. These needs would be addressed during or immediately following suppression operations. All other rehabilitation needs would be addressed following the guidance found in the Burned Area Emergency Stabilization and Rehabilitation Handbook.

Pre-Identified Areas with Restoration Needs

There are no pre-identified areas with restoration needs within the WMD.

ORGANIZATION AND BUDGET

STAFFING

Current Level

Current staffing consists of two individuals located in the Michigan Private Lands Office. These individuals provide oversight and coordination of mechanical operations with MIDNR.

Level Needed to Achieve Wildland Fire Management Goals

Due to the current small size of the WMD, lack of fire history since acquisition, and the MOU with MIDNR, no additional staffing is needed for wildland fire suppression operations. Staff borrowed from other stations for prescribed fire operations should be adequate to accomplish stated objectives. It may also be possible to work cooperatively with trained, experienced MIDNR staff from the local area to complete prescribed fire operations. If and when additional property is acquired, added staff locally may be desirable.

FUNDING

Current Level

Current funding is adequate for purposes of management oversight.

Level Needed to Achieve Wildland Fire Management Goals

To achieve wildland fire management goals, especially prescribed fire application, additional funding for contract services, or to pay salary and travel costs of FWS employees would be necessary. Under current conditions, the needed funding can be requested through FIREBASE.

Additional Support

No additional support is needed under current conditions.

COOPERATIVE AGREEMENTS

No known agreements exist for fire suppression. If suppression agreements are pursued, it will be helpful to explore suppression goals with local entities. This may help to minimize environmental impacts associated with suppression efforts.

The MOU with the MIDNR does not specifically address management using prescribed fire or other tools. This leaves flexibility in cooperatively addressing future management options and tools.

MONITORING AND EVALUATION

MONITORING

Prescribed Fire

Minimum Levels

At the least, permanent photo points should be installed and documented. Before and after photos will document the overall visual changes following prescribed fire operations.

Intermediate Levels (NPS Fire Monitoring Handbook)

The National Park Service Fire Monitoring Handbook is scheduled to become the de facto monitoring guidance for all Federal land management agencies. Monitoring at levels 1 and 2 is preferred as a minimum level. A full PDF file version can be downloaded from the internet or a hardcopy can be obtained by contacting the National Park Service in Boise, ID.

Maximum Levels

If and when it becomes feasible, fire monitoring should become part of a comprehensive refuge monitoring program. All monitoring, (i.e. species surveys, water level monitoring, vegetation changes, fire effects and others) would be integrated into one program supporting adaptive management.

Non-Fire Treatments

Minimum Levels

At the least, permanent photo points should be installed and documented. Before and after photos will document the overall visual changes following mechanical operations.

Volume/Weight Removed Measures

At a higher level, information about the volume or weight of biomass removed is valuable to quantify treatment effects.

EVALUATION

Wildland Fire Suppression Operations

Review of Outside Resource Performance

Evaluation of outside resources (MIDNR, other overhead or resources) will occur in accordance with guidance in the Fire Management Handbook, Section 3.6, Reviews.

Review of Internal Refuge Actions

Evaluation of Refuge suppression actions, if any, will be handled the same as the review of outside resource performance. Again the guidance found in the Fire Management Handbook, Section 3.6, Reviews will be followed.

Effectiveness of Prescribed Fire Operations

The effectiveness of prescribed fire operations will be judged using the monitoring results developed in the section on monitoring above.

NATIONAL WILDLAND FIRE PERFORMANCE MEASURES

As there is no documented wildland fire history for this WMD, there are no reductions in acres or costs to be achieved. Projects or activities, including the current haying operation, that relate to the National Fire

Plan would be entered into NFPORS and reported through that system. The current condition class of the WPAs is estimated as 60 % Condition Class 1 and 40% Condition Class 2.

APPENDICES

APPENDIX A: REGIONAL REQUIREMENTS FOR NHPA

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 (sub-activity 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 (sub-activity 9262).

APPENDIX B: ENVIRONMENTAL GUIDELINES FOR FOAM/RETARDANT USE

The following guidelines should be followed to minimize the likelihood of retardant chemicals entering a stream or other body of water.

- During training or briefings, inform field personnel of the potential danger of fire chemicals, especially foam concentrates, in streams or lakes.
- Locate mixing and loading points where contamination of natural water, especially with the foam concentrate, is minimal.
- Maintain all equipment and use check valves where appropriate to prevent release of foam concentrate into any body of water.
- Exercise particular caution when using any fire chemical in watersheds where fish hatcheries are located.
- Locate dip operations to avoid run-off of contaminated water back into the stream.
- Dip from a tank rather than directly from a body of water, to avoid releasing any foam into these especially sensitive areas.
- Use a pump system equipped with check valves to prevent flow of any contaminated water back into the main body of water.
- Avoid direct drops of retardant or foam into rivers, streams, lakes, or along shores. Use alternative methods of fire line building in sensitive areas.
- Notify proper authorities promptly if any fire chemical is used in an area where there is likelihood of negative impacts.
- While it is preferable that drops into or along any body of water not occur, it is possible that the fire location and surrounding terrain make it probable that some retardant may enter the water. The person requesting the retardant (such as the incident commander) must balance the impacts on the environment, i.e., potential fish kill, with the resources and values to be protected from the fire.

APPENDIX C: PRESCRIBED FIRE DOCUMENTS

Prescribed Fire Plan Format

COVER PAGE

Refuge or Station:	
Unit:	
Prepared By: Prescribed Fire Planner	Date:
Reviewed By: Refuge Manager	Date:
Reviewed By: Prescribed Burn Boss	Date:
Reviewed By: Regional Fire Management Coordinator	Date:
Reviewed By: (Others)	Date:

The approved Prescribed Fire Plan constitutes the authority to burn, pending approval of Section 7 Consultations, Environmental Assessments or other required documents. No one has the authority to burn without an approved plan or in a manner not in compliance with the approved plan. Prescribed burning conditions established in the plan are firm limits. Actions taken in compliance with the approved Prescribed Fire Plan will be fully supported, but personnel will be held accountable for actions taken which are not in compliance with the approved plan.

Approved By:	Date:
--------------	-------

PRESCRIBED FIRE PLAN

Refuge:			Refuge Burn Number:		
Sub Station:			Fire Number:		
Name of Area:			Unit Number:		
Acres to be Burned:			Perimeter of Burn:		
Legal Description:	Lat.:	Long.:	T	R	S

County:

Is a Section 7 Consultation being forwarded to Fish and Wildlife Enhancement for review ?
 Yes No (circle).

(Page 2 of this PFP should be a refuge base map showing the location of the burn on Fish and Wildlife Service land)

The Prescribed Fire Burn Boss/Specialist must participate in the development of this plan.

I. GENERAL DESCRIPTION OF BURN UNIT

Physical Features and Vegetation Cover Types (Species, height, density, etc.):

Primary Resource Objectives of Unit (Be specific. These are management goals):

- 1.
- 2.
- 3.

Objectives of Fire (Be specific. These are different than management goals):

- 1.
- 2.
- 3.

Acceptable Range of Results (Area burned vs. unburned, scorch height, percent kill of a species, range of litter removed, etc.):

- 1.
- 2.
- 3.

II. PRE-BURN MONITORING

Vegetation Type	Acres	%	FBPS Fuel Model

Habitat Conditions (Identify with transect numbers if more than one in burn unit.):

Type of Transects:

Photo Documentation (Add enough spaces here to put a pre-burn photo showing the habitat condition or problem you are using fire to change/correct. A photo along your transect may reflect your transect data.):

Other:

III. PLANNING AND ACTIONS

Complexity Analysis Results:

Site preparation (What, when, who & how. Should be done with Burn Boss):

Weather information required (who, what, when, where, how, and how much):

Safety considerations and protection of sensitive features (Adjacent lands, visitors, facilities, terrain, etc., and needed actions. Include buffer and safety zones. Be specific, indicate on a burn unit map. Map should be a USGS quadrangle if possible, so ridges, washes, water, trails, etc. can be identified.)

Special Safety Precautions Needing Attention (Aerial ignition, aircraft, ignition from boat, etc.):

Media Contacts (Radio stations, newspaper, etc., list with telephone numbers):

Special Constraints and Considerations (Should be discussed with Burn Boss):

Communication and Coordination on the Burn (Who will have radios, frequencies to be used, who will coordinate various activities.):

IV. IGNITION, BURNING AND CONTROL

Scheduling	Planned or Proposed	Actual
Approx. Date(s)		
Time of Day		

Acceptable Range of Prescription Elements - Complete for Each Applicable Fuel Model

BEHAVE Fuel Model:	Low	High	Actual
Temperature			
Relative Humidity			
Wind Speed (20' forecast)			
Wind Speed (mid-flame)			

BEHAVE Fuel Model:	Low	High	Actual
Cloud Cover %			
Wind Direction	Between:		
ENVIRONMENTAL CONDITONS			
Soil Moisture			
1 hr. Fuel Moisture			
10 hr. Fuel Moisture			
100 hr. Fuel Moisture			
Woody Live Fuel Moisture			
Herb. Live Fuel Moisture			
Litter/Duff Moisture			
FIRE BEHAVIOR			
Type of Fire (H, B, F)			
Rate of Spread			
Fireline Intensity			
Flame Length			
Energy Release Component			
NFDRS Fuel Model Used:			

Cumulative effects of weather and drought on fire behavior:

Ignition Technique (Explain and include on map of burn unit. Use of aerial ignition must be identified in this plan. Last minute changes to use aircraft will not be allowed and will be considered a major change to the plan. This will require a resubmission):

Prescribed Fire Organization (See Section VII, Crew and Equipment Assignments. All personnel and their assignments must be listed. All personnel must be qualified for the positions they will fill.)

Other (If portions of the burn unit must be burnt under conditions slightly different than stated above, i.e., a different wind direction to keep smoke off of a highway or off of the neighbors wash, detail here.)

Prescription monitoring (Discuss monitoring procedure and frequency to determine if conditions for the burn are within prescription):

V. SMOKE MANAGEMENT

- Make any Smoke Management Plan an attachment.
- Permits required (who, when):
- Distance and Direction from Smoke Sensitive Area(s):
- Necessary Transport Wind Direction, Speed and Mixing
- Height (Explain how this information will be obtained and used):
- Visibility Hazard(s) (Roads, airports, etc.):
- Actions to Reduce Visibility Hazard(s):
- Residual Smoke Problems (Measures to reduce problem, i.e., rapid and complete mop-up, mop-up of certain fuels, specific fuel moistures, time of day, etc.):
- Particulate emissions in Tons/Acre and how calculated
 - Estimated before the burn:
 - Actual after the burn:

VI. FUNDING AND PERSONNEL

Activity Code:

Costs

	Equipment & Supplies	Labor	Overtime	Staff Days
Administration (planning, permits, etc.)				
Site Preparation Ignition & Control				
Travel, Per Diem				
Total	0	0	0	0

VII. BURN-DAY ACTIVITIES

Public/Media Contacts on Burn Day (List with telephone numbers):

Crew & Equipment Assignments (List all personnel, equipment needed, and assignments. The following is not an all inclusive list for what you may need.)

- Burn Boss/Manager -
- Ignition Specialist -
- Ignition Crew -
- Holding Specialist -
- Holding Crew -
- Aircraft Manager -
- FWBS -
- Dispatcher-
- Other -

Crew Briefing Points (Communications, hazards, equipment, water sources, escape fire actions, etc. To be done by Burn Boss. Refer to Safety Considerations in Planning Actions and points listed below):

Ignition Technique (Methods, how, where, who, and sequence. Go over what was submitted in Section IV and any changes needed for the present conditions.) Attach ignition sequencing map if necessary:

Personnel Escape Plan:

Special Safety Requirements:

Go-No-Go Checklist:

Holding and Control:

- Critical Control Problems:
- Water Refill Points:
- Other:

Contingency Plan:

- Holding Plan Failure (Are there dedicated crews standing by to initial attack or will people doing other jobs be called upon to do initial attack, who must be called in case of an escape, what radio frequencies will be used, etc.)
 - Initial Escape
 - Escape Exceeding 1 Burning Period:
- Smoke Management Plan Failure
- Fire Behavior Outside Prescription
- Other

Mop Up and Patrol:

- Resources needed
- Duration

Rehabilitation Needs:

DI 1202 Submission Date:

Special Problems:

VIII. CRITIQUE OF BURN

Were burn objectives within acceptable range of results? (Refer to Section I):

What would be done differently to obtain results or get better results?

Was there any deviation from plan? If so, why?

Problems and general comments:

IX. POST-BURN MONITORING

Date: Refuge Burn Number:

Length of Time after Burn:

Vegetative Transects:

Comments on Habitat Conditions, etc.:

Photo Documentation:

Other:

X. FOLLOW-UP EVALUATION

Date: Refuge Burn Number:

Length of Time after Burn:

Vegetative Transects:

Comments on Habitat Conditions, etc.:

Photo Documentation:

Other:

Monitoring Plan

Critique of Burn

Were burn objectives within acceptable range of results?

What would be done differently to obtain results or get better results?

Was there any deviation from approved plan? If yes, why?

Problems and general comments:

POST-BURN MONITORING

Date: _____ Refuge FIREBASE Project Number: _____

Length of time since burn: _____

Vegetative Transect:

Comments on Habitat conditions, etc.:

Photo Documentation:

Other:

FOLLOW-UP EVALUATION

Date: _____ Refuge FIREBASE Project Number: _____

Length of time since burn: _____

Vegetative Transect:

Comments on Habitat conditions, etc.:

Photo Documentation:

Other:

Burn Severity Data Matrix

	Unburned (5)	Scorched (4)	Lightly Burned (3)	Moderately Burned (2)	Heavily Burned (1)	Not Applicable (0)
Substrate (litter/duff) (S)	Not burned	Litter partially blackened; duff nearly unchanged; wood/leaf structures unchanged	Litter charred to partially consumed: upper duff layer burned; wood/leaf structures charred but recognizable.	Litter mostly to entirely consumed leaving light colored ash; duff deeply burned; wood/leaf structures unrecognizable	Litter and duff consumed leaving fine white ash; mineral soil visibly altered, often reddish.	Inorganic This may be used in grasslands where there is only sand as a substrate and no organic material or where litter/duff layer is lost due to disturbance (as in a gopher mound, badger/fox den, ant hill, etc.)
Vegetation (understory /brush/herbs) (V)	Not burned	Foliage scorched and attached to supporting twigs. Bases of stems of brush lightly browned with blisters visible, but stems still standing. In grasslands, most cured grasses/forbs still left standing after the burn. Green plants are essentially unaffected.	Foliage and smaller twigs partially consumed. Stems of brush burned at bases with heavy blistering. Many stems burned through and fallen over, but not consumed. Most cured forbs, grasses and sedges are burned but may not all be consumed. In grasslands, cured grasses burned off and fallen over. Most are consumed, but some may lay on the ash unburned. There may still be a small percentage of stems left standing. Green plants are discolored.	Foliage, twigs and small stems consumed. Stems of brush burned off and consumed. There will still be charred "stubs" sticking out of the ground where the brush was growing from. All cured forbs, grasses, sedges are consumed. In grasslands, cured grasses are all consumed. Any plants are brown and shriveled.	All plant parts consumed leaving some or no major stems/trunks. Stems of brush burned off and consumed. "Stubs" where shrubs once grew are burned off the ground line. Cured and green grasses, fobs & sedges are completely consumed.	None present

GO/NO-GO Checklist

**NWCG
 PRESCRIBED
 FIRE
 GO/NO-GO
 CHECKLIST**

Yes	No	Questions
		Are ALL fire prescription Elements Met?
		Are ALL smoke management specifications met
		Has ALL required current and projected fire weather forecast been obtained and are they favorable?
		Are ALL planned operations personnel on-site, available and operational?
		Has the availability of ALL contingency resources been checked, and are they available?
		Have ALL personnel been briefed on the project objectives, their assignments, safety hazards, escape routes, and safety zones?
		Have ALL pre-burn considerations identified in the prescribed fire plan been completed or addressed?
		Have ALL the required notifications been made?
		Are ALL permits and clearances obtained?
		In your opinion, can the burn be carried out according to the prescribed fire plan and will it meet the planned objective?

If all questions were answered “YES” proceed with a test fire. Document the current conditions, location, and results.

 Prescribed Fire Burn Boss Date

 Refuge Manager Date

APPENDIX D: FMU PHYSICAL AND BIOLOGICAL ADDENDUM

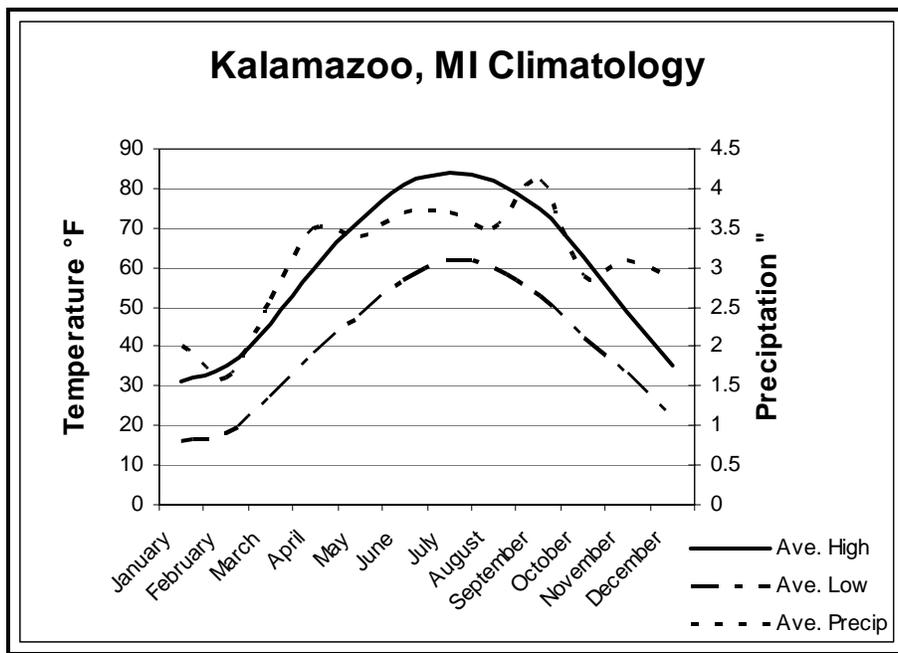
Kinney Waterfowl Production Area

This unit is located in Van Buren County, Michigan, approximately 18 miles southwest of Kalamazoo. The property was acquired from a willing seller in 1981 and is 77 acres in size.

The physical characteristics of the parcel are consistent with most of southwestern Michigan. Topographically, the land is flat to gently rolling with an elevational difference of approximately 40 feet. Along the southeastern portion of the WPA is Grass Lake. A portion of the lake lies within the boundary and constitutes most of the wetland acres. Soils range from sandy-loam to loam on the uplands with ponded soils in the wetlands.

Climatologically, the area is subject to cold winters with lake effect snows common. Summers are warm and humid. The climatology from Kalamazoo is found in the figure below.

Figure 4 – Kalamazoo, MI Climatology



Three types of vegetative cover occur. Approximate acres of each are found in the table below.

COVER TYPE	ACRES
Upland Forest	9
Grasslands	37
Wetlands	31
Totals	77

Management efforts are directed to the grassland vegetation. Current management is by haying approximately 1/3 of the grassland area annually under a Special Use Permit. A small portion of the area has been planted to fruit-bearing shrubs. No vegetation surveys have been conducted so no evidence of threatened or endangered plants has been noted.

While no wildlife species lists have been developed for the Kinney WPA, observations at Schlee WPA indicate use by approximately 60 bird species including 10 species of waterfowl. Muskrat, deer, rabbits and other mammals are reported as well as a variety of reptiles and amphibians.

No Federally-listed threatened or endangered species are recorded on the WPA. No current records exist for State-listed threatened or endangered species on, or within one mile of the WPA. The Federal list for Michigan is found at the end of this Appendix.

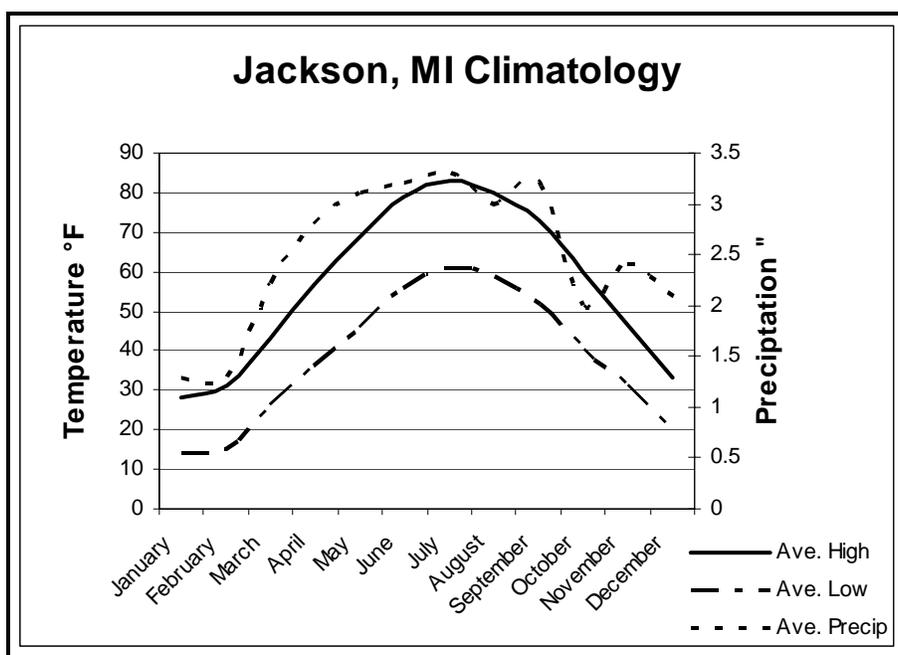
Schlee Waterfowl Production Area

This unit is located in Jackson County approximately 8 miles east of Jackson, Michigan. The property was acquired from a willing seller in 1981 and is 160 acres in size.

The physical characteristics of the parcel are consistent with most of southeastern Michigan. Topographically, the land is flat with an elevational difference of approximately 10 feet. There are 8 water holding depressions in the WPA ranging in size from 1 to 24 acres. Soils range from sandy-loam on the uplands to hydric silt loam and ponded soils in the wetlands.

Climatologically, the area is typical of an interior continental climate; subject to cold winters with warm and humid summers. The climatology from Jackson is found in the figure below.

Figure 5 – Jackson, MI Climatology



Three types of vegetative cover occur. Approximate acres of each are found in the table below.

COVER TYPE	ACRES
Upland Forest	6
Grasslands	108
Wetlands	46
Totals	160

Management efforts are directed to the grassland vegetation. Current management is by haying approximately 1/3 of the grassland area annually under a Special Use Permit. Woody vegetation encroachment is controlled by mowing, hand-cutting and selective use of herbicides. No vegetation surveys have been conducted so no evidence of threatened or endangered plants has been noted.

Observations at Schlee WPA indicate use by approximately 60 bird species including 10 species of waterfowl. Muskrat, deer, rabbits and other mammals are reported as well as a variety of reptiles and amphibians.

No Federally-listed threatened or endangered species are recorded on the WPA. No current records exist for State-listed threatened or endangered species on, or within one mile of the WPA. The Federal list for Michigan is found at the end of this Appendix.

Fire Season

Southern Michigan typically has a split fire season. The first part is in the spring from the time snow disappears until vegetation has begun its growth (green-up). This part of the fire season usually runs from early-April until mid to late May. A fall fire season may follow the growing season. The first frost cures remaining fine fuels and this season may last until snow cover is on the ground. Growing season statistics for the area indicate a 135 day growing season on average.

The following table lists Federally listed species known to occur, or expected to occur, in the state of Michigan.

Table 3 – Federally Listed Threatened or Endangered Species

Common Name	Accepted Scientific Name	Status
BIRDS		
Bald Eagle	<i>Haliaeetus leucocephalus</i>	T
Kirtland's Warbler	<i>Dendroica kirtlandii</i>	E
Piping Plover	<i>Charadrius melodus</i>	E
MAMMALS		
Canada Lynx	<i>Lynx canadensis</i>	T
Eastern Puma	<i>Puma concolor cougar</i>	E
Indiana Bat	<i>Myotis sodalis</i>	E
Gray Wolf	<i>Canis lupus</i>	E
INSECTS: BUTTERFLIES & MOTHS		
Karner Blue Butterfly	<i>Lycaeides melissa samuelis</i>	E
Mitchell's Satyr Butterfly	<i>Neonympha mitchellii mitchellii</i>	E
PLANTS		
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

APPENDIX E: COOPERATOR AND LANDOWNER CONTACTS

Cooperator Contacts

MICHIGAN WMD		
MIDNR Rebecca Humphries, Chief	Wildlife Division P.O. Box 30444 Lansing, MI 48909-7944	(517) 373-1263
SCHLEE WPA		
MIDNR	Waterloo State Game Area R#3, 13578 Seymour Road Grass Lake, MI 49240	(517) 522-4097
MIDNR	Forestry, Mineral and Fire Management Jackson Office 302 East Louis Glick Hwy. Jackson, MI 49201	(517) 780-7901
Grass Lake Fire Department	Grass Lake, MI 49240	(517) 522-4200
KINNEY WPA		
MIDNR	Crane Pond State Game Area P.O. Box 158 60887 M-40 Jones, MI 49601	(269) 244-5928
MIDNR	Forest, Mineral and Fire Management Allegan Field Office 4590 118 th Avenue Allegan, MI 49010	(616) 673-5819
Lawton Fire Department	125 Main St. Lawton, MI 49065	(269) 624-7470

Adjacent Landowner Contacts

SCHLEE WPA		
Owner	Address	Phone
Carl H. & Susan Zahn, Jr.	45803 Turtlehead Plymouth, MI 48170	Unknown
Michigan Department of Natural Resources	Grants Admin. Div. Payments in Lieu of Taxes Program P.O. Box 30735 Lansing, MI 48909-8235	
Gerald & Ila Belle Memmer	1500 Wolf Lake Road Grass Lake, MI 49240	(517) 522-4841
Hope Phillips	9659 Page Ave. Jackson, MI 49201	Unknown
Ruth & Sharon Klotz	9196 Page Ave. Jackson, MI 49201	(517) 522-4056
Daniel A. Crawford Trust	1435 Hayball Road Jackson, MI 49201	(517) 522-4365
Kenneth C. & Patricia Sharp	9200 Page Ave.	(517) 522-4446

SCHLEE WPA		
Owner	Address	Phone
	Jackson, MI 49201	
Jerry N. & Felicia N. Campbell	1677 Hayball Road Jackson, MI 49201	(517) 522-6270
Derek & Esther Hitchcock	9830 Page Ave. Jackson, MI 49201	(517) 522-6037
William G & Leah Nicholas	1607 Hayball Road Jackson, MI 49201	Unknown
Shawn & Susan Raymond	1531 Hayball Road Jackson, MI 49201	(517) 522-6144
Frank & Betty Jelinek	9644 Lee Road Jackson, MI 49201	(517) 522-4859
David Phillips	9701 Page Ave. Jackson, MI 49201	(517) 522-8815

KINNEY WPA		
Owner	Address	Phone
Sharon Cornish	89721 Shorelane Drive Lawton, MI 49065	(269) 624-6623
Gordon & Ann Nesbitt	28419 County Rd. 352 Lawton, MI 49065	(269) 624-6781
Floyd Wait	Address Unknown	Unknown
Erin Hemenway	33414 County Rd. 352 Lawton, MI 49065	(269) 624-7118
Bradley Hemenway	33414 County Rd. 352 Lawton, MI 49065	(269) 624-1102

APPENDIX F: COOPERATIVE AGREEMENTS

MEMORANDUM OF UNDERSTANDING

Department of Natural Resources
State of Michigan

Fish and Wildlife Service
U.S. Department of the Interior

This Memorandum of Understanding, entered into by and between the Department of Natural Resources, State of Michigan, hereinafter called the DNR, under Sections 3.321 and 299.201 of Michigan Compiled Laws, and the Fish and Wildlife Service, United States Department of the Interior, hereinafter called the FWS, acting by and through the Regional Director, Region 3, under the Authority of Migratory Bird Conservation Act of February 18, 1929 (45 Stat. 1222 et seq.), as amended (16 U.S.C. 715- 715r); Migratory Bird Hunting Stamp Act of March 16, 1934 (48 Stat. 451), as amended (16 U.S.C. 718 et seq.); Fish and Wildlife Act of August 8, 1956 (70 Stat. 1119 et seq.), as amended (16 U.S.C. 742a-742j); and in accordance with the policy of cooperation with the various states expressed in 43 CFR part 24, and

WHEREAS, the DNR has been created under the laws of the State of Michigan to provide an adequate and flexible system for the protection, development and use of forests, fish, game, lakes, streams, plant life, flowers and other outdoor resources and,

WHEREAS, the FWS has as its responsibility the management of migratory birds and seeks to maintain and increase populations of migratory birds so they may continue to provide recreational and educational benefits for people, and

WHEREAS, the DNR has a responsibility for management of migratory birds and other wildlife within the boundaries of the State of Michigan and

WHEREAS, it is the mutual desire of the DNR and FWS to work in harmony for the purpose of cooperatively acquiring and managing waterfowl production habitat in Michigan in order to maintain and increase waterfowl populations for the best interests of the people of Michigan and of the United States.

The Department of Natural Resources and the Fish and Wildlife Service
Mutually Agree:

1. To cooperate in planning, carrying out, and operating a program to acquire and manage lands for waterfowl production habitat in the State of Michigan for the express purpose of maintaining and increasing the production of waterfowl, and these lands will be known as Waterfowl Production Areas. This program shall be known as the Waterfowl Production Program.
2. To cooperate in identifying communities of waterfowl production habitat in Michigan, and delineate for fee and easement acquisition lands of high waterfowl production capabilities. Each wetland community so selected for habitat acquisition shall conform to the criteria as described in the FWS Category II Concept Plan, "Breeding Duck Habitat in the Great Lakes Region."
3. To cooperate in preparing guidelines for the delineation, acquisition, development, and management of lands acquired under this program for the production of waterfowl.
4. To review annually the management of lands acquired under this program, progress of the program, and plan future program directions as appropriate.
5. That each and every provision of the Memorandum of Understanding is subject to the laws of the State of Michigan and the laws of the United States.
6. That when the DNR becomes directly involved in the management of lands acquired under this program, the FWS shall still retain primary jurisdiction and be principally responsible for the management of these lands as part of the National Wildlife Refuge System.
7. Questions of disagreement on the cooperative program of the two agencies will be referred to the FWS Regional Director and to the Director of the Michigan DNR for decision.
8. That nothing in this Memorandum shall be construed as obligating DNR or the State of Michigan in the expenditure of funds or for

the future payment of money in excess of appropriations authorized by law.

9. That nothing in this Memorandum shall be construed as obligating the Fish and Wildlife Service to expend, or as involving the United States in any contracts or other obligations for the future payment of money in excess of the appropriations authorized by law.
10. That this Memorandum shall become effective as soon as it is signed by the parties hereto and shall continue in force until terminated by either party upon thirty (30) days notice in writing to the other of his intentions to terminate upon a date indicated.
11. That amendment to this basic Memorandum of Understanding may be proposed by either party and shall become effective upon approval by both parties.

The Fish and Wildlife Service Agrees:

1. To make final determinations in the delineation of lands suitable for fee and easement acquisition for the purpose of this program.
2. To review and approve completed land acquisition appraisal reports prepared by the Michigan DNR.
3. To prepare and authorize Just Compensation Statements, as required by provisions of P.L. 91-646.
4. To take necessary steps to vest title in the United States in land and interests acquired for this program and make payment for property so purchased.
5. To provide signs for posting lands acquired under this program which will reflect the contribution of each agency.

The Department of Natural Resources Agrees:

1. To provide the necessary manpower to plan for and carry out the purposes of this program.
2. To prepare appraisal reports to standards required by the Fish and Wildlife Service on all lands to be acquired for this program.
3. To negotiate with landowners and obtain options on FWS forms.
4. To obtain necessary state approvals for lands acquired for this program in accordance with applicable State and Federal laws.
5. To forward signed options, and completed appraisal reports and other documents deemed necessary to the Regional Director, FWS, Twin Cities, Minnesota.
6. To provide manpower and funds to assist in the development, operation, and maintenance of lands purchased for this program to the limits allowed under Michigan law.
7. To provide FWS with bills on a quarterly basis for services performed for appraisals and negotiations for land acquisition in accordance with the terms of a contract entered into by and between FWS and DNR until such time as DNR is able to assume these obligations in existing programs.

IN WITNESS THEREOF. the parties hereto have executed this Memorandum of Understanding as of the date when last signed below.

MICHIGAN DEPARTMENT OF NATURAL RESOURCES

Date: Feb. 1, 1980

BY: Howard A. Tanner
Director

FISH AND WILDLIFE SERVICE

Date: Jan 14, 1980

By: Harvey K. Nelson
Regional Director

PROCEDURES FOR DELINEATION, ACQUISITION
DEVELOPMENT AND MANAGEMENT OF WATERFOWL
PRODUCTION AREA PROGRAM LANDS IN MICHIGAN

This program is undertaken in Michigan and under the guidelines of the Memorandum of Understanding between the Fish and Wildlife Service (FWS) and the Michigan Department of Natural Resources (DNR) dated _____

I. DELINEATION -- PROCEDURES

- A. Waterfowl Production Areas to be acquired will be selected on the basis of their importance to waterfowl production. The biological value of the wetland or wetland complex to duck production will be determined by waterfowl counts, knowledge of the habitat or similar habitat, and/or field reviews of the habitat.
- B. The upland nest component of waterfowl production habitat is essential. Uplands adjacent to designated wetlands will be acquired in order to provide sufficient upland nesting cover and manageable boundaries.
- C. Creeks and rivers are a lower priority than individual wetlands that form a wetland complex. However, acquisition of riparian areas will be considered if overriding waterfowl production values exist.
- D. The entire unit or delineation should be no less than 40 acres. Whole farm units can be considered if biologically justifiable, or if landowners will sell only their entire ownership. Surplus upland should be used for land exchanges whenever possible.
- E. Access to fee areas for management and public use is required, and must be provided for in the delineation.
- F. Delineations of WPA'S will be completed on Fish and Wildlife Service forms.

II. ACQUISITION -- PROCEDURES

- A. DNR will provide appraisal reports to standards required by the FWS on all lands or rights in lands to be acquired for this program. However, if the need arises and whenever it is mutually agreed upon by both parties, appraisal assistance can be provided by the use of Fish and Wildlife Service personnel or by contract for professional services. If contractual services are required, the Department of Natural Resources agrees that negotiations for such services will be the responsibility of the Fish and Wildlife Service.
- B. FWS will review and approve appraisals prior to negotiations.
- C. An approved appraisal report, FWS appraisal review, and Just Compensation Statement will be forwarded to DNR personnel for negotiations.
- D. FWS Just Compensation, option, and other appropriate forms will be used.
- E. Negotiations will be by DNR personnel. However, if the need arises and when it is mutually agreed upon by both parties, negotiations can be conducted by Fish and Wildlife Service personnel.
- F. Land surveys and necessary maps will be completed by FWS.
- G. After an option is obtained, it will be forwarded to the FWS Regional Office along with supporting data, maps and/or aerial photos.
- H. Upon acceptance of the purchase agreement by the FWS, a Certified letter of acceptance will be sent to the vendor by the FWS. A copy of the letter, copy of accepted option, and a tract map will be sent to DNR and the FWS East Lansing Area Office (ELAO).

- I. FWS will take necessary steps to vest title in the United States and subsequently make payment for the property.

- J. After transfer of title to the United States, the following documents will be furnished to DNR and ELAO:
 - 1. Copy of executed deed.
 - 2. Copy of survey report, if applicable.
 - 3. Notification of payment to vendor.
 - 4. Title vesting memo with copy of Field Solicitor's final opinion.

- K. Relocation activities under the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, P.L. 91-646 will be handled by FWS. The relocation information hand-out will be provided by FWS and is to be delivered by DNR to the landowner at the time the Just Compensation is delivered.

III. DEVELOPMENT AND LAND MANAGEMENT -- PROCEDURES

- A. Liaison and Coordination
The Refuge Manager at Shiawassee National Wildlife Refuge, Saginaw, Michigan, is designated as Michigan Wetlands Management Coordinator. He will represent the FWS in exercising oversight jurisdiction over the Waterfowl Production Areas (WPA's) and coordinate with the Michigan DNR in carrying out the management of WPA's in accordance with the Michigan Waterfowl Production Area Management Guidelines (MWPAMG).

- B. Master Development Plan Requirements
Within six months after the purchase agreement has been accepted by the FWS, a Master Development Plan will be prepared by the DNR for each WPA and submitted to the FWS for concurrence and joint approval. This plan will specifically describe the objectives for

each WPA. The plan will clearly describe maintenance activities required to achieve and support the WPA objectives.

1. Objective Statement

- a. Wildlife objectives will primarily consider production and use by migratory waterfowl.
- b. Public use objectives will be consistent with those authorized in MWPAMG.
- c. Natural areas, scientific sites and antiquities objectives will be discussed for each WPA, if applicable.

2. Resource Inventory and Development Needs

An inventory of present land use practices and recommended future use for each habitat type within the WPA will be prepared. Present man-made facilities will be identified along with recommendations as to their future use or disposal. Planned physical developments will be identified and described.

Details and procedures for preparing the resources inventory will be included in the MWPAMG. Resource inventory cards will be provided by FWS for summarizing data. Photographs, maps, and soils data would be a valuable part of the resource inventory.

C. Biennial Work Plan Outline

An initial work plan will be prepared by the DNR for each WPA and submitted to the FWS for joint approval within one month after title is vested in the United States, or the adoption of the Master Development Plan, whichever is later.

Thereafter, biennial work plans will be prepared and submitted to the FWS for joint approval three months prior to the beginning of each biennium.

This plan will summarize all activities planned for each WPA for the biennium and will include, but not be limited to, the following items:

- Buildings
- Fences
- Posting
- Wetlands Management
- Upland Management
- Animal Control
- Public Use Management
- Wildlife and Public Use Surveys
- Anticipated Problems

D. Land Management Responsibilities

All work to be accomplished in accordance with the MWPAMG which are hereby made a part of these procedures.

1. Administration

FWS

Make payments to local units of government as required under the Revenue-Sharing Act - P.L. 95-469.

Issue special use permits and receive monetary receipts.

Process all right-of-way requests.

Conduct real property inventory.

Provide all boundary. recognition. and regulatory signs.

DNR

Negotiate cooperative farming agreements and special use permits, the agreements to be signed by the FWS.

Compliance checks for all special use permits and cooperative farming agreements.

Construct, maintain, and/or remove fencing or barriers.

Provide posts and supports and install signs at designated locations.

Provide FWS with public use and wildlife use reports as outlined in the MWPAMG.

Prepare Environmental Assessments as required under the National Environmental Policy Act for construction projects. rights-of-way, etc.

2. Building Sites and Other Improvements

FWS

Inventory buildings and structures.

Administer any sales and removal of buildings and structures.

DNR

Bury and/or remove debris, "junk", and unsold buildings and structures.

Fill and/or cap water wells, septic systems, and deep holes.

Level and seed disturbed area(s) to suitable wildlife cover.

3. Wetlands Restoration

DNR

Plug existing ditches and break tile lines, within applicable state and federal statutes.

4. Upland Habitat Management

FWS

Obtain federal clearance for use of any herbicides and pesticides.

DNR

Establish suitable nesting cover for waterfowl on existing cropped lands.

Manage existing grasslands as nesting cover.

Control noxious weeds, as necessary.

5. Enforcement

FWS

Investigate and prosecute violations of Federal laws (those which are not covered by state laws).

Inspect all WPA's at least once a year for land use violations.

Grants authority to the Department of Natural Resources to assume enforcement responsibility on the WPA's and

promulgate and post rules for entry, use, and occupancy of the WPA's as mutually agreed upon and listed in the MWPAMG.

DNR

Assume enforcement responsibility and prosecute all possible conservation cases in state courts, to the limits allowed by Michigan state law.

Assume responsibility for posting appropriate Director's Orders and Natural Resources Commission Orders on each WPA.

6. Animal Control

FWS

Obtain necessary Federal approval for control programs.

DNR

Control undesirable fish and animal populations, if necessary.

7. Easement Responsibilities

Perpetual easements to preclude the draining, burning, leveling, and filling of wetlands are obtained on privately owned lands. The map, which is part of the easement agreement, delineates those wetland basins protected by the easement.

Surveillance by DNR of easements for detecting violations is required at least annually.