

MUD LAKE
Wildlife Management Area

Management Plan
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Idaho Department of Fish and Game
Upper Snake Region
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EXECUTIVE SUMMARY

A key element of wildlife management in Idaho involves managing land and water - the habitat base required for all fish and wildlife species. Providing public access for hunting, fishing, trapping, or simply viewing wildlife is also an integral part of this state's wildlife management program.

To provide habitat for fish and wildlife species and public access, the Idaho Department of Fish and Game (referred to as the Department or IDFG) has developed a system of Wildlife Management Areas (WMAs) on Department owned or managed lands throughout the state.

This document is the management plan for the Mud Lake Wildlife Management Area (MDWMA) and replaces the previous plan adopted in 1991. This plan supplements the Department's Policy Plan 1990-2005: A Vision For The Future.

The reason for this planning effort is to ensure long-term protection and management of fish and wildlife resources on IDFG property within biological limits, economic, social, and manpower constraints.

The MDWMA management plan has been developed by IDFG with public review. The Department developed the MDWMA management plan with input from the public to identify issues important to users of MDWMA. In March 1996, scoping letters were sent to 1,100 individuals, groups, and organizations that were surveyed as users of the Upper Snake Region Wildlife Management Areas. Public meetings on the management plans for the Upper Snake Region's WMAs were held in March 1996 in Mud Lake, Idaho Falls, and Rexburg. A total of 8 users/user-groups provided comments for MDWMA. A draft MDWMA management plan was developed and was mailed in September 1996 with a request for comments to the public which provided comments during the original scoping period. Also, an open house was held at the Upper Snake Regional headquarters to receive additional comments. No further comments were received in response to the MDWMA management plan.

The MDWMA management plan was developed using the mission of the WMA and issues identified by the public (Appendix A). Goals, objectives, and strategies were developed for future management. This management plan will be a guide for both short and long term management of the Mud Lake WMA. The plan is designed to give both specific project/program directions as well as to be flexible with regard to the changes in wildlife needs and to public uses/expectations. As new information and technology become available, this plan may be amended. All goals, objectives, and strategies are dependent on available funding, personnel, and public support.

INTRODUCTION AND PHYSICAL DESCRIPTION

The Mud Lake Wildlife Management Area in Jefferson County is 3 miles north of Terreton, Idaho, and 30 miles northwest of Idaho Falls (Appendix B). The MDWMA is adjacent to the 3,000+ acre Mud Lake. The entire MDWMA lies within big game unit 63. (T6N.,R34E., Sections 1, 2, 3, and 12; T6N.,R35E., Sections 5 and 6; T7N.,R34E., Sections 22, 23, 24, 25, 26, 27, 28 33, 34, 35, and 36; T7N.,R35E., Sections 19, 20, 21, 28, 29, 30, 31, 32, and 33.)

The Mud Lake Wildlife Management Area was established primarily to preserve and improve breeding/nesting habitat for waterfowl (Appendix C). The MDWMA provides over 10,000 user days, with waterfowl hunting providing over 1,000 user days. The MDWMA also provides opportunity for wildlife viewing, picnicking, boating, fishing, big game hunting, and upland bird hunting.

Land acquisition for the MDWMA was begun in 1940; the latest acquisition was made in 1969. A total of 5,889 acres have been purchased, the majority (97%) with federal Pittman-Robertson (PR) funds. There are also 2,705 acres of U.S. Government withdrawn land and 259 acres of land that are leased from the Idaho Department of Lands within project boundaries. Currently, a total of 8,853 acres are managed as MDWMA (Appendix D). PR funds have been the majority of the funds used to develop and manage MDWMA.

The MDWMA lies around the 3,000+ acre Mud Lake. Mud Lake was once a sump area where Camas Creek spread out and disappeared, and extended several miles farther southeast, south, and west from its present area. Over the years, dikes were built and the water was kept in a smaller but deeper lake. Bordering farmlands have been established in areas once covered by water. The MDWMA is bordered by private farm lands on the east and south, and partially on the west. Desert lands abut on the north side. Water to fill Mud Lake comes from Camas Creek and pumping from wells by local irrigators. The Department has no control over the water in Mud Lake. North Lake is included in the project boundary, but is now dry in most years because of changes in local ground water levels. The project was originally named North Lake WMA but the name was changed after North Lake dried up.

The elevation of the MDWMA is about 4,780 feet above sea level. Topography varies only 150 feet from the surface of Mud Lake to the high sandy, rocky ridges. The volcanic cinder cone Clay Butte is the highest point on MDWMA, at about 300 feet above lake level. The lake has no natural outlet. The land around Mud Lake is mostly lake sediments with dry saline meadows. Some of the soil is sandy and underlain with basalt rock (Appendix E). There are some soils that are deep and medium textured but still with rough sandy spots.

The area has a typical eastern Idaho desert climate of cold winters with variable snowfall; cool, windy, dry springs; hot, dry summers; and warm falls. Temperatures range from a recorded low of -50° F to a high of 105° F. Snow depths vary from 5 inches to over 13 inches. The growing season ranges from 80 to 100 days. The area generally has a frost-free period from 85 to 95 days. Killing frosts usually occur in late April and again in September. Soil frost depths average 2-3 feet. Freeze-up of the lake starts about the middle of November, and ice-out occurs around the

last of March or early April. Ice thickness averages about 18 inches. The annual precipitation ranges from 8 to 11 inches, but only a small part falls during the growing season. The annual evaporation is estimated at 30 to 40 inches, with 80 percent occurring between May and September.

The MDWMA consists of a shallow lake (average depth 5 feet) with habitats (Appendix F) grading up through bulrushes *Scirpus spp.*, cattails *Typha latifolia*, into salt grass *Distichlis spp.*, and willows *Salix spp.*, and finally into big sagebrush *Artemisia spp.* Approximately 450 acres of agricultural land within the boundary are under cultivation by sharecroppers. Russian knapweed *Centaurea picris* has been a serious weed problem on the WMA for several years. Control of Russian knapweed is the primary reason for sharecropping the agricultural land. The Department has spent several thousand dollars and hundreds of hours trying to eradicate Russian knapweed. So far, there has been some control, but not at the level desired (Appendix G).

There are 28 species of waterfowl and 49 species of water and shorebirds that use Mud Lake with the most common being Canada geese, mallard, gadwall, wigeon, pintail, green-winged teal, cinnamon teal, redhead, lesser scaup, sandhill crane, white-faced ibis, eared grebe, and double-crested cormorant (Appendix H). Trumpeter swan and peregrine falcons have recently appeared on the WMA. Ring-necked pheasant, gray partridge, sage grouse, mule deer, moose, white-tailed deer, pronghorn antelope, jackrabbits, cotton-tailed rabbits, and an occasional elk reside on the WMA.

MISSION STATEMENT

Protect and provide habitat at the Mud Lake Wildlife Management Area for breeding and migrating waterfowl as well as habitat for other small game, big game, nongame, and threatened, endangered, sensitive wildlife species, or other wildlife and plants with special designations. Provide high quality wildlife related and nature viewing recreational opportunities compatible with MDWMA goals for the benefit of the public.

MANAGEMENT PRIORITIES

Management priorities listed in order of importance:

1. Waterfowl Management
2. Noxious Weed Management
3. Upland Game Management
4. Wildlife/Outdoor Recreation
5. Wildlife Depredation Management
6. Nongame Management
7. Big Game Management

GOALS, OBJECTIVES, AND STRATEGIES

- I. Goal: Maintain or improve current waterfowl production and improve waterfowl nesting and migration habitat on the MDWMA.

(The MDWMA was purchased primarily as a waterfowl production area because of the area's ability to produce large numbers of waterfowl. There is limited quality upland nesting cover on the MDWMA. Although quality overwater nesting habitat exists on the MDWMA, fluctuating water levels flood many nests. MDWMA also provides habitat for thousands of migrating waterfowl.)

- A. Objective: Maintain waterfowl nesting success at or above 30%.

(As stated in the IDFG Waterfowl Management Plan, a nesting success of 30% is considered adequate to maintain and probably increase local duck populations - Appendix L.)

Strategies:

1. Monitor waterfowl nesting to determine nest success and MDWMA production (Appendix N).
2. Continue passive predator control. Implementation of this strategy will depend on future funding and the availability of volunteers.
3. Remove rock and brush piles (possible mammalian predator den sites).
4. Remove avian predator perch sites from nesting areas.
5. Slope dikes when possible to remove potential mammalian den sites.
6. Remove unused culverts and water control structures (possible mammalian predator den sites).
7. If nest success falls below 30%, develop and implement a predator management plan as directed under the IDFG Waterfowl Management Plan (Appendix L).

- B. Objective: Maintain and improve upland nesting cover on the MDWMA.

Strategies:

1. Control and decrease Russian knapweed infestations by using mechanical, chemical, and biological control methods. Weed control methods will be planned on a minimum of a 100 acres of knapweed yearly.
2. Continue planting grass nesting cover in the upland areas of the East Sloughs. Grass plantings will be planned on a minimum of a 20 acres yearly.

3. Continue planting grass on the idle area around the irrigation pond as conditions warrant. Plant mammoth wildrye in windblown areas.
4. Initiate a grass planting program for nesting cover in the western portion of the West Sloughs (as water conditions allow). Implementation of this strategy will depend on future funding and the development of a proposal to flood portions of the western part of West Sloughs.
5. Initiate weed control and grass plantings on North Point and Green Island. Implementation of this strategy will depend on future funding. Current funding levels delegate this strategy to a low priority status.
6. Maintain and/or improve fences to protect nesting cover from livestock damage.
7. Design future livestock grazing agreements to protect/maintain the vegetative cover of nesting areas. Any livestock grazing on the MDWMA must be consistent with the mission statement of the MDWMA and ultimately benefit wildlife. Livestock grazing must coincide with the IDFG Waterfowl and Upland Bird Management Plans and be adjusted accordingly (Appendix L).

C. Objective: Provide mammalian predator free nesting cover with an electric-fence enclosure in the East Sloughs segment of the MDWMA.

Strategies:

1. Maintain, monitor, and evaluate the electric-fence predator enclosure at the East Sloughs. Implementation of this strategy will depend on the availability of volunteers.
2. Conduct weed control and grass plantings to improve nesting cover inside the enclosure. Implementation of this strategy will depend on future funding and the availability of volunteers. Current funding levels delegate this strategy to a low priority status.
3. Improve brood exits for the enclosure.

D. Objective: Enhance overwater nesting cover for waterfowl. This objective also provides migration habitat for waterfowl.

Strategies:

1. Continue to flood the eastern portion of West Sloughs.
2. Flood East Slough impoundments through pumping as much as ground water and conditions allow.
3. Monitor the development of emergent hydrophytes in the East and West Sloughs as nesting cover.

4. Coordinate with the local canal company to flood the East and West Sloughs in spring when excess irrigation water may be available in Mud Lake.
5. Develop a proposal to flood portions of the western part of West Sloughs. Implementation of this proposal will depend on developing a cooperative agreement with the local canal company.
6. Develop a planting program for wetland plants as funding allows. West Sloughs will be a priority for this program.
7. Maintain and/or improve fences to protect existing nesting cover from livestock.
8. Continue the closure of the west segment of Mud Lake to boating activities during the nesting season.

E. Objective: Provide nesting structures for ducks and geese.

Strategies:

1. Continue the maintenance and evaluation of goose nesting platforms. (Goose nests on platforms are less susceptible to some types of predation and flooding.) The objective is to maintain a minimum of 100 goose platforms.
2. Maintain the existing wood duck nest box program with the assistance of volunteers. The objective is to maintain a minimum of 40 nest boxes. Implementation of this strategy will depend on the availability of volunteers.
3. Construct and evaluate artificial islands for waterfowl nesting. Implementation of this strategy will depend on future funding and the availability of volunteers. Current funding levels delegate this strategy to a low priority status.

F. Objective: Monitor for waterfowl diseases and attempt to control outbreaks when they occur.

Strategies:

1. Continue monitoring and evaluating avian mortalities and initiate practical control measures when an outbreak occurs.
2. Remove all sick, dying, and dead birds found in marshes to decrease/prevent a disease outbreak.
3. Ship samples of dead birds to the Wildlife Health Laboratory in Caldwell, Idaho and/or the National Wildlife Health Laboratory in Madison, Wisconsin to determine cause of death.

4. Provide annual report of waterfowl mortalities to the National Wildlife Health Laboratory for inclusion in the national database.

G. Objective: Enhance and increase the quantity of goose pasture on the MDWMA. This objective also provides migration habitat for waterfowl.

Strategies:

1. Use, as much as is practical, MDWMA agricultural fields to provide goose pasture. A total of 456 acres are all or partially available for this strategy. Implementation of this strategy will depend on future funding.
2. Periodically burn grass and sedge areas on Mackenzie Point to remove mulch and to rejuvenate growth. This strategy will depend on annual vegetation growth, weather, and fire conditions.
3. Mow dike roads and ditches to enhance grass as goose pasture. Implementation of this strategy will depend on future funding.

H. Objective: Maintain or improve waterfowl migration habitat.

(MDWMA is a spring and fall migration stop for thousands of waterfowl. Migrating waterfowl need abundant food sources and minimal disturbances to build energy reserves for migration, wintering, and breeding. Mud Lake and the surrounding agricultural fields supply an abundance of food for waterfowl. Hunting pressure and human disturbances to migrating waterfowl on MDWMA are currently not at detrimental levels.)

Strategies:

1. Monitor migratory waterfowl use of MDWMA. If human disturbances increase to a detrimental level, adjust MDWMA access management accordingly and with public involvement.
2. Develop a proposal to flood portions of the western part of West Sloughs. Implementation of this proposal will depend on developing a cooperative agreement with the local canal company.
3. Investigate the feasibility of wetland plantings of waterfowl forage plants.
4. Develop future MDWMA sharecrop agreements to provide some forage for migrating waterfowl. A total of 456 acres are all or partially available for this strategy.

II. Goal: Control noxious weeds on the MDWMA to enhance wildlife habitat.

(Russian knapweed has been a noxious weed problem on the MDWMA and surrounding private and federal lands for years. The knapweed has decreased upland nesting cover and forage by choking out grass and forb species.)

A. Objective: Decrease and control the Russian knapweed infestations on the MDWMA.

Strategies:

1. Control and decrease knapweed infestations by using mechanical, chemical, and biological control methods. Weed control methods will be planned on a minimum of a 100 acres of knapweed yearly.
2. Continue establishing grass plantings in infested areas as funding allows.
3. Continue to grow and harvest alfalfa on some agricultural fields to prevent knapweed seed production and to stress knapweed plants.
4. Coordinate with the Jefferson County weed supervisor and Natural Resource Conservation Service to develop weed control plans which implement chemical, mechanical, and biological methods.
5. Coordinate with the University of Idaho and Montana State University to develop weed control plans which implement biological methods.
6. Conduct controlled burns, as conditions and funds allow, to eliminate mulch material and enhance the effectiveness of other control methods.
7. Monitor and evaluate the implemented control methods and develop a dynamic control plan based upon evaluated methods and new information as it becomes available.

III. Goal: Improve upland game habitat on the MDWMA by providing better nesting cover, winter cover, and winter food.

(There is limited quality nesting and brood habitat, and winter food on the MDWMA. The remnant pheasant population, gray partridge, mourning dove, sage grouse, and rabbits existing on the MDWMA should benefit from many of these habitat enhancements.)

B. Objective: Provide more high quality nesting cover for upland game.

Strategies:

1. Control and decrease knapweed infestations by using mechanical, chemical, and biological control methods.
2. Continue grass plantings for waterfowl nesting, which will also improve upland game nesting and winter cover.
3. Maintain and/or improve fences to protect existing nesting cover from livestock damage.
4. Design future livestock grazing agreements to protect/maintain the vegetative cover of nesting areas. Any livestock grazing on the MDWMA

must be consistent with the mission statement of the MDWMA and ultimately benefit wildlife. Livestock grazing must coincide with the IDFG Waterfowl and Upland Bird Management Plans and be adjusted accordingly (Appendix L).

C. Objective: Provide winter cover and food plots for upland game.

Strategies:

1. Design future sharecrop contracts to include food plots for upland game. A total of 456 acres are all or partially available for this strategy. Implementation of this strategy will depend on future funding and the availability of volunteers.
2. Develop a food plot adjacent to the irrigation pond with the aid of volunteers. Implementation of this strategy will depend on future funding.
3. Develop experimental food plots of millet and other wetland plants on Mackenzie Point and along the south shore. Implementation of this strategy will depend on future funding and the availability of volunteers.
4. Develop food plots on Green Island. Implementation of this strategy will depend on future funding and the availability of volunteers.
5. Develop food plots and shelterbelts/shrub thickets on surrounding private land with willing cooperators through the Department's Habitat Improvement Program.
6. Maintain willow/cattail/bulrush winter cover on the MDWMA.
7. Develop shelterbelts/shrub thickets on the MDWMA. Implementation of this strategy will depend on future funding and the availability of volunteers.
8. Maintain and/or improve fences to protect existing winter cover from livestock damage.
9. Design future livestock grazing agreements to protect wintering areas. Any livestock grazing on the MDWMA must be consistent with the mission statement of the MDWMA and ultimately benefit wildlife. Livestock grazing must coincide with the IDFG Waterfowl and Upland Bird Management Plans and be adjusted accordingly (Appendix L).

D. Objective: Reduce predation on upland game.

Strategies:

1. Continue passive predator control. Implementation of this strategy will depend on future funding and the availability of volunteers.
 - a) Remove rock and brush piles (possible mammalian predator den

sites).

- b) Remove avian predator perch sites from nesting areas.
- c) Slope dikes when possible to remove potential mammalian den sites.
- d) Remove unused culverts and water control structures (possible mammalian predator den sites).

E. Objective: Provide nesting, brood rearing, and winter habitat for sage grouse.

Strategies:

- 1. Design future grazing agreements to provide areas of sagebrush with a tall grass understory as nesting cover for sage grouse.
- 2. Maintain sagebrush winter cover for sage grouse on MDWMA.
- 3. Continue monitoring the local sage grouse population by conducting a lek route on the MDWMA and adjacent public land.

IV. Goal: To provide access and opportunity for a variety of wildlife appreciation or outdoor recreational activities.

A. Objective: Provide high quality waterfowl hunting opportunities.

Strategies:

- 1. Continue to maintain and improve roads and access areas.
- 2. Work on improving the boat access from the North Boat Ramp.
- 3. Maintain and improve the South Boat Ramp. Develop a cooperative agreement with the Owsley Canal Company to improve the road to the South Boat Ramp.
- 4. Clearly mark and improve IDFG access areas on the south shore of Mud Lake.
- 5. Monitor and evaluate hunter use and harvest (Appendix N).
- 6. Adjust public access to MDWMA, according to public use, to maintain quality waterfowl hunting opportunity and protect the wildlife resource.
- 7. Coordinate with the local canal company and water master to try to maintain suitable water levels in Mud Lake during the hunting season.
- 8. If ground water levels are high enough in the fall at the Jernberg well, flood part of the West Slough during the hunting season to provide waterfowl hunting opportunity. Implementation of this strategy will depend on future funding. Current funding levels delegate this strategy to

low priority status.

B. Objective: Provide quality upland game hunting opportunities.

Strategies:

1. Maintain and improve roads and access areas.
2. Release game farm rooster pheasants as determined by the Wildlife Bureau according to the Upland Game Management Plan and IDFG Commission direction.
3. Monitor and evaluate hunter use and harvest (Appendix N).
4. Adjust MDWMA access, according to public use, to maintain quality upland game hunting opportunity and protect the wildlife resource.

C. Objective: Provide quality big game hunting opportunities.

Strategies:

1. Maintain and improve roads and access areas.
2. Monitor and evaluate use and harvest (Appendix N).
3. Adjust MDWMA public access, according to public use, to maintain quality big game hunting opportunity and protect the wildlife resource.

D. Objective: Provide furbearer trapping on MDWMA as opportunity provides and consistent with canal company requests.

Strategies:

1. Continue required registration by trappers interested in trapping on the MDWMA as a way of monitoring trapping activities and harvest.
2. Coordinate with local canal company on muskrat and beaver control in canals on MDWMA.

E. Objective: Provide Access for public fishing.

Strategies:

1. Maintain and improve roads and access areas.
2. Maintain and improve boat ramps and picnic areas.

F. Objective: Provide for a variety of non-consumptive outdoor recreational activities on the MDWMA.

Strategies:

1. Maintain and improve roads and access areas.

2. Maintain and improve boat ramps and picnic areas.
3. Provide access for cross-country skiing, trail biking, hiking, photography, bird watching, and other activities as funding allows. Provide information on non-consumptive recreational opportunities.
4. Adjust MDWMA access, according to public use, to maintain a variety of quality outdoor experiences and to protect the wildlife resource.
5. Develop one or two blinds for wildlife photography/viewing as funding allows.

G. Objective: Enhance available wildlife information to the public.

Strategies:

1. Develop interpretive areas as funding allows.
2. Develop nature trail and/or auto tour with brochure as funding allows.
3. Develop educational brochures on waterfowl/wetlands as funding allows.
4. Conduct tours for interested groups.

V. Goal: To minimize and control wildlife depredations on agricultural lands surrounding the MDWMA.

(Depredation by ducks and geese on alfalfa and small grains on private land is an annual occurrence. MDWMA also supports populations of sandhill crane, deer, moose, antelope, and elk that have the potential to create depredation problems. IDFG is committed to respond to wildlife depredation complaints and to reduce waterfowl depredations on private lands to the lowest level practical.)

A. Objective: Provide alfalfa and small grains on the MDWMA for waterfowl use.

Strategies:

1. Design future North Agricultural field share-crop contracts to include small grains for waterfowl. A total of 337 acres are all or partially available for this strategy.
2. Provide goose pasture in existing alfalfa fields. A total of 456 acres are all or partially available for this strategy.
3. Provide goose pasture on Mackenzie Point by burning sedge and grass areas. Implementation of this strategy will depend on future funding and the availability of volunteers. Current funding levels delegate this strategy to low priority status.

B. Objective: Provide alfalfa and other forage on MDWMA for big game use.

Strategies:

1. Use current and future MDWMA share-crop agreements to provide some forage for big game. A total of 456 acres are all or partially available for this strategy.
2. Maintain willow stands on MDWMA for big game winter forage. Use cutting and/or burning to rejuvenate stands that are declining.
3. Use IDFG's share of baled share-cropped hay in an attempt to hold big game on MDWMA in severe winters.
4. When feasible and practical, include big game forage plants in upland grass seedings.

C. Objective: Provide assistance for depredation problems on private land.

Strategies:

1. Service complaints and repair depredation equipment.
2. Monitor and evaluate depredation problems.

D. Objective: Maintain and improve working relationships with neighboring landowners.

Strategies:

1. Clearly mark boundaries to indicate where public land ends and private land starts.
2. Cooperatively control noxious weeds.
3. Cooperatively maintain fences to regulate livestock.
4. Promote ASK FIRST program to sportsmen and other MDWMA users.
5. Attend local meetings (i.e. water users meetings).

VI. Goal: Maintain or improve nongame wildlife and plant populations and biodiversity on the MDWMA.

(MDWMA supports large populations of nongame wildlife, especially birds. Several threatened, endangered, and species of special concern are found on MDWMA. Viewing of the abundant nongame wildlife is the main non-consumptive use on MDWMA.)

A. Objective: Provide migratory, breeding and/or winter habitat for species with special designations such as threatened and endangered species, and species of special concern.

Strategies:

1. Maintain existing peregrine falcon nesting tower and report sightings of peregrine falcons to the Department's Regional Nongame coordinator.

2. Develop trumpeter swan nesting structures. Implementation of this strategy will depend on future funding and the availability of volunteers. Current funding levels delegate this strategy to low priority status.
3. Monitor annually for nesting trumpeter swans. Implementation of this strategy will depend on future funding and the availability of volunteers. Current funding levels delegate this strategy to low priority status.
4. Continue to monitor bald eagle use of MDWMA and maintain traditional perch sites.
5. Monitor breeding populations of white-faced ibis and long-billed curlew on MDWMA (Appendix N). Develop all habitat projects to have negligible negative impacts on these species.
6. Develop and implement strategies for future listed threatened and endangered species, and species of special concern, if and when listing occurs.

B. Objective: Provide migratory and breeding habitat for shorebirds.

Strategies:

1. Maintain saltgrass stands in West Sloughs for nesting shorebirds.
2. Manage water levels in West Sloughs to provide fall mud flats for shorebirds.
3. Experiment with different vegetation manipulation methods to improve shorebird habitat in South Bay. Implementation of this strategy will depend on future funding and the availability of volunteers. Current funding levels delegate this strategy to low priority status.
4. Develop a proposal to flood portions of the western part of West Sloughs. Implementation of this proposal will depend on developing a cooperative agreement with the local canal company.

C. Objective: Provide migratory, breeding, and winter habitat for nongame species.

Strategies:

1. Construct and maintain nesting boxes for kestrels, saw-whet owls, bluebirds, swallows, wrens, and bats. Implementation of this strategy will depend on future funding and the availability of volunteers. Current funding levels delegate this strategy to low priority status.
2. Construct and maintain nesting structures for raptors and grebes. Implementation of this strategy will depend on future funding and the availability of volunteers. Current funding levels delegate this strategy to low priority status.

3. Design, plant, and maintain nongame wildlife habitat projects. Implementation of this strategy will depend on future funding and the availability of volunteers. Current funding levels delegate this strategy to low priority status.

VII. Goal: Provide habitat to maintain big game populations on MDWMA and reduce depredations on surrounding private lands.

A. Objective: Maintain current big game habitat on MDWMA.

Strategies:

1. Use current and future MDWMA share-crop agreements to provide forage for big game as practical. A total of 456 acres are all or partially available for this strategy.
2. Maintain willow stands on MDWMA for big game winter forage.

APPENDIX A MANAGEMENT ISSUES

THE FOLLOWING MANAGEMENT ISSUES ASSOCIATED WITH MDWMA HAVE BEEN IDENTIFIED BY THE PUBLIC AND THE DEPARTMENT.

Issue 1: Waterfowl production is an important function of the MDWMA. See Goal I, Objectives A, B, C, D, E, F, and G; Goal II, Objective A; Goal III, Objectives A and C; and Goal V, Objective A.

Background: MDWMA was purchased as a waterfowl production area. MDWMA produces thousands of waterfowl every year and it is a source of waterfowl for the Upper Snake Region. Maintaining and improving waterfowl production is the top management priority for the MDWMA.

Issue 2: Providing habitat for migrating waterfowl is an important function of the MDWMA. See Goal I, Objectives D, F, G, and H; and Goal V, Objective A.

Background: Twenty-six species of waterfowl and 34 species of shorebirds have been identified on MDWMA. MDWMA is an important area for thousands of ducks and geese during spring and fall migrations. Spring use is highest, with up to 3,500 tundra swans, 5,000 Canada geese, 50,000 snow geese, and 150,000 ducks using the area. Fall use has up to 3,500 Canada geese, 90,000 ducks, and 60,000 coot on Mud Lake in late August through early November.

Issue 3: Control of noxious weeds is required by state law and necessary to maintain good wildlife habitat. See Goal I, Objectives B and G; and Goal II, Objective A.

Background: Russian knapweed *Centaurea picris* has been a serious weed problem on MDWMA for several years. Land under sharecrop agreement has been planted to alfalfa in an attempt to control the knapweed. Preliminary results are positive. The Department has spent many thousands of dollars and hundreds of hours trying to eradicate knapweed. Eradication of Russian knapweed and the establishment of grass nesting cover will also benefit breeding waterfowl.

Issue 4: Wildlife depredations to private property need to be managed. See Goal I, Objective G; and Goal V, Objectives A, B, C, and D.

Background: The large numbers of waterfowl that are attracted to MDWMA can cause serious damage to surrounding crop land, generally in the spring. Also, resident populations of mule deer, white-tailed deer, moose, elk, and antelope have the potential for creating depredations on surrounding private agricultural fields.

Issue 5: Waterfowl nests may be lost during spring flooding on the MDWMA. See Goal I, Objectives A, B, C, and E; and Goal III, Objective C.

Background: Mud Lake is prone to spring flooding that can destroy a significant number of waterfowl nests. IDFG has no control over water levels in the main body of Mud Lake and has no way to prevent spring flooding of some of the MDWMA. By providing nesting areas above the flood zones and nesting structures, the effects of spring flooding can be partially mitigated.

Issue 6: Pheasants could benefit from the establishment of food plots for upland game on the MDWMA and surrounding agricultural land. Also, existing food plots should be larger. See Goal III, Objective B.

Background: One of the main factors currently influencing pheasant numbers in the Mud Lake area is the lack of winter food and cover. Occasional harsh winters can decimate local populations. While MDWMA provides very good winter cover, it currently provides limited winter food. Winter food plots may increase local pheasant populations.

Issue 7: Livestock grazing on the MDWMA may negatively impact pheasant nesting and winter cover habitats. See Goal I, Objectives B, and D; and Goal II, Objective A.

Background: A long term grazing agreement is currently in effect on parts of the MDWMA. The purpose of this agreement was for weed control and to offset the costs of long term developments on the MDWMA.

Issue 8: The loss of waterfowl and upland game to predators may be excessive. See Goal I, Objectives A, C, and E; and Goal III, Objective C.

Background: With local agriculture moving toward cleaner farming practices and other large scale habitat changes, shifts may have occurred in local predator populations. In many areas, there are now red fox and raccoon; nest predators that were historically absent. Striped skunk and magpie numbers may have also increased. Coyote and badger populations may have declined. While this shift may have resulted in increased predation on waterfowl and upland birds, widespread predator reduction programs are not generally accepted by the public, have very high costs, and often produce only marginal and short term improvements in bird production. Waterfowl nesting success (the chance of a hen hatching a nest) has averaged above 30% on MDWMA, which is adequate to maintain and probably increase local duck populations. As long as nest success is maintained at or above 30%, predation is probably not adversely affecting local waterfowl populations.

Issue 9: Red fox should be harvested/controlled more on MDWMA. See Goal I, Objectives A and C; and Goal III, Objective C.

Background: Red fox harvest regulations are beyond the scope of this MDWMA plan. Red fox numbers have been steadily increasing in the Mud Lake area. Currently, the Upper Snake Region has a year around fox season. Due to low interest in fox hunting and the high reproductive potential of foxes, local fox numbers are probably increasing. (See predator control in issue 8.)

Issue 10: There is a need to maintain access for various types of non-consumptive wildlife/outdoor recreation. See Goal IV, Objectives F and G.

Background: Wildlife viewing is the second most popular activity on MDWMA. An important part of the management of MDWMA will be to provide non-consumptive wildlife related and nature viewing recreational opportunities consistent with the MDWMA mission statement, goals, and objectives.

Issue 11: Access to hunting and fishing areas needs to be maintained on MDWMA. See Goal IV, Objectives A, B, C, and D.

Background: MDWMA receives large numbers of waterfowl hunters every year. Reasonable

access to Mud Lake and surrounding areas has been a factor contributing to the quality of waterfowl hunting, big game hunting, and fishing on MDWMA.

Issue 12: Some have suggested that the access road along Owsley Canal to the South Boat Ramp be widened. See Goal IV, Objectives A and E.

Background: The road to the South Boat Ramp along Owsley Canal is not IDFG property. This road is an Owsley Canal Company right of way and is maintained by the company. IDFG is currently working with Owsley Canal Company to develop cooperative projects to widen parts of this road.

Issue 13: Access to the south side of Mud Lake is limited. See Goal IV, Objectives A and B.

Background: Much of the access to south side of the main body of Mud Lake is privately owned. Access to much of the south shore is limited.

Issue 14: The water around the North Boat Ramp can seasonally be too shallow to launch a boat. See Goal IV, Objectives A and E.

Background: As the water level of Mud Lake is lowered through summer irrigation, water around the North Boat Ramp can become shallow enough to restrict boat launching.

Issue 15: The current share-crop contracts on MDWMA are not providing maximum wildlife benefits. See Goal I, Objectives G and H; Goal II, Objective A; Goal III, Objective B; Goal V, Objectives A and B; and Goal VII, Objective A.

Background: To provide the maximum benefit to wildlife, all farming operations on MDWMA would have to be conducted by IDFG personnel. Current funding and staffing levels prohibit this. Farming operations on MDWMA are being conducted through the share-crop process outlined in IDFG Policy FW-17.00 (Farming, Sharecropping, and Grazing on Department Lands). The current share-crop contracts for the North Agricultural Fields are long term developmental contracts where the IDFG receives a lesser percentage (5% on 273 acres and 30% on 76 acres) of the crop in exchange for major developments made to MDWMA. The IDFG receives 34.5% of the crop under the current share-crop contract for the West Agricultural Fields. Alternatives in share-cropping on MDWMA as allowed by FW-17.00 are as follows:

1. Sell IDFG's share of the crop and place the proceeds in IDFG's general fund.
2. Trade IDFG's share of the crop for goods and services to be used on MDWMA.
3. Leave IDFG's share of the crop standing in the field for wildlife.

Only alternatives 2 and 3 have been used on MDWMA in the past 10 years. Some goods traded for have been herbicides, fence supplies, irrigation supplies, seed, and fertilizer. Some services traded for have been repairs to the irrigation system and wells, fence construction, the planting and growing of corn or sorghum food plots, and weed spraying. Wheat has been left for waterfowl and upland birds, while alfalfa has been left standing for big game. IDFG's share of baled hay has been used to fill goose nest boxes, hold big game on MDWMA, and feed big game in other places across the region. Similar dispositions of IDFG's share of the crop will be conducted in the future under the direction of the Regional Habitat Biologist, Regional Habitat

Manager, and Regional Supervisor.

THE FOLLOWING MANAGEMENT ISSUES WERE IDENTIFIED BY THE PUBLIC BUT ARE OUTSIDE THE SCOPE OF THE MANAGEMENT OF MDWMA.

Issue 1: Some have suggested that the Department should establish wild pheasant populations on MDWMA through stocking. See Goal I, Objectives A, B, and D; Goal II, Objective A; Goal III, Objectives A, B, and C; and Goal V, Objective A.

Background: This issue is beyond the scope and mission of MDWMA. The Department's pheasant stocking program is separate and independent to the management of MDWMA. Decisions when and where to stock pheasants are made according to the Department's Upland Bird Plan through the Wildlife Bureau. The Mud Lake area historically had very good pheasant populations and a high public interest in pheasant hunting. Current trends in local land uses have diminished pheasant habitat, occasional harsh winters result in large pheasant kills, and changes in local predator populations have left local populations at an all time low. Still, a wild population of pheasants exists on and near MDWMA. Interest in pheasants remains high and pheasant management will continue to be part of the management of MDWMA.

Issue 2: Many have requested that the Department increase pheasant stocking. See Goal IV, Objective B.

Background: Pheasant stocking on MDWMA generates considerable public interest. Currently, game-farm pheasant roosters are stocked on a put-and-take basis. This issue is beyond the scope and mission of MDWMA. The Department's pheasant stocking program is separate and independent to the management of MDWMA. Decisions of when and where to stock pheasants are made through the Wildlife Bureau according to the Upland Game Management Plan and IDFG Commission direction. There has also been considerable interest in stocking hen pheasants to support local populations. Research has found that mortality on game-farm pheasants is extremely high and releasing game-farm hens would do little to bolster local populations. The release of wild-trapped hens may be a viable management option to supplement local populations, but depends on the success of local habitat projects and the availability of wild pheasants.

Issue 3: Some have requested that a gray partridge stocking program on MDWMA be initiated.

Background: Gray partridge numbers around MDWMA have been relatively constant, fluctuating with weather and habitat conditions. The territorial nature of gray partridge pairs in the spring tends to maintain a scattered spacing of flocks (a flock is usually a single brood). The gray partridge population in the Mud Lake area is probably near carrying capacity. The Mud Lake area has enough resident gray partridge to take advantage of any habitat improvements. Stocking gray partridge would do little to increase local numbers and would run the risk of introducing disease into the current population.

Issue 4: Some have suggested the Department extend the shotgun/muzzleloader season on MDWMA.

Background: This issue is outside of the scope and mission of MDWMA. MDWMA is part of the big game unit 63. The unit 63 limited range weapon general deer season has been made

consistent with surrounding units to prevent an over concentration of hunters. The suggested extension could cause unsuccessful hunters from surrounding units to concentrate on unit 63 after deer seasons on these other units close. This would probably lead to an over harvest of deer in unit 63.

Issue 5: Some have suggested that the waterfowl hunting season be extended.

Background: This issue is outside of the scope and mission of MDWMA. Waterfowl season lengths are determined yearly based on Pacific Flyway waterfowl populations. The U.S. Fish and Wildlife Service conducts yearly population surveys and sets a maximum season length and bag limit for each flyway. States can have a season more restrictive than U.S. Fish and Wildlife Service recommendations if local conditions warrant, but not a more liberal one. Recently, the Idaho waterfowl season has been the maximum recommended by the U.S. Fish and Wildlife Service. Future season lengths will depend on Pacific Flyway waterfowl numbers and IDFG's waterfowl management goals.

Issue 6: Many have suggested options for stocking fish into Mud Lake.

Background: This issue is outside of the scope and mission of MDWMA. The management of the Mud Lake fishery is the responsibility of the Regional Fisheries Manager. Fish stocking is determined regionally based upon fish availability, cost, and water conditions. Walleye have been stocked into Mud Lake. Walleye survival was poor and the risk of illegal transport to nearby rivers deemed too great to continue stocking. After the winter fish kill of 1992-1993, Mud Lake was restocked with Yellow perch, largemouth bass, tiger muskie, channel catfish, Lahontan cutthroat trout, and brown trout.

Issue 7: Many have requested that the Department attempt to establish a year around sustainable fishery in Mud Lake.

Background: This issue is outside of the scope and mission of MDWMA. The management of the Mud Lake fishery is the responsibility of the Regional Fisheries Manager. The fishery of Mud Lake is very dependent on water levels and conditions over which the IDFG has no control. In low water years, Mud lake is very prone to winter fish kills. Currently, IDFG does not have the resources to alleviate low water conditions.

APPENDIX B
MUD LAKE WMA MAP

APPENDIX C

WILDLIFE USE

WATERFOWL

Twenty-eight species of waterfowl have been identified using MDWMA. MDWMA is an important area for thousands of ducks and geese during spring and fall migrations. Spring use is highest, with up to 5,000 Canada geese, 50,000 snow geese, and 150,000 ducks using the area. Fall use has up to 5,000 snow geese, 2,500-5,000 Canada geese, 20,000-60,000 ducks, and 60,000 coot in most years.

MDWMA was acquired to provide additional breeding and nesting areas for waterfowl and produces over 3,000 waterfowl a year. Overall nesting is good with ducks averaging 30-60% nest success (compared to 15-20% in the mid-west). Although Mud Lake has a high potential for producing waterfowl, flooding is a frequent problem. The lake is used for storing irrigation water, and most years the lake level rises after incubation has started. The Department has built many islands, but wave action, ice, and flooding have eroded most of them. Nesting platforms have increased goose production on MDWMA. Currently, there are 100 to 200 nesting pair of Canada geese on MDWMA. Mallard, gadwall, American wigeon, northern pintail, green-winged teal, cinnamon teal, coot, redhead, and Canada geese are the most common nesting waterfowl.

Fowl cholera has been identified on the area intermittently during spring migration since 1967.

During peak use periods, waterfowl make heavy use of adjoining private lands and result in numerous depredation complaints. Alfalfa and grain are grown on the area to help alleviate depredation complaints on private lands.

UPLAND GAME

MDWMA currently has a small population of wild ring-necked pheasants. One of the main factors currently influencing pheasant numbers in the Mud Lake area is the lack of winter food and cover. Occasional harsh winters can decimate local populations. While MDWMA provides very good winter cover, it currently provides limited winter food. Also, with local agriculture moving toward cleaner farming practices and other large scale habitat changes, shifts may have occurred in local predator populations. In many areas, there are now red fox and raccoon; nest predators that were historically absent. Striped skunk and magpie numbers may have also increased. Coyote and badger numbers may have declined. While this shift may have resulted in increased predation on waterfowl and upland birds, widespread predator reduction programs are not generally accepted by the public, have very high costs, and often produce only marginal and short term improvements in bird production. IDFG supplements pheasant hunting on MDWMA with the yearly release of approximately 200 to 300 game farm roosters.

Gray partridge and sage grouse have stable, though dispersed, populations on MDWMA. Production of these species is very weather dependent and has been variable on MDWMA.

Mourning dove are very common but migrate from MDWMA early in the fall. Mourning dove production has recently been good on MDWMA.

Cottontail and white-tailed jackrabbit are common across MDWMA. Black-tailed jackrabbit are currently at low numbers, but this species has had population explosions on MDWMA in the past.

Red fox, coyote, and raccoon are common on MDWMA. Beaver and mink are present on MDWMA, but have dispersed populations. Muskrats are abundant on MDWMA.

SPECIES WITH SPECIAL DESIGNATIONS

Trumpeter swan (20 to 70 birds) are seen yearly on MDWMA in the spring and fall. Recently, a few trumpeter swan have stayed all summer on MDWMA. Though no nesting has been observed, habitat for swan reproduction on MDWMA is high. Fluctuating spring water levels may be the main deterrent to swan nesting.

Peregrine falcon have recently started nesting on MDWMA. A nesting tower for peregrine is maintained near West Sloughs. The first falcon chicks (3) were produced in 1996, of which at least 2 probably fledged.

One to six bald eagles can usually be found on MDWMA in the fall and winter. As many as 30 bald eagles have been seen on MDWMA.

NONGAME

MDWMA has an abundance of nongame wildlife, especially birds, at over a 150 species. There are 49 documented species of water and shorebirds that use MDWMA. Some of the more common water birds are sandhill crane, American bittern, western grebe, Clark's grebe, eared grebe, pied-billed grebe, white pelican, and American coot.

MDWMA has a large nesting colony of white-faced ibis (400-800 nests) and Franklin's Gull (600-800 nests). MDWMA is an important breeding area for white-faced ibis and in most years these birds have good production. Nests of these species are sometimes destroyed by fluctuating water levels.

A rookery of double-crested cormorant, great blue heron, black-crowned night heron, cattle egret, great egret, and snowy egret can be found on MDWMA.

MDWMA has limited shore bird habitat in the spring due to high water. High numbers of shore birds can be present on MDWMA in the fall as water levels drop. Some of the more common shorebirds are killdeer, common snipe, long-billed curlew, willet, American avocet, black-necked stilt, long-billed dowitcher, Wilson's phalarope, red-necked phalarope, spotted sandpiper, western sandpiper, least sandpiper, Baird's sandpiper, greater yellowlegs, and lesser yellowlegs.

Marmot, wood rat, and kangaroo rat are common nongame mammals found on MDWMA. There is also a variety of mice, voles, shrews, and bats on MDWMA.

Reptiles and amphibians found on MDWMA are leopard frog, sagebrush lizard, short-horned lizard, gopher snake, western rattle snake, and common garter snake.

BIG GAME

Approximately 30 to 70 mule deer can be found year around on MDWMA, with more moving on the area from the surrounding desert in the winter. White-tailed deer are becoming more common on MDWMA. Approximately 10 to 20 moose are year around residents on MDWMA.

Pronghorn antelope can be found year around on MDWMA. Antelope numbers on MDWMA vary greatly with population trends and season.

Elk are recent arrivals on MDWMA (1992-1993) and have increased to a resident population of approximately 15 to 30 animals.

FISH

Mud Lake is a shallow, warm water fishery that is prone to winter fish kills. The main fishery is supported by stocking. Common fish species include brown trout, cutthroat trout, largemouth bass, yellow perch, channel catfish, tiger muskie, Utah chub, and Utah sucker.

WILDLIFE SPECIES INVENTORY

Table 1. Species, abundance by season, and approximate acres of habitat for wildlife found on Mud Lake WMA.

KEY:

Spring (March-May)

Summer (June-August)

Fall (September-November)

Winter (December-February)

1. A-Abundant, a species which is very numerous.
2. C-Common, certain to be seen or heard in suitable habitat.
3. U-Uncommon, present but not certain to be seen.
4. O-Occasional, seen only a few times during the season.
5. R-Rare, seen at intervals of 2 to 5 years.
6. K-Unknown, species abundance unknown.

* = nesting has occurred on the WMA

SPECIES	RELATIVE ABUNDANCE			
	Spring	Summer	Fall	Winter
MAMMALS				
Mule deer	C	C	C	C
White-tailed deer	C	C	C	C
Moose	C	C	C	C
Elk	U	U	U	U
Antelope	C	C	C	C
Cottontail rabbit	C	C	C	C
Black-tailed jackrabbit	U	U	U	C
White-tailed jackrabbit	C	C	C	C
Chipmunk	C	C	C	U
Ground squirrel	U	U	U	U
Wood rat	U	U	U	U
Kangaroo rat	A	A	A	U
Mice and voles	A	A	A	A
Shrews	U	U	U	U
Marmot	U	U	U	U
Raccoon	C	C	C	C
Beaver	C	C	C	U
Muskrat	A	A	A	U

SPECIES	RELATIVE ABUNDANCE			
	Spring	Summer	Fall	Winter
Mink	U	U	U	U
Otter	R	R	R	R
Weasel	C	C	C	C
Badger	U	U	U	U
Porcupine	C	C	C	C
Striped skunk	C	C	C	U
Spotted skunk	R	R	R	R
Red fox	C	C	C	C
Coyote	C	C	C	C
Bobcat	R	R	R	R
Bat species	K	K	K	K
REPTILES & AMPHIBIANS				
Leopard frog	U	U	U	-
Sagebrush Lizard	C	C	C	-
Short-horned lizard	U	U	U	-
Gopher snake	U	U	U	-
Western rattle snake	U	U	U	-
Common garter snake	U	C	U	-
BIRDS				
Common loon	U	R	U	-
Horned grebe	R	R	R	-
Eared grebe*	A	A	A	-
Clark's grebe*	C	C	C	-
Western grebe*	A	A	A	-
Pied-billed grebe*	C	C	C	-
Double-crested cormorant*	A	A	C	-
White pelican	A	C	C	-
Great egret*	U	U	U	-
Snowy egret*	A	A	C	-
Cattle egret	U	U	U	-
American bittern*	C	C	U	-
Great blue heron*	A	A	A	-
Green heron*	R	R	-	-
Black-crowned night heron*	A	A	A	-
White-faced ibis*	A	A	C	-
Tundra swan	A	-	C	-
Trumpeter swan	U	-	U	-
Canada goose*	A	A	A	-

SPECIES	RELATIVE ABUNDANCE			
	Spring	Summer	Fall	Winter
White-fronted goose	R	-	R	-
Snow goose	A	-	U	-
Ross goose	O	-	O	-
Mallard*	A	A	A	U
Gadwall*	A	A	A	R
Northern pintail*	A	A	A	U
Green-winged teal*	A	A	A	R
Blue-winged teal*	A	A	A	-
Cinnamon teal*	A	A	A	-
Eurasian wigeon	R	-	-	-
American wigeon*	A	A	A	-
Northern shoveler*	A	A	A	-
Wood duck*	O	O	O	-
Redhead*	A	A	A	R
Canvasback*	C	U	C	R
Ring-necked duck*	C	U	U	-
Greater scaup	R	-	R	-
Lesser scaup*	A	A	A	-
Common goldeneye	C	R	C	R
Barrow's goldeneye	R	-	R	-
Bufflehead*	C	U	C	R
Ruddy duck*	C	C	C	R
Common merganser	C	U	C	-
Hooded merganser	C	U	C	-
Red-breasted merganser	C	-	U	-
Turkey vulture	O	R	O	-
Goshawk	U	-	U	U
Sharp-shinned hawk	O	R	O	-
Cooper's hawk	O	R	O	-
Red-tailed hawk*	C	C	U	U
Swainson's hawk*	C	C	U	-
Rough-legged hawk	U	R	C	C
Ferruginous hawk	O	O	R	-
Golden eagle	U	U	U	U
Bald eagle	U	-	U	C
Northern harrier*	C	C	C	U
Osprey	U	U	U	-
Gyr Falcon	-	-	-	R
Prairie falcon	U	U	U	-
Peregrine falcon	U	U	U	-
Merlin	R	R	R	-
American kestrel*	C	C	C	U

SPECIES	RELATIVE ABUNDANCE			
	Spring	Summer	Fall	Winter
Sage grouse*	C	C	C	O
Ring-necked pheasant*	C	C	C	C
Gray partridge*	C	C	C	U
Greater sandhill crane*	C	U	C	-
Virginia rail	U	U	U	-
Sora	U	U	U	-
American coot*	A	A	A	R
Black-bellied plover	O	-	O	-
Killdeer*	C	C	C	-
Common snipe*	U	U	U	-
Long-billed curlew*	C	C	U	-
Whimbrel	-	O	-	-
Spotted sandpiper	U	U	R	-
Willet*	C	U	R	-
Greater yellowlegs	O	-	O	-
Lesser yellowlegs	O	-	O	-
Western sandpiper	U	-	C	-
Least sandpiper	U	-	C	-
Semipalmated sandpiper	R	-	R	-
Baird's sandpiper	U	-	U	-
Long-billed dowitcher	C	-	C	-
Short-billed dowitcher	R	-	R	-
Pectoral sandpiper	R	-	O	-
American avocet*	C	C	O	-
Black-necked stilt*	C	C	O	-
Marbled godwit	R	-	R	-
Wilson's phalarope*	O	C	U	-
Red-necked phalarope	O	O	O	-
Herring gull	-	-	O	-
California gull*	A	A	U	-
Ring-billed gull*	A	A	U	-
Franklin's gull*	A	A	U	-
Bonaparte's gull	R	R	-	-
Common tern	O	-	O	-
Forster's tern*	U	O	U	-
Black tern*	C	C	U	-
Mourning dove*	C	C	O	-
Rock dove*	O	C	C	U
Western screech owl	U	U	-	-
Great horned owl*	C	C	C	C
Burrowing owl	O	O	-	-
Long-eared owl*	O	O	-	-

SPECIES	RELATIVE ABUNDANCE			
	Spring	Summer	Fall	Winter
Short-eared owl*	C	C	U	-
Saw-whet owl*	C	C	U	-
Common nighthawk	U	C	-	-
Rufous hummingbird*	U	C	-	-
Calliope hummingbird	U	-	U	-
Black-chinned hummingbird	R	R	R	-
Belted kingfisher	O	U	U	R
Common flicker*	C	C	C	-
Lewis' woodpecker	U	U	-	-
Red-naped sapsucker	U	U	-	-
Hairy woodpecker	U	U	O	-
Downy woodpecker	U	U	O	-
Eastern kingbird*	C	C	U	-
Western kingbird*	C	C	U	-
Say's phoebe	R	R	R	-
Willow flycatcher	O	U	O	-
Ducky flycatcher	R	R	-	-
Olive-sided flycatcher	R	R	-	-
Western wood peewee	U	U	-	-
Horned lark*	C	C	C	C
Violet-green swallow	C	C	U	-
Tree swallow*	C	C	U	-
Bank swallow*	C	C	U	-
Rough-winged swallow*	U	U	U	-
Barn swallow*	O	O	U	-
Cliff swallow*	C	C	U	-
Stellar's jay	-	-	-	R
Blue jay	-	-	-	R
Black-billed magpie*	A	A	A	C
Common raven	R	-	R	U
Common crow*	C	C	C	-
Clark's nutcracker	R	R	R	-
Black-capped chickadee*	C	C	C	C
Mountain chickadee	O	-	O	O
Red-breasted nuthatch	U	-	-	-
House wren*	U	U	O	-
Long-billed marsh wren*	C	C	C	-
Mockingbird	R	R	R	-
Sage thrasher*	C	C	O	-
Hermit thrush	U	-	U	-
Robin*	C	C	C	-
Townsend's solitaire	U	-	U	-

SPECIES	RELATIVE ABUNDANCE			
	Spring	Summer	Fall	Winter
Swainson's thrush	U	U	U	-
Mountain bluebird	U	-	U	-
Blue-gray gnatcatcher	O	-	-	-
Ruby-crowned kinglet	U	-	-	-
Bohemian waxwing	C	-	O	O
Cedar waxwing	C	U	O	O
Northern shrike	O	-	O	-
Loggerhead shrike	O	O	U	-
Starling*	C	C	C	U
Solitary vireo	U	-	U	-
Warbling vireo	U	U	U	-
Yellow warbler	U	U	O	-
Yellow-rumped warbler	U	-	O	-
Black-throated gray warbler	U	-	U	-
Townsend's warbler	U	-	U	-
Yellowthroat	U	U	U	-
Yellow-breasted chat	U	-	U	-
Wilson's warbler	U	-	U	-
American redstart	U	-	U	-
House sparrow*	C	C	C	-
Western meadowlark*	C	C	C	-
Yellow-headed blackbird*	A	A	C	-
Red-winged blackbird*	A	A	C	U
Northern oriole*	C	C	O	-
Brewer's blackbird*	C	C	C	-
Brown-headed cowbird*	C	C	U	-
Western tanager	C	C	U	-
Gray-crowned rosy finch	-	-	-	R
Common redpoll	-	-	-	R
Black-headed grosbeak	O	-	-	-
Lazuli bunting	U	O	O	-
Lapland longspur	O	-	-	O
Snow bunting	-	-	-	O
Evening grosbeak	C	O	U	-
American goldfinch	C	C	C	U
Savannah sparrow	C	C	C	-
Vesper sparrow*	C	C	U	-
Brewer's sparrow	O	O	-	-
Lark sparrow	U	U	O	-
Sage sparrow	U	U	O	-
Dark-eyed junco	C	C	C	C
American tree sparrow	U	-	U	C

SPECIES	RELATIVE ABUNDANCE			
	Spring	Summer	Fall	Winter
Chipping sparrow	U	U	U	-
Song sparrow	U	U	U	-
White-crowned sparrow	C	C	U	-
White-throated sparrow	R	-	R	R
FISH				
Brown trout	R	R	R	R
Cutthroat trout	C	C	C	C
Largemouth bass	U	U	U	U
Yellow perch	A	A	A	A
Bullhead	U	U	U	U
Channel catfish	R	R	R	R
Tiger muskie	R	R	R	R
Utah chub	C	C	C	C
Utah sucker	C	C	C	C

Estimates are based on information in the 1986-1990 and 1991-1995 Wildlife Management Area Plans - Mud Lake Wildlife Management Area, and recent observations (as of 1996) by Department personnel.

APPENDIX D
LAND ACQUISITION

Year	Funds Used	Acres	Acquired From	Ownership
1940	Pittman-Robertson	607.14	Leo S. Twitchell	IDFG
1941	Pittman-Robertson	791.42	Manford D. Turman	IDFG
1942	Pittman-Robertson	73.51	Michael Kreutzer	IDFG
1948	Pittman-Robertson	320.00	Frank S. Jackett	IDFG
1948	Pittman-Robertson	160.00	August Kreutzer	IDFG
1949	Pittman-Robertson	640.00	W.E. Crouch	IDFG
1949	Pittman-Robertson	640.00	David Jernberg	IDFG
1949	Pittman-Robertson	55.00	M.M. Owsley	IDFG
1949	Pittman-Robertson	640.00	W.E. Crouch	IDFG
1949	Pittman-Robertson	80.00	August Kreutzer	IDFG
1950	Pittman-Robertson	400.00	Frank S. Jackett	IDFG
1950	Pittman-Robertson	80.77	Frank S. Jackett	IDFG
1950	Pittman-Robertson	172.00	James O. Staley	IDFG
1950	Pittman-Robertson	160.00	Michael Kreutzer	IDFG
1953	Gift	40.00	Owsley Canal Company	IDFG
1954	Pittman-Robertson	250.11	Shuldberg and Gerard	IDFG
1954	Pittman-Robertson	280.00	Shuldberg and Gerard	IDFG
1954	Gift	2.00	Shuldberg and Gerard	IDFG
1959	Gift	2.00	Frank S. Jackett	IDFG
1963	Pittman-Robertson	13.64	M.M. Owsley	IDFG
1966	Pittman-Robertson	80.00	Michael Kreutzer	IDFG
1966	Pittman-Robertson	240.00	Violet Kreutzer	IDFG
1969	Pittman-Robertson	16.00	Glen Sparks Estate	IDFG
1969	IDFG	1.125	Glen Sparks Estate	IDFG
1945		313.00	US Government Withdrawal	BLM
1954		2,392.32	US Government Withdrawal	BLM
1959	Lease	259.30	State of Idaho	IDL
Total WMA		8,853.335		

Easement and Rights of Way

Owsley Canal Company - Granted a canal right of way easement across MDWMA in 1953.

Flood Control District No. 5 - A cooperative agreement to flood portions of East Sloughs during times of flooding.

APPENDIX E

SOIL TYPES

Soil Descriptions are from: Soil Survey of Jefferson County, Idaho. 1975. USDA, Soil Conservation Service in cooperation with University of Idaho, College of Agriculture and Idaho Agricultural Experiment Station; Jefferson County Board of Commissioners; and the Bureau of Land Management.

Aecet-Rock outcrop complex

These soils are moderately deep to deep and well drained, with basalt rock outcrops occurring in an intricate pattern throughout the complex. This soil is found on the sides of ridges and on convex sides of slopes. The slopes consist of 0 to 12%, permeability is moderately slow, available water capacity is moderate to high, the surface runoff is slow to medium, and the hazard of erosion is slight to high. The primary vegetation is common rangeland plants with bluebunch wheatgrass and Thurber needlegrass indicating good to excellent condition. This soil is best used for native range, wildlife habitat, and recreation.

Bericeton-Aecet loams

These soils are moderately deep to deep, well drained, and are found on concave and convex sides of slopes, sometimes near areas of rock outcrops. The slopes consist of 1 to 6%, permeability is moderately slow, available water capacity is moderate to very high, the surface runoff is slow to medium, and the hazard of erosion is slight. The primary vegetation is common rangeland plants with bluebunch wheatgrass and Thurber needlegrass indicating good to excellent condition. This soil is used for native range, wildlife habitat, and recreation. These soils can be suited to hay, small grains, pasture, and potatoes if irrigated.

Fluvaquents, nearly level

These soils are very deep and very poorly drained soils of old lakebeds. They are in marsh areas that are inundated most of the year and provide an ideal situation for waterfowl habitat. The primary vegetation is cattails and other water loving plants. This soil is used for wildlife habitat and recreation.

Grassy Butte sand, 2 to 20% slopes

These soils are very deep, somewhat excessively drained, and are found on basalt plains. Permeability is rapid, available water capacity is low, surface runoff is very slow to slow, and the hazard of erosion is slight (the hazard of soil blowing is very high). The primary vegetation is common rangeland plants with needle and thread and Indian ricegrass indicating good to excellent condition. This soil is used for native range, wildlife habitat, and recreation. These soils can be cultivated with irrigation, but have a very high hazard of soil blowing.

Levelton loamy sand

These soils are very deep, very poorly drained, and are found on old lakebeds. The slopes consist of 0 to 1%, permeability is slow, available water capacity is high, the surface runoff is ponded,

and the hazard of erosion is slight (the hazard of soil blowing is high). The primary vegetation is common rangeland plants with sedges and tufted hairgrass indicating good to excellent condition. This soil is best used for native range, wildlife habitat, and recreation.

Levelton loam

These soils are deep, very poorly drained, and are found on old lakebeds. The slopes consist of 0 to 1%, permeability is slow, available water capacity is high, the surface runoff is ponded, and the hazard of erosion is slight. The primary vegetation is common rangeland plants with sedges and tufted hairgrass indicating good to excellent condition. This soil is best used for native range, wildlife habitat, and recreation.

Levelton loam, drained, moderately saline-alkali

These are very deep soils found on old lakebeds. The slopes consist of 0 to 1%, permeability is slow, available water capacity is high, the surface runoff is very slow or ponded, and the hazard of erosion is slight. The primary vegetation is common rangeland plants with alkali sacaton and inland saltgrass indicating good to excellent condition. This soil is best used for native range, wildlife habitat, and recreation.

Levelton silty clay loam, drained, moderately saline-alkali

These soils are very deep, very poorly drained, and are found on old lakebeds. The slope is 0 to 1%, permeability is slow, available water capacity is high, surface runoff is very slow, and the hazard of erosion is slight. The dominant plants are alkali sacaton and inland saltgrass. This soil is best used for native range, wildlife habitat, and recreation.

Levelton-Medano complex

These are very deep soils found on old lakebeds. The slopes consist of 0 to 1%, permeability is slow to rapid, available water capacity is moderate to high, the surface runoff is slow to medium, and the hazard of erosion is slight to high. The primary vegetation is common rangeland plants with sedges and tufted hairgrass indicating good to excellent condition. This soil is best used for native range, wildlife habitat, and recreation.

Malm-Rock outcrop complex

These soils are shallow to moderately deep, well drained, with basalt rock outcrops. The slopes consist of 2 to 20%, permeability is moderately rapid, available water capacity is low to moderate, the surface runoff is ponded, and the hazard of erosion is slight. The primary vegetation is common rangeland plants with bluebunch wheatgrass and Thurber needlegrass indicating good to excellent condition. This soil is best used for native range, wildlife habitat, and recreation.

Matheson loamy sand, 2 to 8% slopes

These soils are very deep, well drained, and are found on basalt plains. Permeability is moderately rapid, available water capacity is moderate, surface runoff is slow, and the hazard of erosion is slight (the hazard of soil blowing is very high). The primary vegetation is common rangeland plants with bluebunch wheatgrass, needle and thread, and Indian ricegrass indicating good to excellent condition. This soil is used for native range, wildlife habitat, and recreation. These soils can be used for hay, small grains, pasture, and potatoes if irrigated.

Matheson sandy loam, 2 to 4% slopes

These soils are very deep, well drained, and are found on basalt plains. Permeability is moderately rapid, available water capacity is high, surface runoff is slow, and the hazard of erosion is moderate. This soil is used for native range, wildlife habitat, and recreation. These soils can be used for hay, small grains, pasture, and potatoes if irrigated.

Matheson sandy loam, 4 to 8% slopes

These soils are deep, well drained, and are found on basalt plains. Permeability is moderately rapid, available water capacity is high, surface runoff is medium, and the hazard of erosion is high. This soil is used for native range, wildlife habitat, and recreation. These soils can be used for hay, small grains, pasture, and potatoes if irrigated.

Matheson sandy loam, 1 to 6% slopes

These soils are very deep, well drained, and are found on basalt plains. Permeability is moderately rapid, available water capacity is high, surface runoff is slow to medium, and the hazard of erosion is slight to high. The primary vegetation is common rangeland plants with bluebunch wheatgrass and Thurber needlegrass indicating good to excellent condition. This soil is used for native range, wildlife habitat, and recreation. These soils can be used for hay, small grains, pasture, and potatoes if irrigated.

Matheson loam

These soils are very deep, well drained, and are found on alluvial fans. The slopes consist of 0 to 2%, permeability is moderately rapid, available water capacity is high, the surface runoff is slow, and the hazard of erosion is slight. This soil is used for native range, wildlife habitat, and recreation. These soils can be used for hay, small grains, pasture, and potatoes if irrigated.

Matheson-Malm sandy loams

These soils are moderately to very deep, well drained, and are found on basalt plains. The slopes consist of 0 to 2%, permeability is moderately rapid, available water capacity is low to high, the surface runoff is slow, and the hazard of erosion is slight. This soil is used for native range, wildlife habitat, and recreation. These soils can be used for hay, small grains, pasture, and potatoes if irrigated.

Medano complex

These soils are very deep, very poorly drained, and are found on old lakebeds. The slopes consist

of 0 to 2%, permeability is moderately rapid, available water capacity is moderate, the surface runoff is ponded, and the hazard of erosion is slight (the hazard of soil blowing is very high). The primary vegetation is common rangeland plants such as sedges, tufted hairgrass, and slender wheatgrass. This soil is used for native range, wildlife habitat, and recreation.

Medano-Psammaquents complex

These soils are very deep, very poorly drained, and are found in low areas on old lakebeds. The slopes consist of 0 to 2%, permeability is moderately rapid, available water capacity is moderate, the surface runoff is slow or ponded, and the hazard of erosion is slight. The primary vegetation is common rangeland plants such as sedges, tufted hairgrass, and slender wheatgrass with cattails and other water-loving plants in depressed areas. This soil is used for native range, wildlife habitat, and recreation.

Montlid silty clay loam

These soils are very deep, moderately well drained, and are found on old lakebeds. The slopes consist of 0 to 1%, permeability is moderately slow, available water capacity is very high, the surface runoff is very slow, and the hazard of erosion is slight. This soil is used for native range, wildlife habitat, and recreation. These soils can be used for hay, small grains, and pasture if irrigated.

Montlid-Heiseton complex

These soils are deep to very deep, moderately well drained, and are found in playas the fringes of old lakebeds. The slopes consist of 0 to 4%, permeability is moderately slow to moderately rapid, available water capacity is high to very high, the surface runoff is very slow to slow, and the hazard of erosion is slight. This soil is used for native range, wildlife habitat, and recreation.

Terreton sandy loam

These soils are very deep, well drained, and are found on old lakebeds. The slopes consist of 0 to 1%, permeability is slow, available water capacity is high, the surface runoff is very slow, and the hazard of erosion is slight (the hazard of soil blowing is moderate). This soil is used for native range, wildlife habitat, and recreation. These soils can be used for hay, small grains, and pasture if irrigated.

Terreton loam

These soils are very deep, well drained, and are found on old lakebeds. The slopes consist of 0 to 1%, permeability is slow, available water capacity is high, the surface runoff is very slow, and the hazard of erosion is slight. This soil is used for native range, wildlife habitat, and recreation. These soils can be used for hay, small grains, pasture, and potatoes if irrigated.

Terreton sandy clay loam, 2 to 4% slopes

These soils are very deep, well drained, and are found on old lakebeds. Permeability is slow, available water capacity is high, the surface runoff is slow, and the hazard of erosion is moderate. This soil is used for native range, wildlife habitat, and recreation. These soils can be used for

hay, small grains, pasture, and potatoes if irrigated.

Terreton silty clay loam

These soils are very deep, well drained, and are found on old lakebeds. The slopes consist of 0 to 1%, permeability is slow, available water capacity is high, the surface runoff is very slow, and the hazard of erosion is slight. The primary vegetation is common rangeland plants with bluebunch wheatgrass and Thurber needlegrass indicating good to excellent condition. This soil is used for native range, wildlife habitat, and recreation. These soils can be used for hay, small grains, pasture, and potatoes if irrigated.

Zwiefel sand, 2 to 4% slopes

These soils are deep, well drained, and are found on old lakebeds. Permeability is slow, available water capacity is high, the surface runoff is slow, and the hazard of erosion is slight (the hazard of soil blowing is very high). This soil is used for native range, wildlife habitat, and recreation. These soils can be used for hay, small grains, pasture, and potatoes if irrigated.

Zwiefel-Grassy Butte sands

These soils are very deep, well to somewhat excessively drained, and are found in playas. The slopes consist of 4 to 20%, permeability is slow to rapid, available water capacity is low to high, the surface runoff is slow, and the hazard of erosion is slight (the hazard of soil blowing is very high). The primary vegetation is common rangeland plants with needle and thread and Indian ricegrass indicating good to excellent condition. This soil is used for native range, wildlife habitat, and recreation. These soils can be used for pasture if irrigated.

APPENDIX F
HABITAT TYPES

Approximate acres of common habitat types found on Mud Lake WMA.

Habitat Type	Acres
Perennial grassland	2,199
Tall sagebrush	3,428
Willow wetlands	520
Marsh and swamp*	2,237
Irrigated croplands	469
Total	8,853

* Includes sections of open water.

MDWMA consists of the shallow 3,000+ acre Mud Lake (average depth 5 feet) with habitats (Appendix F) grading up through bulrushes *Scirpus spp.*, cattails *Typha latifolia* into salt grass *Distichlis spp.*, and willows *Salix spp.*, and finally into big sagebrush *Artemisia spp.* Approximately 450 acres of agricultural land within the boundary are under cultivation by sharecroppers. Russian knapweed *Centaurea picris* has been a serious weed problem on the WMA for several years. Control of Russian knapweed is the primary reason for sharecropping the agricultural land. The Department has spent several thousand dollars and hundreds of hours trying to eradicate Russian knapweed. So far, there has been some control, but not at the level desired.

APPENDIX G
NOXIOUS WEED CONTROL PLAN

MUD LAKE WILDLIFE MANAGEMENT AREA
Idaho Department of Fish Game

I. HISTORY OF NOXIOUS WEED MANAGEMENT ON THE WMA

The three noxious weed species found on Mud Lake Wildlife Management Area (MDWMA) were probably present when the Idaho Fish and Game assumed ownership of MDWMA. MDWMA has always had a noxious weed control program, but control efforts intensified in the late 1970s. In the 1980s, the Department intensified the MDWMA noxious weed control program by investing in a sharecrop program on available irrigated farm lands.

The noxious weeds present on MDWMA are as follows:

Canada Thistle - Approximately 60 acres along irrigation ditches; canal company right-of-ways, and low meadows are infested. The major waterfowl nesting areas on MDWMA are infested with Canada thistle. Past methods of control have included grain and alfalfa production, summer fallow, herbicide application, and biologically through insect releases.

Halogeton - Approximately 15 acres of sagebrush are infested. Past control methods have included herbicide applications.

Russian knapweed - Over 630 acres of crop field and uplands are infested. Past methods of control have included grain and alfalfa production, summer fallow, mowing, grass plantings, and herbicide application. The infestation has been greatly reduced in areas available for crop production. Summer fallowing and grass plantings have also been effective controls with properly timed mowing and herbicide application. Many of the areas now infested could become prime waterfowl nesting areas with the establishment of better cover (Russian knapweed is most prevalent in the moister upland sites associated with wetland/upland edge).

II. GOALS AND OBJECTIVES

The primary goal of noxious weed management on MDWMA is to provide better nesting cover for waterfowl. Noxious weeds (especially Russian knapweed) provide poor nesting cover for waterfowl. Decreasing noxious weeds and increasing grass cover provides better nesting cover for waterfowl.

Other goals are as follows:

To prevent the spread of noxious weeds on MDWMA.

To provide, through agricultural crops, food for migrating waterfowl and wintering big game.

III. PRIMARY METHODS OF NOXIOUS WEED INFESTATION

The primary source of noxious weed infestation on MDWMA is most likely from noxious weeds previously existing on the management area and adjoining private property.

IV. CONTROL METHODS

A. BIOLOGICAL

Insects have been released for the biological control of Canada thistle. Insects released were *Larinus planus* (a seed head weevil), *Cassida rubiginosa* (a defoliating beetle), and *Ceutorhynchus litura* (a stem mining weevil). Flooding in release areas in 1995 have decimated many of the Canada thistle stands where insects were released. Canada thistle will only be controlled with biological methods to reduce disturbance to nesting waterfowl and provide a better transition to grass cover.

B. CHEMICAL

Halogeton and Russian knapweed have been treated with herbicides (Curtail, Stinger, 2-4D, Tordon, and Escort) applied in areas and at rates within guidelines as stated on the product label. Backpack, ATV, and tractor tank sprayers have been used as deemed necessary. Treated areas are examined every 7-10 days for herbicide effectiveness. Treated areas are spot-sprayed as necessary to treat previously missed plants. Herbicide treatment for Russian knapweed will continue on Mud Lake WMA on approximately 100 acres a year. Herbicide will be applied in the spring when plants are actively growing but before bloom.

C. LAND USE PRACTICES

1. FARMING

Russian knapweed will be controlled on 456 acres (337 acres of the north agricultural fields and 119 acres of the west agricultural fields) through share-crop farming.

2. PUBLIC ACCESS MANAGEMENT

All MDWMA access will be restricted to established roads to prevent the spread of noxious weeds.

3. DISTURBED AREA MANAGEMENT

Disturbed areas on MDWMA will be protected from further disturbance, seeded, and monitored for noxious weeds.

D. MECHANICAL

Russian knapweed will be controlled on approximately 100 acres yearly through mowing.

APPENDIX H
CONSUMPTIVE USE INVENTORY

Common public consumptive use activities for which MDWMA is used and approximate number of users, user days, and harvest annually. Estimates are based on information in the 1986-1990 and 1991-1995 Wildlife Management Area Plans - Mud Lake Wildlife Management Area, and recent observations (as of 1996) by Department personnel.

Species	Number of Users	User Days	Estimated Harvest
WATERFOWL			
Canada goose	200	1,000	100
Snow goose	20	45	20
Mallard	200	1,000	550
Gadwall	200	1,000	300
Northern pintail	200	1,000	150
American wigeon	200	1,000	120
Green-winged teal	200	1,000	175
Cinnamon/Blue-winged teal	200	1,000	50
Northern shoveler	200	1,000	100
Redhead	200	1,000	100
Canvas back	200	1,000	10
Ring-necked duck	200	1,000	35
Lesser scaup	200	1,000	30
Common goldeneye	200	1,000	40
Bufflehead	200	1,000	10
Other ducks	200	1,000	50
BIG GAME			
Mule deer	30	150	10
White-tailed deer	30	150	5
Elk	50	125	2
Antelope	60	200	4
SMALL GAME			
Sage Grouse	25	100	20
Ring-necked pheasant	100	500	150
Gray partridge	50	100	20
Mourning dove	25	60	75
Cottontail rabbit	10	50	20
Black-tailed jackrabbit	20	75	10
White-tailed jackrabbit	20	75	50

Species	Number of Users	User Days	Estimated Harvest
Raccoon	5	50	5
Beaver	5	50	5
Muskrat	5	50	300
Mink	5	50	5
Red fox	10	70	10
Coyote	10	70	10
FISH			
Brown trout	150	400	5
Cutthroat trout	150	400	400
Largemouth bass	15	100	?
Yellow perch	150	600	2,000+
Bullhead	5	15	?
Channel catfish	5	15	?
Tiger muskie	15	60	?

Mud Lake is primarily a perch and cutthroat trout ice fishery. Because of recent winter fish kills, the status of some fish species is in question.

APPENDIX I
NON-CONSUMPTIVE USE INVENTORY

Common public non-consumptive use activities for which MDWMA is used and approximate number of users and user days annually. Estimates are based on information in the 1986-1990 and 1991-1995 Wildlife Management Area Plans - Mud Lake Wildlife Management Area, and recent observations (as of 1996) by Department personnel.

Non-consumptive Use	Number of Users	User Days
Educational and scientific	150	200
Photography	250	500
Wildlife observation	500	1,100
Camping	100	250
Picnicking	100	250
Hiking	25	15
Swimming	50	200
Boating	100	200
Horseback riding	10	25
Winter sports	50	100

APPENDIX J
WATER RIGHTS

Eastside well (B well)	G23789	7.5 cfs	Priority 2/18/53
Jernberg well (#2)	20852	10.0 cfs	Priority 1/03/49
Eighty shares stock, Owsley Canal Co. – One share represents two acre feet of water			
Headquarters – Pumping use from Owsley Canal and lake storage			
Secondary headquarters – Domestic well			
Headquarters – Domestic well			

APPENDIX K
CAPITAL IMPROVEMENTS AND DEVELOPMENTS

Year	Development
1940	The first land for MDWMA was purchased on the north side of Mud Lake including a house and garage.
1941	Fence construction was started. Thirty-three miles of fence have since been built on the project.
1952	Road construction started on the area.
1953	The B-well was drilled for irrigation of North Agricultural Fields and flooding impoundments.
1953	Twenty-five thousand feet of irrigation canal was excavated from the Jackett well.
1953	A house and garage was constructed and a domestic well drilled on the south side of Mud Lake.
1953	A cinder block shop and machine shed was constructed on the north side of Mud Lake.
1953	The Owsley Canal Company granted a right of way across the west end of the WMA.
1955	The north side house was remodeled.
1955	A dike was started on the west end of MDWMA with 855 feet completed.
1956	Another 4,000 feet of dike was completed in the west end, completing the 190 acre west slough marsh.
1958	The Jernberg well was drilled to pump water into the west slough.
1960	An access road to the southeast side of Mud Lake was constructed.
1962	A crossing over Hutton ditch was built.
1966	The irrigation system was changed to sprinklers. Use of the Jackett Canal was discontinued. New main lines, lateral lines, and a diesel pump were also added.
1969	The south side house was rewired and remodeled.
1969	A new domestic well was drilled for the north side house.
1969	Approximately 3 miles of fence was removed when the flood control dikes of the south and west sides were rebuilt.
1971	The north side road was rebuilt and cindered.
1972	A new septic system was installed at the north side house.
1973	New siding was put on the north side house and garage.
1973	An equipment storage shed was constructed on the north side.
1985	The west sloughs dike was rebuilt due to extensive damage from high water.
1986	A new metal roof was put on the north side house.
1987	The Kaster observation tower was constructed.
1987	One-half mile of boundary fence on the west end of the WMA was replaced.
1987	The Jefferson County Waterways Commission provided 2 picnic tables, 4 iron barbecue grills and a double toilet outhouse for the north boat launch area. The County also provided 2 picnic tables and 2 grills for the south boat launch area.
1987	An outhouse was installed at the north boat launch.

Year	Development
1988	The north side road was rebuilt and cindered. Graveling of the road was started and will be finished as budgets allow.
1988	The Department of Transportation (DOT) completed a project on East Slough to mitigate 16 acres of wetlands filled along Interstate 15. The DOT completed and/or rehabilitated the west side dike of East Slough, and the existing irrigation canal in East Slough. The DOT also paid for the cost of rewinding Fish and Game's 40 horsepower pump, replacing the boot, and installing new pipe.
1989	The Habitat Improvement Program (HIP) constructed an electric fence predator barrier enclosing 80 acres in the northeast corner of East Slough.
1993	The B-well was drilled deeper and the pump bowls were lowered from 60 feet to 120 feet.
1993	Ten thousand feet of 15 inch PVC pipe was installed to improve water delivery from the B-well.
1993	¼ mile of boundary fence was replaced in the Northwest Unit.
1994	Three new wheel lines were added to the east portion of the North Agricultural Fields.
1995	A new outhouse was constructed at the south boat ramp.
1995	The B-well's 75 hp motor was replaced with a 100 hp motor.
1995	¼ mile of fence between Middle and North Lake Units was replaced.
1996	The Green Island road was rebuilt and cindered.
1996	Part of the north side road was rebuilt and cindered.
1996	The north side house was repainted.
1996	MDWMA signs were repainted.
1996	A new information kiosk was constructed at the south boat ramp.
1997	The bridge over Sparks Canal was replaced.
1998	Four new information kiosks and pamphlet boxes were constructed at the north boat ramp, Green Island, West Sloughs, and Duck Trap Point.
1998	Six hunter survey boxes were constructed and placed throughout MDWMA.
1998	¼ mile of the west dike road was rebuilt and cindered.

APPENDIX L
CONSTRAINING AGREEMENTS, PLANS, AND DOCUMENTS

Idaho Fish and Game Plans

Statewide waterfowl management plan 1991-1995.

Statewide upland game management plans 1991-1995.

Statewide management plans for deer, elk, and moose 1991-1995.

Statewide big game depredation management plans 1991-1995.

Statewide nongame management plans 1991-1995.

Statewide furbearer management plans 1991-1995.

Idaho Fish and Game Policy

Policy FW-17.00 - Farming, Sharecropping, and Grazing on Department Lands.

Federal Aid

Requirements associated with using Pittman-Robertson funding for acquiring the property that makes up MDWMA, and used for the annual operation of MDWMA.

Other potential constraining plans and documents:

IDFG has allowed the local water district to use West Sloughs for storage of excess irrigation water to prevent flooding in the spring. No documentation has been found for this arrangement. The IDFG will pursue a written agreement for the flooding of West Sloughs.

1991 - 2000 Sharecrop Agreement for the North Agricultural Fields (west portion).

1994 - 2000 Sharecrop Agreement for the North Agricultural Fields (east portion).

Sharecrop Agreement for the West Agricultural Fields - currently being renewed (as of January 1997).

APPENDIX M
MAJOR EQUIPMENT

- 1955 Ford 850 tractor
- 1961 John Deer 3010 tractor
- 1969 International 2504 tractor
- 1979 Starcraft 14 ft. boat & trailer
- 1983 Mercury 18 hp outboard
- 1985 Polaris Indy Trail 440 snowmobile
- 1986 Ford F250 3/4 ton 4x4 pickup truck
- 1988 Chevy 2500 3/4 ton 4x4 pickup truck
- 1991 Honda 300 TRX 4x4 ATV
- 1991 Compact portable computer & printer
- 1999 Personal Computer

APPENDIX N

MONITORING PLAN

Surveys and monitoring currently conducted on the MDWMA

Survey: Duck nesting success in upland cover.

Objective: Determine success of ducks nesting in upland cover on MDWMA. Data are used to determine if nesting on MDWMA meets the 30% nesting success goal set by the Department's Waterfowl Management Plan 1991-1995. This survey will be conducted at least once every 5 years.

Monitoring: Map noxious weed populations and control methods (Appendix G).

Objective: Monitor noxious weed species present, population trend, and effectiveness of control methods used on MDWMA.

Survey: Public use surveys.

Objective: Determine type and amount of public use on MDWMA. Also, it's an opportunity for public to discuss MDWMA management with the MDWMA staff. Surveys include: hunter number and harvest on opening weekend of duck and goose season, pheasant hunter numbers, trapper reports, angler surveys, and random public use surveys.

Monitoring: Monitor water levels and wetland vegetation in West Sloughs.

Objective: To monitor water levels and vegetation management in the portion of West Sloughs IDFG floods yearly. This very productive wetland system is a habitat for high concentrations of waterfowl and other wildlife.

Survey: Spring aerial count of Canada goose pairs.

Objective: Count number of breeding pairs and total number of Canada geese on the MDWMA as part of Pacific Flyway survey for the Rocky Mountain population of Canada geese. Data specific to the MDWMA is used to determine if changes in Canada goose management on the MDWMA is necessary. Currently, these data are collected by the Regional Population Biologists.

Monitoring: Waterfowl disease outbreaks.

Objective: Monitor for signs (sick or dead birds) of avian cholera during spring waterfowl migration. Implement control techniques when possible.

Survey: Bald eagle winter survey.

Objective: To survey the number of bald eagles using MDWMA in the winter. Part of a nationwide survey.

Surveys and monitoring planned for future implementation on the MDWMA

Monitoring: Vegetation height-density transects in duck nesting cover.

Objective: Monitor quality (height-density) of upland nesting cover used by ducks.

Background: Studies have shown that most duck species prefer to nest in, and are more successful nesting in tall dense cover. Also, studies have shown that the quality of nesting cover deteriorates after several years of growth.

Survey: Nesting success of overwater nesting ducks.

Objective: Determine nesting success of ducks nesting in the marshes. Information will be one criteria used to determine if changes in marsh management are necessary.

Monitoring: Trumpeter swan nesting.

Objective: Determine if trumpeter swan nest on MDWMA by reporting any sightings (adults, nests, cygnets) of swan on MDWMA.

Survey: Sage grouse spring lek trend counts.

Objective: Determine the status of historic sage grouse leks, and search for new leks on MDWMA and adjacent property. Information is to be included in region-wide database to determine long term trend of sage grouse populations.

Survey: Mist netting for bats.

Objective: Determine species of bats using the MDWMA. Bats use the MDWMA, however, the species is unknown.

Survey: Presence or absence of reptiles and amphibians.

Objective: Determine the presence or absence of reptiles and amphibians. Data can be used to update MDWMA species list, and report rare species to conservation data center for inclusion in statewide database.

Survey: Breeding bird survey.

Objective: Determine species breeding/nesting on MDWMA and try to establish a breeding trend. Information can be used as one criteria in determining if management changes for upland habitat and/or marsh habitat is necessary.

Monitoring: Monitor breeding populations of white-faced ibis and long-billed curlew on MDWMA.

Objective: Determine baseline nesting success and population trends for these sensitive species on MDWMA.

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