MARKET LAKE
Wildlife Management Area

Management Plan
July 1999

Idaho Department of Fish and Game
Upper Snake Region
1515 Lincoln Road
Idaho Falls, Idaho 83401

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EXECUTIVE SUMMARY

This management plan will be the guiding document for the short and long term management of the Market Lake Wildlife Management Area (MLWMA).

The management plan for the MLWMA was developed with input from the public and Department personnel. In March 1996, letters were sent to 1,100 individuals, groups and organizations that were surveyed as users of the wildlife management areas in the Upper Snake Region. The letters asked for input on the development of long term management plans for the wildlife management areas. Also, public scoping meetings were held in Mud Lake (3-25-96), Idaho Falls (3-26-96), and Rexburg (3-27-96) allowing the public an opportunity to identify issues related to the wildlife management areas.

The ideas, suggestions, and concerns identified by the public and department personnel were sorted into issues by the MLWMA management staff (Appendix A). Topics not related to the MLWMA (Appendix A) and general comments (Appendix Q) were not used in the analyses. Similar ideas were combined into one issue. Comments on the MLWMA from 23 individuals and organizations were received during the scoping period. In July 1996, abbreviated draft plans were sent to these 23 individuals and organizations for review. A reply was received from one individual.

The plan lists the management priorities for the MLWMA. The management priorities are based upon public and Department input during the scoping process. The plan outlines goals and objectives for the short and long term management of the MLWMA. Goals and objectives were developed based upon issues identified by the public and Department personnel during the scoping process. Management priorities and goals and objectives are also influenced by constraints placed upon funding (i.e. Federal Pittmann Robertson funds) used to purchase and manage the MLWMA.

The direction of work toward meeting goals and objectives will be guided by the management priorities. Work will be directed toward all goals and objectives within the confines of that fiscal year's budget and available labor. Work will be directed toward fulfilling goals and objectives that meet the higher listed management priorities during times of constraining budgets and labor.

INTRODUCTION AND PHYSICAL DESCRIPTION

The 5,071-acre Market Lake Wildlife Management Area (MLWMA) in Jefferson County is located 2 miles north of the city of Roberts, and 17 miles north of Idaho Falls. The MLWMA was established in 1956 to restore a portion of the historic Market Lake basin for migrating and nesting waterfowl, and to provide an area for waterfowl hunting.

The original Market Lake was a 12 square mile flood plain of the adjacent Snake River. The vast flocks of waterfowl that visited Market Lake during the spring and fall migrations attracted “market” hunters who harvested the birds and gave the area its name. In 1956 when the

MLWMA was established, only 30 acres of the original wetlands remained. Federal Aid per the Pittman-Robertson Act was used in acquiring property to create the MLWMA and also is used to manage the MLWMA.

The MLWMA has four major habitat types; marsh/wetland meadow, desert uplands, Snake River riparian, and cropland. The wetland complexes are surrounded by low rises of sand to sandy loam soils and igneous rock ledges. The 1,700 acres of wetlands receive the majority of their water from springs located throughout the MLWMA.

The MLWMA is used by 250 wildlife species (Appendix E) and is an important migration and staging area for waterfowl species in the Pacific Flyway. Approximately 50,000 snow geese, 4,000 tundra swans, 100 trumpeter swans, 2,000 Canada geese and 250,000 ducks feed, rest, and stage at the wetland complex made up of the MLWMA, Mud Lake WMA, and Camas National Wildlife Refuge, during spring migration. The largest concentration of waterfowl occurs in March and April.

An average of 114 indicated breeding pairs of Canada geese used the MLWMA during 1994-1996. Twelve species of ducks nest on the MLWMA.

In 1998, the MLWMA was given **Globally Important Bird Area** status in the American Bird Conservancy's United States Important Bird Areas program. Specifically, the MLWMA provides habitat for greater than 1% of the biogeographic population of snow geese during spring migration, and greater than 1% of the world's breeding population of white-faced ibis. It also provides habitat for a nationally significant population of tundra swans in the spring.

Species with special status designations and species for which there is concern for their long term well being use the MLWMA. These species include; bald eagle, peregrine falcon, sage grouse, sharp-tailed grouse, and white pelican.

Approximately 15,000 user days per year (Appendices G and H) occur on the MLWMA for hunting, wildlife watching, tour groups and other recreation. The MLWMA is an important waterfowl hunting area for the local public. There are waterfowl hunters using the MLWMA during every day of the waterfowl season until the marshes freeze up. Three public events, Waterfowl Hunting Workshop, Pheasant Hunt for Youths, and International Migratory Bird Day, occur annually to biannually on the MLWMA.

The MLWMA provides winter habitat for elk. Up to 500 elk have wintered on the MLWMA during the 1990's, depending upon snow conditions. Also, moose, mule deer, and white-tailed deer use the MLWMA.

MISSION STATEMENT

Protect and provide habitat at the Market Lake Wildlife Management Area for the propagation of waterfowl and other wildlife species so as to maintain abundant populations, and for public hunting, trapping, wildlife viewing, nature viewing and education.

MANAGEMENT PRIORITIES

Listed in order of priority:

1. Waterfowl Production
2. Waterfowl Hunting
3. Upland Game Production and Hunting
4. Big Game Wintering
5. Wildlife Appreciation and Education
6. Nongame Production

CONSTRAINTS AND SIDEBOARDS

All strategies proposed in this plan must stay within the constraints of the mission of the MLWMA. Issues and strategies that are inconsistent with the mission or are outside the scope, function, or mission of the MLWMA cannot be considered. Also, issues and strategies may be bound by constraints (Appendix P) imposed by Department species plans, federal aid requirements, deed restrictions, and agreements with other entities (i.e. water management). The implementation of strategies to address issues is also dependent upon future budgets, available labor and necessary equipment.

GOALS, OBJECTIVES, AND STRATEGIES

I. Goal: Provide wildlife habitat that produces viable waterfowl and other wildlife populations.

A. Objective: Provide resting and feeding habitat for spring migratory waterfowl. (*Issues addressed are: 4, 7, 9, 10 and 24*).

Strategies:

1. Provide deep water and shallow water feeding marshes during the spring waterfowl migration for swans, geese, and dabbling and diving ducks.

2. Provide a minimum of 10 acres of grain crops during the spring waterfowl migration.

3. Provide a minimum of 50 acres of grazing fields for spring migrating Canada geese.

4. Survey the waterfowl food producing plants available in the marshes. Develop management strategies for waterfowl food plants.

5. Investigate potential to grow additional food crops in the North Agricultural fields.

6. Determine feasibility of flooding some food plots to attract spring migrating waterfowl.

7. Continue closure of marshes to public use during spring migration.

B. Objective: Increase the current average nesting success of upland nesting ducks from 20% to a minimum of 30% in accordance with the Department=s Waterfowl Management Plan 1991-1995. (*Issues addressed are: 10, 22 and 24*).

Strategies:

1. Convert 50 cropland acres of the North Agricultural Fields to nesting cover.

2. Convert 30 cropland acres of the South Agricultural Fields to nesting cover.

3. Monitor and manage nesting cover to produce high quality nesting habitat. Establish vegetation height-density transects to determine nesting habitat quality.

4. Investigate and implement rejuvenation methods to enhance deteriorated nesting cover as determined by height-density transects.

5. Implement passive predator control methods (i.e. removing potential predator denning and nesting sites and increasing the quantity and quality of duck nesting habitat) during 1998-2001 in accordance with the Department=s Statewide Five Year Waterfowl Plan.

6. Conduct upland duck nesting success surveys.

7. Implement active predator control methods if duck nesting success does not meet 30% minimum nesting success level after passive predator control methods have been implemented for three years as prescribed in the Department=s Waterfowl Management Plan 1991-1995.

8. Consider using herbicide, biological agents, mowing, grazing and/or burning to control, decrease and/or eliminate state listed noxious weeds, as well as undesirable weeds to increase the quality and quantity of nesting cover.

9. Post closure of upland nesting areas to public use during duck nesting season (April 1st-July 15th).

C. Objective: Maintain the three year average spring goose pair count for the MLWMA to at least the minimum level in accordance with the Department=s Waterfowl Management Plan 1991-1995. (*Issues addressed are: 1, 4, 7, 9, 19 and 24*).

Strategies:

1. Evaluate the nesting use of existing goose nesting platforms and islands to determine if changes in management are necessary.

2. Conduct aerial spring goose pair counts as funding from the Wildlife Bureau allows.

3. Maintain, repair, and/or replace existing goose nesting platforms with labor provided by Adopt-a-Wetland groups, volunteers, Department reservists, and Department staff.

4. Mow roads, dikes and other areas to provide pasture for geese.

5. Add small forbs to grass mix plantings to provide additional forage for geese.

6. Continue closure of marshes to public use during the goose nesting seasons (March 1- July 15). However, see objective D, strategy 7, for potential change in dates.

D. Objective: Provide pair, nesting and brood rearing habitat for over water nesting waterfowl (i.e. redhead duck, canvasback, ruddy duck, mallards and trumpeter swans). (*Issues addressed are: 6, 7, 17, 19 and 24*).

Strategies:

1. Stabilize water levels in the Main marsh by April 15th to prevent flooding of over water nests.

2. Conduct over water nesting surveys in at least one cell of the Main marsh per year during 1999-2001 to determine species use and nesting success. Conduct over water nest surveys in Sandy marsh and East Springs marsh at least once each during 1999-2001 and 2004-2007.

3. Implement methods to open up marshes with a greater than 60:40 ratio of emergent vegetation to open water as indicated by vegetation monitoring.

4. Survey the food producing plants available in the marsh system. Manage for plants producing waterfowl foods.

5. Monitor annually for nesting trumpeter swans.

6. Use biological agents, herbicides consistent with use in or near wetlands, prescribed fire and/or mechanical methods to control, decrease, and/or eliminate state listed noxious weeds in or near wetlands to increase the quality and quantity of nesting, brood rearing and feeding habitat.

7. Extend the nesting season marsh closure to public activities from July 15th to August 15th to allow broods to fledge without public disturbances in the marshes.

8. Manage water levels in marshes in accordance with agreements (Appendix P) with adjacent landowners. Use sinkwells, pumping stations, and disposal to the Snake River to meet management goals for wildlife, recreational users, and terms of agreements.

E. Objective: Control avian botulism and cholera outbreaks on the MLWMA. Monitor for other die-offs. (*Issue addressed is: 5*).

Strategies:

1. Use prescribed fire in marshes to remove the build up of decaying aquatic vegetation that may cause conditions that could trigger avian botulism outbreaks.

2. Store irrigation water in the marshes if conditions indicate a botulism outbreak could occur. (Fresh water decreases the marsh water temperature and decreases the likelihood of botulism.)

3. Monitor water conditions in the marshes, during July, August and early September as warning indicators of conditions leading to botulism.

4. Monitor marshes during spring migration, especially snow goose migration, for sick, dying and dead birds as signs of avian cholera.

5. Investigate and implement methods (i.e. draining a marsh) to control disease outbreaks. Methods may vary dependent upon existing circumstances.

6. 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.

7. Provide annual report of bird die-offs to the National Wildlife Health Laboratory for inclusion in the national database.

8. Replace or add water control structures as needed to provide for optimal water level control in the marshes.

9. Investigate and implement, if feasible, new methods (wells, storage bank water, others) to acquire more water for the marshes during the summer and fall months.

F. Objective: Provide secure habitat, thermal cover, and natural forage for 300 wintering elk and 20 resident deer on the MLWMA. (*Issues addressed are: 17, 19, 21, and 22*).

Strategies:

1. Use Alet-down≅ fence along north and east boundary of the MLWMA when appropriate to avoid entanglement by migrating big game animals.

2. Remove all non-essential fences, and adjust wire height on necessary fences, by 2001 to make fences easier for deer to cross.

3. Provide 10 acres of food crops in the north agricultural fields.

4. Include grass and forb species which are nutritious foods for big game in 50% of the permanent cover plantings to be seeded in the north agricultural fields.

5. Provide a minimum of 500 acres of cattail/bulrush marshes and shelter belts for big game thermal cover.

6. Plant 10 acres of shelterbelts for thermal cover in the north and south agricultural fields by 2010.

7. Provide hay as bait on the MLWMA during heavy snow winters to encourage big game to stay on the MLWMA and avoid depredation situations on private property.

8. Provide secure thermal cover and wintering grounds by maintaining an over snow vehicle closure on marshes, agricultural fields and sagebrush/grasslands, and secondary roads on the MLWMA.

9. Consider using biological agents, herbicides, mowing, prescribed fire, grazing and/or mechanical methods to control, decrease, and/or eliminate state listed noxious weeds and to improve forage and thermal cover for big game.

10. Continue existing road closures on the MLWMA that provide secure winter and summer areas for big game.

G. Objective: Provide nesting, brood rearing and winter habitat for upland game (sage grouse, pheasant, gray partridge, mourning dove and cottontail rabbits). (*Issues addressed are: 9, 13, 14, and 17*).

Strategies:

1. Provide sagebrush with a tall grass understory as nesting cover for sage grouse.

2. Convert 50 acres of crop fields in the north agricultural fields to permanent nesting cover by 2005.

3. Convert 30 acres of crop fields in the south agricultural fields to permanent nesting cover by 2004.

4. Include palatable forb species in seed mixtures to be planted for nesting cover in agricultural fields.

5. Plant grain crops as winter food for pheasants and partridge.

6. Provide secure winter cover for sage grouse, pheasants, partridge and rabbits by maintaining an over snow vehicle closure on sagebrush/grasslands, agricultural fields, marshes and secondary roads on the MLWMA.

7. Plant 10 acres of shelter belts in the north and south agricultural fields as nesting cover for mourning doves and winter cover for pheasants, partridge and rabbits by 2010.

8. Continue monitoring the local sage grouse population by conducting a lek route on the MLWMA and adjacent public land.

9. Continue monitoring the local pheasant population by conducting crow and/or brood surveys a minimum of every other year through 2004 on the MLWMA.

H. Objective: Provide migratory, breeding and/or winter habitat for species with special designations such as threatened and endangered species, and species of special concern. (*Issues addressed are: 7, 15, 16, 17 and 24*).

Strategies:

1. Maintain existing Peregrine falcon hack tower and report sightings of

Peregrine falcons to the Department=s State Nongame coordinator.

2. Maintain existing cottonwood, willow and poplar trees on MLWMA as perch sites for wintering and migrating bald eagles.

3. Stabilize Main marsh water levels by April 15th to encourage nesting by trumpeter swans.

4. Monitor annually for nesting trumpeter swans.

5. Provide 500 acres of flooded marshes for white pelicans.

6. Develop and implement strategies for future listed threatened and endangered species, and species of special concern, if and when listing occurs.

I. Objective: Provide migratory, breeding and winter habitat for nongame species. (*Issues addressed are: 1, 7, 17, 19, and 24*).

Strategies:

1. Plant 10 acres of shelter belts of conifers and fruit bearing trees and shrubs in the north and south agricultural fields as migratory, nesting and winter cover for songbirds by 2010.

2. Install 50 nest boxes for swallows and house wrens by 2005. Boxes will be constructed, installed, monitored and maintained by volunteers.

3. Install 20 nesting boxes for American kestrel and saw whet owls by 2005. Boxes will be constructed, installed, monitored and maintained by volunteers.

4. Maintain snag trees on the MLWMA portion along the Snake River for cavity nesting species.

5. Encourage Idaho State University=s Department of Biological Sciences to continue conducting surveys of colonial nesting waterbird species every five years.

6. Install 10 bat boxes by 2005. Boxes will be constructed, installed, monitored and maintained by volunteers.

7. Install one artificial nesting canopy for cliff swallows by 2005. Canopy will be constructed, monitored and maintained by volunteers.

8. Maintain a minimum of one section, in two of the four Main marsh cells, in bulrush and cattails for colony nesting water birds.

9. Survey the MLWMA for breeding raptors, songbirds and corvids.

10. Investigate potential and install one osprey nesting platform on the

MLWMA along the Snake River by 2007.

11. Stabilize water levels in the Main marsh by April 15th to prevent flooding of over water nests.

12. Maintain closure of marshes to public activities during spring migration.

13. Extend the closure of marshes to public use from July 15th to August 15th to allow all water birds to fledge.

14. Post closures for public notification.

II. Goal: Provide a diversity of high quality recreational opportunities on the MLWMA consistent with the MLWMA mission statement.

A. Objective: Provide boat and foot access to the Main marsh cells by September 1999 to increase access to the marsh for MLWMA personnel use and public use. (*Issue addressed is: 3*).

Strategies:

1. Install one walkway across the drainage channel to each marsh cell that does not have foot access.

2. Install boat ramps in cells M-3 and M-4 of the Main marsh.

3. Install one vehicle access across the channel to allow boat launching to either M-3 or M-4 of the Main marsh.

B. Objective: Provide flooded marshes for waterfowl hunting. (*Issues addressed are: 3 and 24*).

Strategies:

1. Have a minimum of 3 of the 4 main marsh cells flooded annually for waterfowl hunting or as water supplies allow. (Main marsh cells are filled during the winter and spring but can go practically dry during hot, dry summers).

2. Investigate the feasibility of purchasing water from the storage bank system, by September 2000, for use in the Main marsh, Sandy marsh and East Springs marsh.

3. Determine watershed of the marshes to be able to determine potential runoff and water available for the marshes.

4. Use prescribed fire, herbicides, and/or mechanical methods to open up marshes with greater than 60:40 ratio of emergent cover to open water as indicated by monitoring methods.

C. Objective: Monitor harvest and hunter satisfaction during waterfowl and upland

bird seasons. (*Issues addressed are: 8, 11 and 24*).

Strategies:

1. Operate check stations to survey the number of hunters, harvest, and hunter satisfaction.

2. Conduct public use surveys during waterfowl and upland bird seasons to survey the number of hunters, harvest, and hunter satisfaction. Surveys may be conducted by Department personnel, Department reservists and volunteers.

3. Conduct a survey of pheasant hunters to determine if hunter congestion is a concern. Develop and implement methods to alleviate congestion if congestion is occurring.

D. Objective: Promote hunting and wildlife appreciation through education, information and workshops. (*Issues addressed are: 1, 12, 17, 18, and 19*).

Strategies:

1. Conduct a waterfowl hunting workshop on the MLWMA at least once every three years with the cooperation and support from local Ducks Unlimited chapters, gun clubs, hunting clubs, local businesses, local communities and volunteers.

2. Conduct an International Migratory Bird Day event at least once every three years with the cooperation and support of the local Audubon Club, state and federal agencies, local businesses and communities, and volunteers.

3. Continue pheasant youth hunt if and as approved by the Idaho Fish and Game Commission. Organize event with the cooperation and support of the local Pheasants Forever chapter, local businesses, local communities and volunteers.

4. Construct and install an information kiosk or self guided tour on the MLWMA by 1999 as funding allows. Solicit volunteer help and donated resources.

5. Work with the local retriever dog club to investigate and develop, if feasible, a public use area on the MLWMA for training retriever and pointing hunting dogs.

6. Continue giving tours of the MLWMA to scout, school, church and civic groups, as available labor allows without interfering with higher ranked management priorities.

7. Continue to use Department reservists, volunteers, Adopt-a-Wetland groups, scouts, and community service personnel to accomplish work on

the MLWMA. Work may include but is not necessarily restricted to biological surveys and manual labor.

8. Maintain wildlife viewing opportunities along roadways in the MLWMA.

9. Consider construction of handicap accessible waterfowl hunting and wildlife viewing blind.

10. Monitor use on the MLWMA by non-consumptive wildlife users, develop and implement strategies, if necessary, to maintain non-consumptive use within the mission of the MLWMA.

E. Objective: Continue to provide furbearer trapping opportunity on the MLWMA.

Strategies:

1. Continue required registration by trappers interested in trapping on the MLWMA as a way of monitoring trapping activities and harvest.

2. Use trapping as one method to control muskrat damage on dikes. Investigate and implement other methods if trapping does not control muskrat damage.

F. Objective: Maintain existing fishing opportunity on the MLWMA.

Strategies:

1. Continue to allow fishing along the Snake River bordering the MLWMA.

2. Monitor fishing activities along the Snake River and MLWMA border to determine if activities conflict with other MLWMA priorities. Develop and implement methods to alleviate conflicts, if and when conflicts occur.

3. Maintain existing nonfishery in marshes to deter conflict with waterfowl production goals on the MLWMA (see explanation given under issue 23).

III. Goal: Promote MLWMA activities that can have benefits to local communities. (*Issue addressed is: 1).*

A. Objective: Invite local businesses to participate in planned public activity events on the MLWMA.

B. Objective: Continue to purchase materials and supplies from local businesses when economically possible, and as state-purchasing code allows.

C. Objective: Continue to inform adjacent landowners of management activities on the MLWMA.

D. Objective: Maintain working relationship with the local fire department, Sheriff=s office and emergency medical services.

IV. Goal: Maintain MLWMA facilities for the propagation of wildlife, and enjoyment and

safety of the public and working personnel.

A. Objective: Maintain roads for seasonal use by public vehicles. (*Issues addressed are: 2, 4, 6, 10, 11, 13, 15, 16, 17, 19, 20, and 22*).

Strategies:

1. Maintain the paved and gravel road (old highway) along main marsh as unimproved status for non-winter use.

2. Maintain as primitive status, the North Agriculture road to Jones Well road loop, Twin Wells road, and East Springs road for dry season use.

3. Close roads as needed to maintain the integrity of roads, protect MLWMA equipment from vandalism and theft, protect wildlife and their habitat, prevent wild fires, control hunter congestion, and as deemed necessary by MLWMA management staff.

4. Do not maintain the MLWMA roads during the winter months.

5. Post closures, identified above, for public notification.

B. Objective: Maintain parking areas as day use only areas. (*Issues addressed are: 19 and 20*).

Strategies:

1. Mow designated parking areas.

2. Sign areas where parking is permitted.

3. Prohibit camping.

C. Objective: Minimize littering and vandalism on the MLWMA. (*Issues addressed are: 1,19, 20, and 22*).

Strategies:

1. Encourage volunteers to continue trash cleanup.

2. Do not allow camping on the MLWMA.

3. Do not allow campfires.

4. Conduct periodic night time enforcement patrols on the MLWMA.

5. Cooperate with the Jefferson County Sheriff=s Office on MLWMA patrols.

6. Encourage MLWMA users to report violations of Department regulations.

D. Objective: Maintain and/or construct wildlife and user friendly fences where fences are necessary. (*Issues addressed are: 1, 3, 17, 19, 20, and 22*).

Strategies:

1. Maintain Alet down≅ fence along north and east boundary of the MLWMA for easy passage of migrating big game animals.

2. Remove all non-essential fences by 2001.

3. Develop cooperative fence maintenance agreements with adjacent landowners and agencies.

4. Convert necessary fences to allow passage of big game.

5. Install fence styles and gates at appropriate locations to provide public access to some fenced portions of the MLWMA.

E. Objective: Maintain the MLWMA residences, office, shops, out buildings, and compound in a safe and professional manner for the public and MLWMA staff. (*Issues addressed are: 1 and 20*).

Strategies:

1. District habitat biologist and/or regional habitat manager will conduct an annual inspection of residences, buildings and compound area.

2. MLWMA staff will continue to cooperate with the annual State safety inspection and annual fire extinguisher inspection as required.

3. Establish and mark a public closure around the MLWMA headquarters compound when safety hazards warrant.

4. Continue to post and enforce a no hunting safety zone around the headquarters compound, buildings and residences.

5. Secure all hazardous materials at the MLWMA headquarters. Post safety signs regarding chemical use and storage as per state laws. Maintain appropriate records of potentially hazardous materials stored and used on the MLWMA as required by state or federal law.

F. Objective: Control the spread of noxious and undesirable weeds. (*Issues addressed are: 2 and 22*).

Strategies:

1. Continue to prepare and implement an annual weed control plan.

2. Consider chemical, biological, and mechanical methods, as well as prescribed fire and grazing to control, decrease, eradicate, or prevent infestations of state listed noxious weeds and undesirable weeds on the MLWMA.

3. Train MLWMA staff in the identification of noxious weeds and their

control. Encourage attendance at local and regional weed control association meetings, interagency training opportunities, and herbicide seminars.

4. Evaluate hay produced on the MLWMA to determine if the hay meets weed free certification standards. Monitor MLWMA users to determine and encourage the use of weed free hay on the MLWMA.

5. Monitor weed control efforts by mapping weed infestations using global positioning system (GPS) techniques.

6. Monitor weed control efforts and document results.

7. Maintain herbicide spraying records in accordance with state laws.

8. Prepare an annual summary of noxious weed control efforts on the MLWMA including recommendations for improving noxious weed control.

G. Objective: Prevent the spread of wildfire. (*Issues addressed are: 1, 19, and 20*).

Strategies:

1. Mow roadways and parking areas.

2. Prohibit camping and campfires on the MLWMA.

3. Maintain green stripping and fire breaks around Headquarters.

4. Use prescribed fire for habitat improvement and to decrease the likelihood of wildfires.

APPENDIX A

MANAGEMENT ISSUES

ISSUES IDENTIFIED BY THE PUBLIC AND THE DEPARTMENT THAT WILL BE ADDRESSED BY THIS MLWMA PLAN.

Issue 1: Continued cooperation and coordination with adjacent landowners, the City of Roberts, Jefferson County Sheriff=s Office, Roberts Fire Department and other County, State and Federal agencies, and volunteers is important to the management of the MLWMA.

Issue 2: The continuation of state listed noxious weed control efforts is essential to achieving the habitat goals for the MLWMA and is required by state law.

Issue 3: There is a need to improve marsh access for hunting.
Background: Foot and/or boat access into parts of the main marsh can be difficult to impossible because of deep channels along the dikes, low water levels, and the absence of boat ramps on marsh cells M-3 and M-4. Cattail choked marshes also limit hunting access.

Issue 4: Spring Canada goose pair counts need to be maintained at or above the minimum level established in the Department's Statewide Five Year Waterfowl Plan.
Background: The minimum spring goose pair count for a three year average set for Market Lake by the Statewide Five Year Waterfowl Plan is 85 pairs. The 1994-1996 average was 114 pairs.

Issue 5: Avian botulism and avian cholera have killed waterfowl and other water birds on the MLWMA and pose future threats to resident and migratory waterfowl.
Background: Avian botulism has killed as many as 2,650 ducks in a year at Market Lake. Avian cholera killed 6,728 waterfowl on the MLWMA in 1980.

Issue 6: Trumpeter swans, a species of special concern, have not nested on the MLWMA since 1982 and could be reintroduced to the MLWMA.
Background: Currently, the Tri-State population of trumpeter swans have a very limited range. Efforts are being made to reintroduce the swans to their historical range. Market Lake is within the historical range.

Issue 7: Public boating, wading and hiking in the marshes may negatively impact waterfowl, shorebirds and other wildlife species during certain times of the year.
Background: Activities in the marshes during the spring migration, nesting and pre-fledgling periods can have a negative impact on wildlife propagation. Migrating birds burn up a great deal of stored energy during migration to the nesting grounds. Females are also trying to build up energy reserves for egg production and nesting. Disturbing migrating birds can cause more energy reserves to be used up and could delay nesting. Disturbing nesting birds can cause nest abandonment. Disturbing pre-fledged water birds and waterfowl may cause young to be lost from the broods and/or use essential energy reserves to escape the disturbing factor. Young lost from broods have a lower chance of survival.

Issue 8: Waterfowl hunting on the MLWMA often results in fewer ducks and geese returning to the area and a potential reduction in waterfowl to hunt.
Background: Some hunters believe that waterfowl leave the MLWMA due to the commotion of hunting activities and do not return to the MLWMA. Is this a widely held concern of waterfowl hunters using the MLWMA? If so, what can be done to attract waterfowl back to the MLWMA or keep them using the MLWMA?

Issue 9: A variety of food crops are needed on the MLWMA to lure depredating waterfowl to the MLWMA, provide food for upland birds and big game, and to feed spring migrating waterfowl.

Issue 10: Duck nesting success in the uplands is below the minimum acceptable level set by the Department's Statewide Five Year Waterfowl Plan.
Background: The duck nesting success in upland cover averaged 20% during 1993-1995. The minimum level set by the five-year plan is 30 %.

Issue 11: Hunter congestion may be a problem on the MLWMA and needs to be investigated.
Background: Some hunters feel that hunting on the MLWMA, especially for game farm released pheasants is too crowded. The extent of this opinion is unknown. Methods to limit or decrease hunter congestion may need to be developed. Some pheasant hunters want the game farm pheasants released in a larger area on the MLWMA in order to spread out hunters and increase pheasant hunting opportunity.

Issue 12: There is a need for a designated area for year around hunting dog training.
Background: Many hunters would benefit from the use of properly trained retrievers and pointers. Bird hunting with retrievers often results in fewer lost downed birds.

Issue 13: The public desires larger upland bird populations on the MLWMA.

Issue 14: Sage grouse use the MLWMA, but little is known about the local population.

Issue 15: Activities and management at MLWMA must reflect the needs of wintering and spring migrating bald eagles (listed as an endangered species).

Issue 16: The cause(s) for the non-use of the Peregrine falcon hack tower since 1992 is unknown. Activities and management at MLWMA must reflect the needs of Peregrine falcons.
Background: The Peregrine falcon is an endangered species. The hack tower is where young falcons were released to the wild during 1989-1992. Falcons have been seen near and on the tower during spring migration since 1992. However, no falcons have stayed to nest on the tower.

Issue 17: The MLWMA should be managed for a broad diversity of wildlife species (game and nongame species).
Background: The MLWMA is used by at least 250 species of wildlife. Approximately 15,000 user days occur on the MLWMA annually for hunting, viewing and/or learning about the wildlife on the MLWMA.

Issue 18: Programs held at the MLWMA such as the pheasant hunts for youths, waterfowl day workshop, and International Migratory Bird Day are educational and sought by the public.

Issue 19: All MLWMA users need to be informed of the effects that permitted and prohibited recreation has on wildlife production on the area.
Background: The public desires more news releases on recreational activities available on the MLWMA. Informational signs are desired on the MLWMA.

Issue 20: Activities and facilities on MLWMA should ensure to the extent possible, safety for the public and Department personnel.

Issue 21: The Department has received several comments related to livestock grazing on the MLWMA. These suggestions are: 1) The Department should use livestock grazing to control noxious weeds, 2) The Department should limit livestock grazing on the MLWMA, and 3) The Department should not graze livestock during the nesting season or in the fall to leave winter cover for pheasants.
Background: Currently, livestock grazing is not used as a management tool on the MLWMA. Herbicides, prescribed fire, and biological agents are more effective methods to control noxious weeds on the MLWMA. The sagebrush/grassland area on the MLWMA is not grazed so as to provide a tall grass understory in sagebrush that studies indicate is good nesting cover for sage grouse. Grazing has been used as a management tool on the MLWMA in the past. However, cattle died in the Triangle Marsh during the 1980s due to an unidentified toxin. Grazing will be one of many vegetation manipulation tools considered when monitoring indicates vegetation structure should be altered. The management tool most likely to produce the desired condition and is cost effective will be implemented.

Issue 22: There should be a vehicle access to the MLWMA from the north boundary.
Background: There is vehicle access off Highway 33, across the BLM property to the northeast boundary of the MLWMA. However, this road is not open all the time. This access is closed at the MLWMA boundary during the winter to prevent disturbance to elk wintering on the MLWMA and on adjacent BLM land. The road is also closed at the MLWMA boundary during parts of the spring to decrease the likelihood of vandalism to MLWMA heavy equipment used in the north agricultural fields and for pumping floodwaters. This road is also closed at the MLWMA boundary when it is very wet to prevent vehicles from damaging the portion of the road on the MLWMA and to reduce road maintenance cost. The road is usually open during the summer and fall.

Issue 23: Consider developing a fishery on the MLWMA.
Background: In 1994, the Department determined a fishery is not feasible on the MLWMA because it may interfere with waterfowl management due to the low water levels in the marshes. The low water levels occur because the springs produce only 25 percent of the water flow that they produced 15 years ago. This is apparently due to the decline of the water level in the aquifer. Also, the local populace says the spring flow on the MLWMA is influenced by irrigation practices on Egin Bench.

Some marshes are dried up every few years to manage vegetation for waterfowl production goals. Fish in these marshes die. For example, yellow perch were stocked in the main channel (the channel along the old highway) in 1991. These fish died a few months after release when the channel dried up.

Ice fishing activities could disturb elk wintering in the marshes. Elk sometimes use the cattails as thermal cover on the MLWMA. For example, 200 elk spent a considerable portion of the 1992-1993 winter in the cattails of the main marsh. Human activities were curtailed on the MLWMA to prevent disturbing the elk, which may have caused them to move on to private property.

Issue 24: Water needs to be managed on the MLWMA to meet needs of wildlife, hunting, and in accordance with agreements (Appendix P) with other entities.
Background: Various water levels in the marshes create a variety of habitat condition needs by the wildlife species using the MLWMA. Water levels can also effect waterfowl hunting opportunity. Water levels in some marshes can effect water levels in the interstate drain which is covered by a deed restriction (see Appendix P). Water in the Triangle marsh is constrained to a degree by an agreement (see Appendix P) with adjacent landowners. The agreements complicate water management.

CONCERNS IDENTIFIED BY THE PUBLIC THAT WILL NOT BE ADDRESSED BY THE MLWMA PLAN

Issue: Need to work with farmers in the Howe, Mud Lake, Terreton and Monteview area so their land is open to the general public hunting and not tied up in hunting clubs.
Explanation: This issue is outside the scope of the management of the MLWMA.

Issue: Need to improve the fishery on the Henrys Fork between the Ora bridge to St. Anthony.
Explanation: This issue is outside the scope of the management of the MLWMA. However, this concern has been given to the regional fisheries manager.

Issue: It was difficult to find a vendor that had the MLWMA pheasant hunting cards.
Explanation: This issue is outside the scope of the management of the MLWMA. However, regional staff will attempt to remedy this problem. The pheasant hunting card is available at the MLWMA office on the area.

Issue: Some argue that habitat enhancements will not increase upland bird populations and that these funds should be used to stock pheasants.
Explanation: This issue is outside of the mission of the MLWMA. The pheasant stocking program is a separate and independent program.

Issue: Restrict pheasant hunting on the MLWMA to increase the resident pheasant population.

Explanation: Current pheasant hunting regulations allow for the harvest on only male pheasants. Each male pheasant is capable of breeding with seven or more female pheasants. Spring surveys have consistently shown that there are adequate numbers of male pheasants on the MLWMA to breed with the female population. Pheasant populations have very high annual mortality and replacement. Therefore, restricting rooster hunting will not increase the overall resident pheasant population.

Issue: Some have requested that the Department pay farmers to improve pheasant habitat on private property.
Explanation: This issue is outside of the mission of the MLWMA. The Habitat Improvement Program (HIP) provides cost-sharing to landowners to improve pheasant habitat. The HIP program was started in 1987.

Issue: Some have suggested that the Department should windrow standing grain to attract waterfowl.
Explanation: Grain cannot be windrowed in the fall and left for waterfowl consumption in or near a waterfowl hunting area because this practice is considered baiting by the US Fish and Wildlife Service. Baiting is illegal under the Migratory Bird Treaty Act. Currently standing grain is left to provide a winter food for upland birds, then mowed in the spring for migrating waterfowl. Mowed grain is completely consumed by ducks and geese in a few days.

Issue: Many request that more game farm pheasants be released for hunting.
Explanation: This issue is outside of the mission of the MLWMA. The pheasant stocking program is a separate and independent program. The number of roosters released is dependent upon the number of pheasant hunter-days estimated by the 1994 survey for each wildlife management area where pheasants are released. The MLWMA had the lowest estimate of hunter-days in the state.

Issue: The purpose of the Triangle Marsh is not understood by some MLWMA users.
Explanation: The shallow water area of the Triangle Marsh creates very good feeding areas for migrating ducks in the spring. The dry area in the south half of the Triangle Marsh is used by nesting ducks. Canada geese nest on the nesting platforms and in the bulrushes. Sandhill cranes also nest in the Triangle Marsh. The shallow water and mud flats are used by feeding water birds and shorebirds. The bulrush/cattail area is used by wintering elk and pheasants. The Triangle Marsh has been closed to waterfowl hunting to provide a no hunting refuge to help keep more waterfowl using the MLWMA.

Issue: Some have suggested the Department consider releasing schzwen pheasants to increase the MLWMA pheasant population.
Explanation: This issue is outside of the mission of the MLWMA. The Department is currently conducting research in Gooding and Bingham counties on stocking wild pheasants, improving habitat and controlling predators.

Issue: Some have suggested the Department release wild pheasants to re-establish the population on the MLWMA.

Explanation: This issue is outside of the mission of the MLWMA.

Issue: Some have suggested that the pheasant population on the MLWMA is low due to predators.
Explanation: The Department is conducting research in Gooding and Bingham counties on predator control to increase pheasant populations. Direct predator control to increase pheasant populations on the MLWMA is not a consideration until the research is completed. The MLWMA management staff are attempting to limit habitat for some nest predators on the area.

APPENDIX B
MARKET LAKE WMA MAP

APPENDIX C

HABITAT TYPES

Habitat Type		Acres
Perennial grassland		325
Tall sagebrush		1,381
Salt desert shrub		25
Wet meadow		815
Dry meadow		298
Riparian, cottonwood		3
Willow class		22
Other riparian class		3
Marsh		1,710
Islands		10
Barren		22
Streams		2
Irrigated croplands		260
Crops	(1) Cereal grain	166
	(2) Alfalfa	62
	(3) Grassland	32

* 220 acres of original farmland (irrigated hay and small grain)
* 1,380 acres of tall sagebrush *Artemesia tridentata* dominates the highlands.
* 1,600 acres of emergent vegetation consisting of bulrush *Scirpus* spp., cattail *Typha latifolia* and sedges *Carex* spp. comprise most of the vegetation in the marshes.
* 28 acres of riparian river vegetation consisting of cottonwood *Populus* spp., willow *Salix* spp., and rose *Rosa* spp.

APPENDIX D

SOIL TYPES

Table D-1. Soil types found at MLWMA with the approximate acres of each.

Soil Type	Acres
Annis silty clay loam, strongly saline-alkali	53
Fluvaquents, nearly level	2,518
Hovey stony loam	37
Levelton clay loam, moderately saline-alkali	617
Minnewaukin	224
Modkin-Bondranch complex	1,291
Modkin-Rock outcrop complex	125
Wolverine sand, 0 to 30% slopes	206

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.

Annis silty clay loam, strongly saline-alkali

These soils are very deep, moderately well drained, and strongly saline-alkali affected soils on river flood plains. The slope consists of 0 to 1%, permeability is moderately slow, available water capacity is very high, and the surface runoff is very slow. Good soil for irrigated hay pasture.

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.

Hovey stony loam

These soils are very deep, somewhat poorly drained old lakebeds. This soil formed in lacustrine and alluvial material derived from mixed sources. The slope is 0 to 1%, permeability is moderately slow, and available water capacity is high. This soil is best used for native pasture, wildlife habitat and recreation. The dominant plants are alkali sacaton, saltgrass, and Russian olive.

Levelton clay loam, moderately saline-alkali

This soil is very deep, very poorly drained soil of old lakebeds and river terraces. It formed in alluvium and lacustrine sediment. The slope is 0 to 1%, permeability is slow, available water capacity is high, surface runoff is ponded, and the hazard of erosion is slight. This soil has the potential for providing habitat for wildlife. The dominant plants are alkali sacaton and inland saltgrass.

Minnewaukin

These very deep, poorly drained soils are on river terraces. They formed in alluvium derived from mixed sources. The slopes are 0 to 1%, permeability is rapid, available water capacity is low, and the hazard of erosion is low. These soils are best suited for pasture and wildlife habitat. The dominant plants consist of sedges, wheatgrass, foxtail barley, and alkali sacaton.

Modkin-Bondranch complex

This complex is on basalt plains and slopes range from 4 to 20%. Modkin sandy loam makes up approximately 45% of the complex, Bondranch very stony sandy loam makes up 20%, rock outcrops make up approximately 20%, and Mathon sandy loam makes up the rest of the complex. Dominant plants include bluebunch wheatgrass, big sagebrush, and sedges.

Wolverine sand, 0 to 30% slopes

This very deep, excessively drained soil is on terraces. It formed in wind-laid and alluvial sand derived from mixed sources. Permeability is very rapid, surface runoff is slow, and the hazard of erosion is slight. However, the hazard of soil blowing is very high. This soil is used for range, for wildlife habitat, and recreation. The dominant plants include needle and thread grass, big sagebrush, Indian ricegrass, and sand dropseed.

APPENDIX E

WILDLIFE SPECIES INVENTORY

Table E-1. Relative abundance of species found on the MLWMA during the spring, summer, fall, and winter seasons.

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. N-Not present.

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

SPECIES	RELATIVE ABUNDANCE			
	Spring	Summer	Fall	Winter
Otter	R	R	R	R
Weasel	U	U	U	U
Badger	U	U	U	U
Porcupine	U	U	U	U
Striped Skunk	U	U	U	U
Spotted Skunk	R	R	R	R
Red fox	C	C	C	C
Coyote	C	C	C	C
Bobcat	R	R	R	R
REPTILES & AMPHIBIANS				
Frogs	U	U	U	U
Toads	R	R	R	R
Horned toad	U	U	U	U
SNAKES				
Bull snake	U	U	U	N
Water snake	C	C	C	N
Rattle snake	R	R	R	N
BIRDS				
Horned grebe	U	R	R	N
Eared grebe	A	A	A	N
Clark's grebe	N	C	C	U
Western grebe	A	A	A	N
Pied-billed grebe	A	A	A	N
White pelican	U	A	C	N
Double-crested cormorant	N	A	A	N
Green heron	R	R	N	N
Great blue heron	A	A	A	N
Great egret	U	U	U	N
Cattle egret	U	U	U	N
Snowy egret	A	A	A	N
Black-crowned night heron	A	A	A	N
American bittern	O	O	O	N
White-faced ibis	A	A	A	N
Tundra swan	C	N	C	N
Trumpeter swan	C	O	C	N
Canada goose	A	A	A	R

SPECIES	RELATIVE ABUNDANCE			
	Spring	Summer	Fall	Winter
White-fronted goose	R	N	R	N
Snow goose	A	R	U	N
Blue goose	R	N	N	N
Mallard	A	A	A	O
Gadwall	A	C	A	R
Pintail	A	O	C	R
Green-winged teal	A	C	A	R
Cinnamon teal	A	O	C	R
Blue-winged teal	U	U	A	N
American widgeon	A	A	A	N
Shoveler	A	A	A	N
Wood duck	R	R	R	N
Redhead	C	C	C	N
Ring-necked duck	R	C	C	N
Canvasback	O	C	C	N
Lesser scaup	C	C	C	N
Greater scaup	R	R	R	N
Common goldeneye	U	O	U	U
Barrow's goldeneye	U	N	U	R
Bufflehead	C	U	U	R
White-winged scoter	R	N	N	N
Ruddy duck	A	A	A	R
Hooded merganser	R	N	R	N
Common merganser	U	R	U	N
Red-breasted merganser	U	R	U	N
Turkey vulture	O	O	O	N
Goshawk	R	R	R	R
Cooper's hawk	O	R	O	N
Sharp-shinned hawk	O	R	O	N
Red-tailed hawk	C	C	U	U
Swainson's hawk	C	C	C	N
Rough-legged hawk	U	R	C	R
Ferruginous hawk	O	O	R	N
Golden eagle	U	U	U	U
Bald eagle	U	R	U	C
Northern harrier	A	A	A	A
Osprey	U	U	U	N
Prairie falcon	U	U	U	N
Peregrine falcon	U	R	R	N
American kestrel	C	C	C	N
Sage grouse	U	U	U	O
Hungarian partridge	U	U	U	U

SPECIES	RELATIVE ABUNDANCE			
	Spring	Summer	Fall	Winter
Ring-necked pheasant	U	U	U	U
Greater sandhill crane	C	U	C	U
Virginia rail	U	U	U	N
Sora rail	U	U	U	N
American coot	A	A	A	R
Semi-palmated plover	R	N	N	N
Killdeer	C	C	C	N
Black-bellied plover	R	N	R	N
Common snipe	U	U	U	R
Long-billed curlew	C	C	U	N
Spotted sandpiper	U	U	R	N
Willet	C	U	R	N
Greater yellowlegs	O	R	O	N
Lesser yellowlegs	O	N	O	N
Least sandpiper	U	R	C	N
Western sandpiper	U	R	C	N
Semi-palmated sandpiper	R	R	R	N
Dunlin	R	N	N	N
Long-billed dowitcher	U	R	U	N
Marbled godwit	R	R	N	N
Sanderling	R	R	N	N
American avocet	A	A	C	N
Black-necked stilt	C	U	O	N
Wilson’s phalarope	O	C	U	N
Red-necked phalarope	O	O	O	N
Herring gull	R	R	R	N
California gull	A	A	U	N
Ring-billed gull	A	A	U	N
Franklin’s gull	A	A	U	N
Caspian tern	R	N	N	N
Common tern	O	R	O	N
Forster’s tern	U	O	U	N
Black tern	C	C	U	N
Rock dove	O	C	C	R
Mourning dove	C	C	O	N
Snowy owl	N	N	R	R
Great horned owl	C	C	C	C
Long-eared owl	O	O	N	N
Short-eared owl	O	O	R	N
Burrowing owl	R	R	O	N
Barn owl	R	N	R	R
Common nighthawk	U	C	N	N

SPECIES	RELATIVE ABUNDANCE			
	Spring	Summer	Fall	Winter
Poor-will	R	R	R	N
Broad-tailed hummingbird	N	N	R	N
Belted kingfisher	U	O	U	N
Northern flicker	A	A	A	R
Lewis woodpecker	R	N	N	N
Yellow-bellied sapsucker	N	N	R	N
Downy woodpecker	R	R	R	R
Eastern kingbird	R	R	N	N
Western kingbird	R	U	N	N
Willow flycatcher	O	U	O	N
Western flycatcher	R	U	N	N
Western wood pewee	U	U	N	N
Horned lark	C	C	C	C
Violet-green swallow	C	C	U	N
Tree swallow	C	C	U	N
Bank swallow	C	C	U	N
Rough-winged swallow	U	U	U	N
Barn swallow	O	O	U	N
Cliff swallow	C	C	U	N
Blue jay	N	R	N	N
Black-billed magpie	A	A	A	A
Common raven	U	U	U	R
Common crow	C	C	C	N
Black-capped chickadee	C	C	C	C
Common bushtit	R	R	R	R
Red-breasted nuthatch	O	R	N	N
White-breasted nuthatch	R	R	N	N
House wren	U	U	O	N
Long-billed marsh wren	C	C	C	N
Catbird	R	O	N	N
Mocking bird	R	R	N	N
Sage thrasher	C	C	O	N
Robin	A	A	A	N
Hermit thrush	R	N	N	N
Mountain bluebird	U	U	O	N
Townsend’s solitaire	U	U	N	N
Blue-gray gnatcatcher	O	R	N	N
Ruby-crowned kinglet	R	R	N	N
Water pipit	R	R	N	N
Bohemian waxwing	C	N	O	C
Cedar waxwing	U	O	C	C
Northern shrike	O	N	O	R

SPECIES	RELATIVE ABUNDANCE			
	Spring	Summer	Fall	Winter
Loggerhead shrike	C	C	U	R
Starling	A	A	A	C
Warbling vireo	U	U	U	R
Yellow warbler	R	U	N	N
Audubon's warbler	R	R	N	N
Wilson's warbler	R	R	N	N
House sparrow	A	A	A	C
Bobolink	N	R	N	N
Western meadowlark	A	A	A	R
Yellow-headed blackbird	A	A	C	N
Red-winged blackbird	A	A	C	N
Brewer's blackbird	C	C	C	N
Northern oriole	C	C	U	N
Brown-headed cowbird	C	C	U	N
Western tanager	C	C	U	N
Black-headed grosbeak	R	R	N	N
Evening grosbeak	C	O	C	R
Lazuli bunting	U	O	O	N
American goldfinch	C	C	C	N
Savannah sparrow	C	C	C	N
Baird's sparrow	N	U	N	N
Vesper sparrow	C	C	U	N
Sage sparrow	U	U	O	N
Slate-colored junco	N	R	N	N
Oregon junco	N	R	N	N
Tree sparrow	N	N	N	R
Chipping sparrow	R	R	R	R
Clay-colored sparrow	R	N	N	R
Brewer's sparrow	N	R	N	N
Harris' sparrow	N	N	N	R
White-crowned sparrow	U	C	C	R
Song sparrow	N	U	U	U
Snow bunting	N	N	N	O
Lark bunting	N	R	N	N
FISH				
Yellow perch	C	C	C	C
Bullhead catfish	U	U	U	U
Utah chubs	C	C	C	C
ACCIDENTALS				

SPECIES	RELATIVE ABUNDANCE			
	Spring	Summer	Fall	Winter
Sharp-tailed grouse*				
Brown pelican				
Harlequin duck				
Surf scoter				
Western gull				
Purple martin				
American dipper				
Tri-colored heron				

* One Sharp-tailed grouse was observed on the MLWMA in December 1998. Sharp-tailed grouse are currently expanding their range near the MLWMA. It would not be surprising if more grouse are observed near and on the MLWMA in the future.

APPENDIX F

WILDLIFE

WATERFOWL

Table F-1. The three year average of monitored criteria (indicated breeding pairs, total geese, active nests on structures) for Canada goose flocks at the MLWMA during 1986-1996.

Minimum Objective	3-Year Average										
	86-88	87-89	88-90	89-91	90-92	91-93	92-94	93-95	94-96	97-99	2000
85[a]	93	98	82	93	90	[b]	86	114[c]	114[c]	57[d]	95

[a] Indicated breeding pairs.
[b] Incomplete data.
[c] Two year average; data are missing for 1 of 3 years.
[d] Aerial surveys were conducted too late in the spring of 1998 and 1999 to be an accurate estimate of pairs.

The number of breeding pairs of Canada geese is far above the minimum objective set by the Department=s Waterfowl Management Plan 1991-1995. Management will not try to increase goose nesting on the MLWMA unless the indicated number of breeding pairs of geese falls below the minimum objective.

Table F-2. Upland duck nesting numbers[a] and Mayfield success for 1993-1995[b].

Year	Number of nests	Mayfield success (%)
1993	22	20.0
1994	98	18.8
1995	48	20.7
2000	33[c]	21.5

[a] This is the number of nests found in the surveyed areas and is not an indication of the total number of ducks nesting on the MLWMA.
[b] Refer to the Waterfowl Production and Summer Banding Progress Reports for 1993, 1994, and 1995 for more detailed information (in files, Idaho Falls office).
[c] Does not include 17 nests that were not relocated.

Duck nesting success falls below the 30% Mayfield success set as a minimum level on major waterfowl WMA=s by the Department=s Waterfowl Management Plan 1991-1995. Passive predator control methods, including elimination of potential denning site, wintering sites, and improvement of nesting habitat are currently being implemented. Duck nesting success studies will be conducted in the future after passive predator control methods have been fully

implemented. If duck nesting success is below the 30% minimum level and predators are a major cause of nest failure, then active predator control (physically removing and/or destroying predators on the MLWMA) is to be implemented, as per the Department=s Waterfowl Management Plan 1991-1995.

Volunteers conducted surveys for sandhill cranes on the MLWMA in May, 1996. Two sandhill crane pairs nested on the MLWMA, each pair produced one young. It is not known if the young fledged. Ten single cranes stopped on the MLWMA during spring migration. Surveys for migrating and nesting sandhill cranes are conducted as available labor and money allows. In 1992, three nesting pairs were found. It is unknown if the nests were successful.

NONGAME

Members of the Snake River Audubon club surveyed the bluebird nest boxes available for nesting in 1995-1998 on the MLWMA. During 1995, 12 of 20 available boxes were used by tree swallows, with at least seven tree swallow nests producing fledglings. One box had swallow eggs hatching during the last check, and two boxes had swallow nests but no eggs. Two boxes had an active swallow nest on the first visit, but was empty on the last visit and fate of the nest was not determined. Seven boxes were used by house wrens in 1995, with eggs being incubated in six boxes during the last visit. One box was not used.

During 1996, 16 of 20 available boxes were used by tree swallows. Thirteen tree swallow nests apparently produced successful fledglings, one nest had young in the nest during the last visit, and two boxes contained nests but no eggs. Three boxes had active house wren nests during the last check. One box was not used.

During 1997, 16 of 19 available boxes were used by tree swallows. One box was used by house wrens. The one available kestrel box was not used.

In 1998, 9 of 19 available boxes were used by tree swallows and one box was used by house wrens. The one available kestrel box was used by kestrels.

In 1999, 17 of 22 available boxes were used by tree swallows and two boxes were used by house wrens. One kestrel box was used by kestrels

In 2000, 6 of 8 boxes checked were used by tree swallows.

There is available habitat on the MLWMA for more nesting boxes, including boxes for kestrels and saw-whet owls. The Department will continue to encourage volunteers to construct, install and maintain nest boxes on the MLWMA. Also, the Department will continue to ask the Snake River Audubon Club or other volunteers to conduct the bird box nesting surveys.

A large nesting colony of white-faced ibis and Franklin's gulls exist in the Main Marsh. Several other waterbird species nest in the marshes, as given below.

Table F-3. Estimation of nests and numbers of the colonial nesting waterbirds at MLWMA in 1993[a].

Species	Nests	Number of birds
White-faced ibis	500-1,000	3,200+
Franklin's gull	800-1,200	?
Black tern	8-12	12-13
Ring-billed gull	20-25	40
Cattle egret	1-2	?
Great egret	2-3	?
Snowy egret	10-20	26
Black-crowned night heron	10-15	11

[a] Information from AStatus and Distribution of Colonial Nesting Waterbirds in Southern Idaho, 1993". By Dr. C.H. Trost and Arnold Gerstell. 1994. Department of Biological Sciences, Idaho State University.

The colonial nesting birds are a major public attraction on the MLWMA. During the past, the Department has not directly managed for colonial waterbirds. The ibis and gull colony, and the number of nesting night herons and snowy egrets appear to have increased without any active management. MLWMA management will not try to directly increase or decrease the nesting colonies unless management for higher priority species is necessary, or a waterbird species is listed as a threatened or endangered species, or species of special concern.

SPECIES WITH SPECIAL DESIGNATIONS

Usually, 3-5 bald eagles winter on or near the MLWMA. A high of 10 bald eagles have been counted on the MLWMA during spring waterfowl migration. Winter and spring counts will be conducted as labor and money is available.

Peregrine falcon chicks were raised and released on the nesting tower during 1989-1991. It was hoped that a pair of falcons would eventually nest on the tower. During 1992-1998, falcons have been seen on and near the tower during spring migration. However, nesting has not occurred. MLWMA staff and the Regional Nongame biologist will continue to monitor for peregrine falcons.

Trumpeter swans have not nested on the MLWMA since 1982. Currently, the Tri-state population of trumpeter swans have limited range. Efforts are being made to reintroduce the swans to their historical range. Water levels in some marshes will be stabilized in early spring to encourage nesting by swans.

UPLAND GAME

Approximately 225 game farm rooster pheasants have been released on the MLWMA per year during the pheasant hunting season. The pheasants are released for hunting only, and are not considered a method to increase the year around pheasant population.

Pheasant and gray partridge numbers have declined greatly on and around the MLWMA since the 1980s. Also, the populations declined further during the winter of 1992-1993. There is nesting and winter cover on the MLWMA. However, good winter food is not abundant on the MLWMA. Crops to produce better winter food for upland birds are being investigated and will be implemented in the future.

Sage grouse leks occur on the adjacent Bureau of Land Management property. Spring lek counts indicate the population has declined. Sage grouse nest on or near the MLWMA. The sagebrush/grass upland habitat is not grazed to provide nesting cover for sage grouse on the MLWMA. Sage grouse broods also use the sagebrush/grass habitat and the north agricultural fields. Sage grouse also winter on the WMA.

Mourning doves nest on the MLWMA. However, surveys are not conducted for doves. Most doves migrate before the September lst hunting season opener.

One sharp-tailed grouse was observed on the MLWMA in December 1998. A flock of sharp-tailed grouse were observed on the adjacent BLM property also in December.

Cottontail rabbits occur on the MLWMA but hunting pressure is usually low. No surveys are conducted for rabbits or rabbit hunters. However, MLWMA staff observation indicates the population did decline after the heavy snow of 1992-1993. By December 1997, cottontail populations appear to have rebounded from the decline.

BIG GAME

Typically, one cow moose with a calf use the Main marsh and shelter belts in the North Agricultural Fields during the summer and early fall. During the 1990s, as many as seven moose have been counted on the MLWMA at any one time, usually during the late summer and fall. The moose move between the MLWMA and the Snake River corridor.

Elk first wintered on or near the MLWMA in 1969. Up to 1,200 elk have wintered on the MLWMA and adjacent BLM lands during the 1980s (Table F-4). However, the number of elk wintering on the MLWMA has declined due to changes in their migration patterns. Also, cattle grazing in the late fall and winter on adjacent BLM lands leaves little forage for wintering elk. Most elk now winter north of highway 33. Recently, 100-210 elk have migrated through the MLWMA and wintered west of Interstate 15. Three hundred and fifty elk wintered on the MLWMA during the high snow year of 1992-1993. Elk are baited with hay during high snow years (i.e. 1992-1993) to encourage them to stay on the MLWMA and not move to private property where they may cause depredations.

Table F-4. Peak number of elk wintering on MLWMA and adjacent Bureau of Land Management property during 1981-1998.

Winter	Elk	Antelope
1981-1982	575	150
1982-1983	1,200	400
1983-1984	400	350
1984-1985	250	175
1985-1986	600	100
1986-1987	300	0
1987-1988	125	0
1988-1989	700	30
1989-1990	500	0
1990-1991	500	0
1991-1992	500	0
1992-1993	350	4
1993-1994	200	0
1994-1995	300	0
1995-1996	250	0
1996-1997	0[a]	0
1997-1998	0[b]	0
1998-1999	0	0
1999-2000	100	0

[a] 210 elk migrated through the MLWMA and wintered west of Interstate 15.
[b] 100 elk migrated through the MLWMA and wintered west of Interstate 15.

Antelope were first reported wintering on the MLWMA in 1968. Up to 400 antelope wintered on and near the MLWMA in severe winters up to the mid-1980s (Table F-4). Four antelope were seen near the MLWMA during the winter of 1992-1993. No antelope have been seen on the MLWMA or adjacent BLM property during 1993-1998. The antelope herd was greatly reduced in the 1980s due to loss of winter range, severe winters, and being killed by trains during the winter. Currently, antelope usually winter north of highway 33.

Approximately 20 white-tailed deer occur on and near the MLWMA.

BOTULISM

Avian botulism type C has occurred in the marshes since 1980 (Table F-5). Type C botulism is caused by a toxin produced by a bacterium *Clostridium botulinum*. Although not all environmental factors involved in leading up to an outbreak is understood, oxidation-reduction potential, increasing water temperature, increasing invertebrate biomass, and decreasing turbidity may be important factors (Rocke et al. 1999). Recent research indicates shallow water is not

required and dissolved oxygen levels are not predictive of botulism outbreaks (Rocke et al. 1999).

Botulism outbreaks have occurred in East Springs marsh and the Main marsh, but not in the Triangle marsh, Sandy marsh, Corral Pond and Railroad Pond.

Botulism first occurred on the MLWMA in the Main marsh in 1980. Apparently, botulism spread from the Main marsh to East Springs marsh. Botulism has been a persistent problem in the Main marsh during the 1980s and 1990s. Botulism has not occurred in East Springs marsh since 1990.

To combat botulism in the Main marsh, the marsh was divided into four cells named Marsh 1, Marsh 2, Marsh 3 and Marsh 4 (see MLWMA map) by construction of dikes and installation of water control structures. Construction started in 1989 and was completed in 1992. The dike system allows better control of vegetation and water in each cell than prior to dike construction.

For example, water was run into all four cells during 1996 prior to and during the botulism outbreak in Marshes 3 and 4. The fresh water kept water temperatures in Marshes 1 and 2 below the 70 F degree level at which botulism first will likely occur. However, water temperatures in Marshes 3 and 4 exceeded the 70 degree level. Even though botulism occurred in 1996, it was confined to Marshes 3 and 4.

In 1998, Marsh 3 was drained when botulism was detected. The die off was stopped in Marsh 3 and botulism was not detected in the other cells of the Main marsh. Prior to dike construction, draining the Main marsh to stop botulism was not an option.

Also, individual cells can be dried up to burn the accumulation of dead vegetation without affecting the entire Main marsh. Vegetation and water levels can be manipulated in individual cells to provide a variety of habitat for wildlife.

APPENDIX G

CONSUMPTIVE USE INVENTORY

Table G-1. Estimated number of hunter-days and animals harvested by type of hunting during 1996. (Estimations based upon user surveys conducted during 1996).

Type of Hunter	Number of Hunter Days[a]	Animals Harvested
Waterfowl	891	Unknown
Deer	40	5
Pheasant	720	Unknown
Pheasant Youth Day	37	25 game farm pheasants
Other upland game[b]	115	Unknown
Total	1,803	

[a] Number of hunters times number of days hunted.
[b] Mourning doves, gray partridge, rabbits, and sage grouse.

A survey of waterfowl hunters concerning crowded hunting conditions was conducted in 1996. One hundred and thirty hunters were given survey forms. Twenty-eight surveys (21%) were returned. Fifteen surveys (54%) answered "not at all" when asked if waterfowl hunting was crowded on the MLWMA. Eleven returns (39%) indicated there were some crowded conditions sometimes, but did not want any type of limits placed on hunters using the marshes. Two returns (7%) indicated crowded conditions existed and that limits should be placed on the number of hunters using the marshes. Based upon the above results, the Department does not believe that crowding needs to be addressed further on the MLWMA at this time.

Number of waterfowl hunters using the MLWMA have declined during the past 20 years (Table G-2). The decline reflects the nationwide decrease in waterfowl hunter numbers. The decline in the early and mid 1990s was also affected by the dike construction work in the Main Marsh.

Table G-2. Number of waterfowl hunters and harvest reported at check stations[a] on opening day of waterfowl season at the MLWMA during 1978-1998.

Year	Number of Hunters	Hours Hunting	Ducks Harvested	Average Number of Ducks/Hunter	Average Hours/Duck
1978	501	1,706	1,439	2.87	1.19
1979	387	1,495	1,407	3.63	1.06
1980	441	1,781	1,282	2.90	1.39
1981	314	1,192	1,189	3.79	1.00
1982	393	1,456	1,039	2.64	1.40
1983	374	1,542	928	2.48	1.66
1984	327	1,029	1,048	3.20	0.98
1985	287	956	542	1.88	1.76
1986	160	655	384	2.40	1.70
1987	137	424	352	2.57	1.20
1988	82	323	148	1.80	0.46
1989	85	276	46	0.54	6.00
1990	NO DATA				
1991	93	394	212	2.27	1.85
1992	88	397	194	2.40	1.80
1993[b]	23	102	47	2.04	1.80
1994[c]	33	154	83	2.50	1.86
1995	29	112	74	2.55	1.51
1996	19	78.5	55	2.89	1.43
1997	53	158	111	2.09	1.42
1998	55	218.5	179	3.25	1.22
1999	98	295	230	2.35	1.28
2000	NO DATA				

[a] Hunter check stations at East Springs parking lot and Sandy Marsh parking lot.
[b] Data in 1993 is only for a check station at the Sandy Marsh parking lot.
[c] Data in 1994 is only for a check station at the Sandy Marsh parking lot.

1997 Duck Harvest at Market Lake WMA on Opening Day

Marsh	Number of Hunters	Number of Hours	Number of Ducks	Ducks/ Hunter	Hours/ Duck
East Springs	35	132	87	2.48	1.52
Marsh 4	11	27.5	18	1.64	1.53
Marsh 3	5	12	9	1.80	1.33
Marsh 2	3	6	21	7.00	0.29
Marsh 1	1	4	1	1.00	4.00
Sandy Marsh	6	20	7	1.17	2.86
Total	61	201.5	143	2.34	1.41

1998 Duck Harvest at Market Lake WMA on Opening Day

Marsh	Number of Hunters	Number of Hours	Number of Ducks	Ducks/ Hunter	Hours/ Duck
East Springs	20	88	64	3.20	1.38
Marsh 4	7	27	18	2.57	1.50
Marsh 3	10	38	34	3.40	1.12
Marsh 2	11	41	53	4.82	0.77
Marsh 1	3	9	8	2.67	1.13
Sandy Marsh	4	15.5	6	1.50	2.58
Total	55	218.5	183	3.33	1.19

1999 Duck Harvest at Market Lake WMA on Opening Day

Marsh	Number of Hunters	Number of Hours	Number of Ducks	Ducks/ Hunter	Hours/ Duck
East Springs	58	142	89	1.53	1.60
Marsh 4	5	17.5	25	5.00	0.70
Marsh 3	4	17	18	4.50	0.94
Marsh 2	11	45	41	3.73	1.10
Marsh 1	5	22	25	5.00	0.88
Sandy Marsh	7	24	19	2.71	1.26
M3-M4 Dike	5	20	5	1.00	4.00
North of M4	3	7.5	8	1.60	0.94
Total	98	295	230	2.35	1.28

Dike construction in the Main marsh was completed in 1992. However access to the main marsh was still limited by deep channels adjacent to the new dikes. Access to the main marsh was enhanced in 1996 and 1997 by construction of boat ramps and signing of foot pathways. A causeway to further enhance access to the dike between Marsh 3 and Marsh 4 was constructed in 1998.

As many as 2,500 muskrats were harvested on the MLWMA during the 1980s. However, interest in trapping has declined as fur prices have declined. Only one individual trapped on the MLWMA in 1998 and harvested 100 muskrats. The Department expects interest in trapping will continue to fluctuate with changing fur prices. The Department will continue to encourage trapping on the MLWMA to provide opportunity for consumptive use, and to control muskrat numbers and the damage caused by muskrats. Muskrats burrow into dikes and can cause extensive and sometimes expensive damage. There is very little other trapping on the MLWMA.

Pheasant hunting is mostly for game farm raised roosters that have been released during the hunting season. The program is popular amongst the pheasant hunters using the MLWMA. Traditionally, 50-75 roosters are released per week for 3-4 weeks during the season. The birds have been released in the north and south agricultural fields. However, there have been concerns expressed about crowded hunting conditions. To reduce the crowded conditions, MLWMA staff released roosters in a third area in 1996, 1997, and 1998. This action has spread out hunters and will be continued in the future. Hunters have expressed satisfaction with the third area.

Approximately 45 angler days are spent fishing along the bank of the Snake River adjacent to the MLWMA. Most of the fishing is by members of the local community. Harvest is unknown. The Department does not anticipate much change in fishing pressure along the Snake River banks on the MLWMA.

APPENDIX H

NON-CONSUMPTIVE USE INVENTORY

Table H-1. Estimated number of annual non-consumptive users by type of use. Source: Public user surveys conducted in 1995-1998, MLWMA staff observation, and past annual reports for the MLWMA.

User Type	User Days
Wildlife watching / nature viewing	11,800
Horseback riding	150
Mountain bike riding	40
Cross country skiing	10
International Migratory Bird Day	350
Waterfowl Workshop	97
Education / group tours	1,300
Photography	100
Retriever dog training / trials	500
Total	14,347

The largest public use of the MLWMA is wildlife watching and nature viewing. A large portion of the use occurs during the spring waterfowl migration from late February through April, and the songbird and shorebird spring migration in May. As many as 50,000 snow geese and 4,000 tundra swans use the marshes of Market Lake WMA, Mud Lake WMA, Camas National Wildlife Refuge, and fields on surrounding private property during their spring migration. Wildlife watchers come from as far as Island Park, Jackson, WY, Soda Springs, and Challis to view the birds. Many people also visit in May through July to view the goslings, ducklings, and other wildlife hatched or born on the MLWMA.

The staff gives guided tours of the MLWMA to civic, scout, church, and school groups. This is a popular public activity during the spring. School groups from Rexburg to Shelley tour the area. Topics (i.e. wildlife species, wildlife management, hunting) pertaining to the MLWMA are discussed during these tours. Tours will continue to be conducted on the MLWMA. Volunteer guides may be necessary in the future if the number of groups interested in tours continues to increase.

A 2-3 day retriever dog trial is conducted on the MLWMA in August. The trial is hosted by the Eastern Idaho Retrievers Club. Participants come from all regions of the United States. We expect the trials will continue to occur on the MLWMA as long as the trials do not interfere with management priorities. We do not expect any major conflicts regarding the trials and MLWMA management.

The MLWMA staff intends to develop a public use area on the MLWMA for training hunting dogs. The staff will work with the Retriever Club in developing this area.

Horseback riding and mountain bike riding are relatively new activities on the MLWMA. Horseback riding by the local community has always occurred on the MLWMA. However, horseback riders from outside the Roberts community are beginning to use the MLWMA. Most of the mountain bike riders are from the Idaho Falls area. Currently, the small number of users does not interfere with the management priorities when users adhere to MLWMA regulations. Use by these groups, and others, will be monitored to determine if conflicts with management priorities occur and if future management changes are necessary. Current public user regulations will be posted more visibly for public convenience.

The Department expects non-consumptive user numbers will increase on the MLWMA as the population of eastern Idaho grows. Future management will be directed at encouraging enjoyment of the wildlife viewing available, increasing public knowledge of wildlife and management, increasing the public's awareness of user regulations on the MLWMA, and preventing conflict with the management priorities of the MLWMA.

APPENDIX I

NOXIOUS WEED CONTROL PLAN

JANUARY 24, 1996

MARKET LAKE WILDLIFE MANAGEMENT AREA
Idaho Department of Fish and Game

Prepared by
Mark A. Sands

I. HISTORY OF NOXIOUS WEED MANAGEMENT ON THE MLWMA

II. GOALS AND OBJECTIVES

III. PRIMARY METHODS OF NOXIOUS WEED INFESTATIONS

IV. CONTROL METHODS

- A. Biological
- B. Chemical
- C. Land Use Practices
  1. Farming
  2. Domestic Livestock Grazing
  3. Big Game Distribution
  4. Public Access Management
  5. Disturbed Area Management
- D. Mechanical

V. COOPERATION WITH OTHER AGENCIES AND ADJACENT LANDOWNERS

1996 NOXIOUS WEED PLAN

I. HISTORY OF NOXIOUS WEED MANAGEMENT ON THE MLWMA

The MLWMA has been actively involved in a noxious weed control program using various methods since the property was acquired in 1956. Initial weed infestations were probably the result of early farming methods, livestock grazing and trailing, and the Union Pacific Railroad and road systems. Until recent years, Canada thistle *Cirsium arvense*, was the major weed species found on the MLWMA. Historical control efforts included cultivation, mowing, burning, and chemical control. In recent years, other noxious weed species have invaded the MLWMA including: Russian knapweed *Centaurea repens*, musk thistle *Carduus nutans*, and white-top *Cardaria draba*. Furthermore, additional undesirable weed species have invaded the MLWMA. These include: cocklebur *Xanthium strumarium*, kockia *kochia scoparia*, halogeton *halogeton glomeratus*, and field bindweed *convolvulus arvensis*.

II. GOALS AND OBJECTIVES

The long term goal of the weed management program is to eliminate noxious weeds from the MLWMA. The more immediate goals are to:

A. Control the spread of noxious weeds, prevent new infestations, map existing infestations, and document any additional species.

B. Monitor and evaluate the effectiveness of control measures.

C. MLWMA personnel will attend local, county, and state weed control meetings. In addition, they will keep informed of the latest techniques and equipment available for weed control.

D. Meet state and federal safety guidelines for the use of herbicides.

E. Coordinate with Jefferson County weed supervisor on weed control.

III. PRIMARY METHODS OF NOXIOUS WEED INFESTATIONS

Many of the noxious weeds identified on MLWMA appear to have invaded from the Snake River via irrigation canals. Additional invasions are the result of past/present livestock trailing, wildlife use, grazing and farming practices, as well as the presence of the Union Pacific Railroad and road systems.

IV. CONTROL METHODS

A. BIOLOGICAL

The Department makes use of biological control agents on the MLWMA to control noxious weeds. The musk thistle seed head weevil, *Rhinocyllis conicus*, is present on the area and has been effective in reducing seed head production within isolated infestations of musk thistle. During the 1995 field season, 200 gall flies, *urophora cardui*, and 200 seed head weevils, *Larinus planus*, were released in two areas to help control Canada thistle. Further use of biological agents to control other noxious weeds are being investigated.

B. CHEMICAL

In the past, the Idaho Department of Fish and Game has aggressively used herbicides to control weeds on the MLWMA. Herbicides have been the primary control method for weed infestations. The Department will continue to use chemical control until other effective methods are developed.

Herbicides such as 2, 4D, Curtail, Roundup, Rodeo and Casoran are the primary chemicals used on the MLWMA.

Application Methods

1. 212 gallon tank and spray boom mounted on a 1 ton, 4x4 flatbed truck.
2. 20 gallon tank and spray boom mounted on a 2x4 ATV.
3. 5 gallon backpack tank with a hand wand.

C. LAND USE PRACTICES

1. FARMING

Department personnel will plant grain crops to provide food for wildlife. Those fields actively being farmed will be treated with herbicides for the control of weeds. Permanent grass fields are being grown to benefit wildlife. Once these fields are established, they will help prevent the spread of noxious weeds by crowding out the weed seeds.

2. DOMESTIC LIVESTOCK GRAZING

Currently, domestic livestock grazing is not used on the MLWMA because the potential forage is left standing as nesting cover and forage for wintering big game. However, livestock grazing is considered an option, if other methods are not effective.

3. BIG GAME DISTRIBUTION

MLWMA is an important wintering area for big game. Normally, elk, deer, and moose forage on the unharvested grain crops and the native grasses and shrubs located on the MLWMA. Generally, big game animals have migrated to higher elevations by the time weed seeds begin ripening. Therefore, the spread of noxious weed seeds by migrating big game is not a major concern.

4. PUBLIC ACCESS MANAGEMENT

MLWMA operates under the same regulations that all Department owned lands do concerning public use. The following restrictions were designed to improve and maintain Department owned lands and have an indirect effect on the control of weeds.

Prohibited Activities

a) To disturb or remove any soils, gravels, or minerals.

b) To cut, dig, or remove crops, trees, shrubs, grasses, forbs, logs, or fuel wood.

c) To operate any motorized vehicles except on established roadways.

d) Disturbed Area Management

An appropriate seed mixture is planted at optimum times in areas where ground disturbance has occurred to minimize the invasion of noxious weeds. Disturbed areas are inspected periodically to determine whether or not additional seeding or weed control is warranted.

D. MECHANICAL

Mowing is done in hay fields in particular to reduce weed vigor. In addition, discing in agricultural fields is done for weed control when necessary. Where weed infestations are small, plants are physically removed by hand and shoveled prior to seed ripening.

V. COOPERATION WITH OTHER AGENCIES AND ADJACENT LANDOWNERS.

MLWMA personnel primarily concentrate their efforts on Department owned lands. However, when noxious weed infestations are located on either side of boundary lines, the adjacent landowners will be contacted. In the case of potential crop damage, the county weed supervisor will be notified and the appropriate control methods will be used to manage the weeds.

APPENDIX J

MONITORING PLAN

Surveys and Monitoring currently conducted on the MLWMA

Survey: Spring aerial count of Canada goose pairs (Table F-1, Appendix F).
Objective: Count number of breeding pairs and total number of Canada geese on the MLWMA as part of the region wide survey for geese. Regional data is used to set daily hunting bag limits in goose hunt area 4. The data specific to the MLWMA is also used to determine if changes in Canada goose management on the MLWMA is necessary.

Survey: Duck nesting success in upland cover (Table F-2, Appendix F).
Objective: Determine success of ducks nesting in upland cover on the MLWMA. Data is used to determine if nesting on the MLWMA meets the 30% nesting success goal set by the Department's Waterfowl Management Plan 1991-1995.

Survey: Sandhill crane pair survey (Appendix F).
Objective: Determine number of breeding pairs of sandhill cranes nesting on the MLWMA.
Background: The survey was started in 1996 and was conducted by a volunteer.

Survey: Sage grouse spring lek trend count (Appendix F).
Objective: Determine number of male sage grouse attending strutting leks on the adjacent Bureau of Land Management property. Information is included in region-wide data to determine long term trend of sage grouse populations.

Survey: Songbird nesting box species use and success (Appendix F).
Objective: Determine songbird species using nest boxes and success on the MLWMA. Data will determine if further nest boxes should be installed and which species may benefit.
Background: Nesting boxes have been constructed and installed by scouts. Volunteers monitor and maintain the boxes.

Monitoring: Map noxious weed populations and control methods (Appendix I).
Objective: Monitor noxious weed species present, population trend, and effectiveness of control methods used on the MLWMA.
Background: State law mandates control of noxious weeds. Noxious weeds are also controlled on the MLWMA to enhance wildlife habitat.

Survey: Public user surveys (Appendix G and H).
Objective: Determine type and amount of public use on the MLWMA. Also, is an opportunity for public to discuss MLWMA management with the MLWMA staff.
Background: Surveys are conducted periodically by MLWMA staff and volunteers. Surveys include: hunter numbers and harvest on opening weekend of duck and goose season, pheasant hunter numbers, and public use during the spring (time of highest public use on the MLWMA). Also, public use surveys are conducted randomly during the year.

Monitoring: Disease outbreaks.
Objective: Monitor for signs (sick or dead birds) of avian cholera during spring waterfowl migration. Implement control techniques when possible.
Background: Avian cholera occurred on the MLWMA in 1980, 1981, 1987 and 1991. In Idaho, avian cholera typically occurs during the spring waterfowl migration. Cholera outbreaks can start in other areas of the Pacific flyway and spread as infected waterfowl migrate.

Objective: Monitor for signs of avian botulism during July through September.
Background: Avian botulism outbreaks have occurred in the Market Lake area since an unknown date.

Surveys and Monitoring planned for future implementation on the MLWMA

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.

Monitoring: Aerial photography of transects to determine the ratio of open water to emergent vegetation (bulrushes and cattails) within each marsh.
Objective: Monitor quality and quantity of waterfowl pair and brood habitat.
Background: An open water and emergent vegetation ratio of 50:50 is considered desirable. Quality of waterfowl habitat generally declines as emergent vegetation increases above the 50:50 ratio. This information will be one criteria used to determine if changes in marsh management is necessary.

Survey: Nesting success of over water nesting ducks.
Objective: Determine nesting success of ducks nesting in the marshes. This information will be one criteria used to determine if changes in marsh management are necessary.

Monitoring: Trumpeter swan nesting.
Objective: Determine if trumpeter swans nest on the MLWMA by reporting any sightings (adults, nests, cygnets) of swans on the MLWMA during May-August.
Background: Trumpeter swans (a species of special concern) have not nested on the MLWMA since 1982. Actual searches for nests are not planned, however, any sightings during the nesting season will be recorded.

Survey: Mist netting for bats.
Objective: Determine species of bats using the MLWMA.
Background: Bats use the MLWMA, however, the species are unknown.

Survey: Nesting by raptors and corvids (crows and magpies) on MLWMA.
Objective: Determine the number and success of nesting raptors and corvids. Use the information in determining if raptors and corvids are a hindrance to waterfowl and upland bird production on MLWMA.

Background: Volunteers will be requested to conduct this survey.

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

Survey: Breeding songbird survey.
Objective: Determine species nesting trend on MLWMA. Information can be used as one criteria in determining if management changes for upland habitat and/or marsh habitat is necessary.

Survey: Aquatic plants survey.
Objective: Identify aquatic plant species, especially species valuable to waterfowl, in the marshes. Information will be used to develop strategies to maintain or increase waterfowl valuable species, rare species, and other species considered valuable to wildlife.

Survey: Sharp-tailed grouse lek survey.
Objective: Determine if sharp-tailed grouse lek(s) occur on adjacent BLM property. Establish annual lek count if lek(s) occur.
Background: Sharp-tailed grouse might have been heard by the observer during the sage grouse lek count in 1998 on adjacent BLM property. However, the sharp-tailed grouse were not found. A minimum of 19 sharp-tailed grouse were seen on adjacent BLM property in December 1998. One grouse was observed on the MLWMA in December 1998.

APPENDIX K

MAJOR EQUIPMENT
AS OF 11/98

- 1957 Ford 650 wheeled tractor
- 1964 John Deere 4020 wheeled tractor
- 1967 Berkley flood pump
- 1967 Case front-end loader
- 1972 Tomcat airboat and trailer
- 1986 Chevy 3/4 ton, 4x4 pickup
- 1986 Chevy 1-ton, 4x4 flatbed truck
- 1988 Chevy 3/4 ton, 4x4 pickup
- 1988 Yamaha 2x4 ATV
- 1988 Caterpillar engine and pump
- 1990 John Deere tractor with Edwards mowers
- 1992 Coleman canoe
- 1994 Cristafulli pump

APPENDIX L

CAPITAL IMPROVEMENTS AND DEVELOPMENTS

Table L-1. Improvements and developments on the MLWMA since its establishment.

Year	Development
1956	First land purchased with some small marshes and a house.
1959	Dike completed on 600-acre Main marsh.
1965	Dike completed on 530-acre Triangle marsh. Office and small shop completed.
1972	Dike completed on 475 acre East Springs marsh. New manager's residence completed.
1973	Large shop completed.
1984	200-ton capacity hay shed completed.
1989	First cross dike in the Main marsh complex completed.
1990	Second cross dike in Main marsh complex completed.
1992	Third cross dike in Main marsh complex completed.
1995	Whistle tube replaced between the Triangle marsh and the main channel. Marsh 4 dike in Main marsh reconstructed.
1996	Three concrete boat ramps constructed in marshes 3 and 4.
1997	Construction of driveway across main channel.
1997	Cleaning of sinkwells 2-5 and drilling to 120 foot depth.

Other Miscellaneous Improvements

- 15 miles of perimeter fences constructed.
- Approximately 200 acres planted to permanent grass cover.
- 30-foot temporary housing trailer located at MLWMA headquarters.

APPENDIX M

LAND ACQUISITION

Table M-1. Land acquisitions, dates when purchased, sources, costs, and funds used.

Date Purchased	Funds Used	Acres Purchased	Cost	Source
03/27/1956	Pittman/Robertson	2,845.01	$160,000.00	L. Poitevin
10/25/1956	Pittman/Robertson	903.52	$56,460.00	Delmoe Cook
05/18/1957	None	50.00	$0.00	Wilford Taylor
05/18/1957	Pittman/Robertson	43.15	$5,000.00	Wilford Taylor
02/13/1958	Exchange	55.32	$0.00	IDOT
09/19/1960	Pittman/Robertson	214.48	$16,000.00	O.W. Robison
10/10/1960	Pittman/Robertson	527.98	$50,000.00	Joe Tomchak
08/06/1962	Pittman/Robertson	80.00	$13,000.00	Leona Van-Leuven
05/10/1963	Pittman/Robertson	179.00	$22,500.00	Albert S. Harris
03/20/1964	Pittman/Robertson	24.92	$62.50	BLM
07/28/1988	Teton Mitigation	101.90	$53,000.00	Lavern Tomchak
09/09/1988	Dept. of Fish & Game	46.50	$10.00	City of Idaho Falls
12/31/1991	Gift	.50	$0.00	IDOT

APPENDIX N

EASEMENT AND RIGHT-OF-WAYS

30 acres consisting of a strip of land 10 rods wide and parallel to the property boundary with Idaho Department of Lands property in Section 16 of T5N, R37E. The easement was acquired on March 27, 1956, from the Department of Lands.

The Union Pacific Railroad has a right-of-way for the railroad track going across Department property.

The Department has a culvert crossing under the Union Pacific Railroad.

Jefferson County has a right of way for the graveled county road starting at the intersection of 2900 East and 800 North and going north for approximately 0.5 miles, then east for approximately 0.5 miles, and then continuing in an easterly direction across T5N, R37E, Section 21, SE 1/4 and then northeasterly across the T5N, R37E, Section 22, NW 1/4, where it leaves Department property.

APPENDIX O

WATER RIGHTS

Water rights consist of 46.6692 shares of Butte and Market Lake Canal Company stock. NOTE: 1 share of stock = 10 inches of water. Acquired on 1/1/68 from Idaho Dept. of Transportation and Lowell Moore. Decree dates are October 16, 1890, for 344.39 inches, June 1, 1894 for 2.302 inches, and April 1, 1939 for 120.00 inches. There is a delivery right in the Roscoe Lateral Ditch, Inc. for 155 miner=s inches of flow from the above named canal to the Department=s diversion structure. In addition, the following water licenses and rights exist (subject to change pending the outcome of the Snake River Adjudication Court).

License Number	Priority Date	Amount	Purpose
35-0204	05/25/1934	4.100 cfs	Irrigation and incidental wildlife use
35-02050	05/23/1934	9.500 cfs	Wildlife, fish propagation and recreation
35-02054A	04/08/1940	1.500 cfs	Wildlife and recreation
35-02890	05/15/1921	2.500 cfs	Wildlife, fish propagation and recreation
35-04253	08/01/1956	329 acre/ft	Wildlife and recreation storage at Sandy Marsh
35-04254	10/01/1965	1,216 acre/ft	Wildlife and recreation storage at Triangle Marsh
35-04255	04/01/1970	1,057 acre/ft	Wildlife and recreation storage at East Springs Marsh
35-04256	09/19/1960	1,225 acre/ft	Wildlife and recreation use at Main Marsh
35-12859	01/18/1973	0.04 cfs	Domestic use, 1 home, residence number 2
35-12860	07/01/1961	0.04 cfs	Domestic use, 1 home, residence number 1
35-12861	12/31/1957	0.04 cfs	Domestic use, 1 home, Van-Leuven
35-12862	12/31/1944	0.04 cfs	Domestic use, 1 home, Tomchak

APPENDIX P

CONSTRAINING AGREEMENTS, PLANS, AND DOCUMENTS

Department Plans

Statewide waterfowl management plans 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.

Federal Aid

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

Other potential constraining plans and documents

The Department has agreed not to put water into the Triangle Marsh during the winter before February 1st during low snow years. The Department has agreed not to put water into the Triangle Marsh during the winter and spring during high snow years. High snow years are considered to be similar to the amount of snow received in the Roberts area during the 1992-1993 winter. The above agreement is stated in a letter to the Northwest Flood Control Cooperative members, dated May 19, 1993.

Fee title acquisition deed from O.W. Robison dated September 19, 1960. The deed says the Department will maintain water levels in a drainage ditch (Interstate drain) on the acquired property two feet below the level of the sellers land west of the interstate. The effect of the deed is the Department must pump water from the ditch and some marshes to the desert via a pipeline in the winter and/or spring during some years.

1999 Sharecrop Agreement with potential extensions through 2000.

APPENDIX Q

GENERAL COMMENTS RECEIVED FROM THE PUBLIC
1996 SCOPING

The West Side Soil Conservation District compliments Fish and Game for their weed control in recent years.

The West Side Soil Conservation District compliments Idaho Fish and Game on the management of the MLWMA. Keeping water levels low, especially in the Triangle Marsh greatly helps adjacent farmers with management of the flood waters in the area.

Market Lake is very important for big game especially during heavy snow years. It is managed well. Could be very valuable for a feeding program when necessary.

Goose production seems to be the main production on the MLWMA.

It is surprising the amount of people that use the MLWMA. Keep it open for use.

Doing a good job for moose.

You=ve screwed up one of the best duck hunting spots in southeast Idaho. Between the dry east marsh and the diked west marsh there isn=t much area left that is reachable to decoy hunt.

Direct all effort and money toward wetland arrangement.

Doing a great job with waterfowl.

The nesting area is great for waterfowl, I always see ducks and geese when driving by.

Great program on the pheasant youth hunt last year.

Fall “put and take” pheasant hunting hasn=t been much fun especially when the “put” has been so small and infrequent. Market Lake has the potential to be a fine pheasant hunting area. In the meantime, I=m going to South Dakota.

Some folks enjoy seeing all kinds of game and nongame.

Overall, the management of the MLWMA is excellent.

Viewing of wildlife is an important and enjoyable activity available on the MLWMA.

LITERATURE CITED

Rocke, T. E., N. E. Euliss, Jr., and M. D. Samuel. 1999. Environmental characteristics associated with the occurrence of avian botulism in wetlands of a northern California refuge. Journal of Wildlife Management 63:358-368.

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