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LAND USE PLAN WITH EMPHASIS ON MANAGEMENT OF EASTERN PRAIRIE POPULATION OF CANADA GEESE

SWAN LAKE NATIONAL WILDLIFE REFUGE

SUMNER, MISSOURI

Submitted by: John R. Frye, Refuge Manager — Date: November 10, 1987

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Submitted by:

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Swan Lake National Wildlife Refuge

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Missouri Department of Conservation

November 10, 1987

I. INTRODUCTION

Swan Lake National Wildlife Refuge was established to provide a nesting, resting, and feeding area for waterfowl. Land use programs are designed to complement this initial purpose and to maintain or enhance habitats for other wildlife species. Management goals include water management, grasslands management, and croplands management programs. The highest priority goals for habitat maintenance and development are:

1. Protect and enhance refuge habitats to maintain or increase use by endangered species.
2. Provide necessary foods and protection to support the migrating and wintering Canada geese of the Eastern Prairie Population and other waterfowl species.
3. Maintain operational programs of biological farming and moist soil food production to support wildlife species in a more natural and environmentally sound manner.
4. Maintain a variety of habitats to achieve maximum wildlife diversity.
5. Maintain grasslands to provide a demonstration area of native warm season grasses.

II. PURPOSE

To manipulate the refuge farm program in an ecologically sound manner which will consistently produce approximately 57,500 bushels of grain (corn) which would meet the projected wintering objectives for the Eastern Prairie Population of Canada geese as set forth in the E.P.P. Management Plan.

III. PROCEDURE

Following a thorough examination of several options to our current mode of operations, the decision was made to adopt a three year rotation

instead of the current four year rotation, with the premise that additional croplands bordering Silver Lake on the north and east could be elevated from Class III classification to Class II through manipulations of Silver Lake water elevations during the growing season. Land classes based on flood frequency are defined as follows:

Class I Land: Farmland with good drainage which is not subject to flooding.

- Land where a legume can be consistenly grown and overwintered. Examples - red clover, sweet clover, alfalfa, vetch, alsike clover, ladino clover.

Class II Land: Farmland that has fair to good drainage and/or is subject to potential flash flooding perhaps once a year. (Trapped surface drainage.)

- Land where a legume can only be grown on a seasonal basis; providing no flooding occurs during the growing season.

Class III Land: Farmland with poor drainage and/or subject to back-water flooding (longer durations) more frequently than once a year.

- Land where certain legumes can be grown only seasonally. Hairy vetch and alsike clover are the only legume options here and even then their survival is risky.

Class IV Land: Farmland with very poor drainage and subject to flooding at least four or five times per year.

- Legumes do not survive here at all due to flood frequency.

The proposal to change to a two year crop rotation was explored and although it appears to have potential, it is believed that the two year rotation in use at Fountain Grove Wildlife Area should be monitored for a three year period at a minimum, to test the feasibility of this rotation against successes of the current refuge operation. If the short rotation does not result in a drop in crop production, or reduce soil tilth, it could be advantageous both economically and production wise. If the two year rotation proves to be workable to our satisfaction, consideration would be given to an adjustment to our three year program.

To implement the adjustment from our four year program to the proposed three year program, land capabilities and potential upgrading of

capabilities through manipulation of water levels in Silver Lake were thoroughly explored.

IV. LAND USE CAPABILITIES

A. Current Land Use Capabilities

Map I illustrates croplands Class distribution. A summary of current land classification and acreages is as follows:

Table I.

Refuge Operation		State Operation	
Class I	838 acres	Class I	48 acres
Class II	106 acres	Class II	74 acres
Class III	229 acres	Class III	98 acres
Moist Soil	633 acres	Class IV	554 acres

Class I and Class II lands are considered to have the reliability to implement the proposed three year rotation.

B. Proposed Land Use Capabilities

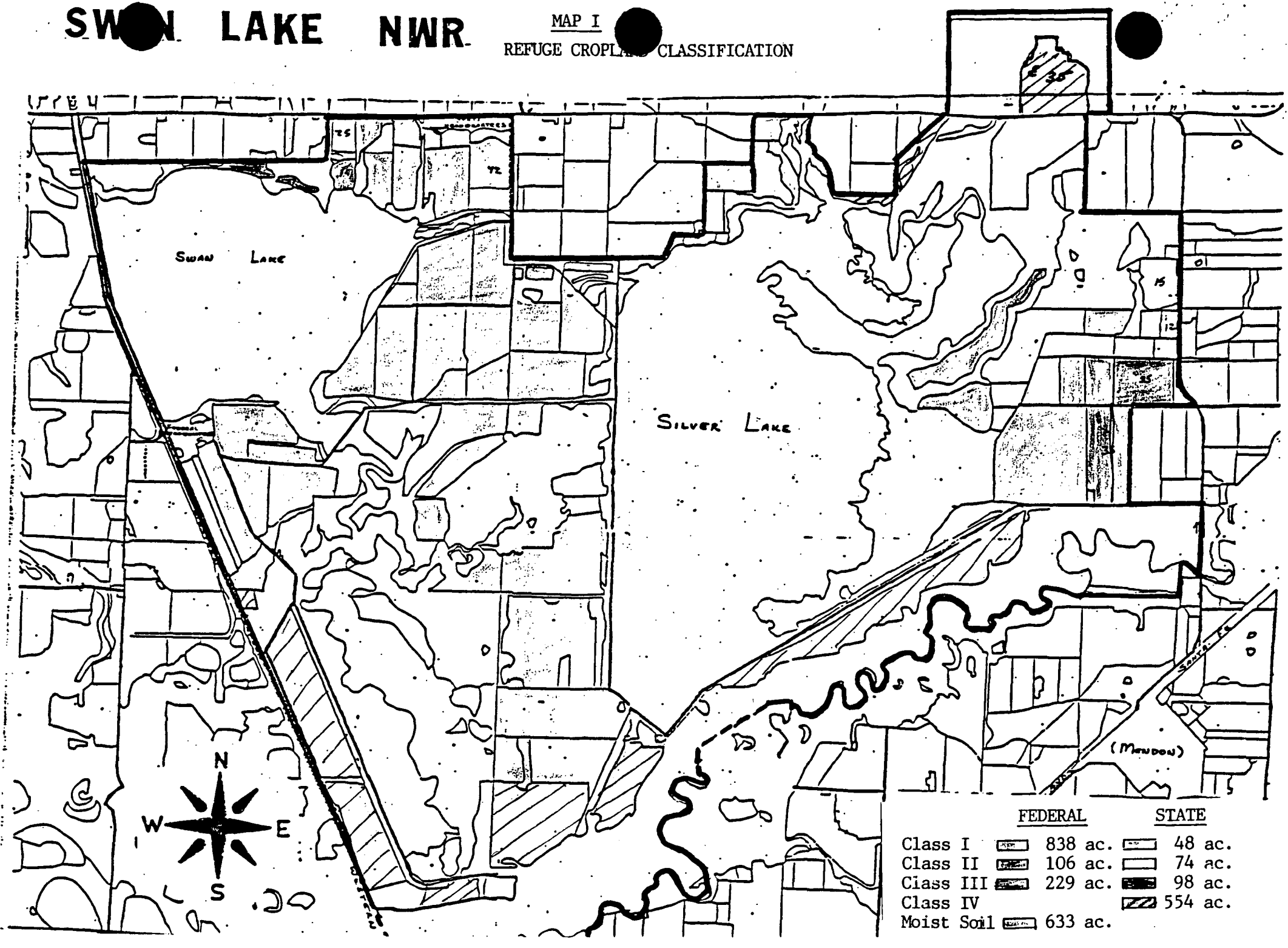
The current acreage of Class I and II lands, 1,056 acres, can be increased by approximately 372 acres by elevating classification of Class III lands lying on the north and east sides of Silver Lake. This may be accomplished through lowering Silver Lake immediately following the spring floods. This will permit farming these lands with a Class II reliability, while in addition, some Class IV lands will be elevated to Class III reliability. (Map II)

A considerable acreage of additional moist soil areas will also be made available with the planned drawdown of Silver Lake. (Map II)

SWAN LAKE NWR

MAP I

REFUGE CROPLAND CLASSIFICATION



	FEDERAL	STATE
Class I	838 ac.	48 ac.
Class II	106 ac.	74 ac.
Class III	229 ac.	98 ac.
Class IV		554 ac.
Moist Soil	633 ac.	

SWAN LAKE NWR

MAP II

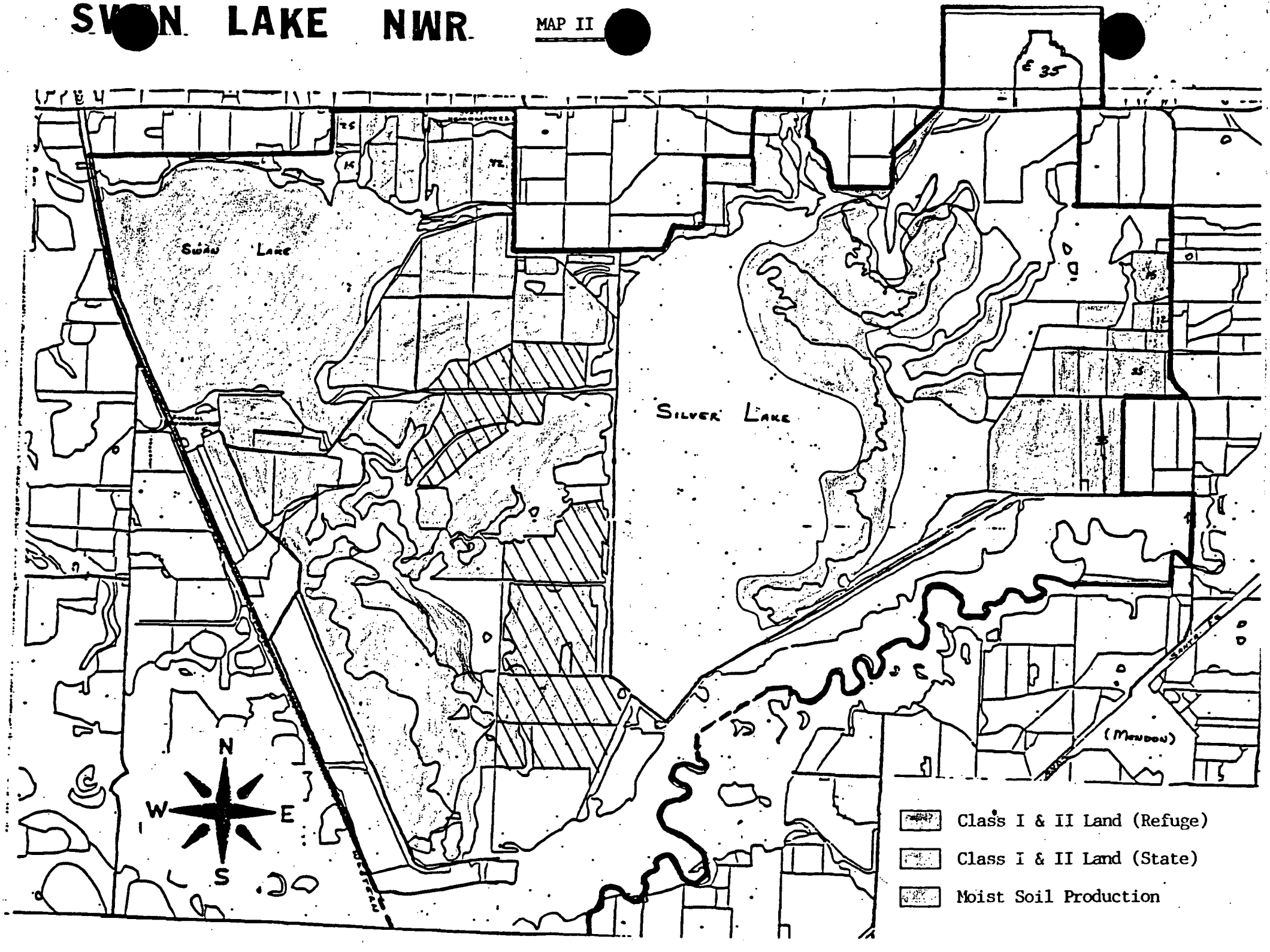


Table II.

PROPOSED CLASSIFICATION ACREAGES

Refuge Operation		State Operation	
Class I	838 acres	Class I	105 acres
Class II	335 acres	Class II	150 acres
*Moist Soil	4,600 acres	Class III	71 acres
		Class IV	554 acres

*Includes Swan Lake and South Pool Acreages.

C. Silver Lake Water Management

Manipulation of water levels in Silver Lake will permit upgrading of Class III and IV lands. Current water management dictates high levels to limit fish kills and to insure sufficient volume of water for fall flooding of moist soil units. These levels limit capability of certain croplands for annual crop production.

It is proposed to maintain water levels in Silver Lake between 662.00 and 664.00 during the corn growing season, April though August. (Figure 1) This is approximately two feet lower than present and should upgrade 372 acres of Class III lands farmed by refuge and state personnel to Class II. In addition, approximately 1,500 acres of moist soil production will be created by lower water levels. The raising of Silver Lake to elevation of 665.50 in early fall will provide water for flooding moist soil units and will provide sufficient water depths to limit winter fish kills.

V. PROPOSED THREE YEAR CROP ROTATION

Once Silver Lake is drawn down, there will be 1,173 acres of Class I and II land farmed by federal personnel. This land will be managed using a modified three year crop rotation. The land will be planted to corn, clover, or wheat at a ratio of 40%, 30% and 30%, respectively, (Map III)

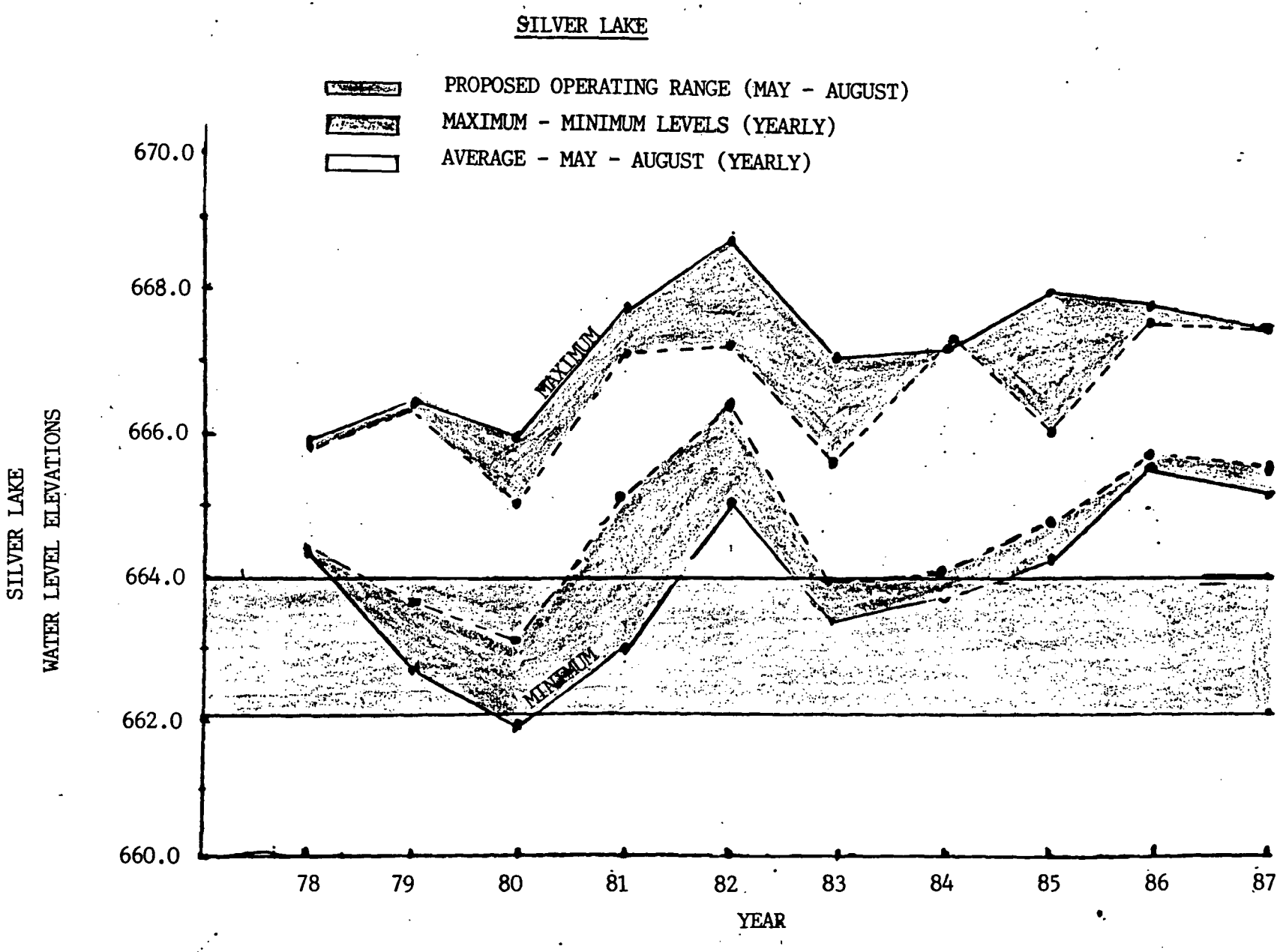
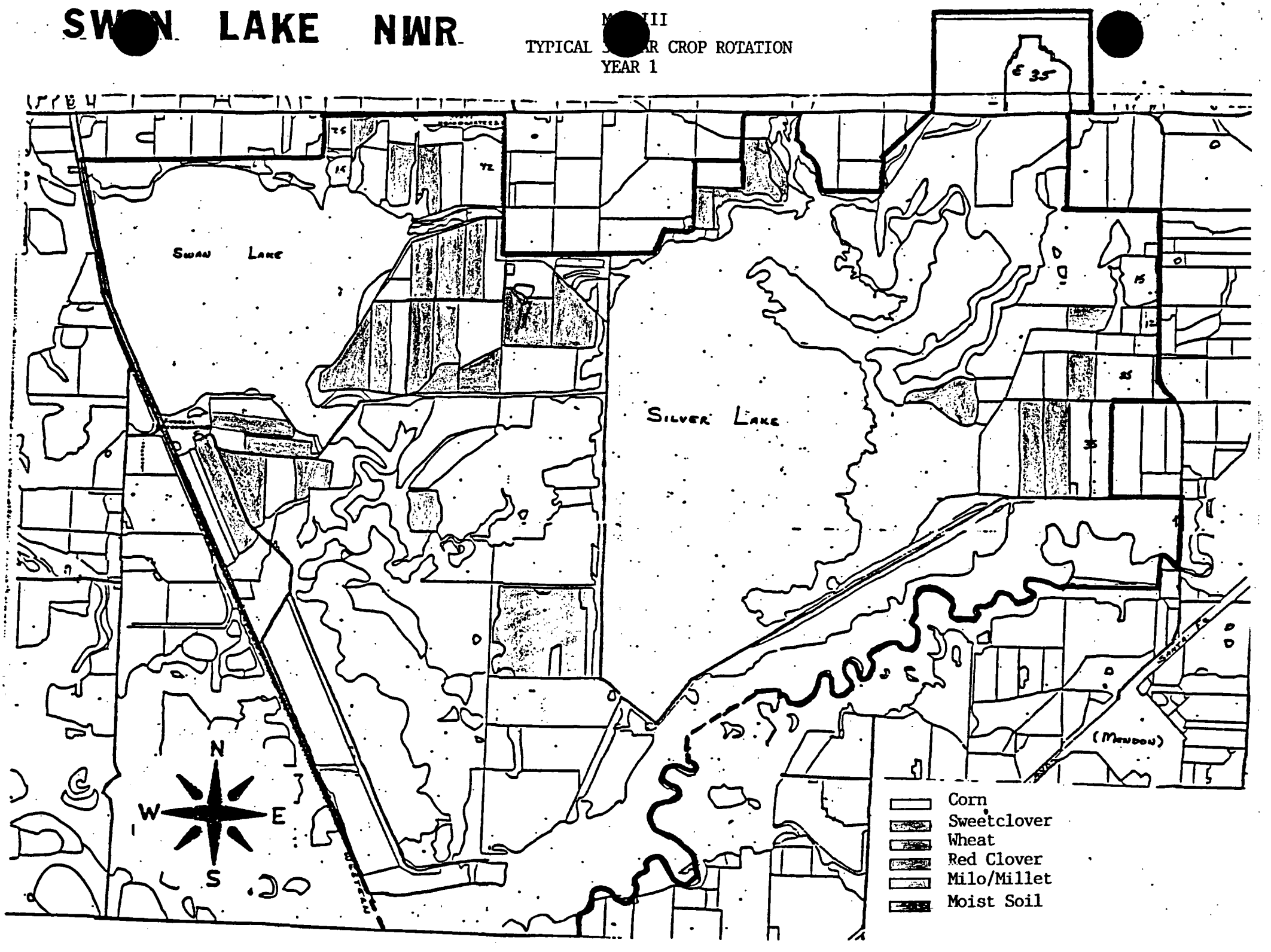

SILVER LAKE
PROPOSED OPERATING RANGE (MAY - AUGUST)
MAXIMUM - MINIMUM LEVELS (YEARLY)
AVERAGE - MAY - AUGUST (YEARLY)
SILVER LAKE
WATER LEVEL ELEVATIONS
670.0
668.0
666.0
664.0
662.0
660.0
MAXIMUM
MINIMUM
78
79
80
81
82
83
84
85
86
87
YEAR

FIGURE I

SWAN LAKE NWR

MAP III

TYPICAL SUMMER CROP ROTATION
YEAR 1



The extra 10% of corn will come either from moist soil unit 1 or short-circuiting one or two fields.

The first year clover (sweet, red, alsike or ladino clover) will be planted in the late winter. The clover will be allowed to grow through the year during which it will be mowed twice. The second year the clover ground will be disced in July and planted to wheat which is left for browse. The wheat ground will be disced in the spring of the third year and planted to corn. If possible, vetch will be interseeded during the last cultivation, or wheat aerial seeded in August. The corn will be mowed after the close of the hunting season for greater use by wildlife. This ground will be seeded to clover in late winter which begins the next three year cycle.

VI. MOIST SOIL UNIT MANAGEMENT

There are 633 acres of moist soil units with good to fair water manipulation/flood protection potential. To maintain productivity and limit encroachment of brush and undesirable vegetation, the units will be managed on a planned four year rotation.

Under this plan 25% of the moist soil units, approximately 150 acres, will be drawn down, disced, and seeded to a food crop annually. Preferred crops to be seeded are milo, buckwheat, or millet which can be flooded in the early fall months.

VII. RECOMMENDATIONS

1. Silver Lake elevation will be lowered two feet in the spring for more predictable farming success on croplands on the east and north sides of the refuge. This will add about 1,500 acres of moist soil and convert 372 acres of Class III land to Class II, providing the required improved drainage for sheet water and additional flood protection is completed. This involves clean-out of existing ditches and improvement and maintenance of existing "W" ditches to permit

rapid removal of surface waters. An improved drainage structure should be installed in the main ditch draining private lands from the east. A tube with flap gate should be installed to prevent future flooding of refuge croplands from rising levels in Silver Lake. An additional flood tube with flap gate should be installed in the East Entrance Road to permit discharge of surface waters south to Yellow Creek when the level of Silver Lake prohibits discharge to the west. Improvements are the responsibility of the Fish and Wildlife Service but cannot be accomplished by the refuge with current budget constraints.

All aspects of this land use plan are contingent upon availability of sufficient manpower and dependable equipment to accomplish the necessary work. Equipment needs have been documented in the Service's budgetary planning process but funding has not been allocated for replacement of major equipment such as the D-8 dozer and farm tractors. Payment for overtime work performed, dictated by FLSA, must be programmed to cover contingencies when weather conditions delay essential operations.

The requirement for adequate funding for equipment replacement, seed and fuel purchases, and overtime pay must be recognized and implemented if we are to meet our E.P.P. objectives. A financial committment must be provided if this plan is to succeed.

2. The refuge will shift from the present four year rotation to a three year rotation.

3. Approximately 450 acres of corn will be in this rotation with an estimated yield of 100 bushels/acre, or 45,000 bushels of grain. This translates into 5,040,000 use-days for geese.

   The state will plant an additional 125 acres of corn. At 100 bushels per acre this should yield 12,500 bushels of grain which translates into 1,400,000 goose use-days.

   Total grain yield would be 57,500 bushels, satisfying the E.P.P. Management Plan recommended production on the refuge.

4. The refuge winter wheat and clover will be approximately equal with 360 acres each. In addition, approximately 120 acres of browse will be available from Reeds canary grass managed for goose pasture by burning, haying, or mowing. This translates into 800,000 goose use-days at a minimum. This does not include the state green browse acreage.
5. The state in the past has been limited as to the use of commercial fertilizer and pesticides. Pesticides will still not be used, but clear, liquid plant food and urea will be allowed where they deem necessary to achieve their grain committment.
6. The state has suggested a two year rotation of corn and wheat. Although this may appear logical, we will encourage the state to do this on the better farm fields we allow them to crop. To determine if this program is applicable to our biological farming program, it is recommended that a wildlife management study of suitable length be completed on this system before we consider implementing this into our biological farming program.