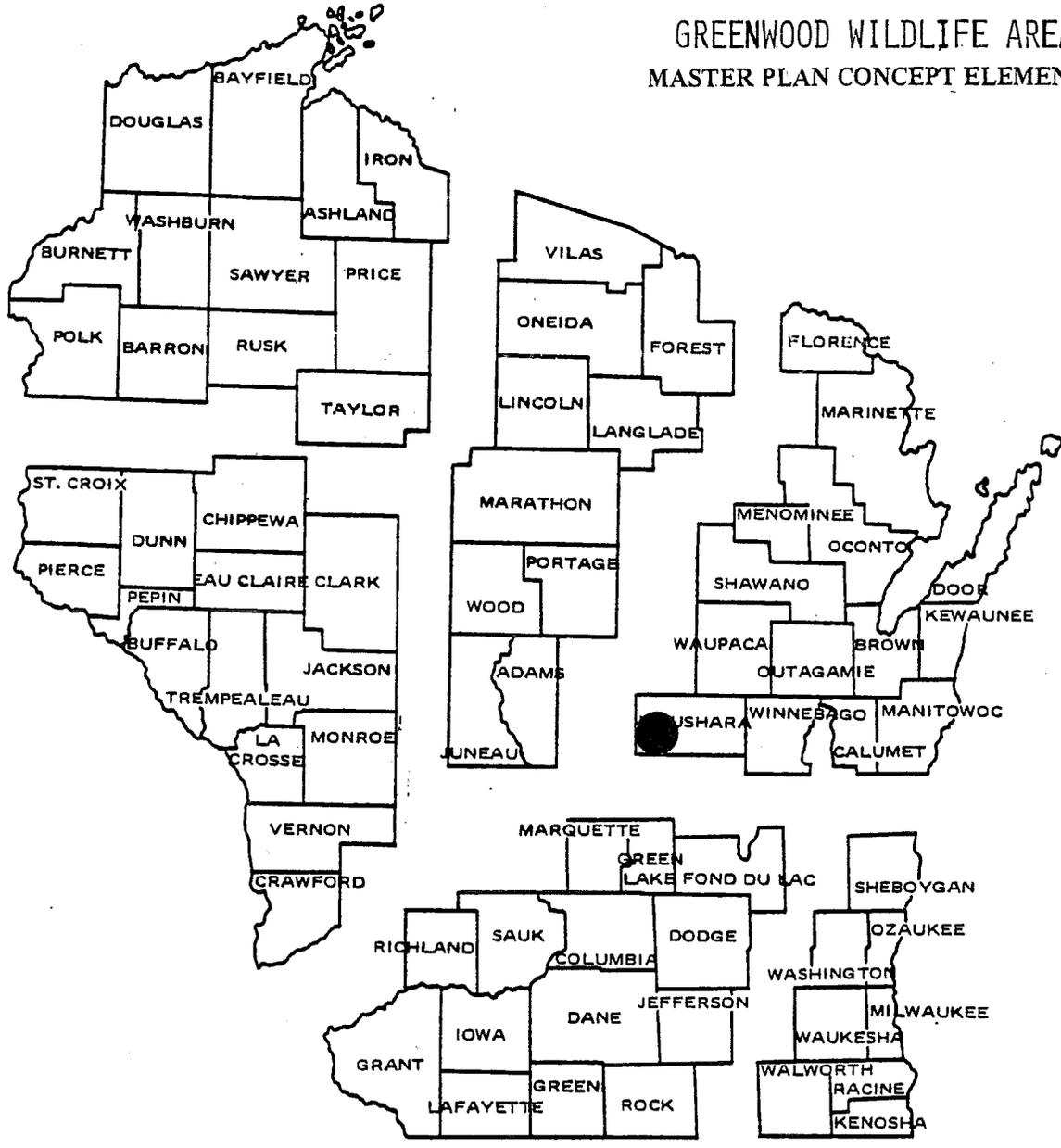


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GREENWOOD WILDLIFE AREA MASTER PLAN CONCEPT ELEMENT



Approved by Natural Resources Board:

SEP 25 1980

Date

PROPERTY TASK FORCE

Leader - TOM HOWARD, WILDLIFE MANAGER
MERLE LANG, PARK SUPERINTENDENT

Submitted: APRIL 25, 1980

TABLE OF CONTENTS

SECTION I - ACTIONS

	Page
Goals, Objective and Additional Benefits	
Goal	1
Objectives	1
Additional Benefits	1
Recommended Management and Development Program	
Property Development Proposal	1
Land Control	1
Timetable	1
Costs	1

SECTION II - SUPPORT DATA

Background Information

History of Property Creation	3
Special Administrative Actions	5
Current Management Activities	5
Ownership	6

Resource Capability and Inventory

Soils, Geology, and Hydrology	6
Wildlife	6
Vegetative Cover	8
Water Resources	8
Historical and Archaeological Features	11
Land Use Potential	11

Management Problems	11
Recreation Needs and Justifications	11
Analysis of Alternatives	12
Agency and Advisory Group Comments	14

SECTION I - ACTIONS

GOALS, OBJECTIVES AND ADDITIONAL BENEFITS

Goal:

To manage a state owned wildlife area for forest-game wildlife, maintain a winter feeding area for giant Canada geese and to provide public hunting as well as compatible outdoor recreation and education.

Annual Objectives:

1. Provide 75,000 goose-use days by Canada geese.
2. Provide 500 participant days of dog trial and training activity (secondary objective).
3. Provide 200 participant days of gun deer hunting opportunity and 600 participant days of bow and arrow deer hunting opportunity.

Annual Additional Benefits:

1. Provide about 1,300 participant days of other hunting activity including rabbit, squirrel, ruffed grouse, fur bearers, and waterfowl.
2. Accommodate about 2,000 participant days of non-hunting activity such as nature observation, education, snowmobiling, hiking, and cross-country skiing.
3. Benefit a variety of nongame species indigenous and transient to the area.
4. Accommodate users of the Wisconsin Ice Age Trail as appropriate.

RECOMMENDED MANAGEMENT AND DEVELOPMENT PROGRAM

Property Development Proposal (Figure 2):

The development of a 200+ acre dog trial and training area on the property is accomplished through sharecrop farmers. The area currently designated for dog trials and training will revert to agricultural cropping at the end of three years' use when the adjacent 200+ acre area becomes developed, again through sharecropping, as a dog trial and training area.

The portion of the property north of the town road will be maintained in a wildlife refuge in order to adequately protect giant Canada geese resting and feeding on the wildlife area. Food will be provided through the sharecropping program in the form of grain crops and grass browse.

Timber management will be applied to 300 acres of oak to provide habitat diversity as well as for an important habitat component for wildlife use.

A county sponsored snowmobile trail is maintained on the area by land use agreement. Trail posting and grooming are the responsibilities of the county. The Department routinely monitors trail use for compliance purposes and provides annual renewal of the land use agreement contract.

Land Control:

The current ownership is 1,438.23 acres. Acquisition has been completed on this property.

Timetable:

Sharecrop contracts are renewed every three years. Maintenance of user facilities (project signs, access parking lots, posting) will be of an ongoing nature.

Costs:

\$1,500.00 annually for maintenance posting, upkeep of parking facilities, management of the sharecropping program, and supervision of short-term land use permits including wood-cutting permits and dog trial and training permits.

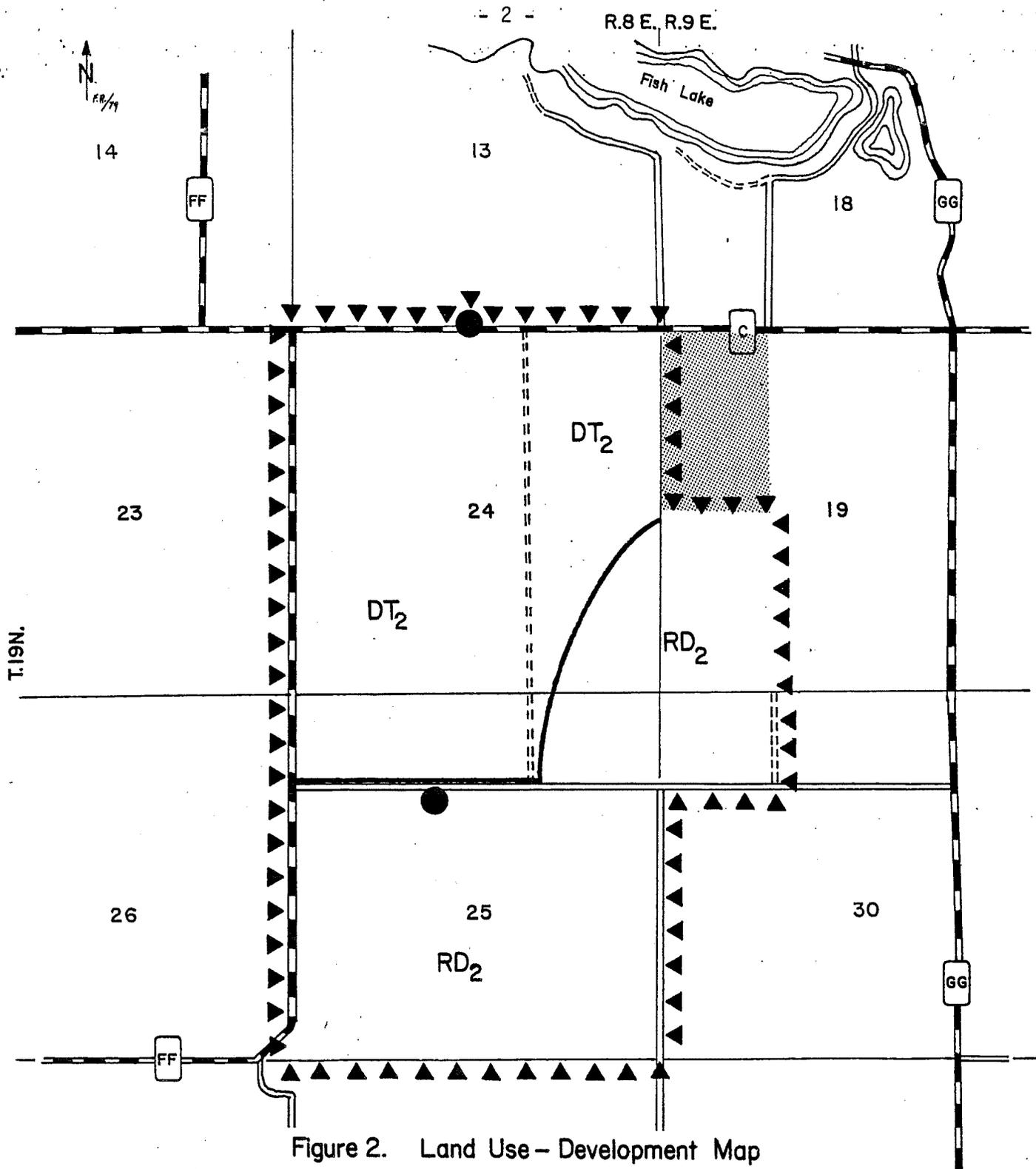


Figure 2. Land Use - Development Map
GREENWOOD WILDLIFE AREA

Scale 1 : 24000

LEGEND

- Property Boundary ▲▲
- Fish & Wildlife Management Area RD₂
- Class II Dog Trial Area DT₂
- Leased Land [shaded box]
- Parking Area ●

SECTION II - SUPPORT DATA

BACKGROUND INFORMATION

The Greenwood Wildlife Area is located in east-central Waushara County (Figure 1). The property lies 3 miles northeast of Coloma and 1 mile southeast of Hancock.

The wildlife area encompasses 1,438 acres located on the edge of an open, pitted outwash plain, resulting in flat, sandy topography and a moraine that is wooded and hilly. About 600 acres of the area are currently under cultivation.

Because of the needs of the giant Canada geese (Branta canadensis maxima), a special relationship exists between the wildlife area and the Mekan Springs Fishery area located 2 miles to the south (Figure 1). The two properties are integral components of a system which presently supports a goose flock during the fall and winter of each year. Both the common Canada goose (B. c. interior) and the giant Canada goose are involved. According to Department records, the use of this area as an ancestral migration and wintering place goes back to the early 1900's.

Since the turn of the century, the wintering flock has varied from 150 to nearly 1,000 geese. While the geese make use of other spring and open river areas during the early winter months, Mekan Springs provides the most critical habitat needs for the wintering flock. Mekan Springs is designated as Class I trout waters. These waters are closed to fishing during the entire annual goose-use period which prevents any conflicts between utilization of the fishery resource and continued goose-use in the fall and winter.

Mekan Springs provides a secure source of open water late in the winter while Greenwood provides a secure feeding and resting area. The essentials of goose habitat including food, water, and security are thus provided. Without the nearby resource of the wetland area of Mekan Springs, the present value of the Greenwood Wildlife Area as a goose management area would be negligible.

History of the Property Creation:

The area presently under state ownership and adjacent land to the north has a history of goose-use in spring and fall for over 100 years. Until 1938, the area was privately controlled by the use of trespass signs. It was closed to goose hunting for the next 10 years by designation as a state refuge. During this time, the goose flock increased from several hundred to several thousand geese. Hunting pressure increased accordingly and, in 1949, 2,000 hunters hunted in the areas adjacent to the refuge.

Acquisition of a portion of this area to provide a refuge and public hunting grounds was begun in 1949 with the purchase of 1,290 acres. New refuge agreements were negotiated at that time to lease an additional 700+ acres. Acquisition was completed by 1955 and the state currently owns 1438.23 acres (Figure 3). The total cost of all land purchased was \$32,650.00 (\$23.38/acre). The funding for the land acquisition was provided entirely through the Federal Aid in Wildlife Restoration Act ("P-R") Project W-21-L.

Since the 1930's, peak goose numbers on the Greenwood Wildlife Area have undergone considerable reduction (6,000 to 8,000 during the early 1950's to the present annual peak of nearly 1,000). From 300 to 500 geese currently over-winter in the Mekan Springs Fishery Area and utilize corn left on the wildlife area.

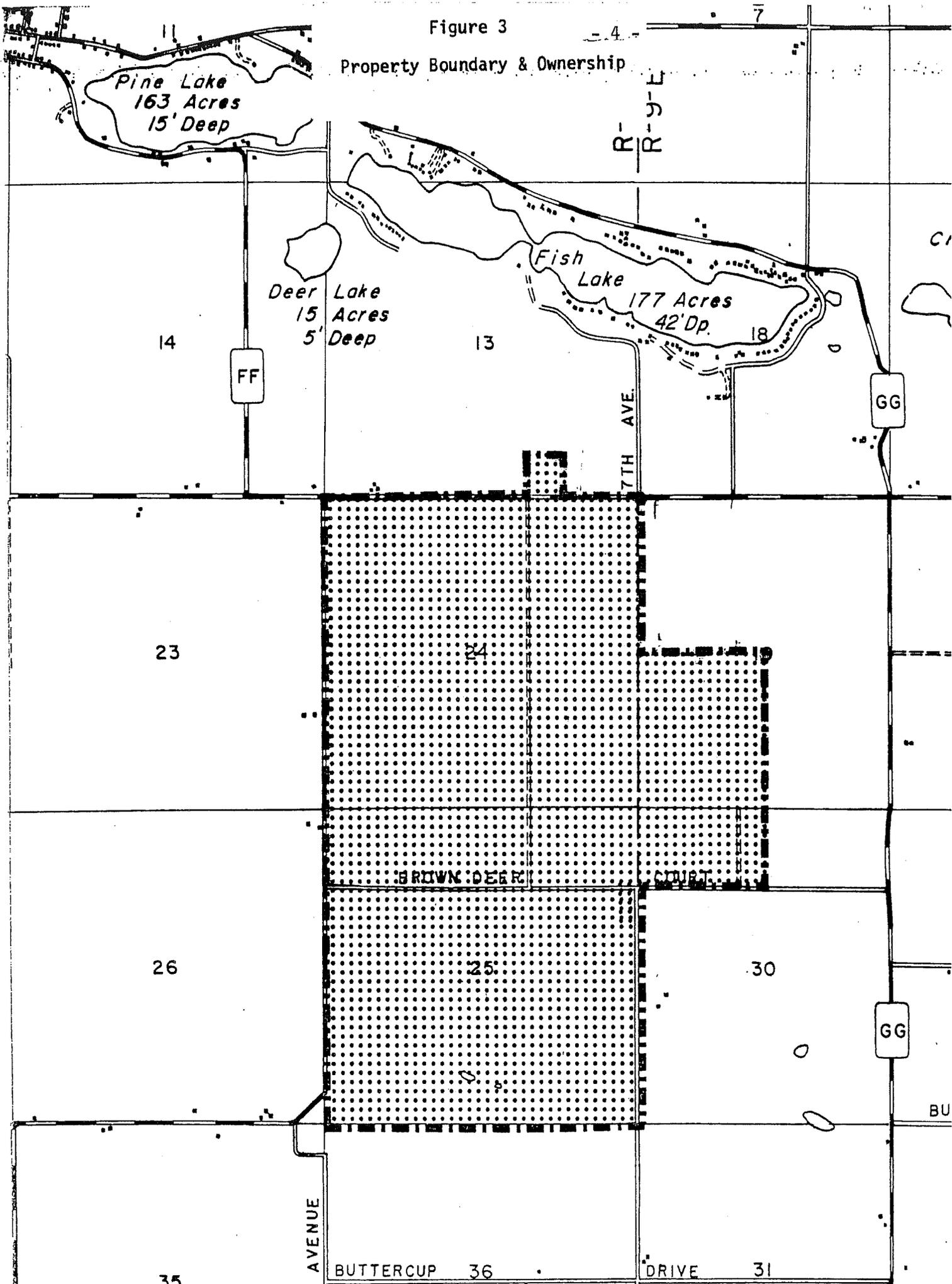
Presently, 840 acres of state land and 80 acres of private land (leased) are closed to hunting. The remainder of the state land lying to the south of the refuge land is open to public hunting. All privately owned land lying north of the state land was removed from refuge designation in 1978. This land included traditional early fall roosts by the Greenwood/Mekan Springs goose flock on Fish Lake and Deer Lake (Figure 3) until heavy hunting pressure and cottage developments, including the creation of an entire subdivision (Greenwood Acres) and a large campground (Tomorrow Woods), precluded continued goose-use.

Prior to state ownership, the state leased some of the refuge land and about 10 acres of standing corn were purchased annually for goose feed. From 1949 to 1953, several hundred acres of state land were cropped by a land-use agreement with the UW Experimental Station at Hancock. About 75 acres of corn and 40 acres of rye were provided annually for the geese. The Department of Natural Resources took over the entire farming operation in 1954 and initiated an SCS farm plan to control wind erosion and increase soil fertility.

Farming operations have been conducted by area farmers since 1960 under sharecrop agreements directed by the Department's property manager. Until 1978, 1/6 of all the corn was left standing as feed for geese and 1/6 was picked by the sharecropper and transported by the Department to Poynette to provide feed for pheasants raised at the state game farm. The remaining 2/3 of the corn was harvested as the sharecropper's "share" of the crop.

Figure 3

Property Boundary & Ownership



Since 1978, new sharecrop agreements require 1/5 of all corn grown to remain as goose feed and the total corn volume has been reduced to increase grass and legume seeding providing areas for dog trials and training. Approximately 600 acres are farmed under sharecrop agreements. About 80 acres of brush lying within the agricultural area has been burned periodically to retard oak succession.

The wooded acreage in the south half of the property (about 300 acres) consists primarily of low quality oak, some of which has been clear-cut for habitat diversity. Some oak is cut annually for use in local trout stream improvement projects, and limited wood-cutting permits are offered to the general public. The property also contains about 14 acres of Norway and Jack pine plantation.

Some grass areas in the south portion of the property are long abandoned fields, with encroachments of oak and other brush species. Hunting and hiking are currently the primary uses of the property (exclusive of the refuge area) because of a good system of trails and access points.

Special Administrative Action:

A refuge in the northern 2/3 of the Greenwood Wildlife Area is designated by Wisconsin Administrative Code, Section NR 15.01(69)(a) as follows:

"(69) Waushara County.

(a) Greenwood Wildlife Area

1. Township 19 North, Range 8 East, Town of Hancock
 - a. Section 24 - Entire Section
 - b. Section 25 - $N\frac{1}{2}$
2. Township 19 North, Range 9 East, Town of Deerfield
 - a. Section 19 - Fractional $NW\frac{1}{4}$;
Fractional $SW\frac{1}{4}$
 - b. Section 30 - Fractional $N\frac{1}{2}$ of $NW\frac{1}{4}$

All of the lands are located in the Towns of Deerfield and Hancock, Waushara County, Wisconsin, containing approximately 920 acres, more or less, according to government survey. This refuge imposes land-use limitations on approximately 65% of the wildlife area by prohibiting hunting and trapping.

Wisconsin Administrative Code, Section NR 17.01(7)(a) established a field trial grounds on the Greenwood Wildlife Area:

"(a) Class 1 field trial grounds. Those areas on department properties where dog trials are a major recreational pursuit. Dog trials and training will be allowed throughout the year except where conflicts occur during hunting seasons.

It is proposed to amend this rule by deleting the Greenwood Wildlife Area from the listing of Class 1 field trial areas and adding the property under NR 17.01(7)(b). This amendment would designate the property as a Class 2 field trial area. This designation permits field trials as a compatible, but not major, recreational pursuit and disallows field trialing from April 15 through July 31.

Current Management Activities and Uses:

The Greenwood Wildlife Area Refuge currently provides approximately 75,000 goose-use days by Canada geese. The remainder of the property (lying south of the town road in Section 25) is open to public hunting and provides about 2,100 participant days of recreational activity, including goose-hunting (300 days), deer hunting (200 days of gun hunting and 600 days of bow and arrow hunting) and small game hunting, including rabbit, squirrel and ruffed grouse (1,000 days).

A snowmobile trail parallels County Trunk Highway C along the north property boundary. This trail is maintained by the Waushara County Snowmobile Association through land use permit and provides 1,000 use days of snowmobiling activity. Over 3 miles of cleared trails through the wooded areas of the property are used by hikers, nature observers, berry-pickers, cross-country skiers, and other low impact users. The Wisconsin National Guard occasionally uses the property as a training area for mapping exercises (about 200 user-days annually).

Recognition of the diversity of glacial formations within the wildlife area led to the designation of an alternate moraine route of the Wisconsin Ice Age Trail (Figure 4). The trail transverses the property along its southern and eastern borders.

Approximately 600 acres are farmed through sharecrop agreements with six local farmers. This farming program has a two-fold purpose: To provide standing corn for goose feed and to maintain a 200+ acre area of grass and legume cover as a dog trial area. The current crop rotation program provides for a rotating schedule of land use between agricultural crops and dog trial use over all of the farm land within the refuge.

Annual management activities include maintenance posting, upkeep of parking facilities, periodic surveys of goose numbers and use activities, management of the sharecrop program, and any activity which results from dog trial or training use. Several thousand board feet of oak are harvested annually for use in area trout stream improvement projects. Limited wood-cutting permits are offered to the general public as wood becomes available.

Ownership:

There are 1,438.23 acres within the authorized boundaries of the property that have been acquired in fee title. Acquisition is 100% completed. Eighty acres adjoining the northeast portion of the property are annually leased as refuge.

RESOURCE CAPABILITY AND INVENTORY

Soils, Geology and Hydrology:

The wildlife area lies on a pitted outwash plain between two end moraines (Figure 5). The outwash plain was deposited by glacial melt water discharging from a stationary ice front. A glacier advanced from the east and stopped at the west side of the property. Melting created the end moraine and melt waters transported the outwash composing the central sand plain of Wisconsin. The ice front then retreated and subsequently advanced, stopping at the east side of the property and depositing a second pitted outwash plain between the moraines.

The altitude of the pitted outwash surface is about 50 feet higher than the central sand plain. The hilly end moraines are composed of poorly sorted sands and gravels and are very permeable. Sandstone underlies the entire glacial configuration. A single dry kettle formation of over 10 acres in size and over 50 feet in depth lies near the center of the agricultural land in Section 24. Several smaller kettle formations are found within the wooded area in the southern portion of section 25.

Soils are Plainfield, Richford, Coloma, and Wyocena series sands or sandy loams with high infiltration rates. The sand is fine to medium - grained and relatively clean. Where farmed, some fine organic matter occurs in the upper sand horizons. Soils in the moraine areas of the property are similar, although boulders and stones are more common. These soil types range from moderately acidic to neutral and where farmed on the property provide poor to fair returns, depending on annual rainfall.

The droughty nature of the soil precludes off-road vehicular traffic as soils are subject to blowing and erosion on moderate slopes (6-12%) may be severe. Clearcut and over-burned areas of similar soil types near this property have exhibited sand-blow characteristics.

Annual precipitation averages about 30". Most of this precipitation rapidly infiltrates and becomes part of the ground water system that eventually discharges into the Mecan River system to the south.

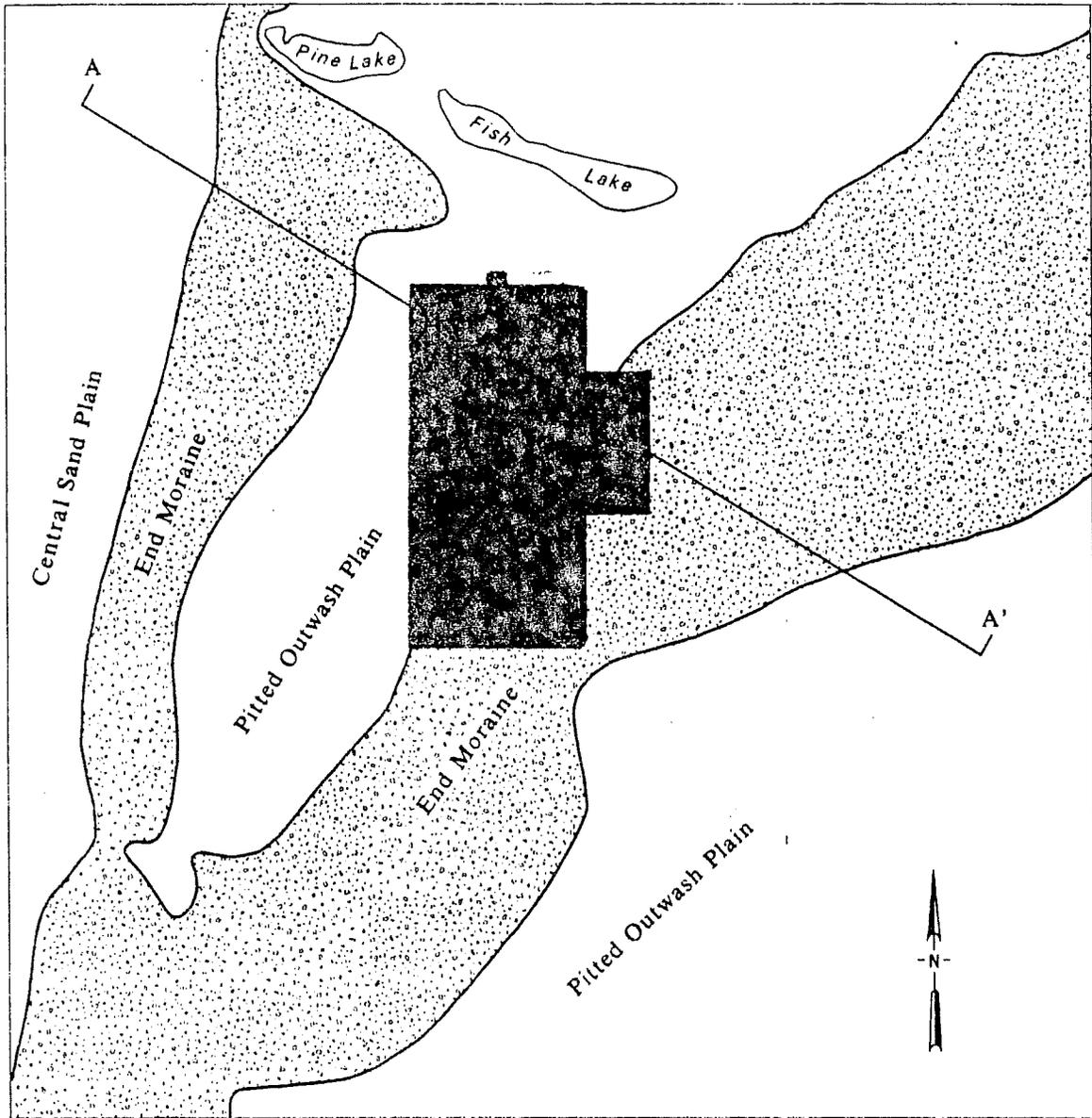
A study was done on the Greenwood area in the early 1970's by the U.S. Department of Interior in conjunction with DNR. Its purpose was to define the ground water system near a potential cold water fish hatchery site. Additionally, the study was to determine the feasibility of recycling of ground water within the ground water system.

Two high-capacity wells were drilled on the refuge. These wells are 18 inch diameter gravel packed wells 154 feet and 185 feet in depth. In addition, 10 observation wells with small diameter casings were installed to define the nature and extent of the ground water system. The saturated layer of glacial deposits resting on top of sandstone ranged from 50 to 100' in thickness. Observation of water levels in test wells while pumping at the high capacity wells indicate that the ground water supply may be as great as 10,000 gal./min.

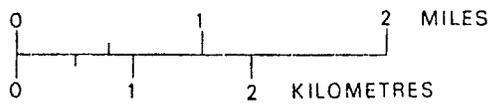
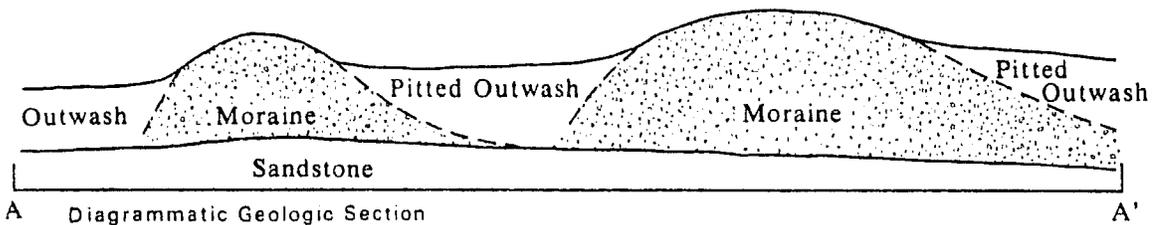
Wildlife:

Goose numbers on the Greenwood Wildlife Area reached a peak of 6,000-8,000 in the late 1940's to early 1950's. Geese traditionally arrive at the nearby Mecan Springs Refuge (2 miles south of Greenwood) in early October and their number increases until a peak is reached in mid-November. They begin feeding on the wildlife area about mid-November. By mid-December, goose numbers decline

Figure 5 - Natural Geologic Features of the Property



Geology from Thwaites, 1956



until only the over-wintering flock of from 350 to 500 remains. These geese utilize the open water at Mecan Springs as a roost and make daily flights to the Greenwood Wildlife Area to feed. The over-wintering flock usually departs the area in late March. This over-wintering flock had been described in the 1960's as being predominately giant Canada geese.

Goose numbers in the fall have peaked at 1,000 to 2,000 for the past few years. These geese provide about 300 hunter-days of goose hunting recreational opportunity at the Greenwood Wildlife Area and about 400 days of such activity at Mecan Springs. About 40 geese at Greenwood and 150 geese at Mecan Springs were harvested during the 1979 waterfowl season.

Continuation of refuge protection on the northern 2/3 of the Greenwood Wildlife Area and continued management of agricultural land within the refuge are necessary to maintain this goose population.

The Greenwood Wildlife Area is located within deer management unit 65. Over-winter estimates of this unit's deer population indicate about 30 deer/square mile of range. Deer density on and in the vicinity of the Wildlife Area, is many times greater than the unit's average because of the refuge's effect. Heavy hunting pressure in this unit cause deer from an area several miles around the refuge to move onto the refuge during the entire deer season. Because of the readily available food within the refuge, cover along the refuge boundary and use patterns established in November and December, large numbers of deer (over 300) remain on or immediately adjacent to the refuge until spring thaws.

All lands lying within road boundaries completely encircling Mecan Springs are included as wildlife refuge under Wis. Admin. Code NR 15.01 or as closed area under Wis. Admin. Code NR 11.08. This springs area and resultant Class I trout stream are included as an active fisheries management project. With the exception of approximately 60 acres, all lands relating to the goose flock are currently owned in fee title by the State of Wisconsin.

The Greenwood Wildlife Area is on the edge of marginal range for bobwhite quail and Hungarian partridge. These are occasionally sighted, but no management effort has been made specifically for the purpose of encouraging harvestable populations because of limiting factors (weather, etc.). Under current hunting season regulations, there is no open season for bobwhite quail in Waushara County. Species of secondary importance on this property which provide some recreational hunting opportunity include: Fox and gray squirrels, rabbits, red fox and ruffed grouse.

No endangered or threatened species are known to live on the wildlife area. Migrant bald eagles (endangered species) have been seen using the property. Extensive survey work would be required to determine their presence. Until funds are made available for such surveys, none are anticipated in the near future.

Vegetative Cover (Figure 6):

A forest reconnaissance was conducted on the Greenwood Wildlife Area in 1977. The report indicated approximately 533 acres contained 11 to 15 inch (dbh) oak (primarily black oak, with some red and white oak) yielding a potential of 4,890 volume board feet per acre. Thinly scattered underbrush in this area is composed of hazel, blueberry, raspberry, and young oak and cherry. No endangered or threatened plant species are known to be found on the area.

There are considerable defects among the oak saw timber including oak wilt and trunk deformity. Small patches of aspen of varying size are found near ravines and lower spots within the oak type. Several clear-cuts of 2 to 5 acres each within the oak type have reverted to early successional stages of cherry, oak, hazel and raspberry bushes. These small areas provide excellent habitat diversity for wildlife.

An additional 137 acres were clear-cut in the early 1960's and have been burned several times since. This area contains 0-5 inch (dbh) oak regenerated from stump sprouts. About 100 acres are in native grass cover (abandoned cropland).

Red and Jack pine from 5 to 10 inch (dbh) comprise 14 acres of plantation on the property. They were planted in 1951 to evaluate them as wind breaks on Greenwood's particularly sandy soil types. The remaining acreage (618) is currently cropped in rotation with corn, small grains and hay.

Water Resources:

There are no surface waters on the property. The nearest surface waters are Fish Lake, Pine Lake, and several small potholes lying within a mile of the north boundary. Two eighteen-inch high capacity wells 154 and 185 feet deep are located in the east-central portion of the agricultural land. These wells are capped and are not currently functional.

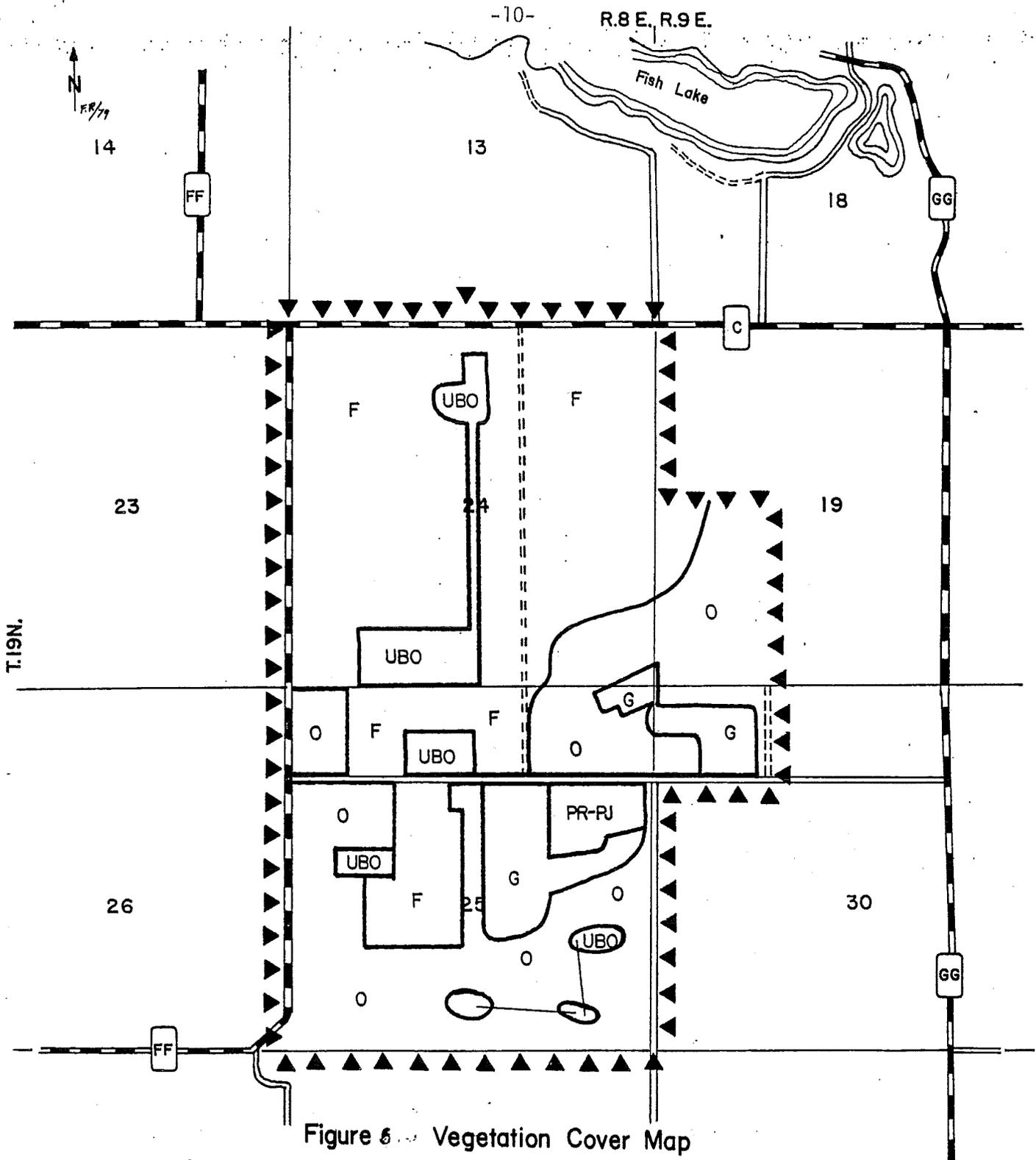


Figure 8. Vegetation Cover Map

GREENWOOD WILDLIFE AREA

Scale 1 : 24000

LEGEND

- Oak O
- Red Pine & Jack Pine PR-PJ
- Upland Brush-Oak UBO
- Abandoned Fields G
- Farm Land F

Goose-use of this wildlife area is dependent upon the water resource of the Mekan Springs which lie 2 miles to the south of the property. This body of water is 41 acres in size, has 3.5 miles of shoreline and averages 13 feet in depth. Mekan Springs is a seepage and flowing spring area that comprises the headwaters of the Mekan River. The flow of 25 c.f.s. at the lower end of this spring area assures adequate open water for goose use throughout the winter months.

Historical and Archaeological Features:

The State Historical Society of Wisconsin was solicited in December of 1979 regarding information concerning any historically or archaeologically significant sites that may be present within the Greenwood Wildlife Area. Their records show there are no such sites known to exist within the wildlife area.

Land Use Potential:

All of the land lying south of the town road (Figure 3) in Section 25 is currently designated as a public hunting area. This area is too hilly and rocky to be farmed. The land north of this town road is currently designated as a wildlife refuge to provide protection for the giant Canada geese. The agricultural land within the refuge can accommodate Class 2 dog trials and dog training.

Two unimproved parking lots are currently used on this wildlife area. Both lots have a 10-car capacity and are located just north of CTH "C" and just south of the town road (figure 2).

MANAGEMENT PROBLEMS

Local opposition to the use of the property as a dog trial and training area has developed. Some local residents fear the entire area would cease to have a refuge effect and the current agricultural cropping program to attract geese would be discontinued. Current agricultural land management has been directed toward providing continued food patches for the goose population concurrent with a dog trial and training area.

The sharecrop program within the refuge provides for standing corn as goose feed. Much of this corn is utilized by the deer which frequent the refuge during the late fall/early winter period of goose-use. Allowing deer gun hunting within the refuge would alleviate the deer problem but would preclude goose-use because of the disturbance factor involved. Geese are present during much of the bow deer season as well.

The rapid percolation characteristic of the soil types on the property preclude development of surface water retention facilities such as runoff or dugout ponds. Such development may be an asset regarding the property's attractiveness to geese, however, past attempts at creating ponds with artificial impermeable basins have failed. In the light of recent knowledge regarding infectious disease transmission among waterfowl, it may not be advisable to lure large numbers of geese into artificial, static pools of small size.

The relatively poor and droughty soil types on the property result in average to low average crop yields. Grass and legume cover persist for 3 to 4 years before row crop farming, with the use of lime and fertilizer, is implemented in the rotation because of the rapid nutrient leach rate. Management of a permanent area for dog trials is, therefore, unadvisable as suitable vegetation types would be replaced in a successional manner by a sparse natural grass and forb cover.

The wooded area does not support a forest crop suitable for economically productive management. Several areas within the oak type have severe infestations of oak wilt disease and the department's timber reconnaissance has determined that considerable defects occur among the saw timber. A marking and removal program to halt the advance of this disease while creating openings for wildlife habitat diversity was begun in 1978. Department Fish Management habitat crews utilize any lumber available for stream improvement projects. Remaining slash is given away as firewood and tops and branches are used as brush piles for habitat.

RECREATION NEEDS AND JUSTIFICATIONS

Although the refuge land area in this vicinity was reduced by 50% in 1978 through elimination of the privately owned refuge area north of the property, protection on the wildlife area proper should continue to be provided. Giant Canada geese annually frequent this area between November and March. One of the goals of Wisconsin's goose management program is to achieve as wide a geographic distribution

of geese as possible within the state for better viewing and hunting opportunities. Currently, about 15% of DNR Lake Michigan District's peak fall population utilize the Mecan/Greenwood vicinity. Continuation of this level of use will help to meet this management program's goal.

Increased demand for cross-country skiing, nature viewing, and hiking trails is being felt in this central Wisconsin area. The Tomorrow Wood Campground, located less than 2 miles from the property, supports a considerable number of campers who represent increasing numbers of day-use visitors.

Heavy demands are being made on the dog trial areas in southern Wisconsin. The Greenwood Wildlife Area has recently been designated as a dog trial area and, through crop rotation during 1978 and 1979, an area suitable for use as a Class 2 dog trial area is ready for use in 1980. This facility will help meet future needs for dog trial facilities.

ANALYSIS OF ALTERNATIVES

1. Eliminate Refuge and Manage for Farm Game Species

The agricultural acreage within the wildlife area could be developed for small game by planting wildlife shrub species to create hedgerows and escape cover for pheasants, rabbits, quail, and Hungarian partridge. Unfortunately, the property is located in very poor pheasant range and only occasional sighting of quail and Hungarian partridge are made since the wildlife area is located on the outermost fringe of their range. Artificial stocking of pheasants could provide some recreational hunting activity. The cropland types could be diversified with more crop types planted in small fields. Currently, fields are long (3/4 to over 1 mile) strips of about 20 acres each.

This alternative would involve removal of the refuge designation and subsequent elimination of goose-use on the property. It would, however, allow for increased use of the area as a dog trial grounds. It would be difficult to solicit cooperation from local farmers to participate in this management plan should the decision be made to utilize smaller fields, farm less land, and plant fewer harvestable crops. Further local opposition would result should the refuge designation be removed.

2. Continue Management as Goose Refuge with Compatible Uses

There is a continuing need for goose satellite areas in central Wisconsin. The Greenwood Wildlife Area annually provides about 75,000 goose-use days. The majority of this use is by the giant Canada goose flock which usually remains in the Mecan Springs/Greenwood vicinity between December and March. This in itself is unique as this subspecies winters in only two other locations in Wisconsin: Rock Prairie and Barkhausen.

The nature of this wildlife area is such that no additional development is warranted. Maintenance of the wildlife refuge and continuation of the sharecrop program to provide feed are necessary to assure goose use and protection. Use of the same land as a Class 2 dog trial area can be accommodated. The current sharecrop program provides agricultural cropping of the land to produce goose food and areas suitable for use for dog trials and training.

The wooded area has almost no forest product values. Improvement of this area through additional sanitation cuttings, additional openings creation, and release of scattered aspen clones would be of benefit by providing more diversified forest habitat types, as well as return some limited forest products such as slab lumber to fill the needs of the cold water fish habitat improvement program and firewood for private consumption. The 14 acres of pine plantation type will support periodic thinnings resulting in small volume pulpwood sales.

3. Sell or Trade the Property

The alternative of disposing of the property through sale or trade must take into account the salable value of the land and its values as a wildlife area.

The Greenwood Wildlife Area was purchased for less than \$25.00/acre. The demand for agricultural property with the potential for irrigation (such as Greenwood possesses) is such that the tillable acreage is currently worth over \$1,000.00/acre. The property represents a considerable economic commodity to weigh against its values as a wildlife and wildlife-based recreational area.

The values of the property as a wildlife area center on its use by giant Canada geese as a resting and feeding area during November-March. The Rock Prairie goose wintering area near Janesville has similar importance to the giant Canada goose in Wisconsin. The status of the giant Canada goose has been fragile since the turn of the century and it is only in recent years, under intensive management, that the subspecies has recovered from its uncertain condition. Our moral and ethical responsibilities are felt to be enough justification for insuring that

this subspecies receives management to a healthy and thriving population. Most significantly, they require more protection and management than other Canada goose population because of their precarious status in this state.

The values of the property as a wildlife-based recreational area are related to the property's proximity to the urban population centers of the Fox River Valley, Portage and Stevens Point, Wisconsin. This open space wildlife area is within an hour's travel time from these cities and, as such, receives relatively heavy day-use. A large privately-owned campground located within 1/2 mile induces a heavy demand for a day-use facility for hikers and nature observers.

The current market value of the entire wildlife property provides an opportunity to sell and reinvest in a property with more utility. However, Natural Resources Board policy discourages the sale or transfer of ownership of existing state properties, particularly a property with the values and uses of the Greenwood Wildlife Area. Consideration of these values underscores the desirability of retaining the property and rejecting the alternative of sale or trading the wildlife area.

4. Convert the Wildlife Area Into a Cold Water Hatchery

A report published by the U.S. Geological Survey in 1976 summarized a study done on the Greenwood Wildlife Area regarding the feasibility of utilizing the available underground water resource to support a cold water fish hatchery. The study determined that the available groundwater supply was eminently suitable for such use. The available water supply was found to be as great as 10,000 gal/min and the quality of the groundwater met reported criteria for hatchery supplies as well as an acceptable temperature (49°F) for fish rearing. Another principal conclusion of the study was the determination that a hatchery could be operated without effluent treatment and without environmental degradation by recycling the raceway effluent into the groundwater system with negligible effect on the regional groundwater system.

Despite the findings of the study, high development and maintenance costs influenced the Department to decide that a cold water fish hatchery not be developed on the property. The Department's need for such a facility involved the trout and salmon rearing and stocking needs for the Great Lakes Fisheries complex. Accordingly, it was determined that a hatchery in the northern part of the state (Bayfield) would be more economically feasible. A hatchery to supply this demand was ultimately constructed near Bayfield.

MASTER PLAN COMMENTS

By: Forest Stearns
Representing: Scientific Areas Preservation Council
Date: July 14, 1980

We have reviewed the Greenwood Wildlife Area Master Plan concept phase and find that the proposed management of this site will not affect our program interests.

By: Henry W. Kolka
Representing: Wild Resources Advisory Council (WRAC)
Date: July 24, 1980

General Review

Note: The Wild Resources Advisory Council has very meticulously examined the Greenwood Wildlife Area Master Plan Concept Element and its Chairperson has referred to USGS 7.5 minute charts of Coloma and Richford quadrangles. On July 11, the Chairperson spent several hours in on-the-field reconnaissance of the Greenwood Wildlife Area and the Mecan Springs. The results of some of my findings will be presented in the portion labeled as Comments and Recommendations.

The Wild Resources Advisory Council wishes to applaud and congratulate the Greenwood Wildlife Area Master Plan Concept Element Property Task Force for realistically and concisely presenting one of the most unique and critical natural phenomenon found in Wisconsin. The Council deplores the fact that DNR has shifted to a much weaker position in supporting and encouraging the survival of Giant Canada Prairie Goose (*B.c. maximus*) in Wisconsin since 1978. The WRAC urges that the Greenwood-Mecan Springs wedlock receive appropriate professional analysis and cautious public visibility before the existing deteriorating forces terminate a most unusual and unique natural sage.

DNR RESPONSE: The Department does not share the view that we have shifted to a much weaker position in supporting and encouraging the survival of giant Canada geese. To the contrary, Greenwood Wildlife Area would not exist if we were not concerned with this subspecies. Further, the land acquisition, closed area and refuge efforts DNR has given this area along with Mecan Springs, Bankhousen, Rock Prairie and Turtle Creek Wildlife Area represents a continuing effort of the agency to support and encourage the survival of this unique resource.

The WRAC is very impressed with the focal sections of the Task Force's presentation of Greenwood Wildlife Area. The history of the project and the analysis of the unique association of the Giant Canada Prairie Goose (*B.c. maximus*) with its roosting area in Mecan Springs and its feeding site to extend special commendation to the property Task Force for this presentation. There were two very inadequate. While on reconnaissance of the wildlife area, I watched a young eagle soaring over the project area for at least fifteen minutes. Considering the varied nature of the habitat of the project area I am quite convinced that there are many nongame species of mammals and birds and other raptorial birds that live in the area or hunt the area. The second weakness concerns the treatment of topography. There are two glacial features worthy of treatment and special designation. One is a dry pit in the middle of the agricultural area about 1200 ft. from west-to-east and 600' from north-to-south. Sincere there is some evidence of a low ground moraine preceding the outwash deposits from east lying recessional moraine a large block of ice could have been deposited in the present cavity and consequently buried with outwash until the melt took place. The crater like depression is between 50 and 60 feet deep--a most unusual pit and worthy of being designated as a scenic area. The other potential scenic area is in the southern wooded section of the property. This is a small lake in a glacial kettle around 120 feet below the upland rim. Still quite unique but more common in Wisconsin than the above described pit.

DNR RESPONSE: There is a difference in philosophy between DNR and WRAC regarding the type of information presented in the conceptual master plan. The listing of nongame species likely to be found on the area serves no useful purpose. The Department is very aware that adequate inventories of plant and animals must be made prior to implementing development actions which may significantly alter the existing environment. No such action is proposed for Greenwood.

The Plan text has been modified to identify the topographical features. While they will be protected by state ownership, DNR does not feel they warrant Scenic Area designation.

Comments and Recommendations

1) Goal.

The WRAC suggests that the goal sentence be appropriately ended with and education (following recreation).

DNR RESPONSE: Concur; text modified.

2) pp. 1, Annual Additional Benefits.

a. Item 2: The WRAC suggests the addition of and education after the word observation.

b. Item 3: The Council suggests the insertion of and transient after the word indigenous.

DNR RESPONSE: Concur; text modified.

3) pp. 1, Property Development Proposal

The top priority for the Property Task Force and the Department of Natural Resources is to maintain and enhance the habitats used by the Canada Prairie Goose (*B.c. maximus*) in its ancestral migration and wintering home. In the estimation of the WRAC perpetuating this program is as vital to Wisconsin as that of preserving the wintering areas of whooping crane on national scale.

The WRAC considers the devotion of about 1/3 of the cultivated land of the no hunting block, too heavy a price for a secondary use (dog trials and training area). When the two events occur simultaneously (Goose feeding and dog trials) the results could mean total disaster for the goose. The Council recommends that no dog trials be held after mid-October to the end of March. Such a schedule will allow the *B.c. maximus* an unmolested use of the 840 acre state owned and 80 acre leased non-hunting block of the project area. Likewise this will give the dog trial people 6 1/2 months to put their act together without disturbing the unique goose natural phenomenon.

DNR RESPONSE: Do not concur. The few dog trials and light training occurring on this property are controlled by permit and are not held mid-October through March.

4) pp. 1, Land Control

The WRAC considers the leased 80 acres an important supplement in maintaining the shrinking Prairie Goose population on the Greenwood property. The Council urges that a more permanent control than short term leases be acquired for this property.

DNR RESPONSE: The Department does not consider these lands critical for proper goose management. If control of such lands were lost in the future it would not produce a negative impact on the flock.

5) pp. 1 and 3, Background Information

The WRAC considers this section exceptionally well diagnosed and written. The Council has one question. Is there a current trend in the goose population that use the combined area, Mecan Springs, and Greenwood refuge?

DNR RESPONSE: Text covered under wildlife section.

6) pp. 3, History of Property, 4th paragraph.

The WRAC has a pertinent question of the task force. Is the 920 acres (80 acres leased included) closed to hunting sufficient to maintain the goose flock desirous of using the area?

DNR RESPONSE: Yes.

7) pp. 5, Special Administrative Action, last paragraph.

The WRAC does not consider dog field trials as compatible when geese are using the Greenwood refuge for feeding purposes. The Council reiterates its recommendation that field trials be disallowed between Mid-October and the end of March.

8) pp. 5, Current Management Activities, second paragraph

Since the snowmobile trail lies on the northern fringe of the property the Council sees no infringement problem on the goose use of the area. Off-trail riders could create disaster, however, of considerable degree. The WRAC finds this topic exceptionally well presented.

9) pp. 6, Ownership.

The WRAC considers the 80 acres annually leased were essential to the success of the goals and objectives of the project area, consequently it urges a more permanent control of this block.

10) pp. 6, Soils, Geology and Hydrology, first paragraph

The WRAC considers this paragraph, on the whole, as sufficiently analytical of the property area. However, as I analyzed it in the General Review, in travelling by the north-south service road, I found evidence of tops of low ground moraines definitely of recessional moraine origin (east moraine). This should be shown in the vertical view of the A-A' transect. Such a ground moraine would have a much greater capability of moving a large block of ice resulting in the pit-crater than wash waters from the melting glacier. At least this is one geomorphic opinion.

11) pp. 6 and 8, Wildlife.

A very good and parts excellent treatment of game species but exceptionally weak in nongame animal species. The Council urges supplementation of this category.

The WRAC also urges the Task Force to consider reducing the goose kill of the Greenwood-Mecan Springs flock, by whatever means within their present or potential control. Another point, while on reconnaissance tour of both areas Mr. Engle and I did see a young bald eagle soaring above the Greenwood property.

DNR RESPONSE: Attempts to expand harvest control (by permit) has been strongly resisted. While the Department is confident that present day harvest rates are reasonable and will continue to be monitored. The eagle observation has been added to the text.

12) Vegetation

The staff force has this section well analyzed. While travelling east on Brown Deer Court I did see some very good prairie specie recovery on abandoned fields north of the road. Time, energy and small investment by the overworked project managers could be directed to prairie recovery program.

13) Management Problems, first paragraph

The WRAC wishes to support the local opposition to the use of the property for dog trial and training area concurrently. The Council considers this a non-compatible enterprise and has already suggested solution to avoid it.

14) Recreational Needs and Justifications, first paragraph.

The WRAC deplors the fact that refuge land was reduced by 50% in 1978 by DNR. Further cutbacks or disturbing practices could result in the demise of one of the most genuinely existing natural phenomenons of the state. The Council again censures the projections made in the last paragraphs of this section. The rest of the section is again very well done.

15) Analysis of Alternatives

The WRAC supports alternative number 2. The Council feels that to credit any of the other alternatives, even in part, would result in complete disaster to one of the most exciting and unique natural sagas of Wisconsin history.

16) Annual Additional Benefits.

Sorry--out of sequence. Item 4 and figure 6. The WRAC suggests that the ice age trail add a supplement from Brown Deer Court crossing up along North South service road to the crater-pit. Visitors of the trail will never see a better dry outwash pit anywhere than this one.

DNR RESPONSE: This recommendation has been referred to the Bureau of Parks and Recreation who coordinates this activity.

17) Associate charts.

Figures 1 through 6 are well designed and very helpful in supplementing the text. The Council does feel that one of the charts should show the crater-pit and the kettle lake.

DNR RESPONSE: Do not concur. The common nature of this feature throughout the region precludes special identification. However, the text has been modified to describe this item to the reader.

By: Roy C. Willey, Jr.
Representing: ECWRPC
Date: July 22, 1980

The East Central Wisconsin Regional Planning Commission has reviewed the Greenwood Wildlife Area Master Plan as it relates to local and regional plans and programs for Waushara County. The plan recommends forest-game wildlife management practices and emphasizes a winter feeding area for Canada geese.

East Central finds the concept master plan to be consistent with local and regional plans. We support the plan recommendations and offer assistance in any further detailed planning.

An area of the plan which should receive further discussion is the Wisconsin Ice Age Trail development. Items of interest are the type of development, intensity of future use and potential facilities which may enhance trail use.

DNR RESPONSE: The Department does not feel the Greenwood Plan is the appropriate document for this type of discussion. A brief reference is felt adequate.

