Upper Mississippi River

National Wildlife and Fish Refuge

Winona, Minnesota

Annual Narrative Report

Calendar Year 1989

REVIEW AND APPROVALS

UPPER MISSISSIPPI RIVER NATIONAL

WILDLIFE AND FISH REFUGE

Winona, Minnesota

Winona District, Winona, Minnesota

La Crosse District, La Crosse, Wisconsin

McGregor District, McGregor, Iowa

Savanna District, Savanna, Illinois

ANNUAL NARRATIVE REPORT

Calendar Year 1989

4/20/90		4/26/90	
Refuge Manager	Date	Complex Manager	Date
Acting 4/30/90		4/30/90	
Refuge Supervisor Review	Date	Regional Office Approval	Date

UPPER MISSISSIPPI RIVER NATIONAL WILDLIFE AND FISH REFUGE

Winona, Minnesota

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UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

Headquarters/Complex

INTRODUCTION

The Upper Mississippi River National Wildlife and Fish Refuge (Refuge) was established by an Act of Congress in 1924 to provide for the needs of fish, migratory birds, other forms of wildlife, and to conserve flowers and aquatic plants. The Refuge is located along 284 miles of the Mississippi River valley extending from the confluence of the Chippewa River near Wabasha, Minnesota to near Rock Island, Illinois. The 194,000 acres of Fish and Wildlife Service and U.S. Army Corps of Engineers lands that make up the refuge lie in four states; Minnesota, Wisconsin, Iowa and Illinois. For efficient management, the Refuge is divided into four districts with a separate manager assigned to each district. The District Offices are located at: Winona, Minnesota; La Crosse, Wisconsin; McGregor, Iowa; and Savanna, Illinois. The Complex Office in La Crosse, Wisconsin and the project leader and staff at the Headquarters Office in Winona develop policy guidelines and coordinate activities with refuge managers at the District Offices.

The Upper Mississippi River is divided into a series of step-like pools by dams and locks constructed by the Corps of Engineers for commercial navigation. Each pool is numbered corresponding to the dam creating the pool. Twelve pools, numbered from 4 through 14, are found in the Refuge. These impoundments abruptly change the riverbottoms from an area of wide fluctuation in water levels to an area of semi-stabilized water. While spring floods still occur, the bottoms do not dry out in the summers to the extent they did under free flowing river conditions. Each pool has three distinct zones. The upper end is in essentially normal river condition where the water levels were not raised to any extent. In this zone, marsh development is limited and the old condition of deep sloughs and wooded islands is found. In mid-pool, large areas of relatively shallow water developed and the old hay meadows became inundated. It is in this zone that the best marsh development occurred. Immediately above each dam the water was impounded to a depth which precluded marsh development. This zone is essentially deep open water with limited aquatic growth.

The Refuge is largely confined to the floodplain and generally lies between the railroads that border the river. Bottomland varies from two to five miles wide between the mouth of the Chippewa River at the upper end of the Refuge and the mouth of the Wisconsin River near Prairie du Chien, Wisconsin. Below Clinton, Iowa, from Beaver Island to the southern extremity of the Refuge, bottomlands are negligible except at the mouths of tributaries. Precipitous wooded hills varying from 200 to 600 feet high, border the Refuge from the Chippewa River to Clinton. Below Clinton, these hills give way to much more gradual slopes.

The natural vegetation of the river valley consists of bottomland deciduous forest, marsh and aquatic plants, and on a few scattered sand terraces, prairie-type species. The river lies roughly on the transition between hardwood forest and western prairie. The bottoms are for the most part timbered. Most of the original timber along the river was found on islands and other sites protected from fire. The present expanses of forest are largely a product of fire control since

settlement by whites. The riverbottom forest (roughly 45,000 acres) is comprised mainly of silver maple, American and red elm, red maple, basswood, swamp white oak, cottonwood, green ash, hackberry, and river birch. Dense beds of nettle and poison ivy are common on many of the river islands. Emergent vegetation in the marshes included such locally dominant species as river bulrush, the round stemmed bulrushes, cattail, phragmites, arrowhead, and smartweed. Wild rice occurs intermittently in the upper part of the river but is absent south of pool 10. The most common aquatics on the area are pondweeds, coontail, elodea, wild celery, and pond lilies. Floating vegetation includes primarily the duckweeds, abundant in most quiet water area. Some meadows and sand prairies are present in various localities. The drier meadows and sand prairies are present in various localities. The drier meadows are vegetated by such species as bluegrass and big and little bluestem. Species such as yucca and gamma grass that are adapted to dry, sandy soils dominate on the arid sand prairies. On the marsh border, dikes and damper meadows, cord grass, reed canary grass, rice cut grass, and sedges appear. About 540 species of vegetation are known on the Refuge.

The Refuge provides migratory habitat for a large percentage of the migratory birds in the Mississippi Flyway. Significant proportions of the continental populations of tundra swans and canvasback ducks use the Refuge as a resting and feeding area for several weeks in the spring and fall.

Winona

INTRODUCTION

The Winona District of the Upper Mississippi River National Wildlife and Fish Refuge consists of approximately 32,000 acres of Mississippi River bottomland from the Chippewa River above Nelson, Wisconsin south to Lock and Dam 6 at Trempealeau, Wisconsin. This area covers Pools 4, 5, 5A and 6. The total length of Winona District is approximately 50 river miles.

Habitat includes wooded river bottomland (mostly silver maple, cottonwood and willow), backwater marshes of cattail, bulrush and other emergent and submergent plants, deep open water areas above each dam and numerous sloughs and channels. Significant biological areas include the Chippewa River Delta (Nelson-Trevino Bottoms) - a natural area of bottomland forest, and the Weaver Bottoms - an important waterfowl migration and hunting area.

The Winona District office is located in Winona, Minnesota and consists of an office and riverfront shop/service facility. The District maintains several major boat landings on the river area.

Present staff consists of the district manager, assistant district manager and an office assistant. In addition, one to four summer personnel are usually employed.

La Crosse

INTRODUCTION

The La Crosse District includes most of navigational Pools 7 and 8 and extends from Trempealeau to Genoa, WI, a distance of about 35 river miles. The District lies within the river corridor bordered by the steep bluffs of Winona and Houston Counties in Minnesota and Trempealeau, La Crosse, and Vernon Counties in Wisconsin.

More than 90,000 people living in the greater La Crosse area are only minutes away from the Refuge. This accessability is reflected in the amount of use the District receives annually from such users as pleasure boaters, campers, hunters, fishermen, and for wildlife observation.

Habitat types include about 15,400 acres of open water, 16,100 acres of backwater marshes and sloughs, and 10,450 acres of bottomland hardwood forests. Extensive tracts of bottomland hardwood forest interlaced with sloughs, marshes, and beaver ponds occur where the Black and Root Rivers join the Mississippi. The District's habitat base supports large concentrations of waterfowl, including canvasbacks.

The popular Lake Onalaska is located in the District. The lake, like many of the Refuge backwaters, was created upon completion of the lock and dam system and subsequent flooding in 1937. Lake Onalaska supports one of the most highly utilized fishery resources on the Upper Mississippi River.

The District office is located in the U.S. Post Office Building in downtown La Crosse, WI; a maintenance facility is located in Minnesota near La Crosse.

McGregor

INTRODUCTION

1. Location

The McGregor District is one of four districts comprising the Upper Mississippi River National Wildlife and Fish Refuge. The District Office is located at McGregor, Iowa with Refuge Headquarters at Winona, Minnesota. This District contains parts of Houston County, Minnesota (8,625 acres); Grant, Crawford and Vernon Counties, Wisconsin (37,135 acres); Dubuque, Clayton and Allamakee Counties, Iowa (32,148 acres) for a total of 77,908 acres. It covers navigation Pools 9, 10 and 11. The District is 97 river miles long, extending from Dubuque, Iowa to Genoa, Wisconsin. Adjoining or nearby public land areas are: 1) Grant River Public Use Area, Potosi, Wisconsin; 2) Nelson Dewey State Park, Cassville, Wisconsin; 3) Pikes Peak State Park, McGregor, Iowa; 4) Wyalusing State Park, Wyalusing, Wisconsin; 5) Effigy Mounds National Monument, McGregor, Iowa; 6) Yellow River State Forest, Harpers Ferry, Iowa; 7) Blackhawk Park, Victory, Wisconsin; 8) Genoa National Fish Hatchery, Genoa, Wisconsin; 9) Fish Farm Mounds State Park Preserve, New Albin, Iowa and several smaller access areas.

2. Topography

The Refuge lies within the Mississippi River Valley which is two to five miles wide and cradled between forested bluffs, rising up to 500 feet above the river. The elevation of the valley is approximately 600 feet msl.

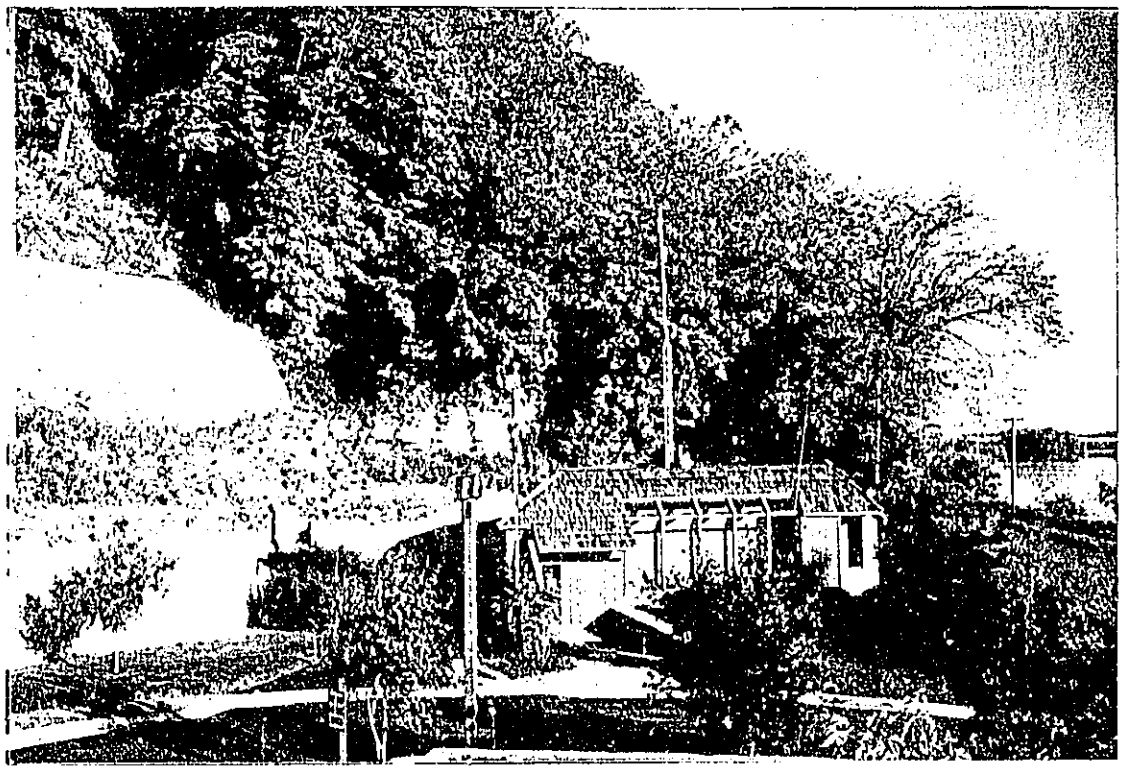
3. Points of Interest

The McGregor District contains no large cities, but small river towns flank the river. Commercial fishing, clamming and furbearer trapping provide income for some residents along the Refuge. Sport fishing is the most popular recreational activity, occurring every day of the year. Waterfowl hunters may travel over 200 miles to participate in opening day hunts on the Refuge. Canvasback concentrations on the District peak at 35,000 or about 25 percent of the world population.

4. Physical Facilities

The District headquarters is located at the McGregor District Office/Visitor Contact Facility (DO/VCF) which was completed in July, 1986. Satellite stations are located at Cassville, Wisconsin, and Lansing, Iowa. Warehouse/storage areas are located at Cassville and Genoa, Wisconsin, and McGregor, Iowa.

McGregor



The McGregor District Office/Visitor Contact Facility is at its photogenic best when framed by the colors of fall.
10/89

FR

Savanna

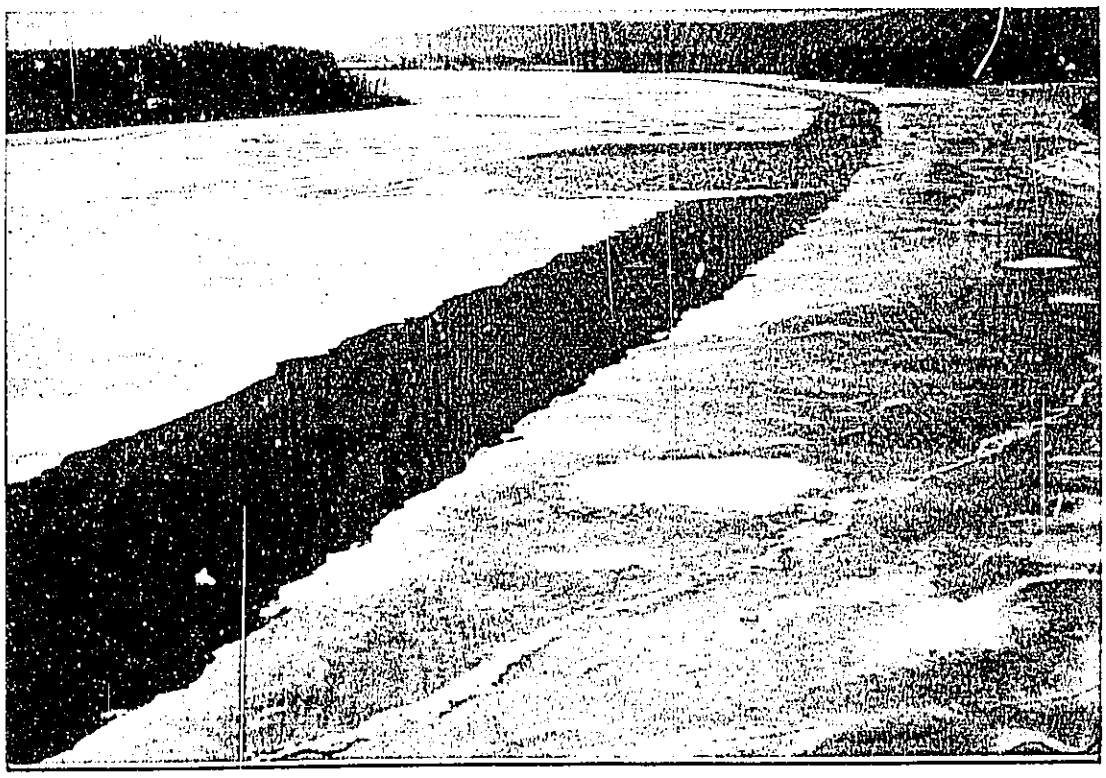
INTRODUCTION

SAVANNA DISTRICT

The Savanna District is located in northwestern Illinois, east-central Iowa and a small portion of southwestern Wisconsin. The District extends along both sides of the Mississippi River approximately 90 river miles from Dubuque, IA, to Rock Island, IL. Management of this District covers three navigational pools: 12, 13, and 14. Nearly 44,000 acres of land owned by the U.S. Fish and Wildlife Service (Service) and the U.S. Corps of Engineers (Corps) are managed for waterfowl, mammals, non-migratory birds and a multitude of recreational uses.

Pool 13 contains several areas that are intensively managed by the District. Spring Lake contains the Refuge's only moist soil unit. Potter's Marsh is the only area on the Refuge where waterfowl hunting is controlled by permit, because of excessive demand for hunting blind sites. The Thomson Grassland Unit contains 329 acres of warm-season native grasses that provide nesting for waterfowl and other native birds.

The Savanna District has an active forest management program. Stand mapping of the entire District is almost finished and seven forest management cuts have been completed. The Savanna District is unique on the River with limited water management capabilities in seven units with seven water control structures and one electrical pump. The District also has an active cooperative farming program, prescription burning program and is actively re-establishing more warm-season native grass. The District Office is located in the basement of the Post Office in Savanna, IL, while a garage, shop and storage facility are located south of Savanna. A permanent staff of 3.8 FTE manage the District.



The broken-ice trail of the first northbound barge tow of 1989 delineates the Pool 13 navigation channel. (3/89 LW)

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A. HIGHLIGHTS

Barge fleeting continues to be a hot topic (D.2).

Refuge takes a stand against the use of single hulled barges for transporting ecologically hazardous cargo (D.2).

Land Use Allocation Plan completed for Pools 11-14 (D.2).

Public participation increases due to the Environmental Management Program (D.3).

Videotaped documentary completed on the Whitewater watershed project (D.3).

Plans for a Office/Visitor Interpretive Center moving forward (H.1).

Plans completed for the Potters Marsh Hunt (H.8).

Agricultural Program assistance was again a big work item for the year (J.1).

GAO report mentions the refuge in their compatibility study (J.3).

A. HIGHLIGHTS

The District hosted a Youth Conservation Corps (YCC) program during a 10-week period beginning on June 12. Three enrollees took part in a variety of work projects ranging from boat landing maintenance to wood duck banding (Section E.2).

Major personnel actions occurred on the District; Alisa Medema entered on duty 1-17-89 as Office Assistant; Kathleen Cheap transferred to Refuge Headquarters on 5-7-89; and Tim Julison was promoted to Assistant District Manager, GS-7 effective 6-4-89 (Section E.1).

Eight projects are in various stages of development as habitat restoration and enhancement projects under the Environmental Management Program. Numerous interagency meetings were held during the year (Section D.6).

District staff worked with local coordinator, Tex Hawkins, implementing Conservation Easements on Farmer's Home Administration inventory properties. Ten easements are under various stages of development on four counties within the Refuge Management District assigned to Winona (Section J.1).

The wood duck banding quota for the District was achieved with 201 birds banded (Section G.16).

Drieslein attended the professional development workshop held at Iowa State University in Ames, Iowa from 2-13 to 2-17 (Section E.1).

The long-awaited interpretive panels for the three-panel kiosk at Weaver Landing were completed and mounted in July (Section H.6).

A significant decline in abundance and distribution of several aquatic plant species was noted on upper river pools this year. District staff noticed the decline, particularly during summer vegetation sampling at Weaver Bottoms and during wild celery tuber collections in Lake Onalaska (Section D.5 and J.1).

Of the twelve illegal structure cases pending at the conclusion of 1988, two remain to be resolved. Partial compliance has been obtained in both instances and the Division of Law Enforcement is assisting with final disposition (Section H.17).

All private structure permits on the District were re-issued effective 1-1-90 as non-transferrable life-use permits. Permittees were given the option of transferring their permit name to that of another family member prior to 12-31-89 (Section E.8).

A. HIGHLIGHTS

Drought conditions prevailed in the La Crosse area for the second consecutive year (Section B).

Two conservation easements were obtained through the Farmers Home Administration as part of the Farm Bill program (Section C.2.).

The District underwent several staff changes during the year and added a new Biological Aid/Technician position (Section E.1.).

Wildcelery and other submersed aquatic plants were scarce this year on Lake Onalaska and most of the Upper Mississippi River System (Section F.2.).

A new bald eagle nest was found in Pool 8 less than one mile from downtown La Crosse (Section G.2.).

Canvasbacks took a pounding during the waterfowl hunting season (Section G.3.).

A wildfire in November burned about 60 acres on a floodplain island in Pool 8 (Section F.9.).

Environmental Management Program (EMP) activities dominated the summer workload. A major dredging and construction project was initiated on Lake Onalaska. Another EMP project, the Pool 8 Islands, got off to an early start due to channel maintenance needs (Section I.1.).

A. HIGHLIGHTS

Low river levels continued throughout the year. There is concern that low flows may be a contributing factor to declines in wild celery and invertebrate abundance. (Section B.)

Clerk-Typist Palmer's position was reclassified to Office Assistant, GS-5. She also received a Level 5 summary performance rating. (Section E.1.)

Biological Technicians Male and Batya were selected for positions in the Refuge Manager Series. Assistant Romero's position was reclassified and he was promoted to Assistant District Manager GS-9. (Section E.1.)

The discovery of a marijuana plot on Refuge land resulted in charges against a Lansing, Iowa grade school teacher. (Section H.17.)

A law enforcement case involving the shooting of Refuge boundary signs resulted in the apprehension of a felon who now faces up to 23 years in prison for a federal firearms violation. (Section H.17.)

Fur prices were very low this year resulting in few trappers and very little trapping pressure. (Section H.10.)

Three new eagle nests were located on the District - two on Pool 9 and one on Pool 10. (Section G.2.)

The first three tracts of land have been acquired for the Driftless Area National Wildlife Refuge. (Section C.1.)

Construction was started in October on the District's first Environmental Management Program (EMP) project. (Section I.1.)

The New Albin Landing comfort station was completed. (Section I.1.)

A. HIGHLIGHTS

The District continues to have numerous on-going research projects by various agencies and universities. (Section D.5.)

Clerk-Typist McDonald retires after 10 years 9 months with the Service. (Section E.1.)

District personnel have to cover 2 1/2 months of clerical assignments waiting for a new secretary to come on board. (Section E.1.)

Assistant District Manager and Clerk-Typist positions were upgraded, a new Clerk-Typist hired, Clerk-Typist position reclassified as Office Assistant, and the permanent Biological Technician position, authorized in 1988, was filled. (Section E.1.)

District receives a certificate and monetary reward for outstanding safety record for 1989. (Section E.6.)

A major allocation of staff time was directed toward the Farm Bill Program. (Section E.7.)

The District continues to convert agricultural cropland into permanent grassland with 31.3 acres completed in 1989. (Section F.4.)

The first recorded sightings on the District of western sandpiper and black-necked stilts occurred during 1989. (Section G.5.)

A goose firing-line adjacent to the Spring Lake Closed Area was eliminated by the Service coordinating a joint effort by state and federal agencies along with private landowners. (Section H.8.)

Despite very little time available for law enforcement, 58 cases and $3,725 in fines were assessed during 1989. (Section H.17.)

The first project funded by the Environmental Management Program on the Savanna District (Brown's Lake $1.63 million) was completed during 1989. (Section I.1.)

Construction work continued on the District with four active projects during 1989. (Sections I.1., I.2.b., I.2.c., and I.8.)

Barge issues demanded major District staff time throughout the year. Pool 14 barge fleeting and permit application (Sections D.3. & D.4.), Sabula, IA-Savanna, IL, barge fleeting controversy (Section D.3.), Pool 12 barge fleeting land exchange (Section J.1.a.), and double-hulled barge controversy. (Section J.1.b.)

District undergoes an in-depth Operations Inspection by an entourage of eight people during portions of three weeks. (Section J.3.)

B. CLIMATIC CONDITIONS

Although a drought was not suffered in 1989, this area did not receive the precipitation needed to make up the loss from the droughts of 1987 and 1988. Temperatures and precipitation during the year were below average for 8 out of the 12 months (Table W-1).

The late winter of 1988-89 was relatively mild with below average snowfall with the exception of a late "dumping" of 19.3 inches of snow in March. December showed winter's fury with up to -50° wind chills lasting for several days.

High water and spring flooding did not occur again this year.

Weather data for 1989 are summarized in the following table:

Table W-1. Precipitation and Temperature Data - 1989*.

	Temperatures (°F)				Precipitation (inches)		
Month	Max.	Min.	Avg.	Departure	Precip.	Snow	Departure
Jan	- 7	52	23.6	+9.6	.41	3.8	-6.40
Feb	-16	41	12.8	-6.9	. 4	7.9	-0.49
Mar	- 6	75	29.3	-1.6	2.36	19.3	+9.30
Apr	19	76	46.0	-1.2	1.78	trace	-1.27
May	26	87	58.9	-0.5	3.02		-0.59
Jun	43	90	67.7	-0.8	1.33		-2.28
Jul	54	100	74.4	+2.4	2.59		-1.24
Aug	51	96	71.4	+0.5	4.58		+0.88
Sep	34	85	61.2	-0.4	1.95		-1.52
Oct	24	83	51.7	+0.8	2.71		+0.63
Nov	4	60	31.5	-3.8	1.47		-0.03
Dec	-22	50	12.1	-9.4	.49	4.1	-0.58
				Total	23.09	35.1	-3.59

*National Weather Service data recorded at La Crosse, Wisconsin.

B. CLIMATIC CONDITIONS (Continued)

Table W-2. Pool Elevation (Feet Above Sea Level).

Month	Pool 4 Maximum	Pool 4 Minimum	Pool 4 Mean	Pool 5 Maximum	Pool 5 Minimum	Pool 5 Mean
January	666.51	667.20	666.95	659.90	660.14	660.03
February	666.66	667.35	667.05	659.61	660.22	660.00
March	666.52	667.44	666.90	658.22	660.29	659.56
April	666.20	667.08	666.55	659.23	659.96	659.55
May	666.32	666.95	666.60	659.34	659.85	659.56
June	666.23	667.02	666.62	659.15	660.11	659.70
July	666.60	667.24	666.88	659.50	660.13	659.84
August	666.81	667.43	667.09	659.81	660.38	660.08
September	666.78	667.45	667.12	659.71	660.30	660.05
October	666.94	667.50	667.10	659.98	660.29	660.10
November	666.85	667.44	667.08	659.84	660.36	660.08
December	666.75	667.38	666.95	659.70	660.12	660.00

Month	Pool 5A Maximum	Pool 5A Minimum	Pool 5A Mean	Pool 6 Maximum	Pool 6 Minimum	Pool 6 Mean
January	650.77	651.11	650.96	644.79	645.14	644.96
February	650.64	651.16	650.95	644.63	645.21	645.00
March	649.91	651.80	650.87	644.72	645.58	645.01
April	649.86	651.72	650.28	644.26	644.68	644.47
May	649.84	650.27	650.07	644.42	644.80	644.60
June	649.85	650.88	650.37	644.35	645.33	644.82
July	650.49	651.17	650.90	644.76	645.70	645.27
August	650.80	651.30	651.07	645.14	645.59	645.36
September	650.69	651.18	650.98	644.96	645.48	645.26
October	650.88	651.17	651.04	645.19	645.62	645.38
November	650.79	651.24	651.03	644.81	645.67	645.32
December	650.61	651.09	650.95	645.02	645.28	645.16

Pool level readings taken at each respective Lock and Dam. Pool elevation information received from U.S. Army Corps of Engineers, St. Paul District.

B. CLIMATIC CONDITIONS

The mild winter of 1988-89 continued into January as temperatures averaged 10 degrees above normal for the month (Table L-1). Average temperatures nosedived in February as winter finally arrived and remained below average in March and April. During the summer and early fall, average temperatures were near normal. The year's high of 100 degrees occurred on July 6. Colder than normal temperatures, signalling the beginning of winter, arrived in mid-November and persisted through the remainder of the year. Average temperatures in November and December were 3.8 degrees and 7.4 degrees below normal, respectively. The year's low of -22 degrees occurred in December.

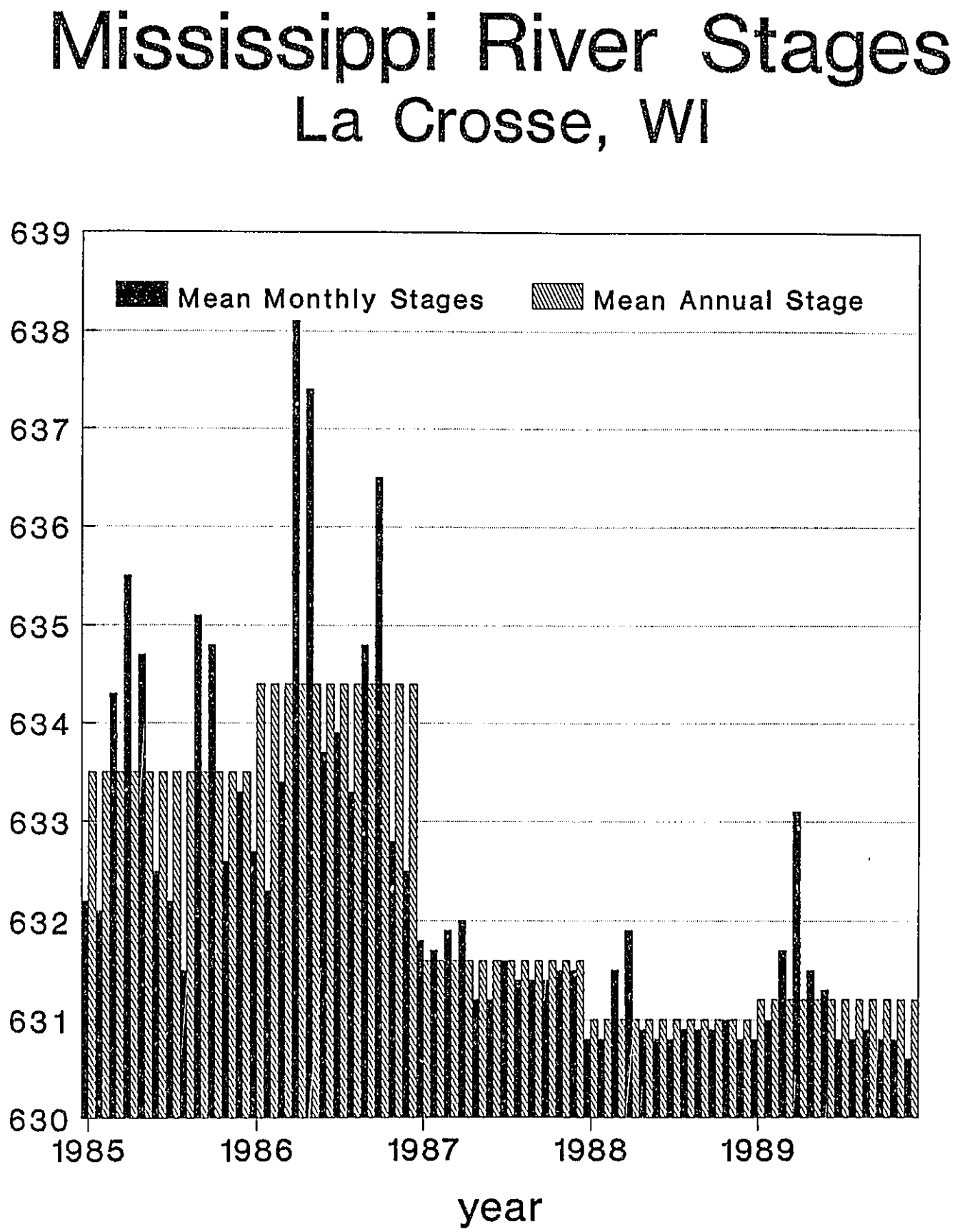
The drought that began in the La Crosse area in 1988 continued throughout 1989, resulting in a total precipitation deficit of over seven inches for the year. The precipitation deficit in 1988 totalled over four inches. Monthly precipitation averages were below normal for nine months during 1989, and were especially low during the critical growing season.

Mississippi river levels are controlled by the Army Corps of Engineers (COE) through a lock and dam system. At Lock and Dam 7, flowage or discharge rates remained at record lows for the second straight year. The extremely low discharge rates were especially pronounced during the period May - December, with July discharge rates down over 50% from the 50-year average. For the year, the river stage at Lock and Dam 7 averaged 5.4 feet, with a peak of 10.2 feet on April 1 (Table L-2).

Table L-1. 1989 temperature and precipitation data recorded at La Crosse, Wisconsin (precipitation data is measured in inches; temperatures in degrees Fahrenheit).

Month	Max.	Min.	Avg.	Departure	Precip.	Departure	Snow
Jan.	52	- 7	24.2	10.2	.41	- .53	3.8
Feb.	41	-16	12.8	-6.9	.40	- .49	7.9
March	75	- 6	29.2	-1.7	2.36	.40	19.3
April	76	19	46.0	-1.2	1.78	-1.27	T
May	87	26	58.9	- .5	3.02	- .59	T
June	90	43	67.7	- .8	1.33	-2.82	0
July	100	54	75.4	2.4	2.59	-1.24	0
Aug.	96	51	71.4	.5	4.60	.90	0
Sept.	85	34	61.1	- .5	1.95	-1.52	0
Oct.	83	24	51.7	.8	2.71	.63	T
Nov.	60	4	31.5	-3.8	1.47	- .03	7.8
Dec.	50	-22	12.1	-9.4	.49	- .58	4.1
TOTAL:				- .9	23.11	-7.14	42.9

Table L-2. River stage at Lock and Dam 7.



B. CLIMATIC CONDITIONS

The year 1989, although dry, did not repeat the extreme drought conditions of 1988. The Mississippi River levels on the District remained low and steady, similar to levels recorded in 1988. Precipitation totaled 25.33 inches as compared to the 17.58 inches received in 1988. Snowfall amounts were similar to 1988 with a total of 31.0 inches. Summer temperatures were more tolerable with the hottest period occurring during the first part of July. The highest temperature recorded was 99°F. During 1988, temperatures repeatedly reached the high 90°'s to over 100°F.

The Mississippi River discharge remained much lower than normal throughout the year making boat access to many backwater areas difficult. There is concern that the continuing low flow conditions may be contributing to new problems on the District. Wild celery (Vallisneria americana), appears to be declining in Pools 5, 7, 8, 9, 11, and 19. A speculative list of causes includes "nutrient enrichment, anoxia, water temperature, algal blooms, reduced flow, ice, fish, ducks and agricultural chemicals". During a meeting this summer, one hypothesis to explain the decline was judged most reasonable by the attendees. This hypothesis is as follows:

> "Lack of flow in the river to record low discharges in 1988 increased water retention times and increased concentrations of nutrients (nitrogen and phosphorous compounds). Combined with higher than normal solar radiation and water temperatures, blooms of phytoplankton, periphyton, and filamentous algae were much increased and persisted longer than normal. These blooms competed with macrophytes for nutrients and reduced their photosynthetic capability by blanketing the beds and individual plants.
>
> Macrophytes were stressed at a critical period during the growing season (August-September) when tubers would be produced. Few plants were able to allocate energy for production of over-wintering tubers. Those plants that did produce tubers grew small tubers with poor viability.
>
> During the spring 1989, phytoplankton abundance remained high, again resulting in poor growing conditions for macrophytes. In most pools the submersed macrophytes are now in very poor condition and will probably produce few tubers. The prognosis for the next growing season is not good."

District staff observed the invasion of purple loosestrife into previously unpopulated areas. Perhaps the low water conditions have favored germination of this exotic species. (Section F.10.)

Low water conditions may also be at least partially responsible for creating a niche for another invading species. Eurasian milfoil (Myriophyllum spicatum) is now very apparent in most pools. This plant has demonstrated an ability to out-compete and displace native flora in many river and lake systems.

Table M-1. River Water Levels by Pool Elevation (Feet)

	Pool 9*		Pool 10**		Pool 11***	
Month	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum
Jan.	20.36	20.03	12.10	11.08	7.68	7.12
Feb.	20.39	20.09	12.46	11.80	7.77	7.15
March	22.96	19.62	17.18	11.56	11.50	7.15
April	23.87	20.35	19.12	13.81	13.29	9.08
May	20.80	19.83	14.24	12.56	9.28	7.74
June	21.80	19.53	15.90	10.44	11.28	7.24
July	20.34	19.88	12.65	11.42	7.81	6.92
Aug.	20.65	19.97	12.05	11.44	7.57	6.93
Sept.	20.67	19.70	12.71	11.48	7.80	6.90
Oct.	20.32	20.06	11.78	11.63	7.47	7.00
Nov.	20.33	19.83	12.08	11.42	7.50	6.81
Dec.	20.47	19.83	11.99	11.02	7.42	6.66

* Readings taken in Lansing, Iowa (Mid-pool).
** Readings taken at Lock and Dam 9 (Tail-water).
*** Readings taken at Dairyland Power Plant, Cassville, Wisconsin (Mid-pool).

Table M-2. Precipitation and Temperat re Data - 1989*

	Temperature (°F)				Precipitation (inches)		
Month	Min.	Max.	Avg.	Departure	Rainfall	Departure	Snow
Jan.	-5	46	25.1	+ 9.9	.86	+0.16	2.0
Feb.	-11	56	13.2	- 7.5	.28	-0.56	9.5
March	3	77	30.1	- 3.1	1.39	-0.68	8.5
April	19	75	45.2	- 1.8	2.28	-0.72	---
May	25	84	56.5	- 1.5	2.34	-1.07	---
June	45	89	66.2	- 0.9	2.44	-1.90	---
July	53	99	73.9	+ 2.2	2.51	-1.62	---
Aug.	49	93	69.2	+ 0.2	5.16	+0.71	---
Sept.	29	82	58.8	- 2.2	3.31	-0.24	---
Oct.	24	81	50.1	+ 0.1	3.71	+1.32	---
Nov.	3	65	31.3	- 4.2	0.68	-1.48	3.0
Dec.	-22	51	12.4	- 9.1	0.37	-0.89	8.0
					25.33	-6.97	31.0

* Official weather station at the University of Wisconsin Experimental Farm, Lancaster, Wisconsin, located 12 miles northeast of Cassville, Wisconsin.

Spring at last! The Iowa River pushes tons of ice and debris into the Upper Mississippi on Pool 9 of the District.
3/89 FR

B. CLIMATIC CONDITIONS

The weather for the Savanna District in 1989 exhibited temperatures which were overall 19 degrees below normal for the year, coupled with precipitation totals which were 6.59 inches below normal. (Table S-1)

Temperatures in January were well above normal, making it the warmest January in 56 years, and the third warmest since 1877. The navigation channel in each Pool was breaking free of ice by the end of the month. The beginning of February saw extremely cold temperatures which continued throughout the month, and refroze the river channel in Pools 12-14.

Snowfall amounts for January-March totaled 25.93 inches, compared to a normal 20.4 inches for that period. Pool 14 became ice-free on March 11 with the first commercial barge traffic of the year the week of March 12. Pool 13 became ice-free on March 14 with river levels rising the week of March 26 due to precipitation and thawing conditions. Minor flooding occurred in backwater areas, but water levels began dropping again the third week of April.

Normal pool level on the Corps river gauge at Lock and Dam 12 is 11.80 feet, but except for the March-April period, this stage was never reached during the year. Gauge levels hovered in the 3-5 foot range most of the year, dropping to a low stage of 2.80 feet on August 12. Commercial navigation of the main channel did not appear to be affected by the low water levels, but side channel areas became very shallow with many wing dams, stumps and sandbars exposed.

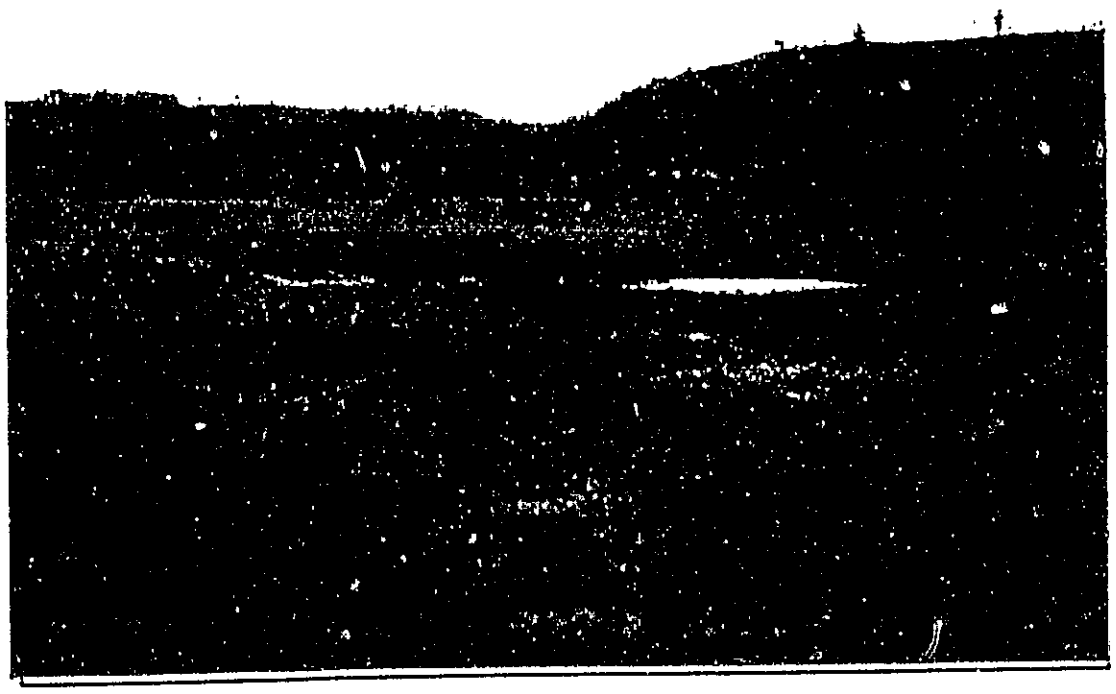
Backwater areas of the District where there was little or no current began freezing up November 18. The last commercial barge of the year heading north was observed in Pool 13 on December 4, while the last barge heading south went through Lock and Dam 14 on December 11. Pool 12 and the north half of Pool 13 were frozen over on December 4. Portions of Pool 14 were freezing over the week of December 10. Ice fishing commenced the first week of December on some backwater lakes and sloughs. The year ended with record lows and wind chill factors of minus 30°F to minus 50°F below zero.

In summary, 1989 was a year which began with one of the warmest Januarys on record, and ended with the sixth coldest December on record. Although precipitation amounts were below normal, temperatures were a bit cooler and the weather in 1989 overall proved to be a welcome relief from the heat and drought of 1988.

Table S-1 Temperature and Precipitation Data - 1989 *

	Temperature (degrees F)				Precipitation (inches)		
Month	Max.	Min.	Avg.	Normal	Precip.	Normal	Snow
Jan.	48	3	29	18	1.00	1.45	.52
Feb.	65	-8	16	24	.33	1.14	19.50
Mar.	78	8	33	33	1.82	2.31	5.91
Apr.	79	21	46	49	1.98	3.37	.09
May	89	27	56	60	1.45	4.01	
Jun.	92	45	67	68	3.69	4.01	
Jul.	100	51	74	72	2.63	4.15	
Aug.	93	47	70	70	4.83	3.61	
Sep.	80	29	60	63	5.09	3.20	
Oct.	83	25	52	52	1.51	2.40	
Nov.	71	6	35	38	.45	2.15	T
Dec.	49	-21	15	25	2.30	1.87	4.55
				Totals:	27.08	33.67	30.57

* As recorded at Lock and Dam 12, Bellevue, IA.
T = Trace



Below normal precipitation during the past two years has failed to restore water levels in many backwater lakes. (11/89 LW)

C. LAND ACQUISITION

1. Fee Title

Acquisition of the 27-acre Vaaler/Markos property in Buffalo County, Wisconsin was completed during the year. Unfortunately, due to some "fine print" in the lease agreement with the previous owner, the Collins Sign Company billboard will remain until April 30, 1991.

The Service conducted an appraisal of an 86-acre parcel owned by Loyde Wilcox located in the Halfmoon Lake area. This property includes about 56 acres of excellent wetland habitat adjacent to existing refuge lands at the north end of the Weaver Bottoms. Mr. Wilcox failed to accept our offer of $71,000 for the property.

We have requested an appraisal on a 4-acre parcel of river frontage adjacent to grounds of the St. Elizabeth Hospital in Wabasha, Minnesota. Acquisition of this inholding could prevent development and associated impacts on an important bald eagle roosting site nearby.

C. LAND ACQUISITION

1. Fee Title

Action continued through the year on an exchange of lands between the FWS and La Crosse County, Wisconsin. Termed the "Hintgen Island Exchange", the FWS will trade Hintgen Island for a 4.8-acre upland site owned by La Crosse County in Onalaska Township.

The reason for this exchange deals with the issue of barge fleeting. Through the Refuge Master Plan, the FWS sought exchange options for several barge fleeting operations located on Refuge lands in areas where off-Refuge sites were not available. Hintgen Island is one of these sites.

At year's end, La Crosse County is in the process of finalizing plans for developing the island into a first-class fleeting site, complete with rip-rap and offshore pilings.

The parcel of land in Onalaska Township that the Refuge will receive in fee title is located between Highway 53 and the Halfway Creek Marsh, and overlooks Lake Onalaska. Because this site has good access and offers a good view of the Refuge, it meets the criteria outlined in the Refuge Management Plan as a possible location for an office/visitor center.

The exhange proposal is currently before a Congressional committee and is expected to be approved in early 1990.

The Refuge is due to receive 80 acres in the Black River bottoms in conjunction with a mitigation plan for a proposed marina in Trempealeau, WI. Apparently, a 40-acre parcel has already been purchased by the developer; however, at year's end this property had not been transferred to the Refuge.

A 35.89 acre inholding in the Black River bottoms in the northwestern corner of La Crosse County was purchased in 1989. This inholding was part of a group of private inholdings along Sawmill Road where vehicle trespass has been a problem. A feud over hunting and access privileges among the other landowners may have prompted the sale to the Refuge.

2. Easements

Two tracts of land, one in La Crosse County (19.9 acres) and the second in Vernon County, WI (44.5 acres), officially became conservation easements in 1989. Both easements were established to protect streambanks from erosion due to livestock grazing.

Both tracts were surveyed by certified surveyors contracted by the Farmers Home Administration. The easement in La Crosse County was posted in October. Also, level I containment surveys were completed on each easement in December.

Stream-side conservation easements have been obtained on FmHA inventory lands in La Crosse and Vernon Counties. Special signs are used to mark the easement boundaries. (J. Nissen)

C. LAND ACQUISITION

1. Fee Title

The District, to date, has acquired the responsibility for three tracts of the Driftless Area National Wildlife Refuge. All three tracts are located in Clayton County, Iowa and total 198.3 acres. Additional tracts will be added to the Refuge as funds are appropriated and agreements with landowners finalized.

The driftless area encompasses portions of Minnesota, Wisconsin, Iowa and Illinois. The area derives its name from the fact that it has not been recently glaciated. A variety of micro-climates is created by the unique physical characteristics of the land. Especially important are steep, moist, north-facing slopes, many of which are classified as "algific talus slopes". A number of rare species, including the endangered Iowa Pleistocene snail (Discus macclintocki) and the threatened northern monkshood plant (Aconitum noveboracense), are dependent on the cool, moist conditions associated with algific talus slopes and shaded cliffs. The continuous out-flow of cold air and water on these slopes results in a plant association vastly different from that a few feet away - species normally found at higher latitudes or elevations. This may indicate that these slopes are serving to preserve flora and fauna surviving from glacial time.

The algific slope portions of these tracts will be isolated from nearly all public and private use by the erection of warning signs and fencing and law enforcement patrols provided by the District. Except for monitoring activities and strictly controlled research, all other forms of human use on the algific slope portions of these sites will probably be prohibited.

Twenty-five sites totalling 700 acres have been prioritized for acquisition via donation, exchange, permanent easement or fee acquisition to provide permanent protection for the northern monkshood and Iowa Pleistocene snail so that delisting can occur. Acquisition may occur in the following states and counties:

Illinois - Jo Daviess
Iowa - Allamakee, Clayton, Delaware, Dubuque, Jackson
Wisconsin - Grant, Richland

The 124.3 acre Whalen tract located in Houston County, Minnesota was added to the Refuge on January 23, 1989 as detailed in the 1988 annual narrative. The District Manager is in the process of negotiating a cooperative farming agreement with Mr. Leo Whalen. It is expected that the tract will eventually be developed into a moist soil unit and nesting component for waterfowl management, unilaterally, in concert with the Iowa and Minnesota DNR's or through an Environmental Management Program project.

A 25.6 acre parcel of land adjoining the Genoa National Fish Hatchery was acquired as an addition to the Upper Mississippi River NWFR. The parcel will be administered by the Genoa Hatchery and may be used for

future expansion of hatchery operations.

2. Easements

The District has ended its efforts to secure a scenic easement across the highway from the District Office/Visitor Contact Facility. The 1.14 acres of land required is located in Clayton County, Iowa and is owned by the Soo Line Railroad. Although negotiations continued for a couple of years, an agreement could not be reached as to how the stipulations of the easement could be met.

3. Other

Assistant Batya prepared a prioritized list of all tracts desired for ultimate purchase under the Master Plan. The list was submitted to Realty.

The Real Property Inventory was completed in August.

Fencing materials for FmHA easements and Driftless Area NWR tracts were purchased and stored at the Genoa warehouse.

Ross Grimwood, Realty, again contacted the owner of the inholding in the Turkey River bottom. To date, the owner has been unwilling to sell the tract which precludes planning and development of a significant moist soil management area.

C. LAND ACQUISITIONS

3. Other

Biological Technician deRosier assembled a list of all land owners, acreage, and tract numbers of land falling within the Refuge Master Plan's approved boundary for the Savanna District. A form letter was sent out to 214 landowners to see if any were interested in selling their land or might be interested in the future.

The areas targeted included buffer strips along tributaries entering the Mississippi River and wetlands adjacent to the Refuge. Approximately 180 river miles were covered in Iowa and Illinois. The list of landowners was priority ranked, based on presence or absence of wetlands, presence or absence of bottomland timber and distance from the existing Refuge boundary.

A list of 32 interested landowners was compiled from the first mailing. A few follow-up letters and telephone calls have taken place, but as time allows, ground-truthing is needed on the remaining tracts. Hopefully, the whole process will be fruitful and preserve some valuable bottomland tracts.

D. PLANNING

1. Master Plan

New initiative has begun to sell the Master Plan to the public.

2. Management Planning

Refuge Hunting Plan

The Refuge Hunting Plan was revised and submitted to the Regional Office for review and approval.

Safety Plan

A Safety Plan was completed for the headquarters office.

Barge Fleeting Activities

a. Hintgen Island Fleeting Site (Pool 8): Land exchange proposal with La Crosse County is being reviewed and acted on at the congressional level.

b. Dubuque Fleeting Sites (Pool 12): Land exchange proposals were submitted by two companies and are being reviewed by the Realty Office.

c. Clinton Iowa Fleeting Sites (Pool 14): Public meetings were held regarding the 404 permit applications for the placement fleeting tie-up structures next to Corps of Engineers land (managed as part of the refuge). Much of public controversy centers around the size of the fleeting areas. Corps of Engineers is expected to act on the permit request in early 1990.

d. Cassville Fleeting Site (Pool 11): Wisconsin-Power and Light has expressed interest in obtaining a fleeting permit in the vicinity of the newly permitted Cassville fleet. We are discouraging them from using refuge lands for this purpose.

Single-Hulled Barge Use

A letter was sent to the Commander of the Second Coast Guard District in November that stated that we had determined that the continued indiscriminate use of single-hulled barges to transport ecologically hazardous cargo through the refuge was not compatible with the purposes for which the refuge was established. We requested (necessary because we do not have the authority to regulate this use ourselves) that the Coast Guard either prohibit the use of single-hulled barges or restrict the use of single-hulled barges or barges containing ecologically hazardous cargo. The latter portion of this recommendation was meant to significantly reduce the potential for a spill while at the same time allowing for the commercial navigation industry to recover the cost of existing single-hulled barges.

The Coast Guard response was both disappointing and unacceptable. Our request was denied for two basic reason: (1) Congress is considering legislation pertaining to single-hulled vessels including barges and thus it would be premature for the Coast Guard to take independent action; and (2) since most barges are already double-hulled and there has not been a catastrophic spill within the refuge, "the casualty and pollution history in your specific area of interest does not indicate a pattern that warrants initiation of specific local regulations at this time." In other words, don't worry, be happy.

The Izaak Walton League and the La Crosse County Conservation Alliance, a group of 24 Wisconsin sportsman's clubs, took exception to the Coast Guard position. By the end of December, the issue had been discussed on La Crosse, Wisconsin TV, Minnesota and Iowa public radio and in numerous newspaper articles from Minneapolis to St. Louis. Congressman Gunderson from western Wisconsin has also become interested in the concept of flanking single-hulled barges in order to lessen the likelihood of a spill. We are hopeful that changes along the lines of our recommendations will occur before this matter is put to rest. This could involve the Coast Guard changing its position. Some sort of voluntary action on the part of the commercial navigation industry or national legislation as a result of Congressman Gunderson's involvement. Next year's narrative will discuss the outcome.

Land Use Allocation Plan (LUAP) - Rock Island District COE

The LUAP for the Rock Island District of the COE (Pool 11-14) was completed and concurred to by the FWS. It is the calumniation of many interagency and public meetings over the past five years. Final public meetings were held in April with no problems noted. The net result of the plan was the zoning of COE land and provides the guidelines which will be followed in managing these lands. The refuge will benefit from this effort as 4-5,000 acres of new land will be added to the refuge base and managed through the cooperative agreement.

3. Public Participation

Headquarters staff participated in numerous public meetings and interagency coordination meetings through the year. Increased work related to the Environmental Management Program (EMP) was reflected in greatly increased interagency coordination and public participation. EMP public meetings were held for the Pool 8 Islands project at Stoddard, Wisconsin; for the Pool 9 Islands project at Ferryville, Wisconsin; for the Bertom/McCartney Lake project at Cassville, Wisconsin; and for the Bussey Lake project at Guttenberg, Iowa. In addition, interagency coordination meetings were held regarding the following EMP projects: Polander Lake, Lake Onalaska, Guttenberg Ponds, Lansing Big Lake, Brown's Lake, Drury Island, Indian Slough, Bullet Chute, Cold Springs, Spring Lake (Pool 5), Spring Lake (Pool 13), and Finger Lakes.

A great deal of public involvement was required to plan for changes in the Potter's Marsh Hunt (see section H. 8. for further information).

Headquarters staff also participated in the following public meetings: The Rock Island District Corps of Engineers Land Use Allocation Plan final public review, held at Dubuque, Iowa; a public meeting regarding barge fleeting, held at Clinton, Iowa; and a Winona County, Minnesota Water Quality Plan public meeting, held in Winona.

The work of the Extension Biologist regarding Farm Bill, the Whitewater Watershed Project, the Conservation Reserve Program, "Reinvest in Minnesota," and other programs on private lands required coordination with many agencies and organizations with which the Refuge has not traditionally had frequent contact. These include the Soil Conservation Service, the Agricultural Stabilization Conservation Service, the Farm Home Administration, the Soil and Water Conservation Districts, county planning and zoning offices, county extension offices, county environmental health offices, Trout Unlimited, Land Stewardship Trust, American Farmland Trust, and numerous sportsman's clubs.

Coordination meetings between headquarters staff and various agencies and organizations with interests in the Upper Mississippi River continue on an ongoing basis. These would include the St. Paul and Rock Island Districts of the Corps of Engineers, the Departments of Natural Resources and Highway Departments of the States of Minnesota, Wisconsin, Iowa, and Illinois, the Channel Maintenance Forum, the Minnesota/Wisconsin Boundary Area Commission, the Upper Mississippi River Basin Association, the Upper Mississippi River Conservation Committee, the Izaak Walton League, the National Audubon Society, Ducks Unlimited, and others, in addition to meetings held with other Service offices.

The level of media interest in the refuge has increased dramatically in recent years. The inclusion of the Refuge on the Wilderness Society's "Ten Most Endangered Refuges" list generated a great deal of newspaper and television coverage, as did release of a General Accounting Office report singling out Upper Mississippi River National Wildlife and Fish Refuge as one of the refuges with the most incompatible uses. In addition, Complex Manager Berry's letter to the Coast Guard stating that the use of single-hulled barges to transport hazardous cargo within the refuge is incompatible with refuge purposes and therefore violates the Refuge System Administration Act prompted a great deal of media coverage.

Television coverage was given to the Whitewater Watershed Project and the Weaver Bottoms Rehabilitation Project. A videotaped documentary was completed on the Whitewater Watershed Project. Several other articles were written for release to local media. Staff responded to requests for information from Laura and Bill Riley, who are updating their book on the National Wildlife Refuges. Arthur and Marge Miller, co-authors of the forthcoming book "A Park Ranger's Guide to Rivers and Lakes," were given a tour and information about the refuge.

5. Research and Investigations

A mallard island-nesting study was continued and expanded in 1989 by Dahlgren and refuge staff. Nest searches were made of natural river islands in pool 4, 5, 8, 9, 12 and 13. Habitat on these islands varied from predominately grassy or brushy to mature bottomland forest. Mallards were found to nest on many of the islands, and in extremely high densities on some of the smallest (less than 1 acre).

D. PLANNING

3. Public Participation

Drieslein met with a group of sportsmen at Nelson, Wisconsin on October 12 to discuss proposed plans for rehabilitation of the Indian Slough/Big Lakes backwaters area of Pool 4. There was concern that the proposed partial closing structure at the mouth on Indian Slough would excessively restrict flows into the backwaters and have a negative impact on the fishery. The group's concerns were discussed at later Environmental Management Program (EMP) planning meetings on the project involving Wisconsin Department of Natural Resources (DNR), U.S. Army Corps of Engineers (Corps) and Service personnel.

4. Compliance with Environmental and Cultural Resource Mandates

Prior to construction of the primitive boat ramp at the Mertes' Slough access site, required permits were obtained from the Army Corps of Engineers and Wisconsin DNR.

District staff provided input at an on-site meeting at Murphy's Cut in Pool 5 on December 19, 1989. Army Corps, Minnesota DNR and Service representatives discussed alternatives for disposal of approximately 3,000 cubic yards of material to be dredged from Old John's Ditch and the area downstream from Murphy's Cut.

The District reviewed and commented on a proposal by the Minnesota DNR to rehabilitate and upgrade the parking area and boat ramp at Pritchard Lake.

The District participated in an on-site visit and commented on the Corps' proposal to rehabilitate the dike north of Lock and Dam 5A. The project included transport of dredge spoil from the containment area at river mile 730.5 to fill the blowout in the dike at river mile 729.5. Our concern was that disturbance during construction would adversely impact the bald eagle nest located about 1/4-mile west of the cut. The actual work was performed in late July, well after the nesting season had ended.

5. Research and Investigations

Monitoring of the Effects on Physical, Biological and Recreational Parameters of the Weaver Bottoms Rehabilitation Project (32570-04)

Weaver Bottoms, a 4,000 acre backwater in Pool 5, is the site of a major interagency rehabilitation project. Dredge spoil from routine navigational channel maintenance was used in 1986 and 1987 to construct closures, dikes and islands to improve water clarity and promote aquatic aquatic vegetation.

D. PLANNING (Continued)

An intensive environmental and biological monitoring project is being conducted to determine the effectiveness of the rehabilitation. In 1989, the District and headquarters staff was responsible for the monitoring of a number of parameters.

Water Quality

Water quality information was collected at 18 permanent stations on a weekly schedule from April through July and once in August. Analysis of suspended solids was done from a collected water sample at each station by A & A Chemical Labs, La Crosse, Wisconsin.

Shore and Wading Bird Survey

Two surveys of shore and wading birds were conducted in June and July. Species seen on the surveys were (in descending order of abundance): great blue heron, great egret, black tern, spotted sandpiper, Caspian tern, ring-billed gull, black-crowned night heron, green-backed heron, killdeer, Forster's tern and long-billed dowitcher.

Fall Migration - Waterfowl Aerial Survey

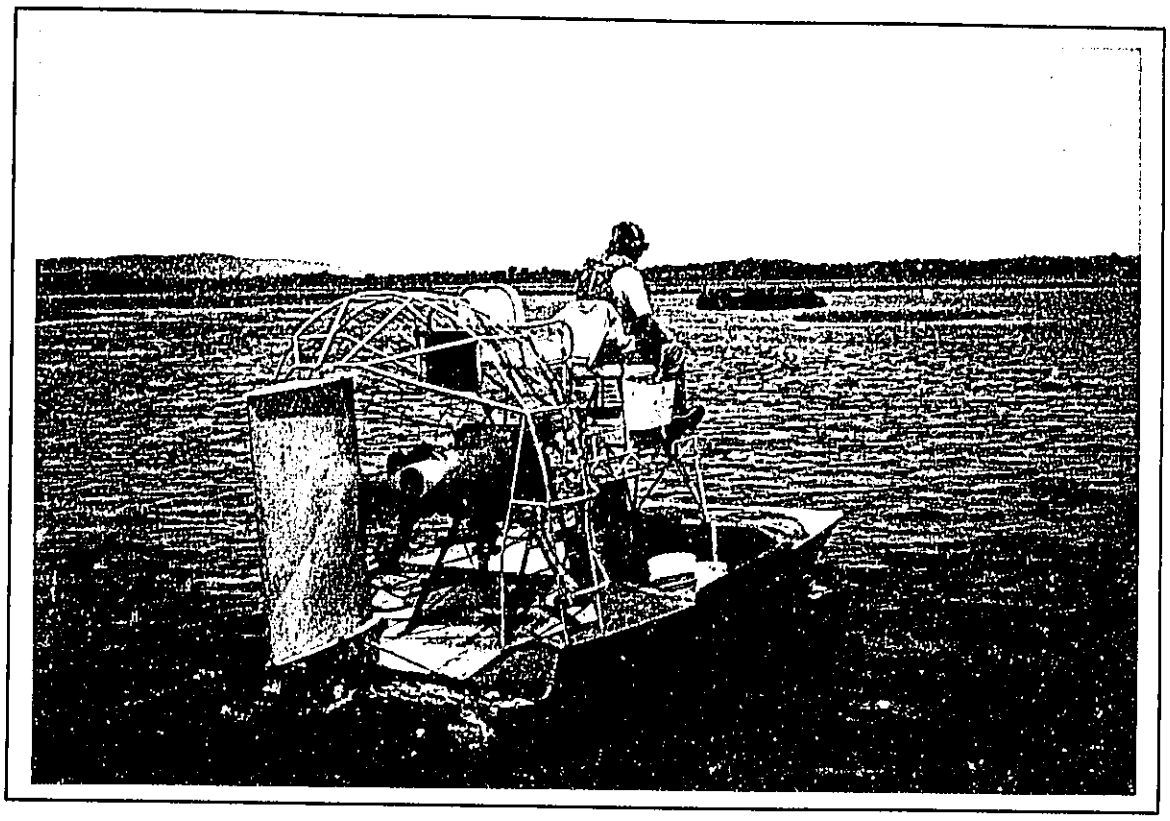
Eight index survey flights of the Weaver Bottoms area were flown between September 18 and November 14. Total duck numbers peaked on October 31 with 11,152 recorded individuals. Diving duck numbers peaked on this date at 7,839 (14% ring-necked ducks, 26% lesser scaup and 60% canvasbacks). Puddle duck numbers increased throughout the season with 2 peak survey population of 6004 (92% mallard) on November 14, the final flight day. Tundra swan peak numbers were greatly reduced in 1989 at 1,619 as compared to the average peak of 6,743 for the years 1985-1988.

Aquatic Vegetation Sampling

The aquatic vegetation survey was conducted on August 7 to August 10. Refuge staff from the Winona and La Crosse Districts, YCC, volunteers and a crew from the Minnesota Conservation Corps collected vegetative samples from emergent and submergent beds in the research area with the help of a rented airboat.

The collection, identification and sorting of the plants progressed quickly due to an evident lack of submergent vegetation. Wild celery, sago pondweed and water starweed beds contained few, if any, plants. The field collection and weighing of samples normally takes five to six days to complete but in 1989, the work was completed early on the fourth day. The "crash" in aquatic vegetation was noted by other researchers and managers on the river and on September 26 a meeting was held to discuss the extent of the loss and possible causes. After reviewing the available information for 1989 and 1988 a probable explanation was presented.

D. PLANNING (Continued)



It was necessary to rent an airboat to effectively sample the emergent vegetation beds for the Weaver Bottoms monitoring.

(8/89, TJ)

The low water years of 1988 and 1989 created conditions in which phytoplankton flourished in the backwaters. In 1988, high nutrient loads and low flows resulted in algae blooms which decreased light penetration in the water column and restricted submergent vegetation growth. Under these stressed conditions plants such as wild celery and sago pondweed did not produce as many over-wintering tubers. Lack of tubers resulted in even fewer plants the following year. In 1989, algae and phytoplankton populations were again high enough to restrict macrophyte growth through increased turbidity levels and competition for nutrients. At this point the decrease in submergent vegetation was great enough that the general public using the river was aware of the lack of "weeds" in the backwaters.

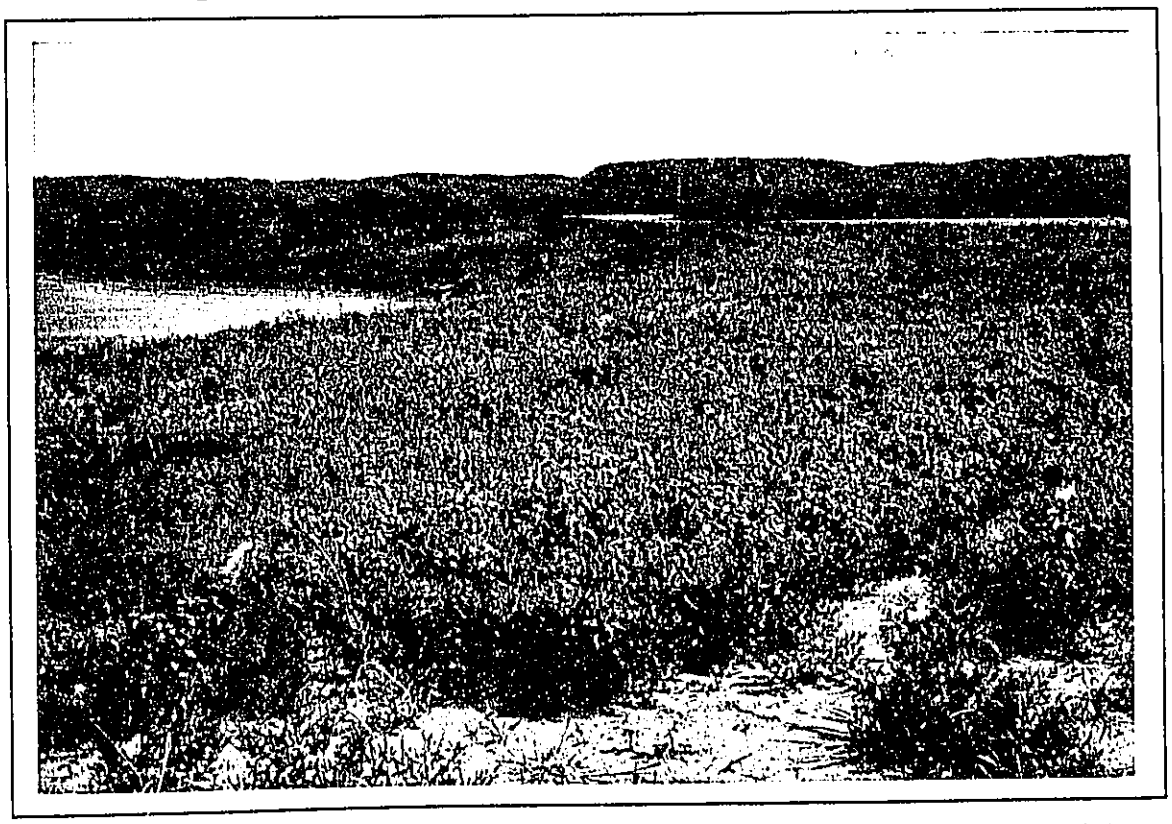
Weaver Islands Vegetative Monitoring

In 1987, two dredge spoil islands were constructed as part of the rehabilitation project and in 1988 the shoreline and upland zones of one of the islands (Swan Island) was planted with native vegetation to help stabilize the soil material and provide habitat for fish and wildlife. The other island (Mallard Island) was not planted but was allowed to colonize naturally from local seed sources.

D. PLANNING (Continued)

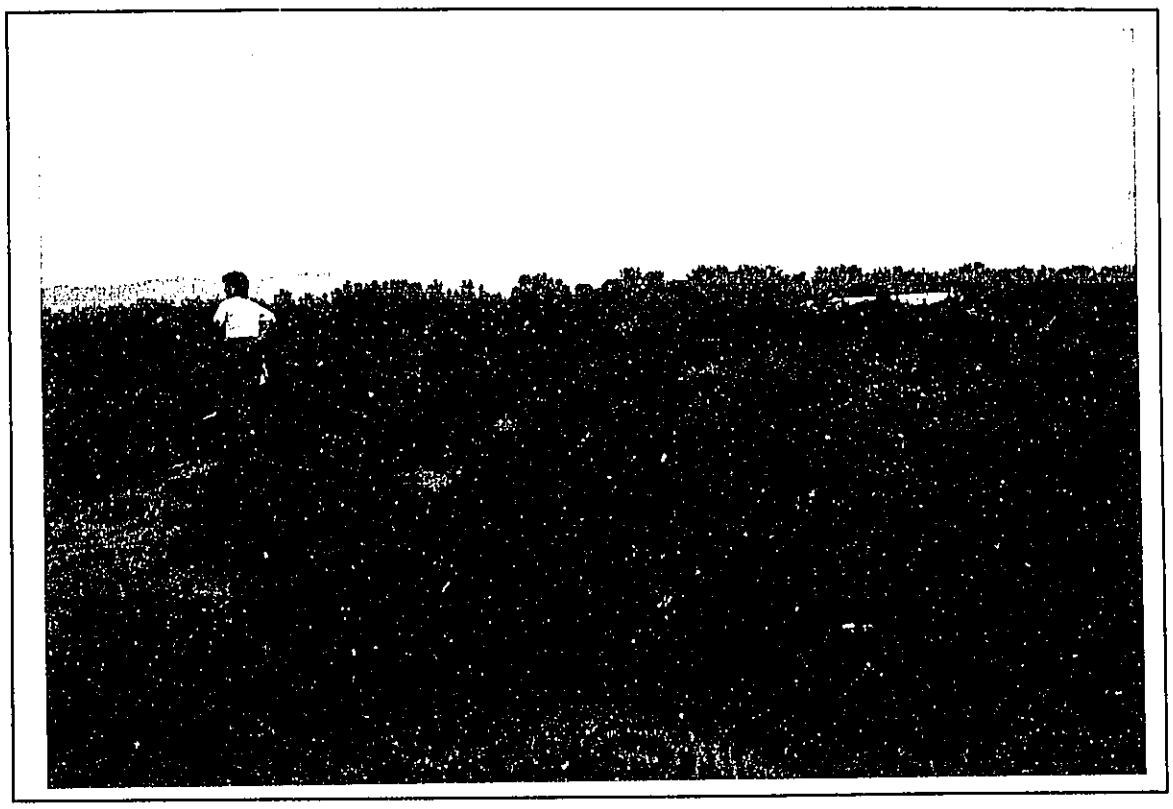
In 1989, an evaluation of the vegetation on the two islands was conducted. The shoreline plantings of emergent vegetation were almost a complete failure. Only a small section of naturally protected shoreline exhibited growth of planted bulrush, one of six species planted around the island. Vegetation on the upland portions of the islands was more successful. The survey showed that 47.5% of Swan Island (planted) and 39.4% of Mallard Island (unplanted) contained vegetative cover. The most common species on Swan Island were winged pigweed, pigweed, side-oats grama, and lambsquarter. Of the planted grass species sand dropseed, switchgrass and Canada wild rye were also evident in the samples. The most common species on Mallard Island were winged pigweed, Pennsylvania smartweed, spiderflower, switchgrass and pigweed.

On paper the two islands would appear to be quite similar. There was less than 10% difference in total vegetative cover and the seven plant species common to both islands accounted for 76% of the cover on Swan Island and 96% of Mallard Island. Photos comparing the two islands showed a marked difference in the vegetative growth forms. On the planted island where there was an ample seed source of native grasses and seeds "accidentally" brought in with the mulch, the number of individual plants was large but the size of each plant was small to moderate due to competition. By contrast, on the unplanted island, seeds were not plentiful and individual plants were well spaced resulting in few, large plants which created a desert-like appearance. In 1990 vegetative monitoring of the islands will be continued and a waterfowl nesting survey will be added to the study.



Swan Island was planted with warm-season native grasses. This photo was taken during the second growing season. (6/89, KC)

D. PLANNING (Continued)



Mallard Island was allowed to vegetate naturally from the available seed source. (6/89, KC)

6. Other

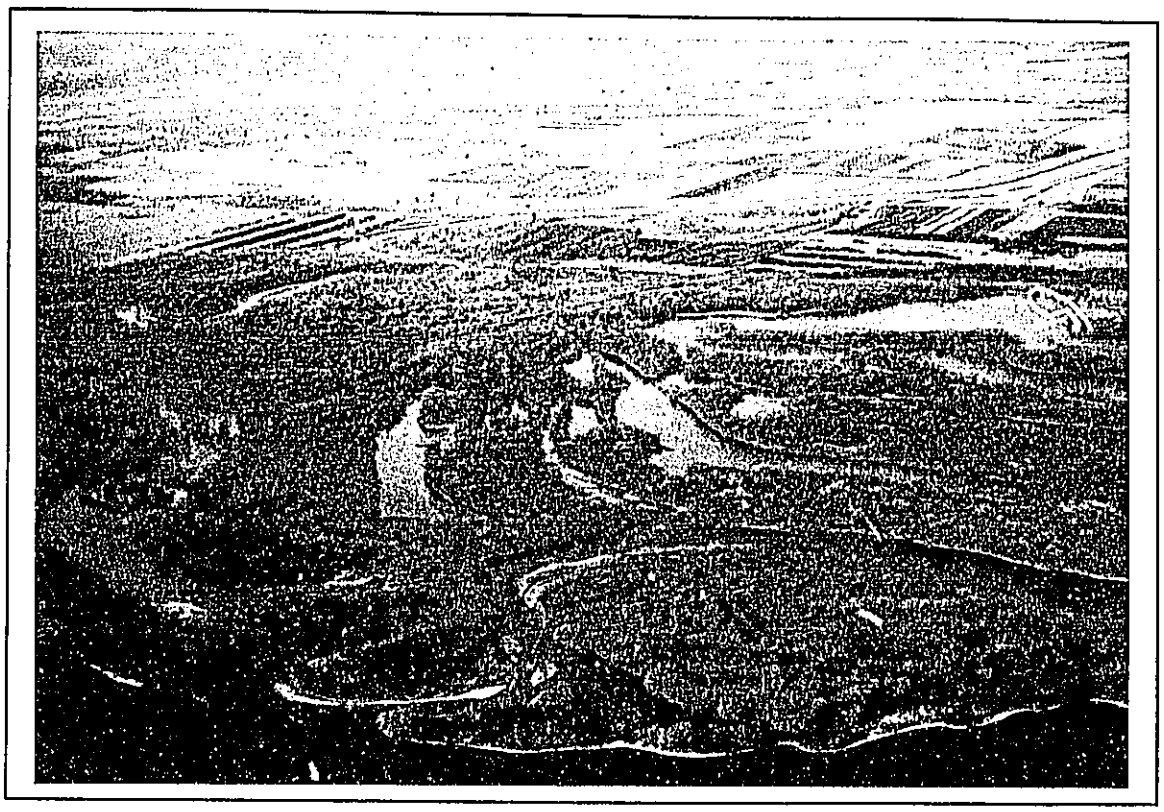
Environmental Management Program

A number of Habitat Rehabilitation and Enhancement Projects (HREP's) proposed for the Winona District were in various stages of planning during the year as described below.

a. Finger Lakes - A draft Definite Project Report (DPR) was nearing completion at the end of the year. It is anticipated that the Army Corps will begin preparation of plans and specifications for the work by mid-year 1990. The Finger Lakes project area is located just below the Lock and Dam 4 dike on the Minnesota side of the main river channel.

Rehabilitation work will comprise constructing a series of culverts to improve dissolved oxygen levels to several backwater lakes, thereby enhancing the fishery. District staff attended two planning meetings during the year on the Finger Lakes EMP project.

D. PLANNING (Continued)



Aerial view of Finger Lakes area in the upper end of Pool 5.
(10/78, SC)

b. Indian Slough - Five meetings were held during the year on this project with District staff, Army Corps and Wisconsin DNR personnel. Consensus was generally reached on a preferred location for a partial closing structure at the mouth of Indian Slough located on the Wisconsin side of the main channel in Pool 4. The project includes other habitat rehab provisions and will be designed to reduce transport of sediment into the Big Lake area. A draft Definite Project Report (DPR) is expected to be prepared for review early in 1990.

c. Polander Lake - This project remains in the preliminary planning stage. Data gathering and analysis in lower Pool 5A is in progress along with a historical review of ecological changes which can be documented for the Polander Lake area. The scope of the project area has been broadened to address input of sediment from running sloughs originating up to four miles upstream from Polander Lake. Two meetings were devoted to a discussion of Polander Lake during 1989.

D. PLANNING (Continued)

d. Drury Island - This project located just upstream from Wabasha, Minnesota in Pool 4 is on hold pending a determination of ownership of the principal island in the proposal area by our solicitor's office. Only one planning meeting was held on Drury Island and nothing further is planned pending a ruling on the property ownership question.

e. Whitewater Dike - This project, located at the mouth of the Whitewater River in Pool 5, is presently in the early planning stages of development. A January 4, 1990 draft Problem Appraisal Report looked at the problem of sedimentation and filling in Weaver Bottoms. More data is needed to assess how rapidly filling is occurring. The Service is proceeding very cautiously on this project due to the present high resource value and fragile nature of the project area. Further extensive planning involving multi-agency input and resource monitoring is anticipated before an alternative selection is made.

f. Spring Lake - This project proposed by Wisconsin DNR is located in Pool 5 and addresses primarily enhancement of fisheries habitat in a backwater area. Only one meeting was held on this project during the year and further concept planning is anticipated.

D. PLANNING

2. Management Plan

As a result of joint efforts by the FWS and Corps of Engineers on issues related to the Shoreline Management Plan, decisions were made in 1988 concerning the administration of boathouse permits in the Lawrence Lake area of Pool 8. Initially, both agencies were planning to phase-out permits over the lifetime of the permit holders. This was scheduled to begin in 1989. However, due to pressure, the COE changed their plans. The Refuge did not agree with the COE's decision because the boathouses were determined to be incompatible with the purposes for which the Refuge was established.

In Lawrence Lake, the habitat gains resulting from the phase-out would be negligible because the 13 permits are sandwiched tightly between over 80 COE-administered boathouse permits. In this area, the decision was made to transfer FWS fee title land to the COE for them to administer. The COE will also work on consolidating their permits in Wildcat Bay and Lawrence Lake to minimize the area affected. If this is completed, structures that are now in the Wisconsin Islands closed area will be removed.

At year's end, the exchange had not been completed.

3. Public Participation

District personnel participated in many public meetings in conjunction with the Lake Onalaska and Pool 8 Islands EMP projects.

A contest to name the three islands constructed in Lake Onalaska through the Environmental Management Program was held the last two weeks of August. The response was good as about 30 individuals submitted entries. Winning names were Broken Gun for the northernmost island, Cormorant for the middle island, and Arrowhead for the southernmost island. The island named Broken Gun is in the same general location as a slough of the same name before the lock and dam system was constructed. The other two islands were named after a bird and a plant that are both commonly found in the area.

A series of public meetings held by the City/County Harbor Commission provided the public an opportunity to comment on the Hintgen Island barge fleeting site and potential land exchange.

Lake Onalaska Protection and Rehabilitation District meetings were attended on January 24 and September 7. Virtually every item on the agenda was Refuge-related.

4. Compliance with Environmental and Cultural Resource Mandates

On October 31, District staff met with representatives of the Wisconsin DNR, FWS Ecological Service office in St. Paul, MN, and FWS National Fisheries Contaminant Research-La Crosse, WI, to standardize sampling

procedures when collecting water and sediment samples from Halfway Creek. The samples, which will be collected in February and October for the next four years, will be used to monitor discharges from Metallics, Inc., a manufacturing plant located near Lake Onalaska. District personnel will coordinate collection of future samples.

Human bones were discovered protruding from a steep sand slope on Red Oak Ridge Island in Lake Onalaska in February. Due to rapid erosion on the steep slope and human use of the island, the decision was made to remove the bones to protect them from vandalism. The Mississippi Valley Archaeology Center, Inc. excavated the site and determined that the individual was a female, approximately 25 years old at the time of death, and probably a Native American. The Great Lakes Inter-Tribal Council was contacted, and Winnebago Tribal members requested reburial on the Island.

The remains are currently awaiting radiocarbon dating, prior to determining if they should be reburied in an off-Refuge site or curated in a laboratory.

5. Research and Investigation

Title: Island Duck Nesting on the Upper Mississippi River National Wildlife and Fish Refuge.

Investigators: Robert B. Dahlgren, Assistant Regional Biologist, and John F. Wetzel, Wildlife Biologist, Wisconsin DNR.

Mallard nesting on islands was studied from May through early August on islands in Pools 7, 8, 11, and 13. Five islands in Pools 7 and 8 totaling 15.39 acres had 64 successful mallard nests out of the 113 located in 1989 (Table L-3). Results in 1988 were similar as 69 of the 125 nests located on the same islands were successful.

Table L-3. Number of mallard nests found on selected islands in Pools 7 and 8, 1988 and 1989.

Island Name	Approx. Acres	1988 Total Nest	1988 Hatched	1989 Total Nest	1989 Hatched
Pool 7					
McIlvaine	0.07	14	1	0	0
Pool 8					
Trapping	0.37	15	11	28	21
Heron	0.17	14	11	11	8
East	1.89	55	39	69	35
Turtle	12.89	27	7	5	0
Total:	15.39	125	69	113	64

Title: Lake Onalaska Voluntary Waterfowl Avoidance Area Migratory Program.

Investigator: Dick Steinbach

In 1985, Korschgen, George, and Green published the paper, "Disturbance of Diving Ducks by Boating on a Migrational Staging Area" in the Wildlife Society Bulletin. Their work centered around boater disturbance to canvasback ducks on Lake Onalaska in 1981. From an observation site on Red Oak Ridge Island in Lake Onalaska, Korschgen estimated that 50% of the lake could be observed. From September 28 to November 23, 1981, 29, six hour-long observations were made. During these observation periods, an average of 17.2 boats entered the study area; of these, an average of 5.2 waterfowl disturbances resulted. This research pointed out that canvasbacks, and other diving ducks using Lake Onalaska, were being disturbed often during a critical time of year.

In 1986, District Manager Steinbach took the initiative and worked with the public to create a voluntary avoidance area to reduce disturbance to waterfowl during the fall migration. To establish the area, approximately 3300 acres of prime diving duck habitat in the closed area on the west side of Lake Onalaska were delineated with buoys to encourage boaters to avoid flocks of feeding and resting waterfowl. The buoys were in place during the peak of the migration period, or from mid-October through mid-November. The avoidance area was also re-established in 1987 and 1988.

In an effort to determine how well boaters were complying with the avoidance area, a monitoring program was initiated in 1986 and continued through 1988. During this investigation, boating activity and waterfowl reactions to disturbance were monitored from a bluff along the Minnesota shoreline.

Monitoring efforts consisted of 125.5 hours of daytime observation, spread over 43 days, during the three years of the monitoring program. Waterfowl disturbances were recorded as either being caused by boats entering the avoidance area, or by "natural causes".

Disturbance to the birds caused by boaters averaged 2.2 events per day in 1986, 2.4 in 1987, and 3.0 in 1988. Observations also indicated that the birds demonstrated the effects of "accumulative" stress with each additional disturbance of the day, resulting in increased flight time.

Steinbach concluded that based on monitoring data, the avoidance area concept should be continued as a method of reducing disturbance to resting waterfowl and raising public awareness of the effects of boater behavior.

D. PLANNING

2. Management Plan

The Initial Project Worksheet (IPW) system was consolidated with the Maintenance Management System (MMS) creating what is now referred to as the IPW/MMS database. The primary reason for combining the systems is to better facilitate the budget process. The existing MMS database was considered too large to be used for budget purposes. The new system contains old IPW's that have been updated. Also, included, are MMS deficiencies that have been consolidated into specific projects. Only projects with costs greater than $500 not covered by general operations and maintenance funds were included. Projects included property replacement, landing, vehicle and computer maintenance and habitat and general construction projects. Ninety-one projects were submitted to the Regional Office for compilation. The projects were ranked according to importance with emphasis placed on the first twenty projects. Hopefully, the District will get a piece of the pie in Fiscal Year 1991.

3. Public Participation

Development of a harbor and intermodal transshipment facility in Prairie du Chien, Wisconsin has become an issue recently. Manager Lyons conducted a tour of the harbor sites for personnel from Rock Island Ecological Services and Winona Refuge offices. Lyons also briefed Doctor and Mrs. Heidenreich from the Audubon Society on the development and showed them the sites by boat. The Heidenreichs are concerned about environmental costs from development and operation of such a facility and its effect on the Refuge. Assistant Refuge Manager Freitsche and Manager Lyons also attended the Technical Committee meeting of the harbor planning group.

Assistant Romero presented a statement at a public hearing on oil and hazardous chemical spills on the River to Wisconsin State Representative Johnsrud and Iowa State Representative Halverson.

Iowa Department of Transportation personnel visited the District Office seeking general and specific information on regional and local wetlands and their values.

Assistant Male attended the Upper Mississippi River Conservation Committee Fish Tech meeting at Dubuque, Iowa in September.

Manager Lyons met with Rock Island District Corps of Engineers personnel to again review erosion on 12-Mile Island resulting from the Ackerman Cut project. Breaches in the island were finally repaired after several years of interagency negotiations. Repairing the island was crucial to prevent its fragmentation and to reduce backwater sedimentation.

The Rock Island Land Use Allocation Plan was reviewed and Romero and Lyons attended an uneventful open house and public meeting with Refuge Manager Lennartson, in Dubuque, Iowa.

4. Compliance with Environmental and Cultural Resource Mandates

The Fish and Wildlife Interagency Committee met at Rock Island in January. Complex Manager Berry, Managers Wargowsky and Lyons and Assistant DeVries combined that trip with one to discuss barge fleeting with Rock Island District Corps of Engineers personnel. Also, shoreline protection needs in Pool 11 were plotted on a map and explained at the requests of that Committee. A memo was provided Jody Millar of the Rock Island Field Office, placing recreation considerations for dredge spoil placement in perspective.

The John Deere Dubuque Works requested information concerning compliance with or abandonment of their permit. The proposals were reviewed and comments provided to the Project Leader.

Rick Berry visited McGregor to discuss Turkey River moist soil units, dredge spoil placement, fleeting and habitat project integration.

Comments were provided to Winona regarding a Pool 9 permit application for construction of a roadway, fish float and marina adjacent to Refuge lands near Blackhawk Park. Denial of the permit was recommended.

The archeological site on Pool 10 was checked and no damage or looting was noted.

Proposed channel realignment in upper Pool 10 was reviewed and "no comments" comments provided.

Assistant Batya documented barge fleeting on Refuge lands across from Dairyland Power Plant on Pool 9. The barges were photographed as the incidents occurred and Notices of Violation were issued to the barge companies. Batya spoke to George Johnston, the environmental manager at Dairyland about the situation. Mr. Johnston said he would notify their contracted towboat operator to steer the barges away from Refuge lands.

Manager Lyons met with Bill Frederick, Wisconsin Power and Light manager in Cassville, Wisconsin to discuss barge fleeting.

A "no objection" letter was issued to the Rock Island District Corps of Engineers for shoreline protection at the base of restored wingdams on and near Hurricane Island.

Dredge spoil disposal, following the plan and District recommendations, occurred on Hurricane Island on Pool 11.

Bank protection recommendations for Pool 11 were prioritized and provided for use by the Corps at Rock Island.

A Wisconsin Department of Transportation project to realign and widen Highway 35 near Cold Springs Landing impacting Refuge lands required meetings with Wisconsin DOT and DNR, St. Paul COE and the Green Bay E.S. Field Office. Documents were reviewed and comments provided. The 4 (f) determination and environmental analysis concerning this construction was finally completed in October with able leadership from the Green Bay

Field Office.

5. Research and Investigations

During May 1988, the Upper Mississippi River Conservation Committee conducted a survey to compile information on all ongoing scientific investigations on the Upper Mississippi River. Their results are compiled in a publication entitled, Summary of Current Scientific Investigations on the Upper Mississippi River. A list of these investigations was included in the 1988 annual narrative. The 1989 volume of this report lists many of these same investigations. A list of investigations new to this report occurring on the District is as follows.

Title	Investigator	Pool Involved
1. Biological Effects of Contaminant Transfer to Biota from Resuspension of Sediments of the Upper Mississippi River	Gary Atchison	9
2. Commercial Fishing Statistics	Tom Boland	9, 10, 11
3. Visitor Use Surveys Mississippi River Project	Roger D. Bollman	11
4. Cadmium and Metallothione in Concentrations in Juvenile Bluegill exposed to Upper Mississippi River Sediment	Greg Cope Iowa State University	9
5. Loras College Freshwater Algal Culture Collection	David B. Czamecki	9, 10, 11
6. Mallard Island Nesting Study	Robert B. Dahlgren U.S. F&WS	11
7. Age/Length Frequency of Lampsilis Higginsi	Marian E. Havlik Malacological Consultants	9, 10, 11
8. Biogeography and Distribution of Rare Unionids in UMR System	Marian E. Havlik Malacological Consultants	9, 10, 11
9. Distribution and Population Dynamics of Rare and Endangered Mussels	David J. Heath Wisconsin DNR	9, 10
10. Coot Use of Pools 9-11 During Migration	Gerald Kaufmann Loras College	9, 10, 11

McGregor

Pool 9

1) Pool 9 Island Creation - The project purpose is to restore severely degraded islands and to improve fisheries habitat by increasing deep water next to the islands. Littoral zone development should take place downwind due to wave reduction. The proposed project would involve the reconstruction and the stabilization of two islands. The Definite Project Report was completed in June 1989. The contract is expected to be awarded in spring 1990.

2) Lansing Big Lake - This project proposes to improve water quality and reduce sedimentation through the construction of a series of closing structures on sloughs and cuts entering Big Lake. A resulting benefit should be the extension of the life of Big Lake as wildlife habitat. The project is still in the planning and design phase.

3) Cold Springs - This project proposes to prevent further degradation and restore fishery habitat in 23 or 36 acres of a valuable off-channel area. The proposed project consists of selectively dredging portions of Cold Springs area to increase water depths, remove fine oxygen-demanding sediments, reduce aquatic plant encroachment, and increase available fish habitat. The Problem Appraisal Report has been completed and Manager Lyons has reviewed and responded to the report.

Pool 10

1) Bussey Lake - The proposed project would reduce sediment transport into the lake by redesigning a culvert on Buck Creek to include a water control structure that would be used to reroute the flow of Buck Creek during periods of spring high flow when it contains sediment-laden waters. In addition, key areas of Bussey Lake would be dredged to rehabilitate fishery habitat. During a public review of the draft Definite Project Report at Guttenberg, Iowa in December, area residents voiced opposition to the Corps of Engineers plan to dredge fish channels in Bussey Lake. Area residents feel that additional dredging should be done to permit recreational access to Bussey Lake and they have proposed an alternative to the proposed project. The project, however, has been designed as a habitat project and Congress has not authorized any money under EMP for recreational projects. The Corps of Engineers is considering possible design changes to the project at this time.

Pool 11

1) Bertom-McCartney Lake - This project involves selectively deepening areas of McCartney Lake by dredging to improve the fish habitat. Refuge staff attended a final plans and specifications meeting on the project in October. Construction should start in early to mid-spring 1990.

2) Guttenberg Fish Ponds - This project involves developing water supply and controls for the old fish hatchery ponds below Lock and Dam 10. They will be managed as moist soil units for waterfowl. Construction on this project began this fall and should be completed during the spring of 1990. (See Section I.1.)

McGregor

The following is a summary by month of EMP and Farm Bill activities throughout the year. Never a dull month!

January

Environmental Management Program (EMP) plans for the Guttenberg Ponds and Pool 9 Island projects were reviewed. Meetings on each were attended at Guttenberg, Iowa and Winona, Minnesota.

A Farmers Home Administration (FmHA) meeting in Stevens Point, Wisconsin was held to discuss interagency cooperation and procedures.

February

EMP meetings regarding Bertom-McCartney Lake and Bussey Lake projects were attended at Guttenberg and Winona.

Maps for FmHA easements were provided to the Regional Office Farm Bill coordinator.

March

Keith Beseke and Manager Lyons attended a public meeting at Cassville, Wisconsin on the Bertom-McCartney EMP project. Comments on the Definite Project Report (DPR) for the Pool 9 Islands project were provided to Keith Beseke.

Lyons attended a "Farm Bill" coordinators meeting at Rock Island, Illinois.

April

The Bertom-McCartney (DPR) was released for the EMP project. Review comments were provided to Keith Beseke.

FmHA review requests were received from one county. General recommendations to reduce soil loss were provided. One riparian zone was protected.

May

An environmental assessment for Hurricane Island development in Pool 11 was reviewed and comments provided. A draft project report for the Pool 9 Islands EMP project was reviewed. Assistant Batya attended a public meeting at Ferryville, Wisconsin regarding the same project.

District staff completed Conservation Reserve Program (CRP) contract screening in Butler, Floyd, Hardin and Mitchell counties in Iowa. The list of names and addresses was compiled and submitted to the Iowa Farm Bill Coordinator at the Rock Island ES Field Office. Several FmHA loan reviews were also completed.

McGregor

June

A tour and planning meeting on the Lansing Big Lake EMP project were attended. The Gremore Lake EMP project near Prairie du Chien was discussed and field checked. Final plans for the Guttenberg Ponds EMP project were reviewed. A brief write-up for proposed moist soil development near New Albin, Iowa was presented at the Fish and Wildlife Work Group meeting in LaCrosse.

Loan reviews were completed as requested by FmHA offices. The native prairie easements have been staked in concert with the Wisconsin DNR easement manager. A meeting was held on-site with the FmHA County Supervisor and new owner to explain easement locations and provisions.

July

The native prairie (FmHA) easements were fenced by the Wisconsin DNR. Easement managers were assisted with boundaries, signing and fencing arrangements. FmHA loan reviews were completed on several tracts in two counties.

August

Manager Lyons and Keith Beseke attended the Cold Springs EMP planning meeting.

Manager Lyons met with a local farmer who wanted to create wetlands. He had too much watershed and too deep a ravine.

September

The EMP contract for the Guttenberg Ponds project was awarded.

FmHA loan actions were reviewed in two counties.

October

A pre-construction conference for the Guttenberg Ponds EMP project was held at Lock and Dam 10. Good weather and low water conditions permitted more progress on the project than thought possible. Assistant Romero has been serving as Service liaison on the project.

A final plans and specifications meeting on the Bertom-McCartney EMP project was held at Cassville. Keith Beseke and Manager Lyons represented the Refuge. Wisconsin DNR and Rock Island District COE personnel were also present.

November

Assistant Romero spent considerable time monitoring the progress of the Guttenberg Ponds EMP project. The project was proceeding smoothly with no major changes to the original plans.

Assistants Romero and Male staked habitat areas to be protected at the Bertom-McCartney EMP project site.

Manager Lyons reviewed and provided comments on the Bussey Lake EMP Definite Project Report.

Two FmHA loan reviews were completed. Manager Lyons met with the Soil Conservation Service and FmHA personnel to discuss debt restructure and do a field review of the farm site.

Manager Lyons attended a two-day Farm Bill meeting at Necedah NWR.

December

Annualized data were compiled for the RMIS reports. Other year-end reports and responses were compiled and submitted.

Assistant Romero continued with contractor liaison at the Guttenberg Ponds EMP project through the month. A public meeting was held on the Bussey Lake EMP project then a follow-up meeting at Winona and further review and a memo to Keith Beseke.

A planning meeting for the Lansing Big Lake EMP project was held at Winona.

A response memo to the Problem Appraisal Report for the Cold Springs EMP project was prepared for use by the Winona staff.

Another FmHA Loan review request was completed.

D. PLANNING

2. Management Plan

The following refuge management plans were revised at the District level in 1989:

- Water Management Plan
- Fire Plan
- Safety Plan

In addition, District personnel assisted the Corps with implementation of the Corps Forest Management Plan for Pools 11-14 on the Mississippi River.

3. Public Participation

There was one public meeting organized by the Service in the Savanna District in 1989. A public meeting concerning possible changes to the Potter's Marsh controlled waterfowl hunting program was held in Savanna, IL, on May 20. (See Section H.8.)

A public meeting sponsored by the Izaak Walton League was held in Clinton, IA, on November 15 concerning barge fleeting. Jim Lennartson, Winona headquarters served on a panel to represent the Refuge. Various issues and concerns relating to barges and barge fleeting on the Mississippi River were brought up by the audience and discussed by the panel.

A Corps sponsored public hearing was held in Clinton, IA, on November 28 to record formal presentations concerning a permit application for barge fleeting in Pool 14. Wargowsky was in attendance for the Refuge.

The most unified public interaction over a single topic in 1989 concerned a new barge fleeting site in Pool 13. A grain terminal in Savanna, IL had a permit for fleeting barges adjacent to the grain elevators, but the barge congestion in front of the city caused a local stir. Past attempts by the company to obtain a permit to fleet on the Refuge were successfully blocked by public comments through the review process of the Section 10/404 permit application.

Through negotiations with the local railroad company in 1989, the grain company obtained permission to drive eight pins and fleet along their railroad right-of-way. However, the site they chose was downstream, across from Sabula, IA, which residents objected to. No Corps permit was needed so the public had no possibility to stop it by any public review.

During the last two months of 1989 the topic was a hot issue. Wargowsky was contacted by a congressional aide for Congresswoman Lynn Martin's office, by mayors of Sabula, IA, and Savanna, IL, by numerous concerned citizens, and by the Bellevue Herald-Leader.

The issue is not dead, only silent over the winter along with the barge traffic, waiting for the next season to reactivate the protest.

4. Compliance with Environmental and Cultural Resources Mandates

The Savanna District staff reviewed 64 Corps Public Notice applications for Section 10/404 permits in 1989. This was an increase of 20.7 percent from 53 applications in 1988. Comments and recommendations were coordinated through the Rock Island, IL, Ecological Services Field Office on five of the permit applications.

A permit application for constructing a submerged barge anchorage system for fleeting barges at two locations in Pool 14 received the most public opposition. Staff time was spent attending meetings concerning the application itself as well as meetings on barges and barge fleeting in general.

The Service recommended that alternative fleeting locations be examined, that a study of the fleeting needs of the immediate area be determined and that the proposed fleeting sites be reduced in size. The Corps is reviewing the application based on information received from their public hearing and from written comments submitted. Local newspapers have carried extensive coverage concerning this application.

The monthly public notice on results of Section 10/404 permit applications showed 17 after-the-fact permits were issued by the Corps Rock Island District in 1989. This was a 39 percent decrease from 28 issued in 1988. A four-year decrease in after-the-fact permits has been noted in the Corps Rock Island District. The two major categories were docks - 5 (29.4 percent) and channelization/fill/dredging - 5 (29.4 percent).

The Savanna District office reviewed 19 special use license renewals in 1989 compared to 44 in 1988 and 43 in 1987. All 19 were for structures in Pool 13 with the majority for docks, steps and retaining walls.

Enron Northern Natural Gas Company actively pursued permits for construction of a submerged natural gas pipeline across the Mississippi River at river mile 574.2, Pool 12. Several meetings were attended by District staff to review the project plans and discuss wetland mitigation for the pipeline disturbance. An 8.75 acre wetland with two waterfowl nesting islands will be constructed to compensate for the right-of-way disturbance. Current plans are for construction to occur in 1990 with directional drilling under the Mississippi River as the first priority, with mechanical and hydraulic dredging as an alternative method.

There are 15 archaeological sites on the Savanna District: 13 in Pool 12 and 2 in Pool 13. Each year the sites are inspected and records updated to document any deterioration, destruction, or erosion of each site. Bank erosion is the most serious threat to a great majority of the sites as the shoreline recedes a bit every year. Low water levels the past few years have helped by reducing wave action against the shore and have allowed natural revegetation of exposed banks.

An archaeological Phase I Reconnaissance Survey of an approximately one acre parcel of land in JoDaviess County, IL was funded by the Service in 1989 for $1,234. The parcel, located southeast of East Dubuque, IL,

consisted of a long (1,800 foot) and narrow (50 foot) stretch of land along an old channel of the Mississippi River. A land exchange between members of the Bowfin Yacht Club and the Service would remove this one-acre parcel from the Refuge.

As per Section 106 of the National Historic Preservation Act, this parcel of land was surveyed prior to divestiture to identify historic properties potentially eligible for the National Register of Historic Places. All phases of the research were conducted by Floyd Mansberger, Fever River Research, Springfield, IL.

Based on the archaeological reconnaissance survey and limited subsurface testing, no significant historic properties were located by the survey.

5. Research and Investigations

Upper Mississippi River NR89 - An Evaluation of Largemouth Bass Populations in the Upper Mississippi River - Largemouth Bass Stock Assessment (32576-9), Fisheries Research Section, Iowa Department of Natural Resources, Bellevue, IA.

This on-going study by the Fisheries Research Section of the Iowa DNR was conducted as part of the Federal Aid to Fish Restoration. The research is an attempt to estimate the abundance, standing stock, age, growth and total mortality of largemouth bass in selected areas of Pools 9, 10, 12, and 13. A better understanding of natural mortality, angler exploitation and growth of largemouth bass inhabiting Pools 9-15 is needed to determine if various management strategies would significantly benefit the size structure of largemouth bass populations.

Largemouth bass were collected September, October and November 1988, with pulsed DC and AC electrofishing gear. All largemouth bass $\geq$ 9 inches were measured for total length to the nearest 0.1 inch and weighed to the nearest 0.1 lb. A serialized Floy tag was inserted below the dorsal fin and the left pelvic fin was excised to determine tag loss.

Over 4,140 largemouth bass were measured, weighed and Floy tagged during this project segment. Largemouth bass population estimates, relative weights, proportionate stock density, weight-length relationships, standing stocks, length-frequency distributions and estimates of total mortality were obtained for five study areas. Scales were analyzed from 255 largemouth bass sampled in Sunfish Lake (Pool 12) and Lainesville Slough-Lower Brown's Lake (Pool 13); an additional 400 scales were collected from three other study areas for analysis during the next study segment. Floy tag loss was estimated at 47 percent. Voluntary return of Floy tags by anglers was 4.9 percent.

Standing stock estimates ranged from 8.0 to 41.0 lbs/acre and reflect changes documented by population estimates. Standing stock estimates in Sunfish Lake (Pool 12) nearly doubled in 1988, compared to 1984 and 1985. Length-frequency indicated a large part of the increase was due to the number of fish in the 8-12 inch range, probably reflecting the 12 inch minimum length limit. This has probably resulted in a reduction in angler mortality for fish in the 8-12 inch range. However, standing stocks have

not responded in a similar manner in Lainesville Slough-Lower Brown's Lake, Pool 13, where a 12 inch minimum length limit is also in effect. Standing stocks increased from 7.0 to 18.5 lbs/acre in Lainesville Slough-Lower Brown's Lake from 1984 to 1987, then decreased to 8.0 lbs/acre during 1988. Length-frequency distributions show good numbers of fish in the 8-12 inch range, however, the total abundance of fish has decreased.

The 68 percent estimated total mortality rate for largemouth bass in Lainesville Slough-Lower Brown's Lake was the highest recorded during the 4 years of the study. Reasons for the high rate are unknown, however, mortality estimates for this study area have always been high and ranged from 56-68 percent. Computation of total mortality by one inch length increments for the 1988 sample indicated nearly 44 percent total mortality for each inch of growth from 12-16 inches. Fourteen estimates of total mortality have been obtained from the five study areas, and of these, six (43 percent) have been near or over 60 percent. Total mortality rates near 60 percent are viewed with concern by many resource managers because such rates may affect fish populations in a negative manner.

Voluntary return of Floy tags is still extremely low despite much effort in the form of posters, radio and newspaper announcements, as well as personal appearances requesting the return of tags. The creel survey completed in Lainesville Slough-Lower Brown's Lake and Sunfish Lake during 1988 will determine exploitation in these sites, however, the creel survey is still needed in Sunfish Lake since voluntary returns are not adequate to determine mortality due to angling.

Upper Mississippi River NR89 - An Evaluation of Largemouth Bass Populations in the Upper Mississippi River - Largemouth Bass Habitat Requirements (32576-10), Fisheries Research Section, Iowa Department of Natural Resources, Bellevue, IA.

This on-going study by the Fisheries Research Section of the Iowa DNR was conducted as part of the Federal Aid to Fish Restoration. The research objective is to determine largemouth bass habitat requirements, response to low oxygen conditions, spawning nest depth and response to water level fluctuations.

Radio transmitters were implanted into largemouth bass captured from Sunfish Lake (Pool 12) and Lainesville Slough-Lower Brown's Lake (Pool 13) study areas. Additional fish were also captured and radio-tagged from other areas in Pool 12 to determine the extent of movement into the Sunfish Lake overwintering area. Electrofishing gear was used to capture most of the largemouth bass, however, several fish caught by participants in fishing tournaments were also used to help determine movement patterns from angler caught fish.

The 43 radio-tagged largemouth bass were located over 700 times during this study segment. Mean water depth occupied by radio-tagged largemouth bass was 3.2 ft, 2.7 ft, 2.6 ft, and 3.2 ft during 1985, 1986, 1987, and 1988, respectively. Tagged largemouth bass associated with cover over 80 percent of the time and dense growths of aquatic vegetation were used most often. Radio-tagged largemouth bass moved up to nine miles to overwinter in protected backwater areas and inhabited the same widely

separated summer and winter areas in consecutive years. Forty-two percent of the radio-tagged fish were lost to angling. No largemouth bass spawning beds were located, due to turbid water conditions and reduced visibility caused by spawning activities of carp.

Upper Mississippi River NR89 - Long Term Biological Monitoring Program, Pool 14 (32576-11), Commonwealth Edison Company, Cordova, IL.

Commonwealth Edison Company contracted six on-going biological studies through Lawler, Matusky and Skelly Engineers of Pearl River, NY, to determine whether the Quad Cities Nuclear Power Plant operation is having any measurable effect on the fishery of Pool 14. The Quad Cities station is a twin reactor nuclear-fueled steam electric generating facility located on the Illinois shore of Pool 14, at river mile 506.5. These studies have been developed in cooperation with the Iowa DNR, Illinois DOC and the Illinois EPA.

1. Long-Term Fisheries Monitoring - This study has been conducted since 1971 and the latest report received by the District was from 1988. The principle objectives of the program are to determine species composition and abundance in Pool 14. Eight-six of the 87 fish species known to exist in Pool 14 have been sampled since the study began. Sampling techniques included electrofishing, bottom trawling, hoop netting and haul seining. Electrofishing resulted in the capture of 6,692 fish constituting 42 species. Species contributing greater than five percent to the total catch, in decreasing order, were gizzard shad, bluegill, largemouth bass, emerald shiner, carp, spotfin shiner and freshwater drum. Bottom trawling produced 22 species distributed among 3,931 fish, of which 73.1 percent were freshwater drum, and 22.7 percent were channel catfish. Hoop netting resulted in the capture of 660 fish constituting 22 species. Freshwater drum (47.6 percent) dominated the catch, followed by flathead catfish (11.9 percent), black crappie (9.5 percent), channel catfish (8.6 percent), and shorthead redhorse (5.2 percent). A total of 6,245 fish of 26 species were collected by haul seining. Gizzard shad made up 78.8 percent of the catch, followed by smallmouth buffalo (5.9 percent) and bluegill (5.7 percent). Standing stock estimates were 1,934 fish/ha in the altered slough habitat (sand and gravel mined), 3,081 fish/ha in the slough habitat and 524 fish/ha in the side channel habitats. Only three hybrid striped bass and no stocked walleye were recovered in 1988.

2. Freshwater Drum Life History and Population Dynamics - This study began in 1977 to gather population estimates and age-class distributions of freshwater drum for specific areas in Pool 14. Freshwater drum were chosen because its eggs and larvae generally constitute the majority of entrained ichthyoplankton. Drum also rank second to gizzard shad in terms of species which are annually impinged on the intake screens. Larval studies have found that most larvae survive entrainment during open-cycle operation if discharge temperatures don't exceed 32 degrees centigrade. Marked fish/recapture studies and radiotelemetry have found yearly growth rates and fecundity to be relatively stable from year to year. According to the studies, annual recruitment of young fish has been enough to sustain a healthy population, with no missing or abnormal year/classes which would indicate a stressed population. A total of 1,715 freshwater drum were marked and released

during spring, 1988. Only one fish was captured during the eight week study. The fish had moved 0.3 miles upstream from the original release site.

The 1988 population estimates for the study areas was 809,372 fish ≥ 150mm and 782,923 fish ≥ 220mm. The standing stock estimate of 404 fish/ha was slightly higher than the 1983-88 average of 314 fish/ha. The majority of the fish collected ranged from Age 2 through Age 6. Age classes 8, 11, 12 and 15 were also strong year classes. The freshwater drum may follow a 3 year cycle of strong age classes.

The annual survival rate was estimated to be 70 percent. Impingement exploitation rates for young of year and age 1 fish were 3.1 percent and 18.4 percent respectively. The impingement rate for Age 2 and older was .29 percent.

3. Impingement Monitoring - This study is being conducted to document fish species composition and numbers being impinged on the intake screens. Fifty-six species were impinged in 1988, totaling 1,485,744 fish, including gizzard shad (71.6 percent), bluegill (18.2 percent), and freshwater drum (7.7 percent). Studies indicated that a large percentage of the fish were dead prior to impingement, especially during the winter months. The impingement exploitation estimate for the total standing crop of Pool 14 was 5.3 percent by weight.

4. Channel Catfish, Flathead Catfish, Walleye and Sauger Population Studies - Catfish, walleye and sauger have been marked and released since 1984 to monitor movement and provide an estimate of standing stock. A total of 548 channel catfish and 518 flathead catfish were tagged and released May-June, 1988. Of these, three channel and 15 flathead catfish were recaptured. The 1988 channel catfish population estimates were lower than past years with 33,106 fish per 2,556 ha compared to an average of 43,849 per 2,556 ha over past years. The flathead catfish population estimate of 9,558 was slightly higher over past years. Movement averaged 0.6 miles for channel catfish and 0.7 miles for flathead catfish. Because of the small numbers of walleye (2) and sauger (3) which were tagged with no recaptures in 1988, there were no study results for these two species.

5. Fall Stock Assessment - Walleye and hybrid striped bass have been reared in an inactive spray canal at the power plant since 1984. An annual production goal of 125,000 fingerlings of both species was set for Pool 14 stocking. Fall electrofishing of Lock and Dams 13 and 14 tailwaters were initiated to monitor the outcome of fingerling stockings, determine age structure, and develop a data base for relative abundance and size distribution of selected game fish species.

Walleye contributed 34.5 percent of the 1988 catch at the tailwaters of Lock and Dam 13. White bass contributed 33.8 percent, sauger 24.5 percent and hybrid striped bass 7.1 percent. Sauger (43.4 percent) was the dominant species collected at Lock and Dam 14, followed by white bass, walleye and hybrid striped bass.

Thirty-two walleye and fifty-seven hybrid striped bass released from the stocking program were recovered during the study. Stocked walleye

comprised 46.1 percent of the young-of-year at Lock and Dam 13, and 17.5 percent of young-of-year walleye at Lock and Dam 14. Four stocked walleye and eight hybrid striped bass were recovered in Pool 15. Fish stocking in 1988 totaled 111,000 walleye and 151,000 hybrid striped bass fingerlings. Of the few verified stocked specimens recovered, growth appears satisfactory, with the largest hybrid striped bass captured to date weighing seven pounds.

Southern Illinois University researchers conducting overwintering fish sampling in the lower Spring Lake unit. (12/89 LW)

Upper Mississippi River NR89 - Winter Habitat Requirements and Overwintering of Riverine Fishes (32576-14), Fisheries Research Laboratory, Southern Illinois University, Carbondale, IL.

The overall goal of this study is to examine the possible use of backwaters as refuges by temperate latitude river fishes during winter. The specific objectives include: 1) description of winter habitat requirements and habitat use of a number of river fishes; 2) determination of the physicochemical, geomorphological, and hydrological characteristics of backwaters suitable for overwintering fish; and 3) the examination of the seasonal movements of fishes into backwaters.

A literature review of 207 journal articles or agency reports revealed a need for further research on winter habitat requirements and winter habitat utilization of riverine fishes. Overwinter survival appears to be correlated with size, with young (small) fish at particular risk. Small fish cool rapidly because of thinner body walls, while heavy-bodied

fish are more tolerant of low temperatures. Some river fish will home to backwater habitats in which they had successfully overwintered in previous years.

The Pool 14 main channel and three backwater sites on Pool 14 were selected for study of overwintering fish utilization. The three sites included Marais d'Osier Slough, Cattail Slough and Shaff Creek. Electrofishing and netting were used to sample each site from fall to spring, gathering data on the diversity, abundance and size of the fish collected. As water temperatures in the main channel declined, so did net captures in the channel, as fish moved to wintering sites.

Overwinter mortality for gizzard shad was severe during 1988-89, especially in Cattail Slough. A dissolved oxygen (D.O.) depletion in the slough in March may have also been a result of this die-off.

Very high capture rates in the backwater areas indicated their heavy use by a variety of fishes. Thermographs were deployed on the bottom of each deepest backwater site. The main channel temperatures fell to 0°C December 9 and remained at less than 1°C until March 20.

Marais d'Osier Slough was the deepest backwater area studied (31 feet), had the highest temperatures (3°C and above) and had an absence of current flow. The increased depth reduced susceptibility to D.O. depletion. Dissolved oxygen levels of less than 2 parts per million (ppm) and temperatures of 2-3°C were exhibited in Cattail Slough (maximum depth=12 feet). This slough was less suitable for overwintering fish as demonstrated by the decline of capture in March.

Shaff Creek Slough (maximum depth=4.3 feet) had temperatures of less than 1°C and is influenced by coldwater flows from Shaff Creek. The D.O. levels were above 12 ppm in the slough.

Maximum sustainable swimming speed has been found to be inversely related to water temperature for a number of fish species. Much of the river habitat may not be suitable for various species and/or size classes during the winter due to a combination of low temperature (0°C) and water velocity. Successful overwintering may only be accomplished in backwater habitats.

Studies of young fish in an environmental chamber have been initiated to determine low temperature toleration and swimming ability for several species. This study will attempt to ascertain what channel habitats may be unsuitable for overwintering based on existing water flow velocities and temperature.

<u>Upper Mississippi River NR89 - Spawning and Early Life History of Paddlefish and Shovelnose Sturgeon (32576-18)</u>, Iowa Coop. Fish and Wildlife Research Unit, Ames, IA.

Objectives:

1. Characterize spawning habitat of paddlefish and shovelnose sturgeon.

Savanna

2. Locate rearing or nursery sites important to early life history in the Upper Mississippi River.
3. Determine vulnerability of reproductive stages to navigational practices and responses to between-year variations in river conditions.

A total of 35 paddlefish and 28 shovelnose sturgeon were tagged in Pool 13 and radio-tracked in 1988, in an attempt to detect spawning migration or movement. However, the researchers were unable to find evidence of spawning from monitoring paddlefish and sturgeon movements alone.

Egg and larval fish collecting efforts began in April 1989. The researchers deployed 24 bottom-set drift nets (in pairs), two heavy-duty bottom sleds equipped with half-meter ichthyoplankton nets, and two half-meter plankton nets extending laterally from the bow of their workboat.

Samples were made at wing dams, closing dams, mussel beds, rock bars, and gravel bars in 4 areas: at the mouth of Catfish Creek (upper reach of Pool 12), the tailwater of Lock and Dam 12 (R.M. 556-557), in the Sand Prairie - Maquoketa River area (R.M. 548-550, Pool 13), and at the entrance to Running Slough (R.M. 541, Pool 13).

Over 1000 eggs and larvae were collected. The eggs were reared in aquaria and the larvae preserved when large enough to be identified. Walleye and mooneye eggs were found commonly at all 4 locations. Freshwater drum and gizzard shad dominated the larval fish catch. Other fish eggs and larvae remain to be identified. Two darkly-pigmented eggs that may be paddlefish eggs (3 mm diameter) were found at Sand Prairie on April 30, 1989. They were bound tightly to bits of vegetation from an egg set on a rock bar. Unfortunately, the eggs were attacked by a fungus and had to be preserved before hatching.

The researchers intend to continue egg and larvae collection and will continue to monitor radio-tagged paddlefish movement. They will also collect gonads of both species to determine population trends in gonadal maturation and ovulation. Research will continue to discern character and habitat needs of eggs, larvae and young.

<u>Upper Mississippi River NR89 - An Evaluation of Largemouth Bass Populations in the Upper Mississippi River - Sport Fishery and Harvest (32576-19)</u>, Fisheries Research Section, Iowa Department of Natural Resources, Bellevue, IA.

This study by the Fisheries Research Section of the Iowa DNR was conducted as part of the Federal Aid to Fish Restoration. Exploitation of the largemouth bass population was estimated through use of an expandable creel survey. Angler catch and harvest from two study areas (Lainesville Slough-Lower Brown's Lake, Pool 13, and Sunfish Lake, Pool 12) were estimated by an expandable creel survey from May 1, 1988 through October 30, 1988.

Nearly 1,200 anglers were interviewed during the survey period. Nearly three times as many anglers utilized the Lainesville Slough-Lower Brown's

Savanna

Lake area compared to the Sunfish Lake area. The highest number of anglers were interviewed during May (286), followed by September (238).

An estimated 4,771 anglers expended 10,260 hours harvesting 7,911 fish in the Lainesville Slough-Lower Brown's Lake study area during the creel survey period. Harvest rate was 0.77 fish/hr while 1.7 fish were harvested per fishing trip. Fish harvest was estimated at 14.7 lbs/acre and fishing pressure was 52.6 hrs/acre. An additional 1,850 fish were caught and released. An estimated 2,328 anglers fished for 2,521 hours to harvest 1,061 fish in the Sunfish Lake area during the study period. Harvest rate was 0.42 fish/hr and 0.5 fish were kept per fishing trip. Pressure was 17.6 hrs/acre and there were 5.4 pounds of fish harvested per acre of water. An additional 899 fish were caught and released. Bluegill dominated the numeric catch in the Lainesville Slough-Lower Browns Lake study area followed by crappie spp., bullhead spp. and largemouth bass. Bluegill, largemouth bass and channel catfish contributed 93 percent of the total catch in the Sunfish Lake study area. Largemouth bass contributed 16 percent to the total weight of fish harvested in the Lainesville Slough-Lower Brown's Lake study area and 47 percent of the fish harvested in the Sunfish Lake area. Anglers preferred crappie, bluegill and largemouth bass when fishing in the Lainesville Slough-Lower Brown's Lake study area. Largemouth bass, bluegill, and crappie were preferred by anglers fishing the Sunfish Lake study area in decreasing order of preference.

Anglers reported over 2,600 largemouth bass were caught in the two study areas during the survey period. Nearly 80 percent (2,103) were released.

The length-frequency distribution of harvested bass indicated 13 percent of the harvested fish were less than the 12 inch minimum length limit in the Lainesville Slough-Lower Brown's Lake study area. Bass less than the minimum length limit were not observed by the survey clerk in the Sunfish Lake study area.

Largemouth bass harvest was estimated to be 2.3 and 2.5 lbs/acre for the Lainesville Slough-Lower Brown's Lake and the Sunfish Lake study areas respectively. Harvest rates were 0.03 and 0.08 bass/hr for the same areas, respectively. Total exploitation for largemouth bass was estimated to be 32 percent for the Lainesville Slough-Lower Brown's Lake study area and 46 percent for the Sunfish Lake study area.

Upper Mississippi River NR89 - Habitat Use by Shovelnose Sturgeon in the Upper Mississippi River (32576-20), Iowa Coop. Fish and Wildlife Research Unit, Ames, IA.

Objectives:

1. Determine habitat limitation of shovelnose sturgeon during a low water year.
2. Describe physical habitat characteristics and selectivity.

This is part of a long term study on spawning and nursery habitat of sturgeon and paddlefish in Pool 13.

A total of 28 adult shovelnose sturgeon were fitted with radio transmitters in 1988, resulting in 277 telemetry observations between April 26 and November 5, 1988.

The sturgeon tended to remain in the upper part of the pool, using only 25 percent of Pool 13 in 1988. The main channel had 48.8 percent of all contacts, border areas with wing dams had 30 percent and tailwaters had 15.2 percent of all contacts.

Record low river flows in 1988 affected sturgeon distribution as the fish sought areas with the most current velocity. They were found in a wide range of water depths and temperatures, and usually were found over clean-swept sand, lying on the river bottom where the swiftest current velocity was available.

Upper Mississippi River NR89 - Habitat Use by Paddlefish in the Upper Mississippi River (32576-21), Iowa Coop. Fish and Wildlife Research Unit, Ames, IA.

Objectives:

1. Determine habitat limitation of paddlefish during a low water year.
2. Describe physical habitat characteristics and selectivity.

This is part of a long term study on spawning and nursery habitat of sturgeon and paddlefish in Pool 13.

Nine adult paddlefish were radio-tagged in March and May 1989, in addition to 35 paddlefish radio-tagged in 1988. All were collected in the tailwater area of Lock and Dam 12 (Pool 13).

The paddlefish were monitored in April 1989, but no upstream movement was detected, even though the Lock and Dam gates were opened March 31 - April 10, 1989. More than 800 location fixes were made in 1988 to measure habitat, describe the habitat, and analyze paddlefish movement. Detailed habitat descriptions were made for 56 paddlefish locations fixed in June-August 1988.

Upper Mississippi River NR89 - Archaeology, Geomorphology and Historic Surveys in Pools 13-14, Upper Mississippi River (32576-22), Center for Archaeological Research, Southwest Missouri State University, Springfield, MO.

This study was contracted by the Corps Rock Island District to provide basic information for managing the cultural heritage of properties under the jurisdiction of the Federal Government.

The study evaluated past cultural investigations of the Upper Mississippi River Valley, and reviewed previous archaeological investigations in Iowa and Illinois. The geomorphological study discussed changes in the river valley and the processes of landscape evolution. The historic survey listed potential archaeologic sites and historic townsites, with a brief history of the formation and change for each site. The archaeological

study involved an intensive surface survey representing all land form types on government property in Pools 13 and 14. A total of 583.5 acres of cultivated fields, 12 miles of linear transects and 72.5 miles of shoreline was covered in addition to digging 120 shovel-test holes. Private collections of artifacts from the survey zone were visited and studied to enhance the survey results. Project personnel ultimately visited, recorded, or studied material from 58 sites, including historic and prehistoric components. Records of previously recorded sites also were reviewed. In the report the entire floodplain is described for its native vegetation, survey conditions and previous investigations. Then, the sites and diagnostic materials from the survey areas are described and analyzed according to culture period.

Recommendations for future investigations at various locations and overall management recommendations for the sites concluded the study.

6. Other

Environmental Management Program (EMP)

Funding for the Environmental Management Program (EMP) was authorized by Public Law 99-88 and Public Law 99-662, Section 1103. There are five elements of the program, but approximately 97 percent of the authorized funding is for habitat projects and Long Term Resource Monitoring (LTRM).

The first project funded by the EMP in the Savanna District was the Brown's Lake project. (Section I.1.) The project was built in 1988 and 1989 with minor dike grading and seeding to be completed in 1990. Four other projects have been submitted for funding in Pool 13 with two selected for construction in 1993 and 1994. Preliminary surveys for Potter's Marsh rehabilitation were initiated in 1989.

Numerous meetings were held throughout the year pertaining to the various EMP projects submitted for potential funding. Other meetings with Corps personnel and contractors evolved around project modifications and pre-final inspections of the Brown's Lake EMP project.

One of the LTRM field stations for the River is located in Bellevue, IA, for monitoring Pool 13. Three resource trend analysis categories were studied in 1989: water quality, fish, and vegetation.

Water quality was studied at 26 sites, an increase of one from 1988. Ten parameters studied, an increase of three from 1988, were as follows: dissolved oxygen, temperature, conductivity, turbidity, water depth, wave height, current velocity, wind direction, wind speed, and water current direction. The last three parameters were added in 1989.

Fish were studied at 19 sites in Pool 13. Various sampling gear was used at each location dependant if the site was a backwater or channel site. Species, weight, length, and number were recorded at each site. Three fish species are also being studied in depth as representative species. They are the channel catfish, sauger, and black crappie.

Vegetation was studied along five transects in Pool 13. One qualitative

sample was completed along each transect route in 1989. Hopefully, both a qualitative and a quantitative vegetative sample can be completed three times each year on each transect route as planned, starting in 1990.

Bathymetry work was also initiated in Pool 13 during 1989 and three sedimentation transects were set up within lower Spring Lake.

E. ADMINISTRATION

1. Personnel

Two personnel changes occurred during 1989. Robert Dahlgren, Wildlife Biologist transferred from the Refuge effective July 1, 1989 and became the Assistant Regional Refuge Biologist for the newly established Office of Refuge Biology located in La Crosse, Wisconsin.

A biologist position was advertised in early 1989. Kathleen Cheap was selected and EOD effective May 8, 1989. Kathleen Cheap was formerly the biological technician for the Winona District of the Refuge.

Table H-1. Staffing Levels at Headquarters/Complex, Fiscal Year 85-89.

Number of Employees for Headquarters/Complex				
Fiscal Year	Full-time	Part-time	Temporary	Total FTE
1989	5/3	0/2	0	9.3
1988	5/4	0	0	9
1987	5/4	0	0	9
1986	5/3	0	1/0	9
1985	6/3	0	0	9

5. Funding

Table H-2. Funding Levels for Fiscal Year 1989.

Headquarters and Complex				
1261	-	O & M	-	354,700
1262	-	O & M	-	90,600
1926-F5	-	EMP	-	37,800
TOTAL				483,100

Funds for Headquarters and Complex were combined in FY89 and the Complex organizational code was eliminated. Salaries accounted for over 80% of the total budget.

Funds from the EMP account were used to partially fund the salary of the EMP coordinator with remaining funds used for travel associated with EMP.

Funding on the Whitewater Watershed Project was reduced to 20,000 for FY89.

Complex

1. Richard F. Berry, Complex Manager, GM-14, PFT, EOD 10-29-84
2. Robert Dahlgren, Fish and Wildlife Biologist, GS-13, PFT, EOD 4-12-87 and Transferred 7-1-89
3. Keith L. Beseke, Environmental Engineer, GS-12, PPT, EOD 1-18-87
4. Arthur "Tex" Hawkins, Jr., Outdoor Recreation Planner, GS-12, PFT, EOD 6-2-85

Headquarters

5. James R. Lennartson, Refuge Manager, GM-13, PFT, EOD 8-4-85
6. Richard A. Frietsche, Refuge Manager, GS-11, PFT, EOD 8-18-86 Transferred 1-15-90
7. Robert F. Bartels, Wildlife Biologist, GS-12, PFT, EOD 1-15-90
8. Henry A. Schneider, Outdoor Recreation Planner, GS-11, PFT, EOD 5-21-78
9. Kathleen Cheap, Fish and Wildlife Biologist, GS-7/9, PFT, EOD 5-8-89
10. Victoria Drieslein, Administrative Technician, GS-6/7, PFT, EOD 12-18-88
11. Gwendolyn F. Whitegull, Secretary, GS-5, PFT, EOD 9-16-86

4 1 2 5 3

Sign Shop Staff

1. Duane A. Gaulke, Silk Screen Maker-Printer, Foreman WS-8, PFT
2. Edward Gittens, Sign Painter, WG-9, PFT
3. Matthew Merchlewitz, Sign Painter, WG-9, PFT
4. Edward Petschow, Maintenance Worker, WG-7, PFT
5. Sharon Duxbury, Office Assistant, GS-4, PPT

Winona Sign Shop

The year 1989 was a good year for the Sign Shop. A new approach for funding was proposed to the Regions that utilize the Center. Four of the five Regions agreed to provide up front funding for their sign orders for the fiscal year. This advance of funds was used as an account for the Regions to charge sign orders against. This guarantee of funds enabled the Shop to hire a part-time office assistant. It also made budget planning, sign production and materials purchasing more efficient. In the past the Shop would receive a large number of sign orders at the end of the fiscal year which made it difficult to plan budgets and production and obligate large sums of money at the end of the year.

During FY 1989 we processed 119 sign orders. All FY 1989 sign orders were completed by the first quarter of FY 1990, a significant improvement over past years. In october we asked each Region to support us with up front funding again, those that supported us in 1989 are doing so in 1990. So we are off to an excellent start for the new year.

Headquarters/Complex

We also start the year with a name and address change from Regional Sign Center, Front and Kansas Streets, to Winona Sign Shop, 3 Kansas Street (same building, same location, just a new address).

6. Safety

There were no accidents or loss of time in FY 89 for Headquarters and Complex. Each staff member received a special achievement award for an accident free year.

Monthly safety meeting were held on the following topics:

January	Techniques for Lifting (film)
February	Above All Keep Your Head (film)
March	Radon (film)
April	Water A Timeless Compound (film)
May	Lyme Disease (film)
June	Lyme Disease Testing (presentation)
July	So You Made It Through Another Vacation (film)
August	Defensive Driving: Magic Circles (film)
September	Defensive Driving: Shade of Difference (film)
October	Blue Cross/Blue Shield Health Awareness (presentation)
November	Ice Safety (film)
	Frost Bite and Snow Blindness (film)
December	Defensive Driving: Adverse Weather Driving (film)
	Fire Safety - Extinguishers (film)

Lyme Disease testing for all personnel who might be exposed to Lyme Disease was conducted prior to the tick season and again at the conclusion of the tick season in November 1989.

The Headquarters/Complex staffs were the recipients of the Award of Safety Accomplishment for their outstanding safety record in 1988-89.

E. ADMINISTRATION

1. Personnel

Alisa Medema joined the Winona District staff on January 17 as Office Assistant, GS-5. Alisa formerly worked as secretary at the Trempealeau National Wildlife Refuge.

Edward "Bo" Petschow was again assigned to the District as Maintenance Worker, WG-7 during the period from April 3 to September 30, 1989. Effective October 1, 1989 Bo was reassigned to work at the Regional Sign Center in Winona.

Kathy Cheap was selected for the Wildlife Biologist, GS-7 position in the refuge headquarters effective May 8, 1989.

Biological Technician, Tim Julison, was promoted to Assistant District Manager, GS-7 effective June 4, 1989.

On-board strength for the Winona District during the last five years is illustrated in the following table:

Table W-3. Staffing Level at Winona District, FY 85 - 89.

	Number of Employees			
	Full-time	Part-time	Temporary	Total FTE
FY 89	3	0	1	3.5
FY 88	3	1	1	4.7
FY 87	3	1	0	3.8
FY 86	4	1	1	4.7
FY 85	2	1	1	2.7

E. ADMINISTRATION (Continued)

Winona District Staff

Alisa Tim Kathy Bob

1. Robert L. Drieslein, District Manager, GS-11.

2. Timothy Julison, Assistant District Manager, GS-7.

3. Alisa Medema, Office Assistant, GS-5.

4. Kathleen Cheap, Biological Tech. (Wildlife), GS-6, transferred to Upper Mississippi River NWFR, Headquarters 5-8-89.

5. Edward Petschow, Maintenance Worker, WG-7 (pictured with Sign Shop Staff).

E. ADMINISTRATION (Continued)

Table W-4. Staff Training - 1989.

Course Description	Date	Hours	Location	Participant
Waterfowl Wingbee	2/6-2/10	40	Carbondale, IL	Julison
Biology Workshop	2/13-2/17	40	Ames, IA	Drieslein
LE Refresher	2/13-2/17	40	Ft. McCoy, WI	Julison
LE Refresher	2/13-2/17	40	Ft. McCoy, WI	Cheap
LE Refresher	2/27-3/3	40	Ft. McCoy, WI	Drieslein
LE Follow-on	3/9-3/15	40	Glynco, GA	Cheap
RBase, WordPerfect	3/14-3/16	24	St. Paul, MN	Medema
DOS Training	3/21	4	La Crosse, WI	all staff
Small Purchase		16	Correspondence	Medema
CPR/First Aid	6/12	8	Trempealeau, WI	all staff
EEO Training	9/20	4	Brainerd, MN	Drieslein

2. Youth Programs

There was a ten week Youth Conservation Corps program with three high school students employed from June 12 to August 18. The enrollees were Cindy Falkowski (youth leader), Erica Small and Dale Plank. Enrollees worked on a variety of maintenance and biological work projects which are listed as follows:

- shop and tool maintenance
- boat landing maintenance
- litter pickup at boat ramps and on sand bars
- installation of a gravel walkway and wood curbing at Weaver Landing
- kiosk maintenance
- wood duck banding and site maintenance
- aquatic plant collection on the Weaver Marsh
- collecting of water samples for Weaver Bottoms monitoring program
- boundary posting.

E. ADMINISTRATION (Continued)

Youth Conservation Corps Staff

Erika Cindy Dale (7/89, TJ)

Overall, the program was a success with most benefits in the areas of landing maintenance and biological monitoring. About ninety percent of the planned YCC projects were accomplished.

3. Other Manpower Programs

Craig Johnson, a senior recreation major from the University of Wisconsin-LaCrosse, joined the District staff under a Student Internship on June 5. Craig worked on a variety of maintenance type projects for 32 hours a week through mid-October. He did an excellent job for us, particularly in view of the fact that he received no salary from us.

Additional summer help was provided by Matt Modjeski who was assigned to the District under the Work Study program from Vermilion College at Ely, Minnesota. Matt reported on June 15 and worked through the end of August on a number of projects, principally preparing for wood duck trapping and banding. Under the Work Study Agreement, Vermilion College picked up half of Matt's salary.

E. ADMINISTRATION (Continued)

Matt Modjeski (foreground) during a river patrol. (8/89, HS)

E. ADMINISTRATION (Continued)

Craig Johnson (8/89, TJ)

4. Volunteer Program

The number of staff-hours donated by volunteers to the District more than doubled in 1989 when compared to 1988. Thirty-eight volunteers contributed a total of 1114 hours to the program. The majority of this work (713 hours) was performed by Craig Johnson, a recreation student intern from the University of Wisconsin-LaCrosse. Johnson assisted the staff with maintenance of public recreation facilities, ecological monitoring, supervising the YCC crew, posting boundaries and many other projects throughout the District. Other volunteers helped with bald eagle nest surveillance, planting native shrub and forb species, statistical analysis of water quality data, collecting aquatic vegetation for the Weaver Bottoms monitoring program and other refuge management duties.

5. Funding

Station funding levels for the Winona District over the past 5 years are shown in Table W-5.

E. ADMINISTRATION (Continued)

Table W-5. Funding Levels for the Period 1985 - 1989.

Fiscal Year	Operations	YCC	ARMM	Total
1985	86,300	9,000	10,000	105,300
1986	108,200	9,500	18,600	136,300
1987	103,700	3,500	2,800	110,000
1988	122,300	13,500		135,800
1989	134,500	5,100	13,000	152,600

6. Safety

The annual step test, a pre-requisite to prescribed burn activities, was conducted on January 31 at Trempealeau National Wildlife Refuge. Drieslein, Julison and Cheap passed this test.

District staff received audiometric testing on March 30 at the Winona Clinic.

District staff underwent testing for Lyme's disease on May 30 prior to the tick season and field activities and again on November 11 at the conclusion of tick season. All staff tested negative for the Lyme titre both times.

First aid and CPR recertification training was conducted on June 12 at Trempealeau Refuge. District staff and two YCC enrollees were certified at completion of the training.

Formal monthly safety meetings were supported by staff, YCC enrollees and volunteers. Topics discussed included water and boating safety, defensive driving, effects of ultraviolet radiation, Lyme disease, heat exhaustion, hypothermia, frostbite, wellness and safe use of hand and electrical powered tools.

An approved explosive storage container for rocket net charges was obtained for safety improvement.

Winona District staff were once again the recipients of the Award of Safety Accomplishment for their outstanding safety record in 1989.

7. Technical Assistance

Farm Bill activities which could logically fall under this category have been reported under Cooperative Programs (J.1).

E. ADMINISTRATION (Continued)

8. Other

Private Structure Permits

An inspection of all boat docks and other structures being operated under Special Use Permit was conducted on July 21, 1989. Compliance with existing regulations and permit provisions was generally quite good. Where discrepancies were noted, permittee's were contacted and given a time frame for compliance. The District presently administers a total of 50 Special Use Permits for private structures on Service fee title lands on Clear, Peterson and Robinson Lakes, all in Wabasha County, Minnesota.

Service policy directed that all Special Use Permits for docks and private structures be re-issued as of January 1, 1990 as non-transferrable, life-use permits. Permittee's were contacted several months before the deadline and advised that they could no longer transfer their permit to another individual after December 31, 1989. Nine permittee's elected to transfer their permit to a son or daughter before the deadline. This policy, as expected, was not well received by permit holders since it meant that if they sold their property after January 1, 1990 the dock permit could not be transferred to the new owner. They complained that the sale value of their riverfront property without water access was significantly reduced. We do not argue the point, but in light of the Service's long-term goal to eliminate non-compatible structures on the refuge, the policy stands.

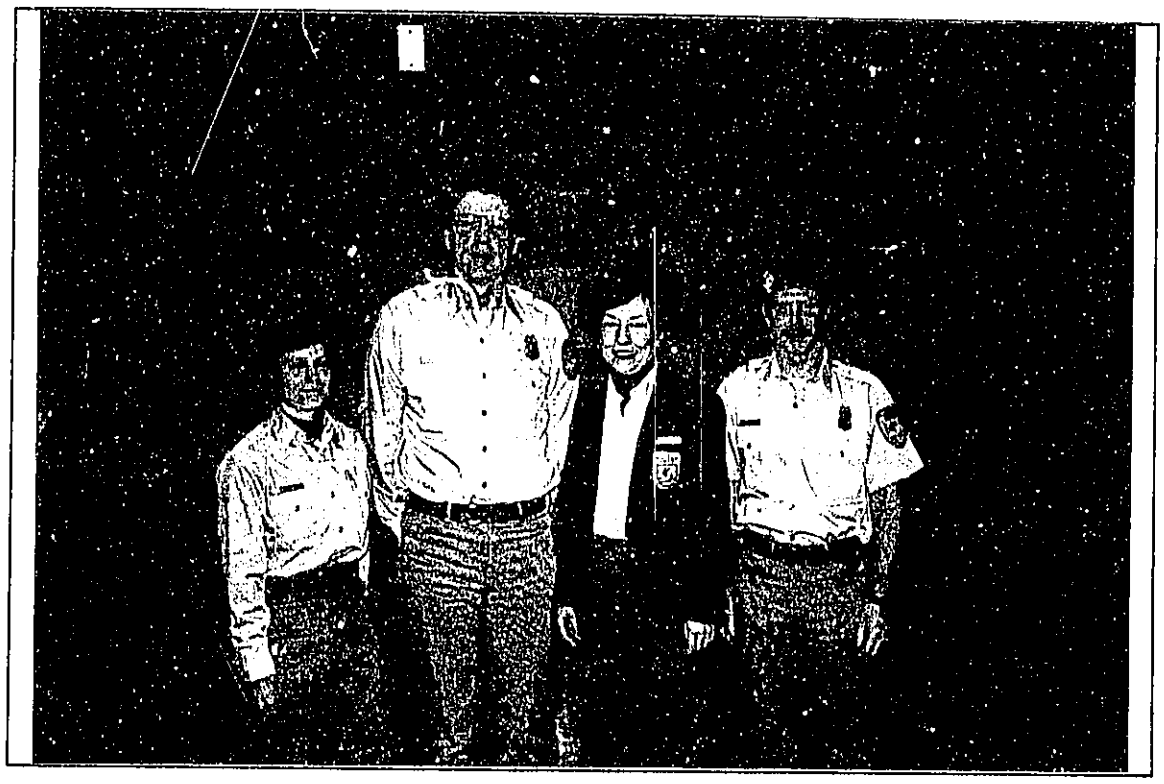
Revenue Sharing

A number of local counties, townships and municipalities received payments in lieu of taxes from the Service during the year. Drieslein delivered the three largest checks in person. Revenue sharing payments made by the District in 1989 are listed below:

Township of Nelson, WI	$3,844
County of Winona, MN	$2,031
County of Wabasha, MN	$1,754
Township of Alma, WI	$1,066
Township of Milton, WI	$ 596
Township of Caledonia, WI	$ 137
Township of Belvidere, WI	$ 108
City of Alma, WI	$ 41
	$9,577

E. ADMINISTRATION

1. Personnel



4 1 3 2 (B. Dahlgren)

	Name	Title	Grade	Status	EOD
	Richard Steinbach, District Manager, (Transferred 6/9/89, not pictured)		GS-11	PFT	6/85
1.	James M. Nissen, District Manager		GS-11	PFT	8/89
2.	William J. Thrune	Asst. Dist. Manager	GS-9	PFT	12/86
3.	Barbara B. Toal, Clerk/Typist, (Transferred 12/17/90)		GS-4	PPT	10/87
4.	Laurie B. Wlosinski, Biological Aid		GS-4	PFT	5/89

With the exception of Bill Thrune, Assistant District Manager, the entire staff changed during the course of the year.

The first change occurred when Laurie Wlosinski was selected to fill the newly created Biological Aid/Technician position. Laurie had previously been employed by the COE at the Waterways Experiment Station in Vicksburg, MS as Physical Science Technican before moving to the La Crosse area in 1987. She entered-on-duty on May 15 as a GS-3 and was promoted to GS-4 on November 19.

The second change came in June when District Manager Dick Steinbach left to become Refuge Manager at Rachel Carson NWR in Maine. Dick returned for a two-week temporary detail in July.

Jim Lennartson presented Dick Steinbach with a Special Achievement Award at his going-away party in July. (Refuge HQ)

The new District Manager, Jim Nissen, arrived on August 14. Jim transferred from Horicon NWR where he was the Primary Assistant Manager.

The final personnel change occurred on December 15 when Clerk-Typist Barb Toal transferred to a new GS-5 Secretary position in the office shared by the Assistant Regional Refuge Biologist, Bob Dahlgren, and the newly-arrived Flyway Biologist, Jim Walter.

Fortunately for us, Barb did not leave the building entirely, she just moved down the hall. In September, Barb received a $400 Special Achievement Award for her outstanding efforts during FY-89.

Assistant District Manager Bill Thrune was promoted to GS-9 on January 29. Bill also participated in the 1989 breeding population and production surveys in North and South Dakota as the observer in the aerial crew.

With the FTE assigned to the District for the Biological Aid/Technician position, the FTE allotment is the highest it has been in the past five years (Table L-4).

Table L-4. La Crosse District staffing pattern, 1985-89.

	Number of Employees			
Year	Full-Time	Part-Time	Temporary	No. FTE's
CY 1985	3	2	1	3.6
CY 1986	3	0	0	3.0
CY 1987	2	1	1	3.0
CY 1988	2	1	0	2.8
CY 1989	3	1	0	3.8

1989 Staff Training

Richard Steinbach

February 1	Advance R-Base, Science Museum, St. Paul, MN
March 14-16	Region 3 Computer Training Workshop
Feb. 27-Mar. 3	Law Enforcement Refresher, Fort McCoy, WI

William Thrune

January 12	EEO Training, Fish Research Center, La Crosse, WI
February 13-17	Law Enforcement Refresher, Fort McCoy, WI

Laurie Wlosinski

June	Pesticide Certification, Self-Study for General and Aquatic Pesticide Use
June 6-8	Boater Safety, La Crosse, WI
November 13-15	New Employee Orientation Program, St. Paul, MN

Barbara Toal

March 22	DOS Computer, Computerland, La Crosse, WI
March 14-16	Region 3 Computer Training Workshop

3. Other Manpower Programs

Nathan Johnson, a student at the University of Wisconsin-Platteville, worked on the District as an intern from May 30 through August 29. Nate "donated" 488 hours of work to the Refuge, and in return, received both classroom credits and practical experience. Nate worked on a variety of projects including purple loosestrife control, avian botulism sanitation, boundary posting, wood duck banding, landing maintenance, and mapping vegetation beds on Lake Onalaska.

Student intern Nathan Johnson spent many hours helping with the usual chores, such as boundary posting. (B. Thrune)

4. Volunteer Program

A cadre of volunteers are an important component of the District's workforce. In 1989, a number of high visibility projects, notably the wildcelery tuber harvesting program, aquatic vegetation surveys, and waterfowl hunter bag surveys, would not have been completed without assistance from volunteers. Volunteers also assisted with wood duck banding, litter cleanup, and clerical work. A total of about 93 hours was donated to the District in addition to the 488 hours donated by the student intern.

5. Funding

Funding for the District in FY-89 totalled $118,500, an increase of about 15% from the FY-88 funding level (Table L-5). The increase funded the salary for the new Biological Aid/Technician position filled by Laurie Wlosinski in May. Salary savings this year that resulted from the change in District Managers helped defray the cost of Jim Nissen's move. Additional funds received from the Upper Mississippi River Refuge Headquarters were used to pay for the move and purchase safety equipment.

Table L-5. La Crosse District funding levels, FY 1985-1989.

Fiscal Year	Station Total*
85	152,700
86	129,700
87	157,000
88	101,000
89	118,500

*Includes ARMM and amounts charged to headquarters.

6. Safety

Clerk/Typist Toal slipped on a wet floor in the Post Office near the District office on January 13. The fall resulted in a broken tooth, cut lip, and a sore shoulder. After the accident, six trips to the dentist were needed to repair the damage, at a cost of $824. This was the first reportable accident on the District in several years.

All field staff members were tested for Lyme disease and hearing loss. Only District Manager Steinbach had a positive titer for Lyme disease.

Assistant Refuge Manager Rick Frietsche completed a safety inspection of the District's maintenance facility on September 14 and found a lengthy list of deficiencies. Corrective action began immediately after the inspection with the purchase of a new lawn mower and new floatation coats. Cleaning of the warehouse and storage yard followed.

On October 19, Regional Safety Manager Gerry Mohl inspected the warehouse facility and found serious electrical problems and an inadequate fuel storage area. A new flammable material storage cabinet was purchased and a certified electrician was hired to complete the necessary repairs and improvements.

The District's 1981 Ford Courier pickup truck was redlined and taken to Trempealeau NWR for storage until it can be sold. The truck had major brake problems and was unsafe to drive. Rather than fix the Courier, the decision was made to transfer a 1981 Chevy pickup to La Crosse from the Winona District and use this vehicle until a new one is obtained.

The area around the dredge spoil containment basins on Rosebud Island was closed to all public entry in September. This was done to protect the safety of crews working on the island during the hunting seasons and to warn the public about the hazardous conditions found in the basins.

In conjunction with the Brice Prairie Conservation Association and Lake Onalaska Rehabilitation and Protection District, warning signs were posted at access points near the dredged area in Lake Onalaska in November. These signs warned lake users of potentially unsafe ice conditions resulting from current changes and deeper water in the newly

dredged areas. The signs were made by the FWS's National Sign Center in Winona, MN.

Safety meetings were held on a regular basis throughout the year.

7. Technical Assistance

During the year, District personnel reviewed and provided comments on a number of projects that would have impacted the Refuge. In addition, proposals to build highways, private marinas, houses and fill floodplain wetlands were also reviewed.

8. Other Items

The Minnesota DNR constructed a storage building next to the District warehouse. The building will house Conservation Officer Larry Webinger's equipment.

E. ADMINISTRATION

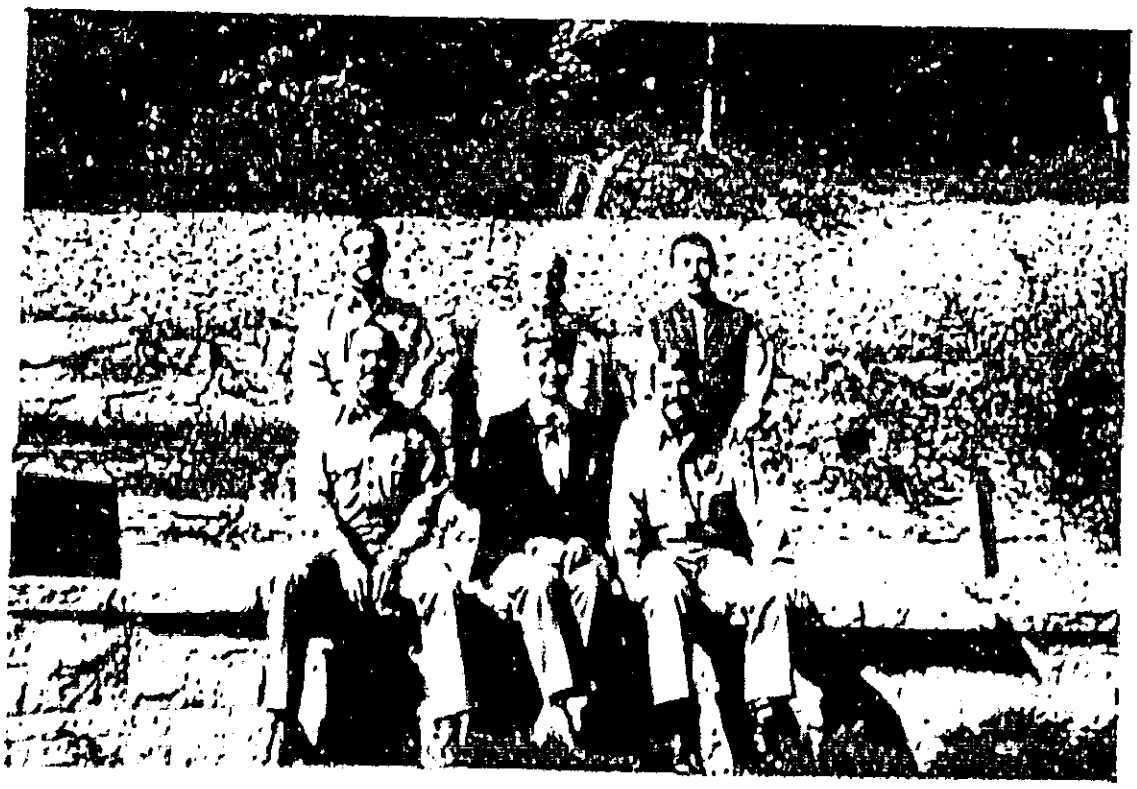
1. Personnel

Although there were no changes in personnel at the District in 1989, a number of changes have occurred in titles, grade levels and duties. In February, Assistant District Manager Romero's position was reclassified to GS-9. Biological Technicians Male and Batya were selected for positions in the Refuge Manager Series effective October 8. In June, Maintenance Worker Brown was converted to a career conditional appointment following completion of his Viet Nam Veterans Readjustment Appointment Plan. Clerk-Typist Palmer was informed that her position was reclassified to Office Assistant, GS-5 effective December 17. The District's increasing responsibilities with Farm Bill, Driftless Area National Wildlife Refuge acquisitions and EMP projects will necessitate redistributing some duties to these newly promoted staff members. The new year should be a great experience of training and learning for the entire staff.

Special Achievement Awards were presented to Fabian Romero, Jim Brown, Clyde Male and Tony Batya for a sustained high level of performance in appraisal year 1989. Office Assistant Dixie Palmer was recognized with a Quality Performance Award and step increase for her outstanding contribution in 1989. Dixie traveled to the Regional Office to accept congratulations and a plaque from Regional Director Gritman.

Although the District staff remained the same in 1989, Assistant Manager Male added one new FTE to his home office. Kristin Kay was born to Clyde and Judy Male on January 10, 1989. The Male brood now stands at four.

McGregor District staff met in October to improve and update internal communications, discuss procedures and work planning and focus on objectives.



Although we consider Office Assistant Palmer a "10", she only received a level 5 rating and a trip to the Regional Office for congratulations from the Regional Director.

FR
10/89

PICTURE KEY

1. John R. Lyons ----- District Manager, PFT, GS-11/10, EOD 10/23/77

2. Fabian F. Romero -- Assistant District Manager, PFT, GS-9/1, EOD 4/14/85

3. Dixie L. Palmer --- Office Assistant, PFT, GS-5/3, EOD 11/2/87

4. Clyde B. Male ----- Assistant Manager, PFT, GS-7/8, EOD 6/23/85

5. Anthony J. Batya -- Assistant Manager, PFT, GS-7/3, EOD 8/18/85

6. James D. Brown ---- Maintenance Worker, PFT, WG-6/3, EOD 6/7/87

Table M-3. McGregor District Staffing - 5 year comparison

	Number of Employees			
	Full Time	Part Time	Temporary	Actual FTE
CY '89	6	0	0	6.0
CY '88	6	0	0	6.0
CY '87	5	1	0	5.7
CY '86	6	1	1	6.4
CY '85	6	2	2	4.7

The following training was completed by staff during the year:

John Lyons		
Law Enforcement Refresher	February	Fort McCoy, Sparta, WI
Firearms Requalification	August	LaCrosse, WI
Continuing Education in Biology Workshop	February	Ames, IA
E.O. Training	September	Nisswa, MN
Fabian Romero		
Law Enforcement Refresher	February	Fort McCoy, Sparta, WI
Firearms Requalification	August	LaCrosse, WI
"Stronger Voice" Workshop	October	Stevens Point, WI
E.O. Training	September	Nisswa, MN
Dixie Palmer		
Word Perfect and R-Base	March	Twin Cities, MN

Clyde B. Male		
Law Enforcement Refresher	February	Fort McCoy, Sparta, WI
Firearms Requalification	August	LaCrosse, WI
Introduction to Computers	August	Fennimore, WI
Anthony Batya		
Law Enforcement Refresher	February	Fort McCoy, Sparta, WI
Firearms Requalification	August	LaCrosse, WI
Jim Brown		
Law Enforcement Refresher	February	Fort McCoy, Sparta, WI
Firearms Requalification	August	LaCrosse, WI

3. Other Manpower Programs

The District did not receive a Job Training Partnership Act enrollee as planned. Both Wisconsin and Iowa had difficulties filling positions at their list of work sites. Efforts will again be made to enlist an enrollee in 1990.

4. Volunteer Program

Eight individuals contributed 274 hours to the Service's volunteer program. Projects included heron rookery surveys, wildlife censusing, wood duck banding, and Refuge signing.

One of our volunteers, an employee of the Soo Line Railroad, travels regularly on the tracks between Marquette, Iowa and LaCrescent, Minnesota. He reports regularly on eagle, goose, swan, and other wildlife observations, as well as remaining alert for oil spills and other situations needing attention.

Assistant Batya's sister, while visiting from Cleveland, Ohio, "volunteered" to help Tony with the temporary signing of the Pool 9 closed area before the opening of the waterfowl season.

5. Funding

A tabulation of funds for the last four years of the McGregor District follows:

Table M-4. Funding Levels for the Period 1986 - 1989

	FY 1989	FY 1988	FY 1987	FY 1986
Operations	$213,500	$211,600	$182,300	$190,100
Y.C.C.	--------	3,400	3,500	2,300

The 1990 budget request was submitted to the Refuge Manager at Winona in April.

6. Safety

Two minor accidents occurred during the year with no injuries or time lost. Moderate damage was sustained on the front of the Dodge Dakota pickup when it struck a tree while sliding on an ice covered landing access road. The second accident occurred while a vehicle was being backed through a narrow warehouse door. The side mirror was damaged.

Assistant Batya met a General Services Administration, (GSA) inspector at Lansing, Iowa for a security inspection of the Lansing office. They may recommend an additional fire extinguisher.

All personnel except for Office Assistant Palmer were tested twice this year for the presence of the Lyme Disease antibody. Results were negative.

Radon gas screening tests for the DO/VCF detected no dangerous levels. Quarterly coliform tests on the drinking water supply showed a zero count each time.

Safety glass and an electronic door release were installed between the office and visitor area for staff protection.

Gerald Mohl, the new Regional Safety Manager, visited McGregor for discussion and familiarization.

GSA personnel conducted a radiation/safety survey at the Lansing Office. No problems were found.

Safety meetings were held on a monthly basis. Everyone received personal copies of Family Safety. The following safety films were shown and topics discussed.

Films

- Cold Can Kill
- Safety Check Your Car
- Emergencies in the Making
- ABCD's of Portable Fire Extinguishers
- Listen While You Can
- Surviving Edged Weapons
- Chain Saw Safety
- Judgement on the Water
- Report on Skin Cancer
- Keep your Head
- Get the Big Picture

Topics

Aircraft Use Policy
River Ice
Safety: A State of Mind

7. Technical Assistance

Assistants Romero and Batya spent one and two weeks, respectively, in Humboldt, Iowa assisting the Soil Conservation Service with wetland mapping.

Information was provided to State DNR personnel from all three states regarding eagle nests and nesting success, heron production and waterfowl and eagle censuses.

8. Other

Refuge revenue checks for FY 1988 were distributed to Minnesota, Wisconsin and Iowa counties under the Refuge Revenue Sharing Act. The amounts issued represented 71 percent of full entitled amounts. In FY 1987 the amounts represented 59 percent of full entitled amounts.

Table M-5. Refuge Revenue Sharing Distribution for FY 88 and FY 87

	FY 88	FY 87
Grant County, WI	5,945	4,931
Crawford County, WI	12,360	10,218
Vernon County, MN	3,357	2,784
Clayton County, IA	3,305	2,741
Dubuque County, IA	243	-----*
Allamakee County, IA	7,683	6,372
	$32,893*	$27,046*

* The check for Houston County, Minnesota was distributed by the LaCrosse District. The Dubuque County, Iowa check was distributed by the Savanna District in FY 87.

E. ADMINISTRATION

1. Personnel

The Savanna District staff includes a permanent, full-time District Manager, a permanent, full-time Assistant District Manager, a permanent, full-time Biological Technician, and a permanent, part-time Office Assistant. Two significant changes in personnel structure occurred during 1989 with the selection of a permanent, full-time Biological Technician (Wildlife) in March and the upgrade of the Clerk-Typist to Office Assistant in December.

Assistant District Manager Edward P. DeVries was promoted to GS-9 effective 1-29-89.

During February, DM Wargowsky and ADM DeVries received special achievement awards. Clerk-Typist Betty McDonald received a special achievement award during August.

On March 19, Matthew deRosier was selected as the District's first permanent full-time Biological Technician.

Betty McDonald, Clerk-Typist, retired on September 30 after 10 years 9 months of service with the Savanna District. The Savanna District hosted a retirement party in Betty's honor on August 16. Representatives from the Regional Office, Winona Headquarters, and McGregor District attended.

During September, October, and November a large amount of staff time was expended covering the office telephone and desk in the absence of clerical assistance. The Savanna District office had accumulated a 2 1/2 month clerical/administrative backlog when Sandra Beyer, the District's new clerk-typist, reported for duty on November 13.

Effective December 18, the Clerk-Typist GS-4 position was upgraded to Office Assistant (Typing) GS-5.

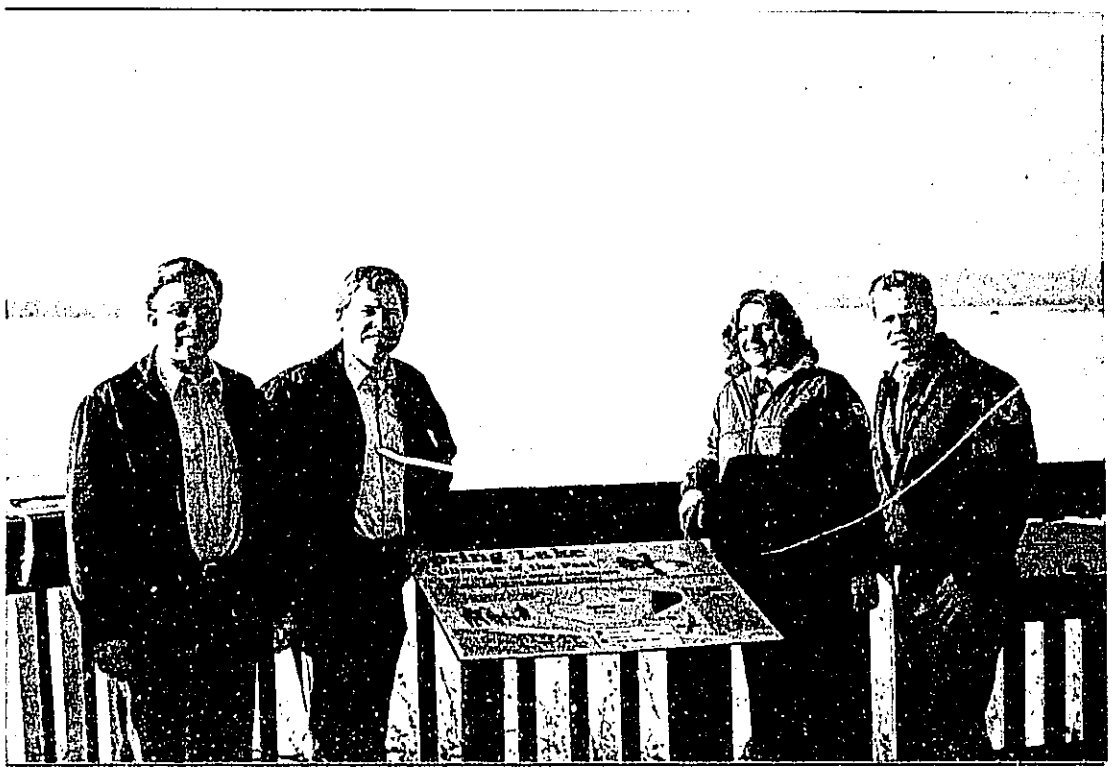
Table S-2 - Staffing levels at Savanna District, FY 1985 - 1989

(Number of Employees)

	Full Time	Part Time	Temporary	Total
FY89	3	1	0	4
FY88	2	1	1	4
FY87	2	1	0	3
FY86	2	1	1	4
FY85	2	1	1	4

PERSONNEL

Wargowsky, Larry A.	GS-11	PFT	District Manager	EOD	6-13-83
DeVries, Edward P.	GS-9	PFT	Asst. District Manager	EOD	7-24-83
deRosier, Matthew W.	GS-5	PFT	Biological Technician	EOD	7-10-88
Beyer, Sandra K.	GS-5	PPT	Office Assistant	EOD	11-12-89
McDonald, Betty J. (Retired 9-29-89)	GS-4	PPT	Clerk Typist	EOD	1-15-79



Wargowsky, DeVries, Beyer, deRosier (2/90 D.Wright)

4. Volunteer Program

The volunteer program this year utilized 21 people for a total of 312 hours. Volunteers assisted the District with various tasks, including spring and fall migratory bird counts, waterfowl nest surveys, woody vegetation control, colonial bird nesting surveys and miscellaneous other projects as listed in Table S-3.

The number of volunteers utilized each year has remained fairly constant, averaging 20. However, the total volunteer hours has decreased from 438 (1987) to 379 (1988) to 312 in 1989. The downward trend is due to a change in management priorities from labor intensive resource management to more administrative programs such as the Farm Bill Program and the Environmental Management Program. Also a Biological Technician (Wildlife) was brought on board during the same time period to accomplish many of the field assignments.

Two senior citizens (70+) volunteered their time to paint the Spring Lake observation deck. (8/89 ED)

Table S-3 - Volunteer Projects/Hours for 1989

Project	Hours
Migratory Bird Census	241
Waterfowl Nesting Surveys	15
Brush Removal	14
General Maintenance	11
Colonial Bird Nesting Surveys	9
Wood Duck Nest Box Maintenance	7
Nocturnal Bird Census	6
Wood Duck Banding	5
Clerical Support	4
	312

5. Funding

The funding allocation for FY89 for subactivity 1261/1262 was finalized at $119,800.00 after one revision. The release of Pay Act funds increased subactivity 1261 by $1,600.00.

One challenge grant project submitted by the Savanna District for $1,000 was selected for funding by the Region. The grant, with matching funds from the Illinois Department of Conservation, provided funding for colonial bird surveys.

Funding was also available for the first time in subactivity 4960. This

recreation fee account returned a portion of the money collected through the Potter's Marsh Waterfowl Hunt Program.

Funds available to the station totaled $123,458, the second highest level in the past five (5) years. It was a welcome relief after the record low funding in 1987 and a backlog of vehicle maintenance.

Table S-4 - Funding Patterns at Savanna District, FY 85 - FY 89*

Fiscal Year	1210/1260	Add-Ons	1520	4960	Total
1989	$119,800	$3,286[a]		$372	$123,458
1988	103,000	77,145[b]			180,145
1987	94,900				94,900
1986	101,400		$8,500		109,900
1985	108,300		8,000		116,300

* Increased funding due to ARMM projects has been combined with the basic budget each year to show total funds available to the station.

a. Challenge grant - $1,000
Winona Headquarters add-on $1,500
Farm Bill - Rock Island, IL, Ecological Services Field Office - $786

b. Flood damage supplemental funds

Work relating to the following programs was funded in FY89: Environmental Management Program, Farm Bill program, Potter's Marsh controlled hunt blind allocation program, cooperative farming program, purple loosestrife control, Spring Lake moist soil management, wood duck banding program, grassland management program, Refuge public image program during peak summer use periods, archaeological site surveillance, biological surveys (rookeries, dove counts, beaver transects, eagles and waterfowl census), Corps channel maintenance coordination, review of Corps Section 10/404 permit applications, review and consultation of refuge and off-refuge projects with the Rock Island, IL, Ecological Services Field Office, law enforcement program, and public service and environmental education programs.

6. Safety

Safety meetings were held on a regular basis on the District. Generally, a safety or health related film was viewed, followed with a discussion period. During the follow-up discussion, equipment defects or safety hazards encountered during the course of field operations were noted for correction or replacement. Health and safety topics discussed during monthly meetings included:

- Defensive driving (5)
- Fire extinguishers
- Water and outdoor safety

- Power boat safety
- Safety around heavy equipment
- Personal flotation devices
- Diabetes awareness

Safety related maintenance improvements/purchases during 1989 included:

- Fire extinguishers inspected and replaced as needed
- Life jackets/boat cushions inspected and replaced as needed
- Automatic tape dialer for security alarm at maintenance facility replaced
- Defective security alarm door contact replaced
- Well water at maintenance facility tested - coliform count proved satisfactory
- Tail light repaired on 1977 Chev. 3/4 ton pickup
- Two radon tests of office area proved satisfactory
- Protective guard installed on John Deere 3010 tractor
- Audiometric testing
- CPR refresher
- Lymes disease testing
- Airboat training manual reviewed by Bio-Tech
- All District gates marked with reflective tape
- Grassland tracts routinely patrolled and broken barbed wire fence repaired
- Brush encroachment around Spring Lake entrance gate removed for vehicular safety
- All drums and containers checked for proper labeling requirements

Savanna District personnel experienced no lost-time injuries during 1989. The District received a framed certificate for the outstanding safety record in 1989, and District personnel each received a monetary award.

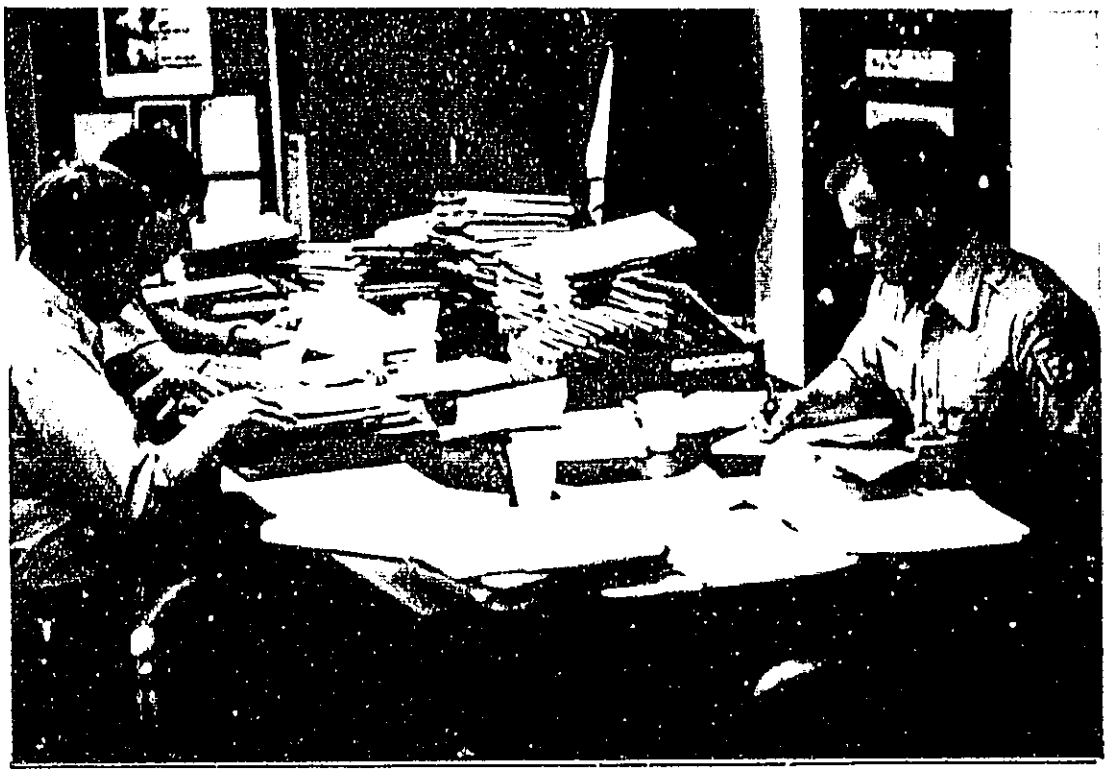
7. TECHNICAL ASSISTANCE

The Savanna District's involvement with the 1985 Farm Bill, includes responsibility for FmHA easement and Conservation Reserve Program (CRP) wetland management in 16 Iowa counties and 14 Illinois counties. Swampbuster consultation involvement includes five Iowa counties and three Illinois counties.

During 1989, a total of 14 wetland development agreements were signed in six Iowa counties, totaling 80 acres of marsh restoration. Four of these restorations were on CRP lands, while the remainder were on non-CRP lands. All the restoration work was accomplished through coordination with the Iowa DNR and performed through contracts funded by the Service.

The Savanna District also received easement management responsibility for five FmHA inventory properties totaling 421.5 acres in four Iowa counties.

Swampbuster consultations in 1989 involved attendance at three determination hearings in Illinois. Two of the hearings in Carroll County have been appealed by the landowners to the state level.



District staff reviewed 1,123 CRP contracts in five central Iowa SCS offices to obtain a list of wetland restoration possibilities within the Iowa Prairie Pothole Joint Venture Area. (5/89 LW)

This six acre wetland in Jackson County, IA, was one of 14 wetlands restored within the Farm Bill Management District in 1989. (6/89 ED)

In May, District staff were detailed to a five county area in central Iowa to inventory CRP enrolled farmlands for wetland restoration possibilities. This detail was requested by the Rock Island, IL, Ecological Services Field Office to obtain an accurate estimate of restorable wetland basins within the Iowa Prairie Pothole Joint Venture area. A total of 1,123 CRP contracts and 2 non-CRP areas were reviewed, out of which 110 contracts offered wetland restoration possibilities. Landowner names and addresses were forwarded to the Rock Island Field Office for follow-up.

Staff assistance was also provided in July to the Henry County, Illinois wetland inventory team at the SCS office in Cambridge, IL.

8. Other Items

Major meetings attended by the Savanna staff during 1989 were as follows:

January:

- Berry, Lyons, Wargowsky and DeVries attended a barge fleeting meeting with the Corps on January 10 in Rock Island, IL. In the afternoon, a Fish and Wildlife Interagency Coordination-River Resource Coordination Team meeting was also attended in Rock Island.

- Wargowsky attended a January 19-20 meeting in Onalaska, WI, regarding the Potter's Marsh controlled waterfowl hunt. Regional Office and Winona Headquarters personnel were also in attendance.

February:

- Wargowsky met with representatives of ENRON (a natural gas pipeline company from Houston, Texas) at the Rock Island, IL, Ecological Services Field Office on February 1, to discuss a proposed 30" pipeline which will cross refuge land in Pool 12. Also in attendance were FWS Ecological Services and Corps personnel.

- Jim Lennartson and Wargowsky attended a meeting in Dubuque, IA on February 22, which involved reactivation of the Dubuque Metropolitan Area Transportation Study (DMATS) Barge Fleeting Advisory Committee.

March:

- Wargowsky attended the annual Upper Mississippi River Conservation Committee meeting in Wisconsin Dells, WI, March 7-9.

- Wargowsky attended a meeting in Winona, MN, March 22-23 to discuss the Potter's Marsh hunt.

- DeVries attended an Iowa Farm Bill meeting in the Rock Island, IL, Ecological Services Field Office, March 23.

- Wargowsky met with the Corps and Rick Fluhr in Savanna, IL, regarding wetland mitigation for a proposed boat harbor in Pool 12.

- Wargowsky, Lennartson and DeVries attended the Corps Forestry

16 interested hunters attended to make their ideas and opinions known to refuge staff. Also in attendance were an IDOC biologist, a Corps park ranger, and Service personnel from the RO and Winona HQ.

June:

- DeVries attended the Illinois-Wisconsin Soil and Water Conservation Society meeting June 8-9, in Galena, IL.
- Wargowsky and deRosier met with Ducks Unlimited representatives on June 17, in Clinton, IA, to discuss modifications of plastic wood duck nesting boxes manufactured by Custom-Pak of Clinton, IA.
- Wargowsky attended a refuge staff meeting in Winona, MN, June 27-28.

July:

- DeVries worked with the Henry County, IL, wetland inventory team in Cambridge, IL, July 5-7.
- Wargowsky met with Gary Newt on July 13, in Dubuque, IA, to discuss various barge fleeting issues.
- Wargowsky showed District EMP projects to Berry, Beseke and Drazkowski on July 24-26. A joint meeting with the Corps, the Service, and IDNR regarding Brown's Lake was also held on July 25 on-site at Brown's Lake (Pool 13).
- Wargowsky met with Gene Christianson, RO Realty on July 31, regarding land appraisals and potential land exchange in Pools 12 and 13.

August:

- An EMP meeting regarding Spring Lake rehabilitation was held on August 24. The meeting was attended by District staff, Berry, Beseke, Corps and IDOC personnel. On-site visits were also conducted.
- A pre-final inspection of the water control structure for the Brown's Lake EMP project was conducted on August 25, and attended by Wargowsky, Beseke and Berry, along with the contractor, IDNR and Corps personnel.

September:

- Wargowsky attended the UMRCC Wildlife Technical Section meeting at Crex Meadows, Grantsburg, WI, September 12-14.
- Wargowsky attended the Region 3 Project Leaders Meeting in Brainerd, MN, September 18-22.
- DeVries attended a planning meeting on September 29 in Rock Island,

Coordination meeting for the Rock Island District on March 28. The meeting was held in Green Island, IA, and attended by Wisconsin, Iowa, and Illinois conservation agency personnel as well as representatives of special interest groups.

- DeVries attended a Swampbuster commenced hearing determination in Jo Daviess County on March 29.

- Wargowsky attended a refuge staff meeting in McGregor, IA, March 30-31.

April:

- Wargowsky and DeVries attended a steering committee meeting at the Commonwealth Edison Power Plant in Cordova, IL, on April 5. The fisheries unit at the power plant raises wipers and walleyes for annual mitigation stocking in Pool 14.

- Wargowsky and deRosier attended a meeting in Rock Island, IL with ENRON Natural Gas officials, Iowa and Illinois agency personnel, Corps and FWS Ecological Services personnel on April 12. The meeting was held to discuss a proposed gas line crossing and wetland mitigation in Pool 12.

- Wargowsky attended the Corps Land Use Allocation Plan and Shoreline Management Plan open house and public meeting in Dubuque, IA, on April 12 and in Davenport, IA, on April 17.

- Wargowsky and Lennartson met with Ecological Services personnel on April 13 regarding the Philipp's permit application for a barge terminal in Pool 12.

May:

- Wargowsky attended a May 2 emergency barge fleeting meeting in Savanna, IL, with the Savanna Park Board, City of Savanna aldermen, representatives of Aggrecon Quarry Company and Consolidated Grain Company in attendance.

- Wargowsky attended a meeting in Davenport, IA, on May 3 regarding Vince Philipp's permit for a new barge loading terminal in Pool 12. In attendance were personnel from the Service and the Corps, as well as Philipps and an architect.

- Wargowsky met with the Sabula, IA, waterfront commission on May 16, to discuss alternatives and review site plans for expansion of the North Sabula ramp parking area.

- Wargowsky attended two on-site meetings with Corps personnel and permit applicants in Pool 12. Both projects concerned dredging of Bent Prop Marina and Mid-Town Marina.

- The public hearing for the Potter's Marsh controlled waterfowl hunt was conducted at the Savanna High School on May 20. A total of

16 interested hunters attended to make their ideas and opinions known to refuge staff. Also in attendance were an IDOC biologist, a Corps park ranger, and Service personnel from the RO and Winona HQ.

June:

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- Wargowsky attended the Region 3 Project Leaders Meeting in Brainerd, MN, September 18-22.
- DeVries attended a planning meeting on September 29 in Rock Island,

IL, to discuss a reforestation research proposal for the Brown's Lake EMP disposal site, Pool 13.

October:

- DeVries attended a Swampbuster commenced determination hearing in Carroll County on October 18.

- District personnel plus representatives of the Burlington Northern RR, Carroll County Sheriff's Department, Illinois State Police, Illinois DOC and several adjoining landowners met on October 19 to discuss a refuge boundary firing-line situation.

- Wargowsky and Lennartson toured the Wapsipinicon River bottoms with Corps of Engineers personnel on October 25 to assess the forestry management potential of the unit.

- Wargowsky attended a Super Trail meeting on October 25 in Thomson, IL, regarding a proposed 45 mile bike trail from Rock Island to Savanna, IL, following the Great River Road. In attendance were personnel from the Corps, IDOC, state representatives and mayors from towns along the proposed route.

November:

- Lennartson and Wargowsky attended a public meeting regarding barge fleeting on the Mississippi River. The meeting was sponsored by the Izaak Walton League and was held in Clinton, IA, on November 15.

- Wargowsky met with Iowa DNR personnel regarding a boat ramp into Brown's Lake and ATV access for ice fishing.

- Wargowsky attended a Corps public hearing concerning a barge fleeting permit application for Pool 14. The meeting was held in Clinton, IA, on November 28.

- Wargowsky met with the Carroll County SCS District Conservationist to inspect an old oxbow along the Plum River which the landowner is interested in filling. The landowner was dissuaded from filing a Section 404 permit application.

December:

- Wargowsky met with the mayor of Savanna on December 1 concerning the Savanna Grain Terminal and Pool 13 barge fleeting.

- DeVries met with an economic development plan group in Thomson, IL, regarding a county economic enterprise zone. The refuge was included because the group is interested in increasing tourism, and wanted to know the refuge plans for the Thomson area, regarding boat landings, kiosks, etc.

- Wargowsky attended a refuge staff meeting in Winona, MN, on December 13-15.

Training completed by Savanna District staff during 1989:

- Wargowsky attended the law enforcement refresher at Fort McCoy, WI, February 13-17.
- DeVries received pesticide applicator re-certification on February 17.
- DeVries received law enforcement refresher training at Fort McCoy, WI, February 27 to March 3.
- deRosier received pesticide operator certification on March 7.
- McDonald attended the computer workshop and special WordPerfect and RBase classes in Twin Cities, MN, March 13-17.
- deRosier completed the 8-hour defensive driving course in April.
- deRosier received basic fire management training at the Western Wisconsin Technical Institute in LaCrosse, WI, May 1-5.
- Wargowsky and deRosier received CPR refresher training on June 21.
- Wargowsky and DeVries requalified with their firearms in LaCrosse, WI, on August 30.
- Wargowsky attended a communication skills workshop in Stevens Point, WI, October 12-13.
- deRosier and Beyer attended a Region 3 orientation for new employees from November 13-15 in Twin Cities, MN.
- Beyer completed the 8-hour defensive driving course in December.
- Beyer received clerical orientation/training in Winona, MN on December 13-15.

F. HABITAT MANAGEMENT

1. General

The Refuge has completed it's third year of involvement with the Environmental Management Program (EMP) which is part of the Water Resources Development Act of 1986 P.L. 99-662. It appears that program funding is going to stabilize around 15 million dollars annually instead of the authorized amount of 19.5 million. The schedule of projects for FY 90 is listed in the following table.

Table H-3. Environmental Management Program Habitat Rehabilitation and Enhancement Program for Fiscal Year 1989.

Project	EMP Construction Costs	Definite Project Report	Plans & Specifications	Construction Started	Refuge O&M Costs
Lake Onalaska	$ 2,350,000	8/88	12/88	5/89	3,000
Guttenberg Ponds	232,000	6/88	3/89	10/89	2,000
Bertom/ McCartney Lake	1,825,000	6/89	10/90	3/90	3,100
Brown's Lake	1,735,000	10/87	3/88	10/88	12,000
Pool 8 Island (Phase I)	*1,213,000	6/89	9/90	12/90	3,200
Bussey Lake	*1,300,000	4/90	9/90	6/91	**
Indian Slough	*1,000,000	3/90	11/90	7/91	**
Pool 9 Islands	* 750,000	5/89	6/90	9/90	3,000
Lansing Big Lake	*1,100,000	5/90	10/90	6/91	**
Finger Lakes	* 750,000	3/90	10/90	1/92	8,500
Spring Lake (Pool 5)	*500,000	12/90	6/91	11/92	**
Cold Springs	*500,000	8/90	1/91	11/91	**
TOTAL	$12,955,000				34,800

* Estimated costs
** Unknown at this date

As illustrated by the table the refuge staff is being spread thin between projects in either the planning, design or construction phase. We have now entered the last phase of operating and maintaining these new structures for the next 50 years. To date the Refuge has not received any additional funding to accomplish these new tasks.

F. HABITAT MANAGEMENT

2. Wetlands

During the last week of March, water control gates on Island 42 were closed briefly to prevent sediment-laden flood water from entering off channel wetland areas.

3. Forests

Forest cover mapping for the Forest Management Plan based on interpretation of satellite data was completed on four areas in Pool 5. The mapping was conducted jointly by the Service and the U.S. Army Corps of Engineers. The ground truthing phase of the mapping was conducted in March by refuge managers Drieslein and Lennartson working in cooperation with Randy Urich, Army Corps Forester with the La Crescent, Minnesota office.

5. Grasslands

There are approximately 130 acres of managed grasslands on the District. Native perennial grasses dominate the grassland plant community and include big blue stem, little blue stem, switchgrass, side-oats grama, and Indian grass. There is also a wide variety of native forbs and wildflowers present. Grassland management units include the following areas: Prairie Island (25 acres), McNally (20 acres), Wabasha Prairie (70 acres) and Peterson Lake (15 acres).

Woody plant control was done on a one-acre stand of staghorn sumac and downy locust on the McNally unit. Stems were cut and the stump portion was treated with Tordon which was hand-sprayed.

A Boy Scout troop from Winona took part in a planting project on April 15 at the McNally grassland unit planting a total of 74 native wildflowers and forbs.

10. Pest Control

Purple loosestrife, the main noxious plant pest on the river bottoms, has continued to plague wetland areas. Individual plants and small patches of loosestrife were hand treated from backpack sprayers with Rodeo. Spraying was done during the flowering stage in August. An airboat was rented for three days to spray in inaccessible areas at a rental fee of $100/day.

Most of the spraying efforts were concentrated on the Weaver Bottoms area of Pool 5, along the Minnesota side of Pool 5A and at the lower end of Pool 6. Areas of 1/2 acre or larger with dense growths of loosestrife were not treated. Denser and more extensive areas on Weaver that were treated with Rodeo in 1986 and 1987 showed heavy reinfestation with purple loosestrife. Areas with scattered plants on Pool 5A treated in 1988 showed little or no re-infestation.

F. HABITAT MANAGEMENT

2. Wetlands

Pools 7 and 8 contain approximately 31,500 acres of open water, sloughs, and marsh. The FWS does not have water level management capabilities on this District as water levels in the river are controlled by the COE for navigation.

For the fifth consecutive year, District personnel conducted a wildcelery (Vallisneria americana) tuber harvest project. The primary goal of the project for the first two years was the restoration of wildcelery beds in Pool 8 that were lost through siltation and excessive turbidity. By 1987, the Pool 8 wildcelery beds were reestablished and harvest efforts were then directed at obtaining tubers for transplanting in other state and federal wildlife areas throughout the North Central states that have the potential to attract canvasbacks and other diving ducks.

The harvesting/transplanting program consists of the following: Wildcelery tubers are collected from beds in Lake Onalaska by using water jets to blow the substrate loose from the tubers, which then float to the surface. The floating tubers are collected with dip nets and are then refrigerated. Once received at the transplant site, the tubers are placed in mesh bags, pea gravel is added for weight, and the bags are dropped into suitable shallow water areas.

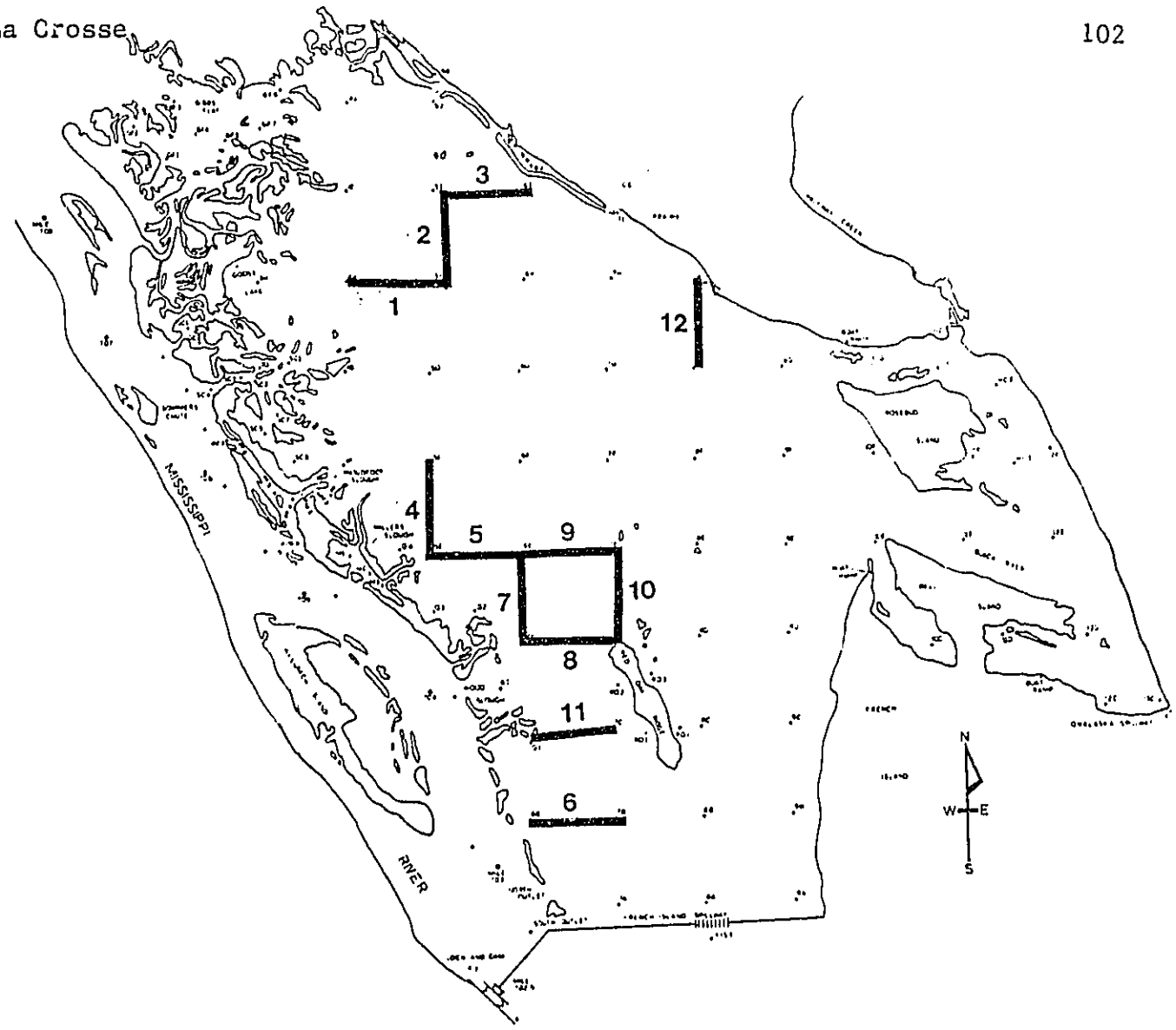
The 1989 edition of the program got underway on April 6 and continued through April 25. Tubers were transplanted in state and federal wildlife areas in Wisconsin, Minnesota, Iowa, and Michigan.

Immediately after beginning the harvesting operation in early April, it became apparent that tubers were not being collected in the same numbers as in previous years and the tubers collected were much smaller. After 14 days of collecting, the harvest operation was stopped with only 45,000 tubers collected. The same level of effort in previous years yielded 140-150,000 tubers.

By midsummer, it was obvious that Lake Onalaska, as well as most of the upper river system, had experienced a severe decline in both the abundance and distribution of wildcelery and other submersed aquatic vegetation.

This observation was quantified in mid-September when stem counts taken along 12.5 miles of line transects in Lake Onalaska revealed a 75% reduction in wildcelery stem density compared with results from the same transects during the period, 1980-84 (Figure L-1). Dr. Carl Korschgen and staff of the Northern Prairie Wildlife Research Center stationed in La Crosse, WI directed the transect work. Work crews consisted of volunteers and Refuge personnel.

Apparently, viability of the wildcelery tubers was also affected. Of the 800 tubers given to Dr. Carl Korschgen from the April collection for



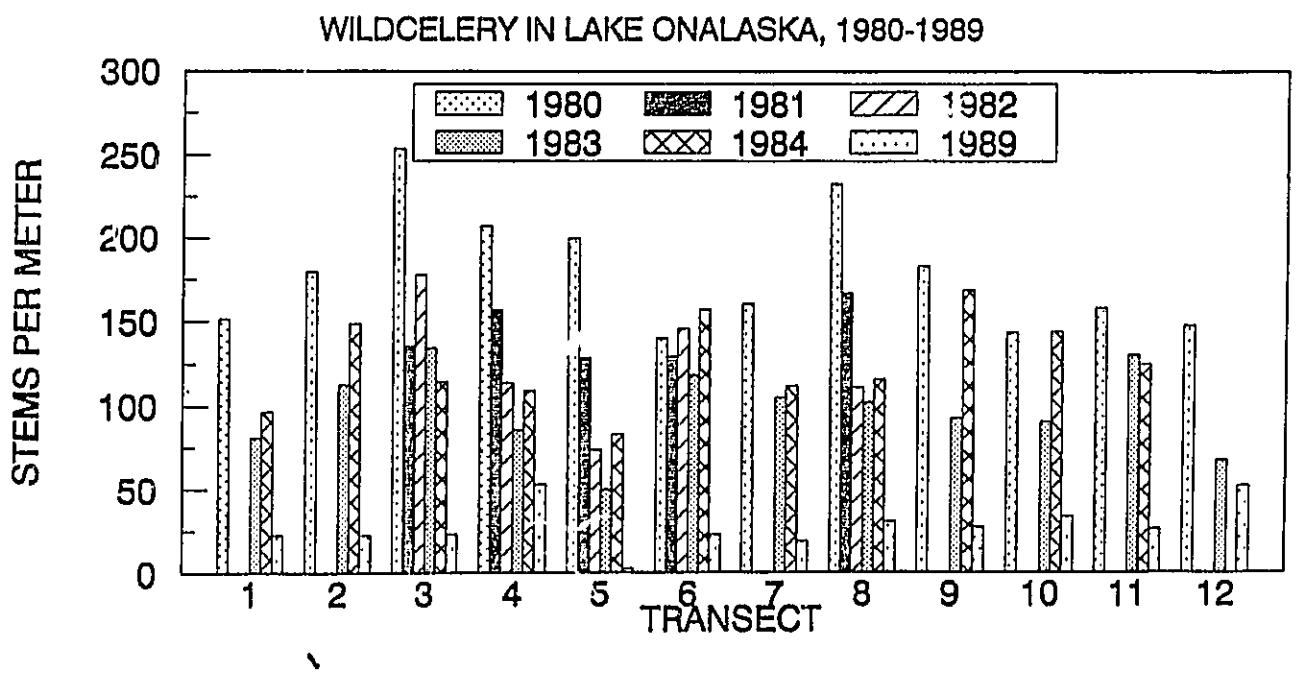


Figure L-1. Location of transects in Lake Onalaska and monitoring results, 1980-89.

his ongoing experimental work, only 97 plants resulted. The sprouting rate of 12% was far below the 95% average obtained in earlier samples.

In late September, 31 representatives from the Wisconsin, Minnesota, and Iowa Departments of Natural Resources, Iowa State University, University of Wisconsin, and three divisions of the FWS gathered in La Crosse to review problems on the river and to determine, if possible, what caused the decline in the abundance of aquatic vegetation.

The consensus of the meeting was that a lack of flow in the river due to record low discharges in 1988 increased water retention times and increased concentrations of nutrients, primarily nitrogen and phosphorous compounds. These factors, combined with higher than normal solar radiation and water temperatures, resulted in blooms of phytoplankton, periphyton, and filamentous algae that persisted longer than normal. These blooms competed with macrophytes for nutrients and also reduced their photosynthetic capability by blanketing the beds and individual plants. Wildcelery plants were stressed at a critical period during the growing season (August-September) when tubers are normally produced. Few plants were able to allocate energy for production of the overwintering tubers; tubers that were produced were small, with poor viability.

During the spring and summer of 1989, growing conditions for macrophytes did not improve, resulting in the continued decline of wildcelery plants noted in Lake Onalaska during the year.

3. Forests

Most of the 10,000 acres of forest on the District occurs in the Root and Black River bottoms and is composed mainly of silver maple, swamp white oak, cottonwood, ash, and elm.

Two firewood cutting permits for downed and dead wood were issued during the year.

7. Grazing

Three permits are issued annually for grazing cattle on floodplain sites on the District. Grazing is permitted from May 1 through October 31 on one site, and from June 15 through October 31 on the other two sites. The fee is $4.00 per AUM. In 1989, permit holders were billed for approximately 175 AUM's for which the District collected $709.96 in fees.

9. Fire Management

A wildfire, which stared on November 20 and was officially declared out on December 27, burned about 60 acres of noncommercial forest land on an island in Pool 8. The cause of the fire is unkown, although local opinion indicates it was started either by deer hunters or fishermen.

The effects of this wildfire were mostly positive. Some of the accumulated deadfall and debris burned, as did an extensive layer of fine fuels, mostly reed canarygrass. On the negative side, nesting cavities were lost when a number of snags burned. The burn also exposed trash of all kinds, mostly deposited by flood events.

Costs incurred amounted to $475 for salaries and $225 for equipment repair.

10. Pest Control

Purple loosestrife has been present on the District for several years. However, until 1989, the plant was usually found in relatively small, isolated patches. Now, two areas in Pool 7 have infestations that cover more than one acre. In Pool 8, an almost steady ribbon of purple can be seen in the backwaters from river mile 695 south to mile 690. Further, the plants are now well established in the Wisconsin Islands closed area where none were found as late as 1987.

Because most of Pool 7 and the upper reaches of Pool 8 are relatively loosestrife free, it appears that one of the major seed sources for the District is the La Crosse River Watershed. Areas within the watershed, including Lake Neshonic, contain large tracts of purple loosestrife plants that to date have received little, if any, treatment.

Purple loosestrife control efforts on the District started on June 22 and ended August 25 and included about 20 days of spraying. A total of 128 gallons of "Rodeo" in a 1.5 percent solution was sprayed through backpack sprayers.

F. HABITAT MANAGEMENT

1. General

The McGregor District of the Upper Mississippi River National Wildlife and Fish Refuge consists of 77,908 acres located on navigation Pools 9, 10, and 11 of the Upper Mississippi River. This reflects an increase of 124 acres from last year as a result of the acquisition of the Whalen tract near New Albin, Iowa. The total includes 27,717 acres owned by the U.S. Army Corps of Engineers and managed under a General Plan and Cooperative Agreement by the U.S. Fish and Wildlife Service as a part of the Refuge. The remaining 50,191 acres are owned by the U.S. Fish and Wildlife Service.

The District's acreage lies in three states. Wisconsin, Iowa and Minnesota contain 37,135, 32,149 and 8,624 acres respectively. The newly acquired tract is in Minnesota.

Table M-6. Habitat Types and Acreages in the McGregor District

Habitat Types	Acres
Seasonally Flooded Basins and Flats	14,730
Shallow Fresh Marshes	12,882
Deep Fresh Marshes	14,374
Open Fresh Marshes	5,914
Rivers and Streams	17,637
Non-Commercial Forests	11,489
Sandy Areas	228
Agricultural Lands	648
Administrative	6

2. Wetlands

In March, base mapping information was provided to Jim Goettl, land surveyor from Realty for a topographic survey of the Turkey River delta. Our plan is to develop several moist soil units there if acquisition and feasibility determinations can be completed.

3. Forests

Five Special Use Permits (SUP's) were issued for firewood cutting on Pool 10. An additional SUP was issued for cutting burls from dead and down trees for hobby interests. This SUP covered Pools 9-11. Only dead, downed trees on islands may be cut and the wood harvested must be for non-commercial personal use. The fee for these permits will be increased from $10 to $35 starting in 1990 to cover costs of issuance and administration.

Twenty Notices of Violation were written this year for illegal woodcutting and damage to live trees. These cases included woodcutting by campers who did not understand the prohibition against cutting standing timber, damage to trees by illegally moored barges and damage caused by deer stands nailed to live trees. The District staff makes a concentrated effort each year to explain the regulation to visitors and to maintain adequate regulation signs on sandbars and boat landings. In spite of these efforts, this type of violation continues to rise on the District.

4. Croplands

Approximately 208 acres of District lands were farmed by four individuals under cooperative farming agreements. All of this acreage was acquired last year and is located along the Turkey River in Pool 11. The farming is an interim measure until the area is developed into moist soil units. Corn was planted in all fields and only approved herbicides were used. Approximately 25 percent of the crop (pick 12, leave 4 rows) is left for wildlife. Cooperators are permitted to harvest any corn remaining the following May. Timely rains provided for excellent production from these bottom-land fields even in a drought year. Deer, squirrels, raccoons and an increasing number of wild turkeys have been observed using the fields. Only when flooded does heavy waterfowl use occur.

10. Pest Control

Purple loosestrife continues to spread to new portions of the District. The greatest concentrations occur on Pool 9, primarily on deltas at the mouths of creeks entering the pool. Very few plants were discovered on Pools 10 and 11 in previous years and they could be controlled by hand pulling. During 1989, however, loosestrife appeared in many new places on these pools making hand control difficult. Assistant Batya discovered about 30 new scattered plants and small patches on Pool 9 south of the Lansing bridge along Big Slough. These plants were either pulled or treated with Rodeo. A large concentration of plants near Reno, Minnesota was sprayed again this year by contract with a licensed chemical applicator. A portion of this same area was sprayed earlier by Houston County crews without a permit from the District.

Distribution information on the District's purple loosestrife was provided to the Corps of Engineers for their use in planning and treatment.

Eurasian milfoil (Myriophyllum spicatum) was discussed at a fall meeting of the Upper Mississippi River Conservation Committee. This exotic is now apparent in most pools and it has demonstrated an ability to out-compete and displace native flora in many river and lake systems. District staff will learn to identify the plant and monitor its distribution and abundance on Pools 9-11.

11. Water Rights

Water levels on the Upper Mississippi River are controlled by the U.S.

Army Corps of Engineers to maintain the 9 foot navigation channel. As during 1988, discharge remained low, creating difficulties in maintaining adequate levels for navigation.

In FY 1990, in cooperation with the Corps, the Environmental Management Technical Center plans to fund a pilot study to determine if water level regulation to benefit fish and wildlife may be possible within the Corps operating constraints. Current funding will limit the study to two pools containing areas where the probability for benefits is great.

12. Wilderness and Special Areas

The Alfred Reed Mound Group is the only fully documented archeological site on the District. The site is located in Crawford County near Prairie du Chien, Wisconsin. The site was inspected in 1989 and found to be in good condition and undisturbed.

A 900 acre area on Twelve-Mile Island in Pool 11 is listed as a Public Use Natural Area. It provides protection to the SAF-62 silver maple - American elm plant community. The 1,980 acre Reno Bottoms Area in Pool 9 is listed as a Research Natural Area. It contains at least one large heron rookery, is important for wood duck production and provides the most significant bald eagle production on the Upper Mississippi Refuge. (See Section G-2.)

F. HABITAT MANAGEMENT

1. General

The Savanna District's management area in Mississippi River Pools 12 through 14, consists of the main 9-foot navigation channel and numerous small to large sloughs meandering among bottomland hardwood islands. The lower portions of the pools, near the locks and dams, are large open water areas up to 2.5 miles wide in Pool 13. The middle section of the pools is an interspersion of small backwater lakes, side channels, sloughs and marshes, while the upper portions are more wooded bottomlands, similar to conditions found on the river prior to construction of the lock and dam system.

The District manages three closed areas in Pool 13, 6 agricultural units, 469 upland acres of cool and warm season grasses, and 22,000 forested acres. Limited water management capabilities exist in seven units with seven water control structures and one electric pump. Great demands have been placed on the river by industry and recreationists alike, as the Mississippi is used for major commercial transportation, industrial development, channel maintenance activities by the Corps and leisure pursuits. Hydrophytic and aquatic plant production along the River and within the backwater sloughs, lakes and marshes, is limited by fluctuating water levels, turbidity and sedimentation build-up. Understandably, multiple uses of the river present a considerable management challenge for the Service.

2. Wetlands

a. Spring Lake

The Spring Lake unit, located two miles south of Savanna, IL, is transversed by a crossdike at the north end of the lake, creating two separate units. The upper pool contains 700 acres and the lower pool 2,850 acres, including both water and islands. The water management objective for the upper Spring Lake unit is to dewater the area to 580.5 mean sea level (m.s.l.) during the period June through August. At this level, maximum moist soil plant production can take place. Dewatering of the moist soil unit (m.s.u.) is accomplished by electrical pumping in conjunction with gravity flow through the pump structure itself and a water control structure on the west dike of the m.s.u. The moist soil unit has a 16,000 gallon per minute pump with a 24-inch propeller.

The original plan for 1989 was to hold water levels at an elevation of 585.0 mean sea level during the growing season. After three consecutive draw-down years (1986 through 1988), there had been increased woody encroachment and the spread of undesirable perennial emergent vegetation within the moist soil unit. It was hoped that by holding water for an extended period of time, the undesirable growth would be stressed and controlled.

Dike rehabilitation funding was made available to the District in 1988 for repair of flood-damaged portions of the m.s.u. dike. In order to accomplish the rehabilitation project, the moist soil unit was drawn down

in 1988, and additional dike work in 1989 necessitated a fourth consecutive year of water drainage from the unit.

Electric pumping for four days in January was required to allow the contractor to work on the crossdike spillway. More project detail is found in Section I.2.b.

The contractor had to slope and seed the dikes during the summer, so gravity drainage of the unit was initiated on May 30, and continued until June 19, at which point the m.s.u. water level was 583.30 m.s.l.

Electric pumping to further drain the unit was started on July 12. The final sloping of the dredged material on the dike sides was accomplished in August and the dike sides were seeded with a grass mixture on August 5. Electrical pumping of the unit was continued until August 31 to keep water off the toe of the dike, thereby allowing the new grass to become established.

The electric pump experienced several power outages toward the end of August due to rodent damage of the pump house wiring. The wiring was replaced and the conduit in the pump house was sealed with a hardened gel to prevent further rodent entry. Snap traps, caulking and moth balls were also utilized to discourage further invitations by rodents.

The pump was again used December 8-10 to drain water from the unit for a second contract on the east dike. Dike rehabilitation was performed as mitigation for construction of a marina on Corps land in East Dubuque. The marina project resulted in the loss of 6.2 acres of forested wetland. Project will be discussed in detail in Section I.2.c.

Approximately 500 acres of moist soil plant production occurred within the unit in 1989. These plant species included redroot and chufa flatsedge (Cyperus spp.), pigweed (Amaranthus spp.), smartweed (Polygonum spp.), beggartick (Bidens spp.), wild millet (Enchinochloa crusgalli), and rice cut grass (Leersia oryzoides). Emergent species within the remainder of the unit included cattail (Typha spp.), American lotus (Nelumbo lutea) and arrowhead (Saggitaria latifolia).

Encroaching woody vegetation, including willow and silver maple on the drier sites, is becoming a problem after four consecutive draw-down years. If the east dike project is completed in spring 1990 as planned, we will be able to flood the unit to alleviate this problem. Scattered islands of small willow and maple were cut and treated with Tordon throughout the year to prevent resprouting.

Approximately 25 acres of herbicide-treated and old growth cattail were prescription burned on March 10 within the Spring Lake moist soil unit. The burn was conducted to remove matted material, promote moist soil plants and open waterways for wildlife movement. The Spring Lake dike was prescription burned, but wind conditions and low fine fuel availability allowed for spotty results, except for the west dike which burned well.

Vandals removed the flapgate from the discharge tube of the moist soil pump in March. The flap had been placed on the outlet to prevent water

flowback into the moist soil unit during periods of high water, when the tube would become submerged. Evidently, whoever removed the flap thought they would improve fishing in the outlet ditch, thinking water would flow out of the moist soil unit. However, water flow from the unit is controlled and gravity fed via a second deeper tube. The discharge flap was reattached in June.

The Spring Lake dike top was force-account mowed May 26, July 6, and again September 11, 1989.

Purple loosestrife control efforts utilizing backpack herbicide sprayers continued from July to September. Glyphosate was applied to scattered clumps and individual plants.

Plastic sheeting and flagging was attached to 2" x 2" posts and placed on the crossdike and west dike to discourage loafing and feeding geese which were attracted to the newly seeded dike sides in November. The new seeding was completely grazed on portions of the dike but hopefully the seeding will come back without any severe damage.

The 2,850 acre Spring Lake lower unit is interspersed with over a dozen small, brushy 1-2 acre islands and one large 79 acre wooded island. The lower unit has two dike breaks of 280 feet and 350 feet in width on its perimeter. The breaks occurred during the 1965 flood by the dike being breached in one location and by dynamite in the other to relieve uneven water pressure. Water management is thus impossible, due to the breaks on the west and south dikes, creating constantly fluctuating water levels.

As river levels were unusually low in 1988 and 1989, submergent aquatics, such as coontail (Ceratophyllum demersum) and pondweed (Potamogeton spp.), have grown in profusion, responding to low silt loads and clearer water than usual. The aquatic growth mats the lake's surface and makes boat travel nearly impossible during the summer. Emergent growth of American lotus and arrowhead was abundant and has increased as well, due to fairly stable water levels during the growing season. The last several years of low water levels (1987-1989) have produced an obvious, visual change in the vegetative composition of the lake. Areas which were once expanses of open water are now full of emergents. Boat trails have been cut through these areas to gain access to deeper water. The low water conditions have also contributed to an improvement in water clarity in lower Spring Lake. Silt loads entering the west break have been stopped, redirected or slowed by the formation of a small sand barrier island east of the break. Sandbar willows have become established on this island since 1987. Heavy bed load drops out near the west break while the fine silts drop out farther inside lower Spring Lake. The aforementioned lush submergent vegetative growth has also been a major contributor to improve visual clarity in the lower unit by filtering out the fine silts. In April, six sandbar islands were prescription burned in lower Spring Lake to remove woody growth. Four islands burned well, while two islands lacked sufficient fine fuel to carry the fire. The burns were conducted to encourage more grass growth and reduce woody growth. The sandbar islands are used by shorebirds, loafing cormorants, nesting mallards, and Canada geese. In August, the west dike of the lower unit was force-account mowed from the crossdike south to the west break.

b. Pleasant Creek Unit

The 2,532 acre Pleasant Creek unit lies on the Iowa side of the Mississippi River, just south of Bellevue, Iowa, in Pool 13. It is an extensive backwater area consisting of small meandering sloughs, lakes, flooded timber, dry wooded sites and 68 acres of agricultural land. Three water control structures were built in the summer of 1961, riprapped in 1963 and rehabilitated in July 1988. A culvert with 2 flap gates to control water flow was also installed in 1988. The structures exist to maintain wetland and/or open water on 264 acres, including two lakes and a slough.

The 1988 project also elevated 1.6 miles of roadway approximately two feet, using existing fill from the sides of the road. One collapsed culvert was removed and a riprapped spillway built in its place. The road not only provides for a complete 6 mile circular route within the unit, but also serves as a low-level dike to hold water in Flat, Golden, and Jackson Lakes.

Rising river levels at the beginning of April produced minor flooding of backwater areas. The three water control structures at Pleasant Creek were opened to relieve pressure on the sides of the low level dike system. Water flowed over the road in lower sections of the dike, but little damage was noted.

The Pleasant Creek unit's seven lakes received an influx of water which proved very attractive to teal, mallards, widgeon and wood duck as moist soil plants, unavailable last fall, were utilized very heavily. Thousands of mallards were using these areas in March.

The structures were left open until August, to gravity drain the various lakes to allow for moist soil plant production. Smartweed, Cyperus species, pigweed, and Bidens species were produced in all three lakes, as well as in the sloughs within the unit. The structures were closed in August to accumulate seepage water, precipitation and runoff from nearby bluffs. Shallow water scattered within pockets of moist soil plants throughout the Pleasant Creek unit, provided food for migrant waterfowl. Low water levels, however, prevented many areas from being utilized. Ample food should be available for spring migrants, given sufficient runoff and spring rain to flood the balance of the units.

In September, the access road was mowed by the farmer who has the Cooperative Farming Agreement for the unit's agricultural fields. The 1.6 mile low level dike/road constructed in 1988 was herbicide sprayed to control broadleaf competition.

c. Dredging

A nine-foot channel is maintained by the Corps for navigation the entire length of the Refuge. Only one dredge cut was needed in the main channel of the Savanna District the past three years. Low spring runoffs with very little transport of bed load is the main reason for the decrease in dredging frequency.

The only dredge cut in 1989 in the Savanna District was in Pool 13 at Savanna Bay (R.M. 539). Dredging by the Dredge Thompson commenced on September 4 and was completed on September 13. A total of 173,697 yd^3 was removed from this site; 13,833 yd^3 was placed for beach nourishment along the left bank at river mile 539.5. The remaining 159,864 yd^3 was placed in the thalweg between river miles 538.0 and 538.6.

Although disposal isn't a problem at this location with the thalweg option. fairly regular dredging at this spot demands a closer look at the problem. The Corps has discussed the area at its Committee to Assess Regulatory Structures (CARS) meetings with plans during 1990 to determine if wing dam adjustments are needed to reduce the dredging frequency. During 1989, the Corps placed 32,935 tons of riprap on seven wing dams and along the Illinois bank in Pool 14, river mile 504.6 to 502.8. The wing dams were not expanded but brought back to the original level and length as 1937. The added riprap will adjust the wing dams to hopefully reduce dredging necessary for maintenance of the navigation channel.

Corps rehabilitation of the non-overflow dike at Lock and Dam 12 required 32,589 tons of riprap during 1989. Work continued during 1989 on site plans for long-term management of various areas along the River. The long-term site plan for the Savanna Bay dredge cut was completed in 1988. Another site in the Savanna District, Steamboat Slough (Pool 14), is currently being worked on.

3. Forests

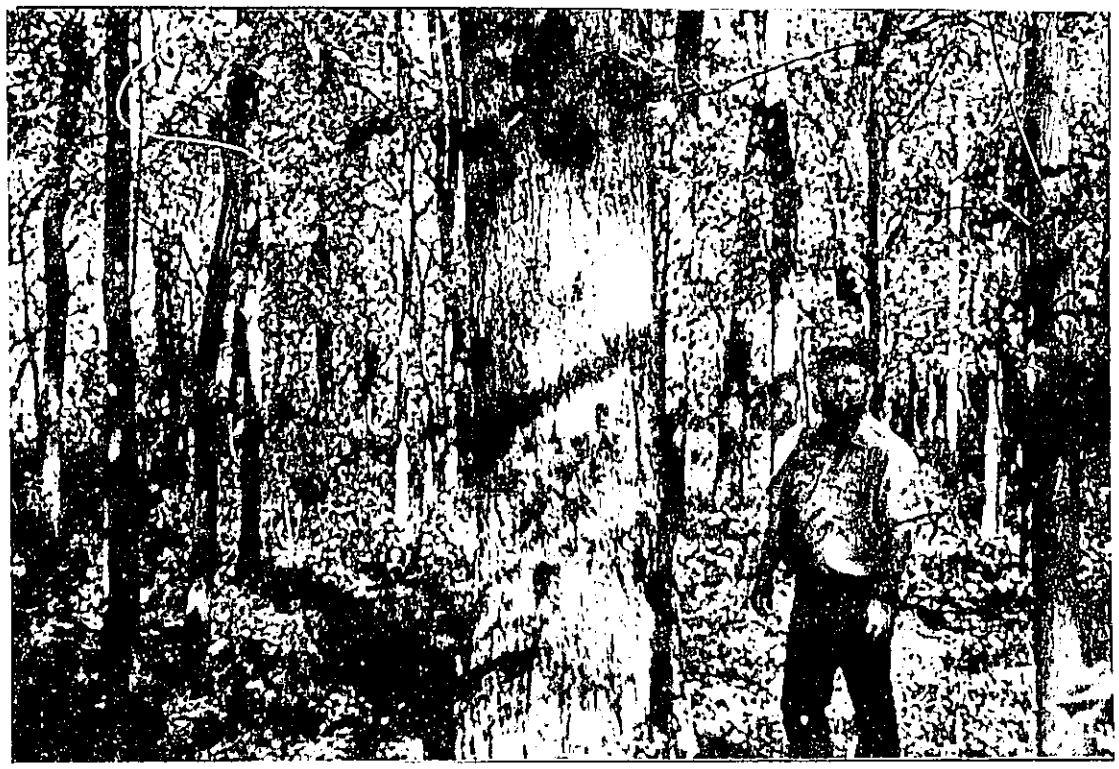
Bottomland hardwoods comprise approximately 22,000 acres of both Corps-Service Cooperative Agreement and Service fee title lands. Primary timber species include: green ash, cottonwood, silver maple, pin oak, box elder, elm, river birch, bur oak, red oak, swamp white oak, black locust, black walnut, hackberry, mulberry, pecan, sycamore, shellbark hickory and willow.

The Corps-Service Cooperative Agreement grants the Corps all timber management rights and control on Cooperative Agreement lands. The refuge controls timber management on Service fee title lands, but this includes only 15.4 percent of the land in the Savanna District. Corp timber management of each unit is on a 100 year rotation with five year cycles of patch and thin cuts. Five years after regeneration treatments, all areas are expected to have at least 200 stems per acre, over at least 75% of the acreage. If at that time the areas are understocked, the Corps will use chemical or mechanical treatments, or replant the area.

The Wapsipinicon River Unit is a 1,828 acre forested bottomland on the Iowa portion of Pool 14. An on-site meeting with the Corps, Service and Iowa DNR was held on October 25, to assess the forestry management potential of the unit. An area of approximately 40 acres will be treated in 1990 to release pin oak regeneration. This treatment will involve the removal of competitive elm and maple overstory, as well as chainsaw girdling of larger trees.

A total of 4,905 acres were timber stand-mapped on the District in 1989. In Pool 12, timber stand-mapping was completed on the Wisconsin portion

of the District in Deadman's Slough and Younker's Lake. In Pool 13, standmapping was completed at Heldt Ditch and Big Slough.



There are three stands of northern pecan trees located on the Savanna District. This large 29" DBH pecan tree is located on Adam's Island, Pool 14. (10/89 LW)

4. Croplands

Cropland management objectives are to supplement sources of food for migratory birds, provide food and cover for resident wildlife and maintain some habitat diversity within the river bottom hardwoods. Waterfowl use on the District's farm units has been negligible in the past due to their small size and bottomland locations. Large, private off-refuge farm fields have proved to be more attractive to migrant waterfowl than the refuge units. Through the farm program, over-wintering food is provided for songbirds, resident birds and mammals. The farming program is also valuable in that it provides openings within forested bottomlands, thereby increasing habitat diversity.

The 1963 Cooperative Agreement between the Service and Corps provides that if croplands are removed from cooperative farming agreements, the Corps can remove these lands from the 1963 Agreement and refuge status. If this agricultural acreage is put into grassland and maintained as such, the Corps considers grassland as an agricultural crop. Over the past years, several cropland units have been converted into warm season native grassland units.

All farming on the Savanna District is accomplished through six cooperative agreements which totaled 139 acres of cropland in 1989. Total crop acreage for all units in 1989 was as follows: corn-49.25 acres, soybeans-47 acres, winter wheat-15 acres, and gamebird mix-4 acres. Observed wildlife use of these units was found to be primarily songbirds, deer, squirrel and other resident animals.

District agricultural units such as this winter wheat field within the Pleasant Creek closed area, provide habitat diversity within bottomland forest. (11/89 LW)

5. Grasslands

Approximately 470 acres of grassland habitat are managed by the Savanna District on land located in the Pool 13 section of the refuge. Included within this total is a 329 acre contiguous parcel near Thomson, IL. Seven more grassland management units are smaller tracts of 35 acres or less. The grassland units consist of remnant prairie stands as well as re-introduced warm season native grasses in areas which were previously farmed. These grasses are mainly an Illinois ecotype mixture of switchgrass, big bluestem, indiangrass and little bluestem.

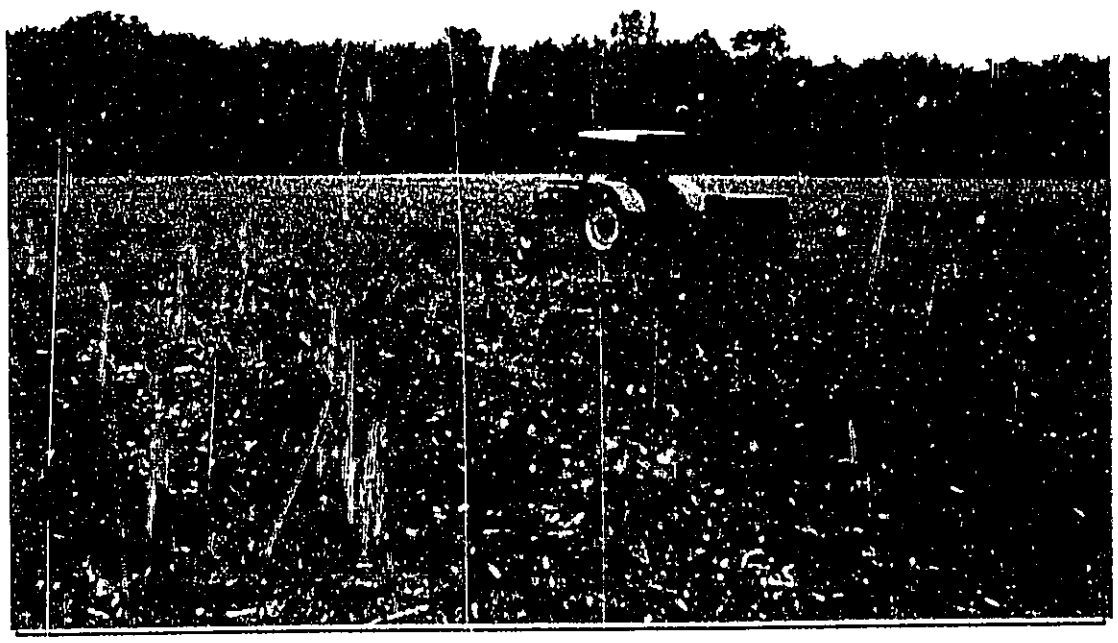
Besides providing refuge habitat diversity, these areas furnish nesting, food and winter cover for upland birds, waterfowl, songbirds and mammals. In addition, the grassland units provide a unique opportunity for scientific study, environmental interpretation and education.

The District grassland units are actively managed to check successional

stages by mowing, burning and cutting to eliminate undesirable woody vegetation, reduce weed and cool season grass competition and restore plant vigor. Newly planted grasses are burned annually for five years, and established units are prescription burned every 3-5 years. Tordon 101 was sprayed on cut stumps to retard stump sprouting within grassland units. These practices are necessary to maintain warm season native grass productivity and composition.

One former 31.3 acre agricultural tract which was farmed under a special use permit, was planted to warm-season native grasses and forbs in June 1989. The field is Corps-Coop land which had been farmed under a Corps permit until we obtained management of the area in 1986. Congressional input directed by appeals made by the permittee, allowed him to farm the land for three additional years before the conversion was made.

Switchgrass, indiangrass, and big and little bluestem, plus 12 different forb species were contract planted utilizing the District's tractor and the contractor's Nesbitt seed drill. An additional $500 mixture of 29 prairie forbs was force account seeded into the unit to enrich the prairie mixtures and to build a seed repository for other refuge plantings. A firebreak of cool season grasses will be established around the unit in Spring 1990.



This 31.3 acre refuge agricultural field in Jackson County, IA, was converted into warm season grasses and forbs in 1989.
(6/89 LW)

The excellent overwintering cover provided by the grasslands, plus several mild winters have allowed resident game species to respond favorably, especially on the longer established grasslands. Bobwhite quail, ringneck pheasants and cottontail rabbits have appeared to increase in number, especially in grassland tract 6, near Thomson, IL.

6. Other Habitats

The Iowa DNR manages the 1,190 acre Princeton Wildlife Area and the 3,625 acre Green Island Wildlife Area in Pools 14 and 13, respectively. Portions of these lands (2,722 acres in Green Island and 772 acres in Princeton), are sublicensed from the Service under a 1963 Cooperative Agreement. A provision of this agreement requires that the Iowa DNR submit Annual Management Reports to the Project Leader of the Mark Twain NWR. The Savanna District office annually reviews the previous year's management reports and the current year's management plans for both units, and submits comments and recommendation. Both areas also were physically inspected in 1989, and a report submitted to the Regional Office.

Recommendations to the Iowa DNR encouraged conversion of a greater portion of the agricultural land to grassland or moist soil units, the incorporation of crop rotation combined with biological farming, and a reduction of the use of fertilizers and pesticides. A reduction in the use of soil amendments would result in less fertilizer/pesticide runoff or percolation to the Mississippi River and its tributaries.

Recommendations were also made regarding the management goals for the Giant Canada goose call flock which has been propagated at Green Island since 1985. The resident flock now numbers 50-100 birds with plans to increase the fall peak up to 50,000 birds. Presently the entire Green Island public use area is closed to Canada goose hunting by state regulation, but a larger zone may be closed in 1990.

In August, a $2 million renovation project at Green Island was started through funding provided by the Iowa Legislature's Resource Enhancement and Protection Act, which is a 10-year $200 million program designed to add to Iowa's open spaces and manage public lands.

The Green Island project was the first one funded by the Act, and involved the construction of new dikes, culverts and water level control tubes. A new pumping station will also be installed. This project will double the existing wetland habitat to 1400 acres. Existing parking lots and boat ramps were also improved and a few new lots and ramps were added.

9. Fire Management

Approximately 25 acres of herbicide-treated and old growth cattail were prescription burned on March 10 within the Spring Lake moist soil unit. The burn was conducted to remove matted material, promote moist soil plants and open waterways for wildlife movement.

Grassland tract 2 (35 acres) was prescription burned by District personnel on April 19. The last time this tract was completely burned was in 1985.

Grassland tract 8, a 13.5 acre former agricultural field, was converted to switchgrass in 1988 and received its first prescription burn on April 20. Rank foxtail growth provided enough fuel for a good burn.

Six sandbar islands totaling 12 acres were prescription burned in lower Spring Lake on April 20. Four of the islands burned well, while the other two islands produced poor results due to wet spots and low fuel. The islands were burned to remove woody vegetation, including thick stands of sandbar willow.

The Spring Lake dike was prescription burned on April 21, but wind conditions and low fine fuel availability allowed for spotty results, except for the west dike which burned well.

A wildfire ignited on private land near Thomson, Illinois on July 4, spread to refuge grassland tract 6 and burned 10 acres. Five juveniles playing with fireworks caused the fire and turned in the fire alarm, which brought in five fire departments and 59 men to suppress the blaze. Parents of each of the juveniles were contacted, but no violation charges were assessed by the FWS. The Village of Thomson and the private landowner didn't bring charges against the juveniles either.

A good supply of fine fuels allowed for a hot burn on this willow-choked sandbar island in lower Spring Lake. (4/89 LW)

10. Pest Control

Purple loosestrife (*Lythrum salicaria*) was the primary pest control

species in 1989. The major infestation of loosestrife occurs in Pool 13, primarily in Savanna Slough, Elk River closed area, Potter's marsh and on islands near West Lake.

Attempts were made to control this perennial wetland exotic through backpack sprayer application of glyphosate herbicide. Application was made during the plant's flowering stage, during the period of June-September. A major emphasis has been placed on keeping loosestrife out of the Spring Lake's moist soil unit, Potter's Marsh and the new Highway 84 mitigation wetland.

This was the sixth year of the District's attempts to eradicate loosestrife from the Refuge, but the battle is far from over, as the seed source will be present for many years, lying dormant in the soil or floating in from river tributaries.

Efforts have been made and will continue, to alert the public to the loosestrife problem through news releases and visits with adjacent and off-refuge landowners. The Illinois Exotic Weed Act of 1987 bans the purchase, planting or distribution of purple loosestrife in Illinois.

Nursery sales and use of purple loosestrife for landscaping purposes continue, despite news releases to discourage the spread of this exotic. (8/89 LW)

G. WILDLIFE

1. Wildlife Diversity

The Winona District is made up of approximately 32,000 acres of bottomland forest, marshes, sloughs, riverine lakes, wet meadows and sand prairies. These diverse communities provide habitat for a wide variety of resident and migratory species. Some of the more unusual sightings in 1989 included: white pelicans as summer residents at Weaver Bottoms; bobwhite quail at a restored prairie area near Winona; snow, blue and white-fronted geese seen during migration; and a hexagenia "mayfly" hatch in mid-July.

2. Endangered and/or Threatened Species

Endangered species present on the District include the Higgin's Eye and Fat Pocketbook mussels and the peregrine falcon. The Blanding's turtle and bald eagle are both listed as threatened in Minnesota and Wisconsin. For information regarding raptors, see Section 6 (Raptors) below.

3. Waterfowl

The marshes and backwaters of the Winona District are major migratory feeding and resting areas for waterfowl in the Mississippi Flyway. The first spring migrants were seen in mid-March and by the end of the month lesser scaup, canvasback and ring-necked ducks were plentiful. The peak of tundra swan numbers seen on survey areas was in mid-April. Puddle ducks, primarily mallard, gadwall, wigeon and wood duck, arrived in early and mid-April.

This District provides breeding and nesting habitat for four primary species: mallard, blue-winged teal, wood duck and Canada geese. Hooded merganser and black duck pairs and broods can also be found on the refuge in much smaller numbers.

There was a great deal of concern for the fall migration of waterfowl in 1989 due to a collapse of submergent vegetation populations in several major feeding areas (see Section D.5). Diving ducks were likely to be the most affected due to their heavy reliance on wild celery, sago and other submergents. The first fall migrants, wigeon and gadwall, were seen in early September and the first canvasbacks and divers in mid-October. The diving duck numbers peaked at the end of October. At this point it was evident that the birds were not feeding in some of the traditional areas which had exhibited a loss in vegetation during the summer. Tundra swans, which were late arriving, also avoided certain traditional feeding areas and were seen in "unusual" areas of the refuge where, we presume, submergent vegetation was available. An early cold spell during the third week of November caused much of the river and backwaters to ice over and most of the migrants were gone by December. Winter residents included common mergansers, common goldeneye, mallards and Canada geese. The lack of snow provided opportunities for mallards and geese to forage on agricultural lands throughout December.

G. WILDLIFE (Continued)

4. Marsh and Water Birds

In December, Drieslein and Julison made an initial survey trip into a heron/egret rookery in the Finger Lakes area of Pool 5. Although records indicate that this colony was started twenty years ago, it had never been properly mapped or surveyed by refuge staff. The colony consists of over 400 nests and contains a suspected bald eagle nest.

Great blue heron hunting on backwaters of Mississippi River. (8/88, CL)

6. Raptors

The winter of 1989 brought a bonus for bald eagle watchers on the District. Weekly surveys regularly recorded over 100 birds along the established route. Reads Landing and the Alma dam and power plant area were major areas of concentration.

Three confirmed bald eagle nest territories are located on the District. Two of these nests were active and productive in 1989. The 3-year old nest in Pool 5A was not active this year although adult and immature birds were seen in and around the nest tree. The Pool 4 pair appeared to have built a new nest in a more secluded area upstream of the established nest. This new nest produced one young. The established nest in Pool 5 (Whitman Wildlife Area) produced two young.

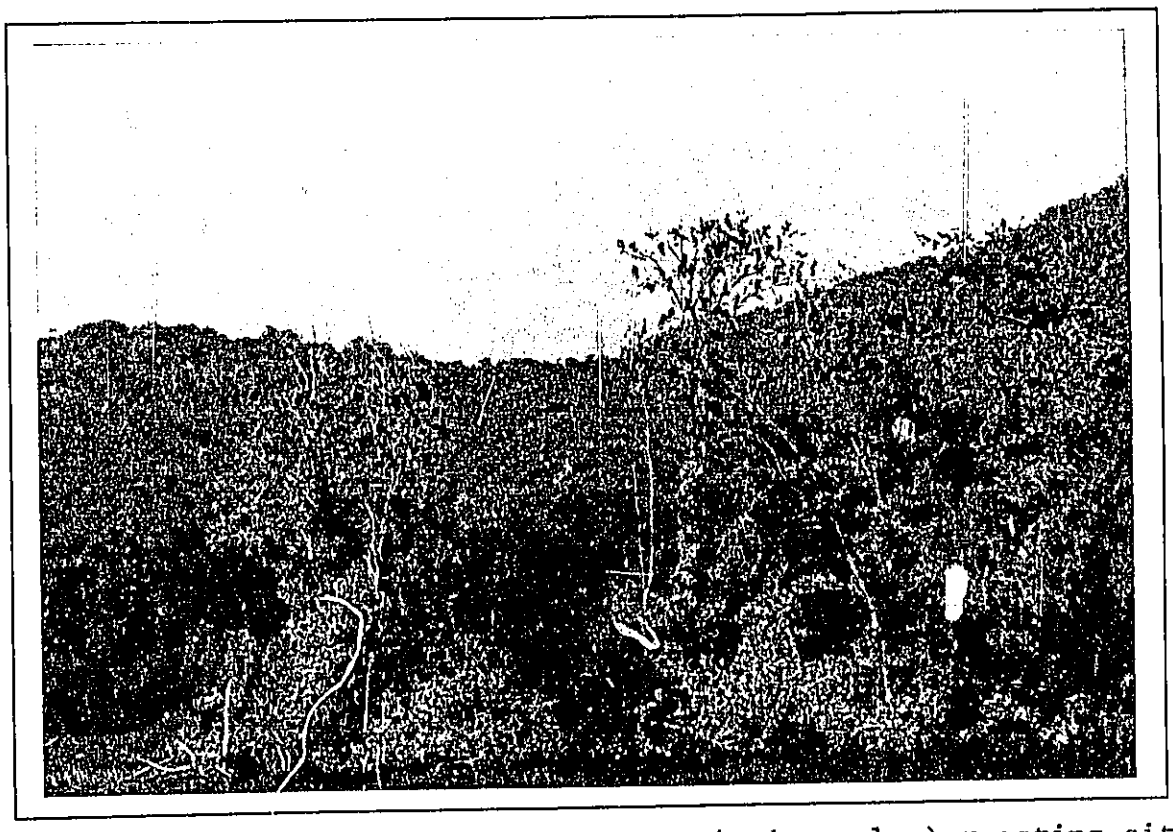
Peregrine falcons on the refuge did not fare as well as bald eagles. Neither of the two nest sites adjacent to the refuge were active in 1989.

G. WILDLIFE (Continued)

7. Other Migratory Birds

In the past few years there has been a dramatic increase in the number of double-crested cormorants on the river. In addition to sightings of large flocks feeding in the various pools, hundreds of cormorants began using a small island above Lock and Dam 6 as a night roost. This island is easily seen from Highway 61 and generated a great deal of public interest and concern as the island's trees became defoliated under a whitewashing of avian excrement. A minimal number of birds using this island on one early fall evening was over 1200!

Being located on a major migration corridor, the refuge receives its share of species that are just "passing through." In the spring, white pelicans were seen on migration as usual, but a small group remained on the District throughout the summer and early fall. From a dozen to 35 individuals were spotted, mostly in Pool 5 (Weaver Bottoms area) feeding and loafing. The staff speculates that these were probably young, non-breeding birds.



Double-crested cormorants found a new (and popular) roosting site on an island above Lock and Dam 6. (9/89, HS)

G. WILDLIFE (Continued)

8. Game Mammals

The District provides habitat for a number of game mammals typical of the upper mid-west. White-tailed deer, eastern cottontail, woodchuck and several species of squirrel are common on the islands, shoreline and upland areas. The most common furbearer is the muskrat with strong populations throughout the District. Beaver, mink, red fox, raccoon and striped skunk are also prevalent and provide recreational opportunities for both the trapper and wildlife observer.

11. Fisheries Resources

Fish population assessment efforts were continued at Weaver Bottoms (Pool 5) by fishery biologist Hannibal Bolton. This project is an evaluation of river habitat modifications done during the Weaver Bottoms Rehabilitation.

Channel catfish abundance showed noticeable increases at several monitoring sites. This increase in channel catfish could be related to both the project and a 15 inch minimum size limit imposed by the states bordering the Upper Mississippi River. Monitoring also showed a significant increase in walleye and smallmouth bass numbers near recently rip-rapped areas on Weaver Bottoms.

15. Animal Control

Animal control consisted of raccoon removal near wood duck banding sites. A total of ten raccoons were taken in live-traps and removed from banding sites during July and August. Eight were trapped at the Robinson banding site and two at the Mertes Slough banding site. Raccoons were transported and released about 20 miles off-site.

16. Marking and Banding

The wood duck banding quota was 150 for 1989. A total of 201 ducks were banded in eight capture attempts between August 11 and September 10 (Table W-6). Trapping was done on three banding sites and capture methods included the use of two salt plains traps and a rocket net. The salt plains traps were used on the Robinson Lake (Pool 4) and the Finger Lakes (Pool 5A) sites and the rocket net was used on the Honeymoon site (Pool 5A).

The Honeymoon site was the most successful, producing 93 wood ducks while 80 birds were banded at Robinson Lake and 18 at Finger Lakes. A new site at Mertes Slough (Pool 6) was closed down in mid-August because of a problem with raccoons, woodchucks and squirrels. Baiting with shelled corn was begun on July 14. About 1500 pounds total were used.

G. WILDLIFE (Continued)

Table W-6 Wood Ducks Captured and Banded for 1989

Date	Site	Caught/Banded	Method
8-11-89	Honeymoon	30	rocket net
8-17-89	Robinson L.	30	salt plains trap
8-25-89	Robinson L.	8	salt plains trap
8-29-89	Honeymoon	20	rocket net
9-01-89	Robinson L.	40	salt plains trap
9-05-89	Robinson L.	12	salt plains trap
9-11-89	Honeymoon	43	rocket net
9-11-89	Finger Lakes	18	salt plains trap
	Total	201	

G. WILDLIFE

1. Wildlife Diversity

District staff participated in the Audubon Christmas bird count on December 16. Fifty species were recorded in the area compared to 51 last year.

2. Endangered and Threatened Species

Two federally listed endangered species, the peregrine falcon and Higgins' eye pearly mussel (Lampsilis higginsi), occur on the District. Several sightings of peregrine falcons are reported each year during late summer and early fall as the birds migrate through the area. No nests have been discovered on the District.

An unknown number of Higgins' eye mussel beds occur on the District. Mussel surveys are expensive and normally are conducted only when a construction or dredging project may affect a bed.

The only species on the threatened list commonly found on the District is the bald eagle. Although eagles are frequently seen in the area throughout the year, peak concentrations occur during spring and fall migration. During migration periods, single day sightings of 100 bald eagles are not uncommon.

A new eagle nest was discovered this year near the City of La Crosse in Pool 8. This is the second nest found in the past two years that is located within a mile of the city and brings the total of known active nests on the District to four. Also, one additional nest is located on private land less than one mile from the Refuge near Brownsville, MN.

3. Waterfowl

During the Midwinter Waterfowl Survey in January, 539 ducks and one Canada goose were observed in the La Crosse area.

Mallards, wood ducks, blue-winged teal, and hooded mergansers are the most abundant species of ducks nesting on the District. In addition, production of giant Canada geese continues to increase each year. Production figures are difficult to determine because much of the prime brood-rearing habitat cannot be reached because of equipment

limitations. Based on limited observations, the production estimates for the District in 1989 were:

Species	Production Estimates
Mallard	3000
Wood duck	2800
Blue-winged teal	750
Hooded merganser	125
Black duck	20

Total Duck Production	6695
Canada goose	400

Total Waterfowl Production	7095

The continuing drought in the La Crosse area was partially responsible for an avian botulism outbreak that occurred on the river this year. Drought conditions were also implicated in the massive reduction of submersed aquatic plant abundance in the upper river system. Pools 7 and 8, which normally support several thousand acres of wildcelery plants, produced almost nothing this year.

The first push of migrating waterfowl was noted during the first week of September when about 4000 wigeon arrived on Lake Onalaska. Along with the wigeon, blue and green-winged teal, ring-necked ducks, and wood ducks were noted in increasing numbers through September and into early October. The peak mallard and canvasback use occurred in late October/ early November.

Results of hunter bag surveys at the Upper Brice Prairie Landing on Lake Onalaska on opening day of the Wisconsin duck season (October 7) and again on October 18 (reopening), illustrates this year's migration chronology. On opening day, wigeon, blue- and green-winged teal, wood ducks, and ring-necked ducks accounted for about 75% of the ducks checked. The mallard harvest comprised about 15% of the total. Eleven days later, the mallard harvest accounted for about 60% of the ducks checked and the five grouped species totalled only 23%.

Because of the shortage of wildcelery tubers in Pools 7 and 8 this fall, canvasbacks instead fed extensively in areas with dense arrowhead (Sagittaria spp) beds. As a result, "cans" could be found feeding with mallards in 4-6" of water. In "normal" years, hunters do not encounter canvasbacks while hunting in shallow marshes or standing timber. This year they did and it resulted in the loss of what was believed to be a substantial number of birds.

The peak canvasback population observed on the District was approximately 15,000 on Pool 7 in mid-October and 20,000 on Pool 8 in early November.

Many of the backwater areas, including much of Lake Onalaska, froze for the season on November 17. Ducks started to leave the District enmasse

on November 16-17, and by November 23, few birds remained.

Tundra swans utilized Pool 7 and 8 from late October until freeze up. Swan numbers peaked in mid-November at 1,800 on Lake Onalaska and 5,800 on Pool 8.

Canada goose numbers throughout the annual cycle continue to increase on the District. Surveys made while birds were using early fall staging areas resulted in an estimate of nearly 3,500 geese. By mid-November, an estimated 15,000 geese were on the District, more than doubling the 1988 total.

4. Marsh and Water Birds

Double-crested cormorants continue to use the District during the open water months. A small island north of Red Oak Ridge Island in Lake Onalaska has been used as a nesting site for several years. Due to shoreline erosion, this island now contains only one suitable nesting tree. A second island .5 mile south of the eroding island is now being colonized by nesting cormorants. A total of 90 nests was observed on the two islands in 1989.

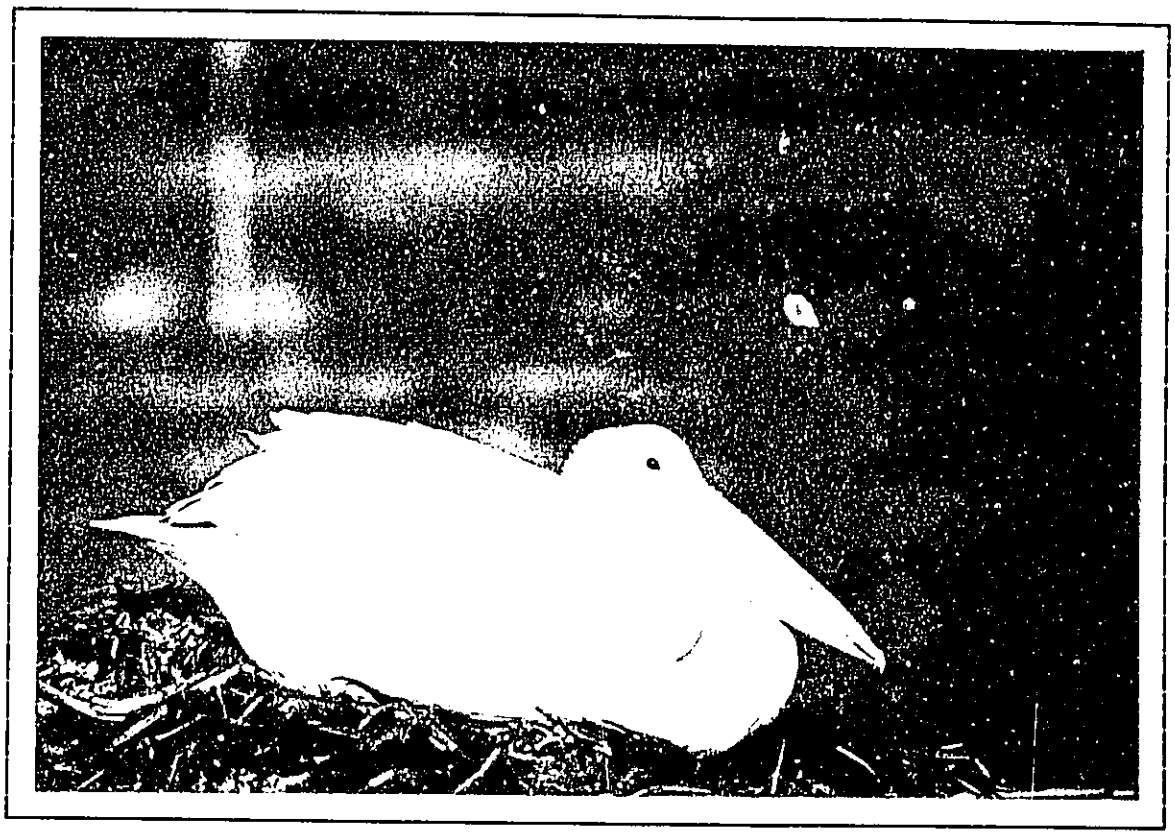
A cluster of dead snags where an island once existed in Pool 8 contained 62 cormorant nests. Because the above-water portion of the island has already disappeared, it is doubtful that the snags will remain through another flood.

Two great blue heron/great egret rookeries are located in Pool 8. A new colony at Smith Slough near French Island contained 240 nests when first discovered after the 1987 nesting season. Mid-winter counts revealed 292 nests in 1988. By 1989, the colony increased to 513 nests in 88 trees.

The District's oldest and largest heron/egret colony is located in the Root River bottoms. This colony has been in existence since at least the mid 1950's. In 1989, 1056 nests were counted in 335 trees.

Despite sub-zero temperatures and solid ice covering most water areas, a great blue heron was observed flying over Pool 8 on the December 27.

Four American white pelicans spent the summer on Lake Onalaska. No nesting activity was observed.



Normally uncommon, a group of white pelicans spent the summer on Lake Onalaska. (R. Nissen)

Green-backed, black-crowned, and yellow-crowned night-herons, American bitterns, rails, coots, and common moorhens are regular summer residents and probably nest on the District. No effort is made to locate nests or monitor populations.

5. Shorebirds, Gulls, Terns, and Allied Species

Killdeer, common snipe, and greater and lesser yellowlegs are commonly observed on islands and along the river shoreline. The new EMP islands in Lake Onalaska and the Rosebud Island disposal sites received extensive shorebird use during mid-late summer.

Ring-billed and herring gulls are commonly observed along the river, especially near locks and dams during the summer and fall months. A group of migrating Bonaparte's gulls frequented Lake Onalaska shortly after ice-out.

Black terns are the most common tern species found on the District. Small groups of common and Caspian terns are readily observed near Lake Onalaska.

6. Raptors

Ospreys are frequently seen from late spring through fall. Although

ospreys have been observed carrying nesting material over the upper portion of Pool 8, no nests have been discovered to date on the District.

A snowy owl was observed on one of the newly constructed EMP islands in Lake Onalaska on November 1.

7. Other Migratory Birds

The first kingfisher of the season was observed on March 13. Migrant robins and red-winged blackbirds were first observed on March 21, and a great blue heron on March 24.

Due to an acute staff shortage, woodcock and mourning dove surveys in Vernon County were completed by McGregor District personnel.

8. Game Mammals

Game mammals found on the District include white-tailed deer, rabbits, squirrels, muskrats, beaver, mink, raccoons, red fox, and river otter. All are found in self-sustaining populations.

12. Wildlife Propagation and Stocking

Personnel of the Minnesota DNR released 29 local giant Canada geese on Blue Lake in Pool 8 on July 13. By midsummer, only a dozen of the birds could be readily observed. It is doubtful that any of these geese survived the hunting season.

The Brice Prairie Conservation Association constructed and placed 50 wood duck boxes in various locations around Lake Onalaska in 1988. The nest boxes are made from freon gas cylinders and are mounted on predator resistant brackets similar to those used at Union Slough NWR. Only one of the boxes was used the first year. In 1989, approximately 120 boxes were available but only five produced ducks.

14. Scientific Collections

The Wisconsin DNR collected puddle and diving ducks from the Mississippi River for a contaminant monitoring study. Five local mallards, three scaup, and one ring-necked duck were collected prior to, and during, the waterfowl hunting season from Pools 7 and 8.

16. Marking and Banding

The District was assigned a wood duck banding quota of 150 birds. The rocket net site on Blue Lake was mowed and baited in July. In addition, floating traps were pre-baited and placed in a backwater slough in Pool 7 where they could be activated if needed. As usual, wood ducks were abundant at the rocket net site and the floating traps were not used.

The first two banding attempts went as planned; however, a series of equipment malfunctions soon developed. One or more rockets failed to

travel the length of the net on each of our last four attempts. After one shot, a rocket was still on its stand, unfired, when the smoke cleared. New wiring, new charges, and a new blasting box will be obtained prior to next year's program.

Mallards captured along with the wood ducks were banded under the Wisconsin DNR's permit. The District's banding results were:

Species	AHY-M	AHY-F	HY-M	HY-F	Total
Wood duck	78	8	63	34	183
Mallard	5	3	42	50	100

Wisconsin DNR personnel banded an additional 325 mallards and one wood duck on the District in 1989.

District personnel assisted Wisconsin DNR personnel in goose round-ups on Trempealeau NWR and along the Bad Axe River in Vernon County. A total of 36 Canada geese was banded and neck collared at Trempealeau NWR and 22 along the Bad Axe River.

17. Disease Prevention and Control

A dead Caspian tern was found on one of the new Lake Onalaska EMP islands and submitted to the National Wildlife Health Research Center in Madison, WI. The Lab reported that the tern died of a fungal infection.

On June 26, eight dead mallards were collected from the Black River at La Crosse and submitted to the National Wildlife Health Research Center for analysis. The Health Center confirmed our suspicions that the birds died from avian botulism. District personnel, along with Wisconsin DNR personnel, FWS Special Agent Mark Johnson, and local residents all helped to remove dead and dying mallards. Approximately 350 wild and partially domesticated "popcorn" mallards died during the outbreak, which apparently ended on July 7.

A second avian botulism outbreak was first recorded on July 7 on the Mississippi River about three miles downstream from the site of the first outbreak. About 150 mallards died.

In 1988, avian botulism outbreaks occurred in the same general areas and claimed about 650 mallards.

G. WILDLIFE

1. Wildlife Diversity

Wildlife on the District consists mainly of wetland and floodplain forest species. The greatest diversity occurs during the spring and fall migration, as large numbers of waterfowl, raptors, and passerine birds move through the Refuge. The District does, however, provide habitat for many species of non-migratory birds and other wildlife throughout the remaining months.

2. Endangered and/or Threatened Species

a. Bald Eagle

An eagle count on Pools 9, 10, and 11 was conducted January 4, 1989 by District staff. The weather conditions were sunny, with temperatures ranging between 10°F and 25°F and with winds of 10 mph. There was approximately 95 percent ice cover on the River. A total of 318 bald eagles was counted; 91 on Pool 9, 76 on Pool 10 and 151 on Pool 11. The mature/immature ratio was approximately 4:1. On December 11, in conjunction with the 1989 December Goose Survey, District staff recorded 639 bald eagles on Pools 9, 10 and 11 - a new record count! Assistant Batya counted 100 eagles concentrated near open water at Interstate Power Plant at Lansing, Iowa on December 23, 1989.

During the aerial nesting survey on March 23, 1989 and subsequent ground checks through April 11, 1989, 12 active nests were located. This is an increase of three nests from last year's count.

Although total active nests were up to 12 from last year's 9, only a total of 16 young produced could be substantiated. This figure is down two from last year. The true figure would probably have surpassed last year's total if nest 3 on Pool 9 could have been relocated and if the existence of young on nest 9 could have been verified. The adults remained protective of nest 9 throughout the nesting season, but the high placement of this nest and a restrictive angle of view did not allow a glimpse of the young on four visits to the nest.

Table M-7. 1989 Eagle Production Data

Nest	Pool Location	Observations	1989 Success
2	9 (MN)	Active	1 young
3***	9 (MN)	Active	*
5	9 (MN)	Active	2 young
8	9 (IA)	Inactive	-------
8a	9 (MN)	Active	1 young
9	9 (IA)	Active	**
10	9 (WI)	Active	3 young
12	9 (WI)	Inactive	-------
12a***	9 (WI)	Active	2 young
13***	9 (WI)	Active	1 young
1	10 (IA)	Active	1 young
2	10 (IA)	Active	1 young
1	11 (WI)	Active	2 young
2	11 (WI)	Active	2 young

* Nest active in spring but, the nest could not be relocated for production counts.

** Nest active throughout nesting season. Staff was unable to verify young due to high placement of nest and restrictive angle of view.

*** New nests in 1989.

Two injured bald eagles were flown to the Raptor Rehabilitation Center in Minneapolis courtesy of Northwest Airlines. A banded adult female was brought to the District office on January 16 by Iowa DNR Warden Mike Ouverson. The bird was discovered near Dubuque, Iowa. It had suffered a fractured scapula and coracoid and the prognosis for a complete recovery was poor. Band return information showed that the bird was banded as a flightless nestling on June 17, 1977 in Oneida County near Woodruff, Wisconsin. We later learned that the bird recovered its flight ability and was released near the Twin Cities. The second bird was prepared for shipment by Gail Goranson, Iowa DNR and Jim Brown. This adult bird's wing was nearly severed. The Rehabilitation Center advised us that the bird was sent as a permanent cripple to the Columbian Park Zoo in LaFayette, Indiana to be used for educational purposes.

A dead golden eagle sent to the National Health Laboratory in Madison, Wisconsin reportedly died of electrocution. The bird was discovered below power lines.

b. Higgins' Eye Pearly Mussel

Nothing to report.

c. Osprey and Peregrine Falcon

There were no reported sightings of peregrine falcons this year. Ospreys were seen frequently, but there is no known nesting on the

District.

3. Waterfowl

The first spring migrants were sighted about the same time as in 1988. Goldeneyes and Canada geese were the first arrivals on February 28, followed by common mergansers and a few canvasbacks on March 7. Migrating mallards, scaup, ring-necked ducks, coots, gadwalls and pied-billed grebes were seen a week later. The first wood ducks were observed on March 11 on lower Pool 11, eight days later than last year's first sighting. The first green-winged teal and pintails were seen on March 16. Blue-winged teal were not sighted until March 29.

The spring peaks for waterfowl were as follows. Canvasbacks peaked at 5,000 on March 30 followed two weeks later with scaup at 7,000. Earlier during the month, a large concentration of about 6,500 mixed divers was located in a small opening in the ice below John Deere Marsh on Pool 11. They appeared to be feeding on small shad which were abundant in the area. Goldeneyes peaked at 1,600 on March 30 followed by redheads at 2,500 on April 1.

On April 21, mallard numbers peaked at 4,000 and remained high throughout the end of May. Blue-winged teal also peaked at 900 during this same period. Canada goose numbers were at their highest on March 24 with 1,070 birds. Wood ducks reached their peak of 20,000 birds about May 12.

Fall waterfowl populations began peaking on September 22 with 32,000 wood ducks. Blue-winged teal also peaked during this same time with 3,200 birds. Mallard numbers reached 10,300 and scaup numbers 3,200 during the last week of October. Canada goose numbers were at a high of 800 the first week of November followed a week later with canvasbacks at 5,600. Tundra swan use peaked during the middle of November with 350 birds. Last years November peak was 2,500 birds. There is concern that some diving ducks and tundra swans may be changing their use-patterns along the Mississippi River in response to a significant decline in wild celery and benthic invertebrates. Recent drought conditions and low discharge rates have been suggested as contributing factors for the declines. During the first two weeks of November, the Dago Slough closed area in Pool 11 hosted some 8,500 puddle ducks. Each evening, large flocks of these birds could be observed flying from the closed area to upland farm fields to feed on grains. Wigeon and pintails peaked the second week in November with 5,000 and 400, respectively.

Annual duck use days totaled 6,790,478. Total waterfowl use days were 7,701,804.

Table M-8. 1989 Monthly Totals of Waterfowl Use-Days on McGregor District

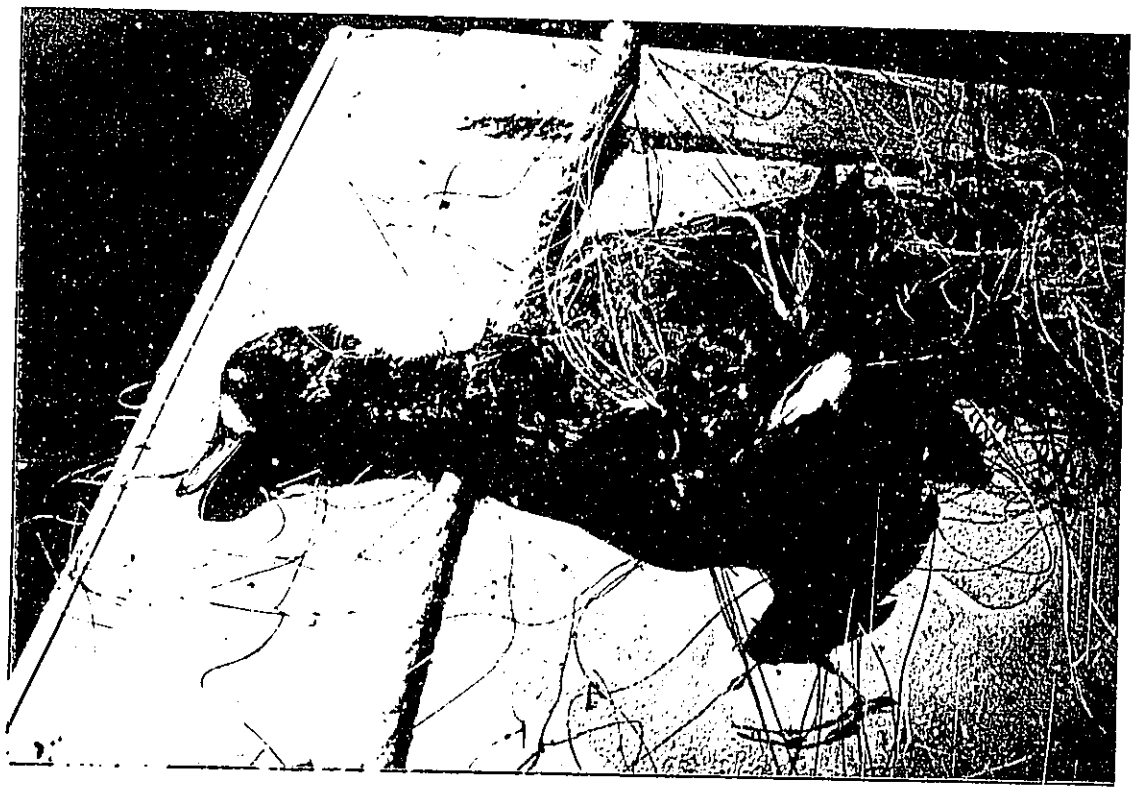
	Duck Use-days	Coot Use-days	Goose Use-days	Swan Use-days
January	2,913	0	0	0
February	7,560	0	1,652	0
March	317,750	21,545	16,678	1,085
April	672,840	165,000	15,390	540
May	696,074	72,075	6,138	0
June	803,880	11,100	5,700	0
July	717,681	10,664	5,053	0
August	610,793	9,145	4,309	0
September	1,111,680	69,600	4,440	0
October	1,125,889	193,750	13,113	1,240
November	681,630	251,250	17,400	8,940
December	41,788	0	3,596	1,953
Totals	6,790,478	804,099	93,469	13,758

District waterfowl production estimates were high again this year, perhaps due to another year with no flooding that resulted in more exposed ground nesting habitat and improved brood habitat. Wood duck and mallard production was estimated at 21,000 and 4,000 birds, respectively. Small islands in the lower portions of the pools appear to be providing good nesting habitat for mallards when there is no flooding. Bob Dahlgren, Refuge Wildlife Biologist continued his nest searching on two of these islands in Pool 11. One of the islands had the highest concentration of nesting mallards of any location found so far on the Refuge.

Goose production was down from last year's 120 young. Sixty-seven goslings were sighted in 1989 and it is estimated that an additional 25-35 were raised on the District. The flock of 20-30 geese that had been present in lower Pool 11 for the previous two seasons was not observed in 1989.

Weekly waterfowl counts were completed during the spring and fall in representative areas of each pool. Particular attention was paid to those areas that normally hold large concentrations of divers, in order to detect any changes in migration patterns in response to an observed decline in wild celery.

Random checks of commercially used gill and trammel nets to estimate diving duck mortality during the peak of the spring migration revealed some interesting results. Scaup, ring-necked ducks and common mergansers appear to be the most vulnerable to being caught and drowned. Birds are caught when gill nets are set in openings in the ice. The period of vulnerability seems to last two to three weeks. Overnight sets are the worst. When commercial fishermen drive fish to attended gill or trammel nets, birds are rarely caught. Typical or average drownings are 1-3 birds per net section per day. Net sections are 150 feet and 300 feet. A typical commercial fisherman runs 900-1800 feet of net and there may be approximately 5-10 such fishermen active per pool. Extrapolating, if 21 fishermen fish 1,350 feet of net in 8 sections for



Commercial fishermen sometimes catch more than rough fish.
10/89 CM

21 days of the vulnerable period catching 2 birds per section, a conservative estimate of mortality for the McGregor District might be 7,056 ducks per spring season. Cormorants, ospreys, and eagles may be involved as well. Some pools have significantly greater canvasback and redhead use than we do here. This is a case where time and location, or methods regulations, applied wisely as a management tool may be more effective than we have realized.

4. Marsh and Water Birds

The first great blue heron was observed on March 15. One or two hardy herons have been sighted throughout the winter. The last one seen was on January 2, 1990. Common egrets were first sighted at the end of March and were numerous, especially in Pool 9 marshes, by mid-April.

The biennial estimate of great blue heron (GBH) production in the District rookeries was conducted in a two phase survey. During the first phase (April 27 - May 1), active nests were counted. A percentage of nests was sampled during the second phase (June 1 - 6) to estimate the average number of young per nest and total production. Six great blue heron rookeries were active in the District in 1989. Three of the rookeries are located in Wisconsin, two in Iowa and one in Minnesota.

The District's great blue heron production estimate of 5,810 in 1989 indicates a seven percent decrease from the 6,208 estimate in 1987. The average number of young per nest also dropped from 1.87 to 1.49 during the same period. Results of the survey are summarized in the following table.

Table M-9. Total Production of Great Blue Herons by Year, McGregor District

	1989	1987	1983*	1980*	1978*
Heron nest trees	1,590	1,338	605	533	419
Active heron nests	3,769	3,334	1,532	1.458	1,084
Estimated Heron Production	5,810	6,208	2,852	3,845	2.333
Average heron young/nest	1.49	1.87	1.87	2.64	2.15
Egret nests	302	45	31	37	18
Cormorant nests	32	0	3	0	0
Start nests	218	146	60	41	67

* The McGregor District was created in 1984 through the combination of the Cassville and Lansing Districts. The 1987, 1989 data include the Dairyland Power Rookery and Lansing Dike Rookery, (i.e., Pool 9), while data in 1983, 1980 and 1978 do not include these rookeries.

Table M-10. 1989 Total Production by Rookery, McGregor District

Rookery	# of Heron Nest Trees	Act. # of GBH Nests	Ave. # of Young/Nest	Tot. Est. Heron Prod.	# Egret Nests	# Cormorant Nests	# Start Nests
Brinkman's	345	799	2.12	1,694	7	1	69
Dago Slough	104	380	1.17	425	0	0	22
Ballard						15	
Butler Lake	496	1,003	1.80	1,805	292	12	74
Vogt Lake	183	591	1.56	921	2	4	26
Lansing Dike	82	154	1.40	216	1	0	12
Dairyland Power	380	842	.89	749	0	0	15
Totals	1,590	3,769	1.49	5,810	302	32	218

Highlights of the survey are as follows: The Dago Slough Rookery exhibited a 64 percent increase in active GBH nests, but the 1.17 young per nest was a 12 year low. The Lansing Dike Rookery experienced phenomenal growth since the 1987 census. An 83 percent increase in production and a doubling of active nests were recorded this year. The Dairyland Power Rookery production decreased 69 percent from the 1987 figures. The decrease may be related to disturbance due to the proximity of the rookery to the main river channel and incidents of illegal barge mooring during the nesting period. Common egrets nesting in the Butler Lake Rookery increased seven-fold in 1989. Eighty-nine percent of the active GBH nests were located in live trees.

Double-crested cormorants were found nesting in three GBH rookeries where cormorant nesting had not been previously observed. In addition, the first exclusive cormorant rookery was discovered in lower Pool 11. During it's first active year, 21 cormorants were produced in eleven active nests.

Black-crowned night herons, American bitterns and least bitterns were frequently observed on the District.

During May, greater yellowlegs and solitary sandpipers were common on the many exposed mud flats. On May 4, a major movement of golden plovers was observed.

5. Shorebirds, Gulls, Terns and Allied Species

Shorebirds, including common snipe, greater and lesser yellow-legs and other unidentified species, were frequently observed along the exposed mud flats and shorelines. Forster's terns were observed at John Deere Marsh in Dubuque, Iowa on April 4. Gulls are common during the warm months and can usually be observed near the locks and dams feeding on an ample supply of fish. Black terns were frequently seen but a nesting colony has not been located on the District. Juvenile black terns have been observed in the Winneshiek Bottoms on Pool 9.

6. Raptors

Information on potential red-shouldered hawk (RSH) nest sites was provided Jon Stravers for his continuing work on the status of this species in Iowa. Stravers submitted his most recent findings to the Iowa DNR during December 1989. The publication entitled Report on the Status of the Red-Shouldered Hawk in Iowa lists eight confirmed nests in Iowa. Three of these nests are located on the McGregor District. An additional three are located on lands of the Effigy Mounds National Monument adjacent to District lands. A seventh nest is located on state land near the District.

According to the report, "RSH are indeed habitat specific and require a large unfragmented and mature floodplain forest as nesting habitat. They also need a variety of associated wetlands within the immediate area as hunting and foraging habitat." Most of this type of habitat is located on public lands in Iowa making the Upper Mississippi Refuge extremely important for this declining species.

Ballard Island cormorant rookery on Pool 11 is the only exclusive cormorant rookery on the District. This new rookery contains 11 nests and produced 21 young this year.
10/89 CM

Not only the District staff have been "busy as beavers". Low fur prices and fewer trappers have resulted in more evidence of a growing beaver population.
4/89 FR

Turkey vultures are commonly seen on and around the District. The first vultures of the year were spotted on March 22. Flocks of 20 to 30 birds are often seen soaring around the bluffs. Turkey vultures are also encountered feeding on dead fish along sandbars and sunning with outstretched wings in trees along the main channel. Red-tailed hawks and American kestrels are commonly seen on power poles and lines along roads surrounding the District. Great horned and barred owls are frequently heard and sighted in the bottoms. Ospreys are often seen fishing along District waters but there are no known nests. Broadwinged and rough-legged hawks and northern harriers are common during the fall migrations. Bald eagle information can be found in Section G-2.

7. Other Migratory Birds

Meadowlarks, robins, red-winged blackbirds and eastern bluebirds were first spotted on March 14, 16, 20 and 23 respectively. The first yellow-headed blackbird was seen by a volunteer on May 1 near Reno, Minnesota.

A Wisconsin DNR naturalist was again issued a Special Use Permit to erect and maintain an observation blind on Refuge lands. He recorded 53 species of passerine birds. Some of the more uncommon species include Louisiana waterthrush, Carolina wrens, Philadelphia vireos, and mourning, cerulean and blackburian warblers.

8. Game Mammals

White-tailed deer are common on the Refuge and surrounding bluff area. Wisconsin reported a record kill of over 300,000 deer this fall. Vernon and Crawford counties bordering the northern portion of the District, however, reported a lower than average kill.

Fox and gray squirrels, cottontail rabbits and raccoon are commonly observed. Coyotes and coyote sign are frequently encountered by District staff.

10. Other Resident Wildlife

Wild turkey populations continue to increase in counties surrounding the Refuge. During January, a flock of 35 was observed on Pool 11 in the Turkey River cooperative farming fields. Flocks of 35-50 birds are frequently seen near the closed area on Pool 9.

Low water levels during May and June provided ample nesting sites for the numerous semi-aquatic turtles. Belted kingfishers and pileated woodpeckers were common throughout the year. Their distinctive calls often announce their presence before they are observed.

In May, Assistant Batya participated in a woodcock survey east of Viroqua, Wisconsin. He also completed a dove coo count a month later near Stoddard, Wisconsin.

Otters were observed on several occasions on the District. Evidence of their presence and distribution is gathered by accidental captures in

beaver sets or signs of their movements in the snow.

The beaver population appears to be growing and their woodworking activities are evident throughout the District. The depressed fur market and the resulting lack of beaver trappers are factors in this apparent increase.

11. Fisheries Resources

Commercial fishing on the Refuge is regulated by the various states in which the waters are located. Five species contributed approximately 93 percent of the total reported harvest. Buffalo comprised the bulk of the catch followed closely by carp and freshwater drum. Channel catfish and flathead catfish make up most of the remaining harvest. The largest harvest of commercial fish on the District occurred in Pool 9. Commercial fishermen use a variety of gear but most non-catfish catches are taken in hoop nets, trammel nets, gill nets and seines. Catfish are traditionally taken using set lines, slat traps and hoop nets. The largest buffalo and carp catches occur from January to May while August and September are also productive.

Peak catches of channel catfish occur from May to August and of flathead catfish from June to October. The Chicago market continues to be the major market for local commercial fishermen. Prices were down this year and many fishermen explored alternative markets. The Canadian market provided some relief for winter catches shipped live by tanker trucks to Canada.

Mussel harvest pressure was down this year in the District because of the continuing decline of harvestable shells. Clammers are exploring different locations on the River. Washboards and threeridge make up the bulk of the harvest. Clamming activities are regulated by the states bordering the River. There is speculation that Wisconsin will tighten size restrictions on washboards from 3¼ to 4 inches. The hand picking of mussels by wading in the shallows has gained popularity in many locations during recent years. Diving and brailbar methods still produce most of the harvest.

Two Special Use Permits (SUP) were issued this year to commercial fishermen who stored their catches in fish cribs in District waters until the fish were marketed. After repeated warnings were ignored, one Notice of Violation was issued to a commercial fisherman who was not in compliance with his SUP.

15. Animal Control

Assistant Batya mapped the beaver dams in the vicinity of New Albin, Iowa on Refuge land adjoining a private field. The landowner believes that the beaver dams are holding water on his field. This field has a high water table and little history of successful cropping. Project Leader Lennartson and District Manager Lyons visited the area in October and concluded that it is unlikely that conditions on the Refuge affect this field.

16. Marking and Banding

Three banding sites, one on each pool, were used to achieve the wood duck banding quota. A new site on Pool 9 with easy access from a landing in Lansing, Iowa was tried. Only twenty birds were banded at the site, although on a number of occasions, 40-50 birds approached the bait. The Pool 10 site produced only two birds and a new site will be tried in 1990. The Pool 11 site produced the remainder of the District's 150 bird quota. This site has been the most productive in recent years and one shot in 1988 resulted in the capture of 163 birds.

Corn for baiting was acquired from DeSoto NWR through an inter-elevator transfer. A new galvanometer and a rocket to replace one lost in 1988 were purchased.

A Special Use Permit was issued to the Iowa DNR to operate wood duck banding sites on Pool 9.

A five year comparison of banding success is listed in the following table.

Table M-11. Wood Duck Banding Quotas and Numbers Banded During the Past Five Years

	Quota				Banded			
	AHYM	AHYF	HYM	HYF	AHYM	AHYF	HYM	HYF
1989	50	50	25	25	61	18	26	45
1988	50	50	25	25	32	11	59	49
1987	50	50	25	25	73	49	107	122
1986	50	50	25	25	20	16	26	26
1985	NO BANDING ON THIS DISTRICT DUE TO STAFF SHORTAGE							

17. Disease Prevention and Control

In April, Assistant Romero and Jim Brown investigated a report of dead ducks along the main channel in Pool 10. A few dead coots were found. No spills of oil or treated grain or other possible explanations could be located. No evidence of avian botulism was found this year even though low water levels prevailed throughout most of the summer.

G. WILDLIFE

1. Wildlife Diversity

District management plans for activities such as cropland management, grassland management, and prescription burning, provide for the opportunity to create and/or maintain habitat diversity within the district. This ultimately increases species diversity.

Large acreages of monotypic vegetation such as dense cattail can be broken up using chemical or mechanical manipulation, and a more diverse plant community will result. These areas then provide food and cover for a number of wildlife species throughout the year.

Water management of moist soil units, modified agricultural practices used in cooperative farming agreements, and forest management techniques also provide for habitat and species diversity.

2. Endangered and/or Threatened Species

Northern bald eagles, considered endangered in Iowa and Illinois, utilize the Upper Mississippi River valley as a winter migration corridor. Migrant eagles are frequently observed roosting or fishing near the tailwaters of the locks and dams, especially during late fall/winter. Eagle viewing opportunities for the public are usually excellent during the months of December and January.

Table S-5 - Peak Wintering Bald Eagle Populations - Savanna District

Year	Total	Adults	Immature	Unidentified	Ratio of Immature/Adult
1989	346	215	128	3	.60
1988	226	133	91	2	.68
1987	85	59	22	4	.37
1986	71	57	11	3	.19
1985	111	89	20	2	.22
1984	246	202	44	0	.22
1983	89	75	14	0	.19
1982	135	112	23	0	.21
1981	118	100	16	2	.16
1980	95	69	25	1	.36
1979	99	58	22	19	.38

Wintering eagle counts are conducted during the months of December, January and February each year to determine peak migrational numbers. The District's eagle census area extends from Lock and Dam 11, Dubuque, IA, south to Lock and Dam 14, Pleasant Valley, IA. The Savanna Army Ordnance Depot, in Pool 13, is also included on the census route. The eagle numbers in Table S-5 show a great deal of annual fluctuation, which demonstrates the impact that the amount of ice cover on the river and weather conditions have on migration. Mild winters, such as those experienced in 1986 and 1987, tend to spread the birds along the river as

there is more open water, whereas extensive ice cover as produced in 1988 and 1989, will concentrate the birds at locks and dams where open water exists for fishing opportunities. The eagles will snatch the fish which go "belly-up" after passing through the rollers of the dams. Hence, eagle census numbers are easier to obtain during periods of extensive ice cover on the river. A peak 1989 wintering eagle count of 346 birds was made on December 19. Record low temperatures for the midwest in December forced birds south, and it was not uncommon to observe over 150 birds at a single open water location such as those provided at the lock and dams. The Army Corps of Engineers in cooperation with the Service have placed avoidance signs below eagle roosting sites at Lock and Dam 13 to discourage human disturbance of wintering eagles. News releases also were sent out to inform the public to observe the eagles at a safe distance and to alert them to the new signs.

A bald eagle nest located in a large cottonwood tree in Spring Lake m.s.u. was discovered blown down on June 13. The nest was constructed late in 1987 and successfully fledged two eaglets in 1988. A pair attempted incubation in 1989 but was unsuccessful prior to the nest blowing down.

The Pleasant Creek nest in Iowa, was successful for the fourth year, producing two young for a production total of six eagles since 1986.

There had been reports of two bald eagle nests located within the Savanna Army Depot. However District personnel were unable to confirm either location after a day of searching.

A new bald eagle nest built during the fall of 1989 was discovered in the lower unit of Spring Lake. It is possible this will be a nesting attempt by adults that were displaced from the nest blown down in the upper Spring Lake unit as it is not uncommon for eagles to establish a new nesting location within their territory.

There were a total of ten active nests this year in the state of Illinois. Of these, four were successful, producing four young. The Service has set a goal of 20 nesting pairs in Illinois by the year 2000.

Two crippled immature bald eagles were sent to the University of Minnesota Raptor Rehabilitation Center during 1989. On November 21 the first was brought to the office by an Iowa Conservation Officer after being retrieved from a leg hold trap set for coyotes on private land in Iowa. The birds foot was nearly severed, and it was euthanized by the Raptor Rehabilitation Center that evening.

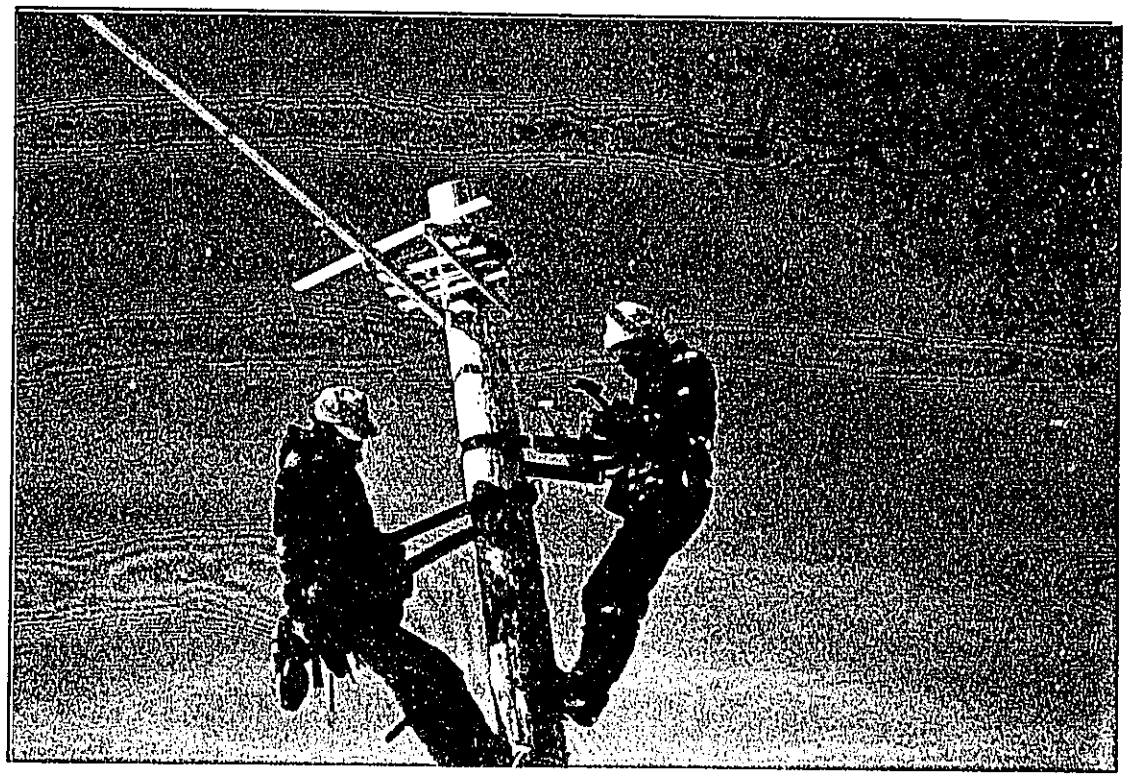
The second eagle was picked up by District personnel on November 25 after notification by a local resident. The bird was picked up on the shoreline of a slough on the Mississippi River. This bird was also sent to the Raptor Rehabilitation Center in Minnesota where it was found to have suffered a cortecoid fracture, probably from a collision. After enough rest and food the bird was released.

A third dead eagle was shipped to the National Wildlife Health Lab in Madison, WI, on November 28. It was brought in by an Iowa Conservation Officer, having been found on a state wildlife management area by a turkey

hunter.

The federally endangered Higgins' Eye Pearly Mussel (Lampsilis higginsi) is present in Pools 12 and 14. The Higgin's Eye has not been located in Pool 13 but mussel surveys in 1988 still identified small populations of it in both Pools 12 and 14.

It was suspected that a pair of red-shouldered hawks were nesting near Lainesville Slough in Pool 13 this spring. A calling adult was heard in March and in May. No nest was located, but the habitat appears to be suitable for the species.



Volunteer pole-climbers attached cormorant nesting platforms on nine poles within the lower Spring Lake unit. (2/89 Md)

Double-crested cormorants (Phalocrocorax auritus) are an Illinois endangered species commonly observed on the Upper Mississippi River. To increase cormorant production and provide more nesting opportunities, the Illinois DOC Natural Heritage Division used Nongame Wildlife Checkoff funds to initiate an artificial nesting structure project in 1987. At that time, nine 30 foot poles were dropped by helicopter in the southwest corner of the lower Spring Lake unit. In February of 1989, 37 nesting platforms were erected on the poles. The project was covered by local new media.

Double crested cormorants were present at the new nesting structures in the lower Spring Lake unit the week of April 23, but no nesting occurred.

By May, the cormorants were nesting at five sites located in Pool 13, three of which occurred on the Illinois portion (West Lake, the Thomson Causeway, and Lock and Dam 13), and two located in Iowa (North Sabula Lake and Keller's Island). A total of 130 nests were counted from all five rookeries, an increase of 50% over 65 nests in 1988.
The cormorant nesting on Keller's Island in 1989 was the first verified nesting by cormorants at this location. The cormorants nested within an active and traditional heron rookery. Nesting occurred within seven trees with a total of 37 nests confirmed.

In addition to the previously mentioned species, the following Iowa/Illinois listed endangered and/or threatened species were observed in 1989: northern harrier (E), common tern (E), black-crowned night heron (E), black tern (E), osprey (E), great egret (E), yellow-headed blackbird (E), and western-hognose snake(T).

3. Waterfowl

Although most of Pools 12, 13, and 14 were frozen at the beginning of the year, a warming trend throughout January provided open water on a great deal of the District. Approximately 650 mallards, 200 goldeneye and 550 Canada geese were observed on the District. A total of 20-30 tundra swans were also observed in January.

Migrant Canada geese totaling up to 10,000 birds, appeared the first few days of March. Mallards and divers arrived the week of March 5. Wood duck, gadwall and snow geese were first observed March 12. Shovelors, wigeon and merganser spp. arrived around March 19. Blue-winged teal were sighted on March 22. A flock of 10 white-fronted geese were counted on March 25.

The mitigation wetland, south of Savanna, held a lot of diving ducks during the week of March 12. Approximately 400 scaup, 200 ringnecks, 400 canvasbacks, 105 mallards, 42 ruddies and 22 Canada geese were censused on the area. Apparently, they were feeding on the flooded nurse oats crop which had been planted on the shoreline. Waterfowl numbers built throughout the month, with most of the birds censused in Pool 13. Diver species totaled approximately 60,000 on March 23, with the majority being scaup, canvasbacks, mergansers and ringnecks.

Approximately 20,000 mallards were on the District at the end of March, using backwater areas where moist soil plants had been flooded. Thousands of mallards were using the shallow lakes in the Pleasant Creek unit.

On March 15, personnel from the NWHL, Madison, WI, and the Northern Prairie Wildlife Research Center, Jamestown, N.D., used the District shop to take cloacal smears and throat cultures from 170 captive-bred hen mallards. The birds were obtained from Whistling Wings, Hanover, IL, and were used in the Small Unit Management Program Study at Jamestown, ND.

In 1988, considerable effort was made by the Refuge to obtain information regarding waterfowl nesting on River islands in Pools 7, 8, 11, 12, and 13. Bob Dahlgren, Complex Biologist, solicited the aid of District personnel for a second season in 1989, for nesting surveys of islands in

These four small islands in Pool 13 received intense nesting by mallard ducks. Losses to predators are greatly reduced by the islands being located a distance of 1/2 to 2 miles from the main shoreline. (7/89 ED)

This mallard nest site within the base of a hollow tree is typical of the nesting adaptations displayed on the islands. (7/89 ED)

Pool 12 and 13.

South bound blue-winged teal migrants began appearing on the District in late August and September. Waterfowl numbers increased steadily throughout the month of October, with a total of at least 4,000 mallards, 3,000 widgeon, and 1,500 Canada geese present by the end of the month.

Approximately 2,500 snow/blue geese arrived on the District the week of October 15. Also present to a lesser extent were gadwall, wood duck, pintail, shovelors, and black ducks. Rafts of divers including scaup, ruddy duck, bufflehead, and goldeneye were also present in October and November, with fewer redhead and canvasback than in 1988.

Utilization of the Spring Lake Closed Area by waterfowl during the Iowa/Illinois duck season was high. Approximately 40,000 ducks plus an additional 8,000 geese were observed during this period. Large flights could be seen at 8:00 a.m. and 3:00 p.m. each day, lifting off Spring Lake and flying to Iowa and Illinois farmlands, then returning at various times during the day. A total of 64 Tundra Swans were also observed using the closed area.

Three waterfowlers contacted our office this fall concerning reward bands. The bands were for $100, $75, and $10.

Three tundra swans were reported to be shot by accident on November 24 adjacent to Spring Lake. One dead swan was retrieved by District personnel after several hunters were questioned concerning the incident. A second one was reportedly retrieved by the hunter as he fled the scene and the third tundra swan was retrieved by Long Term Research Monitoring personnel from Bellevue, IA, on December 5. They used a hovercraft over the ice near Big Slough landing, Pool 13. The swan was transported by ADM DeVries to a licensed rehabilitator in Morrison, IL. The bird had four steel shot pellets, three in its body and one in the foot. The three shot in the body couldn't be removed, but the foot pellet was. After a period of recuperation, the swan was taken to Wildlife Prairie Park in Peoria, IL, and released. At last report the swan was doing well.

Three other swans were also reported shot this fall in Pool 13.

A large influx of 35,000 mallards, 7,000 Canada geese, and 24 tundra swans was observed at Spring Lake on December 1. Ice covered most of the lake, but open water near the crossdike concentrated most of the birds. On December 7, the count dropped off to 2,000 mallards and 600 Canada geese at Spring Lake.

4. Marsh and Waterbirds

The first observed group of northbound great blue herons returned to the District from their wintering locations during the week of March 10. Many of these herons remained in the area to begin nesting activities at one of the four heron rookeries located in the Savanna District.

In the last decade, as many as ten rookeries have been censused on the District, but between 1980 and 1986 five of these were abandoned. A sixth

rookery which was discovered east of Lower Brown's Lake (Pool 13) in 1988 was abandoned in 1989. This rookery had ten nest trees in 1988 and was located approximately five miles north of the large Keller's Island rookery. Possibly these birds used the Keller's Island site in 1989.

As demonstrated in Table S-6, the total nest count for the District showed a decrease of 1.7% from the 1988 census. With the exception of 1982 and 1984, when census data was not obtainable due to high water conditions, 1989 was the first year since 1979 that a decrease was noted in nest counts. The nest counts are conducted annually in May or June. Each nest tree is individually marked with a stamped, numbered metal tag. The location of each tree is marked on a rookery map which is updated each year. Heron rookery maps have been maintained for each rookery censused on the District since 1977.

Table S-6 - Great Blue Heron Nest Totals - 1987-1989 - Savanna District

Year	1989	1988	1987
Beaver Island	550	422	371
Catfish Island	406	479	326
Keller's Island	798	760	609
North Savanna Army Depot	131	172	96
Brown's Lake	a	84	
Deadman's Slough	a	a	50
Totals	1,885	1,917	1,452

(a=abandoned)

Wading birds responded favorably to the Spring Lake m.s.u. drawdown during the summer. Exposed mud flats and edges attracted many great egrets, great blue herons and green-backed herons. Late spring observations produced sightings of soras, Virginia rails, king rails, common moorhens, and an American bittern at Spring Lake. Black-crowned night herons were also observed at Spring Lake in May, August, and October.

A pair of sandhill cranes was observed near Potter's Marsh on March 19, March 25, and September 13. A pair of sandhills also was observed on grassland tract 6 (near Potter's Marsh) on August 7.

A single, common loon was observed in the lower Spring Lake unit on April 7, and another single loon was sighted near Lock and Dam 13 on November 4. An albino coot was observed by the White Pines birding club on November 4 in Spring Lake.

5. Shorebirds, Gulls, Terns and Allied Species

Low water levels in 1989 exposed many mudflats in backwater lakes and sloughs, creating perfect conditions for shorebird use. Shorebird use of the refuge was quite varied, especially during the months of May, August, and September, when migrations were occurring. Among the species observed

on mudflats and beaches were the following: killdeer, solitary sandpipers, spotted sandpipers, pectoral sandpipers, greater and lesser yellowlegs, and common snipe. Especially large numbers (50+) of common snipe were observed in the Sabula Lake area and within the Spring Lake m.s.u. as well as in other shallow backwater areas in September. On September 7, a western sandpiper and eight black-necked stilts were observed at Spring Lake. The observation of these two species was highly unusual and represents the first recorded sightings on the District.

Gull species commonly observed during the year included ring-billed and herring gulls. Migrant Bonaparte's gulls were observed frequently near Lock and Dam 13 in April, October and November. Tern species observed included the black and common tern.

6. Raptors

The Upper Mississippi River valley serves as a natural north-south migrational channel for a wide variety of raptors which can be seen in large numbers during the migrational months of March and September. Commonly observed species include broad winged hawks, sharp-shinned hawks, northern harriers, red-tailed hawks, kestrels, rough-legged hawks, turkey vultures, barred owls, great horned owls and screech owls.

7. Other Migratory Birds

The Spring Lake area is included in the annual spring bird count for Carroll County, IL. A nocturnal and diurnal bird count on May 6 by four volunteer birders indicated a wide range of bird species, including Virginia rails, king rails, least sandpipers, white-rumped sandpipers, yellow-headed blackbirds and a black-crowned night heron. The birders utilized amplified recordings of bird calls to induce responses during the nocturnal count. A total of 875 individuals representing 65 bird species were seen or heard.

Mourning doves are very common in the District, especially on the sand prairie areas between Thomson and Fulton, IL. Jack pine and red pine planted in past years for soil stabilization now provide ideal cover for the doves, as well as for other migratory bird species. Savanna District is responsible for a portion of the annual dove call survey in Illinois. On May 23, Assistant District Manager DeVries conducted a 20-stop call count survey in Lee and Bureau counties, IL. Results from the count were submitted to the Office of Migratory Bird Management in Laurel, MD, for incorporation into the 1989 Mourning Dove Breeding Population Status Report. A total of 21 doves were heard, compared to an Illinois index of 35.3 doves heard per route. Overall numbers in Illinois were down by 5.2 percent over 1988, according to the report, and decreased by 0.2 percent in the Eastern Management Unit, which is comprised of 27 states.

Five areas in the Pleasant Creek unit were identified by the Corps and Service for management cuts in 1987-1988. Three areas of mature silver maple and cottonwood were clearcut in 1987, plus eight acres of monotypic cottonwood were clearcut in 1988 to trigger understory regeneration, thereby improving wildlife habitat and food production. One dense stand

of small pin oak was selectively thinned in 1988 to improve acorn production.

Songbird surveys were conducted at five points in these areas during May, July, August and September of 1986 to obtain pre-timber harvest data regarding bird species use of the units affected. Four more surveys at these five points were conducted during May, June, August and September of 1987-1989 for post-timber harvest data. The surveys were conducted for the Corps by Pete Peterson, an ornithologist from Davenport, IA.

Bird species diversity has increased since the 1986 surveys, from 51 species in 1986 to 64 different species in 1989.

8. Game Mammals

Beaver lodge transects are conducted annually to determine beaver populations on the District. Two transects along each side of the river are surveyed in each of the three navigational pools, according to the Savanna District Wildlife Inventory Plan. The transects include a 20 percent sample of habitat in Iowa and Illinois portions of the refuge.

Table S-7 - Savanna District Beaver Lodge Transect 1985 - 1989

Pool	1989	1988	1987	1986*	1985
12	22	30	17	29	30
13	21	35	36	33	30
14	18	16	12	23	20
Totals	61	81	65	85	80

* Extrapolated data due to incomplete transects because of early ice cover.

The 61 lodges counted in the District represents a 24.7% decrease from the 1988 lodge transect (Table S-7).

White-tail deer are found throughout the bottomland hardwoods areas along the River, but the majority exist off the refuge in upland bluff areas. Fair numbers of deer are found in the Pleasant Creek, Beaver Island and Wapsipinicon Bottoms in Iowa and also in the Marcus Bottoms, Menominee Slough and Potter's Marsh area in Illinois.

10. Other Resident Wildlife

Three successive mild winters, plus a fairly dry spring contributed to an increase in upland wildlife use on the District this year. Ring-necked pheasant, bobwhite quail, and cottontail rabbit were seen much more frequently in the grassland tracts during the spring, summer and fall. A covey of 17 bobwhite quail was sighted in grassland tract 6 on March 22, having survived the prior hunting season and winter weather. The warm season grasses planted in past years on the District have now become well established, providing valuable winter cover, as well as nesting habitat for upland game and songbirds.

Wild turkey are also increasing in number in Illinois and Iowa portions of the District. Most turkey observations are made off-refuge in bluff areas of Jackson County, IA, and Carroll and Whiteside Counties, IL, but in 1989, turkey were also sighted in the bottomland areas of Pleasant Creek and just south of the Rock Island County line.

11. Fisheries Resources

To control rough fish populations in Spring Lake and to provide an economic benefit to area commercial fishermen, 11 commercial fishing permits were issued in 1989. Fishing interest in Spring Lake has dropped off dramatically in recent years. The District issued an average of 41 permits from 1981 to 1986, including a high of 50 permits issued in 1983. Beginning in 1988, a $5.00 fee was assessed per permit to cover administrative costs, consequently only 11 permits were issued. The fee may be one of the reasons for the low interest in fishing Spring Lake, but the decrease may have also been due to the low water levels and dense aquatic plant growth which existed in Spring Lake throughout 1989. The low harvest recorded in 1988 (Table S-8) may have been reflective of the low water conditions experienced that year also. Permit holders are required to report their catches annually as part of the permit. If a report is not received for two consecutive years, they are refused a permit for the following year.

Table S-8 - Spring Lake Commercial Fishing Harvest 1985- 1989

	1989	1988	1987	1986	1985
# of Fish Reports Received	6	7	11	13	11
Pounds by Species					
Buffalo	3,745	110	7,598	28,825	10,670
Carp	10,770	40	37,164	47,545	100,745
Drum	6,033	790	13,600	21,975	12,197
Total Pounds	20,554	947	58,362	98,345	123,612

The Fisheries Assistance Office in Winona has been conducting fish inventories and turbidity sampling of Spring Lake and Plum River/Savanna Slough respectively, to form a database prior to habitat modifications which will occur when the proposed Spring Lake Environmental Management Plan project begins. The fisheries inventories have been conducted twice each summer since 1988.

16. Marking and Banding

The Savanna District had a 1989 pre-season banding quota of 300 wood ducks; 100 each of adult males and females, and 50 hatching year ducks of each sex. Preparation of three banding sites by clearing vegetation was done during June, and baiting with shelled corn was initiated in July. The three sites utilized included the Spring Lake crossdike, a beach on lower Spring Lake, and several floating trap sites at Potter's Marsh. A walk-in land trap was utilized on the cross-dike, while a rocket-net was used in lower Spring Lake unit, and four floating traps were used in Potter's Marsh.

The rocket-net provided 220 wood ducks, the floaters captured 67 ducks and the land trap yielded 2 wood ducks, for a total of 289 wood ducks banded. The age/sex breakdown was as follows: 54 AHY males, 28 AHY females, 148 HY males, 59 HY females.

H. PUBLIC USE

1. General

Plans are progressing for a proposed Upper Mississippi Refuge Interpretive Center. In addition to interpretive and environmental education functions, the facility would house Refuge Complex, Headquarters, Winona District, and Fisheries Assistance Offices. The State of Minnesota Legislative Commission on Minnesota Resources awarded the city of Winona $60,000 to conduct a market analysis and prepare conceptual architectural plans and interpretive programs for the facility. The city would like to donate land on the waterfront levee for the project, have the State of Minnesota contribute $800,000 for design, and let the federal government contribute the estimated $6 million for construction of the approximately 27,000 square foot building.

Refuge staff are assisting the city and contractors in the current market analysis and conceptual planning for this much-needed facility.

Headquarters and McGregor District staff have met to develop concepts for the development of the "Potosi Pier" -- a narrow strip of land extending a half mile out into refuge backwaters which now is used for fishing, small-boat launching, and sight-seeing. The potential exists to make this the best interpretive/wildlife observation site in the central part of the refuge accessible without a boat.

Headquarters staff prepared concepts for potential uses for the Vince Philipps property in East Dubuque, Illinois. Mr. Philipps has a valid permit to dredge through a refuge backwater to provide access for barges to a barge-loading facility proposed for construction on his property. Recently, he has seemed amenable to the idea of the Service acquiring the property and developing the site for environmental education, interpretation, and wildlife-oriented public use. Realty is currently appraising the site.

3. Outdoor Classrooms - Teachers

The focus of refuge support for environmental awareness building in surrounding communities continued to be schools and local teachers. In January, an interagency workshop was co-sponsored with the Minnesota Department of Natural Resources and Winona State University on Project Wild. Refuge staff participation in Minnesota District 861 curriculum evaluation and planning was concluded in 1989. Among the recommendations published with the 1988-89 school calendar and circulated to all parents:

a. That a permanent committee be formed to guide the development and coordination of the K-12 environmental education program.

b. That instruction be provided to staff at all levels on the integration of environmental issues and concerns in the curriculum.

c. That ways be sought to expand beyond the limits of science and social studies for multi-disciplinary treatment of environmental issues.

d. That the district make better use of local environmental specialists and take advantage of learning sites like the Mississippi River and Weaver Bottoms.

e. That the district encourage more schools to take part in overnight environmental experiences.

f. That the district more clearly articulate the K-12 curriculum as a basis for future improvement and growth in environmental areas.

g. That the district locate or design a method of assessing student understanding of environmental concepts and attitudes.

Two possible platforms for future environmental awareness building in the Winona area are the proposed Refuge Interpretive Center, and the Prairie Island Nature Center, located in the Winona City limits adjacent to a refuge natural area. Meetings were attended throughout the year on both projects.

The Interpretive Center has entered the serious conceptual design phase, while trail and interpretive media development was completed at Prairie Island by an interagency coordinating committee, with assistance from the Southeastern Minnesota Initiative Fund. Teacher workshops were planned following Earth Day.

6. Interpretive Exhibits/Demonstrations

The completion of the refuge sign plan has freed up some staff time to actually develop interpretive signs for the refuge. In an attempt to speed up the process of interpretive sign design and fabrication, headquarters and district staff worked together with a local advertising agency to develop interpretive signs for a three-panel kiosk at Weaver Landing and signs attempting to alleviate confusion about hunting, trapping, and fishing regulations at Goose Island in Wisconsin.

The ad agency did layouts, typesetting, original art and maps, and color separations for the three Weaver Kiosk panels for $750 (see Winona District report for photos). They did not make any money on the project, but that was in part due to working through the learning curve. As we utilize their services in the future, their pricing will be more realistic, and they will have had experience preparing layouts for silkscreening.

Headquarters and Winona District staff met with personnel from the Minnesota Department of Transportation (MNDOT) to obtain permission to install interpretive signs at MNDOT pull offs along U.S. Highway 61 which overlook the refuge. Permission was granted and the first sign installed. Several of these 3' x 6' overlook interpretive signs are already in place in state and county parks along the river, and 23 more,

in addition to 8 - 2' x 4' signs are on order to help increase Refuge visibility.

Refuge Complex, Headquarters, and Winona District personnel staffed an exhibit at the Winona Sport and Boat show, attended by a record 12,000 people.

ORP Schneider conducted a tour of approximately 100 miles of the refuge for 50 professional interpreters attending the National Association of Interpreters annual workshop held in St. Paul, Minnesota.

On November 5, the refuge co-sponsored the 6th annual Swan Watch at Weaver Bottoms. Over 300 people stopped to view tundra swans, as well as, canvasback ducks and other waterfowl with the aid of spotting scopes and binoculars set up by the refuge staff. Refuge Biologist Cheap answered questions about swan biology and migration at this popular event.

8. Hunting

The Potter's Marsh hunt is the most tightly controlled waterfowl hunt on Upper Mississippi Refuge. In the past, hunters submitted applications by mail for a computer drawing for one of 60 blind sites. Winners could name up to three partners, who would build a blind to refuge specifications at their designated site. The permit allowed the hunter and his/her partners priority blind rights for the entire season.

The hunt is very popular, with up to 1,600 applications being received for the drawing. Some abuses of the system were known to be occurring, in particular the practice of entering numerous names of non-hunters into the drawing. In recent years, some pressure was applied on refuge staff to change the system from a one-year blind allocation to a two-year system. Refuge staff felt that this would further limit opportunity. A questionnaire was mailed to 823 hunters, to sample their opinion on ways to improve the hunt, and a public meeting was held in Savanna, Illinois to discuss issues with interested hunters face-to-face. It was determined that the one-year blind allocation should be retained, but that some other things could be done to improve quality of the hunt and better distribute opportunity.

Hunters will be required to apply for the drawing in person, to eliminate non-hunters from the drawing. Blind sites will be reduced from 60 to 50, to eliminate non-productive sites. The drawing will be held earlier in the season to allow hunters to construct blinds during cooler weather and higher water. Better maps will also be provided to hunters. A trapper using a very loud airboat who has disrupted hunting in recent years will only be allowed into the marsh during specified times. A number of other minor improvements to the hunt will be implemented.

Although an outcry was anticipated over our retaining the one-year hunt and elimination of the mail-in application, the new system seems to have received widespread acceptance by the hunters. We like to think that this was because of the public participation throughout the planning

process. We await further developments as we approach implementation during the 1990 hunting season.

12. Other Wildlife Recreation

Headquarters staff assisted Wisconsin Department of Natural Resources (DNR) staff in the development of criteria for canoe trails proposed for backwaters of the Mississippi River.

16. Other Non-Wildlife Recreation

Since the Corps of Engineers ceased indiscriminate disposal of dredged material on islands in the Mississippi River during the mid-1970's, many of the sand beaches have deteriorated from the perspective of refuge recreation users. Through a lengthy and complicated planning process involving the Service, the Corps, and the states, certain beaches were identified in Beach Development Plans for each pool to either receive sand replenishment during channel dredging operations, or have existing sand shaped and encroaching vegetation, such as poison ivy, removed to enhance recreation.

Refuge staff monitored Corps operations as they placed 15,000 yards of sand from an emergency dredging operation onto Dresbach Island in Pool 7, and shaped the sand with bulldozers. Simultaneously, the Wisconsin DNR, operating under a special use permit issued by the refuge, hired a contractor with a small bulldozer, to reshape several beaches on islands in Pools 7 and 8. In addition to sloping the beaches gradually to the water and removing vegetation, the contractor made small "pocket" campsites beneath tree cover. Final touch-up work was done by hand by the Wisconsin Conservation Corps.

An on-going problem on the Refuge is lack of "hard" data on recreation use. During the summer or 1989, the Channel Maintenance Forum Recreation Work Group, involving the Corps, the Service, and the states of Minnesota, Wisconsin, and Iowa, coordinated with the National Park Service 15 flights of the St. Croix and Mississippi Rivers, including Pools 4 through 10 of the Refuge, to photograph recreation boat use. Due to bad weather, only 7 flights occurred over the Refuge. Aerial photos are still being analyzed, however as many as 438 water craft have been counted in one pool (Pool 10) at one time. Additional flights are being planned for 1991.

During river patrols this year, it was alarming to note the dramatic increase in size and power of recreation boats being used on the river. Sixty-foot boats are not uncommon on the river, and deep-V hull craft in the 18-25 foot range probably make up the majority of boats along the main channel during the summer season. These craft throw up huge wakes, and operators seem oblivious to the safety of others. Our 17-foot Whaler is sadly outclassed. The high-powered "cigarette-boats" made popular by Miami Vice and capable of speeds in the 70 miles per hour area are also becoming more common.

Although conditions are crowded, if not dangerous, during heavy-use summer periods, the trend continues to be definitely in the upward direction for the larger recreation craft. Recreation craft lockage through locks 4, 5, 5A, and 6 increased from 24,120 in 1980 to 44,015 in 1988, an increase of 82%. Just for Pool 4, eight marinas have permit applications pending which would increase marina slips, mainly for larger boats, by 1,282 from the current total of 1,306, nearly doubling capacity of Pool 4 marinas.

Probably of more concern from their impacts on wildlife are the "jet-ski" type of personal watercraft and other powerful jet boats which, because of their propulsion system requiring no propeller, are getting back into wood duck brood habitat and fish spawning areas previously inaccessible except by canoe or airboat. Discussions are occurring through the Channel Maintenance Forum and the Upper Mississippi River Conservation Committee concerning ways to deal with these threats to fish and wildlife resources and to the safety of wildlife-oriented recreationists.

Since last year, the Refuge and the Corps of Engineers have attempted to be more consistent in enforcement of requirements for special use permits for group events held on federal lands along the river. In general, when faced with insurance, sanitation, and other requirements, these events have sought non-federal lands for their events.

One radio station was contacted by headquarters staff to inform them of permit requirements. In an effort to promote their radio station, they were setting up kegs of beer on refuge beaches for free distribution to the public. Since they were not charging for the beer, they felt that they did not need a permit. They were informed that if they were to continue the operation, that they would suffer penalties through the federal court system, and that if any participants were drowned as a result of participation in their event (there have been drownings before associated with similar functions), there could be some serious liability complications for the radio station and for the program director who was coordinating the event.

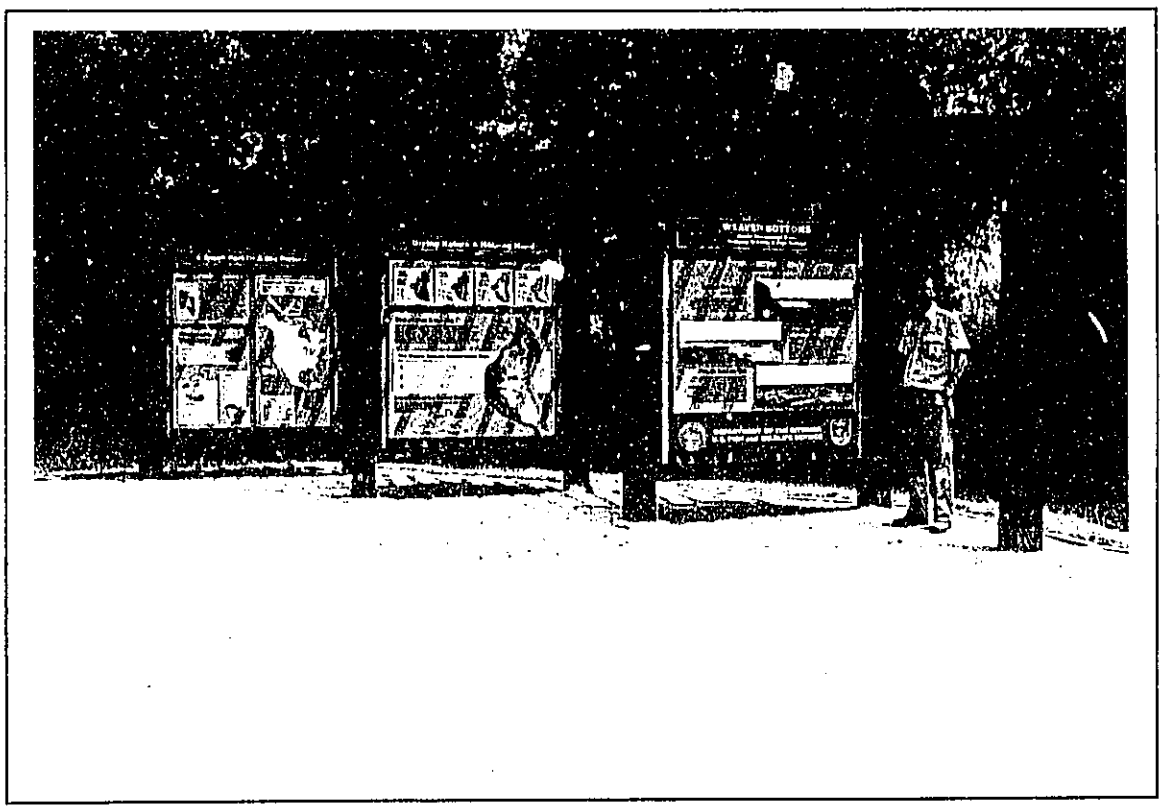
H. PUBLIC USE

6. Interpretive Exhibits/Demonstrations

Weaver Panels

After nearly two years in the planning, design and fabrication phases, the Weaver interpretive panels were finally completed and mounted on the three panel kiosk at Weaver Landing on July 24. Kathy Cheap provided the initial draft art work for the panels while Hank Schneider drafted the text. A local firm, Rob Linden Advertising, was hired to do the camera-ready art and color separations and the Regional Sign Center constructed the panels. The first two panels basically tell the story of how the habitat at Weaver Bottoms has deteriorated due to flooding and sedimentation and the restoration, rehabilitation and monitoring efforts that are currently underway. The third panel discusses the critical role of Weaver's wetlands to fish and wildlife on the refuge and in the entire region.

Kathy Cheap, Hank Schneider and the crew at the Regional Sign Center deserve credit for a very fine job on this project.

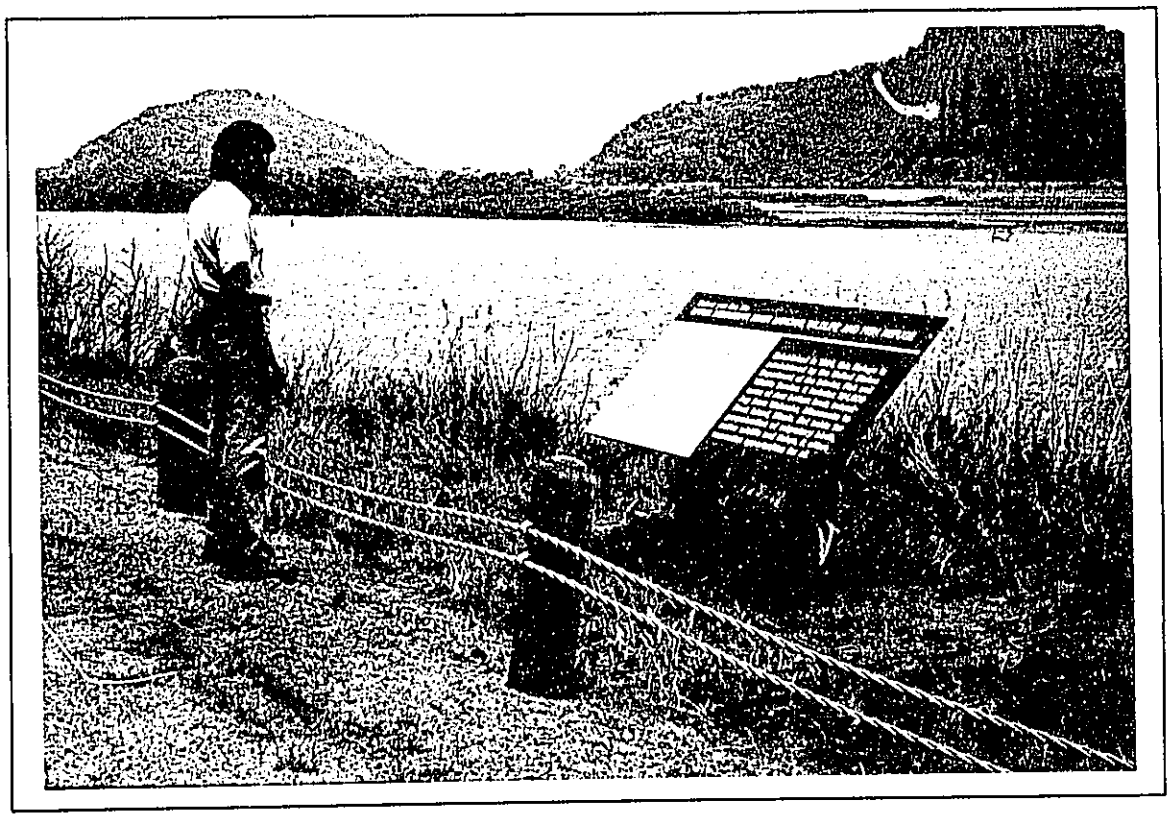


Hank Schneider and three-panel kiosk at Weaver Landing.
(8/89, RD)

H. PUBLIC USE (Continued)

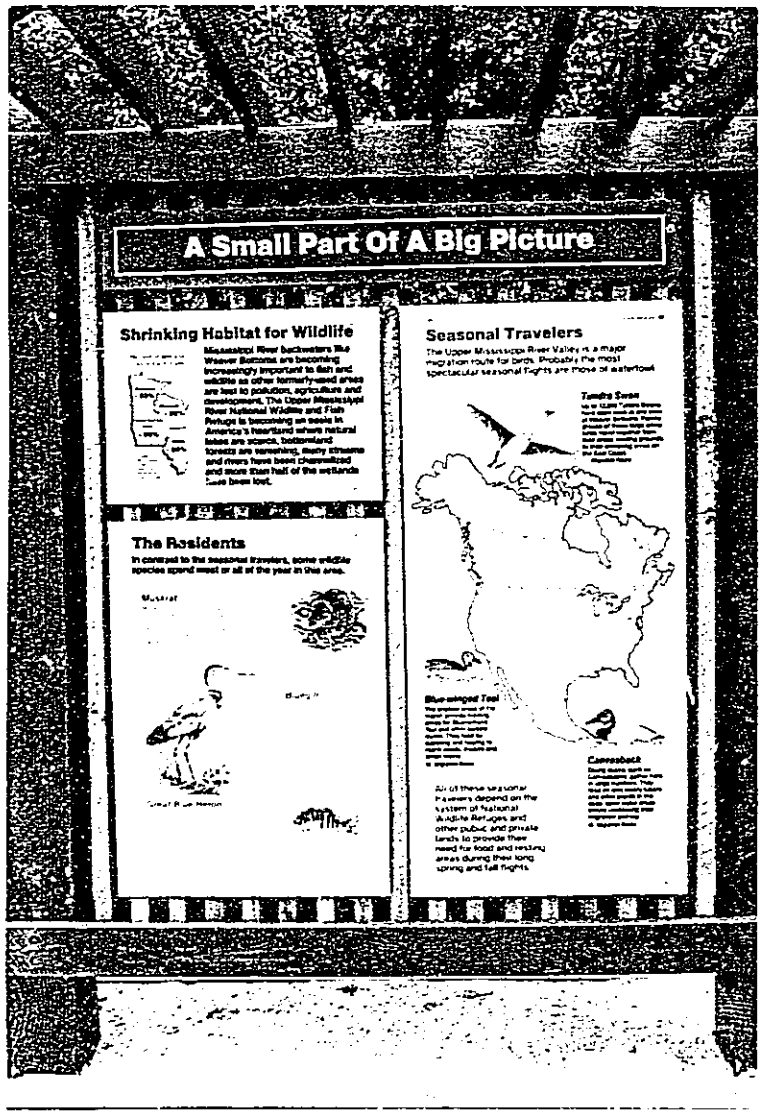
Refuge Recognition Panels

During a house-cleaning effort at the maintenance shop, three brand-new refuge recognition panels were found in storage. The 3'x6' panels were intended to be placed at viewing areas on the District. Maintenance worker Petschow devised a mounting system for the panels which were erected at the following locations: 1) Buena Vista overlook on the bluff above Lock and Dam 4; 2) the observation platform at Weaver Landing; and 3) along Highway 61 south of Winona, Minnesota.

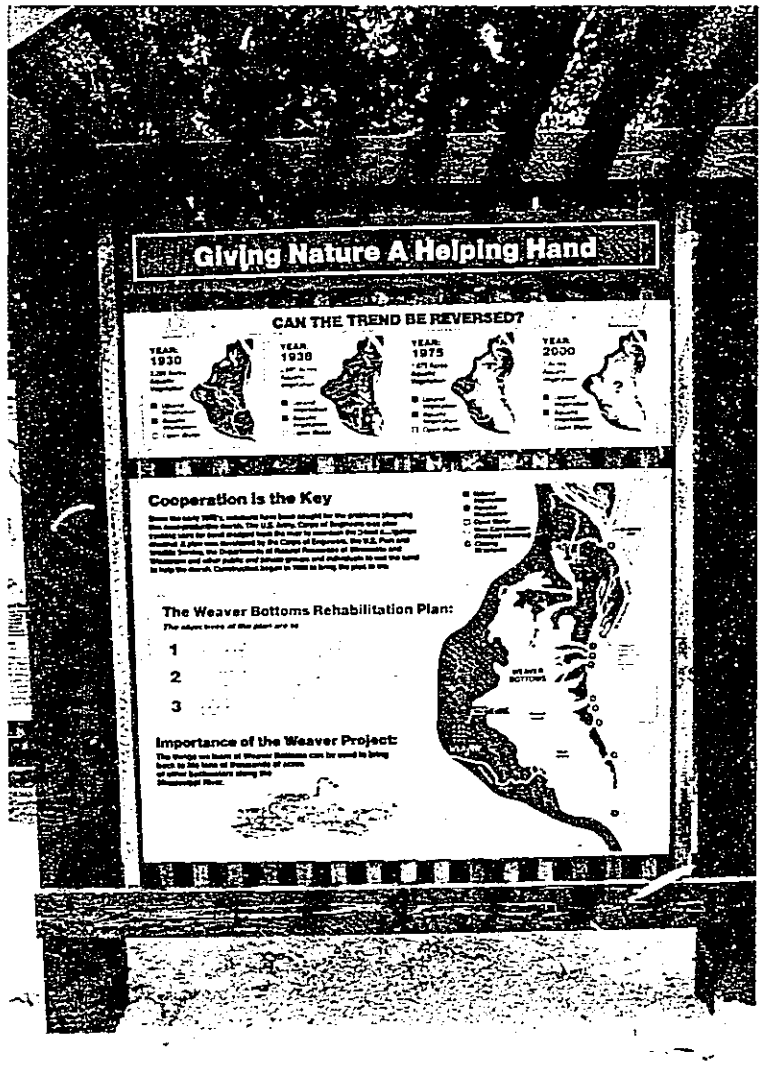


Maintenance worker Petschow viewing recognition panel at Highway 61 wayside. (8/89, RD)

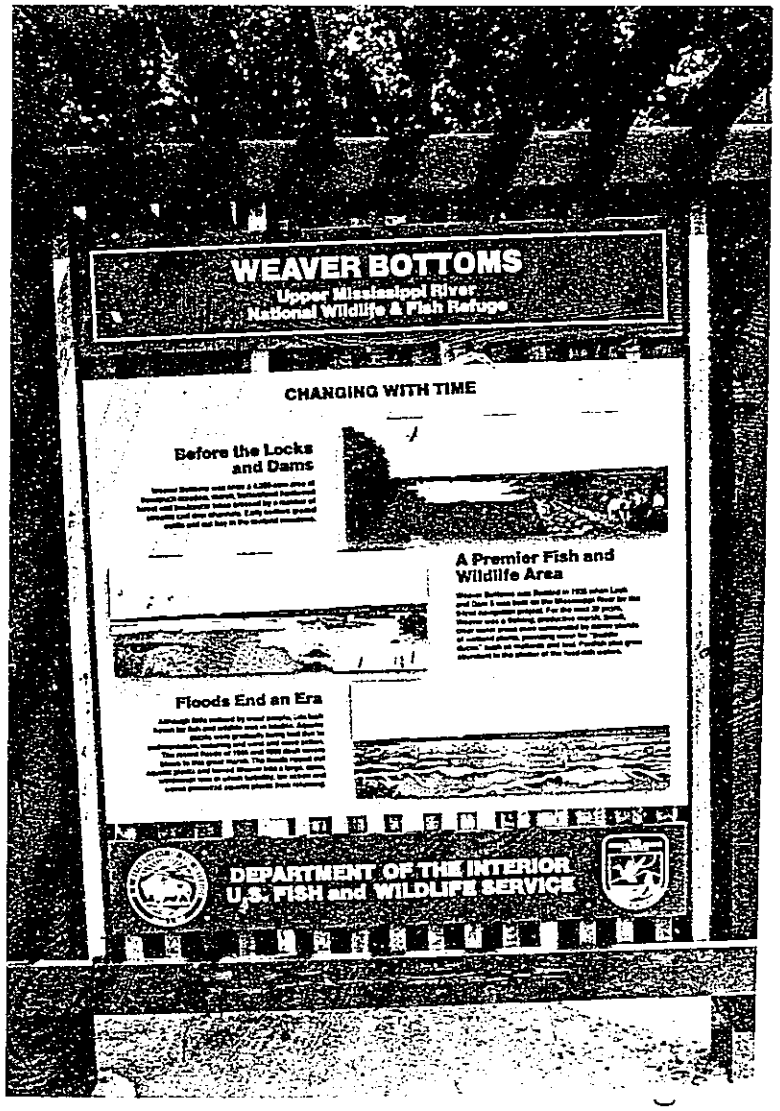
Winona



Panel 3



Panel 2



Panel 1

Weaver kiosk panels. (7/89, HS)

H. PUBLIC USE (Continued)

7. Other Interpretive Programs

Julison participated in a slide presentation on bald eagles with Minnesota DNR personnel Joan Galli and Dave Palmquist at the Winona Holiday Inn on March 11.

Drieslein presented three programs at the Environmental Awareness Day event at Trempealeau Elementary School on March 22. Numerous speakers from other Federal and State conservation agencies and the private sector took part in the activity.

Cheap presented a poster on the construction and planting of Swan Island in Weaver Bottoms at the Mississippi River Research Consortium in La Crosse, Wisconsin on April 27.

Drieslein presented a program on waterfowl banding at the Ducks Unlimited Greenwing Jamboree at Dodge, Wisconsin on September 9. More than 150 youths participated.

8. Hunting

Waterfowl Hunting

The waterfowl season opened at noon on October 7 in both Wisconsin and Minnesota. Both states went to a daily sunrise opening for the remainder of the thirty day season which closed on November 5.

A large Canada goose population in the Mississippi Flyway allowed for liberal goose seasons in Minnesota and Wisconsin. The goose season in the southeast zone of Minnesota ran from September 30 to December 8 and in the Wisconsin Mississippi River subzone from October 7 to December 22 with a one-week closure from October 10 to October 18.

Popular waterfowl hunting areas on the refuge showed a general decrease in hunting pressure after the first week over 1988 hunter numbers. The steadily increasing Canada goose population in the Mississippi Flyway may have caused many duck hunters to turn strictly to goose hunting. Popular goose hunting areas, particularly the Weaver Bottoms and Robinson Lake in Minnesota and Spring Lake in Wisconsin, had steady goose hunting pressure from the season openings until freeze up in early December.

Hunter bag checks conducted throughout the season showed the species most often harvested to be the mallard, wood duck and green-winged teal. Table W-7 illustrates that the hunter success ratio for 71 hunters checked was .94 ducks taken per hunter. This indicates a 6% drop in hunter success in comparison to 1988 bag checks.

H. PUBLIC USE (Continued)

Table W-7 Duck Species Found in 71 Hunter Bag Checks From 10-7-89 to 11-5-89

Species	Number	Percent of Bag
Mallard	20	30.0
Wood Duck	18	26.8
Green-winged Teal	17	25.3
Blue-winged Teal	4	5.9
Pintail	3	4.4
Widgeon	2	2.9
Gadwall	1	1.4
Ring-necked Duck	1	1.4
Scaup	1	1.4
Total	67	

9. Fishing

Sport fishing is the most popular recreational activity on the refuge. An estimated 347,000 people fished on the Winona District during 1989. The most sought after game fish included walleye, bluegill, bass and crappie. Interviews with fishermen indicated that the late spring and early walleye fishing was excellent.

Low water conditions, as was the case in 1988, forced most of the fishermen to fish on the main channel and in the deeper side channels instead of in backwater areas. Bass tournaments sponsored by various sportsmen's clubs, were held at different locations on the District on almost every weekend of the summer.

10. Trapping

Trapping is extremely important on the District for both recreation and economic purposes. The main species trapped are muskrat, beaver, raccoon, fox and mink. Trapping pressure is generally governed by fur market prices. When prices are high, trapping pressure is high; when prices decline, pressure falls and trapping becomes more recreation oriented.

Trapping permit sales for the District in 1989 were 78 for Minnesota and 72 for Wisconsin for a total of 150. This represents a 33% drop in trap tag sales compared to 1988. This drop can most likely be attributed to extremely low fur prices for muskrat and raccoon. Muskrat hides averaged at about $1.00 with raccoon hides selling for about $8.00 each.

H. PUBLIC USE (Continued)

11. Wildlife Observation

The wintering bald eagle population and the fall tundra swan migration are the two main wildlife spectacles that attract thousands of wildlife enthusiasts to the District each year.

A bald eagle watch was conducted by refuge staff and Joan Galli, Minnesota DNR non-game specialist, on March 11. One hundred and twenty people showed up for the event. The eagle watchers were transported by bus from Winona to eagle wintering areas on the District. The main stop was made at Reads Landing at the north end of the refuge where the largest number of wintering bald eagles congregate.

A swan watch was held on November 5 at the mouth of the Whitewater River in Weaver Bottoms. An excellent turnout of 350 people were present for the watch which was conducted by biologist Cheap of the FWS and Minnesota DNR nongame wildlife specialists Bonnie Brooks and Joan Galli. The tundra swans also cooperated for the watch - nearly 700 were resting and feeding in the marsh.

Several hundred wildlife observers utilized the newly constructed observation deck at Weaver Landing. The deck overlooks a portion of the Weaver Marsh where waterfowl can be observed during the spring and fall migration. The deck was constructed during the summer of 1988.

13. Camping

Primitive camping is allowed throughout the District except at refuge boat accesses or parking areas. The majority of campers use non-vegetated portions of sandbars and islands accessible by boat from the main navigational channel.

14. Picnicking

Picnicking is generally associated with boating and/or fishing on the District. Access areas, such as Halfmoon Landing and river islands are popular day trip destinations.

15. Off-Road Vehicling

Off road vehicling is not allowed on refuge lands. Snowmobiles and other motorized vehicles are allowed to travel on the ice. There is a large amount of illegal off-road use that takes place mainly near Winona and Minnesota City. Snowmobile and all-terrain vehicle (ATV) trespass continues to be a serious problem on several areas along the Prairie Island dike road. Vehicle regulatory signs have been placed at all of the access points but the only real deterrent seems to be weekend patrols. A considerable amount of illegal ATV use has continued to take place on refuge islands bordering the main navigation channel.

H. PUBLIC USE (Continued)

16. Other Non-Wildlife Oriented Recreation

Recreational boating and jet skiing are the main forms of non-wildlife oriented recreation that takes place on refuge waters and adjacent waterways. Most of the boating is done on the main channel and connecting side channels and has direct impacts on refuge lands. Recreational boating has greatly increased during recent years causing disturbance to all aquatic related wildlife. The large wake created by power boats and cruisers in accelerating shoreline erosion along the main channel and deep backwater sloughs.

Jet skis, a fairly recent introduction on the river, are causing disturbance to wildlife in backwater areas. Jet skis can run in extremely shallow water and are allowing access to remote backwater sloughs and marshes, where wading birds, waterfowl, aquatic mammals and other forms of aquatic life reside. Jet skiers have recently begun to travel deep into remote areas of the Nelson-Trevino Natural Area near Wabasha, Minnesota. This 2,000 acre natural area offers prime nesting and brood habitat for wood ducks and has a large heron/egret rookery located in the center of it.

Because of the fact that all waters in the river basin are designated by the Army Corps of Engineers as navigable, the U.S. Fish and Wildlife Service has no authority to regulate or restrict boat travel. This factor severely limits the Service's ability to restrict aquatic activities that are disturbing to wildlife. The uncontrolled recreational boat and jet ski use not only negatively impacts refuge lands and wildlife, but also could jeopardize the safety of people using the refuge.

With the increase in recreational boating comes a demand for an increase in marinas. During 1989, 13 marina proposals were initiated on the Upper Mississippi River from St. Paul, Minnesota to Pepin, Wisconsin. The proposed marinas could add about 2,500 boat slips in an area that already has about 3,000 existing marina slips. An increase in boat slips of this magnitude would greatly increase recreational boat traffic on the already overcrowded northern portion of the refuge.

Both Minnesota and Wisconsin Department of Natural Resources and the Army Corps of Engineers with assistance from the Minnesota-Wisconsin Boundary Area Commission have begun work on an environmental review to determine and evaluate site specific impacts that an increase in marinas would cause. Aerial photographs taken during the summer of 1989 from St. Paul to the lower end of Pool 4 will be used to document current levels of recreational use.

17. Law Enforcement

Training

Cheap, Drieslein and Julison all attended Law Enforcement Refresher Training and qualified with the Service revolver twice during the year.

H. PUBLIC USE (Continued)

Waterfowl Season

Duck seasons in both Minnesota and Wisconsin opened this year at noon on Saturday, October 7. District staff concentrated their enforcement efforts on lower Pool 5A during the early portion of the season. As expected, many hunters failed to comply with the sunrise shooting hours provision, particularly on the morning of October 8, 1989 when seven citations for early shooting were issued. Three of these cases involved juveniles and were referred to County Court for disposition. A total of eleven violations were processed during the season, eight involving early shooting, two for stamp or license violations and one for exceeding the legal possession limit.

Illegal Structures

In last year's report, we listed twelve illegal structures which were involved in various stages of negotiations regarding removal from refuge lands. As of December 31, 1989 all but two of these cases had been resolved. In these two instances, both individuals refused to comply with removal deadlines. Special Agent Kevin Adams is assisting with disposition of the remaining cases, one of which involves a wooden deck attached to a residence. Our intention is to obtain a court order directing the owner to remove the encroachment at his own expense.

Other

An incident involving illegal cutting of trees on refuge lands near Minneiska, Minnesota was investigated by refuge staff in May, 1989. An area of about 75 by 400 feet along the Soo Line Railroad was essentially clearcut to enhance the view of the river from residences and a few local businesses across Highway 61. However, after an examination of railroad ownership documents, it was determined that most of the cutting had actually occurred on railroad property. We moved our signs back to the refuge boundary and the responsible parties settled the matter by agreeing to clean up the down trees and debris on refuge property. No citations were issued.

H. PUBLIC USE

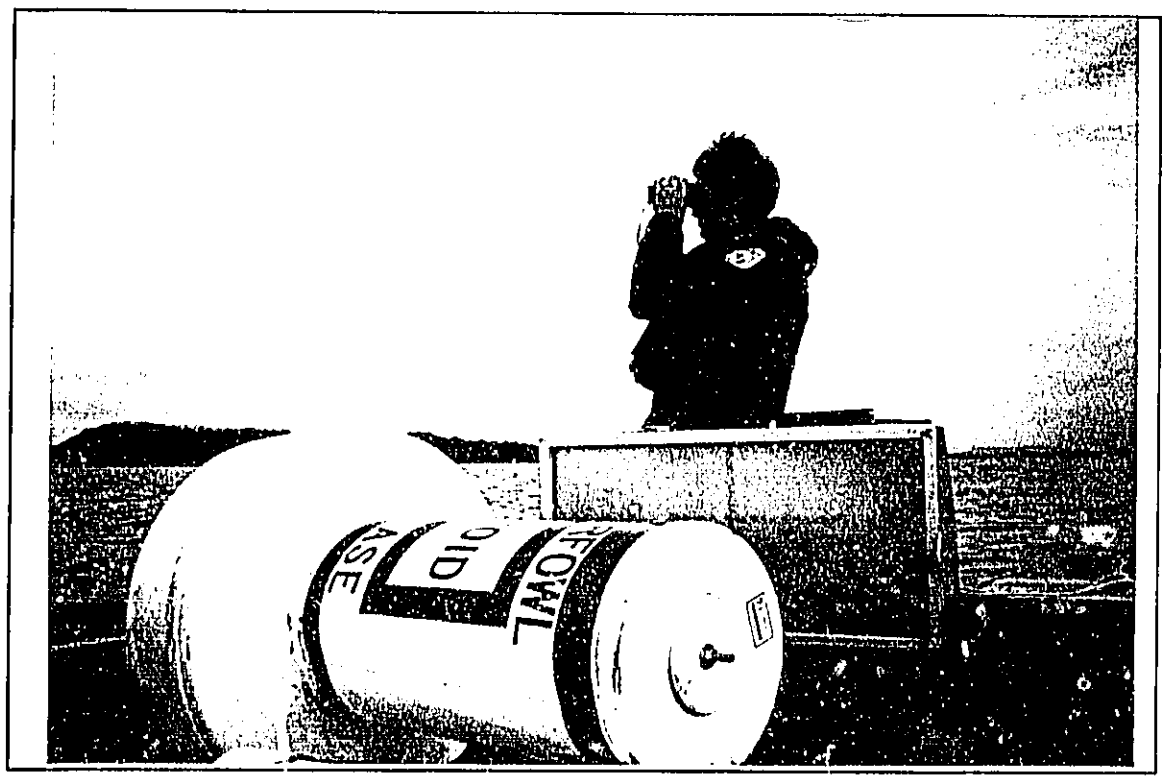
1. General

More than 90,000 people living in the greater La Crosse area are only minutes from the Refuge. This accessibility is reflected in the amount of use the District receives annually, primarily through pleasure boating, camping, picnicking, hunting, fishing, and wildlife oberservation.

In addition, the interstate and state highway systems offer the traveling public many opportunities to view the scenic Mississippi River. Two state visitor centers, numerous overlooks, and two interstate bridges offer exceptional viewing opportunities.

7. Other Interpretive Programs

For the fourth consecutive year, a voluntary "Waterfowl Avoidance Area" on Lake Onalaska was established and delineated with bouys (See Section D.5. for details). Publicity for the program was generated through the use of an exhibit at Nelson Park, the news media, and leaflets.



Bill Thrune placing buoys used to mark the "Waterfowl Avoidance Area" boundaries. (L. Wlosinski)

Leaflets describing the avoidance area were revised and reprinted courtesy of the Brice Prairie Conservation Association and La Crosse County UW-Extension Cooperative Services.

COE personnel from their office in La Crescent, MN provided assistance in setting-out the buoys.

8. Hunting

With the exception of two closed areas and one "no hunting area", the entire District is open to hunting in accordance with state and federal regulations. Closed areas on the District are closed to all hunting until the end of duck season when they open for trapping and all hunting except for geese. The "no hunting area" is located south of Goose Island in Pool 8. About 13,290 acres are in closed areas on the La Crosse District.

Waterfowl hunting is the most popular type of hunting on the District. This year's dates for the duck season in Wisconsin were October 7 through 10 and October 18 through November 12. Duck hunters on the Minnesota side enjoyed a straight 30-day season beginning October 7 and ending November 5. The goose season in each state was considerably longer.

Assistant District Manager Thrune presented a program on waterfowl banding to a group of 30 Greenwing Day participants at the La Crescent, Minnesota Gun Club on September 9. On September 16, District Manager Nissen attended a Greenwing Day program held on Goose Island.

Biological Aid Wlosinski and Ruth Nissen, a Volunteer, bag checked 86 hunters that used the Upper Brice Prairie Boat Ramp on opening day, (October 7), and checked 62 hunters at the same landing the afternoon of October 18 (reopener). Hunter success rates averaged 2.0 birds each day. Hunters using this landing generally hunt the upper end of Lake Onalaska. Hunter success dropped after the opening days, but was still fair to good much of the season.

Laurie Wlosinski interviewing two duck hunters on opening day.
(R. Nissen)

The number of goose hunters in this area is on the increase because of the longer seasons and rapidly increasing goose populations.

Although the hunter success rate is noticeably lower than on surrounding uplands, deer hunting with shotgun and archery equipment remains popular on the wooded islands.

Small game hunting for squirrels and rabbits is available in accordance with state regulations. The number of visits to the District for this purpose is low, possibly because blocks of suitable habitat are widely scattered on the floodplain.

9. Fishing

Fishing and boating account for the largest percentage of public use on the District. Fishermen alone accounted for an estimated 230,000 visits in 1989 with walleye, northern pike, bass, crappie, perch, and sunfish the most sought after gamefish.

Over 30 boat ramps provide easy access to most areas of the District. When winter arrives, almost all the ramps become access points for any one that wants to drive to their favorite fishing spot or just take a spin on a frozen lake.

The third annual National Walleye and Northern Pike Fishing Tournament was held in La Crosse, WI from March 25 through April 15. A total of 1434 people from as far away as Wyoming entered the contest, which was conducted on Pools 5 through 9. Only fish that were brought in alive

that could be released alive were weighed. A total of 1293 walleye weighing 3570 pounds (largest 11 lbs.) and 1188 northern pike weighing 7385 pounds (largest 19.6 lbs.) was brought in to the weigh station.

In addition to sportfishing, commercial fishing also occurs on the District throughout the year. The state regulates the commercial fishing industry and require periodic reports of fishing activity. In Wisconsin alone, over one million pounds of fish were taken from Pools 7 and 8 in 1989. Carp, buffalo, sheepshead, and catfish accounted for more than 95% of the commercial harvest.

10. Trapping

Area trappers using the Refuge are required to obtain a trapping permit and tags for their traps. Forty tags are issued per trapper at a cost of $5.00.

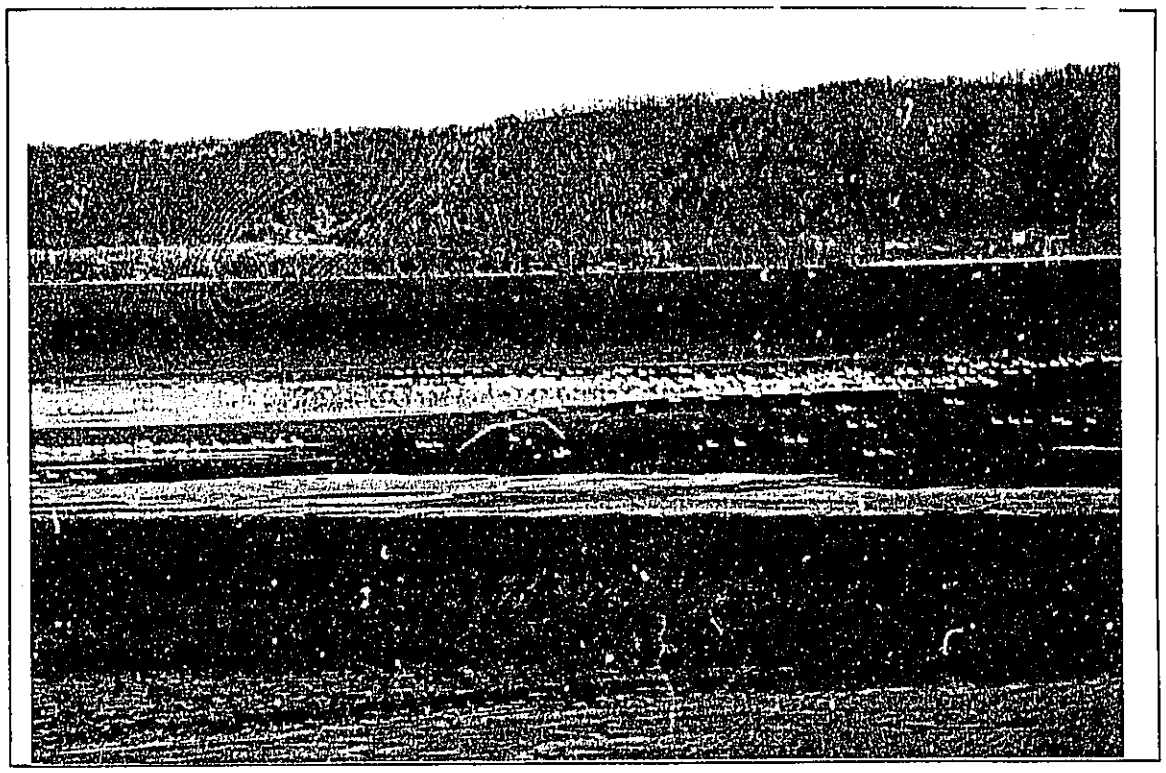
The 1989-90 trapping season opened in Minnesota on October 28. In Wisconsin, the inland trapping zone opened on October 28 and the Mississippi River zone opened the day after duck season closed, or on November 13.

Trapper interest, as indicated by the number of trapping permits sold, dropped significantly this year. In 1987 and 1988, this District sold 419 and 307 permits, respectively. The number dropped to 184 in 1989. Low fur prices were the biggest factor for the drop in the number trapping permits issued. Of note, average fur prices for muskrats in this area dropped from about $2.28 in 1988 to $1.08 in 1989.

In November, District personnel investigated a complaint from an Onalaska resident and the Humane Society about a live beaver that was caught in a trap. Upon investigating, the "beaver" turned out to be an otter who was not at all happy with the situation. Because the otter season was closed, the animal was released. When the trapper stopped in the office to pick up his trap, he was advised to use more caution when making sets.

11. Wildlife Observation

Spring and fall waterfowl and eagle migrations offer excellent wildlife viewing opportunities on the District. The best observation points include the causeway between La Crosse, Wisconsin and La Crescent, Minnesota; at O.L. Kipp State Park and Apple Blossom Drive near La Crescent; and a scenic overlook near Genoa, Wisconsin.



Swans, ducks and geese using Pool 8 can be seen from highways along both sides of the river. (R. Nissen)

13. Camping

Campers on the Refuge range from those equipped with tents to those in large houseboats that use any sandbar that provides good TV reception. Thick poison ivy growth limits most campers to dredge spoil sandbars along the main channel. Easy access, clean sand, good fishing and swimming, and no user fees are probably the main reasons the river is so attractive to campers. Unfortunately, many of the campers are not aware that they are using a national wildlife refuge.

15. Off-Road Vehicles

Motorized land vehicles including snowmobiles and all-terrain vehicles are prohibited on Refuge lands except on designated public roads and on ice over navigable waters.

Within the last two years, problems with vehicle trespass have developed on Red Oak Ridge Island and along the Lone Tree access road. The island has become a favorite gathering spot for all-terrain vehicle enthusiasts. Trees have been cut for bonfires, an ATV trail system has been developed that has been used often enough to cut ruts, and a large amount of litter left for clean-up during the spring.

Why walk to your favorite ice fishing spot when you can drive over trails like this! This trail was made into Mud Lake.
(B. Thrune)

"Leftovers" from a party on Red Oak Ridge Island. (B. Thrune)

17. Law Enforcement

Assistant District Manager Thrune attended the annual law enforcement refresher training at Fort McCoy, Wisconsin from February 13-17. District Manager Steinbach attended the same training during the February 27 - March 3 session.

District Manager Nissen and Thrune requalified with service revolvers on August 30. Range officers Jim Pearson (Minnesota Valley NWR) and John Lindell (Rice Lake NWR) conducted the requalification in La Crosse, WI.

Much of the law enforcement effort by District officers during the waterfowl hunting season was spent along the closed area firing line in Pool 7. Because of the shortage of wildcelery tubers in Lake Onalaska and the upper river system, canvasbacks moved to the marshes to feed on arrowhead tubers and any other available food. Hunters, expecting to find mallards and other puddle ducks in the shallow water marshes, instead found large numbers of canvasbacks feeding with the puddle ducks. The combination of a "competitive environment" along the firing line, the inability of many hunters to identify waterfowl, and a large number of canvasbacks moving from marsh to marsh resulted in a large number of "cans" being killed. An even larger number were shot at and crippled.

How many canvasbacks were stuffed, stomped, or thrown into the river on the La Crosse District in 1989 will never be known.....
(J. Nissen)

During the 1989 waterfowl season, state and federal officers issued 52 Violation Notices involving cases made in Pool 8.

For the year, District personnel issued 12 Violation Notices (Table L-6).

Table L-6. Summary of cases made by La Crosse District personnel 1989.

Number	Violation	Fine	Total Fines
4	Take canvasback during closed season	$150	$600
1	Trapping without Refuge tag	100	100
1	Using a snowmobile to trap on Refuge	100	100
2	Operate vehicle off designated roadway	50	50
1	Abandoning private property on refuge	150	150
1	Attempt to take migratory waterfowl before legal hours	50	50
2	Take migratory waterfowl before legal hours	75	150
12 Total			$1250

During the year, many of the kiosks on the District received at least some damage from vandals. Damage included destroyed leaflet boxes, spray-painted graffiti, and broken plexi-glass.

H. PUBLIC USE

1. General

Seven state parks, Effigy Mounds National Monument and Yellow River State Forest are adjacent to the District. A canoe trail marked from the Glen Lake Landing at Wyalusing State Park provides canoeing opportunities through Refuge backwaters.

The Izaak Walton League at Dubuque, Iowa has expressed interest in a cooperative project for habitat development/protection or educational facility development at the Little Maquoketa delta. Other private citizens have expressed concern over the degradation of the John Deere Marsh due to sedimentation and use by John Deere as a spoil contaminant area.

National Wildlife Federation packets were mailed to 27 schools in our area for use during Wildlife Week.

Criteria for issuance of Special Use Permits for group events on Refuge lands were reviewed. A news release was also issued on the subject.

Reporters from the Allamakee Journal and Guttenberg Press spent an afternoon at the District gathering material on the Refuge and the Master Plan.

The Iowa Department of Transportation was contacted for highway signs to direct visitors to the DO/VCF. Signs were erected concurrent with the opening of the U.S. 18 bypass around McGregor.

A number of contacts have been received from private individuals, a state legislator, and Congressman Cunderson's office regarding possible development of interpretive/recreational facilities at Potosi, Wisconsin. Manager Lyons and Hank Schneider reviewed the site and discussed potentials for improving Refuge image and service to the public.

Large numbers of visitors stopped at the DO/VCF coincident with the fall color season. Approximately 7,500 visitors stopped at the DO/VCF during 1989.

6. Interpretive Exhibits/Demonstrations

A Refuge orientation talk was given to a biology class from Des Moines Area Community College by Manager Lyons. Following the talk, Batya, Male and Brown met the group at Sny McGill Landing for further discussions and a short boat tour of some representative areas of the Refuge.

Clyde Male presented an evening program about the Refuge at the Corps of Engineers Grant River Recreation Area.

Jim Brown manned the Refuge System 70 display at the Mississippi River Revival at Pikes Peak State Park near McGregor. Jim reported small

crowds at the event this year and very little interest in the display.

7. Other Interpretive Programs

In May, two news releases were issued to local and area newspapers. The first release covered regulations governing group activities on the Upper Mississippi Refuge and the second dealt with activities available on the Refuge.

News releases were prepared and distributed in November covering Off-Road Vehicle Use and Winter Recreation on the Upper Mississippi Refuge. Others were issued through the year on special topics such as the trapping program.

At the invitation of the Potosi Chamber of Commerce, a talk about the Refuge and local Environmental Management Program projects was presented and many questions were answered.

Manager Lyons made a presentation about the Refuge to the Grant County Legal Secretaries Association.

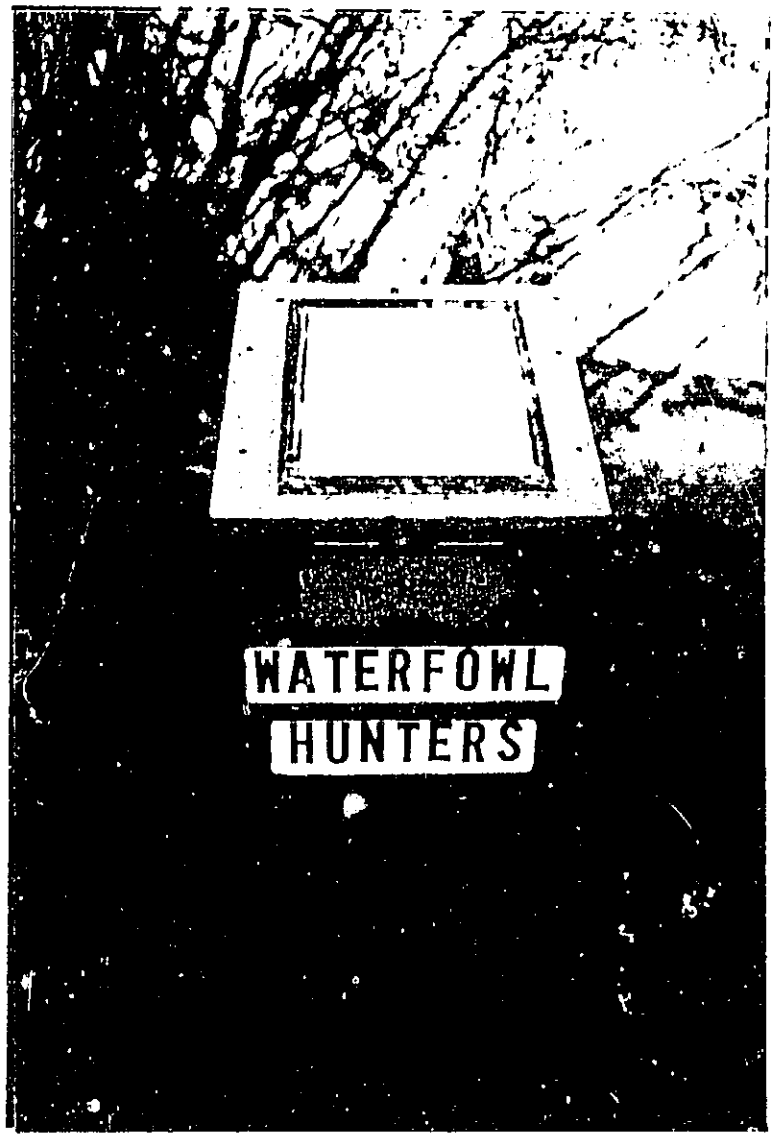
8. Hunting

The entire District is open to hunting in accordance with state seasons, except for 9,070 acres in three designated closed areas. These areas are open to hunting and trapping in compliance with state seasons beginning the day after the close of the regular duck season.

Duck hunters on the River experienced a good year despite early predictions of a poor fall flight. Early days of the respective seasons produced good bags of local birds in most areas. However, many of these birds soon moved into the closed areas making hunting more challenging. A major cold front on October 9-10, brought migrants into the District in large numbers. This same cold front, however, pushed out most of the wood ducks. Migrants continued to arrive in small flocks rather than in a large influx during the remainder of the waterfowl season, perhaps due to the lack of frigid conditions to the north. Many of the ponds and sloughs were dry again this year because of lower than normal discharge rates. Again this year hunting pressure on the District appeared to decline. The cost, increased restrictions and low duck population predictions have taken their toll on hunter numbers.

The composition of the waterfowl harvest was collected by two methods this year. Four Refuge Officers maintained records of harvest incidental to their law enforcement contacts. Information was gathered from 183 hunters. A total of 236 birds was sampled representing 11 different species. Mallards and wood ducks accounted for 62 percent of the harvest. (See Table M-12.)

The second method involved collecting wings from a drop box placed at Lynn Hollow Landing located in Grant County, Wisconsin. This area is typical of good mid-pool waterfowl marshes and sloughs. Hunters were asked to remove one wing from each of their birds and deposit it in the drop box. Instructions and a short explanation of the purpose of the



Waterfowl hunters deposited 148 wings in the wing drop box placed at Lynn Hollow Landing on Pool 11.
10/89 CM

9. Fishing

Sport fishing occurs all year on District waters and is by far the most popular wildlife oriented activity. Ice fishing ended by mid-March, but not before producing some great action for those willing to chance the unpredictable ice conditions during the waning season. The lower McCartney Bay area was popular with fishermen during this time. Most fishermen exhibited heavy 5 gallon buckets, one-half to two-thirds full of nice bluegills and crappies. Other locations were also producing good catches of large crappies during this last ice period. During the end of March, northern pike catches in the 5-10 pound range were common as the fish moved into the shallow bays prior to spawning.

Panfish and catfish catches were fair during summer and early fall. Many of the backwater ponds and sloughs remained dry or had water levels so low that they were inaccessible. Snags, associated with deeper water close the main channel, produced most of the fish. During the last two weeks of July, crappie catches were reported in the lower portions of the pools. Anglers fishing rattle-trap plugs in the tailwaters of wingdams were catching 20 or more white bass during this same period. These fish averaged 1½ pounds with one notable fish measuring 17½ inches.

Bass and walleye tournament pressure continues to grow on the District. The states are responsible for regulating these fishing tournaments on the River. Some recent research on tournaments and their effects on released fish indicates that mortalities may run 40-50 percent to a high of 95 percent during summer walleye tournaments. Iowa now requires a permit to conduct a tournament on the River while Wisconsin does not. Last year, the Iowa DNR issued 39 permits on the District - 16 on Pool 9, 10 on Pool 10, and 13 on Pool 11. There were 2,544 participants in the tournaments. No figures were available for Wisconsin tournaments.

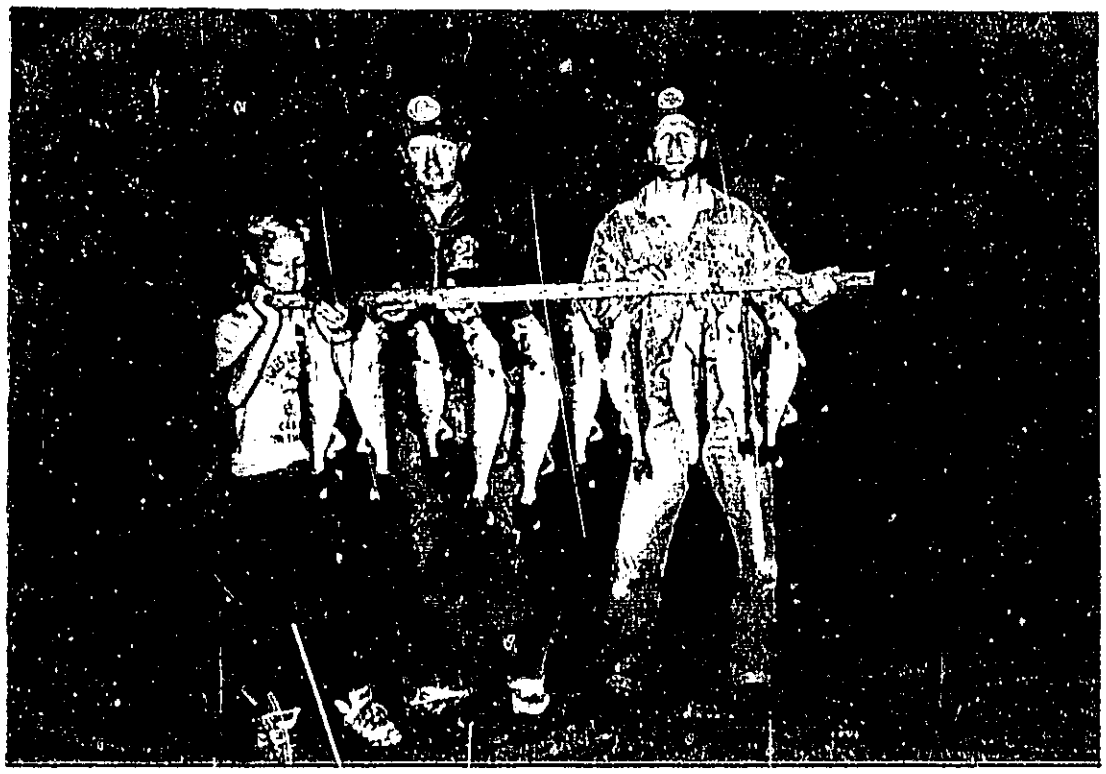
In June, a Genoa, Wisconsin fisherman caught a 41 pound flathead catfish on Pool 9. At the time, he was fishing for walleyes with a 6-pound test line and a jig.

Walleye fishing was reported to be great this fall. Mild temperatures allowed fishermen to work the wingdams until late November. Most catches were made on floating Rapalas or minnow and jig combinations.

Large catches of panfish were reported during "first ice" in December. One fisherman bragged that he caught 307 "nice" bluegills in just three hours from a location on Pool 9 just north of Ferryville, Wisconsin. He also complained that he worked for over six hours filleting the fish.

10. Trapping

All trapping seasons on the Refuge begin at 9:00 A.M. on opening days and the open season is usually structured according to state regulations. Trapping is by permit only. Permits were issued at nine locations around the District on designated dates and at the McGregor District Office. There is no quota on the number of permits issued but each trapper is limited to 40 tagged traps. Trapping areas cannot be



Fall walleye fishing on District waters can be fast and furious as Assistant Male and friends can attest.
10/89 JM

reserved and areas are not delineated for individual trappers. There was only one change in Refuge trapping regulations this year. The restriction on the use of leg-hold traps for the taking of beaver after the close of the muskrat season was rescinded. During the 1988-89 season, #330 conibears were the only traps permitted after the close of muskrat season. This regulation was intended to decrease the number of muskrats taken "accidentally" in pan-traps during the spring and to protect raptors and waterfowl. Complaints from a few trappers and a growing beaver population were the reasons for lifting the restriction. A total of 240 permits was issued by the McGregor District this year as compared to 392 last year. The lowest fur price in years was the major factor causing reduced trapping activity. Weather conditions were favorable throughout the early season with ice formation not a factor until Thanksgiving.

The regulation requiring the submission of the Fur Harvest Report was reinstated for the 1988-1989 season. Trappers not submitting the report at the end of the season faced suspension of trapping privileges for one year. Table M-13 presents data tabulated from these reports.

Table M-13. 1988-89 Fur Catch and Fur Value for the McGregor District

Species	Projected Number	Value (dollars)
Muskrat	62,529	$141,890
Beaver	1,184	11,944
Mink	331	7,996
Raccoon	876	3,963

The pre-season projections for low-fur prices were correct. Muskrats never exceeded the $1 mark and in most cases averaged only $.75. One local fur buyer said he received a lot of muskrats from the River that were of poor quality and that many were young rats. Pre-season price predictions for beaver were encouraging. Early prices averaged $20 for large blankets. However, by the end of December, fur dealers would no longer accept any beaver because of fears of accumulating an unmarketable stock. Raccoons were plentiful this year and dealers were very particular when buying. Dark phase raccoon brought up to $15 but most others sold in the $3-$6 range. Brown, red or yellow phase raccoons were almost worthless. Large yellow phase raccoons sold for only $2 and many dealers were reluctant to buy them at all. Fox and coyote prices were down considerably this year. Coyotes were almost worthless because of the coarse brush fur characteristically found on coyotes in this area. Coyote prices topped at $2 for skinned animals. Fox prices ranged from $10-$12 for reds and from $5-$7 for grays. Mink demand and prices remained high this year with $30-$35 being paid for bucks and about one-half of that for females. Otter prices were up from last year with a $30-$40 average. Three otters were reportedly trapped on the District this year, but only one was taken during Wisconsin's open season. The remaining two were taken incidental to beaver trapping. Iowa and Minnesota maintain closed seasons on otter. Otter trapping in Wisconsin is by special permit with a season bag of only one

for the southern zone. The McGregor District is included in this zone.

The late winter beaver season runs until March 15 on the Wisconsin portion of the Refuge. Persistent ice conditions prevented trappers from using boats and open water sets.

A 77 pound beaver was trapped during November near Lynn Hollow Landing on Pool 11.

Early season raccoon trapping was so successful that many trappers reported that they were catching as many raccoons as muskrats.

A news release describing the trapping program and trap permit issuance was distributed to local media. Suspension letters were mailed to those trappers found guilty of trapping violations last year and for those who failed to return Fur Catch Reports.

11. Wildlife Observation

Wildlife observation usually occurs in conjunction with other activities, although many visitors come specifically to view the seasonal concentrations of bald eagles, tundra swans, and canvasback ducks. Formal observation platforms and nature trails have not been developed but District staff met with Hank Schneider on Pool 9 near Reno, Minnesota, and at Potosi, Wisconsin this year to discuss the possibility of educational and interpretive facilities on Refuge lands.

Eagles are found in concentrations near the power plants at Genoa, Lansing and Cassville in mid-winter. Warm water discharge from these plants keeps the waters open and attracts fish and eagles to these areas.

12. Other Wildlife Oriented Recreation

Cross-country skiing, snow-shoeing and ice skating are becoming more popular modes of recreation for good cardio-vascular workouts and, as a fringe benefit, wildlife observation. Canoeing is an excellent way to quietly approach and view wildlife, especially in the shallow, isolated backwaters. Photographers armed with sophisticated cameras and telephoto lenses are often seen stalking wildlife along Refuge boundaries. More adventuresome photographers may combine their hobby with some of the activities mentioned above, but most are content with snapping pictures from their boats, cars, bicycles or motorcycles. Frogging, turtle trapping and mushroom hunting are other activities that provide opportunities to view wildlife and collect a tasty meal.

13. Camping

Poison ivy and nettles dominate the ground cover on most Refuge lands, naturally restricting camping to the dredge-spoil sandbars. Visitors flock to these sites throughout the spring and summer, especially during the long holiday weekends. In addition to the traditional tent campers, more and more visitors are "camping" in large, well-equipped houseboats and cruisers. The houseboats seem to have very little impact on the

Refuge as most of their occupants rarely leave the safety and comfort of their craft. The large cruisers, however, create large bow waves as they move swiftly down the channel, washing island shorelines and creating havoc with smaller craft near their path.

Traditional problems with illegal fireworks, littering, free-roaming dogs and illegal woodcutting continue and the staff continues to educate campers through pep talks, warnings, and violation notices.

14. Picnicking

Picnicking occurs primarily on the dredge-spoil sandbars along the River's main channel. In addition to ants, the traditional nemesis of picnickers, poison ivy and nettles restrict picnicking on most District lands. Although most picnickers arrive with enough equipment to survive a major catastrophe, some still find it difficult to haul away their garbage.

15. Off-Road Vehicling

Fourteen Notices of Violation were issued for off-road vehicle (ORV) trespass this year as compared to only one in 1988 and nine in 1987. A few problem areas continue to account for most of these violations. District staff have signed these problem areas with signs reading "Closed to motorized vehicles beyond this point" and monitor them on a regular basis. News releases are issued annually, describing Refuge regulations limiting off-road vehicle use on the Upper Mississippi Refuge.

Special Use Permits for ORV use on Refuge grounds may be granted to individuals meeting the criteria for a state handicapped parking permit. The SUP applies only to Bertom Lake (Pool 11), where safety is a factor, to allow these individuals ice fishing access.

16. Other Non-Wildlife Oriented Recreation

Swimming, pleasure boating and water skiing are some of the most popular forms of recreation on the District. In the last few years, the District has experienced an increase in the use of hovercraft, airboats and jet skis. These noisy craft disturb both humans and wildlife and are a growing concern of Refuge managers. There has also been an increase in the number of large cabin cruisers traveling swiftly on the River. These craft create large wakes as they pass, nearly swamping smaller boats and disturbing fishermen. The wakes also wash the island shorelines, thus accelerating erosion.

17. Law Enforcement

The District's law enforcement effort was directed towards obtaining a distribution of cases, both geographically and categorically, as we feel this has a preventive effect on violations. Refuge officers were in the field for most weekends during the various state waterfowl seasons and trapping openers. Summer patrols included many weekends and nights, especially during the busy summer holiday weekends. In addition, all

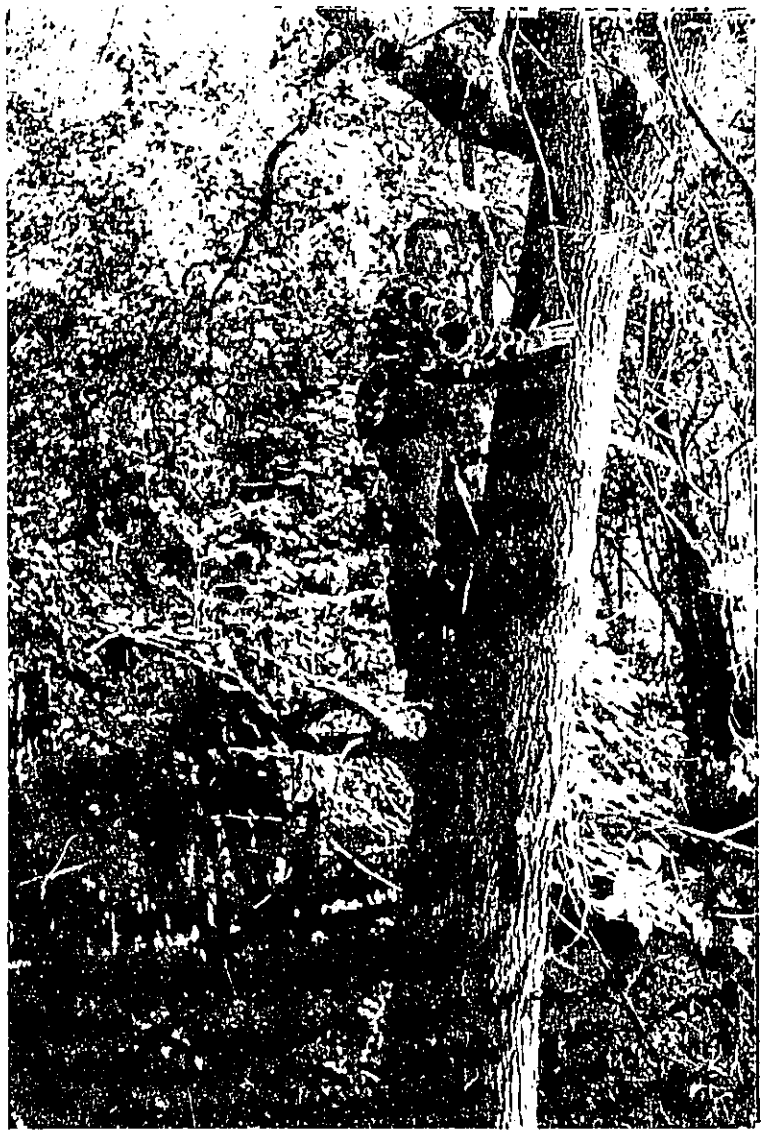
staff are on alert for possible violations during the course of their everyday activities. District officers issued 80 Notices of Violation. Although most situations were routine and resolved without incident, a few situations of a more serious and complicated nature were encountered by District refuge officers.

Assistant Male encountered two men using District boundary signs for target practice. Male observed them until they put away their firearms and then he approached and relieved them of their weapons. When he requested identification, one of the individuals dropped a small package of what appeared to be a white powder. The individual retrieved the package and quickly swallowed it. He later admitted that the package contained "crystal". Male searched him and found a number of marijuana cigarettes. Later, it was learned that the individual who swallowed the package was a felon. His case is still pending, but he faces 23 years in prison on federal firearms violations. The other individual was fined $100 and his Browning pistol was forfeit to the government.

District refuge officers in cooperation with the Allamakee County, Iowa Sheriff's Department, Iowa State drug agents and Special Agent Walt Kocal investigated a Lansing, Iowa 5th grade teacher who was manufacturing a controlled substance (marijuana) on Refuge lands between Lansing and New Albin, Iowa. District officers maintained surveillance of the area during the late stages of the growing season and they obtained photographs of the individual tending the approximately 35 plants. An 8mm camera in a camouflaged protective case was set in a crotch of a tree near the plot. The camera was adjusted to shoot one frame approximately every 90 seconds. The film was replaced every two to three days. During a search of the individual's home, additional marijuana, items used in the manufacture of marijuana, and drug paraphernalia were discovered. The search was conducted professionally and without incident. The individual has resigned his position with the Lansing School District. He has signed a plea agreement for one count of manufacturing a controlled substance and is awaiting sentencing.

Notices of Violation were issued to five barge companies for damage to trees on the District. The tows were illegally moored on Refuge land across from Dairyland Power Company at Genoa, Wisconsin, while awaiting unloading of their coal barges at Dairyland. Trees were stripped of their bark by the taut barge ropes. Dairyland was notified of the problem and promised to cooperate. Hopefully, the Notices of Violation and cooperation from Dairyland will help to eliminate this problem. One of the captains informed refuge officers that it costs over $700 per hour to operate his tow. Perhaps the relatively low fine for the violation will not be much of a deterrent.

Refuge Officer Male encountered two obstinate individuals while attempting to record pink slip information on a discharge of fireworks violation. The two men decided to run. One bolted into the River and the other into the woods. Male tackled the "River" man when he came ashore. The other individual finally decided to come out of hiding when Male threatened to confiscate his boat. In addition to a $100 fine each for discharging fireworks on the Refuge, each of the individuals paid a $200 fine for interfering with an officer.

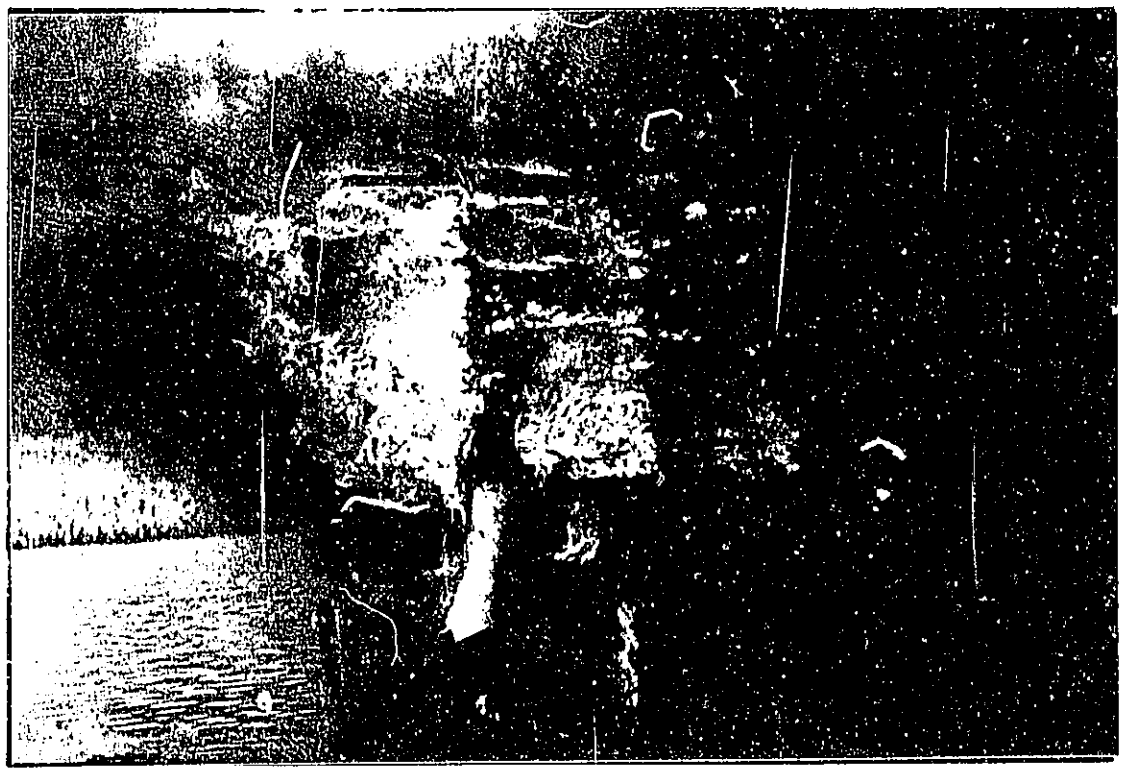


"Smile, you're on Candid Camera."
Assistant Batya changes film in
surveillance camera on Pool 9
marijuana plot near New Albin, Iowa.
9/89 FR

Batya and Brown display seized marijuana plants cultivated on Refuge lands by a Lansing, Iowa school teacher. No, it was not grown as a botany science project.
9/89 FR

Marijuana grows well on fertile Refuge islands. Brown and Batya cut and burned 71 plants from this plot in Minnesota across from Genoa, Wisconsin
9/89 TB

Assistant Male has been "in a rut" lately. Male's investigation of this vehicle trespass damage in the Turkey River Bottoms turned up the culprit who was ordered to repair the damage.
10/89 CM



Assistant Male destroyed an abandoned duck blind on Pool 11.
10/89 CM

Assistant Romero displays 250 traps seized as a result of law enforcement on the District. The traps were divided into lots and auctioned. Proceeds were forwarded to the Denver Finance Center.

JB
4/89

All District refuge officers completed the required 40 hour law enforcement refresher at Fort McCoy in February and firearms requalification at LaCrosse in August. All handguns were checked by a licensed armorer before the refresher.

Assistant Romero and two Corps employees extinguished an eight acre brush fire in the Turkey River Bottom. Two more small fires occurred in the same area in March and April. Although the causes of the fires could not be determined, natural causes were not likely.

In the interest of staff safety, a new bullet-proof information window and a remote control door lock have been installed between the visitor contact area and the office.

A motorist ran off the road at the District Office/Visitor Contact Facility and destroyed an ornamental planting. He was cited by the highway patrol and he was required by the Refuge to pay for replacement of the destroyed plant. The tree was replaced but about a week later it was stolen. Assistant Batya located the motorist's home but no sign of the tree was evident in his weed infested yard.

Dock storage privileges were suspended for one individual for non-compliance with his Special Use Permit. It was reported that this individual has threatened Assistant Romero's life.

Assistant Batya woke up on June 1 to find his Volkswagen Golf turned over on its side at his Genoa, Wisconsin apartment parking lot. About $1,900 damage was sustained. The Vernon County Sheriff and Special Agent Downie Wolfe were alerted. We are uncertain if it was an act of vindictiveness or a truly tasteless joke. There have been no leads in the case.

Assistant Batya issued two Notices of Violation to individuals who were dumping their personal garbage at Winneshiek Boat Landing rather than hauling it to the local dump. Batya traced the individuals by sifting through the garbage until he located identifying information. So far the NOV's seem to have worked as a deterrent to further dumping.

Assistant Clyde Male assisted with retrieving a young boy who drowned as a result of a pleasure boat/barge collision. Clyde provided CPR and coordinated rescue efforts. Unfortunately the young boy had been in the warm water for over one-half hour before resuscitation could be started.

Warning letters were sent to fishermen who were interfering with the Lynxville Fish Float operation located on Refuge land at Lock and Dam 9.

In addition to the previously mentioned marijuana case, Assistant Batya and Jim Brown cut and burned another 71 "high" quality plants discovered on the Minnesota portion of Pool 9. The plants were discovered during a flight with a Drug Enforcement Agency pilot. Time expended on the other plot did not allow staff to sit on this garden. Incident reports on both of the marijuana cases were prepared.

Ruth Braswell, the Assistant U.S. Attorney from Madison, Wisconsin spent

time at the District learning about our law enforcement program. She accompanied refuge officers on a night patrol and a day on the River observing trapping and waterfowl law enforcement techniques. One Notice of Violation was written for the taking of a canvasback duck during her visit.

Trappers and trapping violations are down this year due to low fur prices.

Assistant Batya reviewed law enforcement cases from 1988 and 1989 to insure that fines were paid and that all seizures were disposed of properly. Copies of the Notices of Violation and Disposition Reports will be sent to the Senior Resident Agents for entering into the Law Enforcement Management Information System. Traps seized during several of the last seasons were auctioned this year and the proceeds were sent to the Denver Finance Center. Seized fireworks from the 1988 and 1989 seasons filled a 55 gallon drum which was then filled with water to destroy them. Waterfowl and furbearer seizures were either destroyed or donated to state DNR's. Seized firearms were returned to their owners after disposition of the cases.

Table M-14. 1989 Violations

Violation	Number of Cases	Disposition Per Case
	Closed	Pending
Hunting		
Possess toxic shot while waterfowl hunting	2	$ 75.00
Take migratory waterfowl during closed season	2	175.00
Wanton waste of migratory game	1	50.00
Take migratory waterfowl in excess of daily limit	1	125.00
Take migratory waterfowl in excess of daily limit (attempt)	1	100.00
Possession of canvasback	1	175.00
Waterfowl with identification removed	1	100.00
Invalid migratory waterfowl stamp	1	50.00
Unplugged shotgun	1	50.00
Trapping		
Failure to check traps every 24 hours	1	100.00
	1	50.00
Boating		
Operating motorboat after sunset without running lights	3	25.00

Fireworks

Possession of fireworks on a NWR	6	50.00	
Discharge of fireworks on NWR	10	100.00	

Others

Littering on a NWR	5	50.00	
Dumping on a NWR	2	150.00	
Destroy or injure plant on a NWR	12	100.00	
Destroy or injure plant on NWR	6	50.00	
Travel with motorized vehicle on non-designated route	14	50.00	
Allow dog to roam on NWR	2	50.00	
Trespass on NWR (Fish Crib)	1	50.00	
Camping out of sight of channel	1	50.00	
during waterfowl season	1	20.00	
Interfere with officer in performance of official duties	2	200.00	
Destroy government property	1	200.00	
	1	100.00	
	1		*
Growing a controlled substance on a NWR	1		**

* A felon in the case faces up to 23 years in prison on federal charges for possessing a firearm.

** The individual has signed a plea agreement for one count of manufacturing a controlled substance and awaits sentencing.

Warnings

Travel with motorized vehicle on non-designated route	1	Warning to elderly person
	1	Juvenile
Unconfined dog on NWR	2	Verbal warning
Water skiing without an observer	1	Verbal warning
Federal trapping permit not in possession while trapping	2	Verbal warning
Trapping within 3 ft. of a muskrat house	1	Verbal warning
Unsigned federal waterfowl stamp	2	Verbal warning
No federal waterfowl stamp while hunting waterfowl	1	Warning - individual on leave from military was told by state official he did not need stamp
Not in possession of state license or federal waterfowl stamp	1	Warning - individual later produced license for officer

Injure plant on NWR	1	Warning for nailing a wood duck box to a tree without a Special Use Permit
Illegal boat dock storage on NWR	1	Warning and ordered to move dock
Littering	2	Manager Lyons assigned the two juveniles an essay on the "Values of a National Wildlife Refuge" rather than issuing a Notice of Violation

19. Concessions

Special Use Permits were issued to the two fish float operators below Locks 8 and 9. Permit fees have remained at $100 for several years, but new concession contracts are still in the works. When the new contracts are finalized, operators will remit a percentage of their gross receipts. The fish floats and surrounding areas were inspected and permit compliance was discussed with the operators.

A number of conflicts occurred between boat fishermen and float fishermen at the Lock and Dam 9 fish float. Boat fishermen encroaching on the float made casting for the float fishermen difficult. Angry words were exchanged over who had more right to the fishing spot. District staff warned the encroaching boaters both verbally and in writing.

There have been rumors that the Lock and Dam 8 fish float operator plans to sell his operation. Although he has no firm plans, he said he would sell if he was offered the right price. He was informed that any future operator would have to comply with terms of the Refuge Special Use Permit or concession contract. The current fee for using the fish float is $7.75. The fee entitles one to fish from the float and to transportation from shore to the float and back throughout the day.

The River of Lakes Campground near Bagley, Wisconsin requested termination of its 21 year contract on April 4, 1989. A Reversion of Jurisdiction Agreement with the Corps for this area was completed during 1989.

H. PUBLIC USE

1. General

An estimated 3,000,000 visitors use the Upper Mississippi River area annually. Uniformed District personnel made numerous contacts with refuge visitors throughout the year, with the summer and fall seasons receiving the most emphasis. During visits with river recreationists, District personnel distributed refuge maps and informational pamphlets, and answered questions regarding the refuge and its objectives. Usually, about one-half the people contacted were day users, while the rest were campers. This information is also presented when visiting hunters, fishermen, boaters, etc., throughout the year.

Seven news releases were issued during the year, discussing the following topics:

- Potters Marsh public hearing
- Spring season refuge visitation
- Refuge revenue sharing
- Availability of Potter's Marsh hunting applications
- Waterfowl hunting blind regulations
- Refuge closed area regulations
- Refuge trapping permit availability

In addition, the District staff was interviewed by various newspapers and publications during 1989, as follows:

- DeVries was interviewed by the Rockford Register Star regarding the affect of the 1988 drought on area wildlife.
- Wargowsky was interviewed by "Fishing Hotspots" magazine regarding ice-fishing opportunities and regulations on the refuge.
- Wargowsky was interviewed by the Quad City Times regarding the Thomson grassland area.
- deRosier was interviewed by the Quad City Times in reference to fall waterfowl populations on the refuge.
- Wargowsky and DeVries were interviewed by Quad Cities Times and Dubuque Telegraph Herald concerning bald eagles.
- In December, Wargowsky received interviews from the Clinton Herald, Bellevue Herald, and Quad City Times regarding barge fleeting in the Savanna, IL area of the river.

7. Other Interpretive Programs

District staff participated in various on and off-refuge programs throughout the year, including the following:

- District staff assisted 20 members of local chapters of Ducks Unlimited and Greenwings in the placement of 23 wood duck boxes (Bellrose design) on trees within the Spring Lake closed area on February 25.
- A total of 90 National Wildlife Week packets were sent out to 15 schools and/or school districts.

Refuge personnel assisted Ducks Unlimited and Greenwing members in the placement of wood duck boxes in backwater areas where few cavity trees were present. (2/89 LW)

- Wargowsky presented the refuge's involvement with the Environmental Management Plan to the Clinton County Izaak Walton League and the Thomson Rotary Club.
- deRosier spoke to 28 Elderhostel members at Spring Lake on May 9. The visitors represented nine states, including California, Kentucky, Florida and Nebraska.
- The public meeting for the Potter's Marsh controlled waterfowl hunt was conducted at the Savanna High School on May 20. A total of 16 interested hunters attended to make their ideas and opinions known to refuge staff.
- DeVries spoke to 45 members of the Illinois-Wisconsin Soil and Water Conservation Society, regarding the Service involvement with CRP wetland restorations.
- deRosier spoke to eleven Ducks Unlimited Greenwing members plus seven adults at Spring Lake on October 21.

- District personnel spoke to two cub scout groups at Spring Lake.
- DeVries met with an economic development plan group in Thomson, IL, regarding the Refuge's future plans for development of interpretive areas on the River.
- DeVries presented an overview of the Savanna District's management activities to the Thomson Lions Club.
- Local schools in Carroll County utilized the Spring Lake unit during the fall as part of an environmental program for fifth graders.

Several cub scout groups made use of the wildlife viewing opportunities available from the Spring Lake dike. (4/89 ED)

8. Hunting

The entire District is open to hunting, with the exception of three closed areas during the waterfowl season. Waterfowl hunting on the River attracts the most attention.

The Savanna District's Potter's Marsh waterfowl blind allocation program continued to generate much interest from Illinois and Iowa sportsmen. Potter's Marsh is located on the Illinois side of the most southern portion of Pool 13. Premarked blind sites are available on a seasonal basis for use by waterfowl hunters. The sites are allocated by computer, based on blind site selections by hunters from a map which is printed on the hunting application. Up to nine alternate sites may be selected, in case the first blind choice is taken. A $25.00 administrative fee is assessed each successful blind applicant. In 1989, the number of available blind sites was reduced to 50, after the elimination from the

drawing of ten sites which had a history of poor use. A total of 935 applications were received, which was an increase of 4.3 percent from the 896 applications received in 1988. Of the 935 applications, 25 were rejected for incomplete or invalid information, compared to 27 rejected in 1988. The number disqualified decreased from 3 percent in 1988 to 2.7 percent in 1989.

The successful applications were selected by computer in the Regional Office, and notifications to the hunters were generated from the District. Recipients of the 50 available blinds were notified during the period of July 20-24. Unassigned blind sites were awarded on a first-come, first-served basis on August 15 by either a personal office visit or telephone call on that date. A total of 47 blind sites were utilized in 1989.

Some of the blinds which were eliminated from the 1989 Potter's Marsh blind allocation program were removed to improve the aesthetics of the marsh. (6/89 Md)

Several petitions were received in 1987 from waterfowl hunters expressing a desire to change the Potter's Marsh hunt from a one-year drawing to a two-year drawing. In light of the large number of applications, the position of the refuge has been to attempt to retain the one-year hunt, in order to provide for a greater distribution of hunting opportunity to the public. In November 1988, a questionnaire was sent out to 823 previous blind applicants. A total of 180 questionnaires were returned to the Winona Headquarters by the end of the survey period. Several meetings with Regional Office personnel, Winona Headquarters staff and District staff were held during the first quarter of 1989, leading to a public meeting in Savanna, IL on May 20 to discuss possible changes for the 1990 Potter's Marsh blind allocation program. A total of 16 interested hunters attended the meeting to express their opinions and ideas in an open forum. Also in attendance were an IDOC biologist, a Corps park ranger, and Service personnel from the RO and Winona HQ.

Based upon hunter input from the 180 questionnaires and the public meeting, a course of action for the 1990 has been determined.

The hunting program changes for 1990 were distributed to the 1989 blind applicants as inserts placed within the 1989 applications. Some of the notable changes for 1990 will include: 1) availability of a limited number of boat blind sites (2-5) on an experimental basis, 2) hunter selections will be made earlier in the season so blinds can be built earlier, 3) applicants must apply for a permit in person, with only one application accepted per person. Discontinuing the mail-in application, hopefully will alleviate some of the abuse which has occurred in the past and will equalize each applicant's chances. In past years, some of the hunters entered the names of non-hunters in order to increase their chance of obtaining a choice blind site. In 1990, hopefully, only those hunters who actually intend to build a blind and hunt will apply.

The number of available blind sites in 1990 will again be limited to 50 sites, as it was in 1989.

In Illinois, all waterfowl hunting must be from blinds spaced 200 yards apart, or scullboats. Iowa allows hunting outside of blinds, or jump shooting. The entire refuge required the use of steel shot.

The September teal season in Illinois was cancelled for the second straight year due to poor teal production in 1989. The Iowa waterfowl season was split, with an early two-day opener October 7-8, and a second opener October 21 through November 17. The Iowa goose season opened on September 30, with the Canada goose season closing on November 13, the white-fronted season closing December 8, and the snow goose-brant season closing on December 18. The Illinois waterfowl season opened on October 28, with duck season closing on November 26 and goose season extending until December 26.

Duck hunting was poor with the exception of the first few weeks after each state's season opener. Few limits were taken, but just about every hunter checked during the first few weeks of the season had at least one duck.

Canada goose hunting has improved steadily each year with the corresponding increase of resident geese on the District. A firing-line situation near Spring Lake in Pool 13 was controlled following an interagency meeting with the Burlington Northern Railroad, Carroll County Sheriff's Department, Illinois State Police, Illinois Conservation Department, and several adjoining landowners. The Savanna District organized and hosted the meeting on October 19 in response to hunters pass-shooting at Canada geese in past years, while standing along the railroad ROW near highway 84 and the District shop facility. This situation had created a "Slob Hunter" image as geese were dropped along the highway or crippled as they flew back into the Refuge. The meeting was organized by the Fish and Wildlife Service in response to public complaints. As a result of the meeting, the railroad, Illinois Department of Transportation, and the landowners posted the area against entry, erected new barrier fences and a news release regarding this subject was issued by the BNN railroad. No hunters were observed or reported using the right of way in 1989.

Whitetail deer hunting in Iowa and Illinois is restricted to shotguns, bows and muzzle-loaders. Refuge deer hunting is conducted on the river islands and bottomland areas. Most hunters choose to hunt the bluff ridges of the river valley, which exist off-refuge. Illinois deer hunters again had a record harvest, with Davies and Carroll Counties being among the most productive in the state as far as harvest.

Small game hunters made good use of various refuge areas in 1989, hunting dove, quail, pheasant and rabbits on the grassland tracts, especially near Thomson, IL. Squirrel and wild turkey were hunted in the forested bottomland area of the District.

9. Fishing

Fishing is the most popular wildlife-oriented recreational activity on the refuge. Fishermen can be found on the District practically every day of the year. Panfish, catfish, striped bass, largemouth bass and walleye are the most sought-after species by sport fishermen. Largemouth bass, bluegill, and crappie are plentiful in the backwater areas, while walleye and sauger provide great sport in the tailwaters of the dams and along wing dams in the navigational channel of the river.

Local and national bass fishing tournaments in this area are becoming increasingly popular, beginning in April and extending through September. Conflicts often arise between the competitive professionals and traditional fishermen, as the high-powered bassboats motor at high speeds through sloughs and backwater lakes in pursuit of trophy fish, creating a lot of wave action and disturbance to other river recreationists. The disorientation and stress caused by holding time and later release of the fish at a distant location may be detrimental to largemouth bass populations also. The Iowa DNR required permits for fishing tournaments for the first time during 1989. Approximately 33 permits were issued for tournaments in Pools 12-15, including 27 for bass, 5 for walleye/sauger, and 1 for catfish. No permits are required in Illinois, so total fish tournaments for the area are not known, only that an increase has occurred recently.

"Crappiethon USA", a national circuit contest sponsored by Johnson Reels, hosted part of their 1989 fishing tournament in Pool 14 for the second straight year. The tournament was held April 29 to June 28, with a reward total of $314,250 in cash and prizes for the capture of 2,370 fish. Most of the tagged fish were caught in May and were worth $25-$1,000 for those fishermen entered in the contest. The highest reward tag was for the capture of "Tangle Free Tom". If caught, he would have been worth $15,000 plus an extra $15-45,000 if the sponsor's rod-reel combination was used.

Summer and fall fishing results were spotty, due to the low river levels. Crappie and bass fishing were mostly restricted to deeper sloughs, with some fishermen having success along riprapped shoreline adjacent to the main channel. Bass fishing near the Spring Lake m.s.u. pump was quite productive during early to mid-August.

Ice fishing is very popular each year, however 1989 wasn't very productive until the last few days of December. January was very warm and produced

uncertain ice conditions and poor fishing. February was cold with good ice, but again, the fishing wasn't very good and by early March the ice had left.

Ice fishing commenced again in late November, but didn't really pick up until the last week of December, when excellent catches of bluegill and crappie were reported from various backwater lakes.

10. Trapping

Administration of the trapping program remained the same as in past years. Trappers were required to have a permit for trapping on the refuge as well as metal permit tags on their traps. Permits were issued for $5, along with a string of 40 numbered trap tags assigned to each permit. Tags were issued by District personnel in Clinton and Dubuque, IA, and in Galena and Savanna, IL. A total of 132 trapping permits were issued from the District. This amounted to $660 in revenue.

The fur harvest data (Table S-9) is based on mandatory fur catch reports sent in to the Refuge's Winona headquarters at the end of the 1988-89 trapping season (fall 1988). The submission of the catch report is one of the conditions for the trapping permit. Prior to the 1988-89 trapping season, the submission of fur catch reports was voluntary, which resulted in a 19 percent return in 1987-88 as opposed to a 98.2 percent return this year.

The average price paid for pelts in Iowa and Illinois for 1988-89 was as follows: muskrat, $2.24; raccoon, $7.77; beaver, $9.22; mink, $23.28; and fox, $12.84. Total value of furs taken on the Savanna District in 1988-89 was projected to be $58,589.

Table S-9 - Fur Harvest - Savanna District - 1984-85 to 1988-89

Season	Muskrat	Mink	Raccoon	Beaver	Projected Value	Permits
1988-89	19,334	106	679	522	58,589	240
1987-88	32,835	58	886	1,276	158,543	292
1986-87	23,356	40	837	1,328	129,672	186
1985-86	17,086	114	962	590	62,998	200
1984-85	18,886	88	1,107	300	94,379	211

Probably the chief reason for the low number of permits issued in 1989, is the low demand for fur which has drastically dropped pelt prices the last five years. Sales of fur coats, especially in Europe, have fallen as fur fashions have lost their popularity for various reasons.

11. Wildlife Observation

The entire Savanna District provides a wide range of wildlife observations. Spring Lake offers probably the most diverse, accessible and well-known site for this activity. During 1989 a handicapped access ramp was constructed and a no parking handicapped sign placed at the

Spring Lake parking lot.

Each weekend during the spring and fall, the White Pines Birding Club from Sterling, IL, visited the Spring Lake and Potter's Marsh areas for birdwatching opportunities. The group size averaged about five people, and provided good data regarding unusual bird sightings to the District office. During the fall season, a special use permit was granted to the group as Spring Lake is closed to all entry from October 1 until the close of the Illinois waterfowl season to provide sanctuary for ducks and geese. Viewing opportunities were excellent at Spring Lake, as exposed mudflats, shorelines and sandbars attracted a large number of migrant shorebirds during August and September.

Bald eagle watching was good again this year as the churning tailwaters of the locks and dams afforded easy pickings for fish-scavenging by the birds. The accessibility of the lock and dam roads and parking lots, coupled with the proximity of the eagles to the locks, furnished easy viewing opportunities for the public. The periods of early January, early February and mid-to-late December were the best times to see the eagles as they migrated through the District.

16. Other Non-Wildlife Oriented Recreation

Non-wildlife oriented activities such as boating, water skiing, camping and picnicking accounted for approximately 25 percent of all recreational use. The most frequently used sites for most of these activities were sandbar islands in the River. At least six large river excursion boats make daily use of Pools 12-14, with periodic visits made by the Mississippi Queen, which travels from New Orleans, LA, to Minneapolis, MN. Other recreational uses of the refuge include bicycling, hiking, cross-country skiing and the use of various types of conveyances such as snowmobiles, motorbikes and ATV's.

Under the navigable status of the Mississippi River, snowmobiles or ATV's are permitted on all ice-covered waters, however, they are not allowed on refuge land. Trespass violations occur when the snowmobiles/ATV's take short-cuts from legal navigable areas across wooded and grassland areas of the refuge. Private marina expansion, public use area expansion and new private recreation facility development off-refuge all contribute to increases in non-program use.

During uniformed patrols of the River, the sandbars are visited, refuge regulations are explained and questions are answered. In this way, it is hoped that litter problems and other routine violations will be reduced and people can be made aware of their presence on a national wildlife refuge. An increasingly greater management problem in recent years has been the generation of large organized public events on refuge islands during the summertime. Most of the time these events occur without permits or authorization, as required by the Refuge. In 1987, there were several such "unauthorized events" where the organizers charged fees for parties and rock concerts, with boat shuttles to the islands. The Corps and Service issued a series of news releases and television interviews in 1988 regarding the problem and the necessity of a permit for such activities. No such gatherings were encountered or reported during 1989.

17. Law Enforcement

Law enforcement duties are conducted year-round and violations are often encountered in the course of other refuge work, such as maintenance work or biological surveys. Increased law enforcement emphasis is usually centered around fall hunting and trapping activities. As demonstrated in Table S-10, refuge violations were once again quite varied during the year. Unfortunately, due to the small District staff size and time we could budget for law enforcement, our results certainly did not encompass all the refuge violations which occurred in 1989.

District officers were assisted at various times by the efforts of Senior Resident Agent (SRA) Budzyn, Rosemont, IL and Illinois and Iowa conservation officers.

During one of the District's public image patrols on May 28, an unoccupied boat was found floating downriver in Pool 13. Considerable time was spent visiting recreationists on nearby islands to attempt to find the boat's owner or possible occupants. The Carroll County Sheriff's department and Illinois conservation officers were also notified regarding this possible emergency or tragedy. Eleven hours later, the boat's owner was found on one of the islands, partying. He had looked a short while after he discovered his boat had slipped away from the shore, but failed to report it missing and continued partying instead. When contacted he appeared unconcerned that the boat had been lost even though it belonged to his father. Earlier a line tow had to alter its path to avoid hitting the boat drifting down the main channel.

In September 1988, the Carroll County ASCS office informed the District of a possible dove-baiting situation on private farmland near the refuge. After determining the area was baited and being hunted over, the SRA in Rosemont was notified. Because the bait was discovered two weeks after the dove season opened, no further investigation was performed until late August 1989. District personnel again found the area baited, along with the presence of decoys. On opening day of dove season, September 1, District refuge officers and Illinois Conservation Police Officer Van Hamme assisted SRA Budzyn in the apprehension of five adults and one juvenile for hunting and taking doves over a baited area. The landowner, who was one of those charged, was taking his sons and two business associates from Chicago out for a day of dove hunting. He also had a bag of bird seed in his vehicle, which he was observed placing in the field prior to his apprehension. Federal fines totaled $1,550.00, plus a state citation was issued for littering.

Barge fleeting on Service fee title land requires a special use permit, however, fleeting on cooperative refuge land (Corps owned) never required a permit in past years as Corps policy did not grant permits, but just allowed fleeting to occur, even if on Refuge land. The Service could not cite for trespass. After several meetings between the Service, Corps and Service attorneys in 1988 and 1989, it was determined that the Service has the authority to enforce trespass violations on Corps land that is managed as part of the wildlife refuge. A change by the Corps policy or their interpretation would now allow the Service to enforce the trespass provisions.

In past years, if illegal fleeting was observed on cooperative refuge land, refuge officers could only cite the barge companies if damage occurred to trees along the shoreline. This damage was caused by direct cable tie-off or by uprooting the tree during the process of mooring. The barge companies got around the rule by putting belts around the trees. The trespass provision will give refuge officers more authority to curtail unpermitted fleeting on the refuge. A one-year grace period was given to the barge companies in 1989, to allow them time to apply for Corps permits for fleeting on Corps land or anchoring to the River substrate. The Cassville River Terminal put in an application to fleet at two locations in Pool 14 using a submerged anchorage system. Public outcry resulted in one public meeting and one public hearing before the year ended. The Corps decision of the permit was not decided at the close of the year.

The Clinton Harbor Service informed the District on December 11 that all cables, innertubes around trees, tires and ropes had been removed from former fleeting sites on Beaver Island and south of Coney Island, Pool 14.

The annual 40-hour law enforcement refresher training, plus the 6-month Service revolver recertification, was completed by District personnel in 1989. Both manager and assistant manager have law enforcement authority.

Millet and other seed scattered near dove decoys and a tarp for water retention provided evidence of dove baiting in 1988 and 1989. (8/88 ED)

Table S-10 - Summary of Refuge Violations - 1989

Date	Violation	Disposition	ab
02-11-89	No snowmobile registration	USM	$50
02-11-89	No snowmobile registration	USM	$50
02-11-89	No snowmobile registration	USM	$50
02-11-89	No snowmobile registration	USM	$50
02-11-89	ATV trespass	Warning	
02-25-89	No fishing license in possession	Warning	
02-25-89	Unattended fishing pole	Warning	
02-26-89	ATV trespass	Warning	
03-12-89	Undersized fish	Warning	
04-01-89	Vehicle trespass	USM	$50
04-01-89	Vehicle trespass	USM	$50
04-01-89	Vehicle trespass	USM	$50
04-01-89	Vehicle trespass	USM	$50
04-07-89	Tree damage	USM	$300
05-17-89	Undersized fish	USM	$100
05-27-89	Fishing with more than 2 poles	USM	$100
05-27-89	Fishing with more than 2 poles	Warning	
05-28-89	No fire extinguisher	Warning	
05-28-89	No boat registration in possession	Warning	
05-28-89	No boat registration in possession	Warning	
05-28-89	No boat registration in possession	Warning	
05-28-89	No boat registration in possession	Warning	
05-28-89	No wearable P.F.D.	Warning	
05-28-89	No fire extinguisher	USM	$50
05-28-89	No fishing license in possession	Warning	
06-12-89	Unattended fishing pole	Warning	
06-16-89	No fishing license in possession	Warning	
06-16-89	No fishing license in possession	Warning	
09-02-89	Taking doves over bait	USM	$300
09-02-89	Taking doves over bait	USM	$300
09-02-89	Taking doves over bait	USM	$350
09-02-89	Taking doves over bait	USM	$350
09-02-89	Hunting doves over bait	USM	$250
09-02-89	Littering	S	$50
10-04-89	False information on blind application	Warning	
10-07-89	Unrestrained dog	Warning	
10-25-89	Fishing in closed area	Warning	
10-25-89	Fishing in closed area	Warning	
10-28-89	Possession of canvasback-closed season	USM	$300
10-28-89	Lead shot/steel shot zone	USM	$75
10-28-89	Lead shot/steel shot zone	USM	$100
10-28-89	No wearable P.F.D.	USM	$50
10-28-89	No boat registration in possession	Warning	
11-01-89	Trespass - FAST bike trail	Warning	
11-09-89	Lead shot/steel shot zone	USM	$100
11-14-89	Lead shot/steel shot zone	USM	$100
11-14-89	Trespass - FAST bike trail	Warning	
11-14-89	Trespass - FAST bike trail	Warning	
11-14-89	Trespass - FAST bike trail	Warning	
11-14-89	Trespass - FAST bike trail	Warning	
11-15-89	Trespass - FAST bike trail	Warning	
11-15-89	Waterfowl hunting outside of blind	USM	$100

Savanna

Table S-10 - Summary of refuge violations - 1989 (Continued)

Date	Violation	Disposition ab	
11-30-89	No boat registration	USM	$100
12-07-89	Vehicle trespass	Warning	
12-14-89	Unattended boat - 72 hours	USM	$100
12-15-89	Unplugged shotgun	USM	$50
12-15-89	Lead shot/steel shot zone	USM	$100
12-20-89	Littering	Warning	
	(58 cases) Total Fines Assessed		$3,725

a) USM - U.S. Magistrate Court
b) S - State Court

I. EQUIPMENT AND FACILITIES

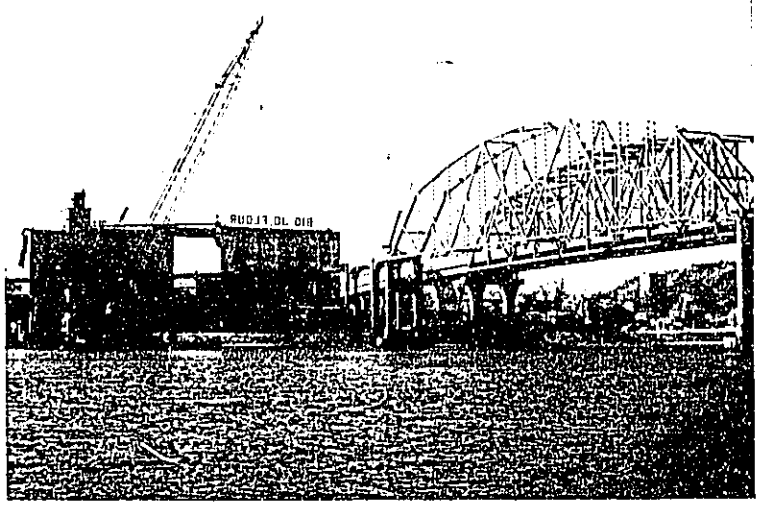
1. New Construction

Dismantling of the old interstate bridge at Wabasha, Minnesota began during the summer. As of December 1989, the structure was almost completely gone with only removal of broken concrete, other debris and haul roads remaining. Demolition of the main span attracted considerable attention from the news media and public. Area wildlife manager Dave Linderud, Wisconsin DNR station at Alma happened to be on hand for the event and provided us with the accompanying series of photographs.

A major recognition sign was erected at the Buffalo River boat access area north of Alma, Wisconsin. Another sign was erected at McNally Landing to replace the one struck by a vehicle last fall. A truck crane was hired to lift both of these signs in place after they were assembled on-site.

District staff mounting the recognition sign at Buffalo River Landing. (5/89, RD)

Demolishing the old
Wabasha bridge



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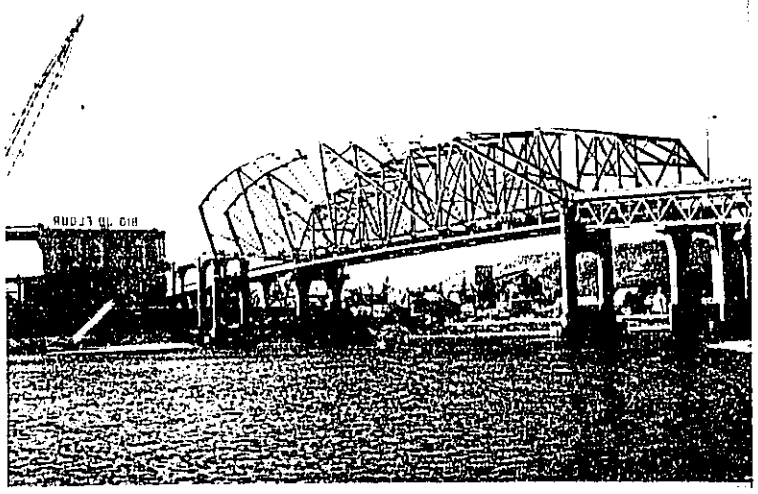

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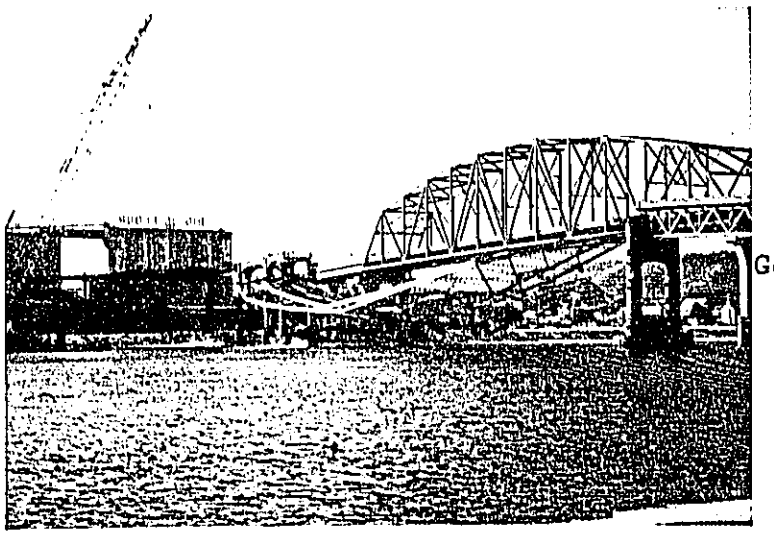

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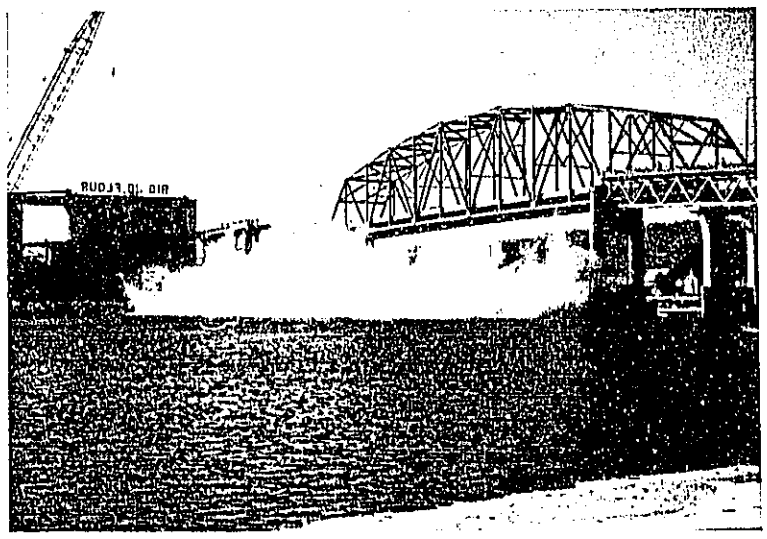
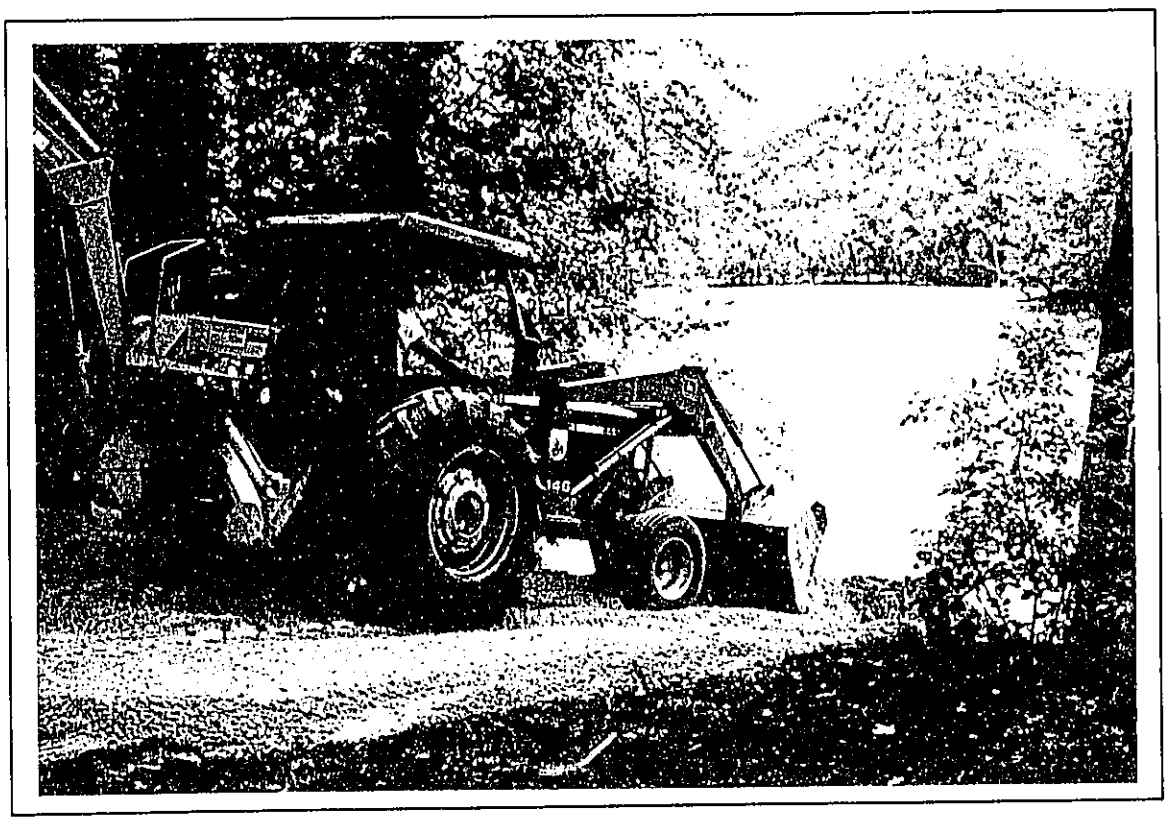


GONE!!!

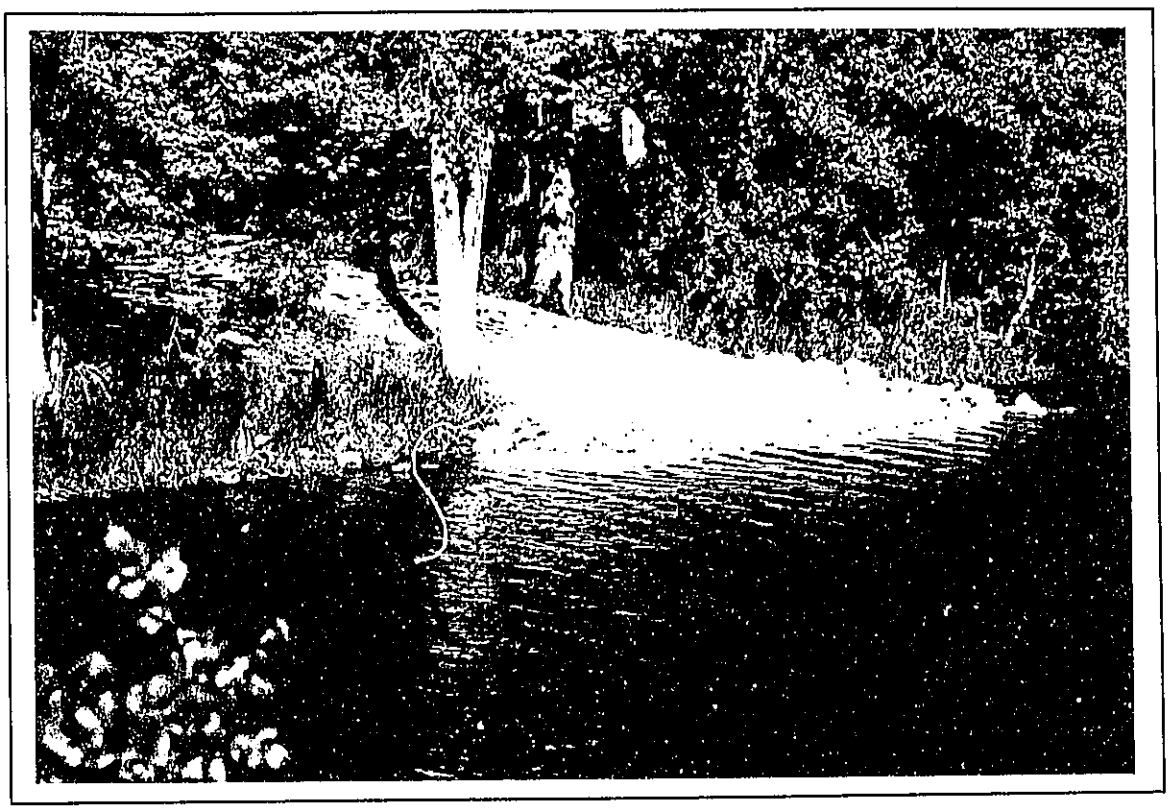
I. EQUIPMENT AND FACILITIES (Continued)

Following the receipt of required permits from Wisconsin DNR and the Army Corps of Engineers, a gravel boat ramp at the new Mertes' Slough fishing access was constructed using the John Deere 2440 tractor from Trempealeau NWR. The ramp will provide access for non-motorized boats into the small lake area north of the parking lot. This area receives considerable use by anglers, senior citizens in particular. Our policy of not permitting boat moorage beyond the 72-hour limit has not been popular with the locals. Prior to acquisition of the Mertes' Slough area by the Service in 1984, local fishermen had free run of the property.



Maintenance worker Petschow putting the finishing touches on Mertes' Slough boat ramp. (6/89, RD)

I. EQUIPMENT AND FACILITIES (Continued)



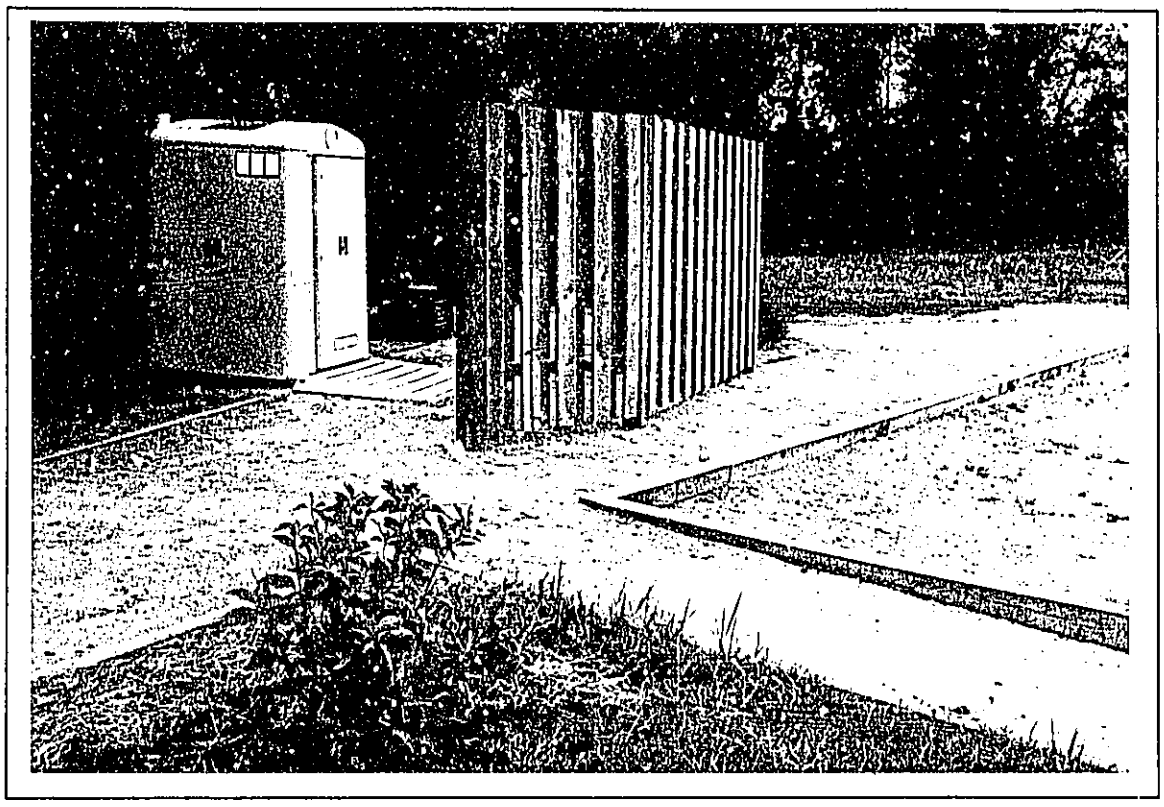
Completed boat access ramp at Mertes' Slough Landing.
(6/89, RD)

2. Rehabilitation

The two wood-frame toilet facilities at the Weaver Landing were removed and reduced to scrap this summer. These structures had become an embarrassment to the Service due to their deteriorated condition and odor problems. We tried a number of different chemical disinfectants and deodorizers to control odors with virtually no success. It was concluded that the units were improperly designed and that the cost of correcting the problem was not practical to consider. The units were demolished, the vaults filled with sand and the holes filled with a concrete plug. A handicapped accessible, rental toilet was placed at the landing through rental agreement with a local vendor. This unit is serviced weekly at a cost of $70 per month. Odor problems have been eliminated and vandalism, it if occurs, is the responsibility of the vendor. We are pleased with this arrangement and plan to replace the units at Halfmoon Landing with a handicapped-accessible rental unit next year.

I. EQUIPMENT AND FACILITIES (Continued)

Other rehab work at the Weaver Landing was performed by maintenance worker Petschow assisted by YCC enrollees. A wooden visual barrier fence was constructed in front of the new toilet facility to enhance aesthetics of the site. Wooded treated curbing was buried along the edge of the graveled footpaths adjacent to the restrooms, three-panel kiosk and observation platform. This project, which turned out to be very labor intensive, should have been part of the original contract.

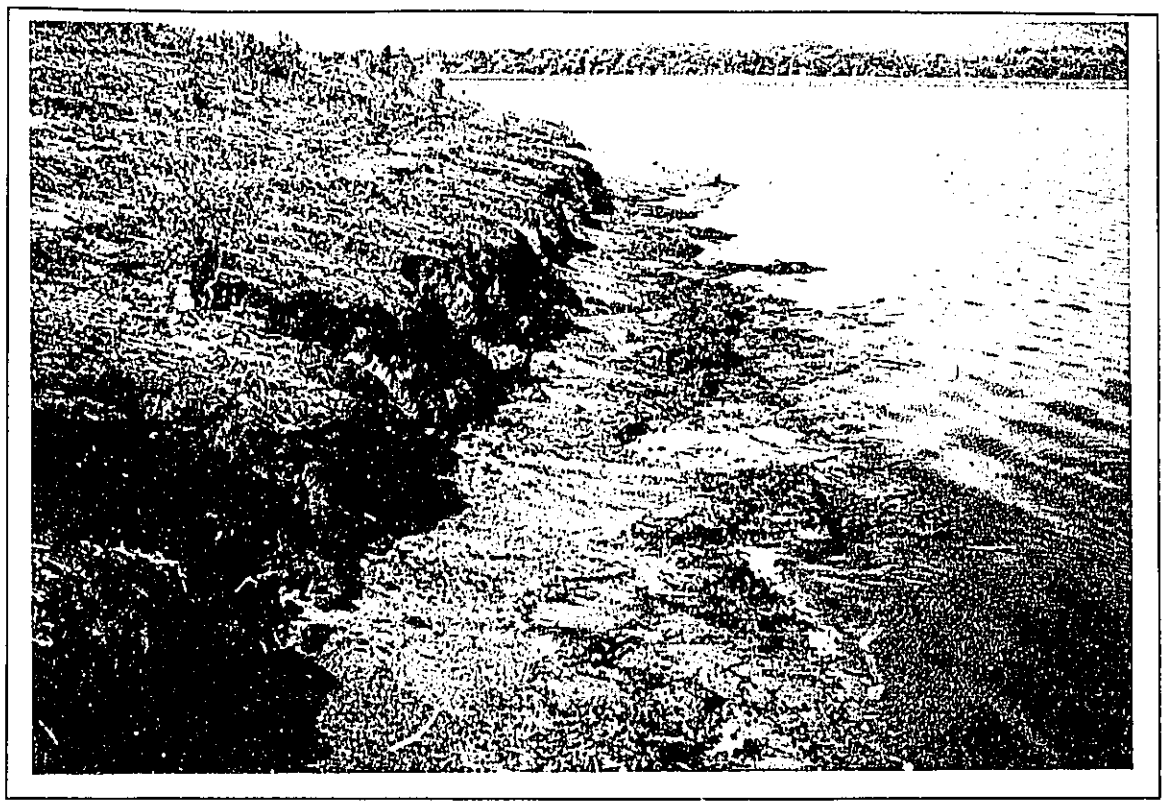


Rental toilet facility and visual barrier fence at Weaver Landing. (8/89 HS)

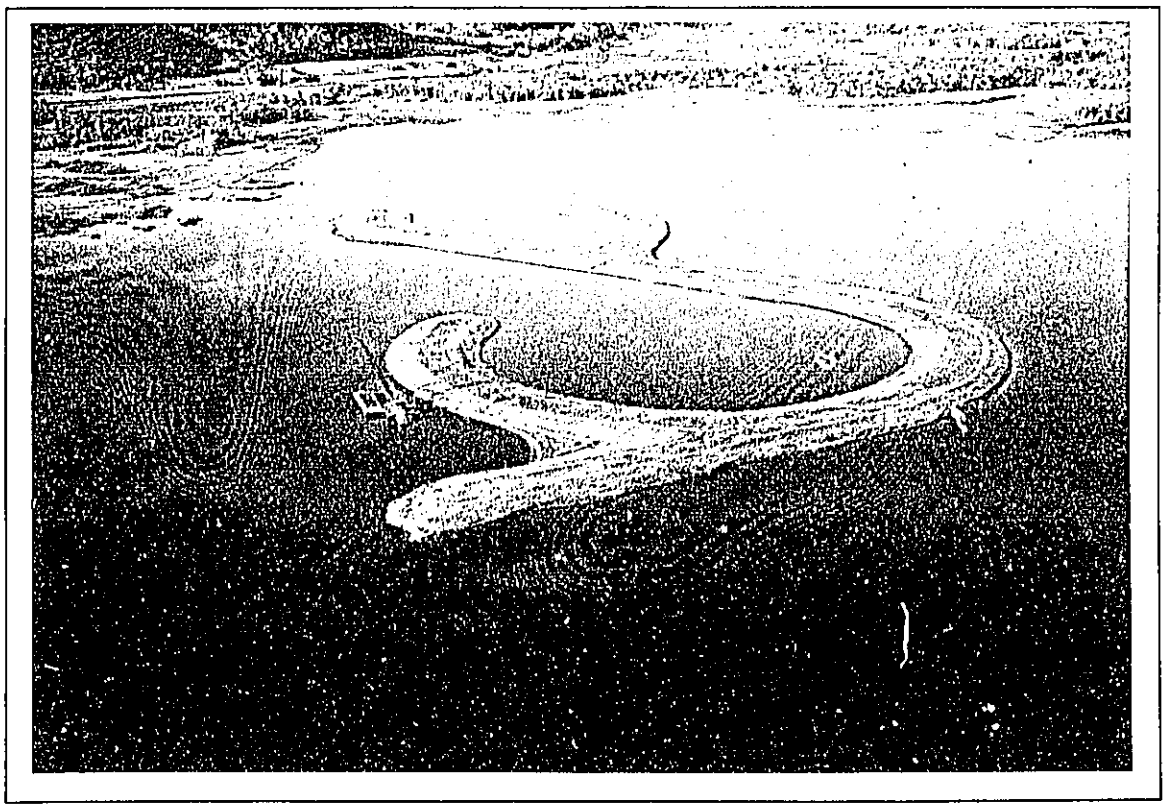
Following an on-site interagency meeting and inspection of wave erosion on Swan Island, the Army Corps of Engineers agreed to perform modifications to exposed shoreline areas on the south side of the island. One exposed point was to be re-shaped and dressed with rip-rap protection. A section of shoreline was to be re-shaped to a 1:5 or 1:6 slope, instead of the 1:3 existing slope and left as an experiment. Unfortunately, due to a misunderstanding, both areas were dressed with rip-rap. Also the rip-rap was placed at the toe of the slope and is likely to be overtopped by high water.

No property line surveys were conducted this year, however a number of areas of the Refuge boundary were reposted. These areas are shown on Maps 1, 2, 3 and 4.

I. EQUIPMENT AND FACILITIES (Continued)



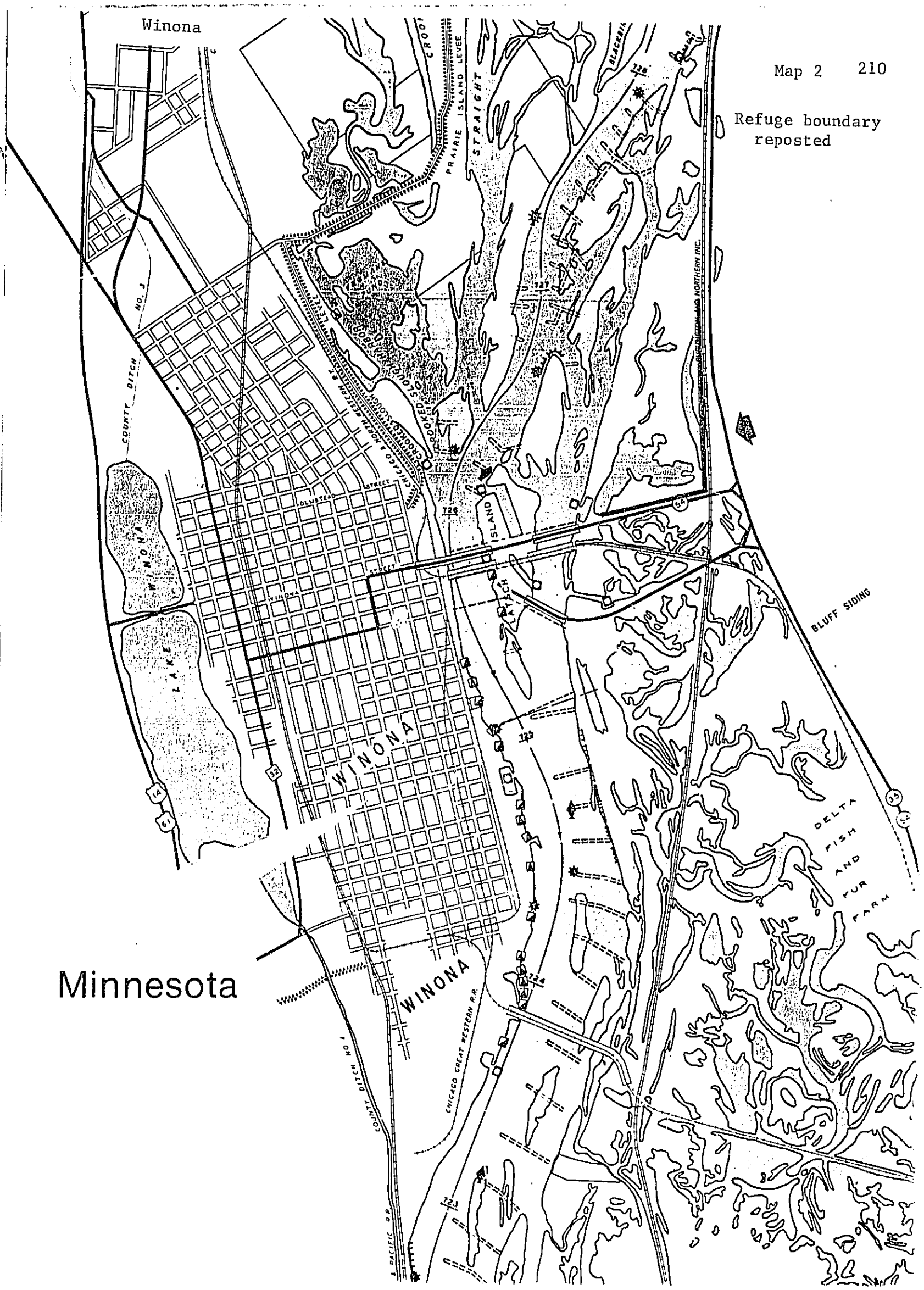
Bank erosion on Swan Island. (7/89, KC)

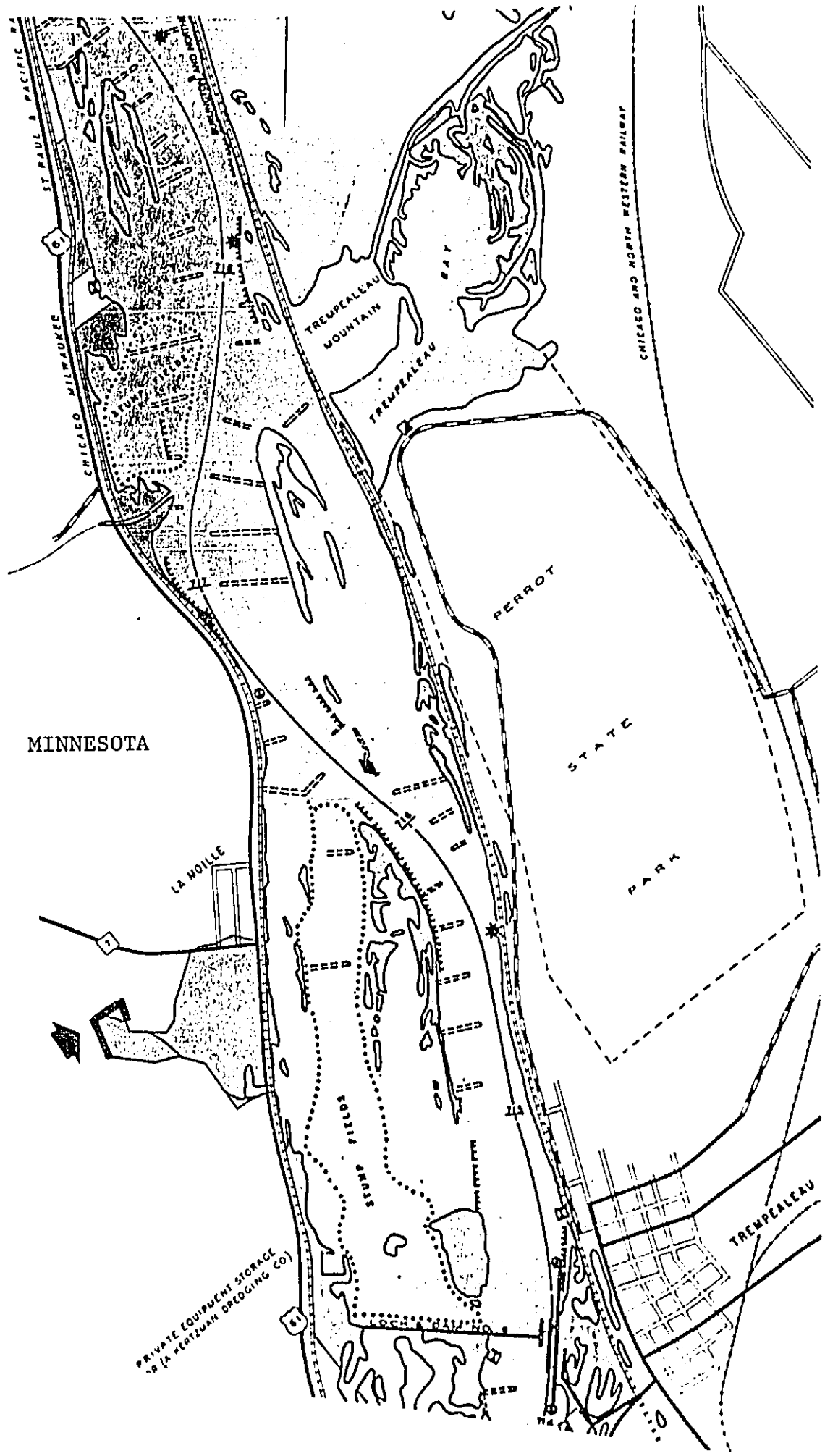


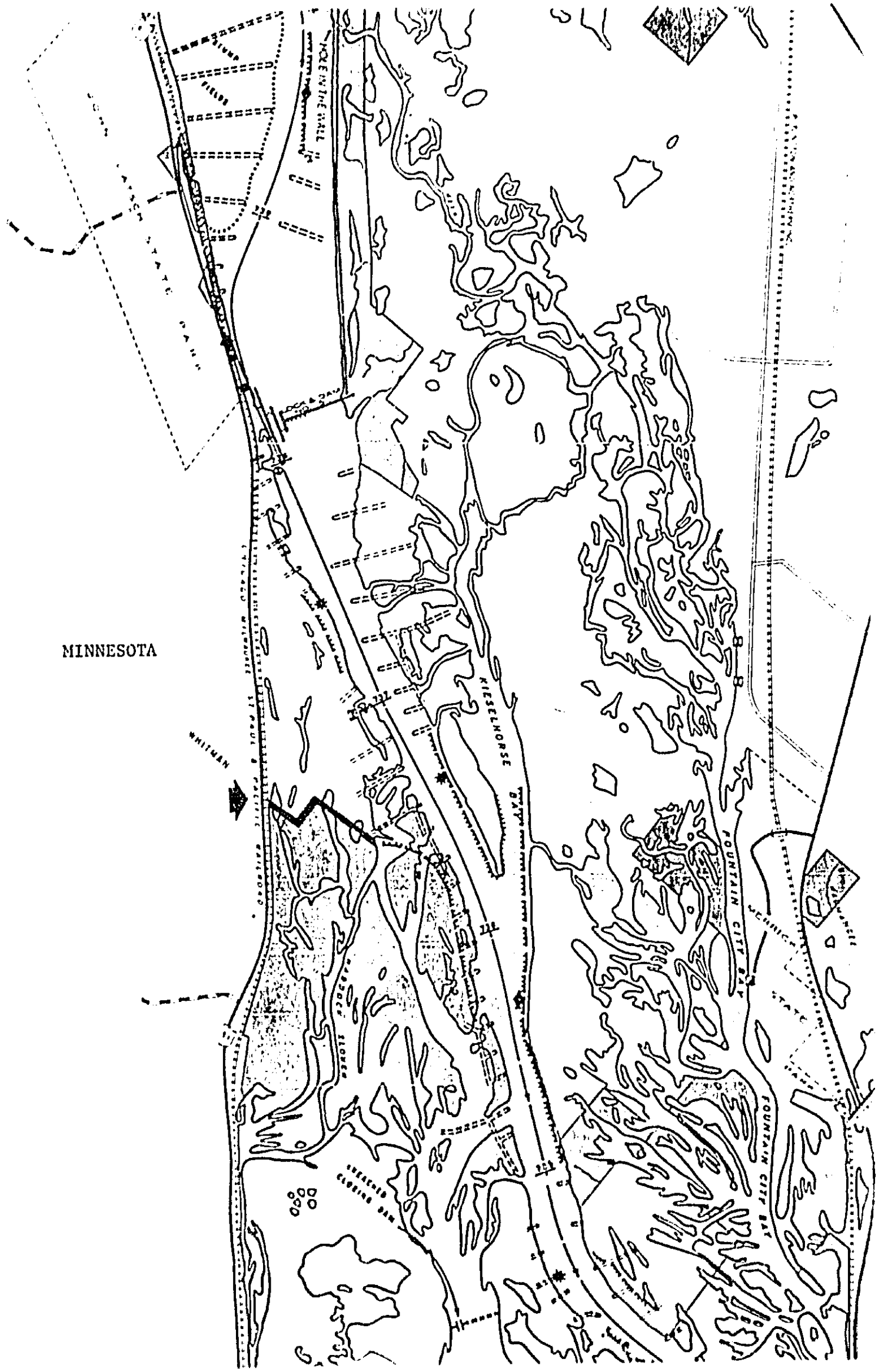
Swan Island showing rip-rap being placed by Army Corps of Engineers equipment. (10/89, KC)

Refuge boundary reposted

Refuge boundary reposted




MINNESOTA
LA MOILLE
TREMPEALEAU MOUNTAIN
TREMPEALEAU BAY
PERROT STATE PARK
STUMP FIELDS
TREMPEALEAU
CHICAGO MILWAUKEE
CHICAGO AND NORTH WESTERN RAILWAY
PRIVATE EQUIPMENT STORAGE
(A KERTZMAN DREDGING CO)


MINNESOTA
WHITMAN
KIESELHORSE
FOUNTAIN CITY BAY
FOUNTAIN CITY BAY

I. EQUIPMENT AND FACILITIES (Continued)

6. Computer System

The District's IBM PC50 was used extensively during the year. The IBM Proprinter was exchanged for the Headquarter's IBM Quietwriter III during mid-year. We have been made aware that the Model 50 is not capable of accommodating all the various programs that we are required to use for reporting purposes by the regional office along with general station functions. In some cases, we have had to rely on the use of computers located at Headquarter's to conduct business. This has been somewhat a nuisance and without question leaves us no alternative but to acquire more accommodating equipment.

District staff attended a 3-hour Introduction to Computer class conducted at Computerland of LaCrosse. Medema attended the RBase and WordPerfect classes conducted at Microworx, Minnetonka, Minnesota along with various workshops conducted at the regional office on March 14 through March 16. Janice Whitney and Deb Southworth, Regional Office Special Services, should be commended for their efforts, along with many others that organized and provided information to the workshops. Janice and Deb have provided priceless help to the field offices from on-site equipment set-up to working through user problems.

7. Energy Conservation

Winona District actively participates in recycling of aluminum, glass, plastic, tin and paper which is collected from office activities and routine litter pickup at boat landings and other refuge areas. Bins were constructed at the shop for collection and separation for each recyclable until a recycling service picks it up. Since the dawn of electronic mail, large volumes of paper are wasted by the duplication of vacancy announcements, staff meeting notes and such. Hopefully by eliminating this practice, the paper waste can be decreased substantially.

Due to the length of the District, field activities are consolidated whenever possible in order to make efficient use of staff, equipment and fuel.

I. EQUIPMENT AND FACILITIES

1. New Construction

To help offset the environmental losses that may have resulted from the construction of a second navigation lock at Lock and Dam 26 at Alton, IL, the Upper Mississippi River Environmental Management Program (EMP) was created in 1986. EMP is a 10-year program, with anticipated funding of up to $190 million, designed to maintain and improve river habitat in the Upper Mississippi River System.

Two major EMP projects were started on the La Crosse District in 1989: the Lake Onalaska Dredging Project and the Pool 8 Island Project.

Lake Onalaska Project:

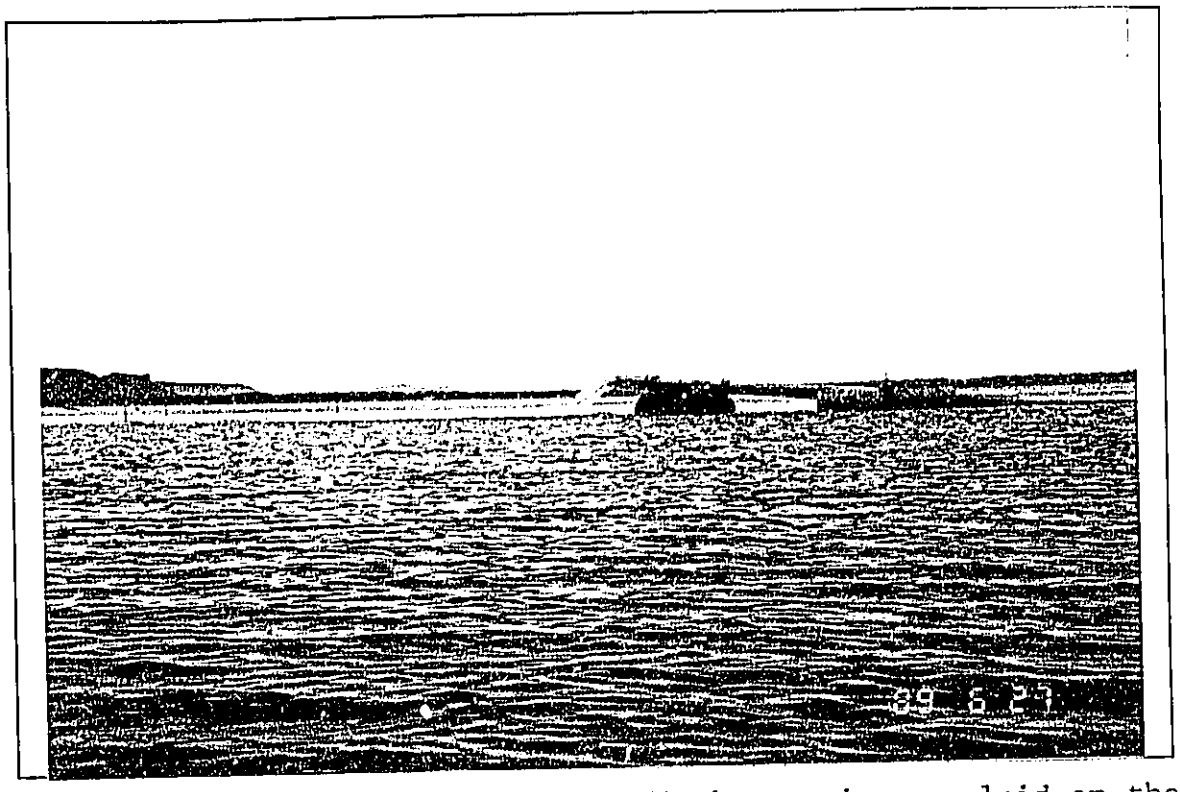
The original proposal for this project involved the creation of deepwater fish habitat by dredging and then using the spoil material to create islands that would reduce wind fetch in Lake Onalaska. After going through a seemingly endless process of reviews and changes, the final project emerged as a cooperative venture between the public and four agencies: Wisconsin DNR, Wisconsin Department of Transportation (DOT), COE, and the FWS.

Final project components included:

a. Three crescent-shaped islands, each measuring about 1500 feet long and 50 feet wide at the top, were created in the open lake to reduce wind fetch and provide structure for a variety of fish and wildlife species where previously none existed.

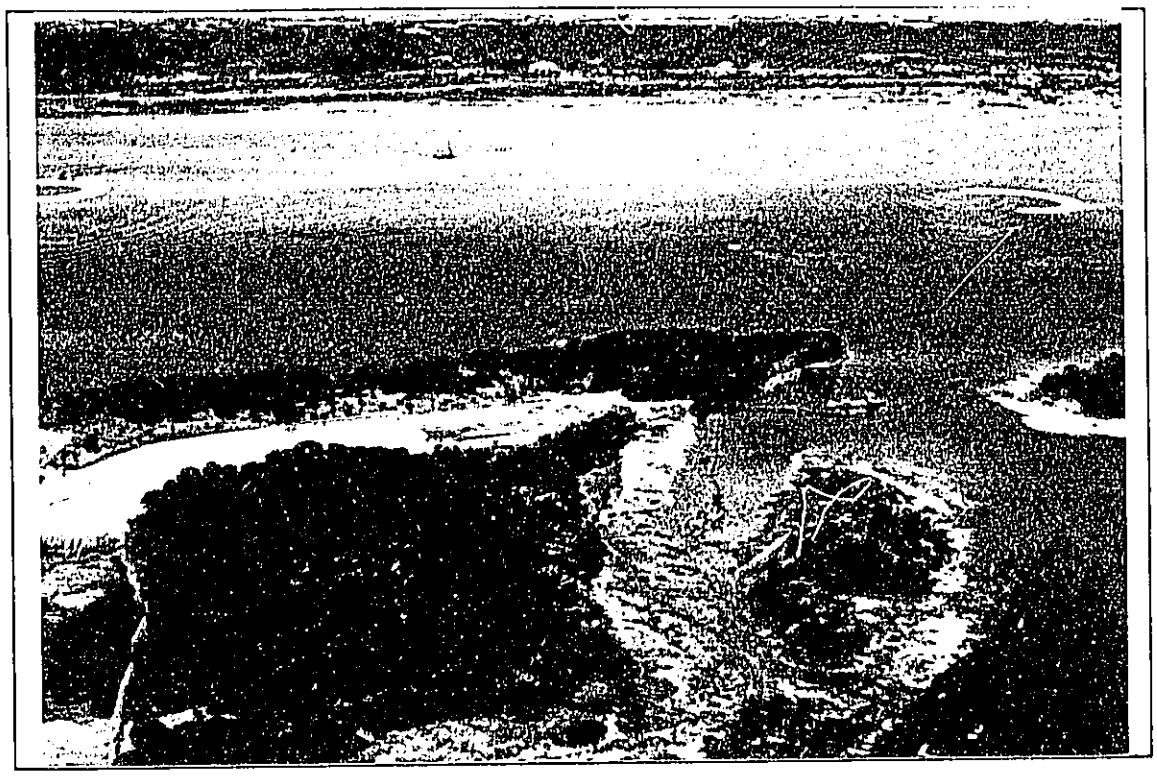
   The core of each island was constructed of sand and gravel pumped by hydraulic dredge from the lakebed and piped to the sites. Island construction began in late May and was completed in early September after topsoil was placed atop each island. The topsoil was mechanically dredged from the lake bottom upstream of each island. Geotextile fabric and rip-rap were also added to the upstream side of each island to provide protection from wave action. The downstream, or south side of the islands, was not rip-rapped; the intent is for this area to erode to a more gradual slope. Slightly over 50,000 cubic yards of material were used to create each island.

   The contractor is scheduled to return in early spring, 1990 to finish grading the topsoil and seed each island.



One island coming up! Most of the discharge pipe was laid on the lake bottom to avoid blocking boat traffic. (L. Wlosinski)

The first island to be built was tied into one of the few remaining islands on Lake Onalaska. (Refuge HQ)



The dredge in the foreground is pumping sand and water through a pipe to create the third island in the top center of the photo. (COE-St. Paul)

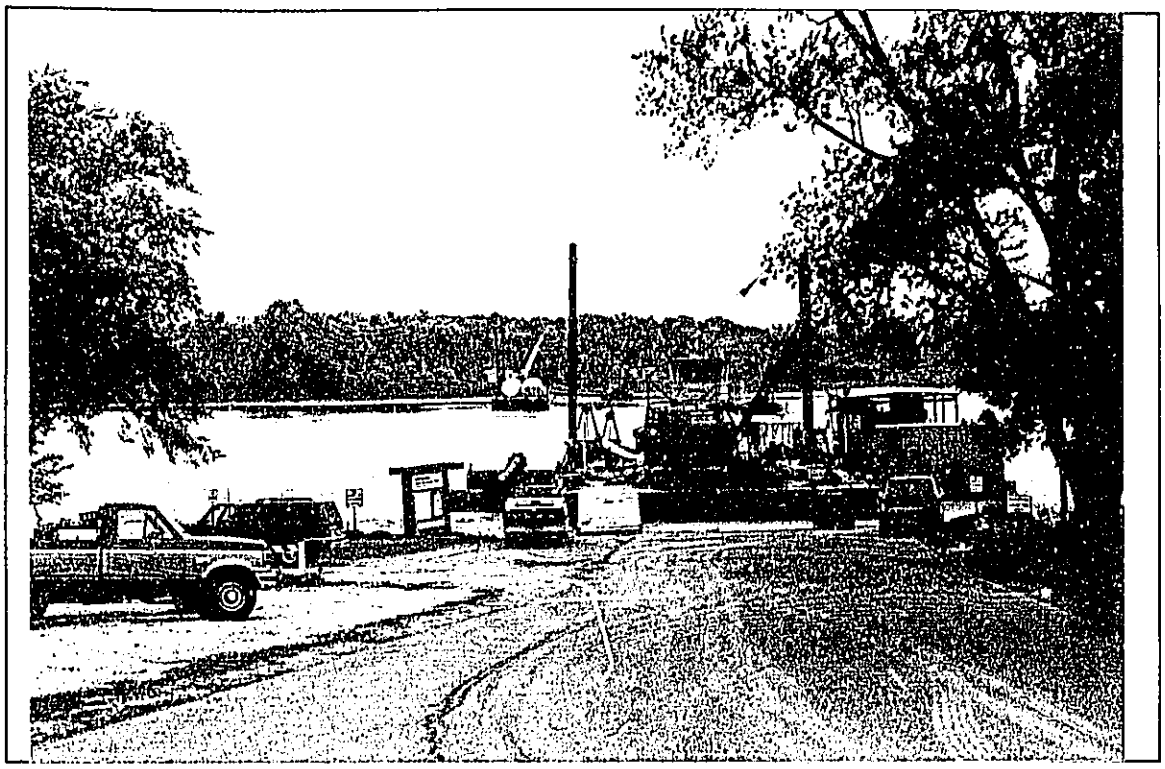
Geotextile fabric and rip-rap were placed on the upstream side of each island to provide protection from wave action. (R. Staszewski)

New islands from left to right: Cormorant, Broken Gun and Arrowhead. (COE-St. Paul)

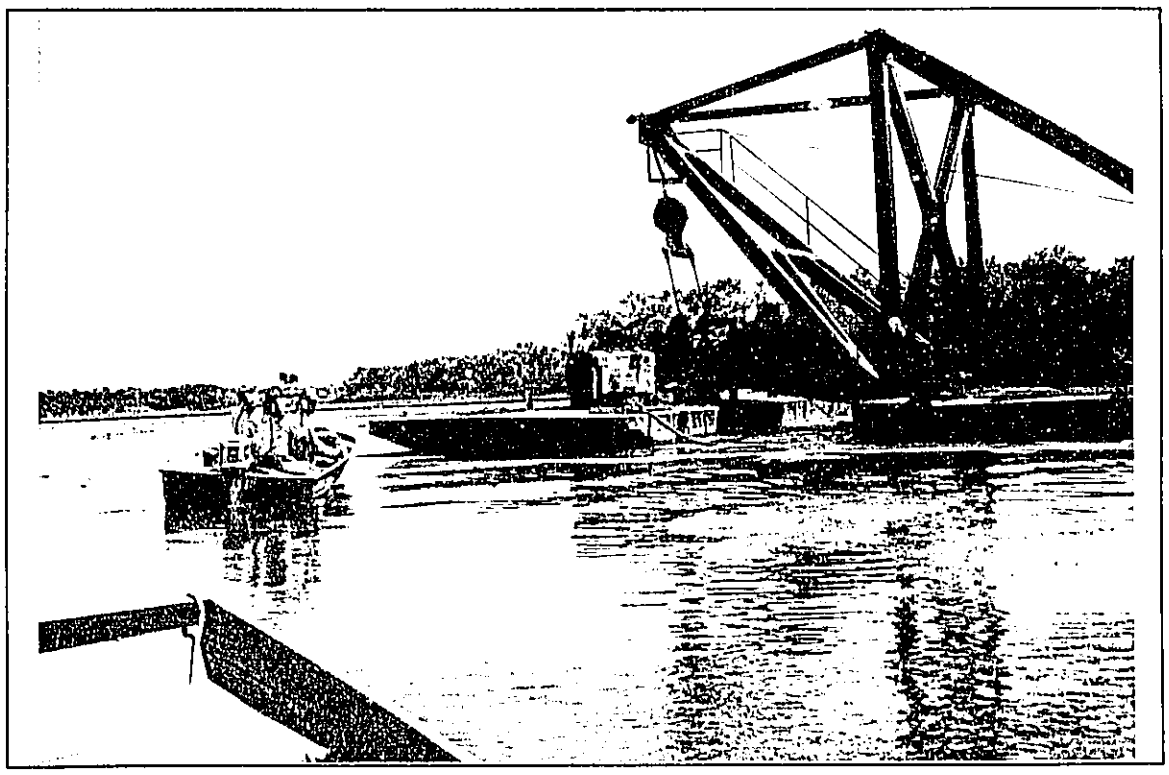
b. About one million cubic yards of sand and gravel were pumped from the lake and transported by pipeline several miles to be used in a highway construction project. Once the material was delivered to the highway construction site, existing drainage ditches and ponds were used to allow fine materials to settle out of the carriage water before the water was returned to the river. This was done to meet State water quality standards.

The material was dredged from around the north and east sides of Rosebud Island. To obtain the material, two curved channels, each about 15 feet deep, up to 300 feet wide, and 6500-7000 feet long were created. In the future, these channels will provide habitat and a source of oxygenated water during critical times of the year to a variety of fish species. A series of dredge cuts connect the two channels and provide additional fish habitat.

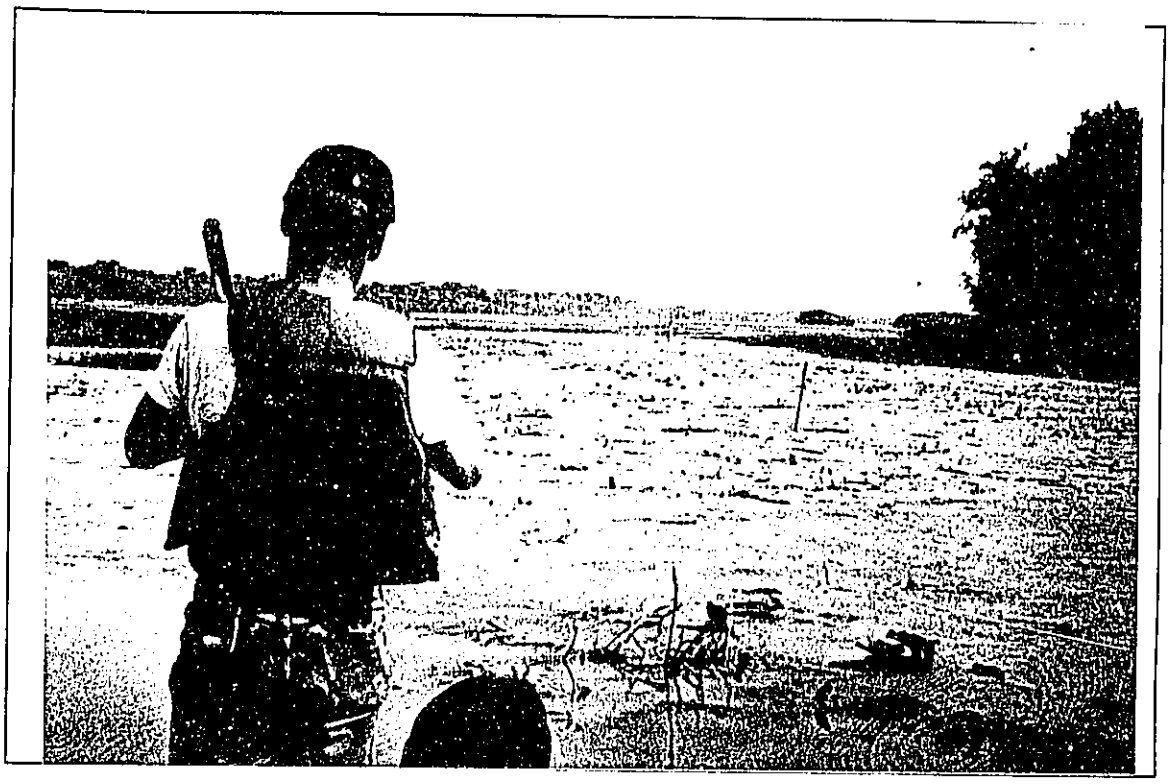
A sediment trap, designed to collect sediment carried by Halfway Creek before it enters Lake Onalaska, was dredged at the mouth of the creek. The area around the Mosey Boat Ramp was also dredged for easier boat access. A total of about 90 acres of lake bottom was dredged.



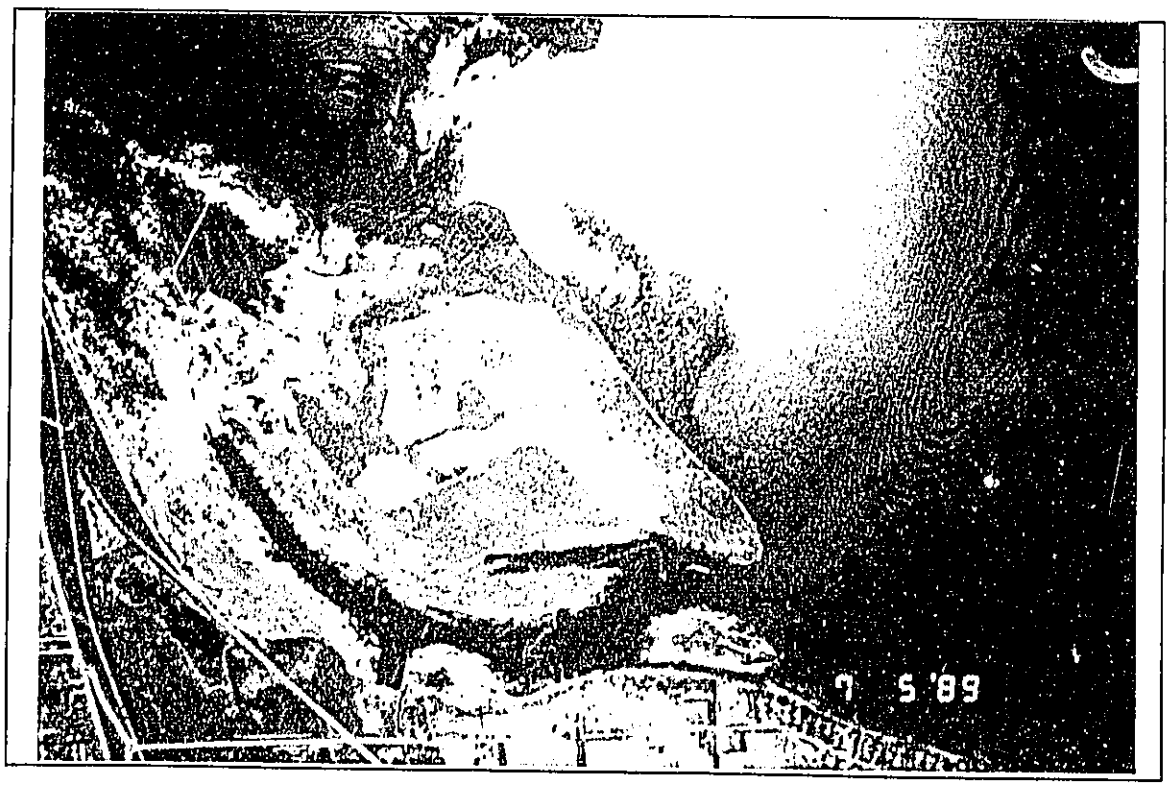
Mosey Landing was closed to public use to provide a base of operations for the dredge crew. In the process, the boat launch was deepened and the parking area expanded. (B. Thrune)



The Lake Onalaska dredge project was the media event of the year. (B.Thrune)



About four feet of muck was skimmed from the dredge channel exposing the clean construction sand used to build the highway (B. Thrune)



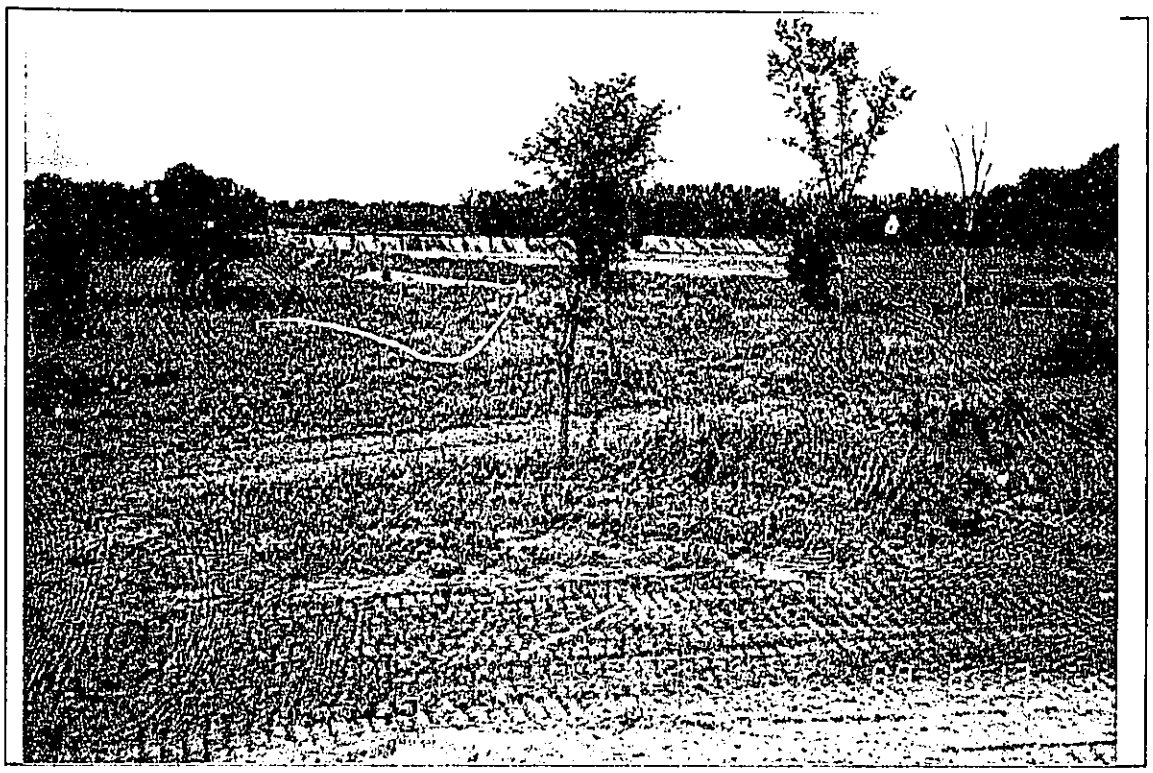
Dredge cuts, settling ponds and the overall size of the project are hard to imagine from the ground. (COE-St. Paul)

c. The highway construction project required sand only. The fine material, or overburden, was pumped into a series of settling ponds constructed on Rosebud Island. Initial project plans identified Rosebud Island as a source for sand and gravel for the highway project. When this idea was abandonded early in the project because the gravel on the island could not be pumped efficiently, the area on the island already cleared of trees was used for the settling ponds.

An estimated 380,000 cubic yards of fine material was pumped into the 85 acres of settling ponds on the island. The dikes on the primary basin, which will remain intact in the future, were reshaped to a 5:1 slope in October. The secondary basins will be leveled as the material dries and then seeded to a prairie mix. To mitigate the loss of trees and use of Rosebud Island as the site for the settling ponds, construction began in October on two waterfowl "pair ponds". These ponds will be completed in the spring.

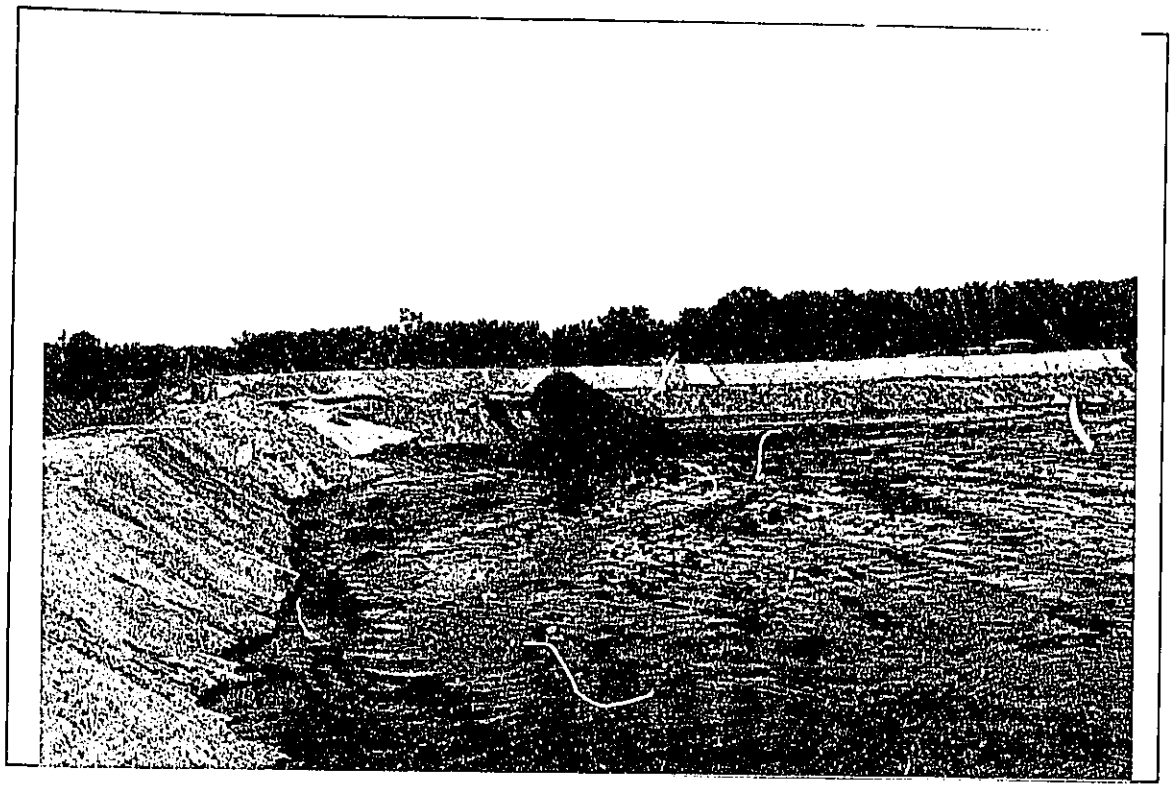
Hoffman Construction of Black River Falls, Wisconsin was the low bidder on the entire project at $7.2 million. Of the total amount, an estimated $2.4 million was charged to the EMP for island creation and a portion of the dredging. Subcontractors on the project included J.F. Brennan, Inc. of La Crosse, WI for placing topsoil, geotextile fabric, and rip-rap on the three islands; L.W. Matteson of Burlington, IA did the dredging and associated work on Rosebud Island.

To date, this project has been viewed as an overwhelming success by the public and media. Much of the credit for this goes to John Chapman, a Wisconsin DOT engineer, who was given the unenviable task of providing the liaison between the agencies involved and the contractors.

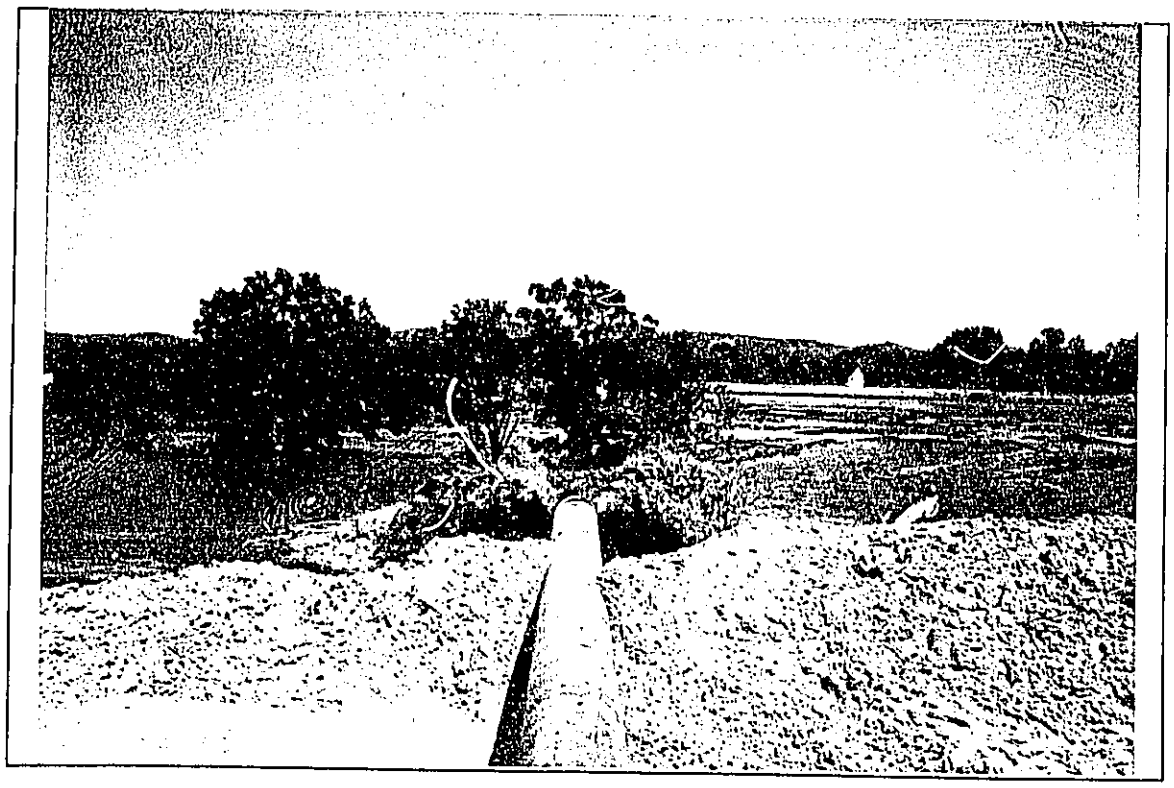


A series of settling ponds were constructed on Rosebud Island in the early stages of the project. (B. Thrune)

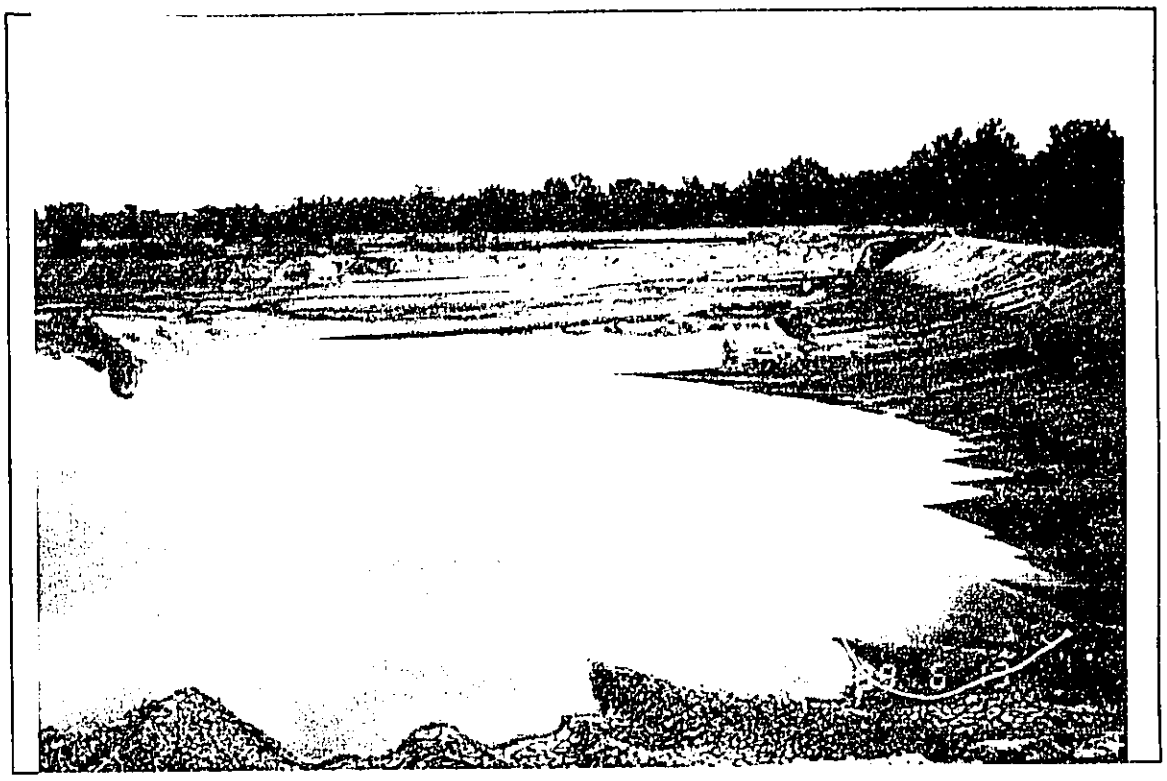
Silt-laden water was pumped into a series of settling ponds to allow fine sediments to drop out before the water was returned to the lake. (B. Thrune)



Many roots and tubers were pumped into the ponds with the fine material and sprouted new growth later in the summer. (B. Thrune)



It is hard to visualize the depth of the disposal site without a gauge such as these oak trees. (B. Thrune)



The mudflats left behind as the water was drained-off provided many acres of shorebird habitat. (B. Thrune)

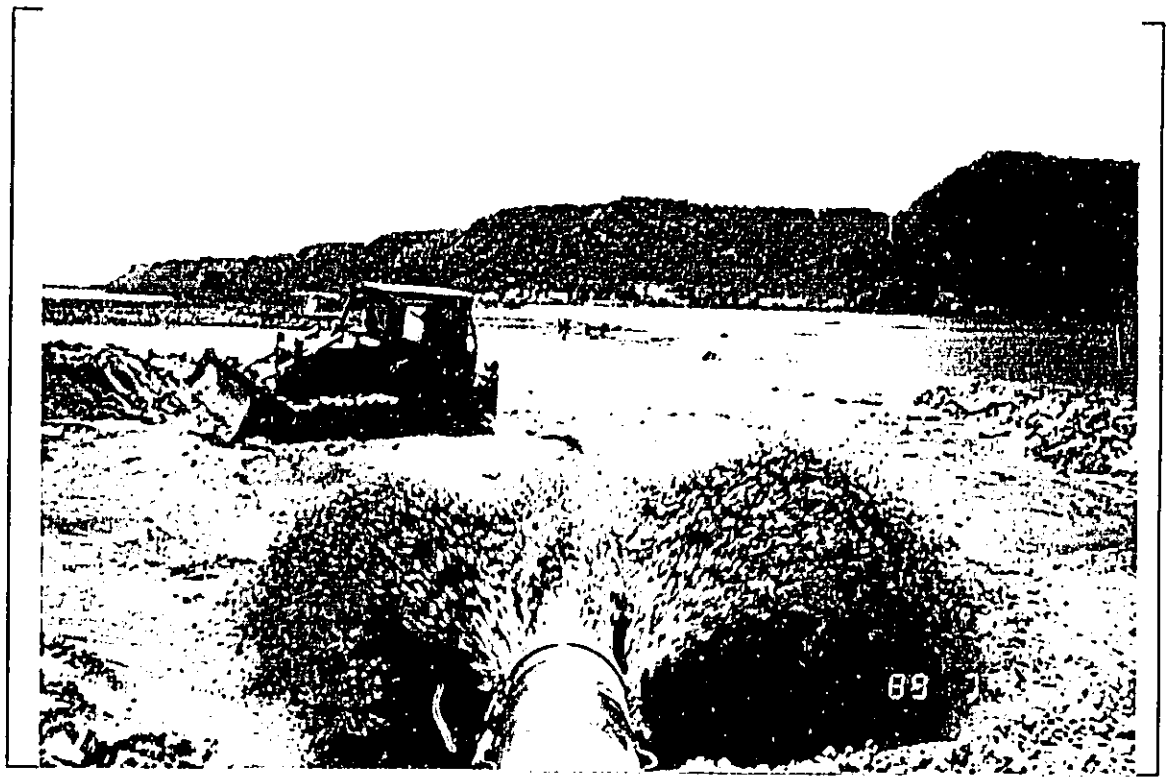
Early plans called for dredging a channel through Rosebud Island along the "L" shaped pond on the right. Two waterfowl pair ponds will be constructed there instead. (COE-St. Paul)

Pool 8 Island Project

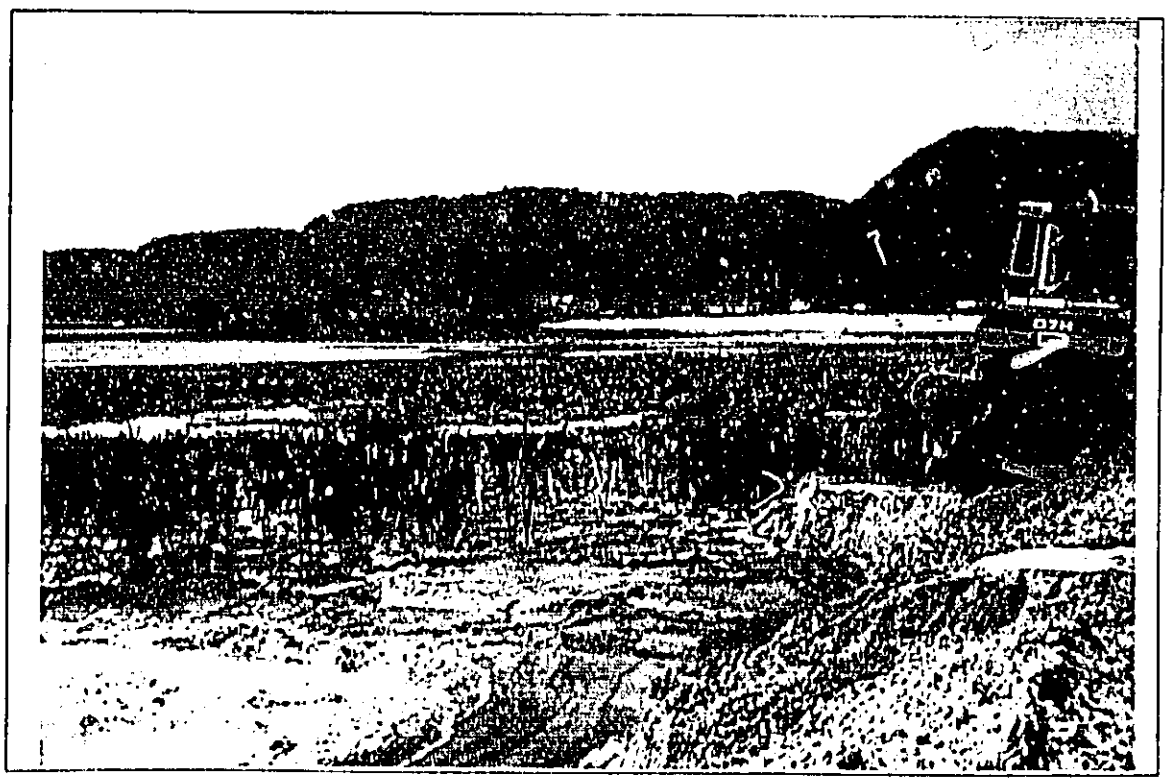
This EMP project, scheduled to be built in phases beginning in 1991, began in 1989 because the COE needed to remove a shoal from the main navigation channel adjacent to the project site. In July, an estimated 100,000 cubic yards of sand were hydraulically dredged from the channel and pumped on the EMP site at no cost to the program. Unfortunately, the new island has not been protected with rip-rap and there is concern that a flood event could cause severe erosion.

The entire Pool 8 project consists of restoring an existing island and building a new 5000 foot barrier island to keep silt-laden floodwater out of the Wisconsin Island closed area. The top of the island will be covered with topsoil, graded, and seeded to protect them from erosion. Total cost of the project is estimated at $1.5 million.

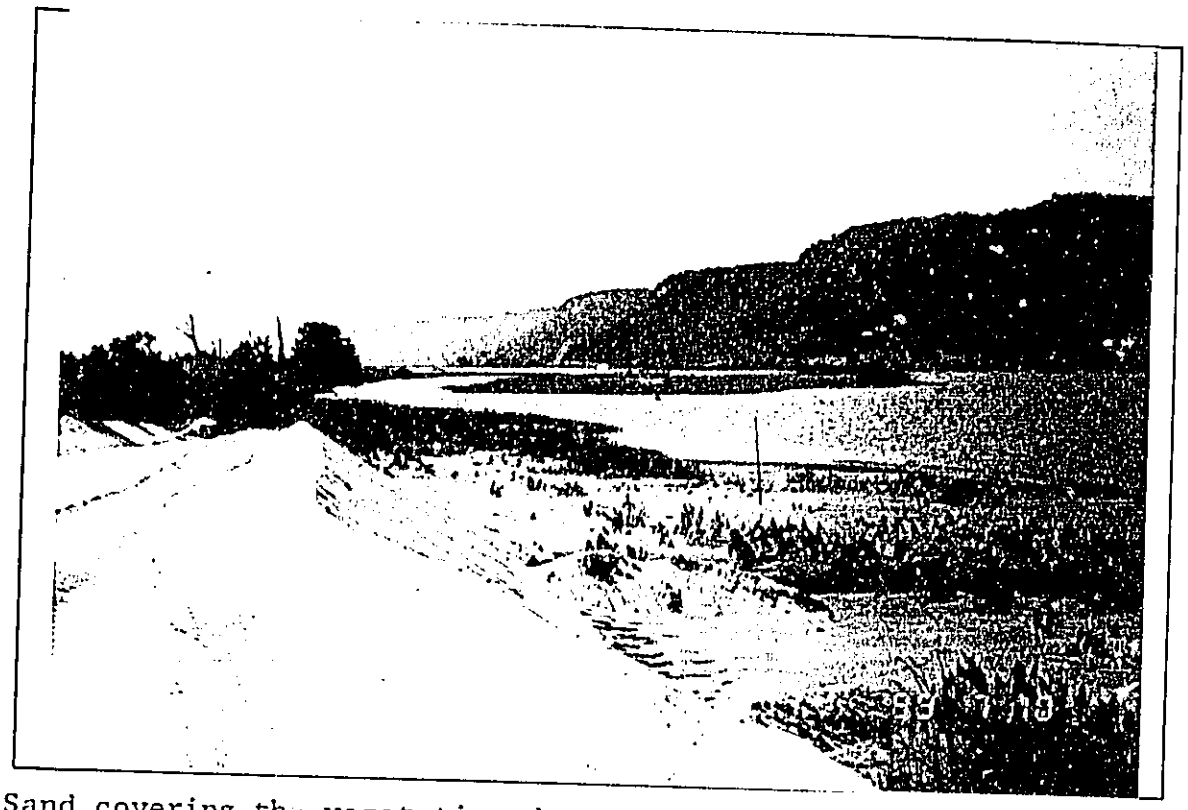
The COE gave a boost to the Pool 8 EMP island project by starting work ahead of schedule and by using channel maintenance funds to do the work. (COE-St. Paul)



Dredge spoil was used to fortify an existing barrier between the river and the marsh. As sand was deposited, a dozer would shape the walls to direct the silt flow. (L. Wlosinski)



Sometimes you have to give a little to save a lot. (L. Wlosinski)



Sand covering the vegetation does not look very nice, but it beats the alternatives.
(L. Wlosinski)

When finished, the barrier island will extend along the navigation channel off the left side of the photo.
(COE-St. Paul)

2. Rehabilitation

In May, the entrance road to the Round Lake Boat Ramp, located in the upper reaches of Pool 7, received new gravel and was graded at a cost of $280.39. Personnel from the Town of Trempealeau did the work.

In an effort to reduce channel maintenance costs and improve barge navigation, wing dams in the Bullet Chute area of Pool 7 were lengthened on the Wisconsin side of the river and shortened on the Minnesota side, resulting in the removal of a difficult corner.

During the second phase of the project, partial closing structures were constructed at the mouths of Bullet and No Name Chutes to reduce the amount of silt-laden water entering the backwaters during floods. In addition, sediment traps were dredged in the chutes and lined with rock.

The project cost of approximately $100,000 was covered by the COE's channel maintenance program.

The Wisconsin DNR had special funds available during the year and allocated the money toward implementing the approved Recreational Beach Development Plan. Islands identified in the Land Use Allocation Plan (LUAP) as low density recreation areas were targeted for beach and camping site rehabilitation. The objective of this effort was to create camping sites/beaches for families or small groups, not large beaches that are later used as sites for large parties.

During the summer, 13 sites on four islands in Pool 7 and 13 sites on five islands in Pool 8 were cleared and graded to provide flat camping sites adjacent to beach areas.

The contract cost of $10,116, excluding 100 hours of supervisory time, was paid by the Wisconsin DNR.

4. Equipment Utilization and Replacement

A new 25 HP Mariner outboard motor, 14-foot Polar Kraft aluminum boat, and Spartan trailer were purchased at a cost of $2,644.

The 16-foot Kann work boat was outfitted with a new trailer winch and jack. The 65 HP motor required a new keel and repairs to the cooling system.

5. Communication Systems

A portable King radio unit was installed in the Ford Courier pick-up truck during the summer.

The District's radio system is in need of upgrading. This process was initiated at year's end.

6. Computer Systems

The computer system was up and running nicely this year. District staff found the system easy-to-use and consider it to be a great labor and time saver. Excess hardware and software were transferred to various government agencies. There were no major additions to the system this year.

I. EQUIPMENT AND FACILITIES

1. New Construction

Guttenberg Waterfowl Ponds Rehabilitation, Pool 11, Iowa

The Guttenberg ponds totalling about 35 acres, were formerly part of the Guttenberg National Fish Hatchery. They are located on the south side of Lock and Dam 10 in the Iowa portion of Pool 11 across from Guttenberg, Iowa. In 1971 the hatchery was closed and the ponds were transferred to the Upper Mississippi Refuge. A water management plan was implemented to improve migratory bird habitat by providing more food resources to help meet the nutritional needs of migrating waterfowl. Because existing methods of managing water levels in a continually fluctuating river system were inefficient and ineffective, the water management plan was abandoned in 1973.

In 1986, a pond renovation project was proposed to permit water level control through new supply and drainage structures. The project, located on Service fee title land within the Upper Mississippi River National Wildlife and Fish Refuge, is funded through the Upper Mississippi River System Environmental Management Program (EMP). The EMP is a long-term program established by Congress to restore and protect habitat on the Upper Mississippi River (Section D.6).

Project construction started in October, three months behind schedule, and should be completed in early 1990. Extremely mild weather allowed for completion of most of the project. The project will cost approximately $300,000 and when completed will be operated as a seasonally flooded impoundment under the principles of moist-soil management to provide nutritional needs to migrating waterfowl in spring or fall. The portion of the abandoned fish hatchery being renovated consists of three adjacent ponds numbered 2, 4, and 3. The project consists of five main construction procedures: installation of a water supply line, excavation of ditches, construction of two water control structures, removal of trees along dikes, and rehabilitation of the Big Pond water control structure.

a. Water Supply Line

A gated water supply line, approximately 1,050 feet in length was constructed parallel to Cassville Slough south to the northeast corner of pond 3. A corridor of bottomland timber approximately 50 feet on either side of the pipe line was cleared to lay the pipe and for equipment access to the rest of the project site. Cut trees were piled and burned. The wetland north of pond 3 was drained to lay the pipe but will be restored when the project is completed. The pipe line will supply water to the ponds via gravity flow and allow filling of the ponds in seven days.

b. Ditch Excavation

A 10-foot wide ditch was excavated in the pond bottom adjacent to the dike toes of ponds 3 and 4, beginning at the water supply line outlet and ending at the northwest corner of pond 4. During construction, it

was found that the elevation in pond 3 was higher than the location of the supply line outlet. Consequently, a change order was completed and the ditch was excavated to the supply line outlet to facilitate water flow. The ditch will allow drainage of ponds 2 and 4 to the water control structures in ponds 3 and 4. Breaches in the northwest and southeast corners of pond 4 were excavated to allow water flow between ponds 2, 4 and 3 via the ditch. The material excavated from the ditch was side cast and placed on the inner side of the dikes within the ponds and later shaped to the contour of the dike.

c. Tree Removal

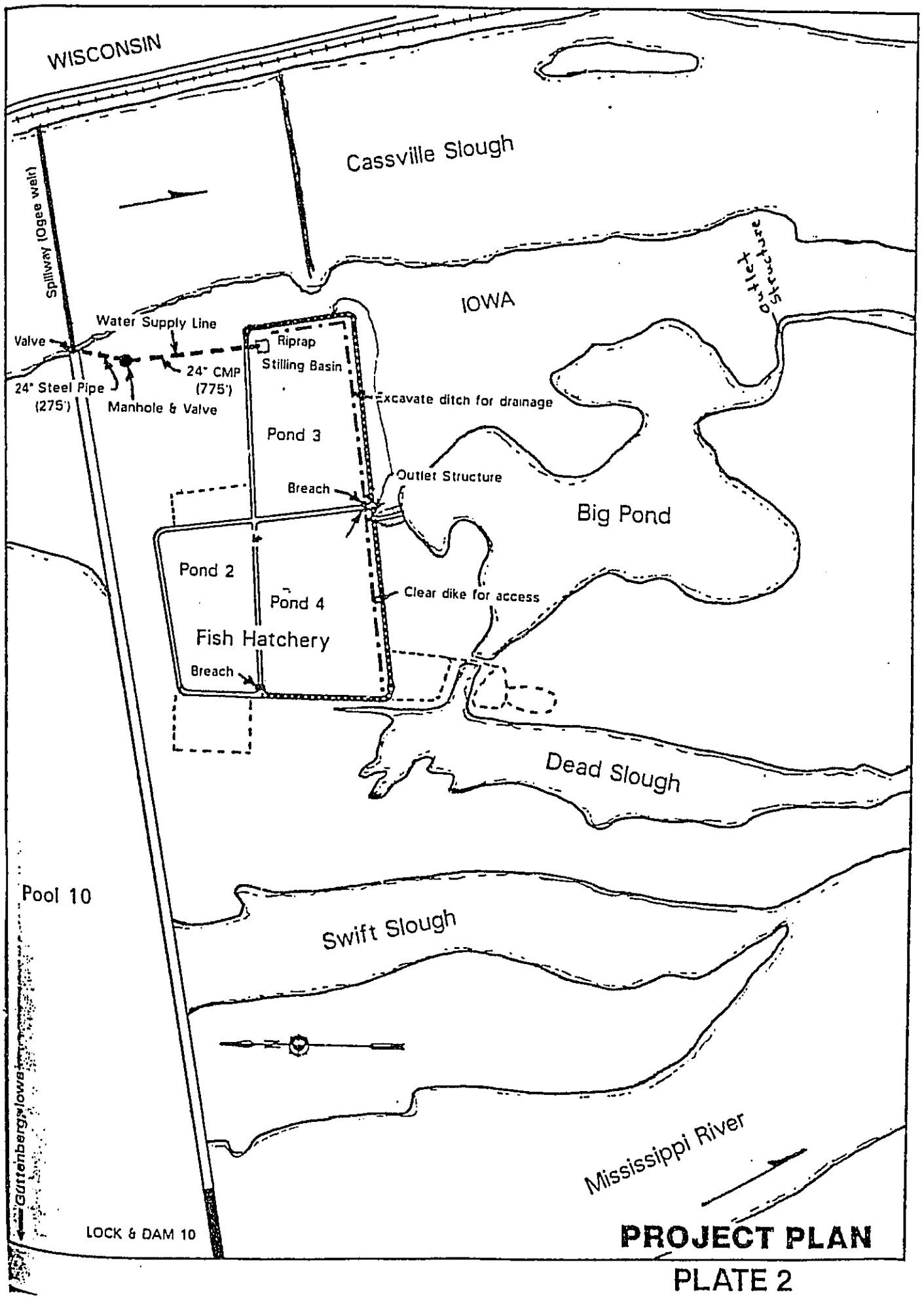
Trees were cleared from the top and pond sides of all the dikes, except for those on the dike common to ponds 3 and 4. Clearing was done to provide construction access and an area for placing excavated material. The trees were piled in the ponds and burned.

d. Water Control Structures

A slide gate water control structure was prefabricated and installed in the southeast corner of pond 4 for drainage through the southern dike into Big Pond. A stop log water control structure was also prefabricated and installed in the lower east dike of pond 3 to facilitate drainage of the ponds into Cassville Slough. Use of both structures will speed up drainage of the ponds when needed. Cassville Slough water levels are normally lower than Big Pond levels so construction of the pond 3 structure will allow for more complete drainage. The structures will remain closed during high river levels to prevent the flow of silt-laden waters into the ponds. Three old hatchery control structures along the western and eastern sides of the ponds, were plugged on the levee side and then filled.

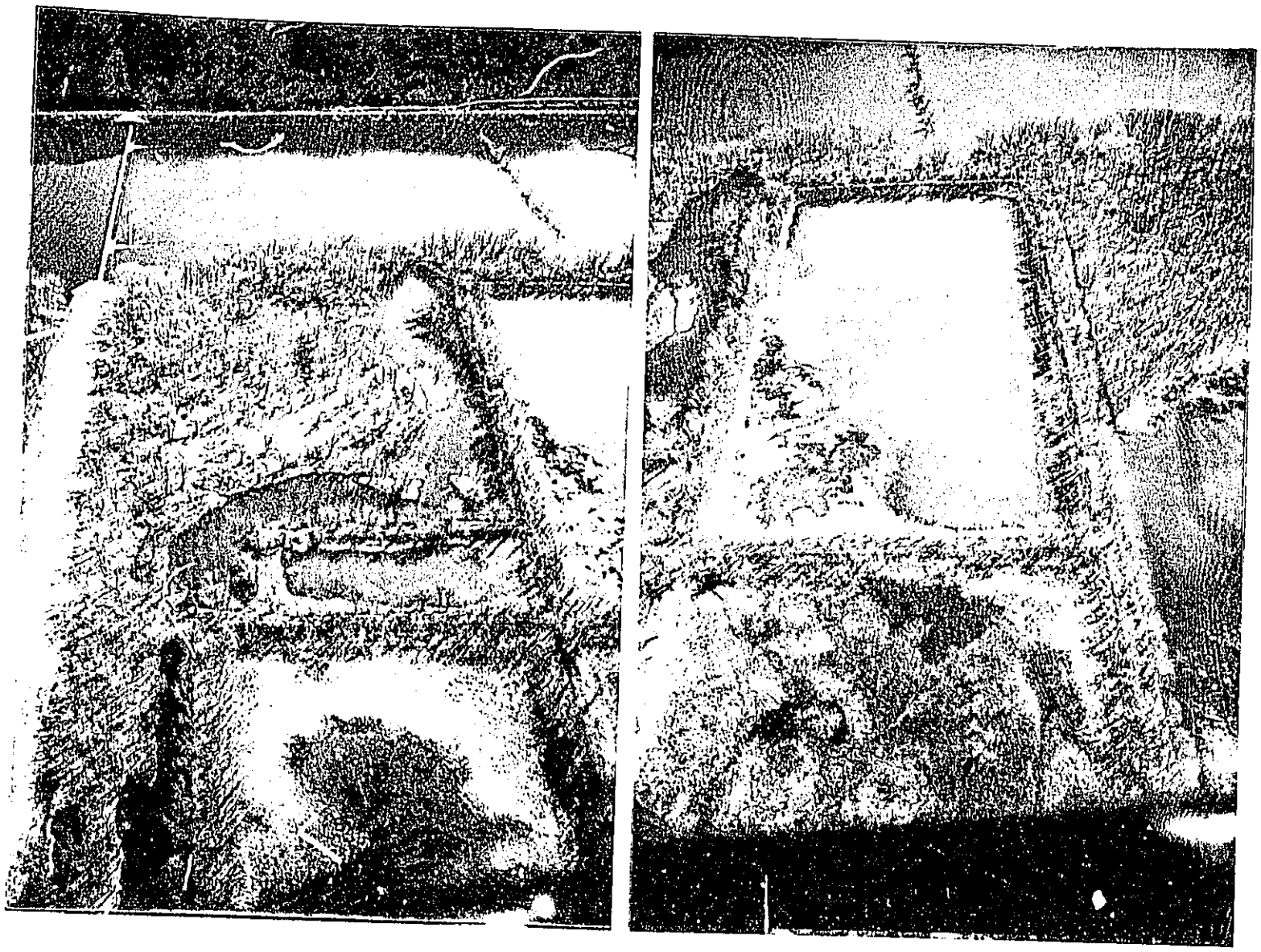
e. Big Pond Water Control Structure Rehabilitation

Part of the project involves removal of debris from an existing Big Pond water control structure located about half a mile south of the main project site. The pipe was cleaned out, but some bank reshaping around the structure needs to be performed and will be completed in spring 1990. Cleaning of the structure will allow lowering of water levels in Big Pond. This will in turn facilitate flow of water from ponds 3, 4 and 2 into Big Pond, during the time of year the ponds need to be drained.



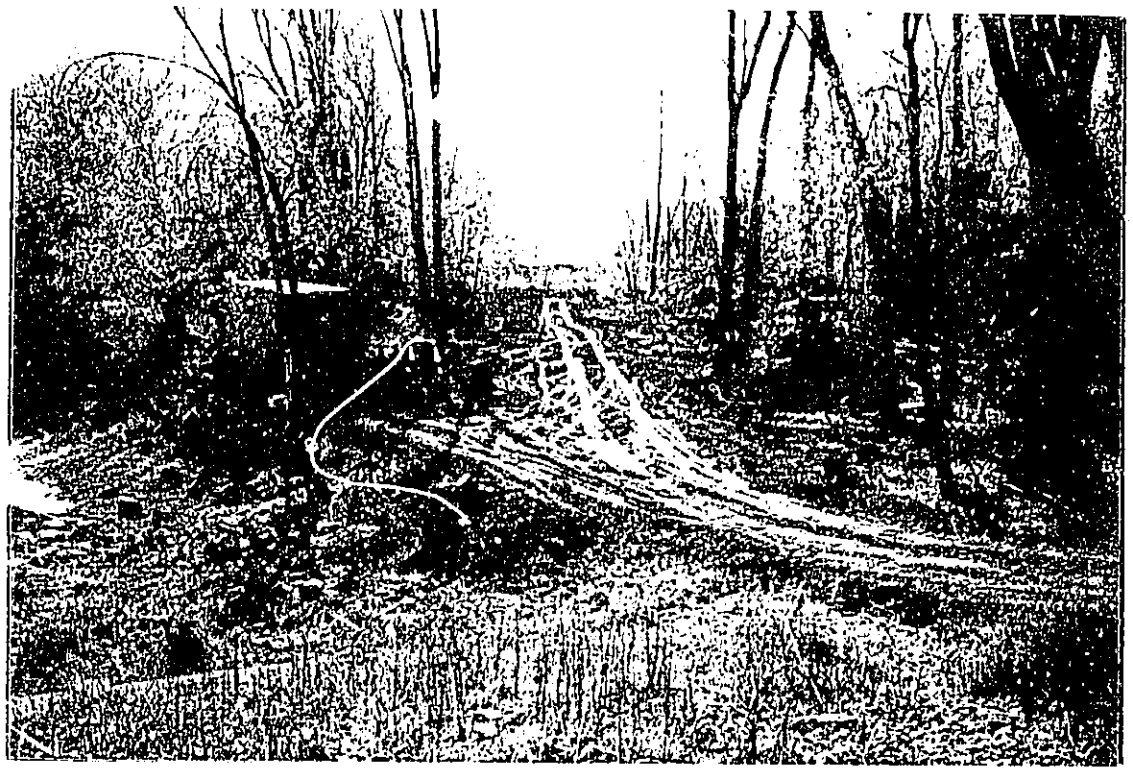
PROJECT PLAN

PLATE 2



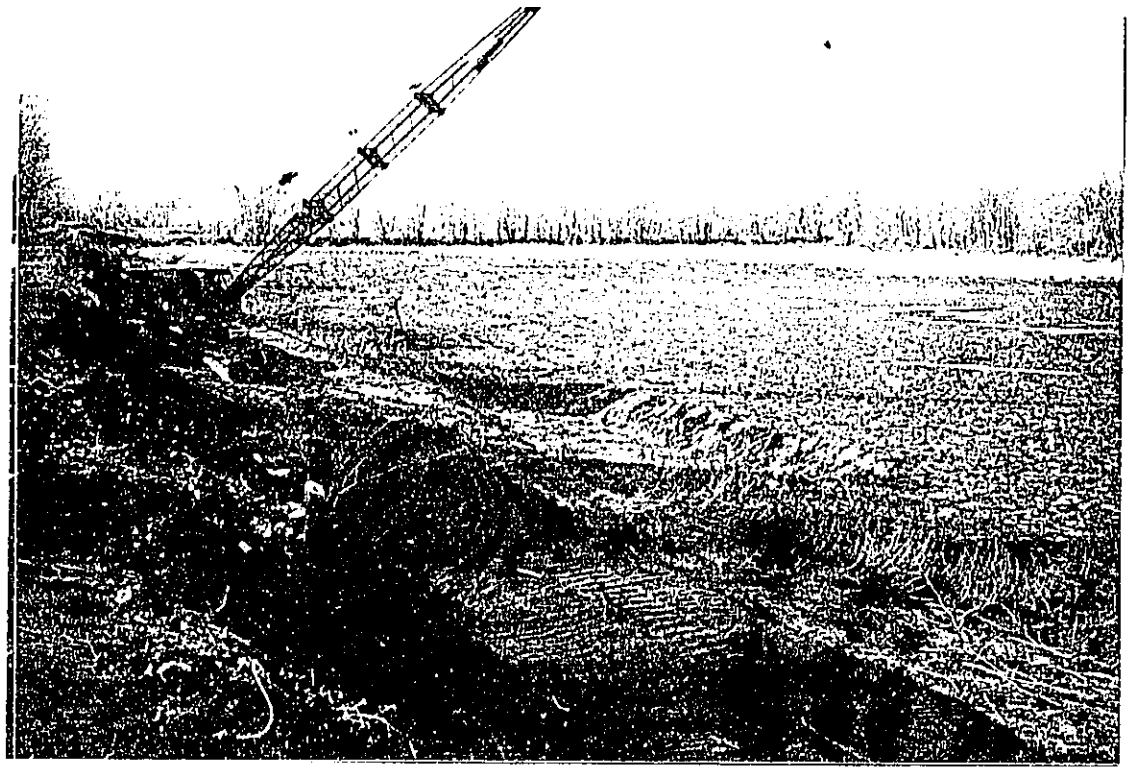
Guttenberg waterfowl ponds EMP project site. Left picture, lower half; pond 2. Right picture; pond 3 (upper half), pond 4 (lower half).
4/88

TB

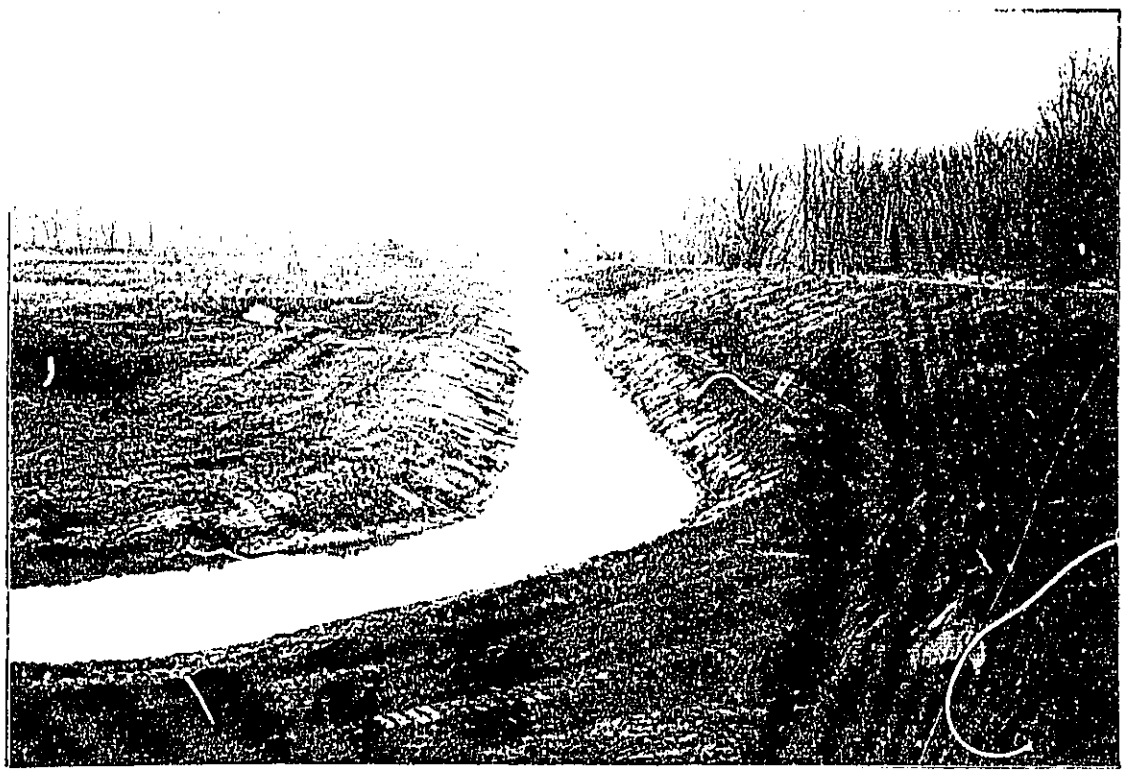


Water supply line looking south towards pond 3.
10/89 FR

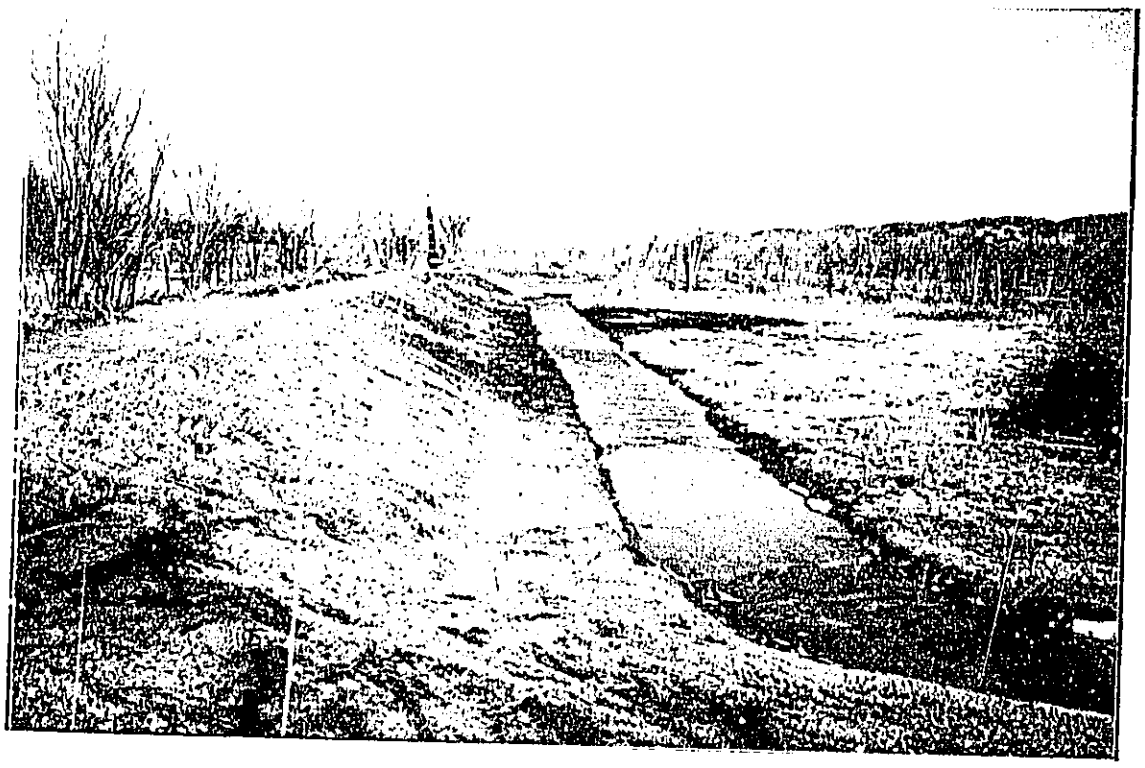
Laying of the water supply pipe looking north towards Lock and Dam 10 dike.
11/89 FR



Ditch excavation - pond 3.
10/89 FR



Ditch excavation - pond 4 looking towards pond 3.
Slopes were shaped with a dulldozer.
11/89 FR

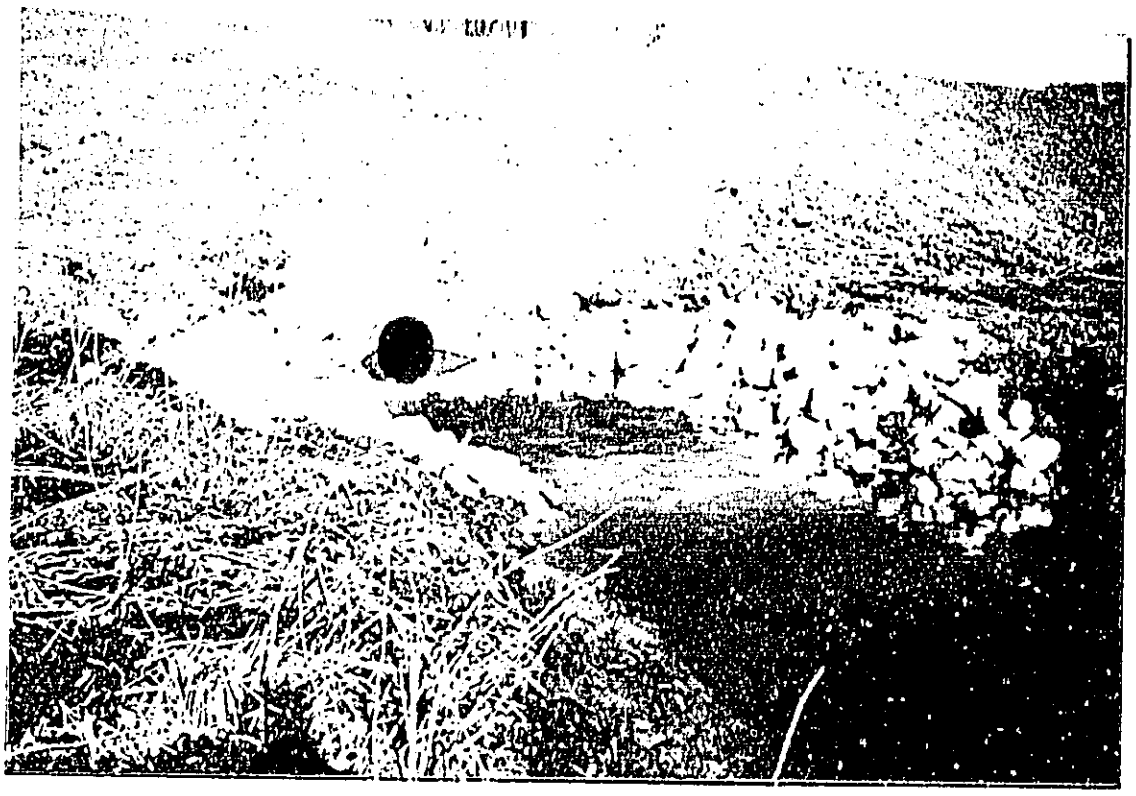


Ditch excavation - pond 4. Pond 2 is in background adjacent to dragline. Note breech in dike that connects ponds 4 and 2, to right of dragline.
11/89

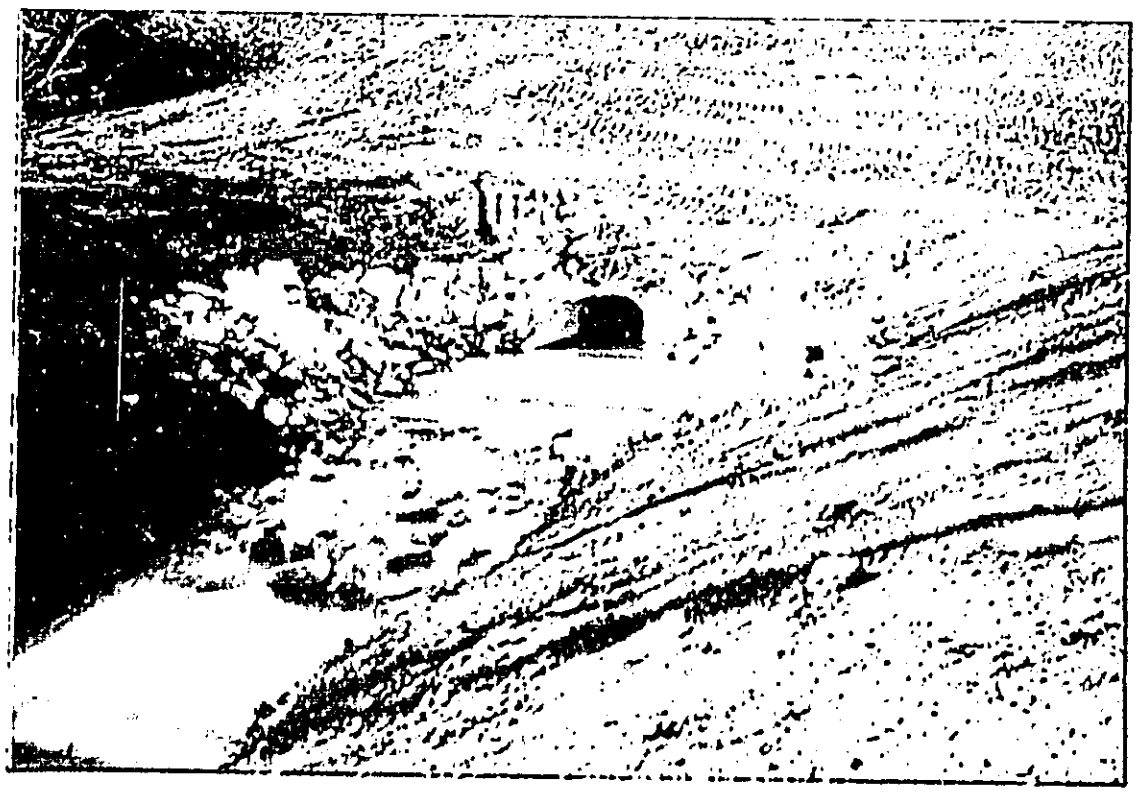
FR

Ditch excavation - extent of ditch (lower portion of picture) connects pond 2 (above) to pond 4. Note tree clearing in background.
11/89

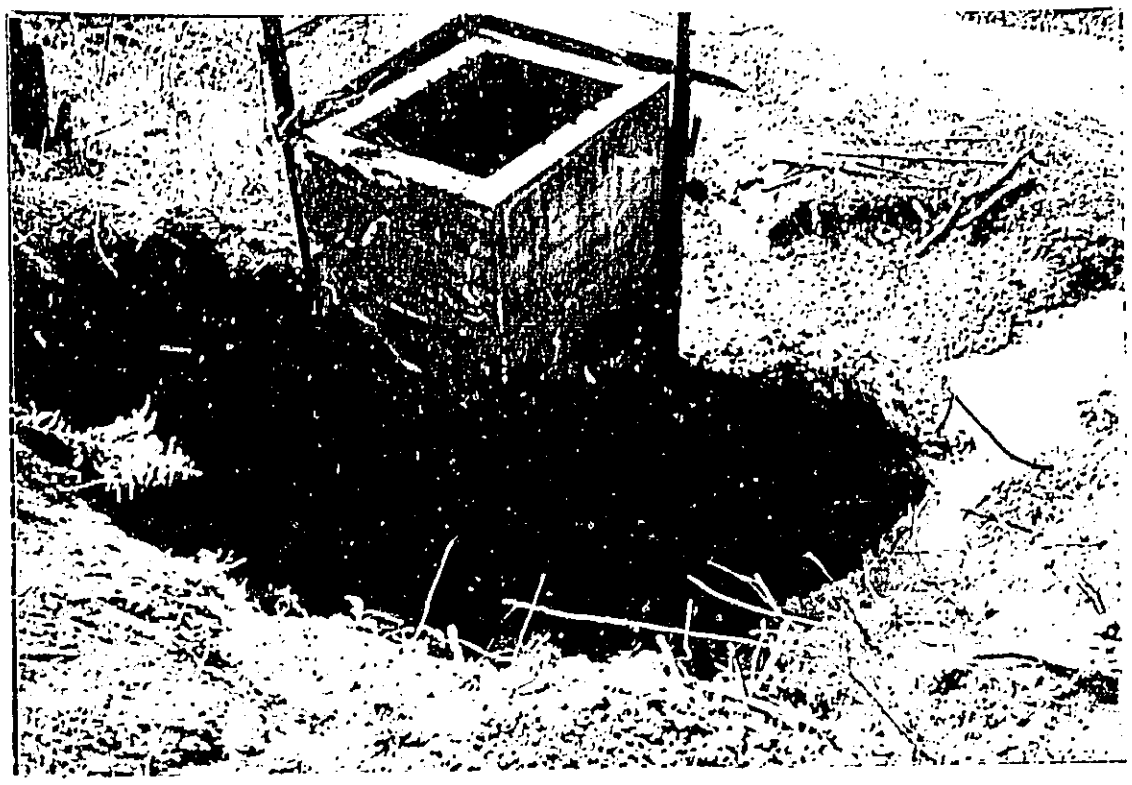
FR



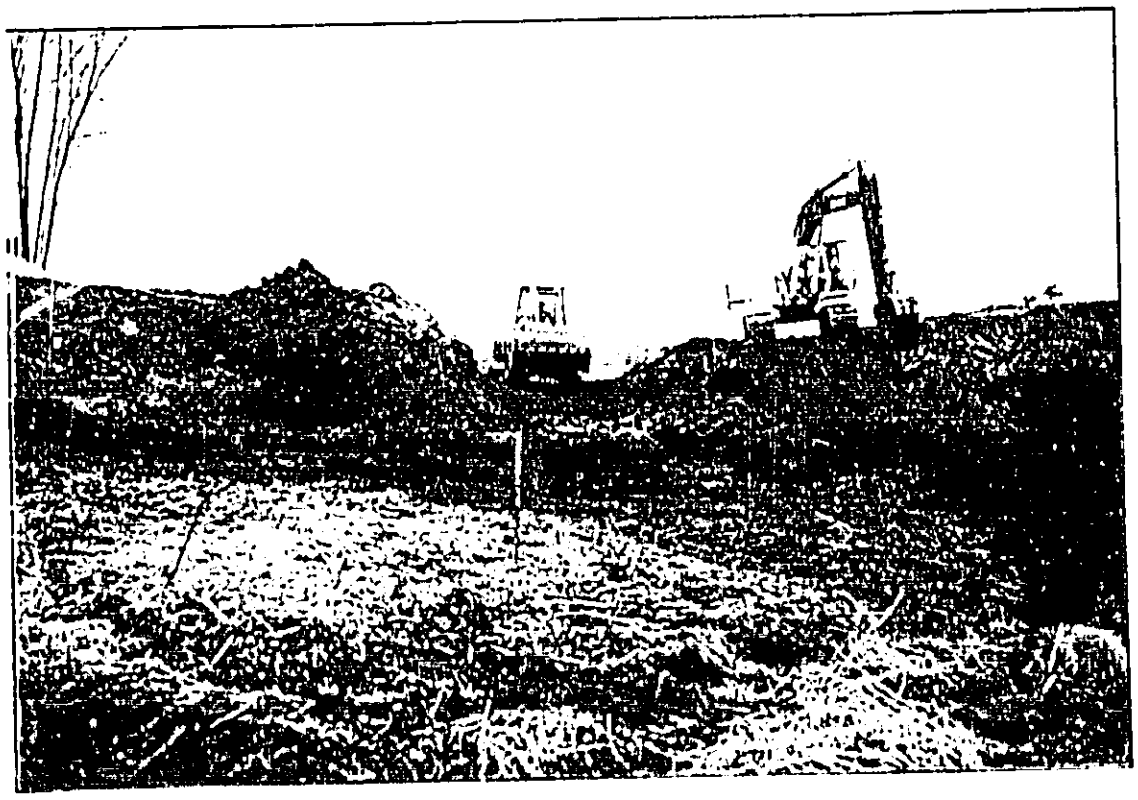
Pond 4 outlet structure. This is supposed to drain into Big Pond but the opposite occurred. Hopefully an outlet ditch that has yet to be excavated, will alleviate the problem.
11/89 FR



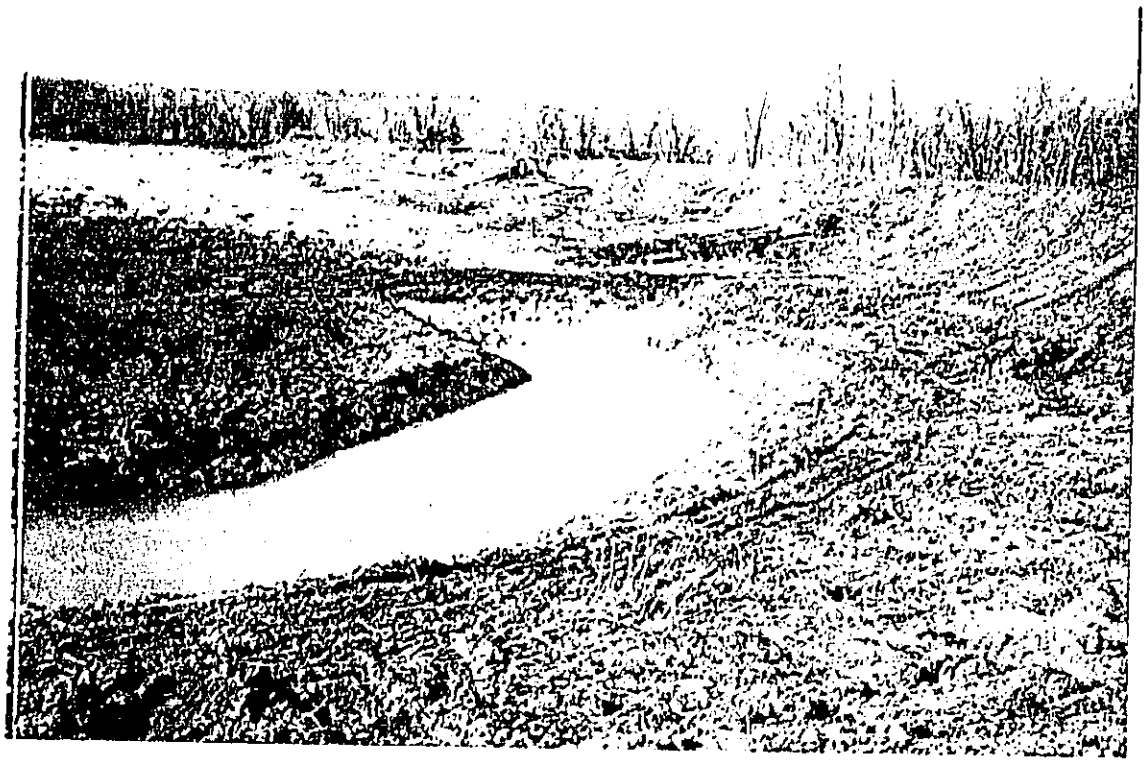
Pond 3 outlet structure. This drains into Cassville Slough.
11/89 FR



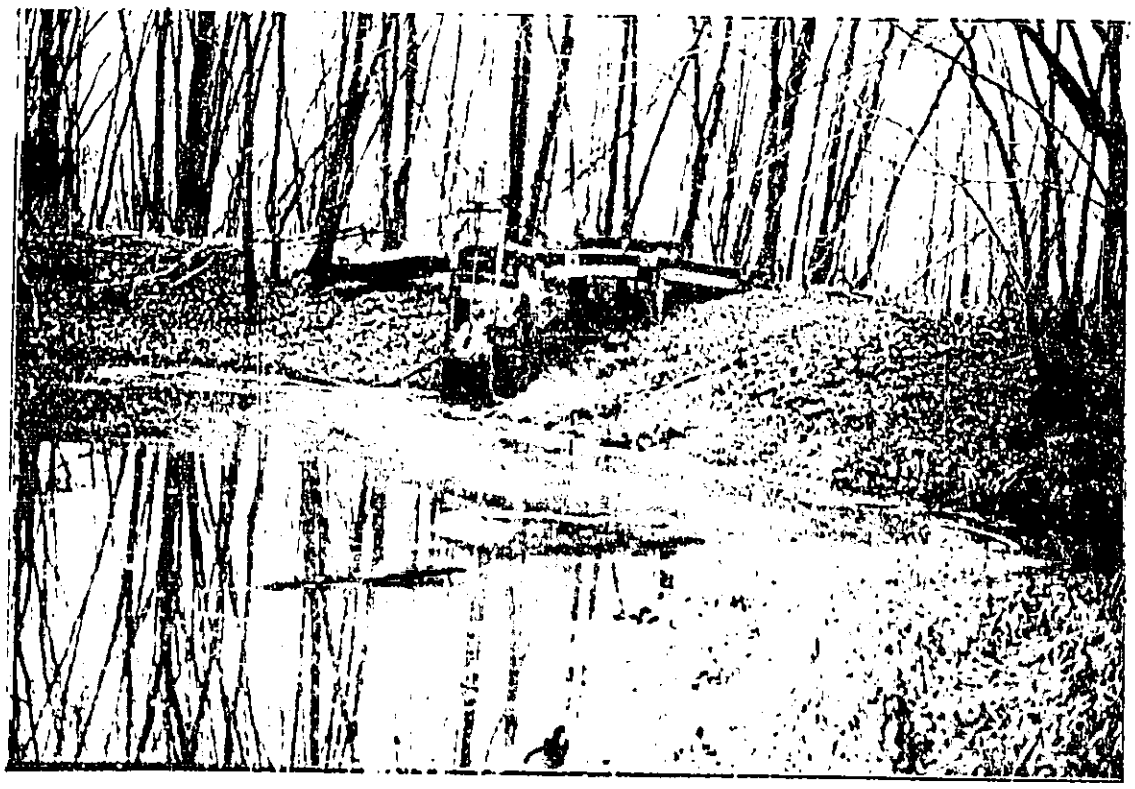
Old water control structure - pond 3. Structure was plugged and filled.
10/89 FR



Pond 4 water control structure outlet construction.
11/89 FR



Finished water supply line outlet into pond 3.
11/89 FR



Big Pond water control structure. Big Pond is to the right, over the dike.
11/89 FR

New Albin Comfort Station

In July the comfort station at the New Albin Landing on Pool 9 was completed. The project was started in October 1988, but construction was put on hold in November due to the unavailability of the block specified for wall construction. When construction resumed in the spring, it was discovered that some of the corner block was not properly glazed. This discovery did not significantly delay the project, but required the contractor to make a long, unscheduled trip to pick up the necessary block. Final touch-up work and the necessity for final inspection unfortunately delayed the opening of the comfort station until after the Fourth of July weekend, perhaps the busiest weekend on the District.

A New Albin woman submitted the lowest bid for maintenance of the facility. She cleans the facility twice a week except during the winter months when low visitation necessitates only a weekly cleaning. It is hoped that hiring a local person for the maintenance will eliminate or lessen vandalism at the site. There has been no vandalism to date and visitors seem to be keeping the facility clean.

Assistant Batya mulched and later seeded the site. The site was covered with a lush growth of grass before winter. The growth should minimize any erosion around the site with the arrival of spring rains.

2. Rehabilitation

As a product of several years of interagency negotiation, the breaches through 12-Mile Island in Pool 11 were repaired by the Corps of Engineers.

3. Major Maintenance

Maintenance Worker Brown stained and weather-proofed the exterior of the DO/VCF. Brown also painted the interior walls of the District office. Assistant Male helped Brown apply 40 gallons of concrete sealant to the exposed-aggregate sidewalks.

Brown, in addition to his law enforcement duties, also kept busy with a variety of janitorial tasks, snow and ice removal, servicing systems, changing light bulbs, protecting shrubs, winterizing, ordering supplies, testing drinking water for lead and bacteria and checking alarm systems.

Minor welding was completed on both the Cassville and Genoa 17 foot boats.

4. Equipment Utilization and Replacement

Two trucks and a Ford station wagon were placed on the excess property list. The two trucks were sold but the station wagon remains in storage at the Genoa warehouse awaiting disposal.

Excess and surplus property was sold and donated. Copiers were given to the Iowa DNR and two vehicle radios and an answering machine were given

to the town of McGregor. Other small items like chairs were sold locally.

A new 35 horsepower Mercury outboard and a 16-foot Lowe boat were purchased. The motor, steering, boat lights and power lift were installed locally. The outfit was placed on an older but sound trailer that had been stored at the Cassville warehouse. Assistant Batya installed rails on the trailer and extensions to raise the trailer lights. The new outfit will be used as a patrol boat on Pool 9. The older 17-foot boat will be used primarily as a work boat for signing and wildlife survey work.

Three new Remington 870 shotguns were purchased for use by Refuge officers especially during the waterfowl season. All of the District officers qualified with shotguns during the last annual law enforcement refresher.

Thirteen hundred steel posts, forty rolls of barb wire and eighty wooden post were purchased for fencing of the Driftless Area National Wildlife Refuge tracts and FmHA easements.

Two lawn mowers with high rise wheels and 4 HP engines were purchased for the Cassville and Genoa warehouses.

A 4' x 4' bullet proof glass window was installed between the office and visitor center. An electric door release was also placed on the existing inner office door with a control button near the Office-Assistant's desk.

A new galvanometer and one recoilless cannon were purchased for wood ducks banding operations.

A 10x-30x zoom spotting scope was purchased for use by Assistant Male on Pool 11.

5. Communications System

Five mobile radios were reprogrammed and installed in the five District vehicles. Four of the radios were removed from old District vehicles. One radio, a Motorola Syntor, although in storage for a number of years, had never been used. The radios all perform adequately except for a few dead zones caused by the high bluffs of the River valley. Repeaters were installed last year at Lynxville and Dickeyville, Wisconsin. Keying into the repeaters with the mobile radios allows easy contact with the McGregor office from the northernmost and southernmost portions of the District. The mobile radios, and the King portables, have been programmed with the frequencies of local law enforcement offices. This addition has added a new sense of security for refuge officers.

Five old portable GE portable radios were transferred to Chautauqua NWR and to the Environmental Management Technical Center in LaCrosse, Wisconsin.

6. Computer Systems

Janice Whitney from the Regional Office spent a day and a half at the McGregor District to provide computer training to Dixie Palmer. Subjects included Word Perfect, R-Base and Microsoft Chart. Dixie Palmer later completed a three day computer training course in the Twin Cities on Word Perfect and R-Base.

Installation of the ProComm Plus and Maintenance Management Systems R-Base programs was completed in March. Assistant Romero also updated the Maintenance Management System (MMS) and Initial Project Work sheet (IPW) files on the computer in June. The ADP Security and Continuity of Operations Plans were submitted during September.

Assistant Male successfully completed a computer course at the Southwest Wisconsin Vocational Technical Institute in Fennimore, Wisconsin during November.

The Farm Bill program was installed in December.

7. Energy Conservation

The McGregor Districts three facilities each consist of a heated office space and a warehouse. The District's fleet of vehicles consists of 1988 and 1989 models - all 4 and 6 cylinder models. Each facility also has two outboard equipped boats that are used on an almost daily basis during the field season. Recent energy-use figures reflect normal operating levels, while 1985 figures reflect usage when the District was not fully staffed or operating a visitor facility. The 1986 figures also reflect temporary office space before the move into the DO/VCF.

Table M-15. Energy Usage

	Electricity (KWH)	Gasoline (gallons)	Fuel-LPG (gallons)
CY '89	25,959*	3,765	1,100
CY '88	24,364	3,708	710
CY '87	27,525	4,170	510
CY '86	22,742	1,914	
CY '85	4,825	1,885	

* Reflects the electricity usage of the two radio repeaters installed at Lynxville and Dickeyville, Wisconsin during FY 89.

8. Other

Ice during January created extra work applying salt and sand at the DO/VCF.

The parking stripes, handicapped logo, and drainage grates in the parking area were painted in March.

An update of the Maintenance Management System was provided Doug Johnson.

Old and damaged boundary signs were replaced at New Albin and Lynn Hollow Landings, John Deere Marsh and Mud Lake. New refuge boundary and Minnesota/Iowa boundary signs were erected on most of that line running through Pool 9. Regulation signs were placed on sandbars as needed. Assistant Batya signed the new 20 acre Mitchell tract on a warm day in December. The Lock and Dam 8 dike separating Pool 9 from the Pool 8 LaCrosse District closed area was resigned along the entire length.

Kiosks were maintained with Refuge literature throughout the year. A number of vandalized leaflet boxes and display cases were also replaced. Maintenance Worker Brown constructed several new leaflet boxes to replace those vandalized on the District kiosks.

The annual accountable property inventory was completed. There were no discrepancies.

The Lynn Hollow Landing and the Cassville warehouse roads were graded. Parking barrier posts that had washed away during the high waters of spring were replaced at New Albin Landing.

Carpeting at the DO/VCF was cleaned. Air conditioners were also cleaned. The alarm system was repaired.

The observation deck at the DO/VCF was re-stained.

Displays at the Visitor Contact Facility were repaired.

The District purchasing records and procedures for 1987-1989 were audited and no problems were found.

I. EQUIPMENT AND FACILITIES

1. New Construction

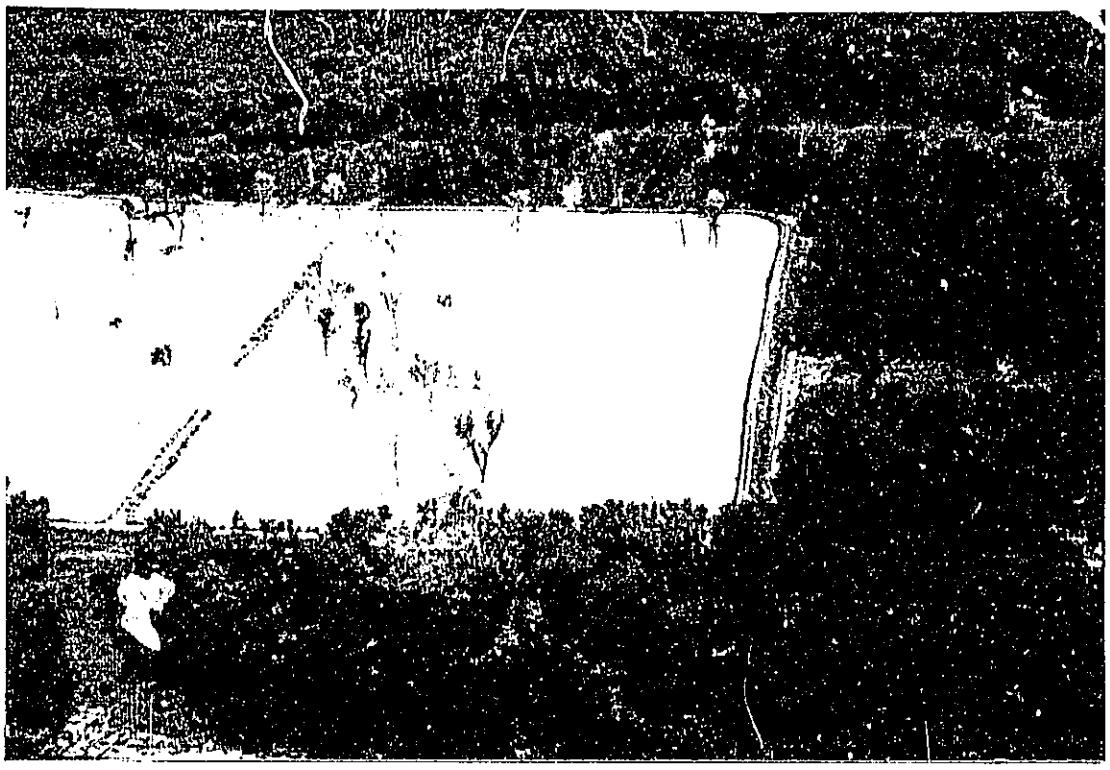
Brown's Lake Rehabilitation, Pool 13, Iowa

Brown's Lake is a 450 acre backwater complex approximately 10 miles south of Bellevue, IA, on the Iowa side of the Upper Mississippi River navigation channel in Pool 13. This valuable backwater area has evolved from a lake which was up to 6 feet deep to a 12-18 inch deep marsh complex. Continued siltation is destroying an important migratory waterfowl, fishery, and furbearer area.

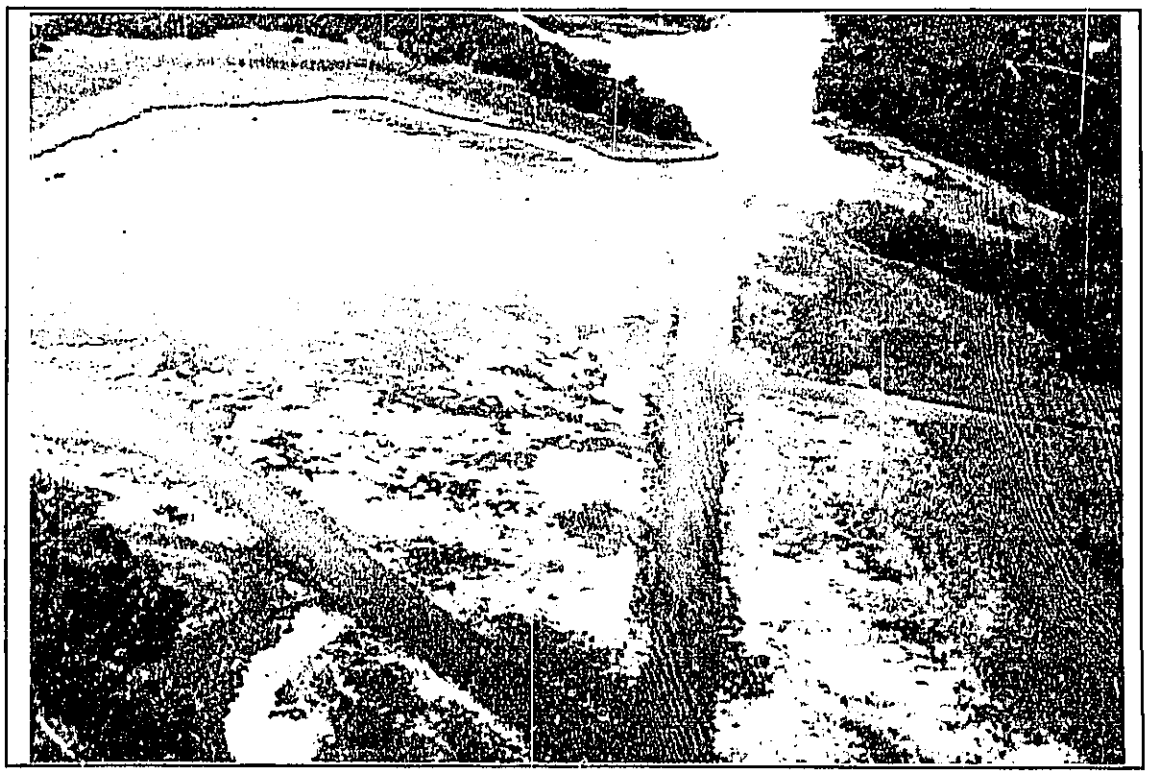
This project, located on Service fee title land within the Upper Mississippi River National Wildlife and Fish Refuge, was funded through the Upper Mississippi River System Environmental Management Program (EMP). The project was initiated in August 1988 with a cost of approximately $1.631 million. It was completed in early 1989 with only minor dike leveling and grass seeding left for 1990.

This discharge tube into the containment cells transported approximately 1,251,300 sq ft of Iowa farmland, dredged from the bottom of Brown's Lake. (7/89 LW)

The project consisted of five main components. A deflection levee, 8-10' high and approximately 3,300 linear feet long, was constructed parallel to the Mississippi River to prevent flood flows and associated sediment from directly entering the Brown's Lake complex. A 40-acre borrow/dredge



The 35 acre containment cells were filled eight feet deep with dredged material from Brown's Lake. (8/89 Corps)



Dredged cuts 60 feet wide, and 7-9 feet deep were extended through Upper and Lower Brown's Lake, north to the intake channel from the River. (8/89 Corps)

containment site was constructed to provide borrow for the deflection and containment levees and also for a two-cell containment area for dredged material from Brown's Lake. A massive water control structure 25'5" high, 24'-29' wide and 139' long was constructed. The structure will remain closed during high river flows to curtail the influx of silt laden water into Brown's Lake and will be open during low flows, such as late summer and in winter to allow oxygenated water into Brown's Lake. An inlet channel 9' deep, 30' wide and 5,400' long was dredged from the Mississippi River to Upper Brown's Lake. This channel along with the water control structure will control water access into Upper Brown's Lake. Approximately 370,000 cubic yards of fine-grained sediments was hydraulically dredged from Upper and Lower Brown's Lake. Dredge cuts were dug 7-9' deep and 60' wide, connected to five deep holes cut 18' deep and 130' wide for overwintering fish. (See 1988 narrative for more details.)

Work accomplished in 1989 included finishing construction of the water control structure, placement of filter blanket and riprap around the structure, finishing hydraulic dredging in the Brown's Lake complex, removing the weir, capping the weir discharge tube and leveling the discharge canal to the River, removing two cofferdams, redredging five bank slumps, leveling berms along the intake channel, and reshaping the containment levee.

Several change orders and contract modifications occurred including trash rack alterations, hinge and lock down latch changes on water control grates, stop log modifications, and the addition of stem covers.

Two problems regarding the hydraulic dredging required stoppage of the work. Cell 1 filled up and overtopped the containment levee in three location causing only minor spillage into the adjoining woods. The discharge from the cell 2 weir, showed an excessive load of sediment toward the end of the dredging as the cells filled up. More settling time eliminated the problem.

District staff erected red "unstable area" warning signs around the containment cells. The dry surface crust gave a false sense of stability over 6-8 feet of "loon muck". Hopefully hunters and unauthorized ATV's won't try to venture across the unit.

Another potentially dangerous situation brought on by this project was the deepening of the water access channel used by ATV's and snowmobiles for access into Upper Brown's Lake. The new water control structure when open will also compound the problem by undercutting the ice. To eliminate a hazardous situation, permission was requested and granted to allow ATV's and snowmobiles to travel across a 350' section of Refuge land to gain safe access into the Brown's Lake complex. This route is the safest route, has returned tremendous good public relations, and reduces law enforcement cost trying to apprehend people using 10-12 different illegal routes.

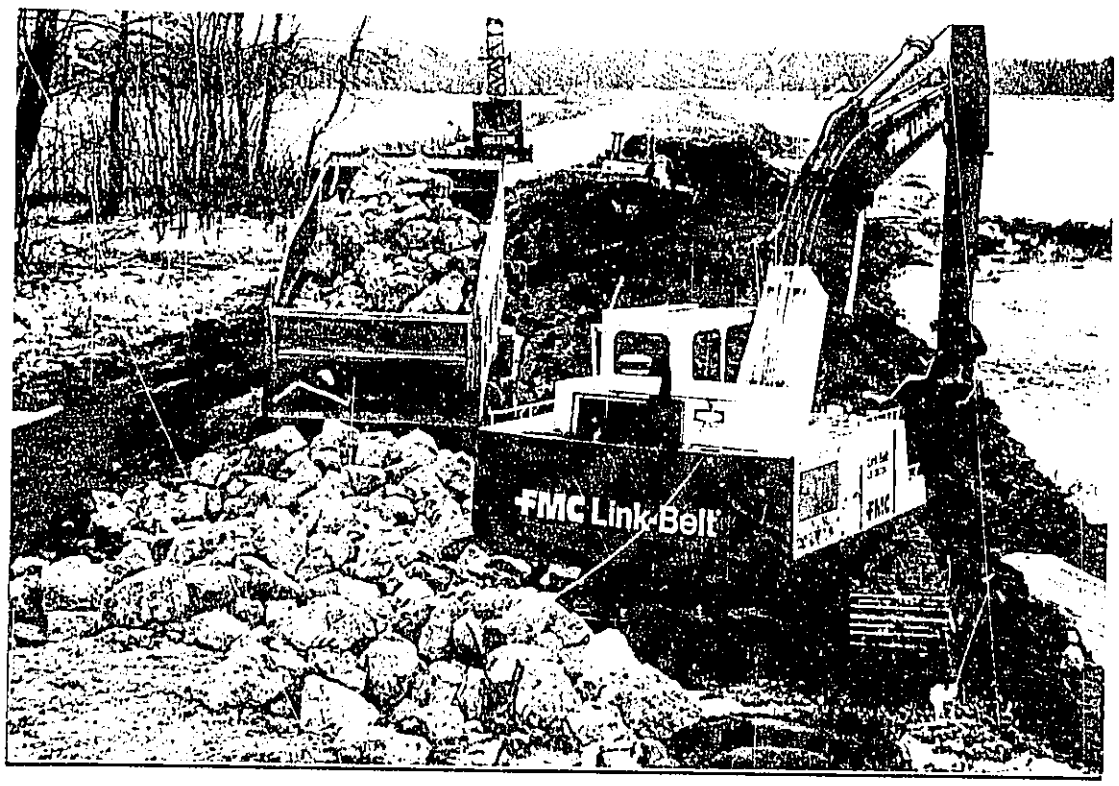
2. Rehabilitation

a. Pleasant Creek Dike/Road

For the second year, the Pleasant Creek dike rehabilitation work scheduled to be completed by the Maintenance Action Team was put on hold. No team was available prior to freeze up.

One area of the main service road approximately 250' long had severe top wash during the spring runoff. A local farmer was contracted for $200 to repair it. Minor side wash and minor top wash occurred in other isolated sections of the 1988 rehabilitated dike after the spring runoff. No repair was needed other than removal of flood debris.

Strong winds from an August 5 storm dropped a lot of trees and limbs across the Pleasant Creek dike. Several days of chain saw work were required to clear the dikes/roads.



Rehabilitation of the Spring Lake crossdike included placement of riprap over filter fabric along the spillway. (1/89 LW)

b. Spring Lake Dike Rehabilitation and Ditch Excavation

A contract awarded to Ardo Schmidt of Preston, IA, in 1988 for $59,395 was completed in 1989. Three separate sections of the Spring Lake dike damaged by the 1986 flood were repaired. Additional ditch excavation along the cross dike was also completed to facilitate drainage of the moist soil unit and to rehabilitate the adjoining dike. (See 1988 narrative for more details.)

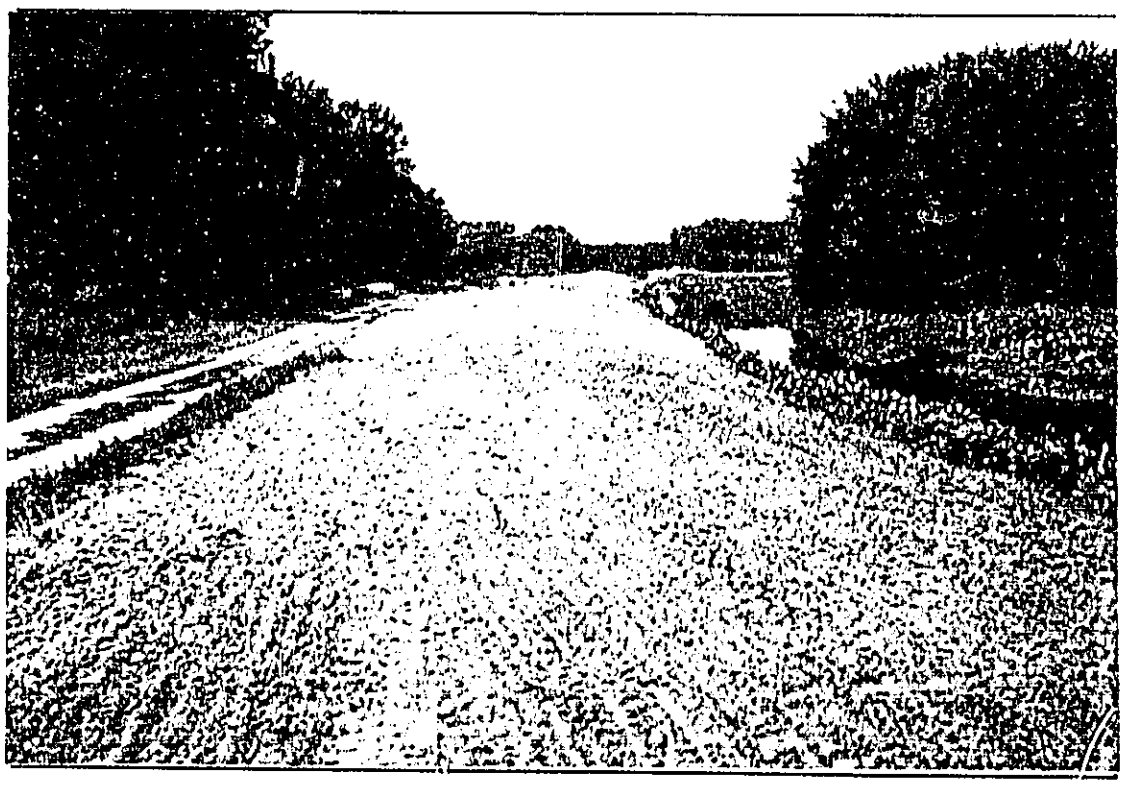
The project continued in January, despite bitter cold spells. To keep the water off the contractor, District personnel kept busy keeping grease heated to service the stationary electric pump every 2-3 hours. The contractor had to work long days to beat frost penetration and thickening ice.

One amendment for $4,995 was added on, when a sand pocket was hit near the spillway, causing the dike sides to slough into the ditch. The ditch had to be cut wider with a slope of 4 to 1, filter fabric put in place and then 332 tons of riprap added. The excavated soil was allowed to dry on the dike slopes until August, when 8,600 linear feet (7 acres) was leveled and prepared for seeding. The three areas were planted to a grass mixture and rate as follows:

Reed canary grass	17	lb/acre
Smooth brome	8 1/2	lb/acre
Perennial rye	7	lb/acre
Timothy	5 1/2	lb/acre

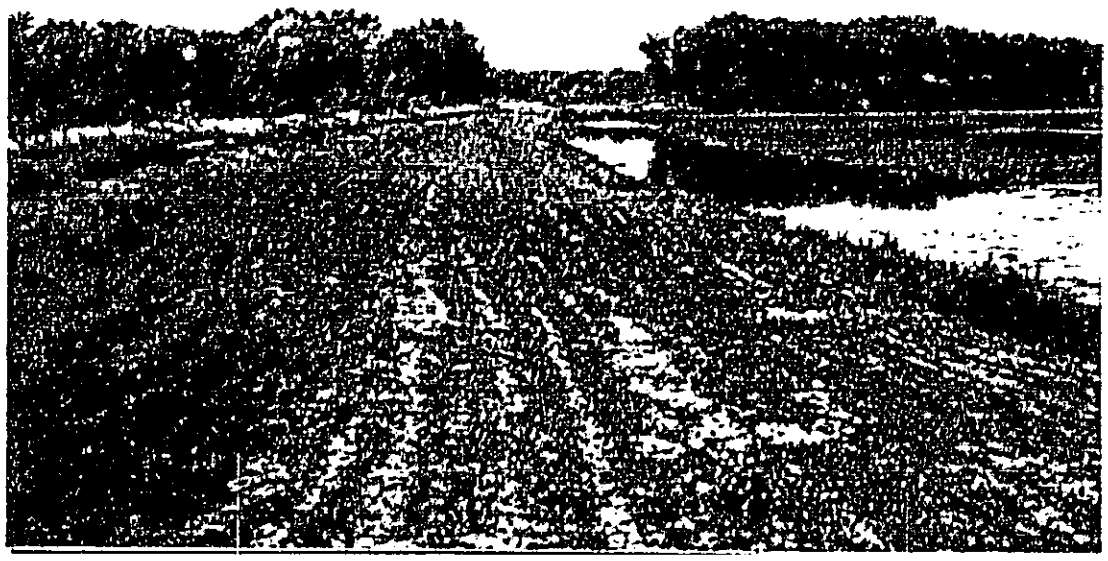
The seed at 38 lb/acre cost $374. The planting was completed by the contractor as part of the project.

A few timely rains helped establish an excellent stand of grass. A good 4-6" mat of grass was found at all three locations by fall. However, the green grass also looked tempting to geese in the fall. The hunting season also compounded the problem as all three sections were within a closed area. Any active means to scare the geese off the new seeding would lead



Excavated fill on the dike sides was leveled, sloped, and seeded in August. (8/89 LW)

BEFORE.



A mixture of brome, timothy, perennial rye, and reed canary grass planted 38 lb/acre produced good results. (9/89 LW)

AFTER THE GEESE ARRIVED.

Canada geese attracted to the newly planted grass, completely grazed the young growth until plastic bags and flagging were placed to haze the birds from the area. (11/89 LW)

to potentially higher hunting mortality with hunters outside the closed area. The only method available was to put up flagging and plastic garbage bags on wooden laths in an attempt to keep the geese off the seeding, yet allow them to stay in the closed area.

Time will tell if the seeding was damaged or will come back. A fairly dry fall prevented the geese from pulling out the roots, but the new seeding was essentially completely devoured to ground level. Winter severity may also have an impact on the already stressed seeding.

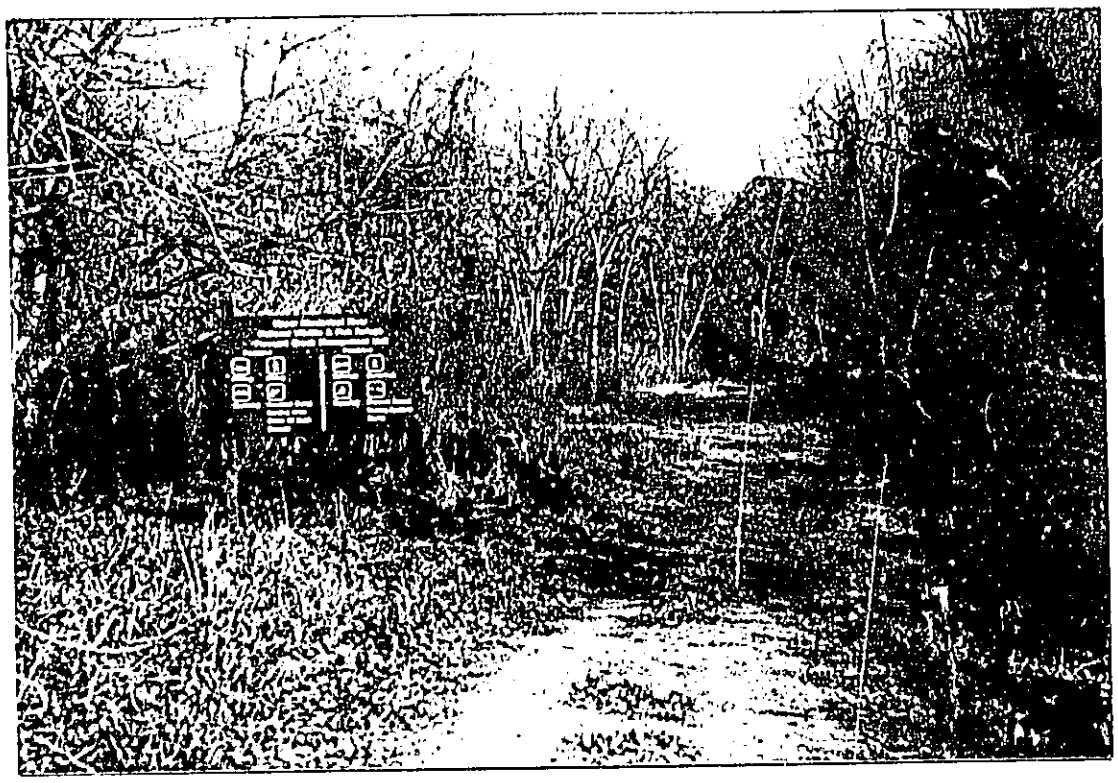
Mitigated rehabilitation of the Spring Lake east dike resulted in woody vegetation removal and a 5:1 dike slope. (12/89 LW)

c. Spring Lake East Dike Rehabilitation

This project was accomplished as mitigation for construction of a boat harbor on the Mississippi River in East Dubuque, IL, river mile 579.3. The new boat harbor off refuge on Corps land, will remove about 6.2 acres of forested wetlands. (Saplings within city limits adjacent to a major highway bridge.)

Stewart Construction Company, East Dubuque, IA, completed the work of rehabilitation on the east dike of the upper unit, Spring Lake, using an excavator. Brush and stumps were first removed from the inner dike slope, then spoil from area beyond the toe of the dike was placed on the dike side. The dike slope prior to the project was 2:1 or 3:1 in most places, but will be 4:1 or 5:1 when completed. Approximately 3,610 feet was completed by the end of the year. 3,333 feet was required for mitigation,

so the balance of the east dike or 277 feet the Service will pay for. The spoil will be leveled by the contractor after it dries out in 1990. The Service will pay for grass seed and planting through a separate contract.



A new informational/regulatory sign was placed at the entrance to the Pleasant Creek Management Unit. (11/89 LW)

3. Major Maintenance

General refuge maintenance activities during the year included dike and grassland maintenance through herbicide application and mowing, building and grounds maintenance at the shop facility, moist soil pump maintenance, refuge boundary posting and sign replacement, and parking lot maintenance at Spring Lake, Goose Point Overlook, and Barge Lake landing.

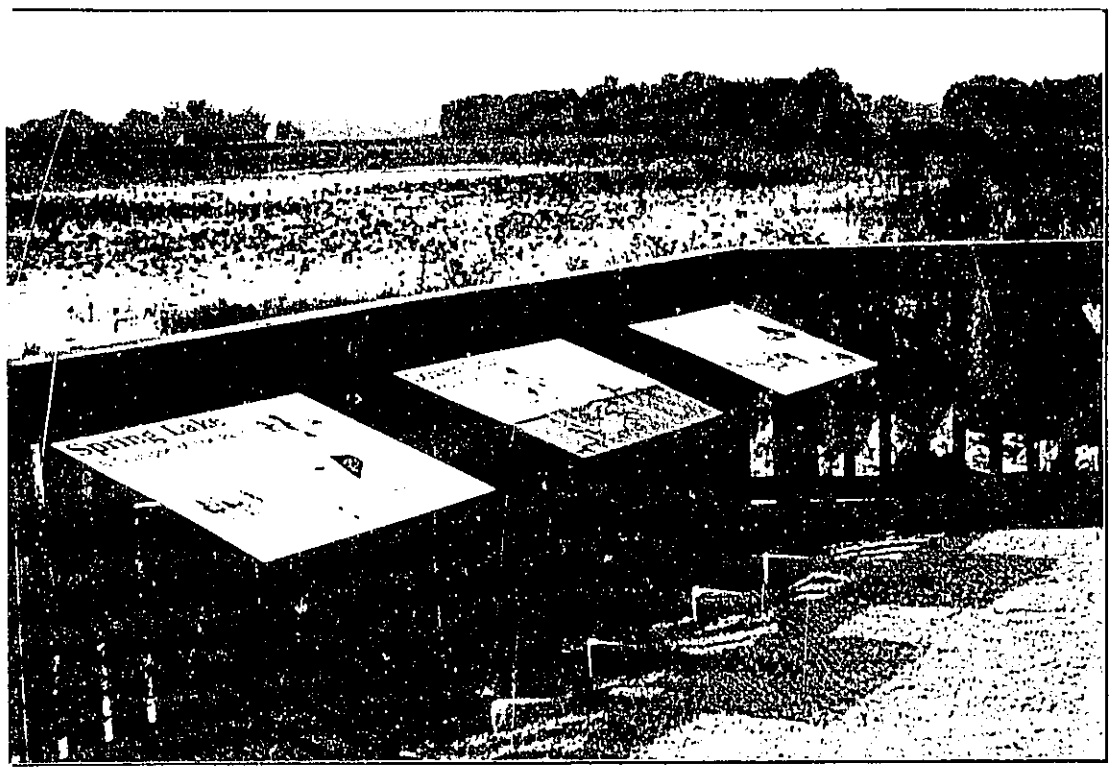
Routine maintenance was performed on all District boats, trailers, and vehicles. The 50hp Mercury outboard required lower unit repairs and one of the boat trailers was rewired and a spare tire purchased. The 1979 Chev. 3/4 ton pickup received a new transmission and battery. The 1983 Chev. 1/2 ton pickup received a new thermostat, starter, solenoid, alternator, fuel gauge, tire, and tail pipe.

The engine for the 100 gallon fire pumper unit was repaired and readied for the burning season. The engine on the 200 gallon herbicide sprayer was also repaired and hoses and a pressure gauge installed. The District airboat received a tune-up.

The entrance gate to the Pleasant Creek Lake complex was repaired, and an

entrance/regulation sign was also installed at the Pleasant Creek entrance. Rewiring of the Spring Lake m.s.u. pumphouse was done in response to an electrical short. The m.s.u. flap valve was repaired and reinstalled on the discharge tube of the m.s.u. pump. One hundred eighty tons of CA-10 stone was tailgate spread on sections of the Spring Lake dike as needed. Several sections of the Goose Point barrier fence were replaced. A four section barrier was installed at Barge Lake landing in response to continued vehicle abuse of refuge land adjacent to the landing. The Spring Lake entrance gate was repaired and interpretive signs were installed on the observation deck. The fence line around the Gomer's Lake farm unit was repaired and a barrier was installed in an attempt to eliminate continued vehicle trespass problems there.

The hydraulic system, boom arm, and ram were repaired on the Ford 4400 Mo-Trim tractor. Replacement batteries for both the Ford 4400 and John Deere 3010 tractors were purchased.



Interpretive signs were mounted on three metal panels at the Spring Lake observation deck. (9/89 ED)

4. Equipment Utilization and Replacement

A 1983 Chevrolet Malibu Sedan delivery was transferred to the Savanna District from complex headquarters in Winona, MN.

The excessed 1976 Plymouth sedan delivery was removed by the successful bidder on January 18.

Surplus office chairs and wood pallets were picked up at the Rock Island Arsenal property disposal office on June 6.

A 200 gallon polyethylene tank was purchased for the herbicide sprayer.

6. Computer Systems

The most immediate benefit noticed by the staff was the reduced editing time required for the 1988 annual narrative by utilizing the WordPerfect software on the IBM PS/2, Model 60 computer system received in 1988.

Janice Whitney from the Regional Office provided one-on-one computer training for Clerk-Typist McDonald on January 30-31. Clerk-Typist McDonald also attended advanced WordPerfect and basic R:Base training courses in Twin Cities, MN, March 13-17. Clerk-Typist Beyer received informal introductory training on WordPerfect and ProComm Plus in December at Refuge headquarters, Winona, MN.

The Region 3 Refuges and Wildlife Accounting Program and the Region 3 Farmbill Database System were received from the Regional Office and installed in December. The data in each program is updated monthly.

8. Other

Highway 84 Mitigation Wetland

During 1988, a 5.2 acre borrow site - wetland area along with another 6 acres of wet-prairie-sedge meadow was developed adjacent to the Spring Lake closed area, by the Illinois Department of Transportation (IDOT). The project was mitigation by IDOT for a realignment of Highway 84, south of Savanna, which eliminated 5.2 acres of an off-refuge marsh. The new wetland area contains a deep water zone, shallow water areas for moist soil plants, a .8 acre nesting island, a spillway, upland nesting habitat, an upland oak grove, and bottomland timber. The entire 35-acre parcel will be donated to the Service after the mitigation work is completed. District staff were involved from conception in helping develop the mitigation package.

A warm season prairie mixture was established in 1988 on all the higher elevations for nesting cover. A prairie-sedge meadow zone had 7,178 vegetative plugs of cord grass, sedges and bluejoint grass planted in October 1988. The shallow aquatic zones had 8,756 root stocks planted on May 30, 1989 with nine aquatic species, including wild celery, bulrush, burreed, pickerelweed and iris.

Also in 1989 the dike top was graveled and graded by IDOT. The spillway had filter fabric and riprap placed in October. Two sinkholes in the dike were repaired, a vehicle crossing built over the spillway and dirt hauled in for a ramp and culvert.

A potential nature trail may be established around the unit to tie in with the loop around the Spring Lake dike and also the adjoining FAST bike trail.

Hopefully, the area will be a showcase for different plant species and shorebirds, but best of all the entire project, except for staff time, didn't require any Service funds and transformed an agricultural field into a valuable wetland complex. Already in the first spring, approximately 400 scaup, 200 ringnecks, 400 canvasbacks, 105 mallards, 42 ruddies and 22 Canada geese were censused on the area.

A spillway with vehicle crossing was constructed at the mitigation wetland near Spring Lake. (10/89 LW)

J. OTHER ITEMS

1. Cooperative Programs

Whitewater Conservation Project

Water quality degradation, particularly sedimentation from eroding farmland, was identified by the Great River studies and the Master Plan as the number one problem affecting floodplain wetlands in the refuge. The U.S. Fish and Wildlife Service completed a three-year interagency outreach effort on the Middle Branch of the Whitewater River to help farmers complete comprehensive conservation plans by 1990. Pilot project goals were to:

a. Assist farmers in completing farm conservation plans and implementing erosion control practices.

b. Promote retirement of marginal, erodible land through provisions of the Food Security Act of 1985 and related state programs.

c. Encourage the adoption of practices that lead to the establishment or enhancement of wildlife cover while reducing off-site sedimentation impacts.

The project targeted problem areas with specific information and implementation assistance on Best Management Practices. It also monitored sediment and shared results in an effort to expand the cooperative approach to the rest of the Whitewater and other tributary watersheds.

Provisions of the 1985 Farm Bill created new tools for more effective watershed management. However, the most difficult to plan areas remain the cash cropping farms that are not dependent on government programs, and are therefore not subject to cross-compliance. The 1990 Farm Bill may strengthen some conservation provisions.

The project made it possible for the Soil and Water Conservation Districts to employ more conservation planners, to continuously monitor suspended sediment, and to develop computerized watershed modeling, field demonstrations and workshops.

By year's end, all but six of the 140 Middle Branch farms in Winona and Olmsted counties had completed new or updated plans. Twin Cities and local television stations and newspapers featured the project, and the Soil Conservation Service produced a video documentary on the project that was widely circulated.

Although it is still too early to detect reliable trends in sediment delivery, a visible and promising early outcome of the project is the ongoing process that has been created for coordinated planning and implementation of erosion and sedimentation control practices. A three-county Joint Powers Board (JPB) was created in 1989, and funding was

obtained for a two-year assessment study of the entire watershed through the Pollution Control Agency's Clean Water Partnership.

The second phase of the Whitewater Project is designed to identify problem areas watershed-wide and produce recommendations for habitat enhancement on the farm and downstream, where impacts are most severe. The project, when fully implemented, will prolong the life of the Weaver Bottoms, a 4,000 acre backwater located at the mouth of the Whitewater River. This is one of southeastern Minnesota's historic waterfowl feeding and staging areas during migration, and the site of a multi-million dollar habitat rehabilitation effort.

In December 1989, a draft report on the pilot project was sent to the Regional Office for approval. Throughout the year, meetings continued with the project steering committee, the technical advisory group and the JPB. In July, watershed farmers were contacted through direct mail and were asked to indicate whether they would be interested in participating in a special program to accelerate conservation practice implementation. The response was overwhelmingly favorable. Throughout the year, runoff was minimal and there was consequently little high-flow sediment data generated at U.S. Geological Services monitoring stations.

In preparation for the conclusion of the pilot project late in 1989, tours were conducted by the cooperating agencies for Pollution Control Agency and Soil Conservation Service water resources staff members who would be involved in the second phase assessment study and in future strategies for accelerated cost-sharing assistance to farmers through the U.S. Department of Agriculture during the final implementation phase.

Agricultural Program Assistance

Headquarters and district staff members shared responsibility for Farm Bill coordination and implementation throughout the year. Overall, level of effort increased as a result of close coordination with agricultural agencies, county water planners and private interests. In 1989, Refuge Extension Biologist Hawkins devoted full time to Farm Bill and related Whitewater Project activities. This was fully consistent with Master Plan objectives, which call for accelerated outreach at all levels to address sources of sedimentation threatening floodplain wetlands along the Upper Mississippi River.

Major areas of activity during 1989 included field inspections of Farmers Home Administration inventory properties, with easement or title transfer recommendations on those properties judged to have Important Resources, and Soil Conservation Service (SCS) Swampbuster wetland field determinations on appeal, with Agricultural Stabilization and Conservation Service (ASCS) Commenced Hearing recommendations. Opportunities for wetland restorations proved to be few and far between throughout the driftless area. There are, however, possibilities for future waterfowl habitat enhancement projects along marshy creek bottoms and on sidehill spring seeps in most counties bordering the Mississippi River.

The final verdict on refuge support of 1985 Farm Bill initiatives is not yet in. In the majority of cases, SCS and Service wetland determinations have been upheld by ASCS county committees. There are strong indications that FmHA is supporting easement recommendations submitted for both Service and other agency administration. The majority of proposed easements have been recorded and signing has been completed on most areas. At least some transfers of title to state agencies appear to be moving forward.

One largely untapped area of opportunity for increased refuge impact continues to be extension techniques and the media. The American Farmland Trust began development of a Best Management Practices slide show to assist farmers with implementation in the Whitewater Watershed and throughout Southeastern Minnesota's driftless area.

Where county ASCS docket-setting meetings could be attended, modified cost-sharing practices were sometimes obtained that enhanced on-farm habitats, while reducing off-farm damages. Media releases to agricultural service centers and local newspapers, as well as conversations with farm reporters, have generated interest in new provisions that benefit wildlife.

Participation in Reinvest in Minnesota screening committees has helped influence decisions not to release enrolled areas to haying during the drought and has probably been a factor in getting enrollment criteria changed to better protect riparian habitats. All of these initiatives carry significant, though difficult to quantify, benefits to the refuge.

As part of the overall coordination effort, Hawkins represented the Service on the Upper Mississippi River Conservation Committee water quality work group during 1989. Hawkins also assisted the low-input sustainable agriculture subcommittee for the Midwest Wildlife Conference, to be held in St. Paul late in 1990.

Long Term Resource Monitoring Accomplishments

COMPONENT: WATER QUALITY

a. Summary of objectives: Water quality data is collected to predict long term trends in the UMR.

b. Parameters investigated: Water temperature/dissolved oxygen/nephelometric turbidity/specific conductivity/secchi disc transparency/velocity in contiguous backwaters, isolated backwaters, channel border (structured and non-structured) and impounded sites.

c. sampling frequency: Weekly (2-3 days).

d. Data collection period: Year round/all seasons including ice/snow.

e. Investigators: Water Quality Specialists/Field Stations.

f. Description of markers/boundaries: Sites marked with eight inch diameter buoys anchored with concrete block.

g. Special notes: Some data (e.g., isolated backwater information) is collected on a monthly basis rather than weekly. During winter snow and ice depth is collected.

COMPONENT: SEDIMENTS

a. Summary of objectives: Sediment elevations are monitored to measure sedimentation rates in 15-20 sites per pool. The data collected is used to predict sedimentation rates throughout the pool.

b. Parameters investigated: Sediment elevation relative to some datum.

c. Sampling frequency: Yearly.

d. Data collection period: Ice-over period.

e. Investigators: Jim Rogala.

f. Descriptions of markers/boundaries: Transect lines are marked with two fence posts and a distant foresight. Elevation marks are established by setting nails in trees which may or may not be marked with blaze orange. Detailed descriptions of study sites have been documented.

g. Special notes: Sediment elevation transects were established to measure small changes of hundredths of feet and abnormal disturbances such as excessive boating or net setting in these areas may effect our results. If you observe such activities in study site areas, please inform us.

COMPONENT: BATHYMETRY

a. Summary of objectives: Create depth coverages as a theme for the Geographic Information System (GIS).

b. Parameters investigated: Water depth relative to some datum.

c. Sampling frequency: Most areas will be mapped only once during a ten year period. HREP areas and areas of high sedimentation rates as indicated by sediment elevation transects will be mapped more than once during a ten year period.

d. Data collection period: Data collection with the hydro survey boat may take place anytime during the ice-free season. Winter activities include surveying in control points by running traverses over frozen backwaters.

e. General "maps"/charts: Maps of completed survey areas and anticipated survey areas are available by contacting the EMTC.

f. Investigators: Jim Rogala and Pete Boma.

g. Description of markers/boundaries: Control points are marked with either fence posts or blaze orange on trees, rocks or structure.

h. Special notes: Positioning during surveys is obtained by setting remote transponders on control points of known coordinates. The transponder is set on a tripod or pipe and consists of a 6" x 12" x 18" metal container with a cylindrical antennae on the top.

COMPONENT: FISHERIES

a. Summary of objectives: Identify fish community structure and target species population structure in selected habitats (See: Water Quality Habitat category). These data will be incorporated with data from other pools to yield an index of long term fishery trends.

b. Parameters investigated: Diversity and relative abundance of fish in selected habitats with length and weight measurements. For target populations: length-frequencies and weight (target species include: channel catfish, black crappie and sauger). Measurements were taken of captured white crappie and walleye.

c. Sampling frequency: Two units-of-effort annually for community sampling (includes trapnetting, hoopnetting, seining and day/night electrofishing) at eight sites. Target population sampling requires three units-of-effort during prescribed temperature regimes.

d. Data collection period: Community sampling between June 15 and August 15. Target population sampling allots 3-4 weeks to each species with catfish in mid-August, crappie in September and sauger in October.

e. Investigators: Fisheries Specialist/State Field Stations

f. Descriptions of markers/boundaries: Metal stakes and eight inch orange buoys. Two-hundred meter electrofishing "runs" marked with stakes with reflective markers for night sampling. Wingdams marked with reflective buoys.

COMPONENT: VEGETATION

a. Summary of objectives: Characterize vegetation communities associated with geomorphological features of the Upper Mississippi River.

b. Parameters Investigated: Percent cover of classified polygons/percent presence of dominant and subordinate taxa/1990

sampling will include community attributes of density, frequency and dominance.

c. Sampling frequency: 1989 qualitative sampling occurred once. Beginning in 1990, qualitative sampling will occur three times per season and quantitative will occur once.

d. Data collection period: Qualitative in May-June/July-August/early September. Quantitative in July-August.

e. Investigators: Vegetation Specialist/State Field Stations.

f. Description of markers/boundaries: Vegetation transects are marked for visual sighting. Trees are marked with "tree paint" (orange) and vinyl tape (orange). Initial transect marking also included buried magnetic markers to serve as "finders." Permanent quantitative sites will be marked with steel fence posts at corners and buried magnetic markers delineating site boundaries.

2. Newspaper Articles

In September two reporters, Ron Seely and Steve Hopkins, from the Wisconsin State Journal spent 14 days on the Upper Mississippi River in a johnboat from Reads Landing, Minnesota to McGregor, Iowa writing a series of newspaper articles on the river as they traveled. The Refuge was a major topic of the articles, as well as, the people who lived along the river and make their living from it. Several refuge staff members were contacted and interviewed during the course of the journey. The series of newspaper articles were brought together in one special edition entitled "River in Peril--a Mississippi Journal." A copy of this publication has been included in the back pocket of the narrative.

3. GAO Report

The biggest event of 1990, I believe, was the issuance of the GAO report on refuge compatibility. Upper Mississippi River National Wildlife and Fish Refuge was one of the refuges selected for an in-depth interview. As it turns out we were cited as having more users than any refuge in the country. More on this subject under feedback.

4. Credits

Lennartson:	Wrote Sections A, D.1, parts of D.2, D.3, D.4, J.3, J.4 and edited entire report.
Berry:	Wrote part of Section D.2.
Schneider:	Wrote part of Section D.2, Section H.1, H.6, H.8, H.12, H.16.
Hawkins:	Wrote Sections H.3, J.1.
Beseke:	Wrote Section F.
Drieslein:	Wrote Section E.
Whitegull:	Developed index and signature pages, typed Headquarters/Complex sections and made corrections to district sections and assembled narrative.

J. OTHER ITEMS

1. Cooperative Programs

Drieslein assisted Wisconsin Department of Natural Resources (DNR) and refuge staff with a Canada goose round-up at Trempealeau Refuge on July 7. More than 200 birds were captured but most had to be released to avoid mortality during the extremely hot and humid weather. Fewer than 50 geese were marked with standard leg bands and plastic neck collars.

Cheap and Julison conducted two woodcock "peenting" surveys on assigned routes in Minnesota on May 2.

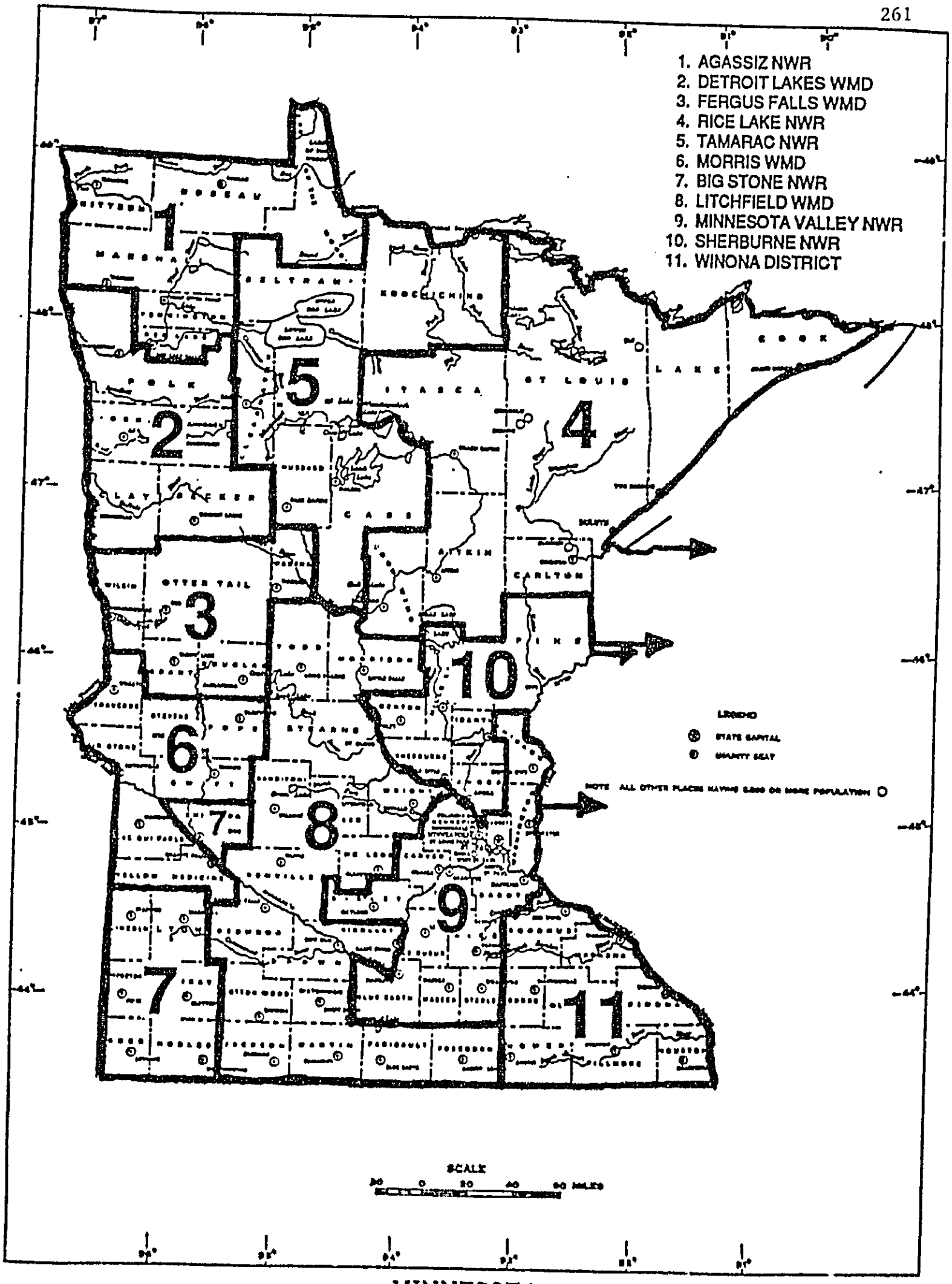
Carcasses from five mink and one otter taken during the fall 1988 trapping season in Minnesota were submitted to the St.Paul Field Office for contaminant analysis.

Cheap and Drieslein spent a day on Lake Onalaska with Bill Thrune from La Crosse District on April 19 collecting wild celery tubers. Although traditionally productive areas were sampled, very few tubers were collected compared to previous years. The decline in wildcelery beds noted over the past two years appears related to a decline in other aquatic plant species (see Section D.5).

Farm Bill

District involvement in Farm Bill matters during the year related almost exclusively to working with Conservation Easements on FmHA inventory lands. Region 3 Farm Bill Announcement No. 63 delineated an eight-county area in southeastern Minnesota as Refuge Management District No. 11 assigned to the Winona District (See Map W-5). The Management District includes the counties of Dodge, Fillmore, Goodhue, Houston, Mower, Olmstead, Wabasha and Winona.

Conservation easements are in various stages of implementation on 10 properties within the Management District (Table W-7). Four of these have been surveyed and posted; one has been surveyed and will be posted shortly; and the remaining five are in the "proposal" category at this time.



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J. OTHER ITEMS (Continued)

Table W-7 FmHA Conservation Easements (as of 12-31-89)

Tract Name	County	Acres	Type of Easement	Status
Gardemann	Fillmore	34.5	Stream corridor	Surveyed 9-20-89 Posted 10-89
Jeche	Fillmore	1.4	Wetland	Surveyed 6-30-89 Posted 9-89
McCabe	Fillmore	34.9	Stream corridor	Surveyed 9-10-89
Rediske	Fillmore	6.2	Stream corridor	Surveyed 10-20-89 Posted 10-89
Yenter	Fillmore	51.3	Stream corridor	Surveyed 10-12-89 Posted 10-89
Heggedahl	Dodge	8.0	Stream corridor	Proposed
Reid	Dodge	75.0	Stream corridor & adjacent slope	Proposed
Pesche	Dodge	12.0	Stream corridor	Currently under "lease-back" with former owner
Haney	Mower	38.3	Stream corridor	Proposed for title transfer to Minnesota DNR
Fritz	Olmstead	99.0	Stream corridor	Proposed for Title transfer to Minnesota DNR

3. Items of Interest

A Special Achievement Award was presented to Alisa Medema for her administrative support to Trempealeau NWR after her transfer to the Winona District until the secretary position there was filled.

Robert Drieslein was also presented a Special Achievement Award for his efforts in re-establishing refuge boundaries in critical areas and recognizing illegal structures.

The annual Upper Miss/Minnesota DNR "grudge" softball game was cancelled this year due to inclement weather.

J. OTHER ITEMS (Continued)

4. Credits

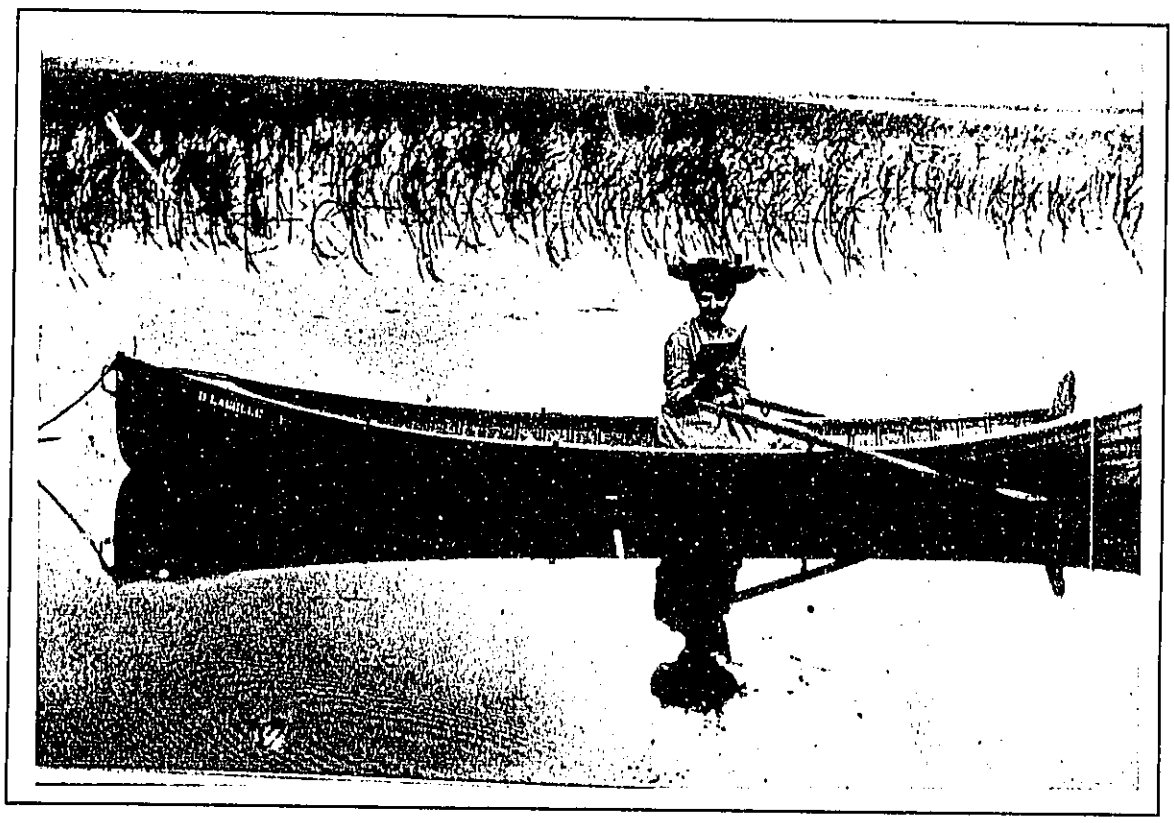
Again, this year's narrative was a cooperative effort with all staff assuming a share of the load. Specific accomplishments were as follows:

Drieslein - wrote Sections A, C, D (except D.5), E.1, 3, 5, 7 and 8, H.6, 7 and 17, I (except I.7) and J.1, 2 and 4.

Julison - wrote Sections E.2, F, G.11, 15 and 16 and H (except 6, 7 and 17).

Cheap - wrote Sections D.5, E.4 and 6, G (except 10, 15 and 16).

Medema - wrote the Introduction, Sections B, I.7, J.3 and typed the report and mounted the photographs.



At the Winona District, we pride ourselves in the fact that our staff and equipment are always up-to-date!

J. OTHER ITEMS

1. Cooperative Programs

District Manager Dick Steinbach served as a judge at the La Crescent, MN High School Service Fair on January 13.

For the fourth consecutive year, District personnel participated in a "Take Pride in America" project sponsored by the Brice Prairie Conservation Association that involves cleaning-up litter from islands in the river. Efforts are normally concentrated in Pool 7; however, this year the islands in Pool 8 located in La Crosse County were also included. Approximately 60 people participated and picked up 4-5 dump truck loads of litter and trash, including 55-gallon barrels, pontoons, and navigation buoys.

A set of informational signs outlining boundaries and regulations on Goose Island was developed by personnel from the Refuge and COE, and Butch Fisher, La Crosse County Parks Director. The signs, which were constructed at the FWS' National Sign Center, will be installed in 1990.

3. Items of Interest

Lock and Dam 7 located just upstream from La Crosse, WI was open and ready for boat traffic on March 16. The first towboat of the season "locked through" on March 27, the last on November 24. During 1989, 1485 towboats pushed 15,082 barges that were carrying about 14.2 million tons of goods passed through Lock and Dam 7. Just for the record, Lock and Dam 7 also recorded 13,751 recreational boat lockages in 1989.

4. Credits

The following individuals were responsible for the preparation of this narrative:

Bill Thrune wrote the majority of the report and helped with editing.

Laurie Wlosinski wrote Section's B, F.9., and I.6. and helped with editing.

Gwen Whitegull, Refuge Headquarter's Secretary, typed the initial rough-draft from handwritten notes.

Lynn Zintz, who started work on March 12 as the Office Assistant, was given the unenviable task of typing several drafts of the report as one of her first duties.

Jim Nissen helped with the editing.

Photography credits are listed below each photograph.

J. OTHER ITEMS

1. Cooperative Programs

Special Use Permits were issued to allow/control power line repairs, handicapped access, fish cribs, woodcutting and search for burls on the Refuge.

A Special Use Permit was issued to Gary Ackerman, Iowa DNR to install and maintain a dock at Bussey Lake (Pool 10).

Manager Lyons met with a commercial fisherman from New, Albin, Iowa regarding issuance of a Special Use Permit to temporarily store his boat at the New Albin Landing. The permit expired at the end of November.

Assistant Male met with a Cassville River Terminal employee to re-sign the fleet area out of the Refuge boundary.

Special Use Permits were issued for dock storage at Clayton and Guttenberg. Compliance was checked at all dock storage areas.

A Special Use Permit was issued to the Iowa DNR for the operation of wood duck banding sites on Pool 9.

Special Use Permits were issued to handicapped persons for safe access to ice fishing at Bertom Lake. A SUP was issued to a commercial fisherman for fish crib storage on Pool 9 and another on Pool 11.

3. Items of Interest

Data for input to the annual report on Cooperative Agreement Lands were supplied to Winona headquarters.

Checks of a repair project to power poles on the Reno Dike of Pool 9 revealed no compliance problems with Dairyland Power's Special Use Permit.

Lennartson and Lyons met with Bob Hudson, Cassville River Terminal. Hudson purchased a Crisafulli pump for the Refuge to use for managing moist soil units.

Information was provided to a state legislator who plans to introduce legislation to treat pollution problems on the River.

John Eadie, Ed Crozier and Rick Berry visited the District on September 6. They met all personnel, toured selected sites, and viewed proposed moist soil developments.

District Manager Lyons and Assistant Romero attended the Projects Leaders Meeting near Brainerd, Minnesota.

Two train derailments occurred on Pools 10 and 11 during May. The first involved 8 grain cars and the second involved over 40 cars. There were no spills or damage to Refuge property. The same was true of other

derailments later in the year.

A towboat from Agri Industries in McGregor, Iowa tracked down a run away coal barge that was heading towards the Prairie du Chien highway bridge. There was no damage, but there was plenty of excitement.

4. Credits

Palmer: Typing on IBM computer and assembly.
Brown: River level data.
Male: Sections F.4.; G.3, 4, 10, 11; H.8, 9, 10.
Romero: Section D.2; editing and assembly.
Lyons: Editing.
Batya: All other sections; editing and assembly.

J. OTHER ITEMS

1. Cooperative Programs

a. Special Use Permits

A total of $16,207.81 was generated in 1989 by special use permits (SUP) (Table S-11) for activities in the Savanna District.

Table S-11. Revenue Generating Special Use Permits - 1989.

Permit No.	Permittee	Purpose	Fee
06598	City of Dubuque	Barge Fleeting maximum 93 barges	$13,139.48
19601	Robert Hudson	Barge Fleeting maximum space 50-50 foot units	1,041.66
19604	Gary Newt	Barge fleeting maximum space 86-50 foot units	1,791.67
410	Petitgout	Provide recreational boat moorage	180.00
Misc.	Commercial Fishermen	Commercial fishing permits for Spring Lake	55.00
		TOTAL	$16,207.81

Barge fleeting at two locations in Pool 12 south of East Dubuque, IL was authorized by several special use permits and covered several permittees in 1989. The Dubuque Barge and Fleeting Company has been the previous permittee but the City of Dubuque started out 1989 as the new permittee.

The Upper Mississippi River Master Plan has determined that barge fleeting on the refuge is not a compatible use and detracts from the purposes for which the refuge was established. The area has a long history of barge fleeting, coupled with extreme political pressure to maintain the sites for barge fleeting. The most plausible solution at this time is a land exchange for land of equal or greater value.

An appraisal was made of the two barge fleeting sites and two land exchange proposals were submitted during 1989. An appraised value for the two proposals and a final decision for a land exchange was not reached by year end. With barge fleeting sites a premium in the Dubuque, IA, area the fleeting sites were divided up between the two companies with two separate special use permits.

Extensive time was required by Refuge staff throughout the year with telephone calls, correspondence, and meetings with all the interested parties. Besides the two main barge companies, landowners on bluffs overlooking the River also had an interest in the outcome of the fleeting area.

Hopefully, 1990 will be the last year of negotiations and the barge fleeting issue in Pool 12 will be resolved.

Permit #410, issued to Dan Petitgout, provides for recreational boat moorage on refuge property. The SUP allows for a large 18-space community boat dock to be moored on the refuge. Attempts have been made to either terminate the permit or proceed with a land exchange. An appraisal of the area and a survey was completed in 1988. A notification was sent to the permittee that the permit will not be renewed and will expire March 31, 1990. Hopefully, a land exchange will be finalized in 1990.

Eleven commercial fishing permits were issued for the Spring Lake closed area, the same number as 1988. A new $5.00 fee for the permit plus low water and dense aquatic vegetation has substantially reduced commercial fishing in this unit.

Special Use Permits were issued at no charge to several individuals to erect and maintain wood duck nest boxes on the refuge. The White Pines Bird Club was given a SUP for access into the Spring Lake closed area for migratory bird census in the fall.

b. Ecological Monitoring

On May 13, a truck carrying a tank containing 110 gallons of atrazine and 2,4-D went off the highway north of Savanna and spilled the contents into a ditch within the Mississippi River watershed. The ditch was dry and blocked by a beaver dam, so most of the material was collected at the site. The Illinois Department of Conservation and Illinois State Police hazardous materials officer responded to the accident. Although this incident occurred off-refuge, it once again demonstrated the potential that exists for accidental chemical entry into river watersheds and subsequently the river system and refuge, via nearby highways and railroad tracks.

On November 8, approximately 150-200 gallons of lubrication oil from a passing barge leaked into the Mississippi River near LeClaire, IA, about seven miles south of the refuge boundary. The spill spread over a large area and affected approximately 3.5 miles of Iowa shoreline. The U.S. Coast Guard, along with the Rock Island, IL, Ecological Services Field Office, the Corps, Scott County, IA, Hazardous Materials Team, and the Iowa DNR responded to begin recovery efforts.

Enviromark Corporation of Davenport, IA was contracted by the Coast Guard to clean up the oil and successfully recovered most of it.

Approximately 40 semi-tame mallards which frequent the LeClaire shoreline were contaminated with the oil. Iowa DNR, Service personnel and local wildlife rehabilitators recovered six of the birds, which were cleaned up and released on November 14. Total cost for the oil clean-up was approximately $20,000. The Coast Guard may assess a $5,000 fine against a Kentucky-based barge company.

The accident demonstrated the potential which exists for hazardous spills from commercial traffic on the river. The Service made a request to the Coast Guard late in 1989 that beginning with the 1990 navigation season, the Coast Guard should either prohibit the transport of hazardous cargo in single-hulled barges within the Refuge (Lock and Dam 14 to river

mile 763.5), or restrict use of single-hulled barges to tows arranged so that any such barge is protected from damage on the front and both sides by double-hulled barges or barges containing non-hazardous cargo.

The Izaak Walton League took up the issue and along with extensive media coverage elevated the issue up and down the River in adjoining towns. The Coast Guard initially refused the request stating that the majority of hazardous cargos are required to be carried in double-hulled vessels but that the shipment of petroleum products does not require the use of double-hulled barges. The year ended with the Washington, DC, Coast Guard office reviewing the request.

c. Revenue Sharing

Checks amounting to $10,268.00 were distributed to eight local counties as part of the U.S. Fish and Wildlife Service annual revenue sharing program. This amount was a 27.6 percent increase over $8,046.00 distributed in 1988. The following counties received payments as follows:

Illinois		Iowa	
Carroll	$2,421.00	Jackson	$4,329.00
JoDaviess	850.00	Clinton	1,380.00
Whiteside	522.00	Dubuque	243.00
Rock Island	281.00	Scott	242.00
Totals	$4,074.00		$6,194.00

3. Items of Interest

Clerk-Typist McDonald completed 10 years with the Service on January 15 and received a pin and certificate.

Wargowsky and DeVries each received special achievement awards in February for FY88.

Sluggish growth in demand for electricity led the Commonwealth Edison Company to scrap a proposal for building twin nuclear reactors near Savanna, IL. They were the last planned reactors in the United States. Edison initiated plans in 1979 and has spent $15 million in preliminary work.

The seventh annual MADRAC USA canoe cruise from Winona, MN, to Bellevue, IA, was held July 2-8. MADRAC USA is America's longest annual canoe trip.

The third annual Great River Tug was held at LeClaire, IA, and Port Byron, IL, in Pool 14. Teams of up to 25 people and 3,600 pounds competed against each other pulling at a 680-pound, 2,400 foot-long rope across the Mississippi River. Iowa won for the third year.

Work began on a pilot project to obtain geographic information system (GIS) data for the entire Upper Mississippi River System. The data will include GIS themes for land cover/land use and aquatic zones. Aerial photography for the entire system and ground-truthing occurred. The pilot project centers on Pool 13.

One of the largest marijuana cases in northern Illinois occurred off refuge in Carroll County. A marijuana crop valued in excess of $1 million was discovered planted between rows of corn and turned in to the Crimestoppers Program.

Groundwork began in November 1989 for cleanup of possible hazardous waste at the Savanna Army Depot Activity, Pool 13. The munitions-related contamination found at the depot includes chemicals that are best known by their initials: TNT, DNT, TNB, and RDX. The possible migration of this alphabet soup of chemicals through the groundwater into the Mississippi River is of concern by the U.S. EPA, the Illinois EPA, and the U.S. Army.

The Service has proposed a contaminant study to determine the Mississippi River sediment quality from Dubuque, IA, to Cairo, IL. Sediment samples and fish samples will be collected at 67 selected sites on the River. The purpose of the study is to: 1) obtain baseline data, 2) determine the toxicity of sediments from selected areas, 3) identify and quantify contaminant levels in sediment that may impact the refuge, 4) determine contaminant levels in select indicator fish species, and 5) prioritize sites for future study. Smaller scale fish and sediment quality studies were conducted on the Refuge in 1985 and 1988.

Hydroelectric plants at Lock and Dam 14 and 15 are still strong possibilities. The city of LeClaire, IA, is actively pursuing a plant for Lock and Dam 14. A license may be granted to LeClaire but the Service has recommended some expensive mitigative conditions which may cause city protest and construction delays.

A 90-mile Great River Super Trail linking 11 Illinois communities from Savanna to Rock Island made slow progress towards realization in 1989. The trail for bikers and runners has been partially completed but lacks money and has some landowner opposition blocking some sections. Illinois DOC funding is being sought for completion of the trail.

The Iowa Air National Guard conducted evening training flights over portions of Pool 13 under a memorandum of agreement with the Service.

Wargowsky had a telephonic inquiry from Patrick Baugh, Washington, DC, congressional aide to U.S. Representative Lynn Martin, on July 27. Discussion centered around EMP funding for Spring Lake.

The national headquarters for Ducks Unlimited made a second inquiry concerning projects they may possibly fund on the Savanna District.

The District underwent an in-depth Operations Inspection by eight people during portions of three weeks during 1989. Bob Dahlgren, Upper Mississippi Refuge Complex Biologist reviewed the District's biological program and toured the District July 31-August 3. At least 34 District staff hours were expended compiling biological data for this review. The following two weeks the whole staff expended numerous hours preparing for the inspection and completing the inspection booklet. The Regional Office inspection team consisted of Ed Crozier, Ede Donovan, John Ellis, and Tom Worthington. Rick Berry and Jim Lennartson also accompanied the group.

The inspection ran from August 14-17. Gerald Mohl, Regional Office Safety Officer, inspected the District on October 17, as a follow-up to the safety portion of the Operations Inspection.

Clerk-Typist McDonald was presented a special achievement award for FY89 in August.

Betty McDonald retired on September 30 after 10 years 9 months of government service. A retirement party attended by Regional Office, Winona Headquarters and McGregor District representatives was held on August 16.

Clerk-Typist, Betty McDonald, retired in September, after 10 years 9 months with the Service. (8/89 ED)

Legalization of riverboat gambling was a very actively contested issue within the legislative chambers of Illinois and Iowa throughout 1989. Both states are trying to get in on the action hoping it will boost the

local economies. Skeptics feel it will bring in more problems than it is worth.

Matthew deRosier not only became a permanent Biological Technician during 1989, but he also became permanently attached with his marriage on September 23, 1989.

Ed and Marcia DeVries received an addition to their family with the birth of Aaron Edward DeVries on October 21.

4. Credits

The 1989 narrative was a cooperative effort, prepared jointly by the entire staff as follows:

- Wargowsky - Introduction, Sections A, C.3, D.3-4, D.6, E.4-5, F.2.c, I.1-2, I.8, J.1.a, J.1.c, J.3, and J.4.
- DeVries - Sections B, D.2, D.5, E.7-8, all F except F.2.c, all G except G.1-3 and G.16, H, and J.1.b.
- deRosier - Sections E.6, G.1-3, G.16, and I.3-5.
- Beyer - Table of Contents, E.1, I-6, and typed entire narrative on IBM PS/2, Model 60 computer.

All sections were edited by Wargowsky and final draft proofread by DeVries and Wargowsky.

With increasing workloads and areas of responsibility, we find our time-budget eroding much like the sand at the base of this tree. But like this tree, we're still hanging in there.
(1/89 LW)

K. FEEDBACK

Refuge Compatibility - GAO Report

I am sure we all have our own ideas about the pros and cons of this report. The only thing I hope is that the Service looks on this report as a positive, and an opportunity to tell Congress what this agency needs in the way of dollars and staff to run the refuge system the way it was intended. I believe it also pointed out to Congress that in some instances whether they knew it or not they themselves have influenced decisions made which resulted in negative impacts on the management of a particular refuge. I also feel very strongly that the refuge manager currently has the authority to disallow incompatible uses. The question, however, is whether or not decisions survive the test of higher authority.