NARRATIVE REPORT

1988

AUDUBON WETLAND MANAGEMENT DISTRICT
AUDUBON GARRISON WETLAND MANAGEMENT DISTRICT

COLEHARBOR, NORTH DAKOTA

REVIEW AND APPROVALS

AUDUBON WETLAND MANAGEMENT DISTRICT

Coleharbor, North Dakota

ANNUAL NARRATIVE REPORT

Calendar Year 1988

Rich Antonette — Submitted by — 3/10/89 — Date

David Cr. Potter — Refuge Manager — 5-13-89 — Date

Dale B. Henry — Associate Manager, ND — 3.31.89 — Date

Ralph F. Ferris — Regional Office Approval — 4/3/89 — Date

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U.S. Department of the Interior
Fish and Wildlife Service
NATIONAL WILDLIFE REFUG E SYSTEM

INTRODUCTION

The Audubon Wetland Management District (WMD) in McLean, Sheridan and Ward Counties, North Dakota comprises 17,029 acres of fee title lands on 81 Waterfowl Production Areas (WPA) and 77,679 wetland acres on 1,123 wetland easements. Lostwood WMD manages the 617 fee acres in the Ward County "gooseneck".

Wetland acreage on the WPA's (6,260 acres) is 37% of the total fee acres. The ratio of grass to wetland is about 2 to 1 with 6,787 acres of native and 566 acres of tame grasslands plus former cropland seeded to 2,942 acres of dense nesting cover (DNC) or 236 acres of native grass. Objectives are to provide waterfowl production (primarily ducks) through management of good nesting cover on an area with an excellent wetland complex.

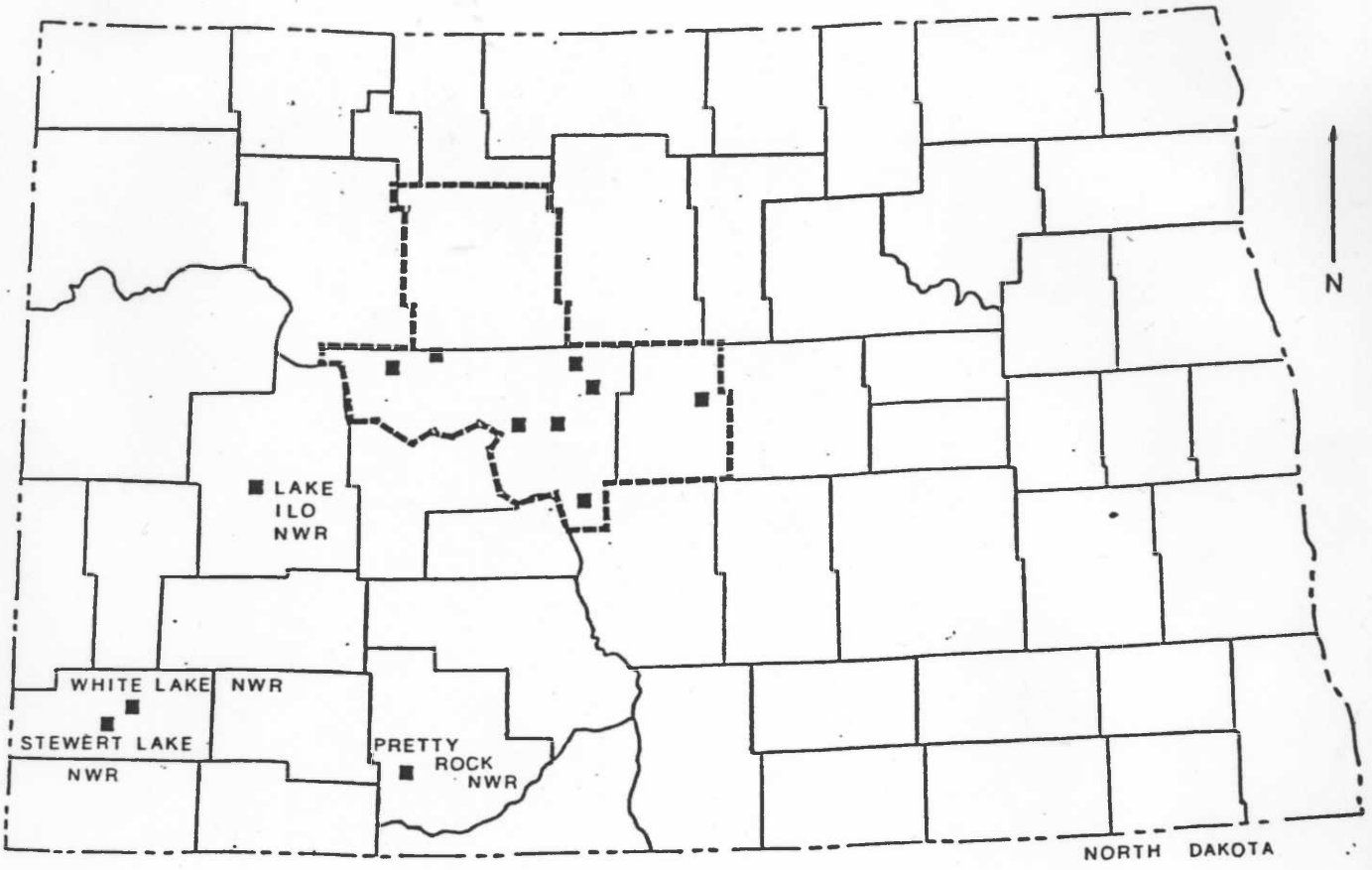
The climate is extreme. Temperatures approach 100° F. in summer and -30° F. in winter. Annual precipitation averages about 17 inches, with about 60% occurring from May through August and with June being the wettest month. The last spring frost usually occurs in early May and the first fall frost occurs in early October, providing about 147 frost-free days. Snow is expected in mid-November and lasts until mid-March and totals about 37 inches in an average year.

The Missouri Coteau is a physiographic region extending from northwest to southeast for about 110 miles through the district and comprises most of the area. The Coteau's hummocky, dead-ice moraine delineates a broad band, 25 to 30 miles wide, where the last glacial ice advance stagnated due to the gentle rise of the Fox Hills and Hell Creek Formations of the Cretaceous Period. Isolated, buried blocks of ice that were buried in the glacial drift melted to leave the typical kettle holes of the Coteau. The area is characterized by sometimes steep and very rolling topography with numerous wetlands per square mile (37% water). It is a closed drainage area; therefore, land use often remains pasture or wetland.

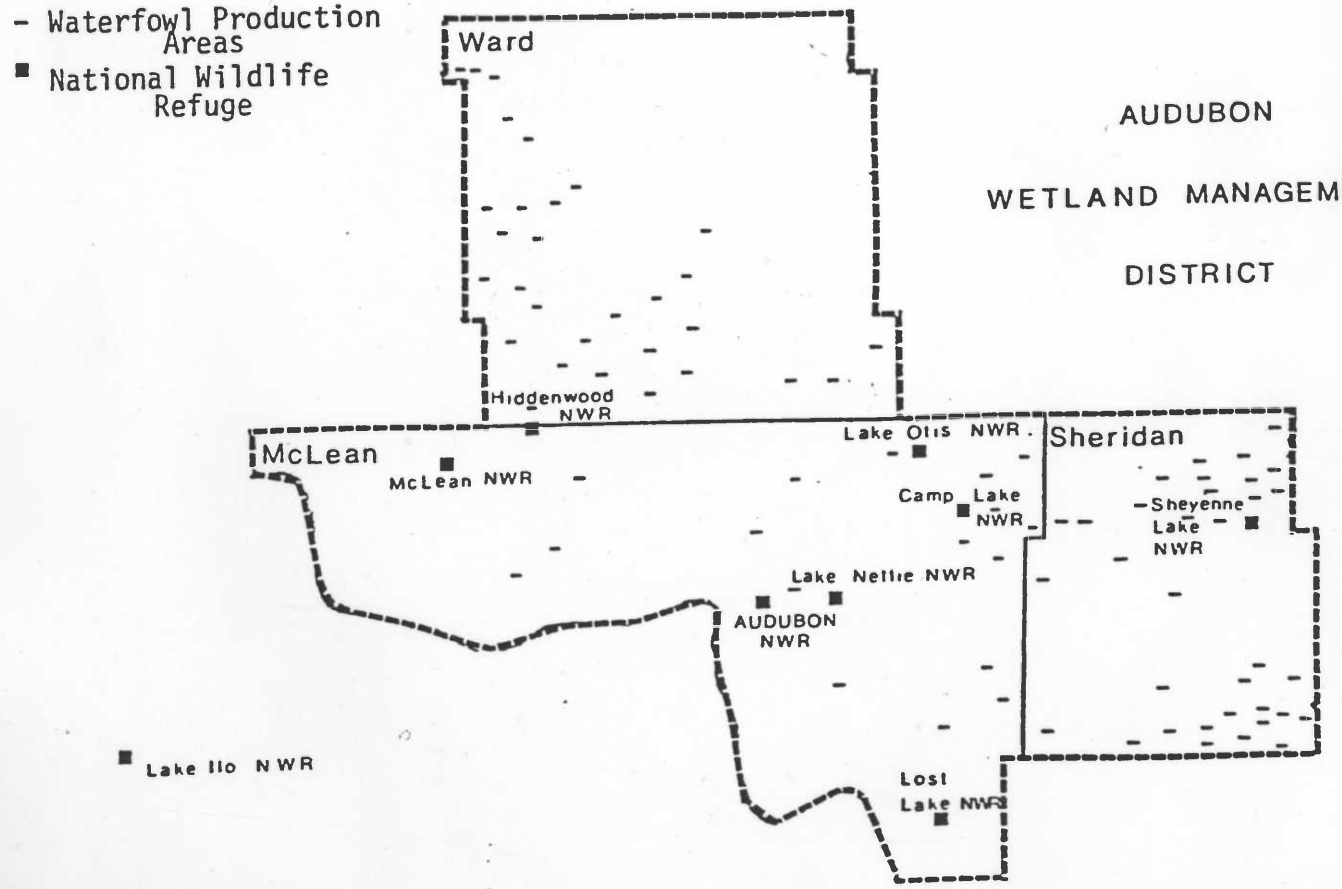
The drift plain is a second physiographic area found northeast of the Coteau. This is a less rolling, more fertile area with fewer, larger wetlands than the Coteau. About a dozen WPA's and a relatively few wetland easements are located in northeast Ward and Sheridan Counties.

The Coteau slope lies southwest of the Coteau within the Missouri River drainage. Only six WPA's and a few easements are located in this portion of the district in southwestern parts of McLean County.

AUDUBON NATIONAL WILDLIFE REFUGE COMPLEX



- Waterfowl Production Areas
- National Wildlife Refuge



AUDUBON

WETLAND MANAGEMENT

DISTRICT

INTRODUCTION

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A. HIGHLIGHTS

This year saw the worst drought since 1936 (Section B).

Nineteen easements comprising 971 wet acres were protected. (C.3).

Wildlife extension program, drained wetland restoration and straw nesting bales placed on private lands continued for the second year (F.1).

Drought continues (11/86 to 2/87 and 9/87 to 5/88) wetlands mostly dry (F.2).

Farming for DNC or native prairie (NP) establishment on 32 acres (F.4), interseeded 23 acres of DNC and 32 acres of NP, grazed 4,871 acres (F.7), haying on 1,170 acres (F.8) and prescribed burning on 251 acres (F.9).

Land use reflects reduced farming, implementing interseeding for grass rejuvenation and continued increased grazing, haying and burning (F.1).

Duck numbers and production continue low for the fourth year (G.2).

B. CLIMATIC CONDITIONS

Drought was the word in 1988. Appended to this report are excerpts from the COE's 1988-1989 Annual Operating Plan [1] pertaining to the extreme drought conditions that existed during 1988. Extreme drought prevailed throughout the district. 1936 was the driest year; however, 1988 was the hottest year since 1931 in the Missouri River Basin. By contrast at Minot, there have been seven years dryer than 1988 and four hotter years according to Minot Experiment Station records. 1987 was overall hotter than 1988 in Minot.

Fall, 1987 was excessively dry. From December, 1987 to March, 1988, winter conditions were relatively mild. Although 32 days had daily lows below zero (normal), the daily high was below zero only 9 days during January to February at Max, ND. Snow was on the ground continuously only from 1/12-2/27. A March blizzard dumped 14 inches of snow.

Severe drought prevailed by spring, which was one of the hottest and driest of record with about 50% of normal precip noted in the WMD. At Minot, the total snowfall during the winter of 1987-1988 was 18 inches, normal being 36.6". Winter moisture (September, 1987 through March, 1988) totaled 2.35" which is significantly less than average at Minot. March precip at Minot (1.3 inches) was more than double the average (.65 inches). March snow totaled 7.5 inches, exceeding 6.2 inches average. It was windy in March and

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[1]1988. Anonymous. 1988-1989 Missouri River Main Stem Reservoirs Annual Operation Plan and Summary of Actual 1987-1988 Operations. U.S. Army COE, Mo. Riv. Div. 107pp. Nov, 1988. p33-38.

warmer than average. No precip was received in the Max - Garrison area from 3/30- to 5/1. Seeding oats near Coleharbor started on 4/11 - an early date.

Drought further deteriorated wetlands and the blistering heat and low precip were records during May-July. Unusually warm temps occurred May through August with +100° F. days on 9 days and +90° on 25 days. There were 5 days above 100° F. at Max during June, which is unusual for that month. The 6/27 high of 107° F. tied the month of June's all time record set in 1921 at Bismarck. Two tornadoes on 6/20 destroyed buildings about 11 miles south of Kief.

Sheridan county suffered a 80-90% crop loss. 75% of small grain farmers did not harvest grain. Ranchers suffered 70-80% loss of range production. A rain of 1.37 inches fell on 6/30 but heat and drought returned in July. Grain further deteriorated as did pastures. Topsoil and subsoil moisture was the driest since 1950 records started.

In August, the small grain harvest in Sheridan county was completed in record time and the earliest harvest since 1976. Dry soil moisture going into the winter of 1988-89 was a major concern.

The last killing frost (below 28° F.) was on 4/27 and the first fall frost occurred 10/23 at Max and the growing season was 180 frost-free days. Type IV's first froze on 11/9, slightly late. Due to moderate temps, Lake Audubon remained open to 11/17, which is about average (11/24).

In December, the light snow cover was lost due to temps in 50's. Ice fishermen were warned in the media of dangerously thin ice as winter seemed to be coming reluctantly. Two drowning incidents occurred in the district - one in March in Brush Lake near Mercer when an elderly Mandan couple drowned due to water kept open by an aerator and a second incident in December on Audubon NWR (see refuge NR) when two elderly Hensler men drowned when they drove into one of the ice cracks caused by relatively warm temps.

December was one rare month of 1988 when precip was above normal, measuring 1.19 inches compared to an average of 0.53 inches. Most was from the 11.8 inch snow received - more than 7 inches in one storm and double the average of 6.2 inches.

Total snowfall during 1988 at Max was 32 inches and 36.1 inches was received at Minot (36.6" average). Total precip at Max was 9.8" and Minot's 11.4 inches total was 31% less than average (16.5").

C. LAND ACQUISITION

2. Fee Title

We found the Sheridan County Commission to be very cooperative concerning the proposed acquisition of the 1,000+ acre David Tessman property in east central Sheridan County.

In 1987, the Ward County Commissioners approved a fee purchase in the gooseneck (north area) which indicates a favorable climate for future acquisition in the county. No other fee purchases have occurred and basically no fee acquisition is occurring.

A fee donation tract in Sheridan County of about 335 acres was being processed by Realty from the Small Business Administration on a tract that was forfeited as collateral on a SBA loan.

Due to 1987 acquisition of the Falkirk WPA in exchange for easements M188X and 198X, wet easement acres were reduced 35 acres for the district effective 10/30/87. This WPA's 160.14 acres is added to McLean fee totals below. Also, the Kjallberg fee tract in the Ward County 'gooseneck" reduced wet easement acres by 19 acres and is included in the below figures. The 617 fee acres in the gooseneck are assigned to Lostwood WMD for management.

Fee Acres - Audubon WMD

County	Acres	BLM Withdrawn Acres	Total Acres
McLean	3,907		3,907
Sheridan	7,086	128	7,214
Ward	5,868	40	5,908
Total:	16,805	168	17,029

3. Easements

Easement acquisition continued with willing sellers. Under the FWS Wildlife Extension Program six easements were purchased as a condition of signing up under the Wildlife Management Agreement (WMA): four Haugen easements (FY 1987) and Wickman easement (FY 1988) (see Wildlife Extension in Section F.1). Unfortunately, three other piggyback contracts were canceled since the landowners turned down the easement offer. Also, during FY 1987 and 1988, 3 and 16 wetlands, respectively, were restored under Extension and the basins then permanently protected when the new wetland easement was purchased on those basins. Three added easement acquisitions are pending (Reiswig, Schilling and Wahl) and they include five ditch plugs built in 1988. Costs run about $150/ditch plug. District easement information is as follows.

Wetland Easement Acres

Fiscal Year	McLean		Sheridan		Ward		WMD Total	
	No.	Acres	No.	Acres	No.	Acres	No.	Acres
1978*	326	17,043	268	23,463	464	33,353	1,058	73,859
1985	5	184	5	368	5	298	15	850
1986	12	737	1	212	3	149	16	1,098
1987	0		4	348	3	124	7	472
1988#	+6	448	4	335	+9	+359	+19	+971
1988#	-2	-35			-1	-19	-3	-54
1989**	7	296	4	155			11	451
Total Acquired	353#	18,502#	286	24,881	484	34,296	1,123	77,679
Goal		52,260		41,178		39,407		132,845
Balance		33,883		16,452		5,111		55,446

* 1963 to 1978 totals, no acquisition from 1978 to 1984.
** FY 1989 to date.
# Note: easement numbers and acres reduced as shown in McLean and Ward Counties by Falkirk Mine exchange and Kjallberg acquisition, respectively.

Figure 1. Former wetland easement M198x being mined. 11/2/88. (16-88-20, HCH)

Figure 2. Falkirk WPA fee exchange received for M188x and M198x. 11/2/88. (19-88-20, HCH)

E. ADMINISTRATION

1. Personnel

To reflect the broad scale of his responsibilities (including management decisions for the Ilo group of four refuges), Assistant Project Leader Pete Smith's job was upgraded to a GS-11 in February. With this far-flung Complex the field challenges and paper load is extremely heavy.

As usual to a Complex this large, several other personnel moves occurred. In March, Biological Technician Don Bozovsky transferred from a permanent part time Biological Technician at Tewaukon NWR, Cayuga, ND to become the GS-5 Bio. Tech. in charge of Lake Ilo, White Lake, Stewart Lake and Pretty Rock NWRs. In July, Don was promoted to GS-6 in this GS-5/6/7 position.

Also in March, the Ilo permanent part time clerk typist, Mick Erickson, was selected to fill the PFT slot vacated when Pep Bratz retired last year. This position had been a maintenance worker job but Mick will be a Biological Technician.

In June Garrison WMD Assistant Manager Sally Sovey accepted a lateral transfer and moved to Bismarck to join the FWS-Enhancement office working on Garrison Diversion land management issues. This position was filled in September when Biological Technician Mike Goos from Long Lake NWR, Moffit, ND was selected to become the Assistant Manager GS-5/7/9.

Also, with the rapid increase in Garrison WMD lands and the associated funding from USBR, a temporary Biological Aid position was assigned to this WMD. Ms. Cathy Nigg, a graduate of Iowa State University, was selected to work the summer months in this job.

In September the senior Biological Technician job was rewritten as a GS-7/9 Refuge Biologist to better reflect the work actually required. Bio. Tech. Craig Hultberg was selected to become our Refuge Biologist. In addition to traditional banding and census duties he will be in charge of converting the Complex's far-flung farming and grazing programs toward more biologically sound methods and results.

Personnel

1. David G. Potter, Project Leader, GS-485/12, PFT
2. Peter T. Smith, Asst. Project Leader, GS-485/9-11 PFT (Ilo, Stewart Lake and 2 Easement Refuges)
3. Richard Antonette, Asst. Refuge Manager, GS-485/9, PFT (Audubon Wetland Management District)
4. Sally Sovey, Asst. Refuge Manager, GS-485/7, PFT (Garrison Diversion Wetland Management District), transferred 6/2/88
5. Mike Goos, Asst. Refuge Manager, GS-485/5, PFT (Garrison Diversion Wetland Management District, EOD 10/23/88
6. H. Craig Hultberg, Refuge Biologist, GS-486/7, PFT
7. Marilyn Wohlk, Refuge Assistant, GS-303/6, PFT
8. Duane Brenneise, Eng. Equip. Operator, WG-5716/8, PFT
9. Don Bozovsky, Bio. Tech., GS-404/6, PFT (Ilo, Stewart Lake and 2 Easement Refuges)
10. Mick Erickson, Clerk/Typist 11/9/87 - 3/13/88 promoted to Bio. Tech., GS-404/5. PFT, 3/14/88
11. Eugene Utecht, Bio. Tech., GS-404/4, PPT, 5/31/88 - 8/12/88
12. Brain Mautz, Bio. Aid, GS-404/3, PPT, 5/31/88 - 9/9/88
13. Cathy Nigg, Bio. Aid, GS-404/3, PPT, 6/6/88 - 8/26/88
14. Jim Ruch, Bio. Aid, GS-404/3, Range Aid, 3/21/88 - 5/20/88
15. Terry Kostinec, Volunteer, 5/13/88 - 7/28/88
16. Patrick Railey, SCA Volunteer, 4/14/88 - 6/17/88, Range Aid 6/19/88 - 8/19/88
17. Thomas Perkins, SCA Volunteer, 9/2/88 - 10/28/88
18. Mike Havlik, Volunteer, 6/18/88 - 7/31/88
19. Jim Nelson, YCC, 6/6/88 - 7/29/88
20. Aaron Weisenberger, YCC, 6/6/88 - 7/29/88
21. Mike Belgrade, NDSYETP
22. Laurie Bang, Bio. Aid., GS-404/3, 5/31/88 -8/26/88
23. Duane Kudrmas, NDSYETP
24. Wanda Bozovsky, Volunteer

2. Youth Programs

Again this year the Complex had 2 YCC slots. Both people worked out of Audubon Refuge mainly doing WPA fence building and repairs. The woman selected declined the job offer so we ended up hiring Jim Nelson and Aaron Weisenberger, both from Underwood. Extreme heat made fencing a tough assignment but the men kept at it and "did us good".

Also like list year, the North Dakota Summer Youth Employment Program (NDSYETP) paid for Mike Belgrade from Coleharbor to work with the Audubon YCC crew. This program is very similar to the YCC program except that the employee's parents must meet low income guidelines. For the last 4-5 years we've welcomed these youth and had very good work from them (with one exception).

3. Other Personnel Programs

In May Biological Technician Craig Hultberg was awarded a $250 Special Achievement Award in recognition of his thorough, dedicated and "beyond the call of duty" efforts in making plans, meeting with cooperators and convincing them to implement more biologically sound farming and grazing practices. Craig performed well above the level of a GS-7 Technician. Changing the practices of a North Dakota farmer or rancher is quite an undertaking - most especially if you wear a Fish and Wildlife Service uniform!

The whole Audubon permanent crew (Pete Smith, Rich Antonette, Craig Hultberg, Marilyn Wohlk, Duane Brenneise and Mick Erickson) were awarded $250 each under a Group Special Achievement Award. It recognized their excellent accomplishments during two massive add-on assignments: the many Farm Bill jobs and the Haying and Grazing Drought Emergency. The crew kept the routine work going while producing extra work such as: restoring 40 private wetlands, working 7 Commencement Hearings, processing 14 suspected Swampbuster and 3 Sodbuster violations and working out 49 emergency haying or grazing permits (in addition to about 40 some routine permits).

4. Volunteer Programs

Again this year the Student Conservation Association worked well for us. From 4/14/88 to 6/17/88 Mr. Patrick Railey from Georgia with a degree in wildlife volunteered. He did a good job helping on nest dragging, island predator trapping and monitoring, 4 square mile counts, goose banding, nesting tub checks and others. From 6/19/88 to 8/19/88 we were able to hire him as a GS-3 Range Aid.

To get help in the fall, S.C.A. was again utilized. A young lady from Massachusetts drove out but after a half day decided it wasn't for her and headed home. She agreed that we'd briefed her on North Dakota but she said she wasn't ready for the openness and isolation.

As a replacement, Mr. Tom Perkins from Kansas arrived and helped out from September to November. His willingness to come on one week's notice was much appreciated. Major jobs Tom was involved with were helping in the shop, operating the tractor while pumping down a wetland and installing cement culvert nesting structures.

Mr. Terry Kostinec returned as a volunteer to work about half time on the second year of his M.S. Study (Section D.5). The rest of the time Terry helped out on most on-going biological projects. Mr. Mike Havlik, a senior in wildlife from Iowa State, also spent most of the summer as a volunteer. Like Pat Railey and Terry Kostinec, he helped a great deal on nest dragging, island studies, predator control and many smaller jobs. Another good man.

5. Funding

Money was okay this year. It could have been bad but the RO got us "some pretty good bucks".

Table 2. Funding Comparisons 1984 - 1988, Audubon Complex

Sub-Activity	Fiscal Year 1989	1988	1987	1986	1985	1984
Base 1260	-	-	-	243,000	206,900	202,000
Base 1261	223,000	233,000	220,000	-	-	-
1262	124,000	53,000	-	-	-	-
ARMM's	-	78,000	112,000	110,000	78,300	65,000
6860	6,000	6,000	6,000	7,000	5,000	5,000
8610	8,000	9,700	5,700	6,500	3,000	2,500
1520(1210)	3,000	3,000	0	7,600	6,000	3,000
2821	-	0	0	199,000	0	120,000
1902-05*	25,675	38,600	18,800	-	-	-
1929-29**	2,400	2,400	-	-	-	-
TOTALS	392,675	423,700	364,500	573,200	229,200	397,500

* GDU land management transfer funds
** GDU planning transfer (allocated from FWE - Bismarck)

6. Safety

A tragedy occurred on Dec. 20 when two senior citizens drove across the Refuge ice on Lake Audubon north of the access ramp near headquarters pulling an ice house. Reportedly the ice in general was around 9 to 13 inches thick; 7-1/2 inches is the minimum for a vehicle. But the gentlemen drove onto a crack (where pressure ridges usually form) in which the ice rapidly thinned down to 2-4 inches. The truck broke through and quickly plunged nose down into about 17 feet of water. Truck and trailer completely submerged and only the ice house remained floating on the edge of the hole.

A nearby fisherman saw the men drive by and minutes later noticed the floating ice house. A second fishermen came to the office for help but nothing could be done. That evening one man's body (the passenger) was recovered from the truck cab. Work was halted by darkness. About 10 a.m. the next morning the driver was found floating under the ice at the edge of the hole.

Lake Audubon is a first rate ice fishing lake but it routinely remains somewhat hazardous to driving due to springs and currents producing changing and thin ice conditions. For example, a truck put a tire through at a pressure ridge last February when the driver became disoriented driving in a snow storm.

The victims were in the third vehicle to break through this fall. (The other 2 were on the State managed part of Lake Audubon). Every year people walk and then drive out onto the ice early before the ice is (more or less) safe. It happens all over the State. However, this was the first time a life was lost at Lake Audubon.

The crew suffered two minor, non-lost-time accidents. In February Mick Erickson's finger was smashed when the window on a tractor cab swung shut on it due to the tractor lurching. He had a doctor treat it. In August Cathy Nigg got a foreign object in her eye probably from cleaning clover seed. She also received treatment from a doctor.

Monthly safety meetings were held. This year an increased emphasis on driving films and discussions was made to work on our DDC requirements. Pete Smith established and held meetings of a Safety Committee consisting also of Duane Brenneise and Sally Sovey.

Rich Antonette attended training in Bismarck and was certified by the ATV Safety Institute of Irvine, California to instruct on safe ATV operation. He ran nearly all the crew through an ATV session but earlier in the year. Again this year, Craig Hultberg re-certified as a CPR instructor and trained the Garrison Dam and Refuge folks at a safety meeting. At another meeting Duane Brenneise instructed on safe operation of the outboard engines and small boats. He also taught the crew where the various power and fuel shut-offs are for each building in case of fire. He also demonstrated operation of the refuge's pumper.

7. Technical Assistance

Technical assistance was provided to the following organizations on a request basis during 1987.

U.S. Army Corps of Engineers
Soil Conservation Service
Bureau of Reclamation
North American Coal Company
McLean County Red Cross
Garrison Public School
Underwood Public School
McLean County Water Resource District
State Water Commission
Ward County Highway Dept.
Sheridan County Highway Dept.
McLean County Highway Dept.
Colonial Bird Register
Cornell University
N.D. Game & Fish Dept.
Ward County Water Resource District

8. Other Items

Nothing to Report.

F. HABITAT MANAGEMENT

1. General

Drought was the largest impact on habitat in 1988. Generally wildlife cover was severely depleted (and will be so in 1989). Virtually all CRP, Waterbank, idle native grass, etc. on private land was hayed. All private wetlands were hayed if possible. Hundreds of areas (thousands of acres) of idle native grass were hayed. Those areas not hayed were farmed, grazed or burned. As a result residual nesting cover is virtually nonexistent for 1989. Ducks especially will be hit hard in 1989 since populations have been low since the high breeding numbers in 1984 and it will be a double blow to loose virtually all nesting.

A couple of drought related items that "did not make the news" were the abundance of tumbleweeds (kochia and Russian thistle) on fence rows and in totaled out grain fields and the abundance of box elder bugs virtually everywhere during late summer plus inside buildings well into 1989.

Emphasis for the complex continued on increasing WPA management. About twice the haying was accomplished in both 1987 and 1988. Most hay areas now are in need of rest for a couple of years. Six burns were completed. Most areas are not suitable for burning in 1989 due to extensive loss of cover from 1988 activities. Farming acreage continues to decline due to smaller areas being broken or farmed due to the high cost of seed and use of more cover manipulation to improve the stand. Two areas will be harvested for seed in the future. Areas are being seeded to native prairie grass when possible. Habitat management for recent years follows.

	1984	1985	1986	1987	1988
Grazing	1,748	1,766	1,377	1,596	4,871
Haying	189	185	725	1,448	1,170
Farming	443	380	218	201	32
Burning		6	5	159	251
Total Acres:	2,380	2,337	2,325	3,404	6,324

Wildlife Extension Program

The total of Wildlife Management Agreements (WMA) or piggyback completed in 1987 was revised down from 33 to 30 tracts totaling 5,119 acres, since three landowners turned down the wetland easement offer upon which the WMA was contingent. Eleven WMA's required landowners to sign new wetland easement options to qualify for piggyback. Unfortunately R. Schock, Helm and S. Kensmoe turned down the easement offer and their WMA was cancelled in 1988 (after they received the 11/87 payment). They forfeited the $47,200 easement payment and $48,135 for 9 years of future piggyback payments.

Figure 3. Drought contributed to wildfire as this lightning-caused fire burned 1,000+ acres in 2-150-81 (east view). (11/88. 9A-88-21. RA)

Figure 4. Note overgrazed private pasture, which appears like dirt compared to Panko WPA receiving fairly intensive management. Drought exacerbated any overgrazed areas in 1988 (south view). (11/88. 34-88-20. HCH)

Five WMA's had ditch blocks constructed (this included the Helm and Kensmoe areas). Piggyback, new easement and ditch blocks were done on each of three WMA's. Wickman was not piggyback but from routine easement acquisition we were able to plug ditches restoring 16 wetlands protected by easement.

We signed Wildlife Extension Agreements (WEA) to restore drained wetlands as listed below. All are on CRP except Wickman and Jungling. Wetland easements were also purchased on two of the tracts, permanently protecting a total of 33.5 acres on Haugen and Wickman land. We have made offers to purchase easement on three added tracts, on which ditch plugs were built in 1988 (Reiswig, Schilling and Wahl). Several plugged wetlands had been only partially drained prior to restoration so the acres protected are less than total basin size. WEA's in both FY 1987 and 1988 were completed on both Sonny Hoffer and S. Kensmoe lands for eight ditch plugs. During 1988 we paid landowners for them doing the dirt work if they were able to. Ditch blocks were completed on the following areas.

Name	Ditch Blocks (No.)	Wetland Acres Total	Wetlands Increase (Acres)	Install Cost ($)	Bonus Pmt. ($)	Total Cost ($)
FY 1987						
Wagner	2	0.3	0.3	150**		150
Hoffer	1*	1.2	1.2	220**		220
Helm	2	0.8	0.8	518**		518
Kensmoe	3*	1.4	1.4	792**		792
Haugen	3	12.1	4.5	1,000**		1,000
Jungling	1	0.7	0.2	255**		255
Totals:	12	16.2	8.2	2,935		2,935
FY 1988						
Wickman	16	21.4	15.0	1,925**		1,925
Reiswig	1	5.5	4.0	290**	55	345
Polesfut	1	0.8	0.8	150	50	200
Schilling	2	8.5	4.5	400	105	505
Wahl	2	4.6	1.6	400	100	500
Kensmoe	1*	0.2	0.1	100	50	150
Hoffer	3*	12.8	2.5	540	150	690
Lee	1	2.8	2.6	300	50	350
Totals:	27					
FY 1989						
Nichols	3	2.7	0.6	400	150	550
Haushauer	9	4.5	4.5	1,060**	450	1,510
Totals:	11	7.4	5.1	1,560	600	2,060
Grand total:	50	80.2	44.4	8,600	1,210	9,660

* Hoffer and Kensmoe negotiated ditch plugs in two fiscal years.
** Paid to contractor.

We signed a one-year WEA to avoid breaking waterbank until the new contract can be signed in 1989 (Polesfut); FY 88 cost $1,895 and FY 89 cost $3,789.

Under the Wildlife Extension Program during CY 1988, we purchased and placed 31 flax nesting bales on private lands in McLean and Ward Counties using sportsmen's clubs to haul and place bales. Bales placed during the fall of 1987 were all part of the same extension project and discussed in 1987 NR. Added to 1987's bales, we've placed 157 total. See section G.3, Waterfowl for more discussion of bales.

Figure 5. Elmer Wahl ditch plug (east view). (7/88. 9-88-5. RA)

Figure 6. McClusky Sportsmen place flax goose nesting bales. (12/87. 16-87-37. RA)

1985 Farm Bill.

In administering the 1985 Farm Bill in the district, we observed 11 potential drain areas, reporting 3 to McLean and one to Ward County ASCS. In spring flights we observed and reported 3 to Ward ASCS. All reported were scraper ditches draining Type III or better wetlands. The remainder were in cropland and likely were ditch cleanouts and not reported. In 1986 and 1987, we reported 34 and 14, respectively, of which most were plow furrows and all apparently dropped by ASCS. Most cleanouts are approved by SCS in advance and are not a violation of the Farm Bill. In 1988, Ward ASCS advised that none were seeded to commodity grains; therefore, the landowners were not violating the bill.

The Myron Diterle commencement hearing was held to finish a 12' deep by 30' wide by 250' long ditch. The remaining wetland values comprised a 5 acre saline area and we did not recommend denial. The David Tessman commencement is pending. This involves requests to continue drainage on about 51 wetlands on portions of 10 sections of land. Initially, they submitted a "shopping list" of 79 wetlands for commencement determination, 43 of which no drainage had begun, they just wanted to drain them now. We will recommend denial on several. At the John Novodvorsky commencement we recommended denial since he did not actively pursue drainage since he has owned the land (1978); however the ASCS committee, in an appeal hearing, reversed their earlier ruling and granted his commencement. FWS appeal of this last decision was again denied by the county committee. Three other commencement hearings were attended in Ward County, 2 were approved and one denied.

The ASCS/SCS wetland classification process was completed in Sheridan County and is now being done by the Turtle Lake SCS for southern McLean County. Their methodology is seriously flawed and some wetlands are not determined to be a wetland. The ditches may or may not be found on the ASCS aerial slides which are taken in July each year when ditches are not present. No ground verification is routinely scheduled. ASCS, in some cases, uses the landowner's verbal verification of any ditches being present as the final word. No effort is made to determine depth of existing ditches and preserve remaining wetland values that technically are protected by the swampbuster provisions.

This is true for Type I wetlands which most landowners don't understand or agree that they are wetland. Notes on pintail habitat indicate that they are attracted to sheet water in typical Class I wetlands. Temporary wetlands have never ranked high in preservation efforts.

The ASCS/SCS ditch cleanout approval process will continue to allow loss of Type I wetlands. The procedure is that the landowner requests to clean out a ditch from ASCS, no verification is made of depth of the ditch, either before or after cleanout, and the landowner does the work unsupervised. The remaining wetland values which are protected by the swampbuster provisions will be lost, since no one monitors the cleanout or enforces the law.

The ASCS swampbuster compliance monitoring process is seriously flawed in that the staff in ASCS checks a small sample using ASCS slides taken during July when the ditches haven't been dug yet. The staff person is inexperienced in identifying ditches on the slides and has not been out in the field at all. For example, Ward ASCS has 2,200 producers and spot checks 10-15% for compliance, they also spot check 10% for ACP and CRP compliance. With no field checking, they simply check acreage on photos and mark fields on maps and list acreages on forms.

On 5/5, we reported 80+ acres of sodbusting in 4-151-83 involving breaking sod on the steep slopes at slough margins. Apparently the producer is not in the farm program and is not subject to the law.

CRP Activities

The activities in the district are summarized below showing a total of 201,764 acres has been signed up in the district by ASCS. The sixth and seventh signups occurred during 1988. Haying during the drought was permitted on CRP. If the landowner donated the hay, he retained his annual CRP payment. Haying due to the drought emergency had severe impact on ground nesting birds dependent on this habitat. These areas had no cover before CRP (cropland) so basically the nesting cover established was delayed up to 4 years (1987 - 1990) before wildlife cover became available.

Figure 7. Wetland drainage on private lands reported to ASCS for potential swampbuster violation in NW 32-154-84. (11/88. 19A-88-21. RA)

CRP SIGNUP

County	Signup Acres		County-Wide	
	No. 1-6	No. 7	25% Cropland	Balance Avail.*
McLean	71,207	24,895	224,765	153,557
Sheridan	44,930#	11,916	91,086	46,155
Ward	34,361	14,455	234,372	200,010
Totals:	150,498	51,266	550,223	399,722

Number 5 in state.
* After 6th signup.

County	HAYING ON CRP		HAYING ON WATERBANK			
			Total		Hayed	
	Contracts Hayed	Acres Hayed	Contracts	Ac.	Contracts	Ac.
McLean	93	4,842	30	4,523	19	1,173
Sheridan	72	6,659	36	6,563	28	2,190
Ward	77	10,969	15	2,412	7	453

2. Wetlands

No management of water is done on the 6,260 acres of natural wetlands. Winter moisture was significantly below average (see Section B), and with mild, dry conditions, wetland conditions were poor during spring migration. Moisture conditions were poor and drought prevailed from 11/18/86 through 2/24/87 and from 9/28/87 through 5/1/88. No moisture was received during April in the Max or Garrison areas.

Snow accumulations melted rapidly with moderate temps. During the 4/88 easement flight, wet conditions were noted in many areas but dry conditions were noted in east central McLean and west central Sheridan Counties. Lake Audubon was ice free on 4/12 and Type IV wetlands were open on 4/6.

Many moderate size IV's were dry in widespread areas by November, 1987, thus wetland conditions were poor for spring, 1988. Type IX (saline) were dry near Ryder coming into 1988 also. By 4/1 some Type IV's were open; however, most III's were dry and all I's were dry (except those with a watershed & some runoff). These normally provide early migrants with needed sheetwater to initiate nesting. This was the driest spring since 1981. In the spring, IV's were generally down 2' from maximum (highest high water) and down 1' below recent years. Last spring was relatively dry at this time also.

By 4/18, small type III's that had previously held some water were drying and they were completely dry by 5/25. The Weltikol saline Type X wetland was 80% dry on 4/13. By 5/11, all type III's were dry on the Kruger Lake and Rovig 4 mi^2 plots. Birds were concentrated on some IV's and V's - likely many were non-breeders. The dry beds of some IV's were seeded to oats or sorghum for hay by landowners.

By 5/26 in the area from US 83 to Ryder along SR 23, most IV's still held water but were down 1-1/2'. Type V's were down 2'. From Ryder to Makoti, there were several dry IV's (same ones dry in 1980) but the conditions for ducks were not too bad since good complexes of IV's exist in this area. The 6/7 algal blooms seemed early?

By 6/24, 80% of the 300' diameter IV's were dry in the Ryder to Makoti area along SR 23. Most IV's were dry from Mercer east to central Sheridan County. Kandt Lake in 13-150-77 was dry and salt was blowing out of the lake bed in dust storms (see Figure 21). Large IV's were dry south of Pickardville.

"Windshield" surveys of wetland conditions found most Type IV's had disappeared by summer. For example on September 7 in the area from Turtle Lake to central Sheridan County along SR 200, 108 of 116 basins (93%) were dry. Only 8 basins held water; these were down about 1-2 feet (60-80% wet).

On 9/26 a windshield survey of wetlands through Sheridan County along SR 200 found only 21 large wetlands (V's) with water and they were down an average 2' from normal (60% wet). This was about one wet basin per mi^2.

During the 11/88 easement flight virtually the entire district was 95-100% dry except good water (60% wet) was found in the Spring Lake and the west portion of Rushville Townships area near Day, Field, Knudson and Albertson

WPA's. Breeding pair and brood numbers have been higher in the Max area also (see Section 3, Waterfowl).

Type IV's first froze by 11/9, which is slightly later than normal. Since December was warmer, they continued to open up. By 11/23, IV's and small V's iced over. Some remained open but no ducks were seen in the eastern part of the district to McClusky. Lake Audubon was 99.5% frozen 11/17 and the Type V's including Lake Audubon finally froze solid on 12/15, which is much later than normal.

The culvert washout on Allen WPA lowered the Type IV (145 acres) by 2' and dumped on and raised the saline Type X (est. 200 acres) proportionately. Water analysis on the saline lake on Galusha WPA to determine adequacy of the grazing water supply found the total dissolved solids were at 52,200 mg/1 - anything over 10,000 requires caution if used as livestock water. Total hardness (as CaCO3) was 49,500 mg/1. and conductivity was 65,200 umhos/cm and sodium was 21,200 mg/1.

In the McLean County Journal on 3/3/88: The time had come to form an irrigation district near Turtle Lake and an informational meeting was held and a 6/1 deadline was set to sign petitions. The 1984 Reformulation Act included the Turtle Lake area (about 15-17,000 acres are suitable, only 3,700 acres are authorized). A drainage plan would be included in the system, natural drainage will be augmented by pipe where needed. "We would be protecting Lake Nettie Wildlife Refuge, elsewhere the water level could be lowered (emphasis mine) and it might affect some shallow stock ponds."

The McCulloch WPA lake dried significantly, converting the 200 acre Type V into 3 Type V's (104 ac.) and 3 Type III's (5.6 ac.). Water decreased and native prairie increased by 91 acres.

4. Croplands

In 1988, the final 32 acres of farming that were broken in 1982 to improve the vegetation stand were seeded to native grass. This operation consisted of natives interseeded (by FA using our new no-till drill) on the northwest field on Allen WPA (highly erodible soil). Species included wheatgrasses, bluestems, switch and Indiangrasses, Russian wildrye and yellow sweet clover.

No new areas were broken in 1988, using mechanical means instead, such as disking, interseeding, etc. to rejuvenate the stand. In this way the grass is not out of production (by nesting ducks) more than one spring. DNC was interseeded at half rate into a 23 acre DNC stand on the Hillstrom WPA.

The alfalfa seeded in 1987 on Dossenko WPA did not provide a seed source as intended. Also, the Kohoutek DNC did not set sufficient seed nor was the Cartwright burn completed to enable seed production for harvest. These all were not done due to drought impacts.

Figure 8. Typical scene of 1988 drought on an alkali slough on Jones WPA in Sheridan County. (10/13/88. HCH)

Figure 9. Typical dried up saline Type X wetland 4 miles east of McClusky in Sheridan County. (8/30/88. HCH)

Figure 10. McCulloch WPA showing significant lowering of Type V wetland in Ward County (north view). (11/88. RA 14-88-22)

Figure 11. Chenopodium (goosefoot) invaded the exposed mud flat areas of most Type IV wetlands about August. This species was utilized by grazing cattle on Davis WPA. (8/26/88. RA 18A-88-8)

7. Grazing :

Precipitation from September through June is important for rangeland grasses. Overgrazed rangeland suffers a greater loss of carrying capacity in drought than does better managed range. Producers using grazing systems, tame pastures in the spring, grazing distribution techniques and reasonable stocking rates fare better. Turning stock onto drought-affected grass too early greatly reduces carrying capacity (the last week in May is recommended).

By 4/18 brome had 3 inches of new growth in road ditches, estimating this is 1 week earlier than usual? By 5/16 Kentucky bluegrass was headed out and by 5/30 brome was headed out at Riverdale. By 5/26 spurge was fully flowered at McCulloch WPA. Due to drought native grasses did not green up until about August or after the heat spell ended and some rains were received.

As shown on the following table, grazing was completed on a total of 82 paddocks on 25 WPA's. A total of 4,871 acres was grazed by 24 permittees. Receipts totaled $22,406 but most were in credit for fence and other improvements. $8,581.37 was collected. About 190 acres of tame (DNC) were grazed on Ketterling, Oster and Allen WPA's. A total of 18 miles of electric and 6.4 miles of steel fence was built during 1988 for grazing. Electric fence was used to subdivide large units. Areas were grazed using a short-duration system consisting of about 10 to 14 days/paddock and with some of the larger areas grazed twice-over. Several multi-year permits were implemented. YCC built fence on Geigle and Eddy WPA's for grazing.

Grazing Observations:

- On the Geigle WPA prior to the grazing, the needle & thread and crested wheatgrass were headed out by 6/7 and the other natives were greening up but were not headed. Considering non-use for many years, litter was not bad (2") and this is due to sandy soils. The WPA's south unit was severely grazed in 1988. Conversely the private native pasture to the north was extremely browned and dead appearing due to drought on abused pasture.
- On the Oster the native grasses after once-around all paddocks generally looked good on 7/12, with an estimated 50% utilization overall. However, all tame grass areas were very sparse. The west native pasture looked fair with cattle present at the time.
- The cooperator on the Davis WPA lost ten cattle to wild mint poisoning. Drought contributed to the cattle utilizing this plant that may cause poisoning but normally is not utilized in large quantities.
- The neighbor west of Jones WPA complained of his bull jumping fences since no double fence was used.
- The cooperator on the Evanenko as part of his permit conducted several briefing sessions on the WPA for staff to discuss the short-duration grazing system implemented this year and which he has practiced on his home place for many years. Also attending were NPWRC and J. Clark Salyer NWR staff.

1988 GRAZING SUMMARY

WPA	ACRES GRAZED	AUM'S
** COUNTY MCLE		
PANKO	480.0	142.7
KETTERLING	0.0	61.5
OTIS	550.0	263.2
ZAREK	132.0	40.9
EVANENKO	150.0	103.0
** Subtotal **	1312.0	611.3
** COUNTY SHER		
TKACH	531.0	132.8
THORSON	0.0	102.5
LASHER	135.0	88.8
EDDY	125.0	4.3
JONES	34.0	17.5
GEIGLE+WEL	182.0	116.9
ALLEN	500.0	250.0
DAVIS	400.0	229.2
OSTER	405.0	403.3
ALLEN	200.0	148.7
** Subtotal **	2512.0	1494.0
** COUNTY WARD		
ROVIG	292.0	165.0
DAY	292.0	54.0
FIELD	64.0	23.5
V. JOHNSON	89.0	29.2
NELSON	78.9	32.8
KVAM	13.0	24.9
CAMERON	9.8	19.4
ROAD	93.0	79.5
PETERSON	115.0	60.2
** Subtotal **	1046.7	488.5
*** Total ***	4870.7	2593.8

Figure 12. Cattle died on Davis WPA and the cause was wild mint poisoning - the cattle were forced to eat it due to drought. (8/2/88 PTS)

Figure 13. Typical conditions - Tkach WPA, grazed and hayed (includes non-permitted haying area (see Section 8. Haying). (11/88. 28-88-20. HCH)

Figure 14. Tkach WPA grazed and hayed. Note good cover remains on WPA compared to private property. (11/88. 28-88-20. HCH)

8. Haying

Grassland management by haying was emphasized in 1987 and 1988. About double the acres and WPA's were hayed both years compared to 1986. A total of 1,170 acres was hayed by forty-eight cooperators on 47 WPA's. Receipts totaled only $1,521.50 since most haying was done in exchange for habitat rejuvenation.

Forty-four areas were for emergency haying, which was declared by the Governor and required extensive administration in July. Another three WPA's (Kindschi, Helm and Haugeberg) were available for the haying emergency but were not spoken for. In 1988, wetland margins on 41 WPA's and totaling 555 acres were hayed (listed in "1988 Haying Summary" following).The objective of releasing wetlands was to open up and rejuvenate the matted down wetland vegetation and to provide open water areas for breeding pairs. Also, 665 acres of tame/DNC and 89 acres of native grass were hayed.

Haying Observations:

- On the Eddy WPA the SW field needed haying, with 4" litter present and poor alfalfa-brome with scattered wormwood and few natives and go back species.
- On the Weckerley and Tkach, the permittee cut outside the permitted areas.
- On the Papke WPA the 1987 haying had good regrowth of grasses and alfalfa.
- On Galusha WPA, the 1987 hayed area came nicely with good alfalfa and grass regrowth. On 5/26 the grasses were 4" tall and the alfalfa was 8" tall.

1988 HAYING SUMMARY

WPA	COOPERATOR	DNC ACRES	NP ACRES	WETLAND ACRES	TOTAL ACRES
** COUNTY MCLE					
Dossenko	Moseanko, Perry	0.0	0.0	12.0	12.0
Fines	Haugen, Ron	44.0	0.0	10.0	54.0
Gaub	Gessele, Larry	0.0	0.0	10.0	10.0
Haas	Schlichenmayer,	4.0	0.0	15.0	19.0
Haas	Schlafmann	0.0	0.0	10.0	10.0
Haas	Miller, Jerald	10.0	5.0	5.0	20.0
Hove	Hanson, John	17.0	0.0	3.0	20.0
Hove	Hanson, Wayne	25.0	0.0	10.0	35.0
Love	Manz, Terry	34.0	0.0	10.0	44.0
Schott	Rodgers, Dave	0.0	0.0	10.0	10.0
Weishaar	Kinn, Wendell	24.0	0.0	0.0	24.0
Weishaar	Voth, Robert	18.0	0.0	0.0	18.0
Laib	Wagner, Senus	3.0	0.0	5.0	8.0
** Subtotal **		179.0	5.0	100.0	284.0
** COUNTY SHER					
Oliver	Gessele, Larry	0.0	0.0	0.0	16.0
Allen	Hoots, Glen	0.0	20.0	20.0	20.0
Bahr	Mauch, Garold	35.0	0.0	24.0	59.0
Ewert	Krueger, Albert	13.0	0.0	0.0	13.0
Grayson	Nigrin, Gary	0.0	0.0	15.0	15.0
Kindschi	Schindler, Tim	0.0	0.0	0.0	0.0
Kreiter	Erdmann, Tim	22.0	0.0	5.0	27.0
Lasher	Lasher, Duane	0.0	0.0	12.0	12.0
Moldenhaue	Docktor, Scott	0.0	0.0	150.0	15.0
Papke	Meier, Victor	0.0	0.0	15.0	15.0
Stotz	Hase, Tim	10.0	0.0	3.0	13.0
Thorson	Heitzman, Clare	0.0	0.0	15.0	15.0
Weber	Krein, Merwyn	0.0	0.0	15.0	15.0
Weckerley	Berreth, Sidney	113.0	0.0	15.0	128.0
Hillstrom	Blumhagen, Jero	29.0	0.0	5.0	34.0
Schmeets	Krapu, Jon	0.0	0.0	10.0	10.0
Allen	Hoots, Eldon	20.0	0.0	2.0	22.0
Eddy	Melson	16.0	0.0	10.0	26.0
Helm	Filler, Ryan	0.0	0.0	0.0	0.0
Holmes	Ketterling	16.0	0.0	2.0	18.0
Johnson	Dieterle, Myron	0.0	0.0	7.0	7.0
** Subtotal **		274.0	20.0	325.0	480.0
** COUNTY WARD					
Blum	Fyllesvold, Jer	8.0	0.0	15.0	23.0
Brown	Severance, Hal	30.0	0.0	0.0	30.0
Brown	Johansen, Russe	0.0	34.0	0.0	34.0
Danielson	Osadchy, Amil	30.0	18.0	8.0	56.0
Day	Berg, Paul	0.0	0.0	10.0	10.0
Field	Berg, Paul	0.0	0.0	15.0	15.0
Galusha	Simonson, DeWay	6.0	0.0	5.0	11.0
Halden	Kjallberg, Norr	0.0	0.0	10.0	10.0
Hanson	Hornberger, Way	0.0	0.0	10.0	10.0
Muus	Henne, Dean	0.0	3.0	15.0	18.0
Kerchenko	Dyke, Allen	9.0	0.0	1.0	10.0
Kerchenko	Tranbe, David	12.0	0.0	0.0	12.0
Kohoutek	Bauch, Ron	10.0	0.0	15.0	25.0
Fox	Bauch, Ron	1.0	0.0	0.0	1.0
McCulloch	Nichols, Jim	25.0	0.0	10.0	35.0
Nelson	Olson, Edwin	0.0	0.0	0.0	0.0
Road	Brandvold	0.0	9.0	9.0	18.0
Rooks	Smith, Richard	5.0	0.0	0.0	5.0
Rovig	Berg, Arnold	76.0	0.0	7.0	83.0
** Subtotal **		212.0	64.0	130.0	406.0
*** Total ***		665.0	89.0	555.0	1170.0

- On Dossenko WPA the alfalfa did not produce enough seed to combine as we had hoped. It was seeded in 1987, maybe better seed production in 1989?
- The 1986 hayed/spiked DNC on Field WPA still looked good in spite of drought. Wheatgrass and alfalfa was flourishing and litter was sparse.
- On the Nelson WPA the southwest DNC that was spiked in 1986 was very rough and smoothing was arranged in exchange for haying.

The haying cooperator mowed roadsides on Weishaar WPA. The neighbor mowed Grayson roadsides in exchange for the hay. Danielson and Weber WPA neighbors were paid for mowing roadsides.

The McLean County Farm Bureau passed a resolution commending FWS for haying/grazing during the drought. Since this group usually passes resolutions "dinging" us, this positive resolution was quite meaningful.

9. Fire Management

Ten prescribed burns were planned totaling 461 acres on nine WPA's and six burns were completed totaling 251 acres as listed below. This was the first burn on all areas and is the start of rejuvenation of grassland condition on these areas. Burning is difficult to achieve due to the weather's extremes during burning season. Burns were planned on the Cartwright, Cameron, Brown and Galusha WPA's but were not carried out since we permitted grazing or haying instead due to drought.

Objectives of prescribed burning are to control Kentucky bluegrass or brome, to reduce litter, recycle nutrients and enhance native grasses and forbs. Thick stands of silverberry are reduced in stature by burning and both this species and western snowberry are increased in basal sprouting and density by a single burn (thus providing brush as duck nesting cover).

1988 Prescribed Burns

WPA	Acres	Date
Fox	28	5/10
Kohoutek	34	3/31
Knudson	110	5/10
McCulloch	15	5/11
Rovig	30	5/11
Weishaar	34	5/10
Total:	251	

Burn Observations:

- Fox WPA included 2 acres of private land. The area was go-back and was disked in 1980 and had mostly brome, some wormwood and buckbrush. Much litter was present and the fire carried well.

- Kohoutek burn objective was to promote DNC seed production for harvest. It had some bare soil from recent haying and spraying but the fire did

carry well. Due to the abnormally hot dry spring, grasses did not produce seed well. A neighbor's escaped fire was put down by refuge staff.

- Knudson burn included 3.7 acres of private, 96.8 acres of native and 12 acres of DNC. Lots of brome and litter were present. Prior to the burn, we received a complaint from the Chairman of the county weed board concerning our proposed burning of this area. He also was the sole opposition to Ward County fee purchase in 1987.

- McCulloch WPA was burned right after a rain so the grass was wet and it was a slow and spotty burn with lots of green left standing. Very good results were obtained on the side slopes (see Figure 15 below).

- Rovig burned well, heavy litter was present from dominant Kentucky bluegrass, which was set back. Lots of stipas greened up.

- Weishaar had lots of litter and burned well. Kentucky bluegrass was greening up at the time. An old manure pile caused smoke problems and was dug out and wetted down again the next day.

- Day WPA 1987 burn checked this year found fair response on the ungrazed portions and the grazed portions were heavily used in 1988 (burning attracted grazing). Kentucky bluegrass and brome were abundant.

Figure 15. Prescribed burn on McCulloch WPA shows good response of native grasses on side slope (west view). (8/88. RA. 16A-88-8)

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Figure 15. Prescribed burn on McCulloch WPA shows good response of native grasses on side slope (west view). (8/88. RA. 16A-88-8)

Figure 16. Rovig WPA showing burn, graze and hay management (north view). (11/88: RA 23-88-22)

The waterbank just east of the Eddy was prescribed burned by the landowner in 1987. During 1988, good alfalfa response was noted, grasses had about 3" of growth and no litter was present. It will be fair nesting in 1989.

A burning ban was imposed in April by the three county commissions. A state ban that was imposed on 4/13 remained in effect throughout the year, but burning was permitted when the fire index was not in the very high or extreme categories. Numerous large range fires occurred. Two grass fires occurred near McClusky in April due to early dry spring conditions. Two large grass fires occurred near Benedict. In September, the Governor restricted outdoor activities and off-road travel due to fire danger.

At the Central Dakota Firemen's Assn annual meeting on 9/26 at Bowdon, the group said our lands were out of their district (since they are federal); therefore, they intended that we pay for fire protection. We have not negotiated any fire agreements on WPA's. Our dozens of WPA's are scattered in about 13 rural fire districts, most of which are not in their association.

10. Pest Control

Our chemical use has been significantly reduced as directed by the RO for two years. Leafy spurge, Canada thistle and sowthistle are controlled on rangeland. Not all areas are treated each year and only spot spraying is used.

In 1988, noxious weeds were sprayed on 83 treated acres of 10 WPA's as shown on the following table. Leafy spurge was sprayed on 58 acres of 7 WPA's, 28 acres of which was fall spraying on the same spots done in spring. Spring spurge spraying was done 6/1 to 24 and fall spraying was from 9/14 to 27.

Our spurge problem is only single or a few plants in scattered sites on seven WPA's. Large scale control systems are not needed. In order to comply with state law (prevent going to seed), when it is needed and no alternatives are available, these areas are spot sprayed. The amount of chemical applied on each WPA may be as little as a pint and averages under 1 gallon.

In addition, on-going cattle herd affect will improve the plant diversity in these spots and increase competition on spurge. Grazing occurs on all spurge areas except Halden WPA.

The cooperators sprayed spurge on Allen and Oster WPA's as part of the grazing permit. Allen was sprayed on 6/1 right after cattle were removed. The Allen east field has some spurge and minor wormwood. Refuge staff sprayed some and the cooperator sprayed a patch on 6/1. The field has quack which we hope to reduce through grazing. On the Oster east spurge patch, only one plant was seen in each site on 7/12 and good control has been achieved with Tordon + 2,4-D from 1982-87.

Canada thistle exists in small patches on virtually all areas on and off refuge lands. Sowthistle is in virtually every wetland margin. These are sprayed or otherwise controlled when a complaint is received (includes four WPA's none of which were sprayed in 1988). We tried mowing Canada thistle followed by wetting down two areas in 1988, results will be monitored. Haying is exchanged for spot mowing of noxious weeds. In 1988, haying occurred on the large patches (10 acres) of Canada thistle in the alfalfa on Dossenko. Haying was completed in 1988 to reduce weeds and improve the grass stand on Brown and Hove. Canada thistle was clipped by the cooperator on Kreiter WPA. Sowthistle in a Type II wetland on Danielson is sprayed. Cows ate the sowthistle flower heads on Evanenko. Grazing has reduced Canada thistle through trampling on Oster WPA. They seem to seek out the thistle and trampling occurs. We are getting results with the mowing and grazing.

Wormwood was sprayed on 23 acres of 5 WPA's from 5/27 to 6/2. Wormwood in tame grass usually is not severe enough to warrant control; however, thick infestations are hayed two years and sprayed to prevent seed formation of this biennial. The cooperator is required to spray the wormwood as a condition of the haying permit. Also, some spraying is needed on two-year old seedings in badly infested areas until the grass becomes established.

Stotz was hayed in 1987 for wormwood control and was sprayed by the cooperator in spring, 1988 for emerging seedlings. In 1988, haying occurred on Bahr, Weckerley, Kreiter, Stotz, Hillstrom, Ewert and Kohoutek WPA's. On the Weckerley the second year of haying was completed on the 30 acre center part. Spraying was completed within the trees on Kohoutek, on Krieter, Stotz (w fields), Hillstrom and Ewert WPA's.

Patches with no other species (grass) are interseeded after spraying to provide competition. Interseeding of legumes will be done when weed control is achieved and then mowing can maintain the stand. The Kohoutek NE field,

1988 WEED CONTROL
AUDUBON WETLAND MANAGEMENT DISTRICT

AREA	SEC.	TOWNSHIP	TARGET SPECIES	METHOD	ACRES TREATED	ACRES TOTAL	APPLIED BY
** COUNTY MCLE							
DOSSENKO	29	150-78	CT	HAY	20.0	40	COOP
** Subtotal **					20.0	40	
** COUNTY SHER							
ALLEN	01	145-74	SP	SPRAY	20.0	120	FORCE ACCOUNT
ALLEN	01	145-74	WW	GRAZE	96.0	96	COOP
BAHR	10	145-74	WW	HAY	40.0	40	COOP
OSTER	34	145-76	SP	SPRAY	5.0	320	COOP
OSTER	34	145-76	SP	GRAZE	5.0	320	COOP
WECKERLE	03	145-74	WW	HAY	10.0	30	COOP
KREITER	22	146-76	WW	HAY	12.0	22	COOP
KREITER	12	146-76	CT	SPRAY	2.0	4	COOP
STOTZ	24	150-75	WW	HAY	10.0	24	COOP
HELM	35	150-74	WW	SPRAY	3.0	6	BUREC
HILLSTRO	01	149-74	WW	HAY	29.0	29	COOP
EWERT	01	149-77	WW	HAY	13.0	13	COOP
** Subtotal **					245.0	1024	
** COUNTY WARD							
BLUM	24	154-87	SP	SPRAY	3.0	120	FORCE ACCOUNT
HALDEN	08	156-87	SP	SPRAY	6.0	40	FORCE ACCOUNT
V.JOHNSO	01	151-81	SP	SPRAY	4.0	120	FORCE ACCOUNT
MCCULLOC	24	155-87	SP	SPRAY	19.0	320	FORCE ACCOUNT
HANSON	17	154-86	SP	SPRAY	1.0	80	FORCE ACCOUNT
KOHOUTEK	22	151-82	WW	SPRAY	20.0	40	FORCE ACCOUNT
KOHOUTEK	22	151-82	WW	HAY	11.0	11	COOPERATOR
** Subtotal **					64.0	731	
*** Total ***					329.0	1795	

which was hayed and sprayed in 1986 and sprayed during 1987 now needs grass interseeding to increase competition on weed species. Hillstrom was hayed and interseeded with DNC mix to increase competition on weeds.

Wormwood in rangeland is not sprayed, usually only scattered plants are present except in patches of western snowberry where salt blocks combined with grazing and mowing are used to reduce the wormwood.

At a stormy McLean County Weed Board meetine, the complaints originally addressed to FWS were not, in fact, concerning our lands.

13. WPA Easement Monitoring

All 1987 ditch/fill type violations were in compliance by the beginning of 1988 except two with early 1988 compliance dates that complied by July. Two days (20.5 hours) of flying in April were completed, allowing checking about 1/3 of the district for a routine spring check (and to monitor problem individuals). This included western Ward County plus the eastern portion of the district. Ground checking commenced in late winter after most snow cover disappeared due to mild weather.

Fall, 1988 flights were completed on three days (24 hours) 11/2, 3, and 7. Ground checking took parts of four days and landowner contacts were completed on portions of two days. SA Bill Skar assisted with landowner contacts in April, September and November; SRA Dave Kraft assisted in November.

1988 Violations

Easement	Violation	Status	Compliance Date
M120x	Backhoe Ditch	Pending	5/89
S101x	3 filled	Pending	
S238x	Ditch clean/fill	Pending	5/89
W 49x	Fill	Pending	5/89
W279x	Fill (4)	Pending	5/89
W430x	Rocks	Letter sent	
W457x	Burns	Letter sent	
W461x	Level Ditch/fill	Complied	10/88

The landowner on Sheridan 238x requested from SCS to clean an old ditch. Their wetland determination was that the area was "Wd" (wetland-drained) and that he could clean it out and not violate the swampbuster provisions of the Farm Bill. However, he violated the wetland easement. This is a problem with the SCS program.

This same individual had a fill and trespass situation on this quarter involving trespass and taking dirt from the Kreiter WPA to build a ridge through Type IV wetlands to place a boundary fence. See Figure 20 below. We reported the fill to FWE as a potential COE 404 permit violation.

Several meetings were attended concerning wetland drainage impacting downstream areas at Ward County Route 22 and at the City of Max. Suggested solutions included refilling of drainage ditches upstream of the problems areas. No progress was achieved at Max since the single landowner involved with virtually all tracts with drainage was not persuaded to participate. The Ward WRD was an obstacle to progress at Ward County Route 22.

Field Reviews. A minor Sheridan County road maintenance project along the Grimes WPA was reviewed and no impacts occurred. Also, Sheridan County rebuilt the road along the north edge of the Davis WPA.

A U.S. 83 construction gravel operation required water so we issued a SUP for W196x. On 8/26 the water was down about 3.5' due to drought but no impacts from the limited water pumping were observed on this large Type IV wetland.

On Ward 207x the well site in NE SE 11-153-84 was originally staked about 80' from two wetlands and we requested they move the well prior to drilling. The wetland margins were flagged. This subsequently became the first producing oil well on easement in the district. A total of five wells were drilled on the easement requiring several field reviews from 5/23 to 10/7. The last one in SW was near two wetlands, which were flagged to avoid dirt fill. The gas line route from the producer well was flagged to avoid wetlands along the route. (See Figure below)

A wetland delineation of pre-1976 easement wetlands was done on Sheridan 67x at the request of the landowner and provided copies of the delineation maps to the landowner. We completed a field review and submitted recommendations to the RO for permission to drain a wetland in a corral area on Sheridan 55x. The landowner exchanged a wetland previously deleted from the contract. As of the end-of-year, the dirt work had not been completed.

A request to exchange a wetland for a corral problem was received for McLean 66x. Alternatives were presented to the landowner and no response was received, as happened in 1981 on this same area.

Several easement violations involved highway construction borrow sites which were not field reviewed by FWE or refuge staff. We recommended to FWE to implement a mandatory field review for the county or state highway engineers on borrow.

During 1988, we followed the gravel trucks on County Route Rt 9 resurfacing near Makoti to the gravel pit on Ward 25x in SW 36-153-87 and were aghast to find an easement violation: one small Type I ephemeral wetland was completely obliterated and a 400' diameter gravel stockpile was partly filling a Type III wetland. Contacts with the landowner and contractor provided for restoration in the spring of 1989. No field review was requested by the County Highway Department on this federally-funded resurfacing project on a federal aid road. The County also did the dirt work on reshaping the road ditches during 1987 and did not contact us for field review of that work because the County Engineer felt no wetlands would be impacted.

During the 1988 resurfacing of U.S. 83 south of Minot, two situations developed:

1) The one on Ward 24x involved an initial field review of the dirt borrow site with the contractor on 5/9. The sill of a Type III wetland was staked to avoid excavating and obliterating the sill. Other wetland margins were flagged, also. Compliance with wetland avoidance went well for a few days. Then the contractor moved on his own to a second borrow site, where a dirt fill violation occurred. The potential to obliterate the sill of a 3 acre Type IV was imminent. The landowner told them where to borrow and did not remember (maybe conveniently?) that there was easement on that site. Restoration was handled by the contractor.

2) The second site in Afton Township involved a non-easement wetland which apparently was not field reviewed by Bismarck FWE for the dirt borrow site. The contractor cut the sill completely draining a 5 acre Type III wetland. Refuge staff found it and handled the needed restoration for FWE staff. Only active monitoring during construction avoided more problems or accomplished timely restoration.

Other similar problems have occurred in the past. In 1982 during the U.S. 83 four-laning, the gravel borrow area in SW SE 9-149-83 resulted in drain and fill violations on McLean 172x. Three small Type I's were partly filled by the site preparation for a batch plant. Also, one of the three was ditched to dry out the site. Restoration was obtained by the contractor. A second gravel pit was opened east of Max on easement lands. Fortunately no wetlands were affected; however, we must have the opportunity to conduct the field review.

Easements McLean 188x and 198x were exchanged for fee title ownership of 160 acres of Falkirk Mine lands effective on 10/30/87 (see Section C also).

Figure 17. Gravel from road construction partly filled a Type III plus a Type I wetland was destroyed on Ward 25X. (11/88. RA 34A-88-21)

Figure 18. Oil well pad site partly filling four wetlands on Ward 267x. (11/88. RA 30A-88-21)

Figure 19. Subsoiler was used this fall throughout entire field on W115x to "reduce hardpan." When first seen in 1987 it was used only at wetland sill areas to dry up wetlands. (11/88. RA. 2-88-23)

Figure 20. Fill on S138x with borrow removed without permission from Kreiter WPA. (8/88. RA. 6-88-13)

G. WILDLIFE

2. Endangered and Threatened Species

The 1/88 midwinter survey found 57 bald eagles, with 47 adults along the river from Bismarck to Garrison Dam - the largest number seen in the last eight years. This likely was due to the open water causing an abundance of prey species, especially waterfowl. Bald eagles were seen near Coleharbor from 1/27 to 3/29 (6 sightings) and from 9/24 to 11/18 (6 sightings).

A group of five whooping cranes was present about 3 miles SE of Underwood in McLean County from 4/15 to 5/8. The juvenile of the group finally migrated on 5/8 after remaining alone for several days.

A prairie falcon was observed in the spring and a peregrine falcon in the fall near Coleharbor.

Piping plovers were severely affected by drought (per NGD&F). In 1988, 824 piping plovers were present statewide during breeding compared to 852 in 1987. Coteau alkali wetlands had 150 fewer birds in 1988 compared to 1987. Conversely, Lake Sakakawea held 140+ birds compared to about 50 in 1987. North Dakota has 1/2 of the United States breeding plovers. On saline wetlands, which comprise 85% of the plover nesting habitat, young birds starved for lack of their insect prey and dried ponds, which forced survivors to seek out new habitat (see Figure 21 below). More were observed on Lake Sakakawea shorelines where the lowered water levels exposed vast beaches. At Lake Krueger in NW Sheridan County, an excellent hatch was negated by no survival to flight stage since the lake dried by hatching time. Three sightings of piping plovers (threatened) were made in central McLean county. One was on Baluki Island (nest drag area).

3. Waterfowl

Geese.

During the 1/6/88 NDG&F waterfowl survey 33,026 large Canada geese were seen mostly from Bismarck to Garrison Dam. Our local geese were first seen 1/25 on open water near Coleharbor. Canada geese arrived in the state the last week of February, which was later than in 1987. By 2/23, geese had moved to northern Ward County. Reports were received of migration north a Douglas on 2/28. On 2/29, 1,800 were present near Coleharbor along with ducks such as common merganser. On 3/2, there were 2,500 Canada geese on the refuge; these were the local breeders that usually winter at the River 15 miles away. There was a major movement of geese and mallards into the state during the second week of March. White-fronts were migrating 3/21 -23 and snows on 3/28-4/5. Large numbers of snow geese, Canada geese and ducks moved into the state during the first week of April. Little Crooked Lake had 2,000 snows and 2,000 Canada's on 4/5.

Figure 21. Dried up saline Kandt Lake in 13-150-77, Sheridan County (note saline dust cloud) - typical piping plover site. (7/88. RA. 7-88-6)

A Canada goose was incubating on the structure on the GMA SW of the embankment on 4/12. The goose on the structure SW of Q-1 was first laying on 4/11. On Brown WPA an island had 3+ goose pairs and a goose nest was seen on a rat house on 4/13. On 4/1, 30 geese were at the north end of Lake Ordway (north of the paved road) and 12 mallard were on Hass WPA (north of the road). Lake Ordway was still frozen over and this was the only available open water for returning nesting pairs. Some ducks and geese were seen from Turtle Lake to Pickardville on 4/1.

On 4/29 two goose nests hatched northeast of Coleharbor - one on a bale. On 5/9 the goose nest on the structure SW of the embankment hatched (she was sitting and the gander was down below and the nest was empty the next day). On 5/4, four two day old goslings were seen north of Coleharbor. On 5/16 a brood of 6 two day old goslings were in the SW corner of 4-145-76 where 4 nest bales were located. On 5/25 2 broods of 5 each were at Fox WPA plus 1 brood of 5 young were 5 miles SE of the Fox WPA. On 5/26, 2 broods plus 30 adult geese were on the McCulloch WPA. Goose production was termed good in the district, increasing in western areas plus in western parts of Sheridan County. Canada goose broods were observed for the second year on the Anamoose brood route reflecting increases in north central Sheridan County. NDG&F released 35 geese (30 goslings originating at Audubon) northeast of Pickardville in Sheridan County on 6/29. The neighbor north of the Gaub WPA reported 20 geese used his large Type IV. Nesting is occurring and he complained about the flax bale placement in 1988 (he apparently had goose depredations in his wheat in the spring). Goose production for the district was estimated at 700 fledged - increased WPA nesting activity due to drought.

The June NDG&F goose survey found 390 geese in the east end of Lake Sakakawea (Douglas Creek, Wolf Creek and deTrobriand GMA's) compared to 732 in 1987 (47% decrease). The FWS census for Lake Audubon found a 60% increase.

On 9/24, 30 white fronts were seen north of Coleharbor. On 10/1, 300 snows were seen 2 miles SW of Max and on 10/27, 3000 were east of Coleharbor, which is significantly more than usual.

A snowstorm beginning on 12/29 moved out the 97,000 Canada geese and 31,000 mallards that had been wintering on the Missouri River and their numbers were reduced to 2,000 and 900, respectively by 1/5/89.

Ducks.

Mallards were not noted in their usual late winter feeding flights near Lake Sack. The waterfowl survey on 1/6/88 found 20,226 mallards, 372 common goldeneyes, 341 common mergansers and 2 wood ducks. Mallards were generally present near the river throughout the mild winter, but the first observation near Coleharbor was 3/7 - about a normal date. A major movement was noted about 3/31.

First sightings in central McLean County: common goldeneye on 2/25, scaup and shoveler on 4/1; redhead, gadwall and mergansers on 4/4; blue-winged teal 4/7, A large movement of ducks came in the evening of 4/4 including scaup and most other duck species plus coots and swans. Ruddy were first seen 4/15, hooded merganser 4/17.

Most ducks appeared in normal numbers when Type IV wetlands opened on 4/4. At that time, pairs were using small I & III wetlands in McLean County. Unusual sightings included wood ducks on 6/8, 7/15 and 7/24 near Coleharbor.

Breeding ducks

The NDG&F breeding pair surveys completed 5/9-13 were significantly above average statewide for total ducks; however, the drought affected the data. 1984 was the banner year and since then, ducks have declined significantly. The statewide breeding duck population was up 13% from 1987 but the drought affected the study results since birds were concentrated. The 1988 water index was 43% below 1987 and 55% below average during the breeding survey. In addition, 1987 was a 65% decrease from 1986. Species indexes indicated increases in all species except mallard, pintail and shoveler from 1987 to 1988. Pintail numbers in 1987 were 60% below 1984 levels and this continued during 1988 - decreasing 55% from 1987. Nesting was less advanced for pintail, mallard, canvasback and blue-winged teal during the survey than was noted during the 1987 survey.

We compiled the district portions of the three NDG&F breeding pair survey routes, finding the 2,292 total ducks almost twice 1987 but only 22% greater than in 1984. Ducks/mi^2 was 62 compared to 31 in 1987, exactly double. Divers totaled 804 compared to 227 in 1987, while dabblers totaled 1,488 compared to 931 in 1987. This is all due to concentration of the few ducks

in less water areas. The increase was greater in the eastern part of the district.

A five-year list of ducks and ducks/mile in the district portion of the state surveys (149 miles of transect and 37 mi.^{2}) follows. These data are affected by the drought concentrating pairs in reduced acres of habitat.

Ducks Observed on Breeding Pair Counts

	Average	1984	1985	1986	1987	1988
Dabblers	1,142	1,563	919	897	931	1,488
Divers	401	317	355	378	227	804
Total	1,544	1,880	1,274	1,279	1,158	2,292
Dks/mi^2	42	51	34	34	31	62
Coots	788	1,018	545	345	431	629

Some interesting points about each transect were noted, keeping in mind that the drought drastically affects the data. Blue-winged teal and scaup were up and shoveler were down in all areas. Redhead and canvasback were down from 1986 to 1987 but up from 1987 to 1988.

Transect III, which runs north from Garrison generally has held an approximately constant number of pintail, redhead and canvasback (species of special emphasis) for the seven years we have compiled the district portion of the transects. Except for 1988, mallard increased here each of the past six years. Therefore, we feel that mallard and canvasback continue to do best in the Garrison-Max area.

Transect IV which runs north from Turtle Lake remained relatively steady for all species through the years. Mallard numbers increased from 1987 to 1988.

On Transect V running north at Hurdsfield, redhead increased above the pre-1984 levels, mallard continued down for two years and both mallard and pintail are still below 1984 levels, pintail significantly so.

Although in 1987 the percent decreased trend for all species was progressively greater from west to east, the reverse happened from 1987 to 1988. The mallard decreased in Transect III and increased in Transect IV; however, for the three other species of special emphasis, the percent decreased trend was from east to west. The largest increases occurred in those areas where the greatest declines occurred from 1986 to 1987.

Shown below is the percent change in special emphasis species - 1986 to 1988.

Species	Changes 1986-1987 Transect III	IV	V	Total	Changes 1987-1988 Transect III	IV	V	Total
Mallard	+20	-65	-24	+ 3	-25	+30	-11	- 6
Pintail	-16	-31	-59	+73	-27	- 3	+17	- 13
Redhead	-15	-45	-59	-10	+77	+72	+342	+137
Canvasback	+39	-17	-86	+63	+208	+100	+300	+194

The FWS May breeding bird surveys found ducks 4% lower than 1987 and 16% below average. There was a major shift of ducks to northern Canada and Alaska. Pond numbers in the north-central states fell 41% from 1987 with the largest decrease in North Dakota. Mallard and blue-winged teal were the same as 1987 but 20 and 25% below average, respectively. Redhead increased 10%

The four-square mile breeding duck census was done in the district for the second year. Note that all discussions are affected by including Lake Audubon in the total FWS acres (but it is not part of the district). The data for 1987 were revised by NPWRC for mallard, gadwall, blue-winged teal, shoveler and pintail breeding pairs and recruits (and the below list reflects this change). While pairs increased, recruits were down due to poor brood conditions and non-breeding behavior of pairs using the district.

Year	Wet Ponds	Wet Acres	Breeding Pairs	Recruits
1987	254	102	4,643	8,208
1988	214	116	5,147	3,997

A comparison of data among the wetland districts in the Coteau physiographic region in North Dakota follows.

	NW Coteau	Audubon WMD	SE Coteau
Wet ponds x 1000	21.1	41.5	13.1
Area wet (Mi.²)	57.8	440.1	201.1
Pairs/mi.²			
Mallard	9.1**	14.5*	4.6
Gadwall	9.6*	9.0**	5.8
Blue-wing	7.6	17.7	9.0**
Shoveler	1.9	3.1*	2.8**
Pintail	1.5	4.5*	3.5**

* Highest in survey area
** Second highest

Audubon's survey area included 19 plots scattered throughout the district. The district's 4,774 total square miles were estimated to have produced 134,411 compared to 1987's 317,466 recruits of the five species, with a recruitment rate of 0.288 compared with 1987's 0.442 recruitment rate.

Duck Broods

Breeding mallard numbers in the NDG&F surveys were about average statewide. Pintail were -71% from average, redhead +42% and Canvasback +33%, statewide. Notably gadwall and scaup were significantly above average at +139 and 132% respectively. Mid-July water conditions statewide were 57% below those of 1987 and the brood index was down 10.3% statewide.

Analysis of the district portions of the July 10-15 NDG&F brood counts found the Drake-Anamoose route was average. The Douglas route was 61% above 1987 and the Snake Creek route was 156% above 1987 for brood numbers. Due to the drought, these do not necessarily reflect better production. The sample size is small, also.

The first nest observed was a mallard on 4/30 with 10 eggs north of Coleharbor. A pintail brood of 7 was seen east of Coleharbor on 6/12. About 25% fewer duck broods were seen. On the Oster on 7/12, the Type V east of the old home site held a brood of teal and a brood of seven gadwall (Class IB). The basin was drying and down about 1-1/2 feet. Duck production on WPA's was estimated to be 3,997 - down significantly from the 1987 estimate of 8,208.

Islands and Predators

Private islands were trapped as a Wildlife Extension project throughout the west portion of the district. Fewer skunks were noted and coyote seemed to have displaced fox in some areas. Excellent duck nesting was noted on off-shore islands that were predator-free.

Nest dragging on eleven islands with predator control found a range of 17-100% of duck nests hatched on eight of the islands (see following table). About 90% of goose nests hatched. A remarkable 46 goose nests were found on 10 of the islands - the western part of the district has again proven to be a good producer of geese on virtually every island searched; likely the drought concentrated goose nesting on islands. A total of 7 raccoon and 6 skunks were caught on 6 of the islands. Mink were present and tracks of fox or coyote were observed. The Baluki island again has proven to be a good waterfowl producer.

Nesting structures

During 1988 36 flax bales were placed on WPA's. The total on WPA's is 47 (complex total 80). WPA's with bales placed in CY 1988 were: Gaub, Haas, Haugeberg, Laib and Weishaar in McLean; Helm and Hillstrom in Sheridan; and Brown, Danielson and McCulloch in Ward Counties. In 1987, bales were placed by FA on the Williams, Schott, Evanenko, Love, Zarek and Panko WPA's in McLean County. Cooperators have also placed hay bales on Allen and Weckerley

Island	Size of Island (acres)	No. of Goose Nest Present (1)	No. of Duck Nest Present (2)	No. of Duck Nest Hatched	No. of Duck Nests Destroyed by Predators (3)	No. of Predators Caught on Island	No. of Nests Abandoned (4)	% of Duck Nest Hatched
Baluki	8.0	12	65	59	2	0	4	91%
(2) Kantz	3.2	12	7	4	3	2 raccoon	0	57%
(East) Brown WPA	1.2	1	2	0	2	0	0	0
(West) Brown WPA	4.9	6	5	3	2	1 raccoon	0	60%
Erickson	6.0	1	6	1	5	0	0	17%
(2) Goven	0.6	0	1	1	0	2 raccoon 1 skunk	0	100%
Olson	6.4	3	3	2	0	0	1	67%
(2) Albertson WPA	4.9	0	6	4	1	1 raccoon 2 skunk	1	67%
Nielson WPA	2.9	9	12	7	4	0	1	58%
Peterson	0.6	1	1	0	1	2 skunk 1 mink	0	0
Lee	0.6	1	2	1	1	1 raccoon 1 skunk	0	0

(1) About 90% of Canada goose nest hatched. Geese defend the nest from predators better than most birds.
(2) Nesting duck species included; mallard, gadwall, blue wing teal, pintail, redhead, scaup and canvasback
(3) Ground predators present were raccoon, skunk and mink. Tracks of fox or coyote were seen.
(4) Some of the abandoned nests may have been due to extreme heat.

and Rovig WPA's. No WPA bale use occurred in 1988 of which we are aware but very little checking was done.

Conditions were excellent because drought conditions allowed driving right into the wetland sites and mild weather provided good working conditions. We also obtained flax bales in exchange for hay removed and placed these on WPA's, WDA's and private land in east McLean and Sheridan County by force account. A total of 69 were placed during fall, 1988.

In 1988, 31 bales were placed on private lands in the Douglas and Snake Creek areas. Bales were placed on private lands in 1987 in the Berthold, Rice Lake, and McClusky areas. Structures on WPA's are clustered south of Butte and in the Ryder area. Near Butte, there are 9 goose structures and 16 flax bales on WPAs. On private lands there are 20 bales near Butte and 12 in west central Sheridan County. Near Ryder there are 20 goose structures and 10 flax bales on WPA's. Also there are 34 flax bales on private lands: 18 placed in 1987 by Hiddenwood Sportsmen and 16 placed in 1988 by Douglas Sportsmen. In 1988, 12 concrete culverts were placed (by FA) standing on end for nest structures on 4 private tracts in the Snake Creek area.

In November, 1987, the Berthold Sportsmen's Club placed 120 bales. In May, 1988, they checked the use of their flax bales and found 13 were used by geese in Tolgen, Mandan, Evergreen, Passport and Ree Townships. One nest was abandoned. One bale was used on each of the Rehfield and Halden WPA's. Most nests south of County 14 had already hatched by 5/1 and near town the nests hatched slightly later. Ice-out was later there (end of April) and geese were still on nests on 5/20 NW by Heartland. Bales placed in 3-153-87 were used with three broods of 7, 5 and 3 young being observed.

There are 89 artificial goose tubs on WPA's (of the complex's 213 total). The results of structures checked follows.

WPA	1988 Use	Past Use
Laib	duck	
Haas	4 geese, 1 duck	geese 1983-present
Weishaar	goose	goose 1982
McLean NWR	duck	
Allen		duck 1985
Danielson	duck	
Nelson	duck	duck 1986-present
Muus		duck 1985 & 1987
Brown	goose	duck 1984-present (2 in 1985)
Albertson		duck 1985 & 1986
Road		duck 1985 & 1987
Otis		duck 1984-1986
Schott		duck 1985
Panko		duck 1984-86
Haugeberg		duck 1986

Fall Waterfowl Observations

Bachelor flocks of drake mallards were not as visible this year during June in the district. Waterfowl numbers remained down until late September, when geese moved into the Coleharbor area. Large concentrations of ducks were noted on the few remaining concentrations of water. No apparent major movement of birds was noted.

Ducks peaked the first week of October with slightly increased concentrations of most species. Large flocks of canvasback were on the Papke WPA in the fall. Canvasback numbers seemed to be slightly greater than the previous two falls during the hunting opener. With open water most birds were not forced out of the area by weather which has not been noted in recent records at the district, since wetlands usually are frozen by late October. However, the numbers were relatively low.

Two weather fronts in the last week of October moved waterfowl south. Duck numbers were up in the Garrison to Max area but were still less than half of past years. In November Canada goose numbers were similar to last year and snow goose numbers continued to increase with about 2,000 in the Coleharbor area. Duck numbers were 60-80% below average. The December 29 snowstorm moved most wintering waterfowl south from the Missouri River.

It is unlikely that mallards, pintails, etc will have the production they need to build up numbers (in 1989). Little cover remained from 1987 and poor growth occurred during the spring of 1988. Cattle grazed many areas not normally accessible, further reducing cover. Many wetlands were plowed as the drought made them more accessible. In 1985, duck production reached their lowest levels since the 1950's and has continued at low levels since.

Tundra Swans

On 4/4 tundra swans were seen on Crooked Lake and the Max sewage lagoon and in central Ward County. On 10/1, there were 12 swan 1/2 mile north of the Danielson and 14 were near Field WPA's. On 10/3 there were 33 on McLean NWR. Normal numbers were observed during easement flights in early November.

4. Marsh and Water Birds

The first coot was seen on 4/7 east of Coleharbor. Large numbers of coots were in 3 Type IV's at Benedict for several days in April. Coot observations during the NDG&F breeding pair surveys in the district totoled 629 in 1988 or 50 % above 1987 (431), but 20% below average (788).

On 4/12, 200 sandhill cranes were feeding in 12-149-82 and 500 were in 1-149-80. On 4/12, 1,000 sandhill cranes were heard flying near Coleharbor and on 4/14, 800 were on Lake Nettie - these are normal arrival dates. Cranes were seen east of Coleharbor on 8/19 for a first fall arrival and by 9/4, 300 were roosting with numbers building to 2,000 by 10/1. A single bird on 11/11 east of Coleharbor was a relatively late sighting.

The first white pelicans were observed 4/12 when 15 were north of Coleharbor. Apparently lower than average numbers were seen during the summer in their

usual areas. We observed 11 pelicans in the NE 17-145-76 (1/2 NE of Reiser WPA) in 800' Type V, which was down 3' on 7/12. On 7/12 Oster had 20 pelicans in Type V SW of the farm site (water was down 1/2' and 95% wet). A great blue heron was seen 6/29 north of Coleharbor. Three cattle egrets were near Little Crooked Lake on 6/7 and two snowy egrets were present east of the cabin site from 7/19 to 8/10. Two were seen 4 miles south of Max on 7/29. Other first sightings: three eared grebe 4/18 on Lake Audubon, western grebe on 4/21 at Lake Nettie, and horned grebe 1/2 milw east of Day WPA on 6/24.

6. Raptors

Endangered species are discussed in G.2 above. Two golden eagles were counted on the 1/88 midwinter eagle survey between Bismarck and Garrison Dam. As occurred in 1987, one sighting of golden eagles was made during spring and one during fall migration near Coleharbor. A golden eagle adult was six miles west of Douglas on 9/16.

The first northern harrier was seen 2/27 and the first red-tailed hawks (3) were seen 3/21 between Washburn and Butte in eastern McLean County. Red-tails were seen 3/30 at Kohoutek and on 3/31 two were in NE McLean County. On 4/12 a ferruginous hawk nest was found on Stawberry Lake NWR in the SE of the quarter. A ferruginous hawk was seen in SE 31-145-74 on 9/19. On 4/18 a rough legged hawk was 15 miles north of Goodrich.

On 7/27 a red-tail was north of Coleharbor and during the week of 8/8 red-tails were seen moving through McLean and Sheridan Counties. Burrowing owls were seen 4/20 four miles east of the Turtle Lake turnoff and on 4/19 3 miles north of Gateway and on 4/25 four miles east of Roseglen (in 7-149-79). On 7/5 five young burrowing owls were present on the Peterson private lands in west Sheridan County. On 4/22 an osprey was along SE of Lake Audubon and on 5/3 one was on Crooked Lake. On 5/17 a turkey vulture was north of Coleharbor.

On 10/17, two American kestrels were 3 west of Coleharbor. No rough-legged hawk sightings were made during early fall as usual. Other species seen included sharp-shinned, cooper's and ferruginous hawks; goshawk and merlin. The first snowy owl sighting was 11/19 north of Coleharbor. A short-eared owl was seen 11/19 three miles southeast of Underwood. A gyrfalcon was 1 mile north of Coleharbor on 12/4.

7. Other Migratory Birds

On the Turtle Lake Dove coo count, 98 mourning doves were heard and 19 were seen. This is slightly above average. On the Parshall route, 37 were heard and 19 seen - an average number. First sightings: a crow on 2/1 about one mile south of Minot and 3/20 one mile east of Garrison; starlings on 3/23 at Max and meadowlarks 3/24 three miles east of Turtle Lake. During the Christmas bird count at Garrison Dam, few birds were seen due maybe to drought changing migration patterns of some species.

8. Game Mammals :

As in 1987, the fall deer population numbers continued to be sparse during the hunting season in portions of the district. Certain areas, particularly CRP acreage, seemed to hold good numbers at the end of the year. The NDG&F population survey from 1/13 to 2/11 found the 1987-88 deer population data below the 1986-87 survey. The winter of 87-88 was one of the mildest on record with little snow and above normal temps. Does with triplets were seen on 7/18 northeast of Coleharbor and a doe with twins on 7/9 on Eddy WPA. American pronghorn observations in the district: on 7/21 five were just west of Galusha WPA, on 7/22 one was near the Gaines WPA, and on 7/25 five were two miles southeast of Kerchenko WPA. A herd of 30 to 40 antelope was reported wintering about 4 miles southwest of Berthold. During the 1987 NDG&F pronghorn population survey found a population of 103 (89/1,000 mi.^{2}) in Unit 15B (Ward County between U.S. 2 south to SR 23, while Unit 16A (SR 23 south to Lake Sack) had 28 animals and 27/1,000 mi.^{2} The male:female:fawn ratio was .31:1:.87.

The spring rural mail carrier survey found 20.4 red fox families per township in the prairie pothole portion. A coyote was observed on 4/21 about 2 miles NW of Coleharbor and 11/17 in 6-151-82. Coyote numbers are reported increasing. An apparent wolf was shot northwest of Garrison and reported to LE. Smithsonian Institution analyzed the carcass and it was a large dog.

10. Other Resident Wildlife

General observations of pheasants in the district found good numbers present in isolated areas such as central Sheridan County and in McLean County near the river. The NDG&F 1987 roadside counts found a 33% increase from 1986 to 1987 with a 29% increase in broods observed and a 36% increase in number of juveniles compared to 1986. The mean hatch date was 6/9/87. The April, 1988 mail carrier routes found an increase compared to 1986 and 1987 and an increase over the five-year average. September, 1988 data found increases in 1987 over both 1985 and 1986. 1988 pheasant crow counts found increases of 69.6% over 1987 and 123% over 1986. The spring breeding population index was better in 1988 than 1987.

The April 1988 survey of District 6, which includes McLean and Sheridan Counties plus District 2, including Ward County found the following.

District	Pheasants Per Mile				Per Cent Change		
	1986	1987	1988	Ave.*	86-88	87-88	Ave.-88*
2	0.17	0.52	0.07	0.28	-58.8	-86.5	-75.0
3	11.35	3.89	5.01	5.46	-55.9	+28.8	-8.2

* Average is for 1983 to 1988.

Hungarian partridge numbers were good in northern Sheridan County and other portions of the district during hunting season. Grouse numbers seemed to be down in the district throughout the year.

H. PUBLIC USE

8. Hunting

The waterfowl opener was extremely poor for numbers of ducks, hunter activity and hunter success. Most waterfowl hunters did not even go out for various reasons. Ducks were concentrated on large Type V's with no emergent cover to either hold birds or to build a blind. A week after the opener a duck wasn't to be seen except on the big waters. Some goose hunting was attempted in western Ward County with fair success. More snow geese were present in northwest Ward County in November. This was the third year of canvasback season closure. The state maintains goose hunting closure areas in the district northwest of Pickardville and at Sheyenne Lake to protect restoration Canada geese.

The white-tailed deer season included the second year of a muzzleloader season in December. Although many deer hunters were successful, more work was needed to fill out. Many were taken during the second weekend before the snow. Deer were not in their normal spots during the opener and seemed to be more apparent during the second weekend in Ward County. CRP is providing cover for all game and helped with population numbers in northern Sheridan County.

The NDG&F mail survey for the 1987 deer season found a 72% hunter success rate. The largest number of hunters was in Unit 2K, which is also the largest hunting unit and encompasses most of the district. Unit 2K had the largest number of recreation days for all hunters with 34,678 hunting days. Unit 3B3 had the highest concentration of hunters with 2,921 hunters per 1,000 mi.^{2}. The average hunter spent 3.3 to 7.34 days afield statewide. The 1987 deer harvest in 1987 was the second highest, taking about 58,899 deer Generally hunters spent more time with less success than in 1986.

The NDG&F mail survey of pronghorn hunters in 1987 found an 88% hunter success rate and 84% of the harvest occurred during the opening weekend. The harvested animals had a buck:doe:fawn ratio of 10:1:1.4.

The NDG&F pheasant survey found in 1987 that hunters averaged 1.44 pheasants per hunter per day on the opening weekend. The harvest was higher and the hunter success was better in 1987 than 1986.

17. Law Enforcement

Limited patrols were conducted during the the waterfowl opening weekend on several WPA's. Few waterfowl hunters were encountered and few waterfowl were taken. After the first week, few ducks were seen except on the large waters. The "High Plains" mallard hunt ran from 12/10 to 21 with limited hunting opportunity since the birds were in wide-ranging feeding flights.

Only limited numbers of contacts were needed for WPA trespass. The west neighbor at Kreiter WPA drove on and borrowed dirt from the Kreiter WPA to

push-up an earth grade upon which to build his boundary fence. The south neighbor at the Allen WPA had trouble keeping his boundary fence in the dried wetlands and cattle got onto the WPA several times. Sheep and cattle trespass on the Oster WPA occurred.

I. EQUIPMENT AND FACILITIES

1. New Construction

About 3-1/2 miles of new fence was built on Geigle, Eddy and Helm WPA's by YCC. Also, about 53 H-braces were completed for the cooperator to finish fence on Geigle plus the cooperator completed 1.5 miles of exterior and 0.1 mile of interior barbed wire fence. The north unit wire did not get installed by the cooperator. Cooperators built 6.4 miles of exterior barbed wire fence on WPA's. Also, the cooperators built and maintained interior barbed and electric fence on _ WPA's. New posting was completed on the Falkirk WPA.

Figure 22. YCC install fence on Helm WPA. (7/88. 13-88-6. RA)

2. Maintenance

Posting and fence repair was completed on numerous WPA's during July including 43 signs replaced, 28 signs/posts installed, etc.

4. Equipment Utilization and Replacement

Three four-wheel drive all-terrain vehicles were acquired and are a great assist on field operations and definitely are safer and more stable than the three-wheeler models.

J. OTHER ITEMS

1. Cooperative Programs

Two dove call counts and colonial bird surveys and Christmas bird count at Riverdale were completed. A tour of grazing systems was conducted on Oster WPA for the Sheridan County Action Committee.

4. Credits

Antonette wrote and edited on the computer and Wohlk completed assembling the report.

Figure 23. Ward 24x dirt borrow area for U.S. 83 resurfacing fill and potential destruction of wetland sill. (11/88. RA. 15-88-23)

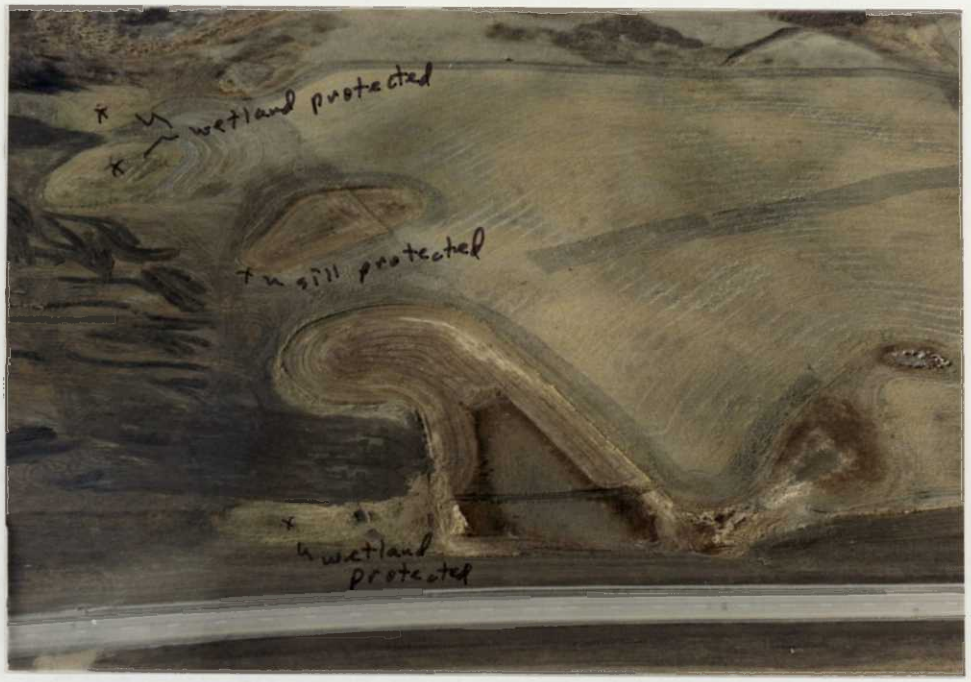

Figure 24. ...and potential to drain other wetlands. (11/88. RA. 15-88-23)

Figure 25. Exploratory oil rig in SW 11-153-87 on W207x needed to stake two wetland margins to avoid fill. (11/88. RA. 10-88-23)

Figure 26. Next step in process is a "workover rig" in NE 14-153-84 on W207x. (11/88. RA. 10-88-23)

Figure 27. Producing well in NE 14-153-84. Gas line route was staked to avoid wetalnds. (11/88. RA. 21A-88-8)

Figure 28. Producing well in NE SE 11-153-84. (11/88. RA. 9-88-23)

Figure 29. Producer well and tank battery in NE SE Sec. 11. (11/88. RA. 19A-88-8)

Figure 30. Gas lines and access roads may have as much impact on wetlands as the drilling pad. North view in 31-153-87. (11/88. RA. 32A-88-21)

K. FEEDBACK

On the refuge management roller coaster of 1988 we had the typical highs and lows. But all-in-all I consider the year a winner, more gains than losses.

Winners

Thanks to RO support, four personnel upgrades were accomplished. The Assistant Project Leader was upgraded. Lake Ilo was filled with a sharp young Biological Technician who was later upgraded to a GS-6. The senior Biological Technician was converted to a Refuge Biologist GS-7/9. And our long standing temporary Biological Technician was converted to PFT.

Thanks to great work from Bismarck FWE, FWE and the Refuge were able to negotiate with the Bureau of Reclamation and Corps of Engineers to get a 6 inch drawdown in the summer elevation of Lake Audubon. It may be a one time anomaly but the annual erosion loss of the extremely productive nesting islands in Lake Audubon dropped from a loss of 4.70 feet in 1986-87 to 1.39 feet in 87-88. Shoreline erosion averaged 2.71 feet last year and 1.55 feet this year. Going back at the problem this fall, we were able to get another 4 inches off the lake for next summer. All of this progress while some cabin owners blustered and threatened.

Massive add-on workloads of farm bill activities and drought emergency haying and grazing permits were accomplished very successfully. In January 1989, the Audubon crew received Special Achievement Awards for these accomplishments.

The Denver Finance Center has greatly improved. Travel vouchers, travel advances and imprest vouchers flow very rapidly through the system. We're seeing none of the nit-picking of old. We get telephone calls to clarify things rather than rejected TIDS'. Also our regional CGS, Safety and Personnel Management were very helpful this year.

Funding was good. A new pickup truck, tractor, drill, disc and other implements were purchased. For $5,000 a beautiful wood sided mobile home was transferred in from Utah. It will serve as an excellent bunkhouse for the volunteers and temporaries.

Despite a summer vacancy in the Garrison Wetland Manager job good progress was made on beginning management of the 11 Wildlife Development Areas (3,429 ac.) transferred to us and on 3 other WDA's scheduled for transfer in the near future. By the end of the year the new manager was off and running very strongly.

Land acquisition was looking good. Many excellent tracts were inspected and written-up for easement acquisition. Actual easement purchasing also seemed to be increasing. For fee acquisition, the Sheridan County Commissioners informally approved the sale of up to 1,000 acres for a WPA. A second area of about 400 acres probably will be transferred to us in 1989 by the Small Business Administration after the owner defaulted on his loan.

Losers

We need better specific guidance when very heavy new workloads are set on the crews(off refuge extension projects and farm bill projects are examples). Obviously on-going, traditional jobs must be dropped. But yet data and results are still expected from the traditional work. Either we get more people (little to no chance) or the RO specifically must state that some old-line projects are not to be done. We can stretch no thinner to keep covering "everything".

Marilyn and I agree that the paperwork load is getting worse - not better. Seems like many staff offices just have to have data to play with. Some examples are the annual vehicle reports, annual report of stockpiled supplies and report of record holdings. I'm sure there are others. Another desk-jockey killer is the weeks of effort that go into environmental assessments and associated paperwork. We literally have an excellent WPA waterfowl production project (a peninsula cut-off) that Ducks Unlimited said they'd like to do this winter. No way to even attempt it. Nobody has the time to write the EA and other paperwork. Maybe in 1990 .... maybe.

The bottom line is habitat is what raises wildlife. Seems like the Service is running pell-mell in all kinds of directions, staffing up all kinds of new and old offices churning out more and more paper: newsletters, research reports, data summaries, posters, leaflets, stickers, tip sheets and requests for information. These jobs have a place but its the generally lower graded field realtor, technician, assistant manager or biologist that buy, protect and improve habitat - where flying ducks actually come from. I haven't seen significant increases in these front line troops. If we are serious about the plight of the duck, we should shift our people and get more folks on the line working with buying and developing habitat. The opportunities are there .... we just need more "combat" troops.

Dave Potter

APPENDIX

The COE's 1988-1989 Annual Operating Plan [2] provides a summary of the extreme drought conditions that existed during 1988. Attached below is the Palmer Drought Index of NOAA and USDA. This is an indicator of the severity of long term drought related to moisture deficiency (takes into account ground water, crop and pasture conditions, stream flow, and reservoir storage). Shown are the conditions existing on July 30, 1988. As shown extreme drought prevailed throughout the district comparable to 1936 as the driest year; however, 1988 was the hottest year from 1931-1988.

Fall, 1987 was excessively dry and severe drought prevailed by the start of spring. Excessive hot and very light precip deepen the drought during the summer. Snowpack peaked at Garrison Reservoir at 81% of normal in early April (normal peak is in July). The spring of 1988 was one of the hottest and driest of record with about 50% of normal precip noted. Drought further deteriorated in June reminiscent of the 1930's. June Bismarck temps were 11°F. above normal, the warmest since 1933. The blistering heat and low precip were records during May-July and were comparable to the severe drought years of 1934 and 1936. The maps attached (Figures 6A and 6B) show the driest and hottest May-July periods since 1931. The area including the WMD was drier in 1936 but hotter in 1988.

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[2]1988. Anonymous. 1988-1989 Missouri River Main Stem Reservoirs Annual Operation Plan and Summary of Actual 1987-1988 Operations. U.S. Army COE, Mo. Riv. Div. 107pp. Nov, 1988. p33-38.

Drought Severity

(LONG TERM, PALMER)

JULY 30, 1988

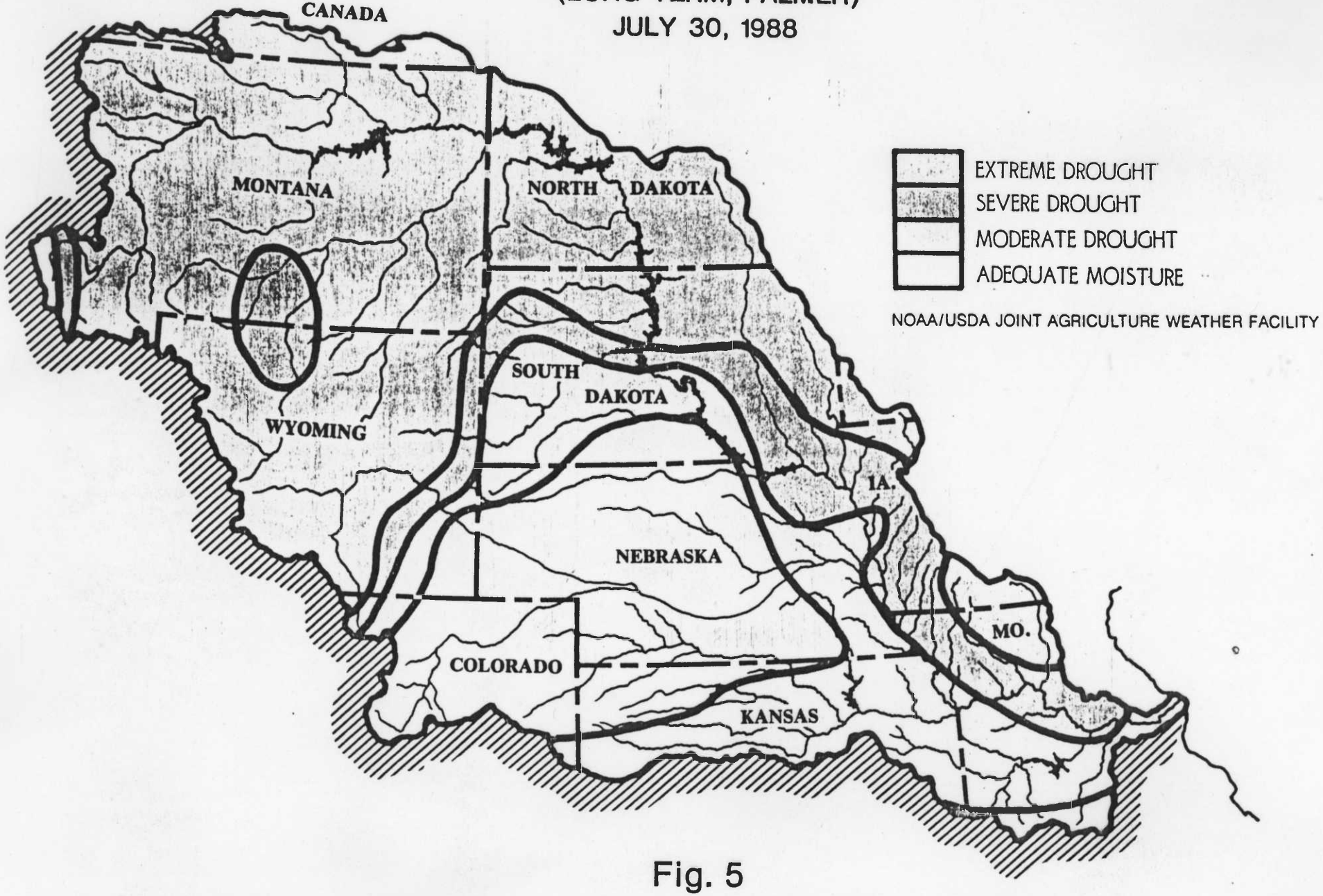

Fig. 5

DRIEST YEAR (1931-1988)*

MAY THROUGH JULY

*BY UNITED STATES CLIMATE DIVISIONS

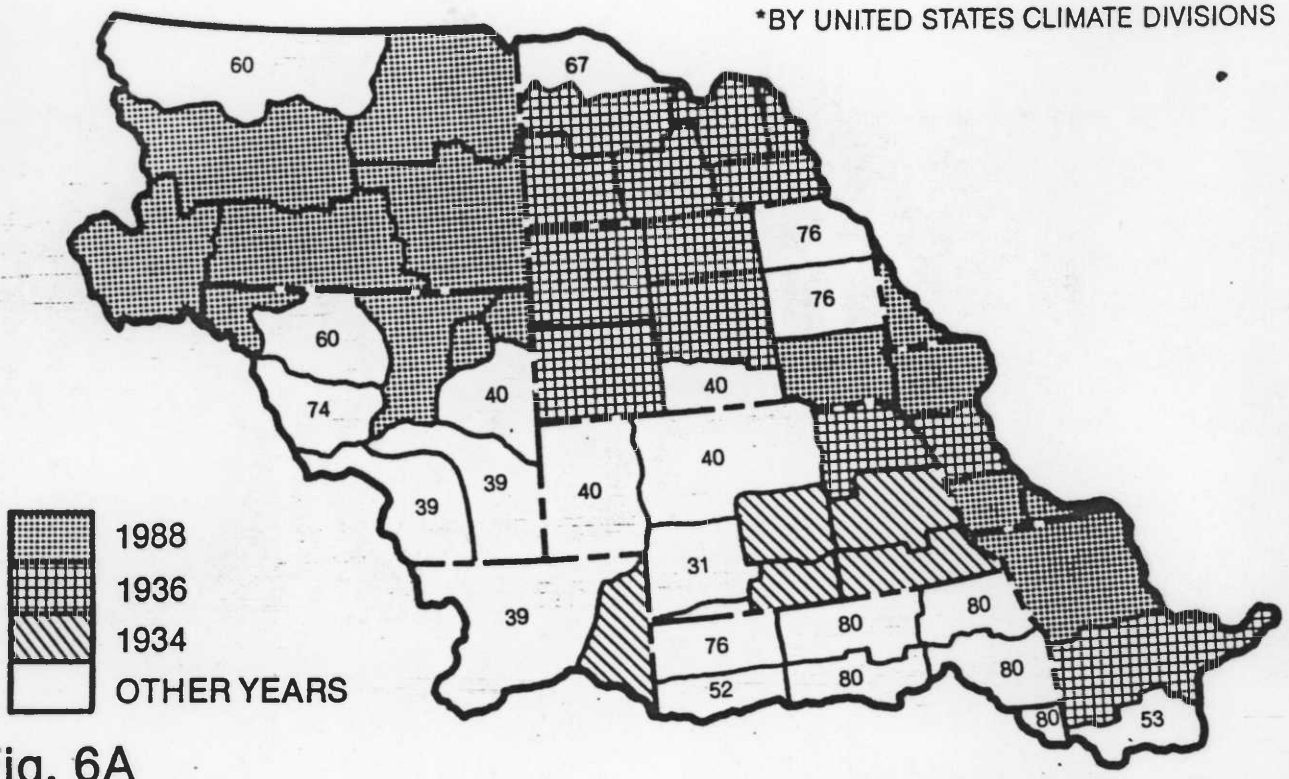

Fig. 6A

NOAA/USDA JOINT AGRICULTURE WEATHER FACILITY

HOTTEST YEAR (1931-1988)*

MAY THROUGH JULY

*BY UNITED STATES CLIMATE DIVISIONS

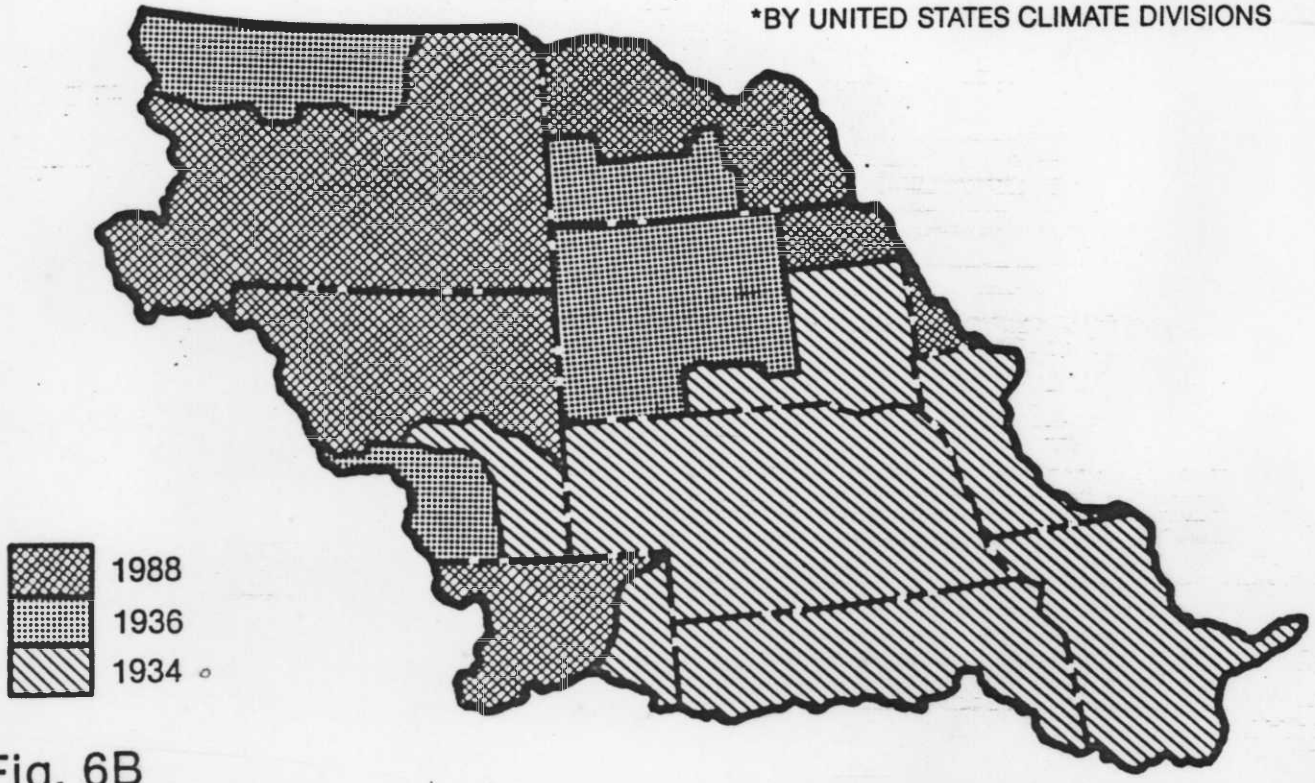

Fig. 6B

NOAA/USDA JOINT AGRICULTURE WEATHER FACILITY

AUDUBON GARRISON WETLAND MANAGEMENT DISTRICT
Coleharbor, North Dakota

ANNUAL NARRATIVE REPORT
Calendar Year 1988

U.S. Department of the Interior
Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM
Audubon NWR Complex

INTRODUCTION

The Audubon Garrison Wetland Management District consists of lands purchased by the Bureau of Reclamation (Bureau) in McLean and Sheridan Counties to mitigate for losses caused by the Garrison Diversion Irrigation Project. These tracts are funded by the Bureau but are owned and managed by the FWS as wildlife development areas (WDA's). Their primary management objective is waterfowl production.

The Bureau of Reclamation transferred nine tracts totalling 2,636.7 acres to the FWS during FY87 and two tracts totalling 792.6 acres during FY88.

AREA	WET AC.	GRASS AC.	WOOD AC.	TOTAL AC.	YEAR OF TRANSFER
Lincoln Valley S.	34.5	80.5	0	115.0	FY-88
Turtle Lake II	306.9	361.2	.5	670.6	FY-88
Turtle Lake I	216.1	295.3	0.2	511.6	FY-87
Turtle Lake III	627.3	357.6	0	984.9	FY-87
Turtle Creek II	52.6	37.8	0	90.4	FY-87
Turtle Creek III	39.7	95.4	1.9	137.0	FY-87
Lake Williams North	10.2	108.3	1.5	120.0	FY-87
Lake Williams South	26.9	92.6	0.5	120.0	FY-87
Hekker's Lake	33.9	149.3	0	183.2	FY-87
Coal Coulee	147.6	245.2	23.8	416.6	FY-87
West Lost Lake	51.0	29.0	0	80.0	FY-87
TOTAL	1546.7	1852.2	30.4	3429.3	11

INTRODUCTION

TABLE OF CONTENTS

A. HIGHLIGHTS

- Drought affected all aspects of management. Only one half of the WDA's had wetland remaining by freeze-up.
- Nine of the eleven WDA specific management plans were received and approved.
- A seven acre roundout to Coal Coulee WDA was purchased by the Bureau
- Turtle Creek II was accepted as a WDA
- Canals A and B were cleaned out and a water control structure built in Canal B downstream from Turtle Lake I.

B. CLIMATIC CONDITIONS

Weather in 1988 was dry and warm throughout the year. Drought conditions caused wetland drying, crop failure and little vegetative growth. Vegetative cover on the WDA's although short and in poor condition was much in demand for emergency haying and grazing by WDA neighbors.

At freeze-up only one half of the WDA's had any wetland remaining. Much moisture will be needed to recharge wetlands and soil moisture.

C. LAND ACQUISITION

1. Fee Title

In 1988 a seven acre round-out was purchased by the Bureau from Mrs. Rose Koenig, Underwood and added to the Coal Coulee WDA. Also this year the FWS decided to accept the Turtle Creek II tract as a WDA rather than use it as trade material.

3. Other

Four of the eleven transferred tracts still have outstanding round-outs to be resolved. They are Turtle Lake I, Coal Coulee, Turtle Lake II, and Turtle Lake III. Currently a trade for the round-out on Turtle Lake II is being negotiated by offering the private landowner Turtle Creek III.

WDA	ACRES	ROUND-OUT ACREAGE	DESC. OF R-O
Turtle Lake I	511.6	40	T147N, R82W, Sec. 24. NE1/4NW1/4
Coal Coulee	416.6	80	T146N, R81W, Sec. 18, SW1/4SE1/4, SE1/4SW1/4
Turtle Lake II	670.6	160	T147N, R81W, Sec. 20, SW1/4
Turtle Lake III	984.9	85	T147N, R81W, Sec. 25, NE1/4NE1/4

D. PLANNING

2. Management Plan

A water management request for 1989 was written and submitted to the Bureau for the Turtle Lake WDA's.

A comprehensive water management plan for the Turtle Lake area was being developed by the Bureau. The plan will incorporate the concerns of several entities and was due Dec. 15, 1988. The plan will include the WDA's in the area and establish long term operating procedures. The plan has yet to be completed.

Specific management plans for 9 of 11 tracts were received this year. One tract (Turtle Creek III) may be traded and the plan is on hold. The last outstanding plan (Turtle Creek II) is currently being written by the U.S. Bureau of Reclamation.

Future WDA transfers will require the specific management plan to be completed and approved before the tracts are accepted by the Service.

5. Research and Investigations

Additional photo points, Daubenmier transects, and Robel transects were established this year. Bureau biologists are continuing various on-going studies such as island nesting, photo points of the grasslands and robel readings. It is anticipated that they will continue this work on FWS owned WDA's after receiving advanced approval from the Refuge Manager.

The following table summarizes Robel transect readings conducted on the WDA's the past three years.

WDA	Habitat	Month	Rob. Reading Avg (in dec.) 1988	1987	1986
Lincoln Valley (S)	Tame	April	0.38	0.60	-
Turtle Lake II	DNC	April	1.58	1.11	-
	DNC	June	3.56	-	-
Turtle Lake I	NP	April	0.77	0.46	-
	DNC	April	2.05	0.98	-
Turtle Lake III	DNC	April	0.38	0.90	-
	Tame	April	1.80	0.60	-
	DNC	April	0.16	0.41	-
Lake Williams North	DNC	June	2.99	-	-
Lake Williams South	Tame	July	2.60	-	-
Hekker's Lake	NP	April	0.54	0.36	-
	DNC	April	0.54	0.71	-
Coal Coulee	NP	April	0.78	0.40	0.34
	NP	April	0.67	0.50	0.31
	Nat. Brush		1.87	1.04	1.42
West Lost Lake	DNC	April	1.58	0.60	-

E. ADMINISTRATION

1. Personnel

Staffing that was paid by GDU funds this year included one assistant manager (120 days), project leader (37 days), biological aid (50 days), maintenance personnel (10 days), and administrative assistant - clerical (20 days). The GDU assistant manager position was vacant from 6/3/88 to 10/23/88.

5. Funding

For fiscal year 1988 the Audubon Complex received $38,600 as GDU funding. Personnel directed 237 staff days towards GDU related projects for a total expenditure of $22,162. Equipment obtained this year totaled $15,092 (see Section D). Basic operational and over-head costs including gasoline, vehicle maintenance, telephone, and electric totaled $1,346.

F. HABITAT MANAGEMENT

2. Wetlands

Water depths in Nygaard Slough located on Turtle Lake II were measured on 4/19/88. A maximum depth of 2.2 feet was recorded. The slough was completely dry by late summer.

In October the Turtle Lake II turn-out on the McClusky Canal was opened by vandals. Water filled two wetlands on the WDA and then ran east down Canal B to Turtle Lake. No damage to the turn-out or the WDA was recorded; habitat for wildlife was improved.

4. Croplands

Two five acre plots were farmed on Turtle Lake II to prepare them for tree plantings scheduled for 1989. The Bureau will be responsible for the planting and the maintenance of the plots.

An 80 acre farm field on Turtle Lake I was planted this spring to DNC by the Bureau.

The following table summarizes grazing activity on the WDA's in 1988.

WDA	System	Dates	AUM's	Acres	Goal	Results
Lincoln Valley S.	SD	6/25-7/25	95.5	80.5	Grassland Maint.	Good
Turtle Creek II	O/F	5/14-8/1	24.91	37.8	Stop free interim grazing	-
Turtle Creek III	O/F	5/1-8/30	95.4	74.9	Stop free interim grazing	-
Hekkers Lake	SD	7/18-8/29	116.5	149.3	Grassland Maint.	Fair
West Lost Lake	SD	6/3-6/22 7/7-7/25	53.5	40.0 (appr.)	Grassland Maint.	Poor
Coat Coulee	C	7/30-9/30	36.0	20.0	Litter reduction	Good
Total Acres				417.5		

SD - Short Duration, O/F - On and off, C - Crowd

Shoreline cattails were flattened by cattle during the Coal Coulee graze. Now to just over-flood them! 11/17/88 DGP

8. Haying

The following table summarizes haying activity on the WDA's in 1988.

WDA	Type	Acres	Payment/Credit
Turtle Lake II	Tame	5.0	Break for tree planting
Turtle Lake II	Tame	66.0	One disking operation and 50 flax bales
Turtle Lake II	DNC	70.0	Two disking/dragging operations
Turtle Lake III	DNC	40.0	Two disking/dragging operations
Turtle Lake III	DNC	36.0	Two disking/dragging operations
Turtle Lake III	DNC	40.0	Two disking/dragging operations
Lake Williams (N)	DNC	20.0	Two disking/dragging operations
Lake Williams (S)	Tame	41.0	Interseed grass/legume mixture
West Lost Lake	DNC	28.0	Two disking/dragging operations
Total Acres		346.0	

9. Fire Management

A prescribed burn was conducted on 5/12/88 on 139.8 acres of tame grass and cattails located on the east side of Turtle Lake I WDA. The objectives of the burn were to reduce litter and open a cattail choked area. These objectives were accomplished.

A wildfire caused by a catalytic converter on a Bureau vehicle occurred on the Lake Williams (N) WDA this year on 6/27/88. The fire burned approximately 50 acres of DNC, approximately 150 yards of one row tree belt, a goose tub, and a Bureau truck.

G. WILDLIFE

2. Endangered and/or Threatened Species

Five whooping cranes were observed on Coal Lake located one mile southwest of the Coal Coulee WDA on 4/18/88. One of the cranes, a juvenile, was observed in the area until 4/24/88.

3. Waterfowl

The eleven islands located on Turtle Lake I were checked for waterfowl nests twice, once in April and once in May. Twelve Canada goose nests and one mallard nest were found. The nest fates were not determined.

Banded flax bales to serve as waterfowl sites were placed on the following WDA's in November; Turtle Lake II - 6, Turtle Lake I - 10, and Turtle Lake III - 2.

Goose nesting tubs have been erected on the following WDA's: Turtle Lake I - 1, Turtle Lake II - 5, Turtle Lake III - 3, Lake Williams (N) - 3; Lake Williams (S) - 2 (erected in 1988), and Hekkers Lake - 2. A partial check of the tubs was completed and goose use was recorded on Turtle Lake II - 1 and Turtle Lake III - 1.

Duck production based on 4-square mile estimates was 396 ducklings.

15. Animal Control

Predators were trapped on the eleven islands located on Turtle Lake I. Total catch was five raccoon and three skunks.

H. PUBLIC USE

1. General

Public use on the WDA's was mostly in the form of hunting. An estimated 800 visits occurred.

17. Law Enforcement

The WDA's were patrolled regularly through the various hunting seasons. No violations were detected.

A section line agriculture trespass problem on the west side of Turtle Lake I WDA was satisfactorily addressed this year.

I. EQUIPMENT AND FACILITIES

1. New Construction

Canal A linking the McClusky Canal to Turtle Lake I was dug in the fall of 1988. Canal B which links Turtle Creek I and II WDA's was cleaned out this year and completed into Turtle Lake I. A water control structure was constructed in the canal to allow water management on Turtle Lake I.

Canal Construction by Bureau at Turtle Lake I.
10-88-PTS

4. Equipment Utilization and Replacement

Equipment purchased this year included a pickup, a refuge frequency radio and an ATV.

J. OTHER ITEMS

3. Items of Interest

A team comprised of personnel from the Bureau, the Service, and the ND Game and Fish Department inspected five WDA's this year. Management and condition of all five tracts was found to be acceptable.

4. Credits

Written by Mike Goos, typed and assembled by Marilyn Wohlk, and edited by Dave Potter.