PERSONNEL

James M. Williams, Refuge Manager, GS-11, PFT

William R. James, III, Assistant Refuge Manager, GS-9, PFT

Karen C. Howard, Office Assistant, GS-4, PFT

Preston O. Lawrence, Automotive Mechanic, WG-10, PFT

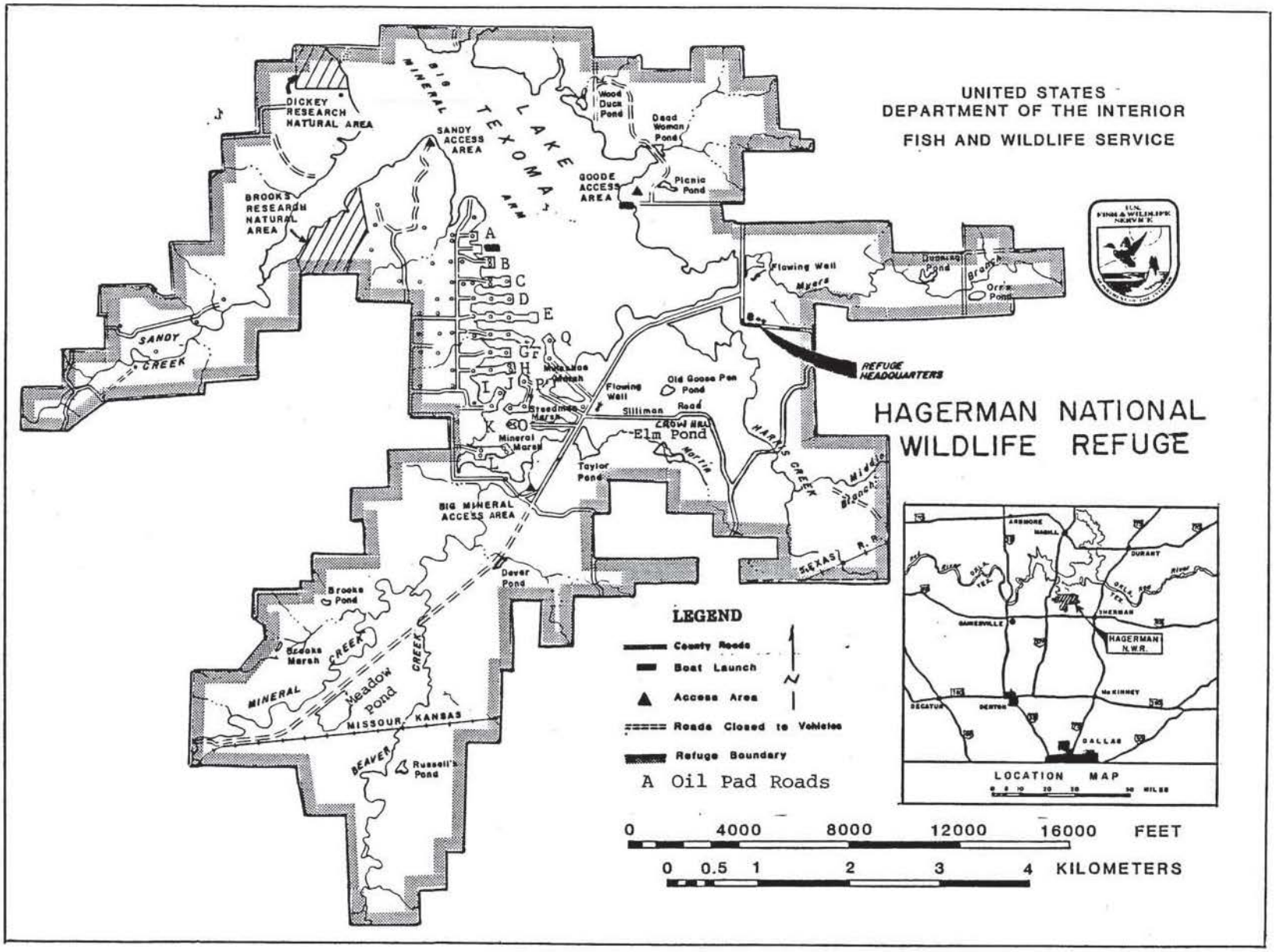
Doyle W. Sloan, Engineering Equipment Operator, WG-8, PFT

REVIEW AND APPROVALS

SUBMITTED BY: _____ DATE: 2/28/84

James J. Hulbert 4-4-84

Regional Office Review Date


UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
HAGERMAN NATIONAL WILDLIFE REFUGE
LAKE TEXOMA
BIG MINERAL ARM
DICKEY RESEARCH NATURAL AREA
BROOKS RESEARCH NATURAL AREA
SANDY ACCESS AREA
GOODE ACCESS AREA
BIG MINERAL ACCESS AREA
Wood Duck Pond
Dead Woman Pond
Picnic Pond
Flowing Well
Myers
Bass Pond
Brown Creek Pond
REFUGE HEADQUARTERS
Old Goose Pen Pond
Flowing Well
Silliman Road
CROW HILL
Elm Pond
Mineral Marsh
Taylor Pond
Dever Pond
Brooks Pond
Brooks Marsh
MINERAL CREEK
Meadow Pond
SANDY CREEK
BEAVER CREEK
Russell's Pond
MISSOURI KANSAS TEXAS R.R.
HARRIS CREEK
Middle Bloodhart
A
B
C
D
E
Q
G
H
I
J
K
L
LEGEND
County Roads
Boat Launch
Access Area
Roads Closed to Vehicles
Refuge Boundary
A Oil Pad Roads
N
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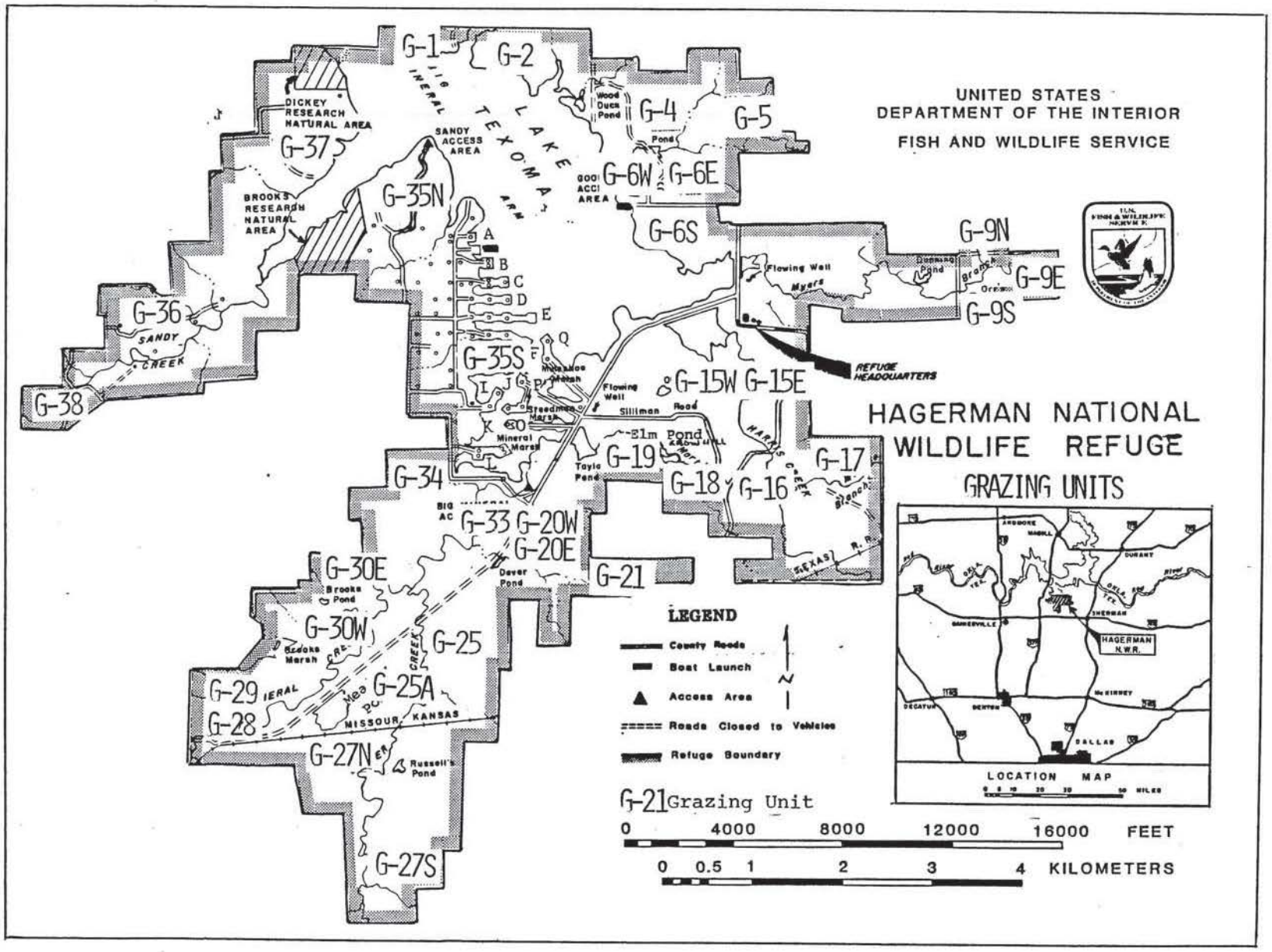
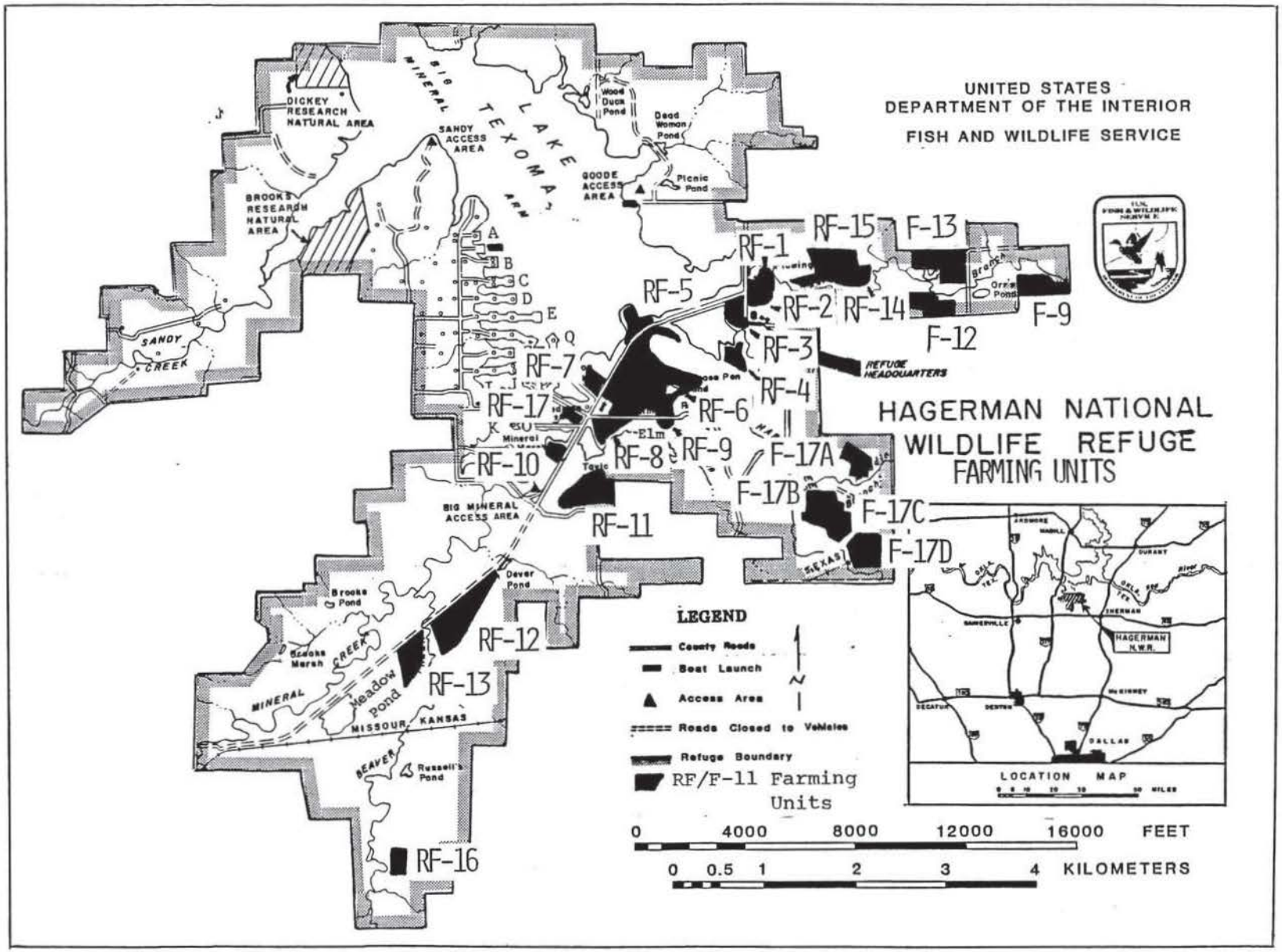
0 0.5 1 2 3 4 KILOMETERS
ARDMORE
DURANT
SHERMAN
GAINESVILLE
HAGERMAN N.W.R.
McKINNEY
DENTON
DALLAS
LOCATION MAP


UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
HAGERMAN NATIONAL WILDLIFE REFUGE
GRAZING UNITS
G-1
G-2
G-4
G-5
G-6W
G-6E
G-6S
G-9N
G-9E
G-9S
G-15W
G-15E
G-17
G-16
G-18
G-19
G-20W
G-20E
G-21
G-25
G-25A
G-27N
G-27S
G-28
G-29
G-30W
G-30E
G-33
G-34
G-35N
G-35S
G-36
G-37
G-38
DICKEY RESEARCH NATURAL AREA
BROOKS RESEARCH NATURAL AREA
SANDY ACCESS AREA
GOO ACCI AREA
LAKE TEXOMA
SANDY CREEK
REFUGE HEADQUARTERS
Wood Duck Pond
Flowing Well
Myers
Sillman Road
Elm Pond
Mineral Marsh
Taylo Pond
Dover Pond
Brooks Pond
Brooks Marsh
Russell's Pond
MISSOURI KANSAS TEXAS R.R.
LEGEND
County Roads
Boat Launch
Access Area
Roads Closed to Vehicles
Refuge Boundary
G-21 Grazing Unit
0 4000 8000 12000 16000 FEET
0 0.5 1 2 3 4 KILOMETERS
LOCATION MAP
HAGERMAN N.W.R.
SHERMAN
DENISON
DALLAS
DENTON
DURANT
ARDMORE
MARIETTA
GAINESVILLE
DECATUR
McKINNEY


UNITED STATES
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HAGERMAN NATIONAL
WILDLIFE REFUGE
FARMING UNITS
LAKE TEXOMA
BIG MINERAL ARM
DICKEY RESEARCH NATURAL AREA
BROOKS RESEARCH NATURAL AREA
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Dever Pond
Russell's Pond
Mineral
Elm
Tank
REFUGE HEADQUARTERS
MISSOURI KANSAS
TEXAS
RF-1
RF-2
RF-3
RF-4
RF-5
RF-6
RF-7
RF-8
RF-9
RF-10
RF-11
RF-12
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RF-14
RF-15
RF-16
RF-17
F-9
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F-17A
F-17B
F-17C
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LEGEND
County Roads
Boat Launch
Access Area
Roads Closed to Vehicles
Refuge Boundary
RF/F-11 Farming Units
N
0 4000 8000 12000 16000 FEET
0 0.5 1 2 3 4 KILOMETERS
LOCATION MAP
ARDMORE
MADILL
DURANT
SHERMAN
SHERMAN N.W.R.
SHERMAN
DENISON
DALLAS
MILES

Refuge Manager James M. Williams (WRJ)

Asst. Manager William(Brick) James, III (JMW)

Automotive Mechanic Preston Lawrence (WRJ)

Engineering Equip. Oper. Doyle W. Sloan (WRJ)

Office Assistant Karen C. Howard (WRJ)

TABLE OF CONTENTS

A. Highlights

Work on water management facilities was a major thrust this year, highlighted by the construction of a low water crossing on Dever Pond. (See Section I. 2.).

VCS/Office, built under BLHP, was ordered vacated pending a decision on repairing the facility. (See Section I.1.).

The refuge hosted a YCC Camp with an enrollee complement of 18. Section E.2. has details on their many accomplishments.

Karen Howard and Doyle Sloan were both converted to full time appointments in May. Doyle also received a special achievement award for his carpentry skills and performance.

A 6.2 km Auto Tour Route and self-guiding interpretive leaflet were developed by Assistant Manager James, a significant innovation in the refuge interpretive program. (See Section H. 5).

B. Climatic Conditions

Nothing remarkable happened temperature wise until the very end of the year. January and February were relatively mild. Spring came early and stayed a long time. The temperature didn't reach the century mark until August, but summer lingered a long time, too, with the first frost not recorded until nearly Thanksgiving. An unusually warm fall came to an abrupt and nasty end in mid-December with a 6" snow and a cold wave that broke all records for hours below 32°. Starting on December 18 the mercury slid below the freezing mark and stayed there for just a few hours shy of 2 weeks. The lake froze 6-8" thick all the way out Big Mineral Arm to Cedar Mills - the main body of the lake.

Rainfall was not too unusual, either, with a few months on the dry side, and a few on the wet. The overall effect was a good year for upland and moist-soil food production. Weather data is shown in table I.

In typically Texas erratic weather fashion, the high and the low lake level for the year occurred in the same month. October saw a 9 foot rise in lake levels which scared the daylights out of Shell Oil Co. They have been jumpy since the floods of '81 and '82 covered half their well sites and shut down production for weeks. The rise made orderly management of moist soil impoundments impossible, but waterfowl made good use of flooded shoreline and wheat fields anyway. Minimum and maximum lake fluctuations are shown in table II.

C. Land Acquisition

Nothing to report.

D. Planning

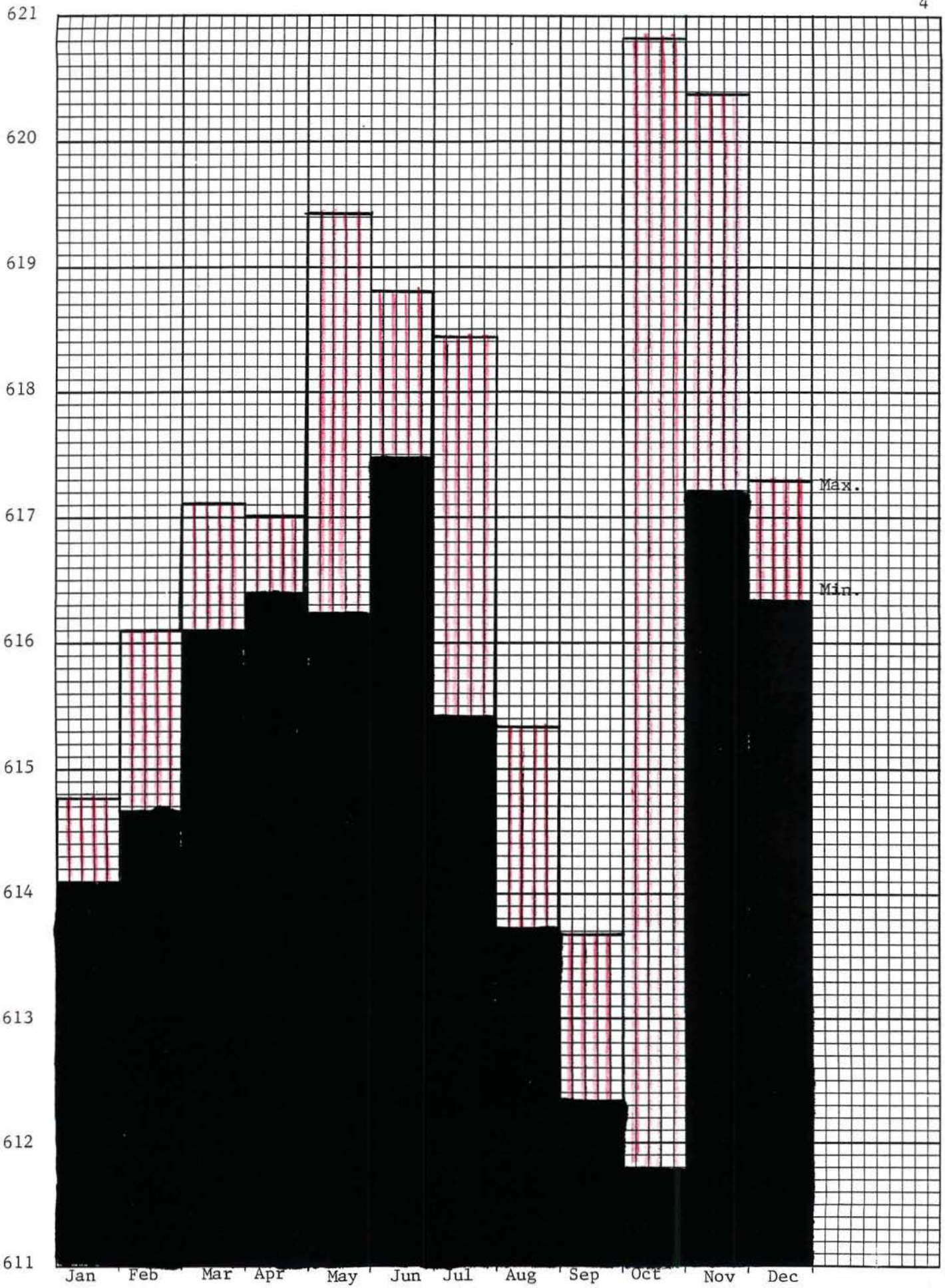
1. Master Planning

Hagerman, along with the rest of Region II, went through a Planning Needs Assessment exercise in order to see what priority a full-blown master planning effort would be assigned to this station. Close to month of staff days went into the effort, with an excellent document turned out, largely through the

An unusual December covering of 6" of snow ushered in a record winter freeze. (WRJ)

TABLE I	TEMPERATURES		PRECIPITATION		
Month	Max	Min	Rain	38 Year Average	Difference
January	70	23	2.49	1.77	.72
February	69	29	.68	2.42	-1.74
March	85	29	3.61	2.75	.86
April	88	33	.78	4.01	-3.23
May	87	45	4.98	5.02	- .04
June	93	54	9.54	3.74	5.80
July	99	60	1.45	2.80	-1.35
August	101	68	2.39	3.98	-1.59
September	96	41	2.24	4.44	-2.20
October	91	41	3.46	3.76	- .30
November	80	26	2.94	2.92	.02
December	65	2	.83	2.81	-1.98
Total			35.39	40.50	

Table II
Water Levels Lake Texoma 1983 - m.s.l.



work of Assistant Manager James. The final decision was to place a low priority on Master Planning at this station, but the document has proven well worth the effort by refining and redefining refuge direction. That direction has been negotiated and approved, so the staff can now lay plans to see the plan through.

2. Management Planning

The major planning effort this year after the PNA process was the fire management plan. Working on a considerably shortened deadline, most of December was spent gathering information and writing a draft. Final submission ran into January. Some planning effort was put into the proposed bow hunt for deer projected to take place on the refuge October 1984. The hunt plan was reviewed, regulations sheet updated, and a recommendation made to the TPWD.

A public use concept statement was drafted and submitted in anticipation and support of a wide interpretive planning effort coming up in 1984. Included in the statement was a revision of the exhibit concept plan for the VCS and trails.

3. Public Participation

The Refuge Manager and Assistant attended the regional hearing on the Texas Outdoor Recreation Plan. Very little was applicable to the refuge, unfortunately, and the whole effort was hamstrung by their silly rules of the game. For instance, they could not possibly count our oil pads as fishing jetties because jetties were only in coastal waters. Their survey of recreational pursuits completely ignored hunting. One of the acknowledged most pressing needs state-wide is the availability of public lands for hunting but the TORP staff said that the problem was beyond the scope of their effort. Their main concern was playing fields and picnic tables, marinas and tennis courts. We had very little to say about that, but it was educational.

E. Administration

1. Personnel

Efforts to bring staffing to full complement in 1982 were finally realized with two significant personnel actions. After dropping a Service wide hiring freeze, and serving two 30-day and a NTE 1 year temporary appointments, we were able to convert Karen Howard, our Office Assistant to PFT. Engineering Equipment Operator Doyle Sloan was also converted from PPT to PFT with Karen, in May. Both are adding their dedicated spirit to the refuge's direction.

Two Concrete Finishers (WG-3602-8) were hired on temporary appointments to assist in Job Order 2821-FA, Water Facilities Rehabilitation. W. E. and E. B. Martin came on board, along with four volunteers, in September for the construction of a fixed level spillway on Dever Marsh Dike. All excavation, forming and steel work was completed for an early October concrete pouring. The appointments were terminated October 14 after all masonary work was completed.

Two staff were hired to coordinate the 18 enrollee Youth Conservation Corps program. Terri V. Green and Jeffrey L. McElrath were secured to fill the Excepted Appointment (NTE 90 days) GS-301-7, Camp Director, and GS-186-5, Group Leader, respectively. Termination of Jeff was on 8-10 and Terri 8-12-83.

Table II

Staffing Patterns

	Permanent FT	Permanent PT	Other
FY 83	5	-	2 (YCC), 2 (I)
FY 82	2	1	2
FY 81	2	1	2
FY 80	2	2	1
FY 79	2	2	1

2. Youth Programs

a. YCC - The 1983 YCC program was launched in March with the distribution of application packets to area high school guidance counselors and Texas State Employment Commission. The tentative 10-enrollee camp was expanded to 18 youth in April and two temporary appointments were filled by month's end to coordinate the program. One hundred enrollee applications were thrown into a hat and randomly drawn. Selected enrollees, alternates (15 male and 3 female) and their parents attended a May 10 informational meeting. The program kicked-off June 13 with sixteen of the eighteen enrollee complement showing up eager for work. Replacements were quickly found. The program's director, Terri Green, and group leader, Jeff McElrath went into full swing. An unseasonably wet June nearly exhausted the planned rainy day projects but hot, dry July and August weather was more than conducive for field work.

The program concluded August 5 with staff staying on board until August 10. Fifteen projects were completed, generating an appraised value of $49,295. The 8-week program, enabled the refuge to accomplish many back-logged maintenance projects. Boundary and grazing unit cross-fencing occupied much of the project time. A 3/4 mile trail just south of the Visitor Center was laid out, cleared, structures built and a tentative interpretive guide developed by YCC. Three bridges and a photo blind were incorporated into the nature trail.

New 55-gallon drums were acquired, painted and fitted with handles to replace the refuge trash barrels. YCC completed this project by constructing concrete pads and security posts for the placement of the new trash receptacles. Other projects included the sowing of wild millet around lakeshore impoundments; the painting of all wooden visitor control and entrance signs, and the old office/shop complex; and assisting in evaluating grazing unit vegetative transects.

One of the summer's project highlights was the assistance of YCC in the refuge game fish stocking program. An initial Texas Parks and Wildlife Fishery personnel cooperative venture in April to improve refuge fish management was culminated with seining of a brood pond in G-18. Two ponds were selected to serve as game and forage fish rearing facilities. A 1.2 surface acre pond in G-18 was selected to serve in the rearing of black bass. A total of 28 one to two pound average black bass, and some bluegills, obtained from Lake Texoma stocking operations were stocked in this pond. Hay was then scattered over the pond surface to provide forage fish egg laying substrate and fry cover. A .2 acre pond in G-16 was seined and rotenoned in preparation for the stocking and rearing of redhorse shiners. These forage fish will later be stocked in G-18 pond. Vegetation in these two ponds was controlled by Aqua Kleen in May. The seining of the rearing pond in G-18 was undertaken by YCC in mid July. Thirty-four black bass fingerlings were transferred to the eastern most pond on G-15. YCC will continue to sein this rearing pond in up-coming years and fingerling game

The seining of a fishing rearing pond in G-18 by YCC.
(WRJ)

YCC painted the old office/shop complex to match the new.
(WRJ)

Everything nailed down got a coat of paint.
(WRJ)

A little YCC Environmental Awareness (WRJ)

YCC and refuge staff completed the 8-hour Red Cross Multi-Media First Aid Course conducted by Shell Oil. (JMW)

fish will be stocked in other refuge ponds.

In overview, the YCC program's over-all output and contribution to refuge operation far exceeded staff expectations and more than justifies refuge staff input. Much of the refuge office assistant's time and energy was spent in the follow-up of YCC Staff and enrollee concerns due to a dying DIPS System. The result was a harried refuge clerk and a bad taste for the government in the mouths of 20 part-time employees.

4. Volunteer Program

Approximately 920 hour of Volunteer time was spent in various areas of refuge operations. Two Volunteer Services Agreements were formulated in 1983. One, between the refuge and a Grayson County College student, Mark Kucera was formulated in April. The other, with Karl Haller, an authoritative local ornithologist, was executed in June. Mark, a radio and TV repair major contributed approximately 25 hours a month in carrying out projects of general maintenance, litter control and wildlife inventory.

Much of the refuge RMIS waterfowl, marsh, shorebird and raptor information was gathered by Karl and another avid bird watching enthusiast, John Moody. Karl and John, a retired railroad employee spent Thursdays and Tuesdays respectively censusing these species. A total of 416 hours was recored in this volunteer category. The hours, expertise and enthusiasm contributed by these individuals is truely commendable and appreciated by refuge staff. Four area, general construction volunteers logged 240 hours while assisting in the construction of the Dever Marsh low water crossing.

5. Funding

Much of the year was spent operating on a continuing resolution without an approved budget. Operations and Maintenance funding was adequate, but accomplishment of many AWPed projects was supplemented by Job Order and YCC monies. The upgrading water facilities associated maintenance and overhead were made possible by these supplemental funds.

Station funding and staff days of the past 5 years is presented in Table III.

6. Safety

Another year free of lost time accidents certainly merits recognition. This high standard is reflective of a staff whose greatest concern is providing safe and healthful working conditions and ensuing operating practices that safeguard all employees and the visiting public. This safety ethic is generated by regularly scheduled safety committee and staff meetings. Though usually convened in conjunction with the monthly safety meeting, the safety committee has pointed out station hazards or concerns, and recommended corrective action. Scheduled the first Monday of each month, the safety meetings focus on a particular topic usually relevant to seasonal or projected job schedules. Defensive driving, eye and ear protection, YCC hazards and discussions of Regional incidents were representative safety topics. The staff also received 8 hours of First Aid training.

Mention should be made of reportable injuries: Three DI-134 were submitted for YCC injury - one for lacerations on arm and neck from barbed wire and two cases

Table III

REFUGE FUNDING 1980-84

	FY 80	FY 81	FY 82	FY 83	FY 84 (Target)
Operations & Maintenance					
1210- Migratory Birds	91,500	97,300	96,000	114,000	
1220-Mammals & Non-Migratory Birds	3,200	4,000	6,000	6,000	
1230-ADC	1,000	1,000	1,000	1,500	
1240- I&R	8,000	8,000	9,200		
1260- Management & Administration Field Offices					141,000 □
1270- Resource Management					1,000
Cyclical Maintenance					
1210 Cyclical Maintenance	20,000	20,000	20,000	22,000	
1220 Cyclical Maintenance	-	-	-		
1230 Cyclical Maintenance	-	-	-		
1240 Cyclical Maintenance	2,000	2,000	2,000	2,000	
Accelerated Refuge Maintenance (ARRM)					35,000
Recurring Funding Total	125,000	132,300	134,200	157,700	177,000
Rehab. Projects BLHP	3,000	892,400			
Engineering Job Order		20,000	10,000	47,000	
Personnel (Staff Days)	1,414	1,252	1,298	1,273	1,300
1994- Quarters Maintenance		1,000	1,000	1,000	2,000

FY 1984 (target) Total $179,000
□$3,000 - Fire Maintenance

of poison ivy and a fourth incident report for a volunteer sustained a bruised knuckle by table saw kickback.

The following station safety actions were undertaken resulting from Safety Committee or safety inspection recommendations.

-- Ground fault interrupters were placed in the shop crewroom, bathroom and mop sink areas.

-- A fire-proof hearth covering was placed in front of the fireplace insert in the government quarters.

-- An approved explosive magazine for refuge pyro-technics and cannon net charges was ordered.

-- New seat belts were mounted to the frames of the D-6, TD 20 dozers and Adams road grader.

-- Guard rails and approved ladders were constructed for the two observation towers acquired from Shell Oil Co.

-- The protective cover over the 220 volt wiring box on the air compressor in the old automotive shop was replaced.

-- The electrical conduit on the chlorinator in the pump house was properly grounded.

-- All storage items were removed from the furnace room in the shop bay area. The flammable liquid storage cabinet was relocated in the carpentry shop.

-- Greater care will be exercised in assuring the tool rest on the shop bench grinder will not exceed 1/8" from the grinding wheel.

-- Cross-mix check valves were installed on the acetylene welder.

-- All extension cords, floor fan and electrical tools were properly fitted with three prong ground plugs.

-- Breakage protector tubes were placed on overhead florescent lights in the carpenter shop.

-- A blade guard and anti-kickback device was installed on the table saw in the carpenter shop.

-- The PTO guard on the bushhog mower was replaced.

-- A cargo barrier was installed on the new 1983 Chevrolet 4x2 pickup.

7. Technical Assistance

Assistant Manager James investigated a complaint by a Whitesboro resident of the killing of three domestic hogs. Initial inspection of numerous tracks and lacerations on the back of the hogs' necks indicated the killings were made by a mountain lion, or panther as they're locally called. The fact that the killings occurred during daylight hours confused positive identification, since these cats are normally considered nocturnal. The ADC office in Fort Worth was

contacted and later confirmed the findings. It seems this was one of many similar incidents attesting to the presence of such an animal in this area south of the Red River.

8. Other Items

-- Clerk, Karen Howard attended the "Better Office Skills" course in Dallas by the Office of Personnel Management, January 11 and 12.

-- Assistant Manager Brick James participated in the 40 hour Fire Management Workshop at Laguna Atascosa NWR, January 24-28.

-- Managers Williams and James travelled to Austin for a January 21 Zone Meeting.

-- Equipment Operator Sloan was awarded a Special Achievement Award and $100 cash bonus for his exceptional carpentry skills in the design and construction of a refuge gun cabinet, display boards and tool racks. Doyle's skills are a valuable refuge asset.

-- Refuge Supervisor Jim Hubert conducted a station administrative inspection March 17. Major issues focused on the cooperative grazing and farming programs. Zone Biologist Ernie Jemison followed up on these issues and the refuge's role in upcoming Texas Water Rights hearings, with a day-and a-half visit March 24 and 25.

-- Managers Williams and James and Auto Mechanic Lawrence completed an 8-hour instinctive shooting course conducted by the Texoma Regional Police Academy.

-- Manager Jim Williams participated in a Planning Needs Assessment workshop conducted in Albuquerque, NM, April 26-29.

-- Williams & James attended a Zone Meeting at Muleshoe NWR in May.

-- The refuge staff participated in 8-hours of multi-media First Aid training conducted by Frank Cole, Shell Oil's regional safety representative. The staff participated along with the YCC staff and enrollees.

-- April Fletcher (RO) spent June 30 - July 4th visiting the refuge with particular attention to our YCC program.

-- Manager Williams attended an AWP/Fire Training meeting in Albuquerque, August 2-5.

-- Jim Williams also attended a 40-hour LE refresher training course at Wichita Mountains NWR, August 22-6 but was forced to return August 24th due to illness.

-- Assistant Manager James attended 40-hour of LE refresher training at Aransas NWR, September 18-23.

-- Ray Rauch Asst. Zone Supervisor, conducted a two-day refuge inspection December 14-15.

-- Regional Engineer Tom Reed and La Vaughn Jones (CGS) met with Joe Spears, original BLHP contractor for the office complex November 29 and discussed avenues of recourse for the building's shift.

F. Habitat Management

1. General

Upland habitat had an excellent year with distribution of rainfall coming at all the right times. Wetland habitat conditions improved with the annual summer draw-down of the lake, after a poor start due to high water. No unusual habitat conditions were seen this year.

2. Wetlands

Moist-soil food production carry-over from 1983 was virtually non-existent due to flood waters that receded too late to allow any subsequent production. Spring draw-down was delayed by the May rise. By July, a steady fall in lake levels produced rank after rank of sedges, smartweed, ground cherries, and morning glories, providing food a-plenty for migrant ducks. Backflooding was fairly easy this year. We just stood back and watched everything go underwater in the fall flood.

Dever Pond remained dry the entire season while work was in progress on restoring this facility. Deadwoman Pond was not effective as a controlled impoundment due to a non-functional control structure. Meadow Pond held water all year but submergent food production was reduced by an influx of rough fish from last year's flood. Emergent vegetation is beginning to increase past the optimum point. Elm Pond is now completely functional as a water storage facility, but was not needed this year since lakeside impoundments were backflooded from the lake.

4. Croplands

The year began with about 100 acres of wheat sowed but not much of it showing. It was planted so late that it never had a chance to get ahead of the few geese we had. The cooperative farmer, Mr. Morris, had no intention of harvesting it, wanting only to provide a little goose food. In the spring, all the fields were broken in preparation for grain sorghum, but poor land preparation, late planting dates, and failure to fertilize and take care of weed problems caused the acreage planted to be a total loss. Mr. Morris saw that he had no chance of pulling anything out of it and released the acreage to the new cooperative farmer Scott Christensen. Scott brought his equipment in, plowed the entire acreage, and began planting wheat in September.

The refuge share of wheat was planted in a timely manner so that a thick, vigorous stand was here to greet the first migrant geese. The entire 676 acres of farm land was planted to wheat by early December. Some of the latest planted wheat looked pretty poor, but given some decent weather, it may pull out and make something.

We are pleased with the new farmer. He shows a willingness to do whatever it takes to make a crop, for us and for him. He has had plenty of experience growing corn and milo-maize, which pretty well rounds out the refuge cropping plans. The only fly in the ointment is the fact that his home operation is about 30 miles south of here. We would like to share up the farming operation, but if his acreage is reduced too much, we might lose him. So far, distance has not been a hardship for him or for us.

5. Grasslands

A nearly complete round of range surveys were done again this summer. They were last done in 1980. The survey this year showed a general improvement in range conditions after three years of deferred rotation grazing and reduced stocking rates. Only G-27 (south pasture) and G-36 & 37 were not surveyed out of 33 lines to be run. The method used, step/count method, measures only species composition compared to climax and does not give any production data. Results are shown in table IV. The results of the survey showed a definite upward trend on nearly all transects. We would like to think that the improvement is the result of a better grazing management scheme, but in fact, it may just be a relfection of a couple of good growing seasons. As the range improves in condition (as a reflection of climax), overall productivity should also increase. The objective of increased productivity by approaching climax will benefit grazers as well as the entire biota of the prairie community.

The range restoration project undertaken last year on what used to be farm field F-17e was evaluated again this year by SCS and refuge staff. The results are most gratifying. An excellent stand of grasses has been established, with Indiangrass being the most abundant, but switchgrass and little bluestem close behind. Engelmanndaisy was also very successful. Partridgepea (prairie senna) reseeded itself and the bundleflowers can be seen here and there. Bushsunflower was a complete failure, which is not too surprising since we are a little north of its normal hill country range.

The similar treatment on F-16 was very disappointing. Using the criterion of one plant per square foot for success, this seeding would be classed as failure. A few seed heads of Indiangrass were seen here and there, amidst the Johnsongrass and very few forbs could be located. The probable reason for the failure was competition from Johnsongrass and other field weeds. Had F-16 been regularly farmed a few seasons before seeding, the weed problem, especially Johnsongrass, would have been reduced.

Another planting amounting to about 3 acres was put in G-19 along the fence next to field RD-9. The principle seed, Englemanndaisy, was put out in March to see if early sowing of this cool season perennial would have better success than late in the season. In preparation for the planting, G-19 was burned in early March. Then the 3 acre parcel next to the fence was rough plowed and the seed was distributed using the cyclone seeder. No further compaction was used. A late fall evaluation showed a fair to poor stand of Englemanndaisy, but it was old seed (1981 crop), which may account for the low germination.

7. Grazing

Table IV presents a summary of leases issued in 1983. Grazed acreage totalled 4,661 and supported 2,416 animal unit months.

Table IV

Grazing Leases

Lease	Leasee	Acres	Head	AUM	Condition
1 & 2	Roger Terry	358	18	216	Poor
4 & 5	McClain	326	18	108	Poor-Good
6 & 6a	Smith	344	20	240	Fair
9	McElrath	173	9	108	Poor-Fair
15	Curtis Terry	376	20	240	Fair
16 & 21	Dan Wright	194	9	54	Poor-Fair
17	D. Wright	247	13	156	Fair-Good
20	Hill	391	18	216	Fair-Poor
25 & 25a	Bennett	591	28	336	Fair-Good
29	Coey Brooks	106	5	30	Poor
30	Clayton Brooks	416	21	252	Poor
33	Neasbitt	213	40	100	Fair
35	J. M. Terry	798	27	324	Poor-Fair
38	Schmidt	128	6	36	Poor
		4,661		2,416	

Inactive Leases

18 & 19	- (Smith	387	20	-	Good-Fair
27	-	790	40	-	Poor
34	-(Bennett)*	190	8	-	Poor
36 & 37	-	1207	42	-	-
		2,574			

* Held but not in use

Through consolidation, and permittee attrition, the number of leases now stand at 18. Of these, only 14 were leased out in July (renewal time). The "spare" leases are being held for now as relief pastures when current permittees need to be moved from their regular lease so it can be treated (i.e. burned). That is precisely what was done with J. T. Smith, who normally runs cattle on G-6 and 6a. He agreed to move his cattle in September to G-18 and 19, which are now being managed together in a switch-back rotation system, same as G-6 & 6a. G-6 & 6a will be burned in 1984, rested for at least one year, then Smitty will move his cattle back. About 100 acres in G-18 and G-19 were burned to remove litter and renovate the pasture prior to turning cattle in. Results were excellent.

G-36 and 37 were actually put under lease, but about the time permittee Dale Dickey was to turn his cattle in, he suffered a serious stroke that has left him partially paralyzed. The Dickey's petitioned for, and received, their lease fee back because of non-use.

Mrs. Sneed also decided not to hold on to G-27 any longer. This lease has been idle for two years and has a good fuel load on it. A prescribed burn is scheduled for 1984 and, after resting and re-evaluation, may be used as a relief pasture.

All permittees were notified at renewal time that the 1984-85 grazing rate will be increased from $4 to $5/AUM. Some of them squawked about it, but rates on comparable land in the area run that much.

9. Fire Management

One prescribed burn was performed in two parts, this year. A part of G-18 that was not burned in 1981 finally got treated. Across the road, another area extending from G-18 into G-19 was treated at the same time. Grass in the area had lost vigor and become decadent due to an over abundance of standing dead matter and ground litter. Eastern redcedar, honeylocust and bois d'arc was also gaining a foothold.

The fire was set on March 1, mid-afternoon. Winds were southwest at 7-10 mph, relative humidity was 30-40% and air temperatures were in the 70's - almost ideal conditions for a reclamation burn. The fire eliminated all cedars on the treated area. Response of other woody vegetation will be further evaluated in the spring of 1984 to see what leafs out and the extent of basal sprouting. The response of the grasses was beyond expectations. What has appeared to be monotypic switchgrass came back with more little bluestem and Indiangrass than we could have imagined. The re-growth of switchgrass was excellent, too, with a good seed crop produced on the lush new growth.

The prescribed burn gave Assistant Manager James the perfect opportunity to use all his newly acquired knowledge from the Laguna fire workshop. Other fire management endeavors this year include work on the new Fire Management Plan, and submission of a Fire Dispatch Plan. A new pickup was ordered to haul around our pumper unit. When it gets here, it will be a 1 ton, dual wheel, 4x4. Personal size (handi-talkie) radios are in the FY '84 Fire Management budget. Fire clothing, Pulaskis, and fire shelters were also added to the fire fighting arsenal.

11. Water Rights

The adjudication procedure for Grayson County water rights began on April 25. Prior to D-Day all forms and submissions were completed and sent to Regional Engineers (Henry Edgar), Zone Biologist (Jemison), and Regional Solicitor Kathleen King. Mrs. King applied for a delay on the hearing date for Hagerman Refuge. Several attempts have been made through the year to determine the status of the case but no further word has been received.

G. Wildlife

2. Endangered Species

Three bald eagles made their winter home on Big Mineral Creek during winter and spring. They were last seen on March 22. Two eagles were seen again on November 15 and stayed with us till the end of December when they were "frozen out" to the main body of the lake where open water afforded a better chance of feeding. A maximum of three were seen in mid-December but only one immature was still around for the Christmas Count. No peregrines were seen this year.

3. Waterfowl

With a severe shortage of food, it it not surprising that the spring peak for waterfowl only amounted to 425 geese and 1800 ducks. All the geese were gone by the end of March. Blue-wings, shoveler and widgeon continued to move through into May, but the numbers were small - flocks of 15-25 instead of the 100 - 150 we sometimes see.

Some wood duck production was evident this year with one positive brood at Meadow

A good fuel load and favorable weather conditions prompted the ignition of the G-18 controlled burn. (WRJ)

Green-up gave evidence of a successful burn. (JMW)

Pond. Another flight of 10-15 immature birds in early summer indicated that there may have been some success in Wood Duck Pond or elsewhere. The surprise of the year was a pair of mallards seen acting very broody in early summer. They kept flying off to Old Goose Pen Pond. Finally in late summer, a brood of 5 ducklings were seen with mamma in Steedman Pond. Sounds like the makings of a WPA.

Fall migration began in July with first migrant blue-wings. The early teal season was perfectly timed this year, with the peak migration period in early September. This fall saw an unusually large and steady number of baldpate in the area. Other ducks were near normal and expected population levels. The peak for mallards came in the last half of December with 13,000 rafted up on the lake and at Meadow Pond.

Of the more unusual migrants this year were two female red-breasted mergansers, which spent nearly a month in the ponds and on the lake in the fall. A common goldeneye was also seen in early December. Canvasback numbers were down considerably from normal with only a few scattered individuals recorded.

Geese had a much better fall season than last year. The earliest migrants were 7 Canadas passing through on September 21. The main migration began arriving early in October. After some ups and downs, the fall peak came early in December with 2000 Canadas, and a sprinkling of snows. Green browse in abundance greeted the south-bound geese when they got here, and lasted through the end of the year, although the prolonged sub-freezing temperatures took its toll on the wheat, as well as on the population figures. The year ended with only 175 Canadas huddled together on the ice in the middle of the lake.

4. Marsh and Water Birds

Nothing remarkable happened with the usually seen species of wading birds this year. Populations were about average. There were several unusual points of interest concerning some of the less common species.

A group of 10 white-faced ibis showed up in May and were seen off and on all summer long. The last sighting was a single individual on November 1. An olivaceous cormorant also took up permanent residence in June and stayed till the December freeze-up. One single anhinga was seen at Meadow Pond on April 5. Up to two reseate spoon-bill were seen off and on feeding along the lake shore just off the Central Service Road during a six-week period from mid-July into September.

The fall white pelican migration was spectacular in numbers of birds moving through the area. Perhaps as many as 50,000 funnelled through the Texoma area beginning in mid-September and continuing through October. The refuge recorded only a peak of 3500, but this represents only the ones who stayed the night, had breakfast and left. The shallow ponds on the lakeshore were full of shad and the pelicans took full advantage by tanking up before mid-morning lift-off. Many more overflew the refuge in "kettles" of a few hundred and up to a thousand or more on almost a daily basis during the peak. The reason for the birds to use this particular route are unknown, but it sure was a banner year for pelicans.

One pelican stayed on the refuge following spring migration in May. It was almost surely an immature. It was joined from time to time by one or two more after the fall migration began, and we had figured to see it fly off with one of the big flocks that moved through but it stayed right on location until the December freeze-up. The bird did not appear sick and it definitely could fly, so it must have stayed out of choice. Pelicans have been recorded throughout the year at one location or another on Lake Texoma. The upper end is especially attractive to them.

5. Shorebirds, Gulls and Terns

The most note-worthy occurrence was the finding of a dead glaucous gull on the lakeshore near the Central Service Road in January. Glaucous gulls had been reported at the Dam on Lake Texoma earlier and the reports ceased about the time the dead one was recovered on the refuge. As study skin was prepared by Karl Haller, and sent to Washington DC for confirmation. It is one of only 2 or 3 specimens from the State of Texas.

There is some question as to where the bird might have originated. Dr. Banks in Washington is about to submit for publication a new subspecies *Larus hyperboreas leuceretes*, to which all eastern birds will be assigned as distinct from the Alaskan birds which belong to subspecies *Larus hyperboreas barrovianus*. Our bird is definitely *Larus hyperboreus leuceretes* but both other subspecies are represented by specimens from the Gainesville, Texas area.

Another very good sighting was a laughing gull seen by several people including Warren Pulich and Karl Haller, in June and August and early September. This is only the second record for the refuge.

The spring migration saw many species but none in great numbers. The most abundant species was a white-rumped sandpiper in May. The migration was reduced by high water levels during the spring.

July and August saw steadily falling water levels which set the stage for an excellent migration of shorebirds. Among the rarer records were five piping plovers and one snowy plover. Western and stilt sandpipers were the most abundant species. Least sandpipers peaked at 600 in early October. The fall showing of gulls - mostly ring-billed and Franklin's - was disappointing at less than half last year's number. Three Caspian terns, seen on October 11, were considered a good find by local bird watchers. All remaining gulls and shorebirds were effectively driven out by the lake freeze-up.

6. Raptors

Barred owls must have had a banner year for production. On one night in May at a single location on Big Mineral Creek, 5 were seen or heard, two of them young birds, judging by their actions. More families have territories on Harris Creek and at other locations besides.

No unusual observations were made during the spring and summer, though the Mississippi kites were much fewer in number, only three this year. Fall brought an unusually large number of red-tailed hawks and northern harriers (that's marsh hawks to most of us), peaking at 20 and 9 respectively.

An interesting observation of 70 black vultures was seen in December 13. No particular reason could be found for the high count, beyond just having caught them right during migration. The Meadow Pond buzzard roost seems to be a regular stop-over for black and turkey vultures.

The best observation of the year for raptors was the merlin that was seen on the Christmas Count. It was late in the day and everyone was just about ready to leave because the light was fading when Karl Haller had to take one last look at a bird near the Meyers Branch low water crossing. In the fading light of the setting, the sighting was confirmed. Merlins are noted as rare on the refuge bird list.

7. Other Migratory Birds

For the last five summers, Kentucky warblers have been seen by Karl Haller in an area just beyond Meadow Pond. No records of nesting have been made until this year when young birds were seen along with the singing male. This is a new nesting record for the refuge for the area.

8. Game Mammals

The annual deer census performed by Texas Parks and Wildlife biologists turned up an approximate population of 315 deer for the refuge. A similar cruise count was done by refuge personnel and SCS biologists as a training exercise a month later, in September. It turned up nearly twice the number of deer, but the animals may have been more concentrated due to the newly planted wheat.

In an effort to deal with heavy raccoon population that caused such problems during last year's banding program, a trapping permit was issued. Mr. Ivan Miller, long-time resident and retiree, was recommended to us by State Game Wardens Brown and Rowe. Beginning December 1, Mr. Miller removed 19 coon and 1 beaver by the end of the year. He reports numerous catches of skunk and oppossum, but a final number has not been turned in as of this writing. Frozen weather at the end of December cut into his success considerably.

11. Fishery Resources

The YCC's helped again this year toward the goal of giving Hagerman Refuge the capability of restocking fishing ponds with refuge-raised fish. The seining done by YCC is more fully described under section E.2.

15. Animal Control

In May, Everrett Tucker and his Rat-choking Raiders paid the refuge a call. In three nights of all-out effort, a total of 47 beaver were "removed" from four refuge locations. The technique that worked so well involved a spotlight and #4 shot, "and a good time was had by all." Thanks to ADC, there wasn't a new cutting anywhere on the refuge for 6 months.

Probably the most unusual depredation complaint to be handled this year was from the Munson Vinyard at Grayson County College. It seems the mockingbirds, starlings and crows were eating up all the grapes as soon as they began to ripen. The refuge loaned them a propane gun with instructions on its use and suggestions on how to keep the birds at bay. When they brought it back a month later, they reported only limited success. The crows and starlings were wary, but nothing stopped the mockingbirds.

16. Marking and Banding

The banding program for 1983 was a disaster. After getting off to a good start, the whole project turned sour. The swim-in traps used in past years caught the ducks just fine, but they were soon discovered by the coons. After one good trap full of ducks was ravaged by coons, we left off trapping ducks and switched to coons. The season ended with 22 drake and 5 hen mallards, and 2 green-winged teal banded. Four raccoon were also "removed" during banding operations. Poor banding was not all the fault of predator problems. Refuge duck populations were low all season long. Warm weather made the birds lose interest in hot foods used for bait, too.

H. Public Use

1. General

With potential visits from 2.9 million people from the Dallas-Fort Worth area, public use could exert a major pressure on refuge facilities. Refuge public use objectives carefully weigh community needs with refuge capabilities so as not to create an excessive demand on staff time and resources. The refuge currently offers a broad range of outdoor appreciation-activities, which at present, are able to meet load demands. Only with the establishment of at least a part-time interpretive position, would the refuge attempt to really stimulate high public interest. Over 81,600 visits were logged in 1983 by those eagerly wishing to fish, hunt, bird watch, take pictures, hike, picnic and learn of the refuge's role in the area's ecology (up 20,000 over 1982 visits). Major increases responsible was the demand by scout and conservation groups for audio-visual programs on general refuge orientation and special subjects such as eagle natural history. Completion of a 3/4 mile hiking trail and self - guided

The refuge became a popular outing spot throughout the year to many community groups. (WRJ)

A self-guided auto tour route was added to the refuges list of outdoor recreation opportunities. (WRJ)

auto tour helped meet refuge interpretive objectives. With the Regional Office ordered move out of the new VCS/Office back into the old office in November, public use emphasis had to be re-examined. The increased demand for on-refuge programs was instantly shut off and by year end; requests for EE and informational talks had to be shifted to the field in the form of conducted or self-guided tours or off-refuge engangements. Plans for visitor center displays, though on the drawing board, are not being enthusiastically pursued due to the uncertainty of the building's fate. Regardless of the centers closing, refuge staff presented 17 programs on refuge information/management and eagle ecology. Each was concluded with either a conducted or self-guided auto tour or hike. About 430 individuals participated in this interpretive program.

2. Outdoor Classrooms - Students

A day-long Father/Daughter Environmental Field Day, conducted by Asst. Manager James was held in November at the Goode Access Area. A group of 77 girls and their fathers participated in OBIS, ecology, and scavenger hunt games, learning the fundamentals of predator-prey relationships, the food web and refuge management. The group concluded the day with a self-guided tour of the refuge.

Manager Williams presented an afternoon program on using the refuge as an outdoor classroom to 16 Austin College students. These students, in preparation for summer jobs as camp counselors later made two visits to the refuge, to prepare on-site recreational plans. The final session brought the 16 college students back to the refuge with 24 children for a day of outdoor classroom activities, again assisted by the Manager.

3. Outdoor Classrooms - Teachers

Sue Raasch, a member of the Texoma Outdoor Club and active community leader spent a day consulting with Manager Williams on outdoor classrooms and environmental education. OBIS and various materials and approaches were discussed along with the possibility of pursuing a more active program of field trips at Perrin School.

4. Interpretive Foot Trails

A 3/4 mile all-season hiking trail, across the road south of the visitor center was laid out and cleared by the YCC program. Three bridges and a photo blind were designed and constructed in conformance with the Service Facility Manual. Interpretive stops along the trail were selected by the YCC Crew and a rough draft of an interpretive guide was prepared. It has not yet been determined whether a leaflet or interpretive signing will best serve refuge objectives. Budgeting will be the final factor. The proposed interpretation of the trail will include a blend of natural history and management of the areas. The trail's offering will further supplement the goals outlined in the I & R concept plan.

5. Interpretive Tour Routes

Refuge staff conducted numerous refuge tours utilizing the 15-passenger van acquired from the U. S. Park Service in Chickasaw National Recreation Area, Sulfur, OK. Refuge objectives, though, focus more on a self-guided approach to interpretation. Consequently, work began in March on a 6.2 km self-guided auto tour. The leaflet draft was submitted to the RO graphics specialist and with only a few minor lay-out changes, was received in September. Numbered markers, used in conjunction with the guide, were placed prior to high fall public use. An estimated 472 visitors used the tour route in the last four

months of the year. The RO graphic staff is complemented on their professional and prompt assistance on the project. The tour route will greatly enhance the visiting public's knowledge and appreciation of the area and its management as a refuge.

The Texas State Historical Marker, for the Town of Hagerman, along the tour route, received a face lift of black paint and a coat of clear lacquer.

6. Interpretive Exhibits/Demonstrations

Even though the Visitor Center was closed in November, the enclosed entranceway was left open and operated as a Visitor Contact Point. This area affords the refuge visitor selection of leaflets and guides, shelter (complete with water fountain) and current information on refuge happenings. Waterfowl population numbers and bird sightings of interest are noted weekly, on a board in this visitor contact area. Just outside this area, the visitor can start the auto tour or choose the hiking trail. Visitors requiring further assistance are directed to the relocated office.

Two new displays were completed and placed in the visitor center during the year. Nearly 1000 visitors viewed these exhibits prior to the center's closing. One display entitled "Facts on Endangered and Threatened Species Trade" was fashioned from numerous articles transferred from LE at D/FW Port of Entry. Small items, such as ivory carvings and turtle shell jewelery were placed in a redwood case and larger items of clothing and shoes were included in a "hands-on" touch table. All items of endangered or threatened species were seized at the DFW Airport and declared for educational use following case disposition.

A second display - a mount of a Southern Bald Eagle was placed in the Visitor Center vestibule after receiving clearance from Region. The bird was observed by a Texaco Oil employee January 28 fishing along the lakeshore at Delaware Bend. It seems while trying to gain altitude after a successful catch, the bird flew into a high tension power line and was electrocuted. LE in Fort Worth processed the incident report and later informed us it could be used for educational purposes. After receiving an anonymous donation for its mounting, the bald eagle and a striped bass were transported to the Flagg Group Taxidermy in Dallas along with a bois d'arc snag. The bass was furnished by the TPWD Fishery Station north of Pottsboro. The completed mount was recieved in September and after being fitted with a base, was ready to greet the public. Visitors to the Visitor Center are afforded a breathtaking view of a 3½ year old bird protecting a striped bass. The display is especially appreciated by winter visitors in search of the majestic birds.

Manager Williams attended the annual Hagerman Reunion on Labor Day. He was able to obtain on loan, some black and white photographs of the old town as it existed, before it was removed because of the Lake Texoma project. The photos were reproduced and will be used in a visitor center display.

Managers Williams and James staffed a booth at the Sher-Den Shopping Mall in conjunction with National Hunting and Fishing Day. The booth, across from the Army Corps of Engineers display, offered leaflets, information and sold Duck Stamps. Inquiries were sporadic but the showing by the refuge promoted Corps and F&WS partnership in management objectives.

Contraband from LE - DFW Airport made for a "hands-on" VC display on Endangered Species Trade. (JMW)

The untimely death of a winter resident was good fortune for the refuge in a mount of this Southern Bald Eagle. (WRJ)

7. Other Interpretive Activities

Assistant Manager James assisted TP&W Fishery personnel in the teaching of Fishing, and Fish and Wildlife Management Merit Badges at the Texoma Boy Scout Council Summer Camp. Sixty boys participated in the two one-week sessions. Course work involved the studying of fish and game laws. Theory and field work was highlighted by a pond study, construction of bluebird boxes, and tours of the refuge.

8. Hunting

Two new hunter check station boxes were constructed and placed at the two major entry points of the controlled hunting area. These boxes (Standard Leaflet Dispenser, support type Aj page 29 - Facilities Manual) requested that hunters record game numbers taken and time spent in the field. The boxes were readied for the September 1 opening of the refuge (30-day season) for dove, squirrel and rabbit. Hunt tallies indicated that 208 hunters, hunting 443 hours, bagged 104 mourning dove, 117 fox squirrel and one eastern cottontail. Dove harvest was, as predicted, lower than the last year as each hunter spent more time in the field. The passage of a cold front never occurred to push the birds into the area. Squirrel take was up ten fold indicating that either numbers are up or hunters gave up on the doves. Abundant post-seasonal squirrel sightings indicate the former.

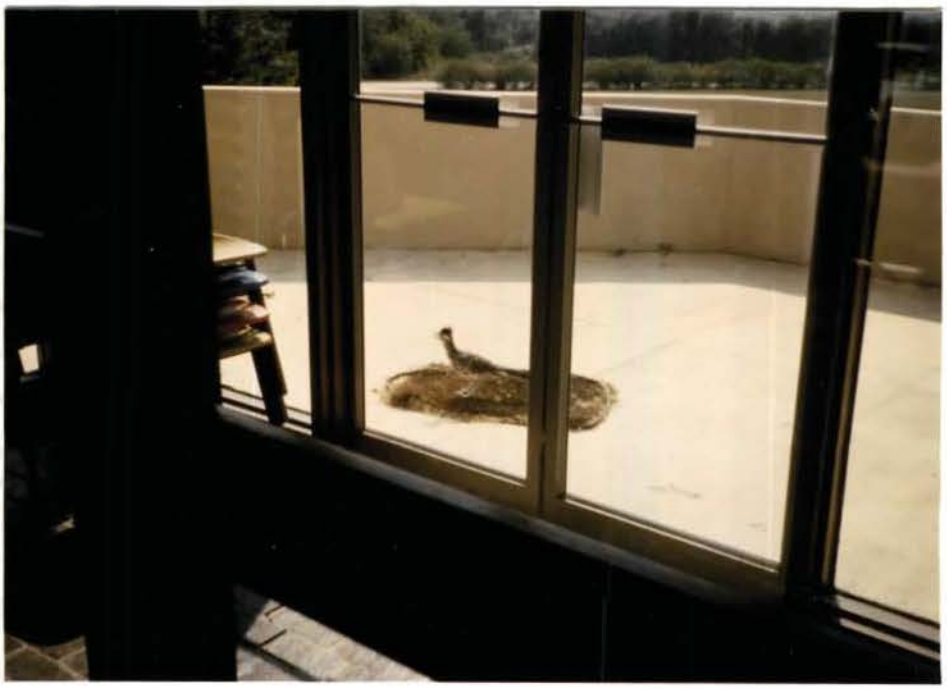
The false listing of archery hunting opportunities on the refuge in a TPWD publication, "Acres for the Asking", prompted numerous written and telephone requests for season information. This is believed to be only a small example of the expected requests for the first actual archery season planned for the fall of 1984. Submission of the hunting plan to the RO and initial contact with bow hunter education instructors was accomplished by year end. Extensive coordinating will be required to inform the public of the upcoming hunt logistics and proficiency certification.

9. Fishing

The refuge fishing season opened Friday April 1st; fishing visits were considerably increased over past years because, by chance, schools were out for teacher in-service training, and universities were on spring break. The main enforcement concerns involved boat launching and fires in unauthorized sites. A few citations got the word out and those incidents have declined. Later in the summer, efforts were redirected to the checking of trot lines within the refuge boundry of the lake. Three trips found "boat loads" of untagged and abondoned lines.

10. Trapping

A Special Use Permit was issued to Ivan Miller, a life-long sport trapper, for the trapping of raccoon and beaver. Extensive predatory pressure by raccoons hindered the 1983 post-season waterfowl banding program. Beaver populations too, are at the point of conflicting with the management of water levels. Mr. Miller trapped the banding area as well as other parts of the refuge in an effort to reduce these conflicts. At the close of the year, 19 raccoon and 1 beaver were removed. Extensive icing hindered his efforts and it is hoped trapping conditions will improve prior to the close of the season, February 1, 1984.



A roadrunner eagerly awaits the opening of the Visitor Center for an I&R program. (JMW)

Asst. Manager James demonstrates the construction of a Blue Bird house to a Boy Scout F&W Management Merit Badge class. (TPWD Fishery Personnel)

11. Wildlife Observation

The addition of the self-guided tour route, favorable water level conditions and food supplies all seemed to attract waterfowl, shorebirds and visitors alike from mid-July into fall. The refuge Central Service Road along the lake shore still is a favorite for the wildlife enthusiast and his family. This road passes through excellent shorebird and marsh bird habitat as well as stretches of open lake. The refuge visitor can observe wading birds, raptors, geese and ducks, climb an observation platform, learn of the oil operations and have a picnic within the circuit of this 6.2 km graveled road. Numerous groups included this activitiy in their over-all refuge visit. Our ornithologist-in-residence, Karl Haller, continued to use the refuge as a college extension classroom. He conducts a weekly bird watching class for senior citizens enrolled in the Grayson County Junior College Senior Avocational and Vocational Education (SAVE) class. Average weekly attendance was 14. Karl also leads an occasional visit by the Texoma Outdoor Club, Audubon groups and the "Thursday Bird Ladies" outing.

Sandy Beach, another local ornithologist and coordinator of the Audubon Christmas Bird Count, conducted a weekly extension course on bird watching in March. This Saturday program sported an enrollment of 5.

The refuge acquired two additional observation platforms from the Shell Oil Company. One, located at the Group Camping Site in G-35, will be used by the public and staff during waterfowl census, and the second, atop "Crow Hill" in G-19, will be utilized during refuge enforcement operations. The fitting of wooden stairways and safety railings was nearly complete by the end of the report period.

The two battery operated traffic counters located on the Central Service Road and entrance at the Shell Oil field office were replaced in August. These counters provide data for visitation figures.

12. Other Wildlife Oriented Recreation

Two Boy Scout & one Girl Scout Troop camped on the G-35N group camping area. This site is available to organized conservation groups who utilize the refuge for wildlife-oriented activities such as merit badge and service projects. Fifty-eight youth and their leaders "roughed it" on the point. Picnicking too, is a recognized activity incorporated into the over-all refuge outing experience. Picknicking at the three access areas was enjoyed by 4064 visitors while pursuing other wildlife-oriented activities. In anticipation of the spring fishing and general public use season, the three pit toilets at the three access areas were pumped and filled with a solution of 10 gallons of water and a gallon Liquid Live Micro Organisms. This suspension, acquired from General Environmental Science Corp., Cleveland, OH, is designed to naturally break down waste without causing any odor. By mid summer with a good batch of organic material and hot weather, the telling was in the air. Odor was considerably reduced.

The North Texas Retriever Club again held their annual field trial on the refuge the weekend of March 18-20. All permit conditions were met even though the weather was damp and cold, and events were well attended. A good rapport has been established with the officers of this club and continued use of refuge lands for these trials is expected.

A special use permit was issued to a neighboring dog trainer for the working of

young bird dogs in selected refuge areas. Permit conditions included no use of fire arms or release of captive birds. The trainer, after working a covey of quail a few times, would abandon the area to minimize disturbance. All indications of his conservation ethics seem to be most positive.

17. Law Enforcement

Both managers and the Automotive Mechanic have F&WS law enforcement authority. Protection for Service property, the resource and refuge visitors was performed on a routine seasonal basis and as enforcement concerns arose. The April opening of fishing season, the 30-day dove season, and evenings during deer season were periods of concentrated patrol. Auto Mechanic Lawrence, when faced with the 40-hours of LE refresher training in September, opted to surrender his authority in light of his projected spring retirement. Working relations with the two county TP&W Department Conservation Officers is good as the two agencies frequently patroled together, referred and cross-prosecuted cases. A listing of cases and dispositions follows (cases processed through the CVB only):

Violation Issued	Violation	Fine Paid	Date Paid
11-18-82	*Possessing, using or transporting firearms on NWR 50 CFR 27.42	$ 50	2-14-83
11-19-82	*Use of an artificial light for the purpose of spotlighting animals on NWR 50 CFR 27.73	100	2- 7-83
4-1-83	Unauthorized fire 50 CFR 26.22	50	4-8-83 →
4-1-83	Unauthorized fire 50 CFR 26.22	50	4-11-83
4-1-83	Unauthorized fire 50 CFR 26.22	50	4-12-83
4-1-83	Unauthorized fire 50 CFR 26.22	50	4-13-83
6-3-83	Driving off roads 50 CFR 27.31	50	6-13-83
9-14-83	Hunting in unauthorized area 50 CFR 32.2 (f)	50	9-19-83

* Violation referred by TP&W personnel and processed through the Central Violation Bureau.

Two illegal fish traps were observed March 28 by refuge personnel in Muleshoe Marsh. Trap locations were reported to local TP&W game wardens. Two individuals were observed by these officers tending the traps that same evening and were arrested. Bond was secured and magistrate court appearance is pending. The offense carries a $200/fish fine.

The refuge buoy boundary line was inspected late in September. After receiving reports of summer water skiers frequenting Sandy Bay just inside the boundary it was decided to redesign the buoys and warning signs. Present posting conveys that the refuge is open to boating (not waterskiing) April 1 - September 30 and then closed to any boat access throughout the rest of the year. New buoys have been received, will be fitted with new regulatory signs, and placed on the line prior to the April 1, 1984 refuge opening. The extensive icing of the lake in December also sheared off and shifted boundary buoys prompting further action. Warning signs to skiers will be placed, pending permission by concessioners, at private boat launches across from this northern lake boundary.

I. Equipment and Facilities

1. New Construction

The "new buildings" aren't new anymore. This is the last time they will be mentioned under new construction. The warranty period on the buildings ran out this year with a flurry of last minute fix-ups. The electrical sockets in the carpentry shop were made to work. The pecan trees which had died were replaced. (They promptly perished, too - out of warranty). The night light timer switch was also replaced at the VCS/Office.

In an effort to relieve the problem with ground water in the air duct system, a sump pump was installed in the plenum under the air handler unit in the VCS/Office. It did a fairly good job of reducing the condensation problem. The same situation of the shop building was remedied using a battery-powered boat bilge pump and a garden hose. It is dropped in, used as needed, and removed again till next time.

A monthly stress report was requested by Regional Engineers to monitor movement in the VCS/Office slabs. Serious foundation problems have caused as much as 4 inches of upward thrust of the concrete floors in this building. The good news is that the slabs were designed to float and move independently from the walls which are on grade beams. The bad news is the doors are attached to non-moving walls and jam against floating floors. It also looks rough as a cob. So much so that the Safety Manager recommended getting out of the building before someone tripped over a threshhold going from one room to another. Apparently, split-level offices don't meet OSHA guidelines. So in November, the new VCS/Office was duly abandoned and the staff moved back into the old office/garage building.

Nothing concrete (no pun intended) has been decided concerning the status of the vacant VCS/Office building. Regional Engineer Tom Reed and Contracting Officer Vaughn Jones met with the original contractor's representatives to see what solutions might be workable. The concensus was along the lines of ripping out all the floors, excavating the fill material, and replacing the floors suspended from the grade beams or supported by adjustable jacks. Meanwhile the staff is (literally) cooling their heels in what is affectionately known as "the tomb".

2. Rehabilitation

The major program in rehabilitation was water facilities. Several impoundments were scheduled for extensive work to restore lost functions. Elm Pond water control structure replaced last year, had a new walk-way installed this year. Roughly 465 tons of rip-rap was delivered by Joe Siegmund, Inc. and put on Muleshoe Dike to replenish material that had washed away during the floods of '81 and '82.

Dever Pond was completely cleared of heavy brush and reshaped in preparation for replacing the water control structure. In view of the SCS estimate of maximum flowage rates, it is not surprising this impoundment was overtopped with such regularity. In order to alleviate flood problems, a low water crossing was installed at the south end of the dike. Work was accomplished force account using temporary help in the persons of Willie and Elvis (Bugs) Martin, local concrete workers. The slab is 300' long and contains about

Final Rehabilitation of Elm Pond WCS- construction of a walkway. (WRJ)

The setting of Mineral Marsh WCS outlet tube and stop log riser. (WRJ)

The construction of a low water crossing at the south end of Dever Pond Dike. (WRJ)

Dever LWC - East view. (WRJ)

115 CY of 5-bag concrete. The upper and lower footers extend 1.5 ft below grade. The 6 inch slab contains concrete wire reinforced with ½" rebar. At maximum flood, the SCS figures water 3 ft deep will be flowing over the crossing. The replacement of the water control structure and delivery of contract gravel for the roadbed are scheduled for early completion in 1984.

Deadwoman Pond dike was smoothed up, reshaped, and brought up to grade. The water control structure is on hand but replacement had to be postponed because of YCC committments. Part of the gravel on contract will be used to cap this road bed as well. Beside setting up contracts for delivery of road gravel and rip-rap, arrangements were made to have the bare soil areas on dikes, spillways and grassed waterways sprigged with common bermuda grass.

Mineral Marsh water control structure was also replaced with concrete anti-seep collars in the dike, similar to those on Elm Pond. A walkway still remains to be constructed. The levee was also cleared of the willows and brush that had gained a foothold. Another rehabilitation job was the refurbishing of the old refuge office. This fine example of Neo-penal design from the Late Industrial Period features such endearing qualities as plastered concrete block walls and steel sash windows. A coat of paint, new carpeting and tile, modern lavatory facilities, and replacement of the steel sash windows did a lot to ease the staff back into a facility with all the warmth of a crypt.

About mid-summer a serious problem surfaced concerning the refuge fuel island. When regular gas was being pumped, fuel would gush from the on-off switch. The unleaded pump also operated erratically. The problem turned out to be a vapor lock caused by the number of twists and turns in the line from the tanks down the hill to the pumps. We had no choice but to relocate the fuel island back to its original location and abandon the BLHP-constructed location. Engineering strikes again.

3. Major Maintenance

Both of the full-tracked tractors and the motor grader were scraped, taped and repainted implement yellow for uniformity and to preserve them against the elements. Besides the normal day-to day maintenance tune-ups, and parts replacement, several major jobs were accomplished. The dump truck received some major work on the brake and air system. The 1981 Ford pick-up had the clutch replaced and a new right front spring installed. The 1979 Chevette electrical system was completely devoured by rodents while it sat in the garage. Our attempt at rewiring was only partially successful and it ended up at the Chevrolet house for the final fixing. The 1983 Chevrolet pickup had the emmission control vacuum pump replaced under warranty.

After a 1979 Dodge Van was received by transfer, several modifications and repairs were in order. An extra seat was installed to bring passenger capacity to 15. Seat belts for the extra seat were also installed. The exhaust system was replaced and a new heater switch was put in. A new battery and two new rear tires put the vehicle in good shape for the YCC program.

A new brake system master cylinder was put in the motor grader. Problems with the electrical system were finally solved by replacing the batteries, voltage regulator and rebuilding the starter. the D-6 Dozer had the clutch replaced.

Caterpiller TD-20 before..... (WRJ)

..... and after scraping and painting. (WRJ)

Other miscellaneous maintenance tasks accomplished this year include the following:

- The fence around the grain bin was rebuilt and the entry corner cleared out and straightened up a little.

- New Mini-blinds replaced the old worn-out venetian blinds in the three bedrooms of Quarters 1. A set of mini-blinds was put in the east-facing window of the crew room, too.

- "Vandal-proof" toilet paper bars were installed in outhouses at the picnic areas before the spring rush. The fiberglass skylight was also replaced.

- Multiflora rose hedge was planted across the old office entrance road location, carrying out the landscape scheme of the rest of the Headquarters complex area.

- Silliman Road was elevated and regravelled by ARCO Oil Co. We helped by pulling the ditches and replacing a culvert near the flowing well.

- Extensive carburetor work was done on both motorcycles due to rust in the gas tanks. Both got new batteries too.

- A welding table was set up in the north bay of the shop and a hardware bin and assortment was purchased and installed in the south bay.

4. Equipment Utilization and Replacement

A new 1983 Chevrolet ½ ton pick-up was received this spring, just in the nick of time. The old 1972 Dodge ½ ton had just given up the ghost and was red-tagged.

A 1979 Dodge Van was transferred from YACC stock held by NPS at Sulphur OK. After some fixing up, it makes a very serviceable vehicle, and came in very handy during the summer's YCC program.

Mechanic Preston Lawrence manufactured a lighweight equipment trailer with loading ramp to facilitate hauling the mowing tractor around to remote locations around the refuge.

Two observation towers were received from Shell Oil Co. as excess to their needs. They are actually old oil well location stands but make excellent towers - about 13 ft high. One was placed on Crow Hill as a law enforcement lookout post. The other was put at the north end of the pad road past A pad.

5. Communications Systems

In early May, the Chevette was broken into and the Maxar 80 radio stolen. The thieves must have thought it was a scanner or a CB. A new radio had to be ordered to replace it. Other radio work included pulling radios from the old Chevy and Dodge pickups and installing a radio in the new '83 Chevy truck. On the recommendation of the radio repairman, we also grounded the guy wires of the radio tower to decrease the possibility of more lightening damage.

A lightweight equipment trailer constructed by Mechanic Lawrence. (JMW)

In October it was learned that FTS service (in Dallas) would no longer be available after early November, so we began looking into alternative long distance service - MCI, Sprint, US Tel, etc. During the investigation, the plans to vacate the VCS/Office building were also formulated, making a big telephone system move necessary. As things finally shook out, the moving and service problems were resolved by buying a phone system and getting MCI service. Southwestern Bell would (could not) sell us the key service units that were in place.

We ended up with much better telephones than the old Bell klunkers. The new ones are completely electronic, have three line capacity besides hold button, intercom, and line privacy feature. The sets are Model EK-308 from TIE/Communications Inc. Three sets were purchased and one will be added in the shop at some time in the future. There is no phone line to the shop right now. Cost for the units was $235 each and the saving on the monthly phone bill is $48.40 making the pay-back on just the phones about 15 months. With all the power supply and hook-up paraphernaila, the total price tag was $2026.50. Even at that, the new system will pay for itself in less than 4 years. MCI has not proven itself yet. Getting a line is not always an easy task. Missed connections - false busy signals - have also been a problem. As for the savings feature, time will tell. The service was only installed in December. Bell service can be obtained by punching the # sign.

6. Energy Conservation

The wind generator was out of commission for most of February. The machine was not tracking the wind and had been using an unusually high amount of energy. It was shut down for inspection after it was observed running against the wind. The serviceman from Great Plains Wind Works said the yaw was out of adjustment due to some set screws which had backed off. The situation was covered under warranty and he performed the annual service at the same time.

The total amount of energy produced by the wind machine in 1983 was 9268 kwh, of which 5632 kwh were used up in production, leaving a net gain of 3036 kwh for the year. If you figure that the average cost of kwh is about 6¢ here, we saved $181.80, which in turn means that the $16,400 acquisition price will be paid back in 90 years. In spite of its poor performance, several inquiries are received each year about the wind generator.

A ceiling fan was installed in Quarters 1 this year to help circulate the hot air produced by the wood stove in the living room. The wood stove has saved at least 50 gallons of LPG per month or about $40/month. For better summer cooling, the attic fan was put back into peak operating condition by replacing the motor.

J. Other Items

1. Cooperative Programs

a. Oil Industry

(1) Operations - the oil glut slowed down exploration activities in the area considerably early in the year. The usual situation of locations waiting for a rig was reversed with many rigs idle due to the lack of interest in drilling new wells. No new wells were drilled on the refuge again this year, but activity off-refuge and up-drainage from us continues. Meyers Branch

literally bristles with rigs. At one time you could see seven drilling rigs cutting the skyline from the intersection of FM 1417 and Hagerman Road. A whole new area of oil interest was opened late this year with the erection of a rig just off-refuge near the old burned bridge on Big Mineral Creek. No word has been received about success of this wildcat well, so there's still hope (for a dry hole). A major change in operators was discovered after the fact by refuge staff. The leases held by W. R. Grace Chemical Co. was apparently bought by Gray Operating Co., headquartered in Ardmore, OK. The pumper remained the same, but a new owner meant a new superintendent, and a new perspective on the facilities. The company has pursued an active course of management, maintenance and production having reworked several wells and spruced up the facilities. These leases are looking better than they have in recent years.

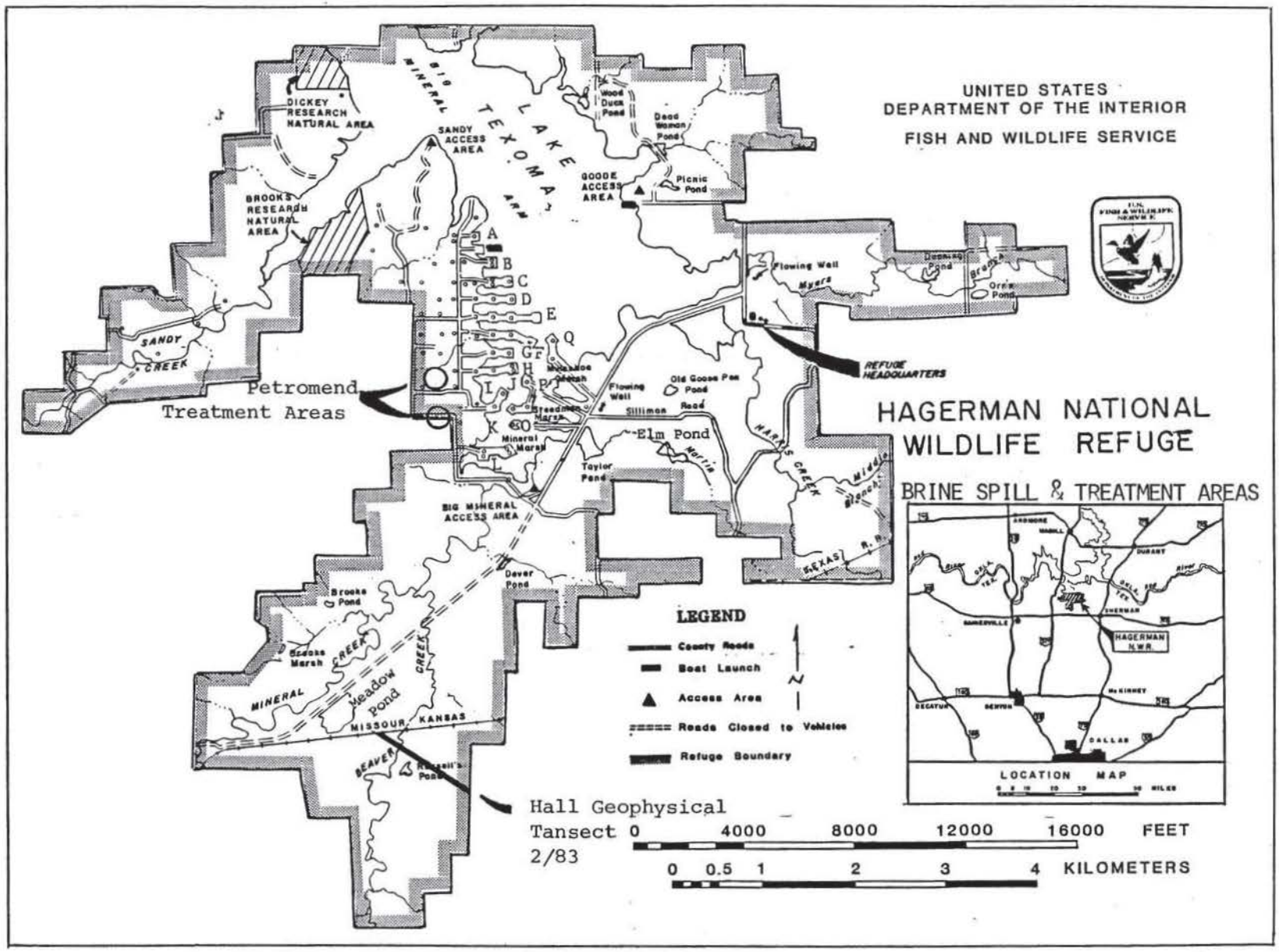
(2) Seismic - Permit requests for seismic activities experienced a similar slowdown this year. An inquiry from Kemp Geophysical in January was never pursued to the permit stage. Their proposal included the use of compressed air guns on the lake. Several lines were proposed by the restrictions on work during waterfowl season may have discouraged them.

Hall Geophysical applied for and recieved a permit to run a line on the south end of the refuge. The line had to be relocated several times before it was actually shot because of a small tract containing Government Mineral Rights (T-161-2). If any shot holes or even phones, were located on Government minerals, a copy of the information would have to be furnished to the Corps of Engineers and a substantial performance bond would be required to ensure compliance. Hall said no dice and skipped over that section by offsetting the line. The final line is shown on the following maps.

(3) Spills - Salt water leaks from the Shell Oil Co. injection system continue to wreak havoc. In February a major break in a 2000 psi line at the west entrance to the refuge shot a plume of brine nearly 50 feet into the air, coating all vegetation downwind and soaking the soil. The usual washdown procedure was followed but some vegetation died anyway. When they came back in to repair the line, Shell admitted the soil was to "hot" (corrosive) to put the steel tubing in, wrapped though it be in paper and plastic. The solution was to elevate the lines above ground and put in another cattle guard to get the above-ground lines across the road.

Another salt water spill occurred during the spring at the site of the vegetation transect on G35S. The leak covered an area of about 1 acre in size. Clean-up of these contaminated areas is very difficult using conventional flushing techniques, so it was good news indeed when Shell proposed a new treatment for salt contaminated soils with a demonstration scheduled in early December.

Petromend's process involves a wetting/surfactant agent, gypsum, dilute sulfuric acid and lots of water. The idea is to put the sodium salts back into solution by substituting the calcium radical, then move the sodium down, by leaching, to about 2-3 ft below the surface and thus beyond the root zone of most (some?) herbaceous vegetation. The area is disked or tilled, treated, mulched with hay and tilled again (to promote wicking). After 2 to 3 months the area can (and must be) reseeded. Petromend and Shell will coordinate this phase with refuge staff so that adaptable natives may be used. If it works, this process will take the sting out of future salt water spills. In an effort to track and evaluate spills - treated and untreated - a map follows showing locations of each.


UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
HAGERMAN NATIONAL
WILDLIFE REFUGE
BRINE SPILL & TREATMENT AREAS
LOCATION MAP
HAGERMAN N.W.R.
LAKE TEXOMA
BIG MINERAL ARM
DICKEY RESEARCH NATURAL AREA
BROOKS RESEARCH NATURAL AREA
SANDY ACCESS AREA
GOODE ACCESS AREA
BIG MINERAL ACCESS AREA
Wood Duck Pond
Dead Woman Pond
Picnic Pond
Flowing Well
Myers
Bronco Creek
Pond
REFUGE HEADQUARTERS
Old Goose Pen Pond
Sillimon Road
Elm Pond
Mineral Marsh
Taylor Pond
Dever Pond
Brooks Pond
Brooks Marsh
Meadow Pond
MINERAL CREEK
MISSOURI KANSAS
TEXAS
BEAVER
SANDY CREEK
HARRIS CREEK
Middle Branch
Petromend
Treatment Areas
Hall Geophysical
Tansect
2/83
LEGEND
County Roads
Boat Launch
Access Area
Roads Closed to Vehicles
Refuge Boundary
0 4000 8000 12000 16000 FEET
0 0.5 1 2 3 4 KILOMETERS

Treatment of salt contaminated soils by Shell Oil and Petromend (TM) crews. (WRJ)

An impromptu Shell Oil spill drill between H and I Oil Pads. (WRJ)

Shell held their annual unannounced spill drill on June 10 and had more trouble than they'd had in several years. It was good practice for what was to come later. In October the spill they had "drilled" for for years finally came. A seal in one of the separators blew out (as it was supposed to) to relieve some erratic pressure surges. The crude oil then passed through a pipe into the catchment pit designed for the purpose. It has enough capacity to hold the entire contents of the Barnes, Strawn II, and TD Green batteries, but only if the drain valve in the bottom is closed. Somehow this drain valve had been left open (sabotage was not ruled out) and an entire night's production flowed down the drainage into the lake-bed between G and H pads. The lake was so low, no oil even got to water.

In all, about 300-400 bbl. of oil was spilled. Most of it was recovered before it got into the lake-bed by a series of back-up devices. Containment had to be accomplished by dirt work. Once a levee was pushed up, the area was flooded, the oil floated, herded up and recovered. The remainder was burned off just before the October flood put the whole area under water. It's a unique situation when the lake gets to the spill before the spill can get into the lake.

A minor oil spill was discovered on J Pad in November after a well head packing failed. Only a few barrels got away, and none of it reached the lake. Union Texas Gas Pipeline had a line break during the cold wave in December. Some oil that had blown by the separator due to the cold weather escaped through a break in field F-17d. It was easily cleaned up by burning it off and the corroded section of pipe was replaced.

b. Surveys and Census

(1) The mid-winter Bald Eagle Survey, run in cooperation with the National Wildlife Federation's Raptor Information Center was conducted in January. Two (2) of the winter resident eagles (adult) were observed off "O" Oil Pad. The regularly sighted immature bird was believed just off the refuge, on the main body of Lake Texoma.

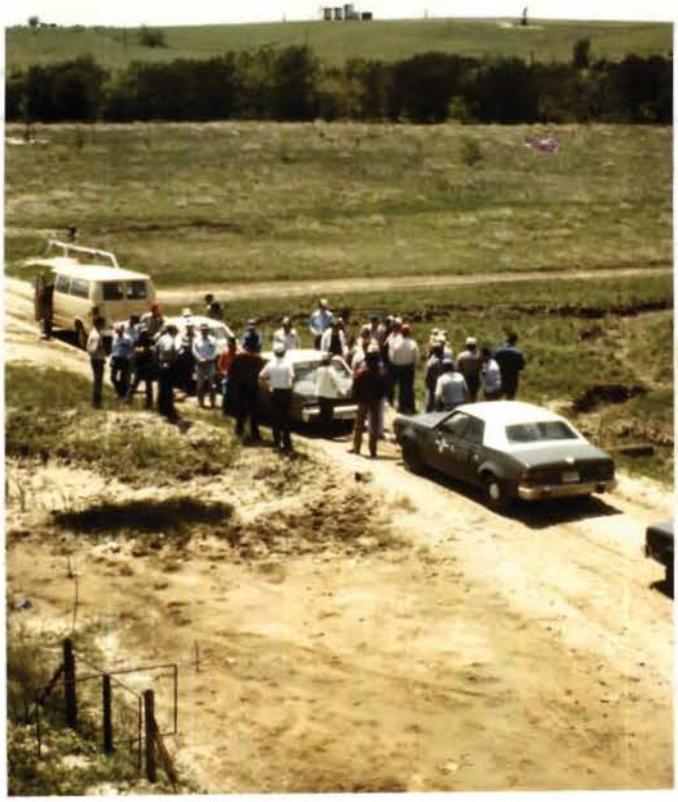
(2) The refuge also participated in the Texas Parks and Wildlife Department mid-winter duck survey the first week in January. Unusually mild weather conditions and the absence of foods contributed to low counts. About 900 ducks were observed, with mallards, green-winged teal and coot contributing the majority.

(3) The TP&W Coordinated Annual Spring Mid-Continent White-fronted Goose Survey was conducted March 15, assisted by volunteer John Moody refuge staff did not observe any of the target waterfowl. Census conditions were ideal with anticipation of a cold front passage, yet the absence of natural and planted foods did not offer an attraction.

(4) The Texas State Goose Survey was conducted Tuesday, December 13, in conjunction with the regular weekly waterfowl survey. Geese observed in the inventory zone numbered 1602 small Canadas, 100 large and 22 snow/blues. These sightings were well representative of the seasonal population trends which were above 1982 figures but still below historically expected use.

(5) The 1983 area Audubon Christmas Bird Count which includes the refuge, was conducted Saturday, December 17. Attendance was less than expected due primarily to the previous day's snowfall. Many of the refuge impoundments were frozen contributing to a drop in reported species. Species tally was down

District SCS personnel utilized the Visitor Center for a classroom Seminar..... (WRJ)



..... and the refuge for a field class.

(WRJ)

slightly from previous years (108) with 97 species, 2 additional sub species and 1 form. Two species were highlighted as rare. One common Loon in winter plumage was sighted off Sandy Point on Lake Texoma and a Merlin. The Merlin had been recorded only once (1974) since the count began in 1956.

(6) The much awaited up-dated Refuge Soil and Water Conservation Plan was received in April. Ed Schwille, Wildlife Biologist with the Soil Conservation Service, was instrumental in the compilation of field data and document drafting. The plan was used to supplement the planning Needs Assessment process.

c. Other Agencies

(1) District Conservationists and SCS personnel from all over the Gainesville area met in the Visitors Center and utilized the refuge, May 3 for a Fish and Game Management training seminar. About 40 SCS staff participated in the program including a tour of the refuge. Managers Williams and James included discussions of refuge management objectives and water management programs in the tour.

(2) The refuge hosted a Gainesville, Tx area SCS deer census workshop the evening of September 14. Asst. Manager James assisted in the instruction and presentation of the night lighting auto cruise census of white-tailed deer. The workshop was intended to assist SCS personnel in instructing local land owners how to determine their deer herd size for management purposes. The State requires a management plan before landowners can qualify for anterless deer permits. SCS is helping in this process.

(3) Pat Conner (SCS) took grass samples in December from G-19 to determine the unit's species composition and soil type productivity (pounds dry weight/acre). The units located in eroded Blackland Soil type plot were in corporated into the continuing statewide grassland/soil type survey.

2. Items of Interst

Jim Andreasen (ES-Tulsa) conducted a station oil spill and containment inspection September 28.

Dr. Dan Shores, Professor of Anthropology at Austin College, a local archeological expert, visited the refuge in July to check on some of the sites listed by the State of Texas. Only two sites were checked and the material was inconclusive. Water levels were really too high to permit a very good sampling.

3. Credits

Sections E & H and photo captions by Asst. Manager James. Section K by everyone, balance by Williams.

K. Feedback

YCC Camp couldn't have been better - except for one detail. Payroll was the pits. From the beginning of camp until well into January, we had problems getting everyone paid what they were owed.

Time was entered into the computer wrong and had to be corrected, some people turned in the wrong Social Security numbers. This caused more problems than you could imagine. It took until mid-January to get one person straightened out with DIPS.

Our hours were run incorrectly and there had to be a complete audit of all the YCC'ers time and this time re-entered into the computer. We hope that our next YCC Camp will not have as many problems. (A lot of hate and discontent were caused by the payroll problems this year).

One of the biggest disappointments in the history of the refuge has got to be the BLHP building fiasco. The VCS/Office was designed to fail. It is way past the time for recriminations or trying to determine culpability for the numerous design errors that eventually made the building unsuitable for further occupancy. It is time, however, to deal with the problem at hand, that of funding a repair job.

Interpretation has been assigned a high regional priority. We sit here with the resources and expertise to begin developing a series of high quality displays and exhibits. We were using the auditorium to good advantage for meetings of various sorts and had created quite a demand. Now exhibits and meetings are not even worth considering while the building intended for interpretative activities sits gathering dust and heaving its insides around. At year's end, no prospects were in sight for funding the necessary repairs.

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	S	S	F	W
Red-breasted Nuthatch	accidental			
Brown Creeper	o		u	u
House Wren	u	r	u	
Winter Wren			o	o
• Bewick's Wren	u	u	u	u
• Carolina Wren	u	u	u	u
Long-billed Marsh Wren	o		o	
Short-billed Marsh Wren	r		o	
• Mockingbird	c	c	c	c
Gray Catbird	u	r	u	
• Brown Thrasher	u	u	c	u
Sage Thrasher	accidental			
American Robin	c	o	a	a
Wood Thrush	o	r	r	
Hermit Thrush	r		o	o
Swainson's Thrush	c		c	
Gray-cheeked Thrush	r			
Veery	r			
• Eastern Bluebird	c	c	c	c
• Blue-gray Gnatcatcher	c	c	u	
Golden-crowned Kinglet	o		u	o
Ruby-crowned Kinglet	c		c	u
Water Pipit	c		a	c
Sprague's Pipit	accidental			
Cedar Waxwing	c		c	a
• Loggerhead Shrike	c	c	c	c
• Starling	a	a	a	a
• White-eyed Vireo	u	u	u	
• Bell's Vireo	u	c	u	
Solitary Vireo	o		o	
• Red-eyed Vireo	u	u	o	
Philadelphia Vireo	r			
Warbling Vireo	u	o	r	
• Black-and-white Warbler	o	o	o	
• Prothonotary Warbler	o	o		
Tennessee Warbler	u		r	
Orange-crowned Warbler	u		u	o
Nashville Warbler	c		c	
Northern Parula	r		r	
Yellow Warbler	u	c	c	
Magnolia Warbler	o		o	
Yellow-rumped Warbler	c		c	c
Black-throated Green Warbler	o		o	
Yellow-throated Warbler	r			
Blackburnian Warbler	r			
Chestnut-sided Warbler	u		o	
Bay-breasted Warbler	o			
Blackpoll Warbler	o			
Palm Warbler			r	
Ovenbird	o			
Northern Waterthrush	o			
Louisiana Waterthrush	o	o	r	
Kentucky Warbler	accidental			
Mourning Warbler	o		o	
Mac'Gillivray's Warbler	accidental			
• Common Yellowthroat	c	u	c	o
• Yellow-breasted Chat	o	u	o	
Wilson's Warbler	c		c	
Canada Warbler	o		o	

	S	S	F	W
American Redstart	c		o	
• House Sparrow	a	a	a	a
Bobolink	o		r	
• Eastern Meadowlark	a	a	a	a
Western Meadowlark	u		u	u
Yellow-headed Blackbird	u	r	u	o
• Redwinged Blackbird	a	a	a	a
• Orchard Oriole	c	c	o	
• Northern Oriole	u	r	c	
Rusty Blackbird			u	u
Brewer's Blackbird			u	u
Great-tailed Grackle	u	u	u	u
Common Grackle	c	o	c	c
• Brown-headed Cowbird	a	c	a	a
Summer Tanager	u	o	r	
• Cardinal	c	c	a	a
Red-breasted Grosbeak	o		r	
• Blue-Grosbeak	c	c	c	
• Indigo Bunting	c	c	c	
• Painted Bunting	c	a	c	
• Dickcissel	a	a	a	
Purple Finch	u		c	c
Pine Siskin			o	o
• American Goldfinch	c	o	c	c
Rufous-sided Towhee	u		u	u
Savannah Sparrow	c		a	c
• Grasshopper Sparrow	c	c	r	
LeConte's Sparrow			u	u
Vesper Sparrow	c		c	o
• Lark Sparrow	a	a	c	
Dark-eyed Junco	c		c	a
Tree Sparrow			r	r
Chipping Sparrow	u		u	
Clay-colored Sparrow	o		o	
• Field Sparrow	c	u	c	a
Harris Sparrow	c		c	a
White-crowned Sparrow	c		c	a
White-throated Sparrow	c		c	a
Fox Sparrow	u		u	c
Lincoln's Sparrow	c		a	o
Swamp Sparrow	o		c	o
Song Sparrow	c		a	a
McCown's Longspur				r
Lapland Longspur				r
Smith's Longspur	o		r	o
Chestnut-collared Longspur				r

REFUGE MANAGER
ROUTE 3, P.O. B 123
SHERMAN, TX 75090

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

RF–21580–2
January 1978
GPO 844-128

BIRDS

of the

HAGERMAN

NATIONAL WILDLIFE REFUGE

This folder lists 282 species of birds that have been identified on the Hagerman Refuge since its establishment in 1946. Personnel of the U.S. Fish and Wildlife Service and a number of visiting ornithologists have contributed data for this list.

The following legend indicates the relative abundance of each species in each season:

a—abundant
c—common
u—uncommon
o—occasional
r—rare

S—March-May
S—June-August
F—Sept.-Nov.
W—Dec.-Feb.
•—Nests on refuge

accidental—seen once or twice

	S	S	F	W
Common Loon			o	o
Red-necked Grebe	accidental			
Horned Grebe	u		u	c
Eared Grebe	o		u	o
Western Grebe			r	r
Pied-billed Grebe	c	r	c	u
White Pelican	c	o	a	o
Double-crested Cormorant	a	r	c	u
Olivaceous Cormorant		r	r	
Anhinga		r	r	
• Great Blue Heron	c	c	c	o
• Green Heron	c	c	c	
• Little Blue Heron	c	c	c	
• Great Egret	c	c	c	
• Snowy Egret	o	c	c	
Cattle Egret	o	u	u	
Louisiana Heron		r		
Black-crowned Night Heron	r	o	u	
Yellow-crowned Night Heron		r	o	
• Least Bittern	o	o	r	
• American Bittern	o	u	o	
Wood Stork		r		
Glossy Ibis	accidental			
White-faced Ibis	o	o	o	
White Ibis	accidental			
Roseate Spoonbill	accidental			
Whistling Swan			r	r
• Canada Goose	c	r	a	a
Brant			r	r
White-fronted Goose	u		c	c
Snow Goose	u		c	u
Ross' Goose			r	r
Mallard	a	r	a	a
Black Duck	r		o	o
Gadwall	u		c	c
Pintail	c		c	c
Green-winged Teal	c		c	c
Blue-winged Teal	c	u	c	c
Cinnamon Teal	r		r	r
American Wigeon	c		c	c
Northern Shoveler	c	r	c	c
• Wood Duck	o	o	o	o
Redhead	u	r	u	u
Ring-necked Duck	o		c	c
Canvasback	u		o	o
Lesser Scaup	o	r	o	o
Greater Scaup	r		r	r
Common Goldeneye	o		o	o
Bufflehead	u		u	o
Oldsquaw			r	r
Ruddy Duck	c		c	o
Hooded Merganser	o		u	u
Common Merganser	o		o	o
Red-breasted Merganser			r	r
• Turkey Vulture	c	a	a	c
Black Vulture	u	u	u	u
Mississippi Kite	o		o	
Sharp-shinned Hawk	o	r	u	u
Cooper's Hawk	r		r	r
• Red-tailed Hawk	c	u	c	c

	S	S	F	W
• Red-shouldered Hawk	o	r	o	o
• Broad-winged Hawk	o	r	o	
• Swainson's Hawk	u	o	c	
Rough-legged Hawk	o		o	o
Ferruginous Hawk	accidental			
Golden Eagle	r		r	r
Bald Eagle	o		o	o
Marsh Hawk	o		u	u
Osprey	o		o	
Peregrine Falcon			r	r
Merlin			r	r
American Kestrel	c	r	c	u
• Bobwhite Quail	a	a	a	a
Sandhill Crane	o		o	
• King Rail	o	r	r	
Virginia Rail	r		r	
Sora	o	r	u	
Black Rail	accidental			
Common Gallinule			r	
American Coot	c	o	a	c
Semipalmated Plover	u	u	u	
Piping Plover	r	u	u	
Snowy Plover	r	u	u	
• Killdeer	c	c	a	a
American Golden Plover	o	r	o	
Black-bellied Plover	o	r	o	
Ruddy Turnstone	r	r	r	
American Woodcock	accidental			
Common Snipe	c	r	c	o
Long-billed Curlew	o	r	o	
Upland Sandpiper	c	c	u	
Spotted Snadpiper	c	c	u	
Solitary Sandpiper	c	c	u	
Willet	u	o	r	
Greater Yellowlegs	c	o	o	o
Lesser Yellowlegs	c	c	c	o
Red Knot		r	r	
Pectoral Sandpiper	c	c	u	
White-rumped Sandpiper	c	r		
Baird's Sandpiper	a	u	c	r
Least Sandpiper	a	c	c	u
Dunlin	o		u	
Short-billed Dowitcher		o	r	
Long-billed Dowitcher	o	o	c	r
Stilt Sandpiper	u	c	a	
Semipalmated Sandpiper	c	c	u	
Western Sandpiper	c	c	c	
Buff-breasted Sandpiper	r	o	r	
Marbled Godwit	r	o	o	
Hudsonian Godwit	o	r		
Sandlering	r	u	r	
American Avocet	o	u	u	
Black-necked Stilt	r	r	r	
Wilson's Phalarope	c	u	u	
Northern Phalarope			r	
Red Phalarope	accidental			
Herring Gull	o		o	o
Ring-billed Gull	c	o	a	a
Franklin's Gull	a	o	a	o

	S	S	F	W
Bonaparte's Gull	o		u	o
Forster's Tern	c	u	c	
Common Tern	accidental			
• Least Tern	r	o	o	
Caspian Tern	r	r	u	
Black Tern	c	c	o	
Black Skimmer	accidental			
Mourning Dove	a	a	a	c
Inca Dove	accidental			
• Yellow-billed Cuckoo	c	c	u	
Black-billed Cuckoo	accidental			
• Roadrunner	u	u	u	u
• Screech Owl	r	r	r	r
• Great Horned Owl	c	c	c	c
Snowy Owl	accidental			
Burrowing Owl	accidental			
• Barred Owl	u	u	u	u
Short-eared Owl			o	o
Saw-whet Owl	accidental			
• Chuck-will's-widow	o	o	r	
Whip-poor-will	r	r	r	
• Common Nighthawk	u	c	c	
• Chimney Swift	c	c	c	
• Ruby-throated Hummingbird	u	u	u	
• Belted Kingfisher	u	u	u	u
Common Flicker	u	r	c	c
Pileated Woodpecker	o		o	
• Red-bellied Woodpecker	c	c	c	c
• Red-headed Woodpecker	o	o	o	o
Yellow-bellied Sapsucker	o		u	u
Hairy Woodpecker	u	u	u	u
Downy Woodpecker	c	c	c	c
Ladder-backed Woodpecker	o	o	o	o
• Eastern Kingbird	c	u	o	
• Western Kingbird	c	u	o	
• Scissor-tailed Flycatcher	c	c	a	
• Great Crested Flycatcher	u	u	u	
• Eastern Phoebe	u	u	u	o
Yellow-bellied Flycatcher	accidental			
Acadian Flycatcher	o			
Willow Flycatcher	o			
Alder Flycatcher	o			
Least Flycatcher	u	o	u	
• Eastern Wood Pewee	u	o		
Olive-sided Flycatcher	o		o	
Vermillion Flycatcher	accidental			
Horned Lark	u	u	c	c
Tree Swallow	u	o	c	
Bank Swallow	c	o	c	
• Rough-winged Swallow	c	o	c	
• Barn Swallow	a	c	a	
Cliff Swallow	a	u	a	
• Purple Martin	c	u	c	
• Blue Jay	c	c	c	c
• Common Crow	c	c	c	a
• Carolina Chickadee	c	c	c	c
• Tufted Titmouse	c	c	c	c
• White-breasted Nuthatch	o	o	o	o

HAGERMAN NATIONAL WILDLIFE REFUGE
Sherman, Texas

Public Recreational Uses and Regulations

Recreational use of the refuge is permitted when the activities are compatible with primary refuge objectives. All public access, use or recreation not expressly permitted, is prohibited. Title 50, Code of Federal Regulations, is the guideline used in permitting recreational activities on the refuge.

RECREATIONAL USES:

Refuge lands are open for permitted activities from 1 hour before sunrise to 1 hour after sunset, except as otherwise provided.

Sightseeing, Nature Study, Photography, Picnicking, and Touring are permitted activities.

Vehicles are restricted to gravelled or improved roads only, as designated by signs or maps. No driving is permitted on dirt roads or on grass. Through traffic at night is permitted only on the designated routes of travel (see map on reverse side).

Fishing and Frogging are permitted in accordance with applicable State laws during the period of April 1 through September 30. Boating is permitted only during the fishing season. Night fishing is permitted. No fishing is permitted from bridges.

Boat launching is permitted only at designated areas shown on reverse map.

Fires may be built in access area fireplaces only and must be extinguished before leaving the area.

Pecan picking is permitted and limited to one gallon per person per day. No commercial harvesting.

Hunting on the Refuge is permitted only during limited seasons in designated areas. Consult the current hunting leaflet, available at refuge headquarters.

SUPPLEMENTAL INFORMATION:

Overnight camping prohibited. No single visit may exceed 24 hours.

Animal and Plant Life: Any attempt to molest, disturb, injure, or destroy any animal life, except as otherwise provided in these regulations, is prohibited. Plants may not be removed or damaged.

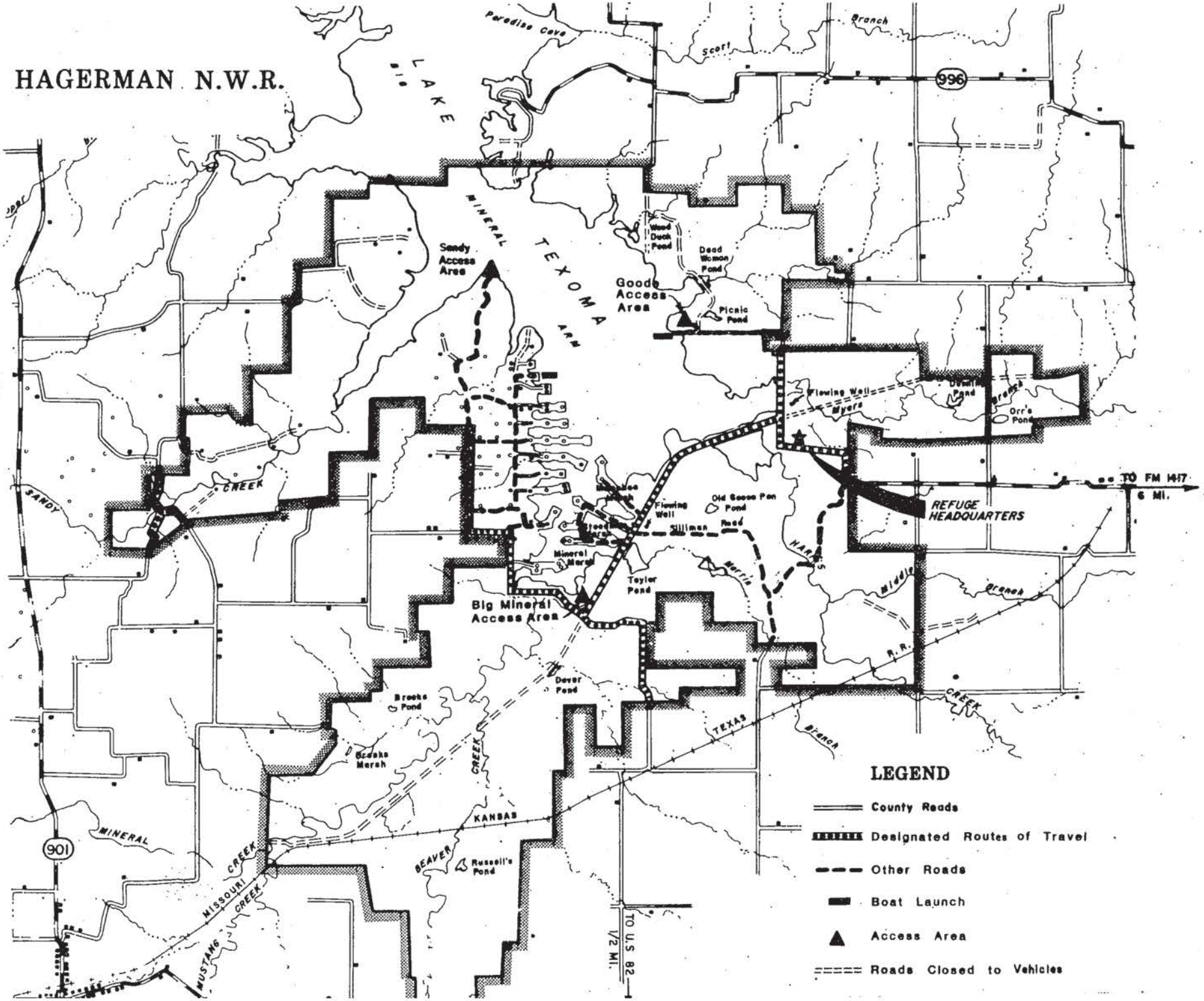
Firearms: Firearms are prohibited except during refuge hunts. Cased and unloaded firearms may be transported through the refuge over designated routes of travel only.

Pets are not permitted to run at large and must be kept in a vehicle or on a secured leash.

Further information is available through the refuge office. Office hours are 7:30 a.m. to 4:00 p.m. weekdays; other hours by appointment. Phone (214) 786-2826.

RF-21580-9

HAGERMAN N.W.R.



HAGERMAN NATIONAL WILDLIFE REFUGE

Sherman, Texas

Hunting Regulations

LEGAL GAME

Doves, squirrels and rabbits may be hunted in accordance with applicable State and Federal regulations.

SEASON

Hunting is permitted only from September 1 to 30.

HUNTING AREA

The hunting area includes that portion of the refuge posted as "Public Hunting Area" and shown on the map. Hunters must check in and check out at the check station, located on the north side of the hunt area.

GUNS

Hunting is permitted with plugged shotguns, capable of holding no more than 3 shells. No shells with larger than No. 4 are permitted. No rifles or handguns are permitted.

DOGS

Dogs may be used within the refuge, during the hunt but must be under the control of the handler at all times.

PARKING

Hunters will park so as not to interfere with traffic or block gates. Loaded firearms and hunting are not permitted within 50 yards of the gates or roads.

OTHER REFUGE REGULATIONS

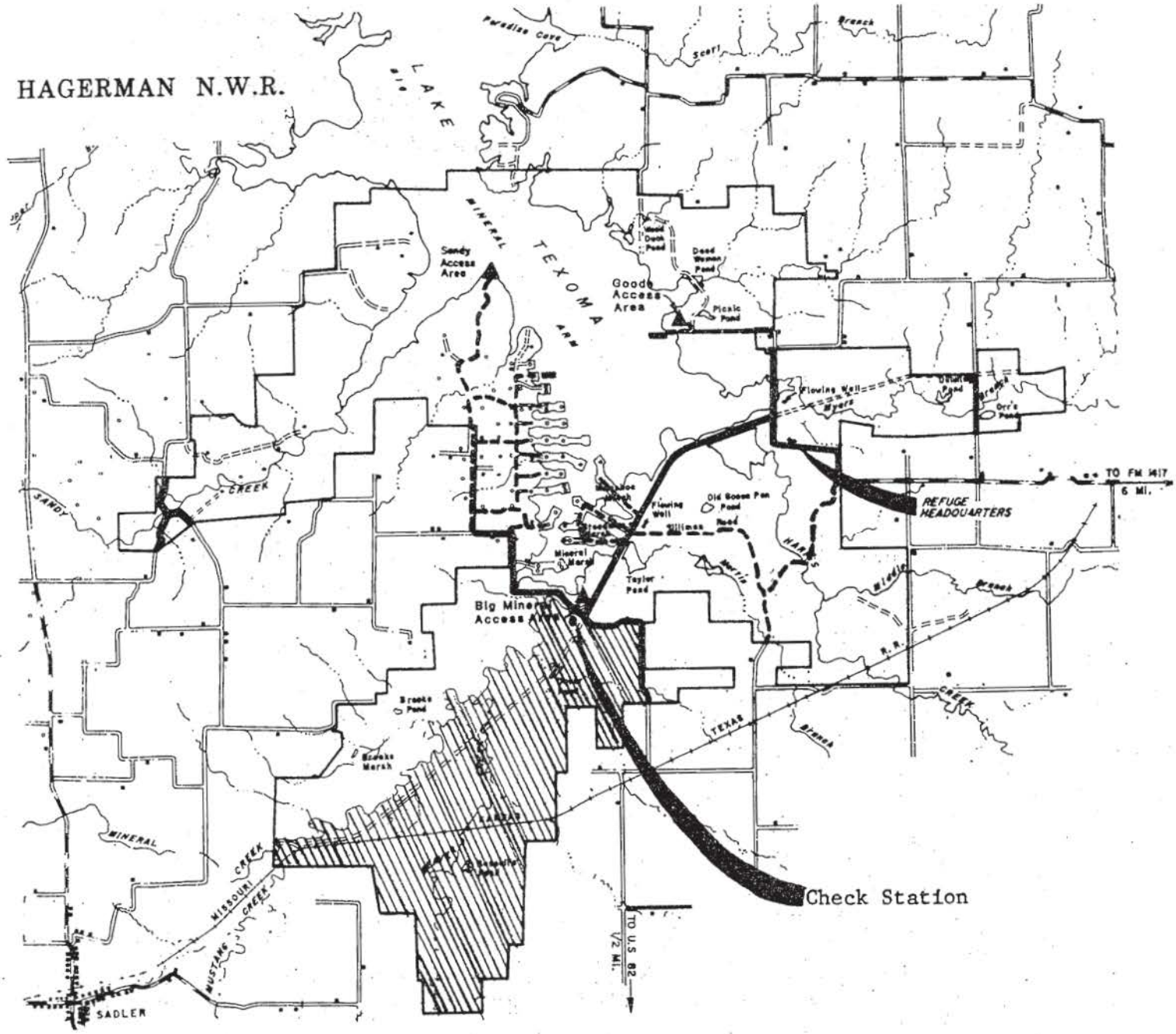
Overnight camping is not permitted.

Fires are not permitted in the hunting area.

Litter must be deposited in the litter barrels provided or removed from the refuge.

BE SURE OF YOUR TARGET ** HUNT SAFELY

HAGERMAN NATIONAL WILDLIFE REFUGE



LEGEND

- Designated Routes of Travel
- Other Roads
- Boat Launch
- Access Area
- Roads Closed to Public
- Refuge Boundary

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

As the Nation's principal conservation agency; the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

REFUGE MANAGER
HAGERMAN
NATIONAL WILDLIFE REFUGE
ROUTE 3, BOX 123
SHERMAN, TEXAS 75090

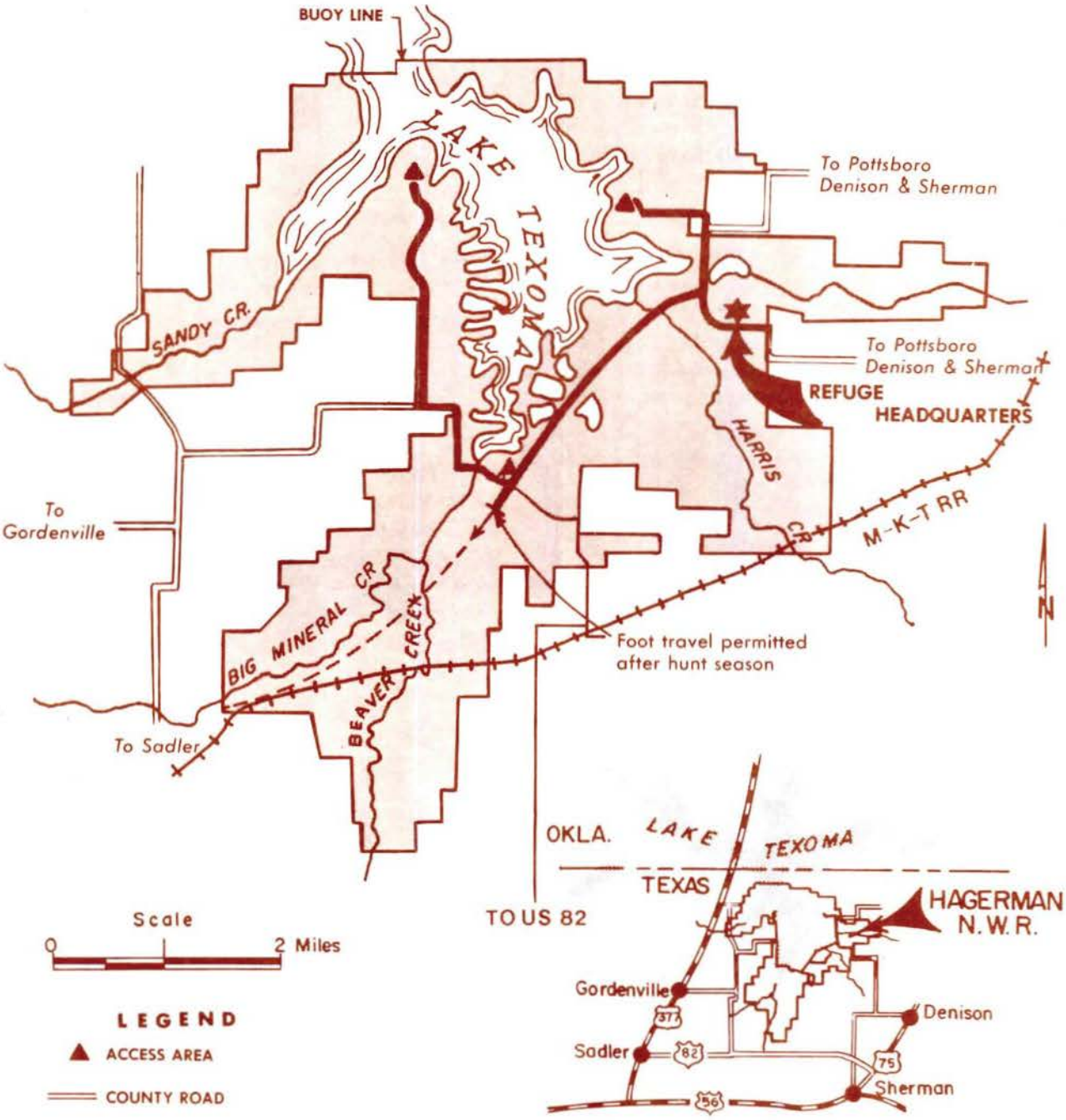
On your visit to this refuge, or any type of public use area, please practice good sportsmanship—remember the people who will visit after you, not only next year, but in generations to come.

RF-21580-1
March 1983

HAGERMAN NATIONAL WILDLIFE REFUGE

Texas

HAGERMAN NATIONAL WILDLIFE REFUGE



Hagerman National Wildlife Refuge lies on the Big Mineral Arm of Lake Texoma formed by the Red River between Texas and Oklahoma. It contains 11,319 acres.

The refuge was created in 1946 by an agreement between the U.S. Fish and Wildlife Service and the U.S. Army Corps of Engineers, builders of Denison Dam that formed Lake Texoma. The refuge includes 3,000 acres of marsh and water, and 8,000 acres of upland habitat and farmland.

WILDLIFE

Hagerman Refuge's primary objective is to assure survival in the natural state of all plant and animal species utilizing this area. The refuge provides food and rest for thousands of migratory waterfowl that travel the Central Flyway each spring and fall. In addition, several thousand ducks and geese make it their winter home, and the refuge protects many birds and mammals native to north-central Texas.

During fall, winter, and spring, the refuge's marsh and water area is constantly used by migrating and wintering waterfowl. Foremost among these are Canada geese. They, along with smaller flights of snow and white-fronted geese, usually reach peak numbers of 10,000 to 15,000. Brant and Ross' geese have been recorded but are rare.

Most of the fall and winter duck population consists of mallards. They are closely followed by wigeons and green-winged teal. Each spring, as these ducks move northward, they are replaced by migrating pintails, shovelers, and blue-winged teal. Diving ducks, such as redheads, canvasbacks, scaup and ring-necks, sweep through in fall and spring, and a few stay through the winter. Duck nesting is not significant, but a few broods of wood ducks may be expected each summer.

About 700 acres of land is subject to cultivation to raise feed for waterfowl. Food crops are grown by refuge personnel and by neighboring farmers on a sharecrop basis. Principal crops are wheat, oats, and sorghum. Wheat and oats are used by geese as green browse.

Ducks use sorghum to supplement natural foods growing in marshes and shallow water.

Wading and shorebirds, including egrets, herons, sandpipers, and plovers abound in summer. In winter they are replaced by large numbers of great blue herons and killdeer. About 280 species of birds have been recorded. A listing of them may be found at the refuge office.

Upland habitat on Hagerman Refuge varies from open meadows to dense stands of pecan, oak, elm, and juniper. It provides a home for many songbirds, bobwhites, mourning doves, squirrels, foxes, opossums, skunks, armadillos, jackrabbits, cottontails, whitetail deer, and a host of other animals. Stream and marsh banks are used by numerous beavers, raccoons and mink, while woodland trails may reveal bobcat tracks. Many reptiles, some poisonous, occur on the refuge. Visitors are urged to be alert for rattlesnakes and cottonmouth moccasins in refuge brushlands and marshes.

ECONOMIC USES

Open meadows and grasslands are used by local stockmen under annual grazing permits.

In 1951 oil was discovered on refuge lands. At present there are approximately 160 producing wells.

RECREATION

Each year more than 35,000 people visit Hagerman Refuge. Fishing is permitted from April 1 to September 30. Fine catches of channel catfish, blue catfish, white bass, largemouth bass, and crappie are made. Other recreational uses are bird watching, photography, and hunting of dove on specified portions of the refuge. Further information on hunting is available at the refuge office. Waterfowl hunting on adjacent lands is often good. There are hotels and motels in nearby Sherman and Denison.

LOCATION

The refuge receives its name from the old town of Hagerman, which was flooded by Lake Texoma. It stood near refuge headquarters. In 1967, the Texas State Historical Survey Committee erected a monument to commemorate the site.

The refuge office is best approached from either Denison or Sherman on FM 1417. Visitors are encouraged to check at the office for information on regulations and road conditions. Office hours are 7:30 a.m. to 4:00 p.m. Monday-Friday. The office is closed on weekends and holidays.

YOUR HELP PLEASE

We ask that you please drive carefully during your tour. Take specific note of the times portions of the route are open to travel. Use your ash trays and deposit litter in the barrels at the designated picnic areas. Please do not pick flowers or shrubs and keep your refuge clean and pleasant for all.

HAGERMAN NATIONAL WILDLIFE REFUGE
ROUTE 3, BOX 123
SHERMAN, TEXAS
PHONE: (213) 786-2826

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

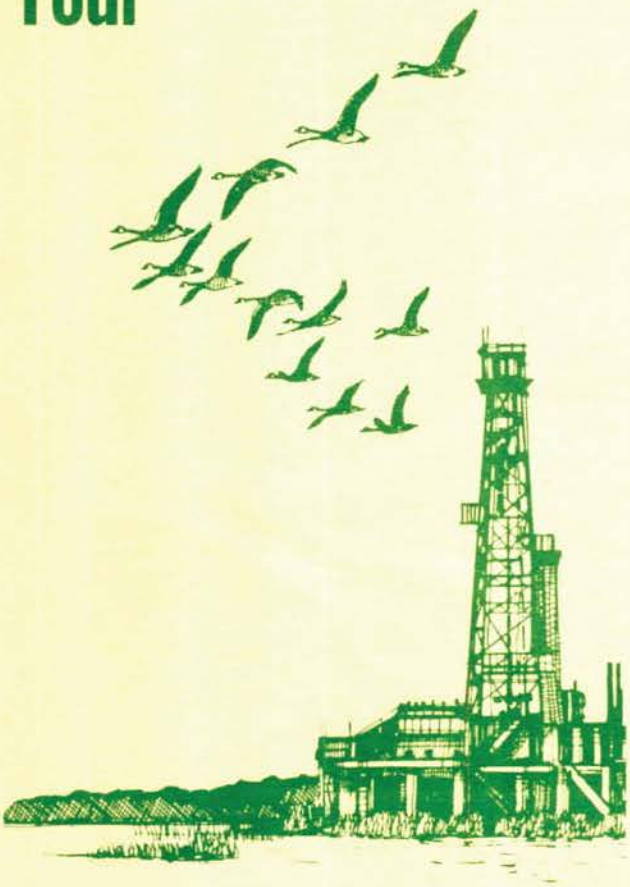
As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island Territories under U.S. administration.

RF-21580-3

August 1983

A SELF-GUIDING

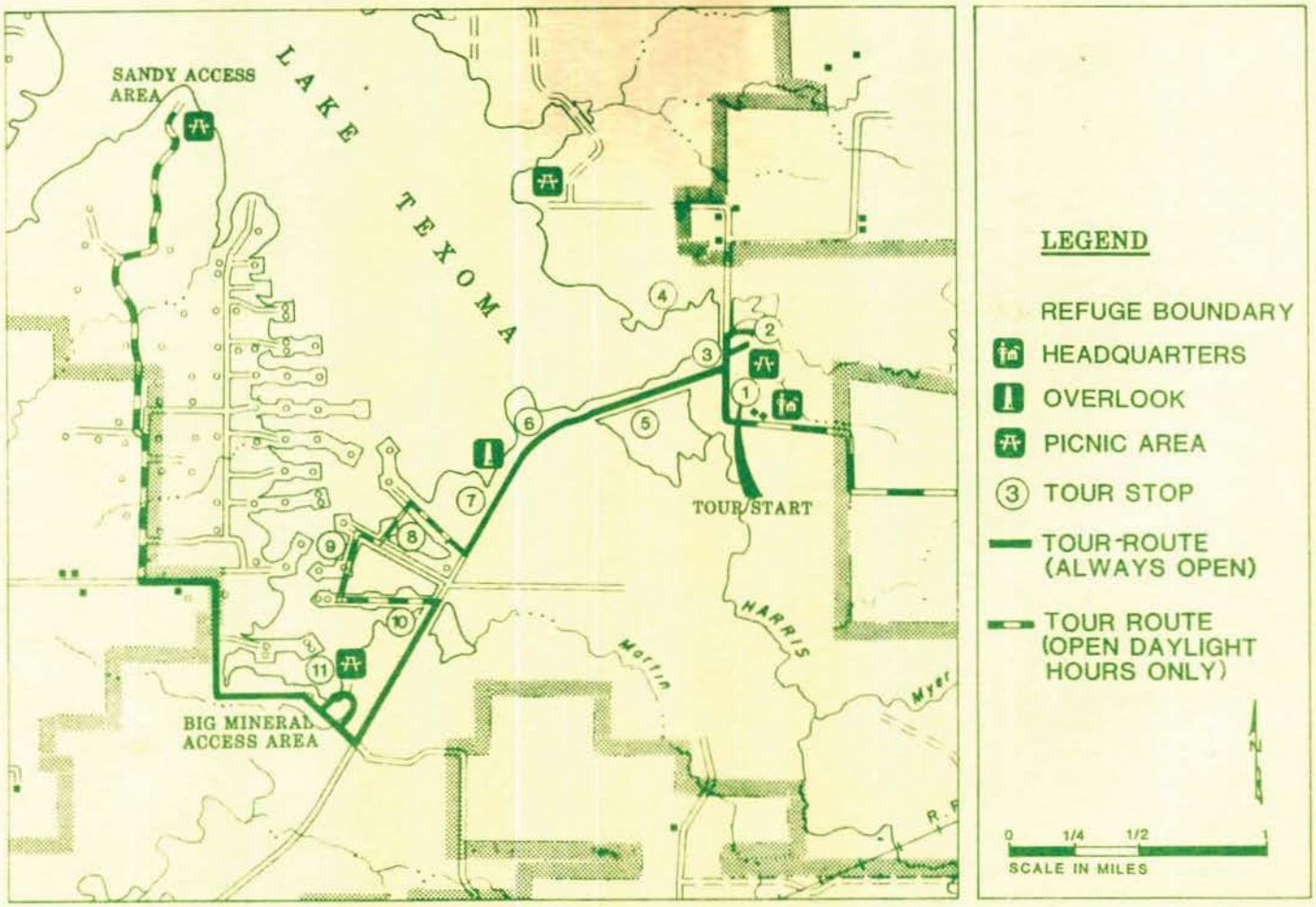
Auto-Wildlife Tour



Hagerman

NATIONAL WILDLIFE REFUGE

TEXAS



AN INVITATION

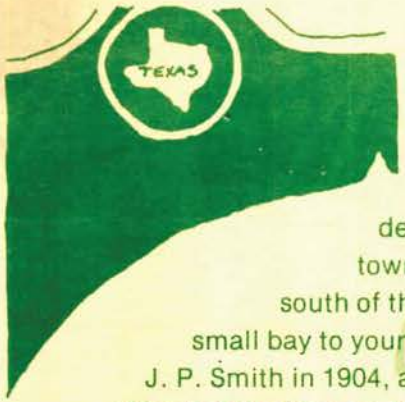
The **U. S. FISH & WILDLIFE SERVICE** invites you to take advantage of the unique opportunities for outdoor enjoyment at **HAGERMAN NATIONAL WILDLIFE REFUGE**. This self-guiding auto tour route was developed to enhance your knowledge of the natural area as well as explain the refuge management programs for waterfowl and other wildlife. To make your trip more meaningful, a 6.2 KM route has been marked beginning at the refuge headquarters and ending at the Big Mineral Access Area. An additional 5.4 KM route, though unguided, has been established to further your outdoor experience. As you take your time and travel the route, you will find numbered markers that correspond to sections in this guide. This leaflet is your personal guide.

ENERGY CONSERVATION

The mission of the U.S. Fish and Wildlife Service includes the wisest use of all natural resources. If you glance at the refuge office and shop facility southeast of the tour starting point, you will see a wind powered electrical generator, a solar water heating panel and high-rising clerestory ceiling structures. They demonstrate the refuge's commitment to energy conservation through the use of renewable resources.

TAKE A BREAK

You are passing through a refuge picnic area. We provide it as a place for rest and refreshment. Please feel free to help yourself to water from the flowing well. It is one of the many that supply clean, health department tested water.



GONE, BUT NOT FORGOTTEN

A ten acre tract denoting the original town of Hagerman lies south of the lake shore in the small bay to your right. Founded by J. P. Smith in 1904, and named after an official of the Kansas, Missouri and Texas Railroad, the town had a population of 258 in 1910. The town was abandoned with the flooding of Lake Texoma in 1943, and is remembered by a few protruding pilons and foundation. Note the historical marker to your left.

GRAZING

Do you see the cattle grazing on the opposite shore? Management of the refuge's 3,740 acres of grassland focuses on the preservation and restoration of native prairie grasses. This effort will support wildlife historically found in this part of the Blackland Prairie. Grazing and controlled burning are used to set back the growth of bushes and promote desirable grasses.

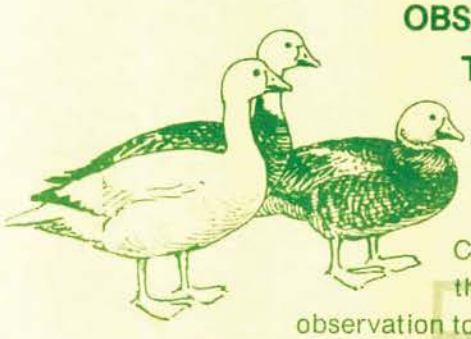
MUD-FLAT SMORGASBORD

The shallow pool and mud flats to your left are used by many kinds of marsh and shorebirds. All these birds are well equipped to wade and capture their favorite food. Among the items eaten are crayfish, minnows, worms, and aquatic insects! See also the **Refuge Bird List**.

WHERE THE GRASS IS GREENER

The planted fields to your left and on the lake shore to your right are farmed to meet waterfowl feeding needs as well as benefit resident wildlife. Refuge farming mainly provides green wheat shoots for winter and spring. A portion of the farmland is planted in small grains to attract the geese and reduce off-refuges crop damage.

OBSERVATION TOWER



Stop and stretch your legs a bit. Carefully climb the steps of the observation tower and get a tree-top view of the lakeshore bird populations. Rafts of diving ducks out on the lake, shorebirds on the mudflats and geese grazing in the fields can be observed at various times of the year from this vantage point.

MANAGING THE MARSH

The concrete and wooden structure just off the roadway to your left is used to control the water level in Muleshoe Marsh. The next two marshes, Steadman and Mineral, are managed by similar devices. The water levels in these areas are raised in the spring to force sprouting of aquatic plants and drained in summer to improve their growth. In the fall, the marshes are flooded for waterfowl feeding areas.

OIL

Oil and gas were discovered on the refuge in 1951, and at present approximately 200 wells are in operation. All royalty payments are made to local lease holders. If you are a newcomer to the area, the wells may seem incompatible with refuge purposes. However, oil operations are managed around strict environmental standards. Stop **#11** includes more information on the oil industry.

NATURE'S ENGINEER

What do you think has been chewing on the base of the trees to your right? A **BEAVER**. He is often called an engineer, because the ponds he creates by building dams provide homes for waterfowl and fish. Beavers often build lodges or homes in the pond behind the dam. Up to nine young beaver may be raised per year. When food supplies are exhausted, the colony will leave the area and start over.

You have just entered another of our picnic areas. Please follow the circle drive to the display on oil extraction. This concludes the guided tour route. You may want to continue on to the Sandy Access Area. Have a nice day.