

Tewaukon National Wildlife Refuge
Cayuga, North Dakota

Annual Narrative Report
Calendar Year 1998

U.S. Department of the Interior
Fish and Wildlife Service
National Wildlife Refuge System


Refuge Manager

6/28/02

Refuge Supervisor

Tewaukon National Wildlife Refuge Complex
Summary of 1998 for Annual Narrative

Comprehensive Conservation Planning

Started setting up the goals and objectives for the Refuge and District. The refuge held 5 open houses throughout the year so people could give comments and feedback for the CCP. A traveling display was designed to give the public an idea about the CCP and to see how it will work.

Fire

Refuge staff completed seventeen prescribed burns totaling 1520 acres. There were three prescribed burns that were conducted away from the refuge. The wildfire season took us to Florida twice this year. The refuge had two wildfires that occurred on the refuge grounds. Both of the wildfires happened on the WPA's.

Law Enforcement

Jack and Rob instructed law enforcement at Upper Souris. Jack helped with Region 3 in service refresher training. Jack worked to change the wording in 50 CFR for hunting and fishing.

Wildlife/Weed Control

First recorded case of avian botulism outbreak on the Tewaukon Complex. The dead waterfowl total birds picked up was 3873. Wildflower walks held at the Hartleben prairie sponsored by the Hankinson Chapter of the General Federation of Women's Cultural Club. There are three wildflower walks that are done. Found an increase in galls for the thistle bug sites on the Ford WPA. Collected 120,000 lacertosa leafy spurge flea beetles at the statewide Barnes County collection day. Distributed insects to existing sites with low numbers of leafy spurge flea beetles.

Highlights

Record number of teams at the 12th annual Lake Tewaukon Fishing Tournament. There were a total of 156 people on 56 teams.

Angela Burwell joined the staff as the Administrative Support Assistant.

Craig Mowry came on board as the Tallgrass Prairie Biologist

Junior Duck Stamp winner was Nevada Miller.

Horsepower restriction was lifted from Tewaukon and Sprague Lakes.

E-MAIL
MEMORANDUM

January 12, 1999

TO: R&W, ND Associate Supervisor (60130)
Denver, CO

FROM: Biologist, Tewaukon NWR Complex (62660)
Cayuga, ND

SUBJECT: December Activity Report

HIGHLIGHTS:

- * Mild winter weather allowed some extra hunting and construction days.
- * Christmas bird count record number of birds.

CCP:

Kristine looked through Realty files in the Regional Office for information.

ENVIRONMENTAL EDUCATION/OUTREACH:

Jack attended the Cogswell Gun Club meeting.

PUBLIC USE:

Mild weather prompted many pheasant hunters to try their luck on the Refuge into the middle of December.

EASEMENTS:

Jack and Rob met with Ransom Township about easement wetlands and culverts.

Jack met with Sargent Co. easement holder to discuss possible solutions to his flooded floor drain.

Jack, Sandra and Rob attended the Wetland Easement meeting.

Jack met with the City of Forman regarding flooding and culvert placement.

Jack followed up on an easement wetland drainage report in Ransom Co. and found no violation.

Jack field checked a Ransom Co. easement in response to a request for drainage clean out and coordinated with NRCS.

Jack sent an e-mail to Jim Bueling in the Ukraine to try and get that easement case finished up. No response.

LAW ENFORCEMENT:

Rob and Jack completed their LE physicals.

WILDLIFE:

24 species of birds were observed on the Christmas Bird Count. Species of note were 5 species of waterfowl, a rough legged hawk, loggerhead shrike, Lapland longspurs and a bald eagle.

A male peregrine falcon was sighted across from the Gainor WPA.

FLOOD PROJECTS:

Parker's Bay spillway construction was completed. Hepi Lake construction continued throughout the month.

Jack reviewed in the field, the construction work done by DU on pools 7A, 8 and 9.

REFUGE OPERATIONS:

Sandra met with Joel Heitkamp and Greg Nelson, Pres. Milnor Golf Course, concerning the fee title ditch that bisects the golf course and the planned mitigation on mowing of the ditch. Previously they had agreed to obtain right-of-ways for 4 bridges in fee title and cooperate on mowing only where safety was an issue. Now they wanted to mow the entire ditch in exchange for not mowing other areas. Sandra agreed the matter with Ron Shupe.

Jack met with Sargent Co. regarding culvert placement located on the Klefstad WPA in response to the raising of Silver Lake project.

FIRE:

Don traveled to Arrowwood to pick up a fire engine to take down to Florida in January.

TALLGRASS PRAIRIE:

Craig met with Al Sapa, Mike McEnroe and Karen Kreil (WHO), Ron Reynolds, Chuck Loesch, and Mike Estey (HAPET), Stu Wacker and Chuck Bosch (Realty), and Joe Satrum from Nature Conservancy.

PERSONNEL/TRAINING:

Angie traveled to Denver for RDE training and the Administrative Workshop.

NAWCA:

Chris worked on potential grassland easements, CRP sign up, nesting culvert placement and a grazing system plan.

Met with Red River Sportsmen's club regarding nesting culvert placement.

E-MAIL
MEMORANDUM

November 24, 1998

TO: R&W, ND Associate Supervisor (60130)
Denver, CO

FROM: Biologist, Tewaukon NWR Complex (62660)
Cayuga, ND

SUBJECT: November Activity Report

HIGHLIGHTS:

- * Refuge deer rifle, pheasant, and second archery season opened.
- * First Blizzard - shut down power at Refuge for 24 hrs.
- * Bill attended the Native Plant Summit in Calgary.

EASEMENTS:

Kristine completed 12 easement mapping cases.

FIRE:

Don returned from his prescribed burn detail in Mississippi.
Don & Kristine discussed burning plans for 1999.
Sent in weather station for its annual maintenance.

PERSONNEL/TRAINING:

Keith completed his tour of duty with the Refuge.
Bill attended the Native Plant Summit in Calgary.
Angie attended Survival Skills for the Office Professional training course in Olympia WA.

ENVIRONMENTAL EDUCATION/OUTREACH:

News releases on the Refuge pheasant season and Jr Duck Stamp program were sent out.

PUBLIC USE:

Refuge deer season opened. 55 permits issued. 8 hunters reported in that they had been successful.
Refuge pheasant season opened with a fair number of hunters enjoying the mild fall weather.

WILDLIFE:

Keith conducted weekly waterfowl counts. The snow geese and most of the northern ducks passed over the Refuge.

Waterfowl Peak Numbers:

Snow geese - 9000
Canada geese - 5000
Mallards - 16000
Total Ducks - 30000

REFUGE OPERATIONS:

Craig and Connie met with Realty staff in Aberdeen. He and Sandra met with FWS Realty staff and TNC in Bismarck.

Tallgrass meeting with Ron Cole (Region 3), Craig, Sandra and Connie to discuss direction and coordination between Regions.

NAWCA:

Chris worked on nesting culverts checks, easement landowner contacts, surveyed possible wetland restoration and completed the final inspection on completed restorations.

Designed a grazing system for Sargent Co. landowner.

Worked with NRCS on CRP sign-up.

E-MAIL
MEMORANDUM

November 24, 1998

TO: R&W, ND Associate Supervisor (60130)
Denver, CO

FROM: Biologist, Tewaukon NWR Complex (62660)
Cayuga, ND

SUBJECT: October Activity Report

HIGHLIGHTS:

- * Craig Mowry begins work at the Refuge.
- * Don detailed to Mississippi Sandhill Crane NWR

FIRE

Winterized fire equipment.

Don traveled to Arrowwood to assist on a prescribed burn.

Rob, Keith and Chanda traveled to Devils Lake for S-131.

Don traveled to Mississippi Sandhill Crane Refuge to assist on prescribed burns.

BIOLOGICAL ACTIVITIES

Staff met with folks from Northern Prairie and Charlie Pelizza to determine research needs on the Refuge & District.

Bill and Keith put out millet bales on the Refuge.

Keith conducted weekly waterfowl surveys.

ENVIRONMENTAL EDUCATION/OUTREACH:

Jack attended the Cogswell Gun Club meeting.

Keith gave the Fargo boy scouts a tour of the Refuge.

Jack gave the West Fargo environmental science class an annual tour on the Refuge.

Keith gave the Lisbon Veterans Home a tour of the Refuge.

Jack & Sandra judged National Wildlife Refuge Week posters at two local schools.

PUBLIC USE:

Closed the road around the lakes on the 15th. Lakes closed to

boat traffic on the 15th.

EASEMENTS:

Jack completed the USA Waste background summary for SA Klett. Jack, Sandra, McEnroe, Shupe, Klett, Gross and Estep-Johnston reviewed the new hole on the USA Waste site and discussed impacts on easement wetlands. Once impacts are quantified meeting will be scheduled with AUSA Crooks.

Rob & Jack met with Karen Bueling, Rob Spiekemeier and NRCS DC Kelly to review sites for mitigation of the co-owned wetland on the Sheldon easement case.

Jack & Sandra met with Sargent Co. NRCS to discuss ditches that do not affect easement wetlands and easement permit ditches that will be allowed to remain open over the winter because they affect roads. Two permit ditches for wetland drains that affect septic systems were also discussed.

Met with Sargent Co. Commissioners concerning possible land acquisition in the county. Commissioners noncommittal.

LAW ENFORCEMENT:

Jack wrote a ticket to a pheasant hunter for trespassing on the Refuge during waterfowl season.

WILDLIFE:

Keith conducted weekly waterfowl surveys.

Waterfowl Peaks:

Snow geese - 2000
Canada geese - 2500
Mallards - 7000
Total Ducks - 15000

Finished picking up dead waterfowl - total number of birds picked up was 3873.

PERSONNEL/TRAINING:

Craig Mowry from Wyoming begins work in the tallgrass prairie position at the Refuge.

Jack & Sandra attended the National Wildlife Refuge Conference in Keystone.

Fencing crew finished their tour of duty with the Refuge.

REFUGE OPERATIONS:

FLOOD PROJECTS:

DU surveys Hepi Lake.

Computer network installed.

Accomplishment report completed.

NAWCA:

Jack worked with NRCS & FSA on the count committee hearing concerning Lunneborg DU predator fence and the withholding of the landowner's CRP payment. The committee recommended to the State Office that the fenced remain and the CRP payment reinstated.

Sent in ITS report and progress report.

Chris checked Lunneborg fence and worked on easements, FmHA tracts, nesting structure placements and a stock pond completion.

E-MAIL
MEMORANDUM

September 9, 1998

TO: R&W, ND Associate Supervisor (60130)
Denver, CO

FROM: Biologist, Tewaukon NWR Complex (62660)
Cayuga, ND

SUBJECT: September Activity Report

HIGHLIGHTS:

- * First recorded case of avian botulism outbreak on the Tewaukon Complex.
- * Kristine has a lbs oz baby boy, Travis Paul Askerooth.
- *

ENVIRONMENTAL EDUCATION/OUTREACH:

Keith, Jack, Neil and Linda (Valley City WMD) presented a program entitled "Wildlife Jeopardy", where students learn about wildlife in a game show setting for the Richland, Ransom and Sargent County Conservation Tours. Thanks to Linda and Valley City WMD for helping us out on the Conservation Tours

Sandra attended Cogswell Gun Club meeting and presented updates on fisheries and Refuge activities.

Kristine conducted a wildflower walk for the Wahpeton Women's Club.

PUBLIC USE:

The Refuge was open during the Youth Deer Gun hunt and archery season. District open for Youth Waterfowl Hunt.

EASEMENTS:

FIRE:

LAW ENFORCEMENT:

Sandra, Jack, Rob, and Scott attended LE refresher in .

Jack and Rob instructed at Upper Souris.

WILDLIFE:

PERSONNEL:

REFUGE OPERATIONS:

WEED CONTROL:

NAWCA:

E-MAIL

MEMORANDUM

September 24, 1998

TO: R&W, ND Associate Supervisor (60130)
Denver, CO

FROM: Biologist, Tewaukon NWR Complex (62660)
Cayuga, ND

SUBJECT: August Activity Report

HIGHLIGHTS:

- * Englevale Slough area no longer a designated Waterfowl Rest Area.
- * Summer staff begins to head back to school.
- * Rob attends Maintenance Workshop. Kristine attends Biologist Workshop.

CCP:

Allison, RO, and Brian Kietzman, NDG&F, traveled to Tewaukon to work on Goals & Objectives for the Refuge and District.

REFUGE & DISTRICT OPERATIONS:

Asbestos was removed from the quarters. New linoleum and bathroom fixtures were installed.

ENVIRONMENTAL EDUCATION/OUTREACH:

Kristine taught the Waterfowl Identification course at the Outdoor Women's Workshop. Thank you to Max and Sheri, RO, for finding a few extra dollars for this project.

Staff did not attend any county fairs this year.

Kristine accompanied the Sargent County Extension Agent and 12 individuals on a native plant tour around NDSU and some urban landscaping projects with native plants.

Sandra attended the Cogswell Gun Club meeting.

EASEMENTS:

Kristine worked on mapping 12 pre-76 wetland easements.

Sandra checked for compliance on an easement violation on a ditch that was open for 2 years and impacting easement wetlands and a WPA in Ransom County. Surprisingly it was filled in. All that remains is a wetland exchange.

Rob & Sandra met with Forman city mayor and water board to look at temporary drainage by the school in Forman. A temporary drain permit was issued.

Rob & Sandra met with an easement holder in Ransom Co concerning a ditch adjacent to his house. Determined that the ditch would not affect an easement wetland. Area was marked and discussed with the landowner.

REFUGE/DISTRICT OPERATIONS:

The SE Water Users began burial of a water line on the north boundary of the Hartleben WPA. Impacts to the area were greater than expected. Plans are for the company to plant a cover crop this fall then plant native grasses in the spring.

Contact was made with the Milnor Golf course regarding trespass on the Storm Lake Easement Refuge. There is a small piece that transects the golf course. Bridges have been erected and mowing of the vegetation has occurred.

WEED CONTROL:

Continued to treat Russian Olive trees on the Refuge with Arsenal. Results from last years treatment on the Stacks Slough WPA Complex were very encouraging with over 75% of the trees showing no sign of life and the other 25% looking sick and stressed. No suckering occurred on any of the treated trees from the last 2 years. Hopes are to finish the Refuge this year and then move out to the rest of the District in 1999. After trees are dead removal of the trees will begin.

PUBLIC USE:

In conjunction with the local game warden and the NDG&F it was decided that the Englevale Slough area no longer had enough support to keep it a Waterfowl Rest Area. It will be open to hunting this year. Seven WPAs (984 acres) are affected.

BUDGET:

End of year spending.

PERSONNEL:

Rob attended the Maintenance Workshop at Upper Souris.

Kristine attended the Biologist Workshop in Jamestown ND.

Jessica, Ryan, Jeff, and Phil finished up their tour of duty at Tewaukon.

Staff held an appreciation pizza party for all the summer staff.

NAWCA:

The Lunneborg fence was mowed for weeds and maintained.

Chris attended the ND Action Group meeting. The NAWCA Grant is coming up for reauthorization in September.

Conducted a cultural resource review for wetland restorations and grazing systems.

E-MAIL
MEMORANDUM

September 24, 1998

TO: R&W, ND Associate Supervisor (60130)
Denver, CO

FROM: Biologist, Tewaukon NWR Complex (62660)
Cayuga, ND

SUBJECT: July Activity Report

HIGHLIGHTS:

- * Refuge Station Inspection was conducted.
- * Chris received appreciation award.
- * Fire crew heads to Florida.
- * USA Waste at it again.

USA WASTE:

Jack and Sandra visited the landfill to review location of settling pond to the north of the cap. USA Waste had dug a 400' x 400' x 60' hole outside the landfill site to obtain clay. The question of altering landscapes that reduce easement wetland watershed acreage will now have to be answered.

Jack met with the ND Dept. of Health about the landfill to discuss methods of directing run-off on the landfill cap (closed portion).

OTHER EASEMENTS:

Five easement contacts were made including township ditching and pumping permits to remove water off roads.

Jack worked on nine highway, road pumping, and grade raising projects involving easements. Sent a reminder letter to Bueling to close her ditch.

CCP:

Worked on Refuge and District goals and objectives.

BIOLOGICAL ACTIVITIES:

Steve Krenz and Wade conducted test netting for fish in Lake Tewaukon and Sprague Lakes. Three healthy age classes of walleyes were found.

Finished checking all remaining waterfowl nests from third nest dragging efforts.

Keith, Jessica, Chris, Deidre and Mike helped the ND Heritage Program with the annual W. Prairie Fringed orchid survey on the Brown Ranch.

Kristine continued to work with Rick Shroeder to develop the tallgrass prairie model.

FIRE:

Don, Ryan, and Phil traveled to Florida to help with wildfires.

WEED CONTROL:

Mowing thistles.

Keith and Jessica checked thistle bug sites. Found an increase in galls on the Ford WPA.

Started treating Russian Olives with Arsenal.

ENVIRONMENTAL EDUCATION/OUTREACH:

Kristine and Keith helped with the second annual wildflower walk on the Hartleben WPA. Darla Lenz led the tour.

The Jr Duck Stamp exhibit traveled to Dakota Square in Minot and back to Tewaukon Refuge in July. Thanks to the Duane Anderson and the Upper Souris staff for setting up the display.

Jack presented programs at the Richland County 4-H Youth Day in Wahpeton on wetland values and wetland Jeopardy.

PERSONNEL:

Angie traveled to Pierre, SD for Diversity Training.

Don attended motorboat instructor training at Upper Souris.

The tallgrass prairie position was advertised interdisciplinary and government wide as a biologist, ecologist and a wildlife biologist. Announcement generated some interest.

Desk audit for manager upgrade was submitted.

REFUGE OPERATIONS:

Jack met with Sargent Co Water Board to review the Hepi Lake project. They had no objections to the project and voted to forward response to the state.

Kristine traveled to Alaska to attend the third meeting of the National Wildlife Working Group.

Ron Shupe, Mike McEnroe and Bob Howard conducted the Refuge Station Inspection. Rick Shroeder also came along to get a better view of the area for our biological program. Visited the landfill, problem easement areas, native prairie on the Hartleben, biological & chemical weed control sites and restoration tracts.

Opened bids for 23 available hay units. Bids ranged from \$2.01/acre to \$14.00/acre. This was the first time a bid system was used. Cooperators were required to pay for hay before they could begin haying. Results were mixed on that.

Opened bids for small lot sale. Generated \$2301.55 revenue and removed many large unusable property items.

New office alarm installed.

Bridge inspection was completed.

Asbestos was removed from Refuge quarters by contractors.

Staff worked on updating RONS & MMS.

NAWCA:

Chris was presented with an appreciation award for all his hard work on preparing the Drift Prairie II Grant.

Chris worked and maintained the Lunneborg fence along with the traps.

Attended a grazing workshop at Audubon NWR.

Inspected Gemar dam project, Seth Gordon WMA and Schmidt WPA restorations.

E-MAIL
MEMORANDUM

July 16, 1998

TO: R&W, ND Associate Supervisor (60130)
Denver, CO

FROM: Biologist, Tewaukon NWR Complex (62660)
Cayuga, ND

SUBJECT: June Activity Report

HIGHLIGHTS:

- * Rain, rain and more rain. A total of 8-10 inches for the month of June for the Refuge. Parts of the District have received over 14 inches.
- * Tewaukon Field Days was a success with over 40 participants.
- * Record number of teams at the 12th annual Lake Tewaukon Fishing Tournament.
- * First of three wildflower walks held on the Hartleben prairie sponsored by the Hankinson Chapter of the General Federation of Women's Cultura Club.
- * Don, Phil and Ryan left for Florida to help with the wildfires.

CCP:

CCP update was sent out to all individuals on the mailing list. A news release was also sent out.

MINIMAL EFFECTS AND EASEMENTS:

Six permits for temporary drains and 1 permit for pumping to relieve flooded roads and driveways were issued. Three permits were extended. One rockpile violation contact was made.

Two spring drain cases were corrected to our satisfaction. One contact was made regarding sources of material to raise ND Highway 11 which currently has 3-4 feet of water on it. The field work on the Bueling case was completed with NRCS so ditch plug length could be provided to the owners.

BIOLOGICAL ACTIVITIES:

The second round of nest dragging was completed. Fewer teal nests but more mallard nests this year. Frequent rains made getting into the field difficult.

Finished 4² mile counts.

WEED CONTROL:

Hartleben native seedlings were assessed for weed control needs. Thistles are only terrible on one field.

Collected 120,000 lacertosa insects at the statewide Barnes County collection day. Distributed the insects to existing sites with low numbers. Tewaukon insect release sites were swept. We are finding large numbers of insects at over 90% of the sites including wet, dry, sandy, shaded, and spring burned sites. Many have expanded beyond the initial release site. Helped Ransom County collect bugs to distribute to landowners. Coordinated on collection and survey techniques with Sargent County.

Jack worked with the Strander WPA sheep cooperator and neighbor to see that dogs stay off the WPA.

ENVIRONMENTAL EDUCATION/OUTREACH:

Jack attended a Fishing Tournament meeting.

The Refuge hosted the 12th annual Tewaukon Fishing Tournament. A record 156 people on 56 teams showed up but yielded only a few fish. The largest walleye was 5 lbs 10 oz. (Tim Kramer) and the largest northern was 3 lbs 11 oz. (Richard Novotny). In the youth category the largest carp 12 lbs 11 oz (Chelsea Roeder), largest walleye and bullhead earned the youngsters cash prizes and trophies. The first place team was Richard, Josh and Richard Novotny.

The Refuge hosted the annual Tewaukon Field Days that is sponsored by the ND Extension Service. This year the Field Days theme was Threatened & Endangered Species.

The Junior Duck Stamp Exhibit traveled to the Gateway Mall in Bismarck and the Columbia Mall in Grand Forks. Thanks to Ken Torkelson, Jim Alfonso and Brad for setting up the display.

Four news releases were written on the Tewaukon Fishing Tournament, Jr. Duck Stamp Exhibit and What To Do with Abandoned Baby Animals, and 4th of July reminder.

Jack worked at a Hunter Safety Field Day for the Forman Rutland graduates.

Kristine guided the Lidgerwood, Fargo and Hankinson Camera Clubs on a tour of the Refuge.

Kristine worked with the ND Extension Service on their "Go Wild With Natives" landscaping project.

SAFETY:

CPR recertification and certification classes were held.

WILDLIFE:

60,000 northern fingerlings were stocked in Lake Tewaukon and 4,000 in Sprague Lake. 10,200 tiger muskies and 60,000 walleye fingerlings were stocked in Lake Tewaukon and 10,000 walleye fingerlings in Sprague Lake.

PERSONNEL/TRAINING:

Staff held a "get to know one another" party.

Angie attended fire timekeepers training in Mandan and received FFS training over the phone.

Paperwork submitted to advertise for the tallgrass prairie position.

REFUGE OPERATIONS:

Brad Beson and Bob Bucholtz, State Water Commission reviewed the Pool 5, A, 8 protects that we are working on with DU.

Water levels continued to rise due to heavy rains. Overland flooding occurred in several places in the District and the Wild Rice River overflowed its banks. The flood repair projects will likely be delayed and the recent floods resulted in additional damage to structures & dams.

Revenue sharing checks were handed to county commissioners in our three counties.

Donated excess and obsolete office equipment to Wyndmere School.

Seeded 3 acres into native wildflowers.

Hay unit packages were sent to people interested in haying. This year bids will be taken for units and payment will be required before the hay is cut. Hopefully, this will eliminate some of the problems we have been having in the past.

Jack coordinated with NDG&F District Warden Tim Phalen regarding management options for the Englevale WPA Complex Waterfowl Rest Area.

Rob and Jack located survey markers for the Trip Fourty tract on the Refuge and followed up with the landowner to get the lines a little straighter.

NAWCA:

Checked predator fence and traps.

Gave the NAWCA council member Ken Ugarenko a tour of the Drift Prairie Project II area.

Kristine and Chris mapped the Brown Ranch for wetland and grassland easements.

Worked on second predator fence location with Dick & Larry Anderson in cooperation with DU.

E-MAIL
MEMORANDUM

June 1, 1998

TO: R&W, ND Associate Supervisor (60130)
Denver, CO

FROM: Biologist, Tewaukon NWR Complex (62660)
Cayuga, ND

SUBJECT: May Activity Report

HIGHLIGHTS:

- * 4² mile counts began with most area wetlands with 70-90% full to overflowing after 4-7 inches of rain fell at the end of the first round.
- * Tewaukon hosted the SE Crime Conference.
- * Several prescribed burns were conducted.

FIRE:

Burns conducted were: SE Sprague Lake (30 acres), NW Mann Lake (91 acres), N Pool 4 (38 acres), the Racetrack (14 acres), Krause E (100 acres), Ahrens/Arndt (30 acres), N. Pool 2 (370 acres), LaBelle Creek (49 acres), Prochnow (27 acres), Native #4 (Hartleben WPA 27 acres), Englevale (355 acres), S Sprague (50 acres), and Klefstad/Nelson (250 acres).

Pack test was conducted for range technicians, biological technicians and permanent staff.

BIOLOGICAL ACTIVITIES:

4² mile counts began in earnest. Most of the wetlands were 90-100% full and the ducks seemed to be spread out all over the counties. Water over the roads made access to some of the ponds difficult. Four - seven inches fell in the District at the end of the first count refilling the small wetlands and expanding the already enlarged wetland basins.

Kristine conducted the annual Dove coo count in Ransom County.

Began first round of nest dragging.

Kristine conducted an wetland easement evaluation on two quarters east of Cogswell. Sent the paperwork into Bismarck, even though wetlands and grasslands in the SE corner of the state are not a priority.

MINIMAL EFFECTS & EASEMENTS

ENVIRONMENTAL EDUCATION/OUTREACH:

Kristine met with the Hankinson Women's Club on the Hartleben WPA to discuss the three upcoming wildflower walks and the interpretive trail.

Kristine conducted school tours for Wahpeton Middle School, St. John's School, Lisbon, Enderlin, and Fairmount. Jack conducted the West Fargo School tour.

The Jr Duck Display was exhibited at the West Acres Mall in Fargo.

Jack attended fishing tournament meetings.

PUBLIC USE:

Road around the Lake was closed after the large amounts of rain in the middle of the month due to water over the road.

Tewaukon and Sprague Lakes were opened to boat fishing on May 1st.

LAW ENFORCEMENT:

Tewaukon hosted the Southeast Crime Conference.

WILDLIFE:

Species of note: A golden eagle was spotted east of Forman (5/13).

Tiger muskies (10,200 fingerlings) and northerns (60,000 fingerlings) were released into Lake Tewaukon. Northerns (4,000 fingerlings) were released into Sprague Lakes.

Shorebirds, sparrows, warblers, bobolinks etc. showed up this month.

Great egrets, great blue herons, black crowned night herons and cormorants are nesting again in the Pool 7A rookery.

WEED CONTROL:

Forb plot was sprayed.

Bill began leafy spurge spraying.

Thistle bugs were released on the Warner WPA and the Boeder WPA.

SAFETY:

Laborers, tractor operators, and range technicians received their tetanus shots.

1.
All laborers, tractor operators, range techs. and bio. techs attended 4-wheeler training at either N. Prairie or Sand Lake NWR. Thank you to John Jones for an outstanding job.

PERSONNEL/TRAINING:

Simon Shafer and Jessica Dathe came on as Biological Technicians.

Ryan Gerth and Jeff Olson came on as Range Technicians.

Sandra attended the Harmony Workshop in Rockville, SD.

REFUGE OPERATIONS:

Jack and Kristine checked a 160 acre tract of land in Richland County that a group is interested in selling to the FWS. It is adjacent to the Leack WPA and the upland portion is native prairie. Jack attended a Richland County Commissioners meeting to gauge their reaction to the proposed sale. The Commissioners were overwhelmingly in favor of the sale. We hope to hold the public meeting sometime in late summer, early fall.

An excess travel trailer was transferred to CMR NWR.

Terry Thorn, HAPET, began working on boundary data for the Refuge and District.

A letter was sent to the RO and Congressionals concerning additional damage after the 4 - 6 inch rains that fell in May. Staff spent considerable time working with Township, County, and State road departments to get water off of roads. 4 permits were issued for temporary ditching and pumping. Two easement tracts were mapped.

Sandra attended the Sargent Co. Water Board. Several people requested larger culverts in Drain 11 which empties into the Wild Rice River. Sandra asked to attend a meeting with the County engineer, Moore engineering, and the Water Board to view Drain 11. The meeting center around the steep slopes of the Drain and improving the steep sides to 4:1 slopes. The Water Board agreed that 10' culverts up stream would be a waste of time due to the 6' culverts downstream.

Water management plan was submitted.

NAWCA:

Chris checked the progress of the seeding and the traps at the Lunneborg fence. Checked the Anderson site for the new fence.

Met with potential grassland easement landowner.

Checked Grant WMA for more restorations and FmHA wetland restorations.

E-MAIL
MEMORANDUM

June 2, 1998

TO: R&W, ND Associate Supervisor (60130)
Denver, CO

FROM: Biologist, Tewaukon NWR Complex (62660)
Cayuga, ND

SUBJECT: April Activity Report

HIGHLIGHTS:

- * Hosted the Fargo CCP Open House - 12 people show up.
- * Two wildfires occurred on the District.
- * Scott left Tewaukon for Devils Lake.
- * STOMP!
- * The Horsepower restriction was lifted from Tewaukon and Sprague Lakes.

CCP

Staff set due dates and assignments from the checklist of "to do" items.

Hosted the Fargo Open House. Representatives from the Fargo Area Sportsmen, Cass County Pheasants Forever, DU, and Sheyenne Grazing Association were in attendance. Comments favored lowering the number of acres farmed on the Refuge, grazing as a management tool, more grassland easements, more access for birding, monitor public use effects on wildlife, deal with avian predators and more.

PUBLIC USE:

The Horsepower restriction was lifted from Tewaukon and Sprague Lakes. A newsrelease was written, the public use summary pamphlet changed, and the ND Game & Fish Dept. was contacted.

Sandra presented the American Fisheries Society Dakota Chapter Conservation of Aquatic Resources Award to the Cogswell Gun Club. They were the co-winners along with the Tewaukon Rod & Gun Club for their efforts at lake and fisheries improvements.

EASEMENTS:

Staff flew spring easement flights. Five easement violations were found consisting of plow furrows and shallow scraper ditches. Rob and Jack met with the various landowners on the violations. All agreed to fill in the ditches.

Jack issued a permit for temporary ditching to relieve flooding from an easement wetland into his basement to Ken Forester.

Two permits to pump easements were issued at the beginning of the month for flooding of Highway 11 and a township road.

FIRE:

Two wildfires occurred. One small 19 ac. fire on the Anderson/Reinke WPA on April 20th. The other fire happened on the BN/Olson (145 acres) on April 24th. Both fires were started by adjacent landowners burning their fields.

Don held a Standards for Survival safety meeting.

Conducted prescribed burns on the Refuge: "Point" (23 acres), NE White Lake (22 acres), White Lake (30 acres), and Sibley (14 acres).

Don attended an FMO meeting in Spearfish, SD.

Don attended S-300 Extended Attack Incident Commander training in Spokane.

ENVIRONMENTAL EDUCATION/OUTREACH:

The ND Jr. Duck Stamp banquet was held in conjunction with the Lewis & Clark Wildlife Club's annual banquet. 34 of the 36 winning students attended.

Kristine met with the Hankinson Women's Club to discuss their participation in biological and education programs on the Hartleben prairie. They plan to participate in hand forb seed collection, organizing and promoting three wildflower and butterfly walks throughout the summer, and raising funds to purchase interpretative signs for the site.

Jack attended the Red River Area Sportsmen's banquet.

WILDLIFE:

Observations of note: Sharp-tailed grouse spotted south of Hepi, 1 Common loon spotted on Lake Tewaukon (14th).

Sandhill cranes migrating through the first two weeks of April.

Worked with Rick Schroeder on key species of the tallgrass prairie that we will be using to monitor and model.

PERSONNEL/TRAINING:

Phil Millette came on as a range technician and Mike Skroch came on as tractor operator.

Staff held a going away party for Scott. A mock safety video was made using

many of Scott's adventures at Tewaukon as things "not to do". We told Scott that we would consider changing the Refuge spelling to Tewau"kahan" in his honor.

Angie Burwell, Milnor, started on March 30 as the new Administrative Assistant.

Sandra conducted interviews to hire 2 tractor operators and 2 laborers to assist in flood damage repairs including fence repairs.

Sandra attended a RONS meeting in Bismarck.

Sandra attended the Project Leaders meeting in Denver. Kristine attended to present the Wildlife Working Group's perspective on the white papers.

A station safety meeting was held to view a video on radial arm safety.

REFUGE & DISTRICT OPERATIONS

Jack reviewed CRP wetland restorations with Matt, DU, in Ransom and Sargent Counties.

Predator fences were turned on.

Checked landowners for 4² mile surveys.

NEPA documentation was completed for SE Water Users to install a water line near the Hartleben WPA.

Compatibility determination was completed for hunting on proposed Kraft Slough NWR. Hunting was deemed to be compatible.

NAWCA:

Finished the final Drift Prairie NAWCA Grant II proposal for \$1,594,288.00.

Checked traps at the Lunneborg fence.

Re-staked Schmidt WPA, checked Grant WMA and Gordan WMA.

Worked with landowner on grazing system.

E-MAIL
MEMORANDUM

April 18, 1997

TO: R&W, ND Associate Supervisor (60130)
Denver, CO

FROM: Biologist, Tewaukon NWR Complex (62660)
Cayuga, ND

SUBJECT: March Activity Report

HIGHLIGHTS:

- * Staff held 4 CCP Open Houses.
- * Scott was selected for a assistant manager's position at Devil's Lake.
- * Selected four Range Technicians.

CCP:

Staff talked to Ransom Co Commissioners, Tewaukon Rod & Gun Club, Rutland Sportsmen's Club, Farm Bureau, Wild Rice Soil Conservation District and the Cass County Wildlife Club about CCP.

Staff hosted 4 CCP Open Houses in Forman, Lisbon, Hankinson, and Wahpeton. Average attendance was 12-15 people. Except Lisbon where only 4 people showed up. Comments ranged from more cropland on the Refuge to fishing and access issues. No surprising comments, most of them we had heard before.

Scott attended the spring Township Officers meeting.

EASEMENTS:

Jack worked with the City of Gwinner on their lagoon and changing their pipes and their impact on easement wetlands.

FIRE:

Don selected all four Range Technicians.

Don wrote many burn plans.

Chanda and Phil attended 130-190 training in Valentine.

ENVIRONMENTAL EDUCATION/OUTREACH:

The Jr Duck Stamp judging was held on March in Cayuga. The five judges selected 36 1st-3rd place winners from the 685 entries. Nevada Miller A 15

year old student from Raleigh, won Best of Show. His acrylic painting of a pair of pintails swimming in a marsh will go on to compete in the National Contest at the end of April. The Awards Banquet will be held in Bismarck in April.

Don, Chris and Bill attended the Rutland Sportsmen's Club meeting.

Tewaukon helped staff the FWS booth at the Fargo Sports Show.

Kristine presented a program on Wildlife Tracks and Sign at the 4-H workshop at Oakes.

Jack taught Hunters Education in Milnor and Lidgerwood.

Staff attended the Pheasants Forever Banquet.

Bill, Chris, and Don attended the Rutland fish fry.

Jack nominated the Cogswell Gun Club and Tewaukon Rod & Gun Club for the American Fisheries Society Award.

BIOLOGICAL:

Met with Rick Schroeder to discuss Tewaukon's biological program, goals, objectives and the CCP process.

LAW ENFORCEMENT:

Turned in law enforcement compilation report.

Jack worked to change the wording in 50 CFR for hunting and fishing.

Jack helped with Region 3 inservice refresher.

PERSONNEL/TRAINING:

Scott Kahan was selected for the assistant manager's position at Devils Lake. We will miss him immensely. He was a very valuable and productive member to the staff.

REFUGE OPERATIONS:

The Tewaukon Township board had their annual meeting at the Refuge.

Jack and Scott met with cooperative farmers about this years planting season.

Sandra talked to Wild Rice SCD about native grass seed harvest.

NAWCA:

Chris spend a considerable amount of time on the Drift Prairie NAWCA Grant II proposal.

Field checked Huckell's for ditch plug possibilities.

Field checked nesting culverts.

Jack worked on researching water rights for Pools 6, 7A, 8, and 9 for structure modification projects under NAWCA.

Jack worked with Bob Novotny to provided information on his CRP contract interest in renewing in Richland County.

E-MAIL

MEMORANDUM

March 4, 1998

TO: R&W, ND Associate Supervisor (60130)
Denver, CO

FROM: Biologist, Tewaukon NWR Complex (62660)
Cayuga, ND

SUBJECT: February Activity Report

HIGHLIGHTS:

- * CCP public outreach continues.
- * Mild winter keeps many species of birds around the Refuge.

EASEMENT:

Jack worked with a FmHA easement holder to discuss his easement and this years fieldwork and plan.

Sandra met with Bob Schutt to look at a site on the Storm Lake Easement Refuge where he is interested in building an apartment complex. The area is close to the Lake and has several wetlands that may be impacted.

Jack worked with Ken Forester on flooded basement/easement wetland problems.

CCP:

Bill attended the Rutland Sportsmen's Club meeting.

Placed our CCP display at the Wildlife Society meeting.

Put up display at the Cogswell Buffalo Supper and Milnor Cafe.

Sandra attended the Sargent and Richland Co commissioner's meeting.

Sandra attended the Red River Area Sportsmen's meeting.

Sandra and Connie, Waubay, met with representatives from the

Sisseton-Wahpeton tribe planning commission. A letter was sent to the tribal Chairman concerning the meeting and our desire to work with the tribe through the planning process. Letters were also sent to Congressionals about the meeting.

Jack spoke at the Ransom County FAC meeting about the process and made worksheets available at the NRCS and FSA offices.

ENVIRONMENTAL EDUCATION/OUTREACH:

Kristine worked on entering in some early Jr Duck Stamp entries and lining up judges.

Scott, Kris, Chris, Jack, and Rob attended the Cogswell Buffalo Supper. Jack and Rob worked the event.

Jack taught Hunters Education classes in Forman and Rutland.

FIRE:

Don attended PFPI training.

Don traveled to Rainwater Basin NWR in Kansas to assist in prescribe burn planning.

Put in FIREPRO funding requests.

Don worked on fire plans.

PERSONNEL/TRAINING:

Rob, Chris, Jack, and Scott donated blood.

Jane Lardy Nelson came for a house hunting trip at the end of the month. Her start date is March 15th.

Rob taught a Heavy Equipment Operators training class at Kulm.

REFUGE OPERATIONS:

Jack, Sandra, Scott and Kristine attended the ND Chapter of the Wildlife Society meeting.

A letter was sent to one of the Ransom Co. Commissioners

concerning the amount of land FWS has in the county.

A D-134 was filled out for Rob's injured foot at Law Enforcement Refresher during the pack test.

Another Project Leader's meeting was held to continue working on goals and objectives.

KRAFT SLOUGH:

Kraft Slough conference call held. A compatibility determination for hunting will be completed by Tewaukon staff prior to the May meeting. Landowners are still concerned that once the area becomes a refuge hunting will not be allowed.

FLOOD PROJECTS:

A memo was sent along with Engineering requests to clarify field and engineering responsibilities. Engineering projects include the White Bridge and Sprague Lake projects.

Flood positions were sent to personnel for processing. Ads were placed in local papers.

NAWCA:

Agreements were developed for projects that DU will be completing.

Looked for possible wetland restorations, predator fence location and on grazing systems.

Installed 22 nesting culverts.

Worked on Drift Prairie Project Grant II proposal.

Sent in Grant modification and extension request to Dave Weaver.

Talked to Sargent Co. NRCS about projects for Grant II.

E-MAIL

MEMORANDUM

February 7, 1998

TO: R&W, ND Associate Supervisor (60130)
Denver, CO

FROM: Biologist, Tewaukon NWR Complex (62660)
Cayuga, ND

SUBJECT: January Activity Report

HIGHLIGHTS:

- * Work began on our Public Outreach for the CCP process.
- * Jane Lardy Nelson was selected to fill the Administrative Position.

CCP

Attended Cogswell Gun Club and handed out Issues Worksheets, discussed the CCP process and announced Open Houses. Jack attended Optimist Club in Wahpeton and discussed process and Open Houses.

Sent out 1 page summary information sheets.

Developed Issue Worksheets.

Conference call with Allison, Carol, Ron, and Barb.

Worked with Doug Staller to design a traveling display for our CCP.

Developed a public involvement plan.

ENVIRONMENTAL EDUCATION/OUTREACH:

Jack spoke at the Wahpeton Optimist Club about the Refuge.

Scott met with the Red River Sportsmen to discuss partnership opportunities in our Zones of Opportunities.

FIRE:

Don worked on Spring fire plans.

Don completed the station Fire Management Plan.

Scott attended S-390 training in Mandan.

LAW ENFORCEMENT:

Scott, Jack, Rob and Sandra attended LE refresher. Jack and Rob stayed an extra session as instructors.

Jack and Scott met with landowner on a FmHA tract to discuss seeding grass and restoring basins.

PERSONNEL:

Interviews were held with applicants from the Green Sheet for the Administrative Position. Jane Lardy Nelson, R3 FWS office, was selected to fill the position.

Tallgrass prairie position memo sent to Skip to assist in clarification of possible position.

REFUGE OPERATIONS:

Submitted a Challenge Grant (Fisheries) to replace accessible fishing pier.

Sandra attended the Project Leaders meeting in Jamestown. She worked on the prairie team to draft goals and objectives.

NAWCA:

Met with contractor on nesting culverts, staked ditch plugs at Grant WMA, and began working on Drift Prairie Project #2.

Met with Arnie Kruse and Larry Hoffman to discuss Elliot drain project.

Installed 22 nesting culverts.

VOLUNTEER SERVICES REPORT

Fiscal Year 1998

Station: Tewaukon NWR

Organization Code: 62660

Provide data on all volunteers working under signed volunteer services agreements. Include Student Conservation Association (SCA) volunteers.

1. NUMBER OF VOLUNTEERS BY AGE

UNDER 18	18-35	36-61	OVER 61	TOTAL
25	64	113	13	215

2. HOURS CONTRIBUTED BY ACTIVITY CATEGORY

Monitoring & Studies:		Coordination Activities:	
Surveys & Censuses		Interagency Coordination	
Studies & Investigations		Tribal Coordination	
		Private Lands Activities (ex. restoration)	
Habitat Restoration:		Resource Protection:	
Wetland Restoration		Law Enforcement	
Upland Restoration	100	Permits & Economic Use Management	
Deepwater/Riverine Restoration		Contaminant Investigation	
		Contaminant Cleanup	
		Water Rights Management	
Habitat Management:		Provisions Unique to Alaska:	
Water Level Management		Subsistence	
Moist Soil Management		Public Access	
Graze/Mow/Hay	8	Manage Comm./Subsistence Fisheries	
Farming		Manage Private Lands	
Forest Management		Navigability Determinations	
Fire Management		Public Education and Recreation	
Pest Plant Control		Provide Visitor Services	
Fish and Wildlife Management		Outreach	516
Bird Banding		Planning & Administration	
Disease Monitoring & Treatment		Comprehensive Conservation Planning	5
Reintroductions		General Administration	50
Nest Structures			
Pest, Predator & Exotic Animal Control			

3. OPERATION COSTS

COST CATEGORY:	DOLLARS
Operations (Supplies, Materials, Equipment, Uniforms, etc.)	\$ 105.00
Travel/Transportation, Per Diem, Housing/Utilities (etc.)	295.70
Other (Staff/Volunteer Training, Recruitment, Recognition	100.00
TOTAL	\$ 500.70

679

4. STAFF TIME/SALARY FOR ADMINISTRATION OF PROGRAM	
CATEGORY:	TOTAL
Staff Time (Hours)	150
Staff Salaries	\$3000

5. PROGRAM HIGHLIGHTS (Unique Activities, Special Achievements, Special Events, Partnerships.)

Habitat

The Hankinson Women's group hand collected rare and unique plant seeds on a tallgrass native prairie site and handed seeded the seeds on a restoration site.

Recreation

The Tewaukon Fishing Tournament is an annual fishing tournament that is sponsored by 2 local sportsmen's groups. Over 50 teams participated in this year's tournament. Volunteers help staff organize the event, run the event, gather prizes and sell tickets to the event. All proceeds go back the Refuge to improve lakeshore fishing access and the fishing program.

Environmental Education(Outreach)

The ND Jr Duck Stamp Program is administered out of the Tewaukon National Wildlife Refuge office. This year we had several volunteers that helped with sorting the over 700 entries, judging, returning artwork to schools, the awards banquet and publicity.

Tewaukon Field Days is an annual event held at the Refuge. The volunteer helped organize the event, gather prizes and run the fishing contest. Event draws approximately 60-80 local young people every year.

The Hankinson Women are sponsoring a interpretative walking trail on the Hartleben WPA on a tallgrass prairie site. They have raised money for the signs and are helping to develop the trail and the signs. They also have helped with publicity and education of tallgrass prairie by sponsoring 6 wildflower walks on the site during the summer.

6. SPECIAL RECOGNITION

- a. Provide individual's name and station(s) where work was accomplished.
- b. Why was this person outstanding in their support of the FWS?

7. RECOMMENDATIONS TO IMPROVE THE VOLUNTEER PROGRAM.

Would like to continue to receive funding to help support the volunteer program for the ND Jr Duck Stamp Contest.

8. **WE NEED PHOTOS** (especially those with volunteers wearing the volunteer patch.) Please provide a caption with the person(s) name, site's name, and description of the project being accomplished.

SPOUSES -

Doug 18-35 30 hours - Admin
Korrinne 36-61 50 hours - Admin & Public Use
Siekaniecs Over 61 20 hours - Public Use

CLAUDIA HAUGEN - Jr Duck

Age 18-35 11 days 8 hours/day

FISHING TOURNAMENT

240 hours

25 0-18
40 18-35
54 36-61
10 over 61

CHRIS H.

15 hours

1 hr -Tewaukon Fishing Tournament, 6 hr - Sportsmen show, 8
hrs maintenance

18-35

LARRY B.

20 hours - Jr Duck Public Use

18-35

MURDEAN GULSVIG

16 hours - Tewaukon Field Days Public Use

Age 85

HANKINSON WOMEN

10 people X 20 hours = 200 hours - Resource Support & Public Use

1 - 18-35

9 - 36-61

TOTALS

UNDER 18.....	25
18-35.....	64
36-61.....	113
OVER 61.....	13
	215

1998 Nest Success On Tewaukon

FIELD	SPECIES	# NESTS	SUCCESSFUL	COMMENTS
ELF 001	Blue-winged teal	9	7	(1 ab.)
	Mallard	7	5	
	Gadwall	2	1	
	Shoveler	1	1	
	TOTAL	19	14	73.7 - (A) 47.0 - (M)
ELF 002	Blue-winged teal	20	17	
	Mallard	8	5	
	Gadwall	11	8	
	TOTAL	39	30	76.9 - (A) 46.2 - (M)
TOTALS		58	44	75.9 - (A) 46.5 - (M)

Two exclosures = 66 total acres

NESTING SUCCESS ON TEWAUKON NWR (OUTSIDE PREDATOR FENCES) ON 275 ACRES

FIELD	SPECIES	# NESTS	SUCCESSFUL	COMMENTS
KFR 001	Blue-winged teal	3	1	
	Mallard	4	2	
	Gadwall	5	3	
	Total	12	6	50.0 - (A) 35.3 - (M)
PL2 001	Blue-winged teal	3	1	
	Mallard	4	3	1 Ab
	Pintail	1	1	
	TOTAL	8	5	62.5 - (A) 40.8 - (M)
TLA 001	Blue-winged teal	4	3	
	Mallard	1	1	
	Gadwall	2	1	
	TOTAL	7	5	71.4 - (A) 25.2 - (M)
WLN 001	Blue-winged teal	2	2	
	Mallard	2	2	
	Gadwall	2	0	
	Pintail	4	3	
	TOTAL	10	7	70.0 - (A) 39.4 - (M)

SLN 001	Blue-winged teal	1	1	
	Mallard	2	0	1 Ab
	Gadwall	2	0	
	Shoveler	1	0	
	Green-winged teal	1	1	
	TOTAL	7	2	28.6 - (A) 10.2 - (M)
SIL 001	Blue-winged teal	3	2	
	Mallard	4	2	2 Ab
	Gadwall	11	4	2 Ab
	TOTAL	18	8	44.4 - (A) 8.2 - (M)
SIL 002	Blue-winged teal	2	1	
	Mallard	14	11	1 Ab
	Gadwall	14	8	1 Ab
	TOTAL	30	20	66.67 - (A) 47.2 - (M)
SIL 003	Mallard	2	0	
	Gadwall	2	2	
	TOTAL	4	2	50.0 - (A) 12.5 - (M)
TOTALS		96	55	57.3 - (A) 27.35 (M)

TOTAL NESTING SUCCESS (OUTSIDE FENCES)

1998			
	A - 57	M - 27	W/PC
1997			
	A - 32	M - 14	W/O PC
1996			
	A - 41	M - 30	W/O PC
1995			
	A - 46	M - 29	W/O PC
1994			
	A - 69	M - 54	W/PC
1993			
	A - 63	M - 52	W/PC
1992			
	A - 80	M - 80	W/PC
1991			
	A - 89	M - 81	W/PC
1990			
	A - 31	M - 17	W/PC

1998

Species	ELF 001	ELF 002	KFR 001	PL2 001	TLA 001	WLN 001	SLN 001	SIL 001	SIL 002	SIL 003	TOTAL	
Blue-winged teal	9	20	3	3	4	2	1	3	2	0	47	
Mallard	7	8	4	4	1	2	2	4	14	2	48	
Gadwall	2	11	5	0	2	2	2	11	14	2	51	
Pintail	0	0	0	1	0	4	0	0	0	0	5	
Shoveler	1	0	0	0	0	0	1	0	0	0	2	
Green-winged teal	0	0	0	0	0	0	1	0	0	0	1	

1997

[illegible]

COOPERATOR OR RESEARCH PROJECT=TEWAUKON NWR YEAR=98

STUDY AREA	SPECIFIC FIELD WITHIN A STUDY AREA	NORMAL NESTS	SUCCESSFUL NESTS	UNSUCCESS- FUL NESTS	FATE UNKNOWN	EXPOSURE DAYS	APPARENT HATCH RATE	MAYFIELD LOWER 95% CL	MAYFIELD HATCH RATE	MAYFIELD UPPER 95% CL	MLE LOWER 95% CL	MLE HATCH RATE	MLE UPPER 95% CL
ELF	001	19	14	5	0	227.5	0.737	0.237	0.470	0.917	0.249	0.482	0.931
ELF	002	38	29	9	0	400.5	0.763	0.275	0.462	0.770	0.279	0.465	0.777
KFR	001	11	6	5	0	165.9	0.545	0.138	0.353	0.885	0.145	0.362	0.905
PL2	001	8	5	3	0	115.3	0.625	0.143	0.408	1.131	0.149	0.415	1.154
SIL	001	18	8	10	0	141.3	0.444	0.016	0.082	0.386	0.015	0.081	0.426
SIL	002	28	19	8	1	365.9	0.704	0.276	0.472	0.799	0.288	0.483	0.810
SIL	003	4	2	2	0	33.7	0.500	0.006	0.125	2.099	0.007	0.134	2.470
SLN	001	7	2	5	0	77.1	0.286	0.012	0.102	0.741	0.013	0.109	0.884
TLA	001	7	5	2	0	50.4	0.714	0.034	0.252	1.676	0.038	0.266	1.871
WLN	001	10	7	3	0	111.0	0.700	0.132	0.394	1.136	0.135	0.395	1.161

46.5 - Electric Fences
27.35 - Outside Fences

TESTING RESULTS BY SAREA AND SPECIES

COOPERATOR OR RESEARCH PROJECT=TEWAWKON NWR YEAR=98

STUDY AREA WITHIN PROJECT	HOST SPECIES	NORMAL NESTS	SUCCESSFUL NESTS	UNSUCCESS- FUL NESTS	FATE UNKNOWN	EXPOSURE DAYS	APPARENT HATCH RATE	MAYFIELD LOWER 95% CL	MAYFIELD HATCH RATE	MAYFIELD UPPER 95% CL	MLE LOWER 95% CL	MLE HATCH RATE	MLE UPPER 95% CL
ELF	MALLARD	15	10	5	0	142.0	0.667	0.098	0.296	0.864	0.104	0.906	0.898
ELF	GADWALL	12	8	4	0	159.9	0.667	0.177	0.428	0.989	0.174	0.419	1.005
ELF	B-W-T	29	24	5	0	310.1	0.828	0.350	0.575	0.940	0.360	0.584	0.946
ELF	SHOVELER	1	1	0	0	16.0	1.000	1.000	1.000	1.000	844E74	844E74	844E74
KFR	MALLARD	4	2	2	0	63.5	0.500	0.070	0.337	1.517	0.073	0.340	1.573
KFR	GADWALL	5	3	2	0	74.4	0.600	0.104	0.396	1.432	0.113	0.406	1.464
KFR	B-W-T	2	1	1	0	28.0	0.500	0.022	0.290	3.161	0.028	0.308	3.407
PL2	MALLARD	4	3	1	0	62.5	0.750	0.190	0.578	1.701	0.188	0.574	1.748
PL2	B-W-T	3	1	2	0	36.8	0.333	0.009	0.150	1.987	0.012	0.165	2.277
PL2	PINTAIL	1	1	0	0	16.0	1.000	1.000	1.000	1.000	844E74	844E74	844E74
SIL	MALLARD	19	12	6	1	232.7	0.667	0.198	0.411	0.843	0.213	0.428	0.860
SIL	GADWALL	26	14	12	0	266.3	0.538	0.085	0.211	0.512	0.088	0.217	0.530
SIL	B-W-T	5	3	2	0	39.9	0.600	0.013	0.174	1.894	0.017	0.185	2.079
SLN	MALLARD	2	0	2	0	33.3	0.000	0.005	0.122	2.116	0.006	0.128	2.604
SLN	GADWALL	2	0	2	0	15.2	0.000	0.000	0.008	4.028	0.000	0.000	0.000
SLN	B-W-T	1	1	0	0	16.0	1.000	1.000	1.000	1.000	844E74	844E74	844E74
SLN	B-W-T	1	1	0	0	5.0	1.000	1.000	1.000	1.000	15E245	15E245	15E245
SLN	SHOVELER	1	0	1	0	7.6	0.000	0.000	0.008	38.862	0.000	0.000	0.000
TLA	MALLARD	1	1	0	0	3.0	1.000	1.000	1.000	1.000	.	.	.
TLA	GADWALL	2	1	1	0	15.0	0.500	0.001	0.096	7.767	0.000	0.087	22.542
TLA	B-W-T	4	3	1	0	32.4	0.750	0.038	0.344	2.723	0.044	0.361	2.922
WLN	MALLARD	2	2	0	0	34.0	1.000	1.000	1.000	1.000	243E65	243E65	243E65
WLN	GADWALL	2	0	2	0	14.5	0.000	0.000	0.006	4.210	0.000	0.000	0.000
WLN	B-W-T	2	2	0	0	25.0	1.000	1.000	1.000	1.000	41E109	41E109	41E109
WLN	PINTAIL	4	3	1	0	37.5	0.750	0.060	0.399	2.389	0.065	0.402	2.498

NESTING RESULTS BY STUDY AREA, ALL SPECIES AND FIELDS COMBINED

08:24 Friday, December 11, 1998 59

COOPERATOR OR RESEARCH PROJECT=TEWAUKON NWR YEAR=98

STUDY AREA	NORMAL NESTS	SUCCESSFUL NESTS	UNSUCCESSFUL NESTS	FATE UNKNOWN	EXPOSURE DAYS	APPARENT HATCH RATE	MAYFIELD LOWER 95% CL	MAYFIELD HATCH RATE	MAYFIELD UPPER 95% CL	MLE LOWER 95% CL	MLE HATCH RATE	MLE UPPER 95% CL
ALL	150	97	52	1	1688.6	0.651	0.257	0.345	0.463	0.265	0.355	0.474
ELF	57	43	14	0	628.0	0.754	0.308	0.465	0.698	0.314	0.471	0.706
KFR	11	6	5	0	165.9	0.545	0.138	0.353	0.885	0.145	0.362	0.905
PL2	8	5	3	0	115.3	0.625	0.143	0.408	1.131	0.149	0.415	1.154
SIL	50	29	20	1	540.9	0.592	0.156	0.278	0.490	0.165	0.289	0.506
SLN	7	2	5	0	77.1	0.286	0.012	0.102	0.741	0.013	0.109	0.684
TLA	7	5	2	0	50.4	0.714	0.034	0.252	1.676	0.038	0.266	1.871
WLN	10	7	3	0	111.0	0.700	0.132	0.394	1.136	0.135	0.395	1.161

NESTING RESULTS BY SPECIES, ALL STUDY AREAS COMBINED

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COOPERATOR OR RESEARCH PROJECT=TEWAUKON NWR YEAR=98

HOST SPECIES	NORMAL NESTS	SUCCESSFUL NESTS	UNSUCCESSFUL NESTS	FATE UNKNOWN	EXPOSURE DAYS	APPARENT HATCH RATE	MAYFIELD LOWER 95% CL	MAYFIELD HATCH RATE	MAYFIELD UPPER 95% CL	MLE LOWER 95% CL	MLE HATCH RATE	MLE UPPER 95% CL
MALLARD	47	30	16	1	571.0	0.652	0.234	0.380	0.615	0.244	0.392	0.628
GADWALL	48	26	23	0	547.3	0.531	0.126	0.232	0.425	0.128	0.236	0.435
G-W-T	1	1	0	0	16.0	1.000	1.000	1.000	1.000	844E74	844E74	844E74
B-W-T	46	35	11	0	477.2	0.761	0.280	0.453	0.728	0.292	0.465	0.740
SHOVELER	2	1	1	0	23.6	0.500	0.011	0.229	3.664	0.014	0.246	4.361
PINTAIL	5	4	1	0	53.5	0.800	0.142	0.526	1.855	0.148	0.529	1.894
ALL	150	97	52	1	1688.6	0.651	0.257	0.345	0.463	0.265	0.355	0.474

NESTS NOT USED IN MAYFIELD CALCULATIONS

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OBS	PROJECT	SAREA	FIELD	SPECIES	YEAR	NEST	NESTFATE	CAUSE	INCUB	COMMENT
1	TEWK	ELF	002	1350	98	31	1	.	20	INVESTIGATOR/PREDATOR/PARASITIC DISTURBANCE
2	TEWK	KFR	001	1400	98	2	3	1	0	INVESTIGATOR/PREDATOR/PARASITIC DISTURBANCE
3	TEWK	SIL	002	1320	98	6	1	.	4	INVESTIGATOR/PREDATOR/PARASITIC DISTURBANCE
4	TEWK	SIL	002	1350	98	11	2	6	0	EXPOSURE DAYS LE 0

Results for Tewaukon WPA's - 1998

Saunders - T131N R56W Sect. 31sw.			
Number unsuccessful	9	Number	
Exposure Days	140.5	of Nests	Species
	n = 13	8	BWT
Daily survival	0.935943	2	Mallards
Mayfield nest success	9.86%	3	Gadwall
Number Abandoned	1		
Number successful	4		
Number destroyed	8		
Apparent success	30.77%		

Palenky/Widmer - T132N R58W Sect. 4se.			
Number unsuccessful	8	Number	
Exposure Days	133.5	of Nests	Species
	n = 10	5	BWT
Daily survival	0.940075	1	Mallards
Mayfield nest success	11.50%	2	Shov
		2	Gadwall
Number Abandoned	1		
Number successful	2		
Number destroyed	7		
Apparent success	20.00%		

Olson - T130N R56W Sect. 14se.			
Number unsuccessful	10	Number	
Exposure Days	131	of Nests	Species
	n = 12	6	BWT
Daily survival	0.923664	1	Mallards
Mayfield nest success	6.21%	5	Gadwall
Number Abandoned	1		
Number successful	2		
Number destroyed	9		
Apparent success	16.67%		

Anderson/Evanson - T130N R56W Sect. 2.				
Number unsuccessful	34	Number	of Nests	Species
Exposure Days	592.5			
	n = 44		35	BWT
Daily survival	0.942616		5	Mallards
Mayfield nest success	12.64%		2	Shov
			2	Gadwall
Number Abandoned	3			
Number successful	10			
Number destroyed	31			
Apparent success	22.73%			

Holt - T134N R58W Sect. 10ne.				
Number unsuccessful	12	Number	of Nests	Species
Exposure Days	321.5			
	n = 21		1	Pintails
Daily survival	0.962675		6	BWT
Mayfield nest success	26.41%		9	Mallards
			1	Shov
Number Abandoned	1		4	Gadwall
Number successful	9			
Number destroyed	11			
Apparent success	42.86%			

Weaver/Coit/Schiffner -T134N R58W Sect. 26se and 27sw.				
Number unsuccessful	10	Number	of Nests	Species
Exposure Days	122			
	n = 13		1	Pintails
Daily survival	0.918033		5	BWT
Mayfield nest success	5.01%		2	Mallards
			3	Shov
Number Abandoned	2		2	Gadwall
Number successful	3			
Number destroyed	8			
Apparent success	23.08%			

Smith/Tanner - T133N R58W Sect. 5 s.

Number unsuccessful	19	Number	
Exposure Days	105.5	of Nests	Species
	n = 22	13	BWT
Daily survival	0.819905	4	Mallards
Mayfield nest success	0.10%	1	Shov
		4	Gadwall
Number Abandoned	3		
Number successful	3		
Number destroyed	16		
Apparent success	13.64%		

Bauer - T131N R58W Sect. 12ne / T131N R57W Sect. 7nw.

Number unsuccessful	31	Number	
Exposure Days	533	of Nests	Species
	n = 43	31	BWT
Daily survival	0.941839	5	Mallards
Mayfield nest success	12.28%	3	Shov
		1	GWT
Number Abandoned	6	3	Gadwall
Number successful	12		
Number destroyed	25		
Apparent success	27.91%		

T136N R58W Sect. 28 s.

Number unsuccessful	16	Number	
Exposure Days	253	of Nests	Species
	n = 21	16	BWT
Daily survival	0.936759	3	Mallards
Mayfield nest success	10.16%	2	Gadwall
Number Abandoned	2		
Number successful	5		
Number destroyed	14		
Apparent success	23.81%		

Kenyon/Kenyon - T134N R58W Sect. 15 w.				
Number unsuccessful	12	Number		
Exposure Days	170	of Nests	Species	
	n = 16	1	Pintails	
Daily survival	0.929412	10	BWT	
Mayfield nest success	7.71%	2	Mallards	
		2	Shov	
Number Abandoned	4	1	Gadwall	
Number successful	1			
Number destroyed	11			
Apparent success	7.69%			

Olson/BN - T130N R56W Sect. 25se.				
Number Abandoned	1	4	BWT	
Number successful	3	1	Mallards	
Number destroyed	3	2	Gadwall	
Apparent success	42.86%			

Dick - T134N R58W Sect. 3se.				
Number Abandoned	2	3	BWT	3 Depredated
Number successful	1	1	Shov	Successful
Number destroyed	1			
Apparent success	25.00%			

Buckmiller - T133N R58W Sect. 4nw.				
Number Abandoned	2			
Number successful	1	4 BWT	4 Depredated	
Number destroyed	5	1 Mallards	Depredated	
Apparent success	12.50%	3 Gadwall	2 Depredated	1 Successful

Wiltse/Kaspari - T135N R54W Sect. 4nw.		
1 BWT	Depredated	
1 MALLARD	Successful	

Compson - T135N R54W Sect. 6se and 7ne.	
1 BWT	Depredated
1 BWT	Successful

Even - T130N R56W Sect. 5se.	
1 BWT	Successful

Strander/Skonseng - T135N R58W Sect. 26nw.	
2 BWT	2 Successful

Total for all Tewaukon WPA areas searched.			
Summary section		Number	
Number unsuccessful	177	of Nests	Species
Exposure Days	2884.5		
	n = 241		
Daily survival	0.938638		
Mayfield nest success	10.90%		
Number Abandoned	29		
Number successful	61		
Number destroyed	151		
Apparent success	25.63%		

Total for the Lisbon Trapped Area			
Summary section		Number	
Number unsuccessful	112	of Nests	Species
Exposure Days	3785.5		
	n = 270		
Daily survival	0.970413		
Mayfield nest success	34.95%		
Number Abandoned	23		
Number successful	158		
Number destroyed	89		
Apparent success	58.52%		

DEAD BIRD COLLECTION FOR FALL 1998

	Location	Total Bir	Mallard	Pintail	Gadw	BW Te	GW T	Shovel	Wideo	Wood	Scaup	Unkno	Coot	Shore	Gulls	Grebe	Redhe	Ruddy	Canva	Cormo	Cattle	BlkBir	Rails	Other
03	Gaukler	17	4	2			10								1									
04	Gaukler	178	5				1					151	10	9									2	
05	Gaukler	20	10										7											3
06	Gaukler	75										75												
08	Gaukler	30	14		6	1		1				1	5	1				1						
14	Gaukler	7	1		1					1			3		1									
21	Gaukler	9	1				1					1	4										1	1
28	Gaukler	3											1	2										
		339	35	2	7	1	12	1	0	1	0	228	30	12	2	0	0	1	0	0	0	0	3	4
17	Kraft	527	43	6	8	56	25	111	12		4	142	88	9	1	1	2	6		2	11			
21	Kraft	294	9		8	21	19	47	8		12	99	68	2							1			
22	Kraft	137	7		7	5	5	25	3		6	37	31					1			5			5
29	Kraft	111	2		12	5	1	19	1			34	31								1		1	4
01	Kraft	5				1							1		2			1						
15	Kraft	30			4		8	3	1			2	10					2						
		1,104	61	6	39	88	58	205	25	0	22	314	229	11	3	1	2	10	0	2	18	0	1	9
21	Park Lake	12	2		1			1				3	3				1							1
28	Park Lake	11	2									1	7											1
07	Park Lake	4											4											
		27	4	0	1	0	0	1	0	0	0	4	14	0	0	0	1	0	0	0	0	0	0	2
15	Pickell & Taayer	364	33	2	23	66	9	13	1			11	178		4		5	7						12
16	Pickell	337	26		57	57	3	19	20			27	124		1	1						1		1
18	Pickell & Taayer	201	5		21	30	7	16	14			16	82				2	1	1	1		1	3	1
18	Pickell & Taayer	163	4		16	22	6	12	11			14	69				1		1	3		1	3	
24	Pickell	283	4		20	16	30	22	17			27	139		1	1	3	2		1				
25	Pickell	205	3		15	16	22	9	4			14	115	4	1		1	1						
30	Pickell	101	6	1	3	16	1	3					60				3	4				1	2	1
01	Pickell	29	1			5	6						12				1	2					2	
08	Pickell	141			7	4	8	4	3			26	89											
09	Pickell	84			3	5	10	4	1			2	57	1				1						
14	Pickell	44			1	3	4	1		1			34											
		1,952	82	3	166	240	106	103	71	1	0	137	959	5	7	2	16	18	2	5	0	4	10	15

11	Taayer	23				1						16		5									1	
16	Taayer	291	9		14	46	19	5	18			38	125	5		1				1		10		
18	Taayer & S of 11	14	2			3		1				1	6	1										
23	Taayer	89	4		7	4	4	5	1	1	1	2	56					2					2	
101	Taayer	16	1			1	2						11							1				
114	Taayer	4										3	1											
		437	16	0	21	55	25	11	19	1	1	44	215	6	5	1	0	2	0	2	0	10	0	3
118	Zimmelman(N)	3					2	1																
118	Zimmelman(N)	5	1		1								3											
118	Zimmelman(W) & Dite	6				5												1						
		14	1	0	1	5	2	1	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	
	TOTAL COLLECTED	3,873	###	11	###	###	###	###	###	3	23	###	1450	34	17	4	19	32	2	9	18	14	14	33
	through 10/15/98		199		235	389	203	322	115			727												



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Tewaukon National Wildlife Refuge Complex
9754 143½ Ave SE
Cayuga, ND 58013-9764

MEMORANDUM

Feb 3, 1999

To: R&W, ND Refuge/Fisheries Supervisor (60130)
Denver, CO

From: Refuge Manager, Tewaukon NWR Complex (62660)
Cayuga, ND

Subject: 1999 Annual Water Management Plan and 1998 Use Report

1. List of Water Rights

Declaration of Filing dated September 1, 1934, for Lake Tewaukon and East and West White Lake (including Cutler Marsh), 7,198 acre-feet storage, 4,251 acre-feet seasonal from Wild Rice River.

Declaration of Filing dated September 1, 1934 claimed 397 acre-feet storage and 312 acre-feet seasonal use for Clouds Lake (Pool 8) now called Hepi Lake. Listed on the same sheet as Lake Tewaukon/White Lake, as per RO(EN) Marshall Fox's 11-14-83 memo. Water use in pools 5 through 10 is covered under this right, with Hepi Lake to be drawn down to fill these pools.

Permit #1261: 4852 acre-feet storage and 2287 acre-feet seasonal use, for a total of 7139 acre-feet. This permit covers additional storage and seasonal use in Lake Tewaukon, Cutlers Marsh and West White Lake; 409 acre-feet seasonal use to replace water to be diverted from the watershed by Sargent County Water Conservation District project; and total storage and seasonal use for Pools 3 and 4. Priority date December 28, 1964.

Tewaukon NWR #1262: 1,130 acre-feet yearly (635 acre-feet storage and 495 acre-feet seasonal use) for Sprague Lake, dated December 28, 1964, diversion from an unnamed creek in the SE1/4NW1/4, Section 2.

Tewaukon NWR #1263: 686 acre-feet yearly for Mann Lake (236 acre-feet) and Horseshoe Slough (450 acre-feet) dated December 28, 1964, diversion from the Wild Rice River.

Tewaukon NWR #3816 Nickeson Tract: 571 acre-feet (474 acre-feet storage, 97 acre-feet annual use) for the Nickeson Bottoms, a tract jointly owned by the ND Game and Fish Department, US Bureau of Reclamation and US Fish and Wildlife Service (FWS). Diversion is from the Wild Rice River, W ½ Section 27, T. 130 N., LTL, R. 54 W. Priority date August 15, 1985. Received perfected water permit on August 14, 1997. Recorded in the Register of Deeds, Sargent County on March 3, 1998.

2. Water Use - 1998

While not much winter precipitation was recorded in 1997/98, water levels were again high due to existing water levels at freeze up and excessive rain in the spring. The Wild Rice River, LaBelle Creek, Frenier Dam Outlet and Sprague Lake Creek flowed well above average this year, exceeding management levels in all wetlands. In February stoplogs were removed from Dam 1 to move water out of the system before a major spring thaw. The Wild Rice River continued a steady flow the entire year with high peaks at major rain events in May and July. It is believed that the cleaning of the Crete-Cogswell drain in 1984-85 plus several continuous high water years caused this increased flow in the Wild Rice River. Most wetlands on the Refuge were filled by the above normal runoff, and they held water into freeze-up. Freeze up this year was a month later than normal.

Pool 1 (Lake Tewaukon): Major inflow began on Feb 23 from LaBelle Creek and overtopped the township road on that day. On May 18, outflow peaked at 1150.94 flowing over the emergency spillway. The management level of 1148.20 was reached on May 30. Rain events in July increased the level to 1150.22 flooding the Point Road. The lowest level occurred on October 28 at 1146.75 when the water level was dropped to facilitate repairs to the Parkers Bay spillway. Once construction was completed on November 19 water was added from upstream pools to maintain the fisheries over winter. Duck numbers peaked on the lake during the week of November 2 at 15,310. This included 8400 mallards, 5200 shovelers, 900 Lesser scaup, 400 ringnecks and other species. Snow geese (400), Canada geese (5000) numbers peaked during the week of November 16 on Lake Tewaukon. Weather had been so warm during early fall that the geese took a while to build their numbers. Adequate water and available food in crop fields throughout the District distributed the flocks of geese. The lake was frozen at 1148.94 (which is full pool) on December 17. The river continued to provide an intermittent flow under the ice after freeze up and water continued flowing over the dam due to continued precipitation events.

Parker Bay (east end of Lake Tewaukon): Inflow from LaBelle Creek flowed into Parker's Bay and raised the water level to about 6 feet. The high water from LaBelle Creek over-topped the East Dike of Lake Tewaukon and the township road several times during spring flow. By late July the pool was at 3 feet. This pool received the most consistent waterfowl use during the migration period. Numbers of waterfowl were included in the Pool 1 survey information (see above).

Pool 2 (Cutler Marsh): This pool filled rapidly due to runoff from the Wild Rice River, West White Lake and privately drained wetlands south of Pool 2. Water came pouring in from south of the refuge at the corner of a curve on County Road 5. There was such a continual flow of water that the road south of Pool 2 and the Ducks Unlimited (DU) cross dike were severely eroded for the second year in a row. The peak on May 17 was 1153.90. The next measurable peak was 1153.75 on June 30. Water levels were dropped in July/August to facilitate riprap placement on the back of the dam (1149). In September water levels were raised to hold sufficient water for replacing water in Pool 1 (1153). Pool 2 received the most snow goose use in the fall of 98 with 7500 birds sitting on the pool on 11/2/98. Close proximity to food plots made the pool an attractive resting site. At freeze-up (December 17) the level of this pool was 1151.00.

Pool 2A: Pool 2A was kept as dry as possible in order to repair the 2A inlet dike with North American Wetland Conservation Council (NAWCC) funds. It was decided not to include this project in the NAWCC projects. The dike was repaired during the year by force account with flood damage dollars. Water from spring runoff naturally maintained the pool at a depth of approximately 1153*.

* Approximate water level readings are based on recently completed surveys of pool depths which were mapped for refuge use. This is the only reliable method available at this time. All pools are scheduled to have gauges set to mean sea level in 1999.

Pool 3 (Maka Pool): Pool 3 peaked at 1156.55 on May 18. The water gradually dropped to 1150.99 by September 8 to expose erosion damage and to insure vegetation growth in the pool. Boards were added gradually starting September 10 to raise water level to store for Pool 1 after repairs were completed on the East Bay Dike. Late summer and fall this pool was a hot spot for waterfowl and pelican loafing. By September 17 the pool level was at 1157.65 and gradual drawdown started on November 19 to flow water into Pool 1. Drawdown was completed on December 4 at 1153.42 and froze at that level on December 17.

The DU cross dike was breached in April of 1997 allowing water to enter from the NE Pool 3 into the main Pool 3 east area. As a result, with the high water inflow in May, additional damage occurred to the cross dike and water levels behind the dike fluctuated with the Pool 3 water levels.

Pool 3A: This pool was lowered during the Pool 3 drawdown to facilitate Pool 2A inlet repairs. It had local runoff only, it did not increase above 1154 and naturally dried up in the early fall.

Nickeson Bottoms: Pool levels were high at 6 ft approximate depth. Waterfowl use in 1998 was low. Lack of emergent vegetation caused by deep water made the area unappealing to over water nesters and as brood water. This pool had some increase due to local runoff, flood relief from township roads to the north and decreased due to natural evaporation.

Pool 4 (River Pool): Peak water level occurred on May 20 when the water level was recorded as 1161.92. Gradual drawdown started on November 23 through December 4 (1158.74) to expose the upstream face of the dike to place rip-rap. On December 4 additional boards were added. Level at freeze up was 1158.95 on December 17.

Pools 3 and 4 had moderate water fowl use during the fall migration with ducks as the majority users. Peak numbers on October 21, 1998 included 920 mallards, 130 wigeon, 120 gadwall, 80 green-winged teal, 60 bufflehead and 10 blue-winged teal.

Pools 5, 5A, 6, 7, 7A: Pool 5 remained dry all year due to damage of the dike from high water levels in 1996. Structure replacement and dike repairs were completed in December. All other pools were full at the beginning of the year, but after the Hepi outlet to the north was washed open, pool levels dropped considerably due to lack of water from Hepi and loss of water from the damage to Pool 5. Pool 5A filled to approximately 1165 then dropped to 1162 at freeze up. Pool 6 filled to approximately 1168 and dropped to 1165 at freeze up. Pool 7's highest water level was approximately 1178 and dropped to 1173 during the summer. Pool 7A water level dropped through out the summer after reaching a peak level of 1177.05 on May 29. Pool 7A has a active rookery composed of great egrets, great blue herons, cormorants, and black-crowned night herons. In the fall of 1998, after Hepi Lake went dry, Pool 7A saw large numbers of puddle ducks (over 5,000 were observed on 10/15/97) utilizing the shallow water and vegetation as a resting and feeding area. 1,000 gadwalls were observed in the area on 10/15/97. At freeze up Pool 7A was estimated to be at 1174.

Pool 8 (Hepi Lake): A maximum depth of 6 feet was reached on May 29 and continued to drop during the rest of the summer. Water continued to exit the pool through the nonfunctioning north structure. By the end of summer only a small amount of water was located in the middle of the pool with mud flats around. Vegetation growth in the pool was good with emergents on the edges of the water including goosefoot, and dock. This area was used by shorebirds, ducks, geese and swans in the summer and fall. At freeze up the pool had approximately 1 ½ feet of water in the center of the pool. The open structure to the north made management water levels impossible. East and North side structures were repaired by the DU contractor and will make water management possible for next year.

Peak waterfowl numbers for Hepi Lake and adjacent pools were 3780 ducks and 1503 geese. Largest numbers by species were: 1500 Canada geese and 3500 mallards.

Pool 9: All water in Pool 8 ran into Pool 9 and water level peaked at approximately 10 feet in May. Because of the steep sides on this pool, vegetation only grew along the edges of the water. It drained through the existing pipe to the Wild Rice River until it reached 3 ½ feet by freeze up. An above ground outlet channel was constructed to the Wild Rice River above the existing pipe in December by the DU contractor which should allow additional sheet water to continue to the Wild Rice.

Pool 10: This pool received only local runoff and natural evaporation due to no management capability on Pool 8. In May it reached an approximately depth of 6 ft. This pool has vegetation around the edges and some submergent vegetation. Due to high water, management goals were not accomplished in this pool (desired depth of 2 ½ feet then dry by August as semi permanent marsh). Pool level gradually dropped to 4 foot by freeze up.

Pool 11 (West White Lake): This pool filled gradually due to water runoff conditions. It peaked at approximately 1151.65 on July 3. Water was moved into East White Lake then into south Pool 2 and the Wild Rice River when the south Pool 2 levels had dropped significantly. The southwest section of the pool has significant cattail growth and the area was utilized by ducks and geese in the fall. The rest of the pool was frequented by pelicans and cormorants. Pool 11 froze on December 17 at 1148.70.

Pool 12 (East White Lake): East White Lake peaked on July 3 at an elevation of 1151.65. It then maintained the same level as West White Lake. This pool has no vegetation except along a few edges. It also has developed severe erosion in some areas. The only wildlife to use this pool are pelicans, cormorants and great blue herons. In August these species were present in large numbers due to the fathead minnows in the pool. Pool 12 continued to flow into south Pool 2 and into the Wild Rice River most of the summer whenever possible. Freeze up was December 17 at approximately 1148.70.

East and West White Lake had peak waterfowl numbers on October 21, 1998 with 360 Canadas, 350 snow geese, 80 mallards, 100 gadwalls, 450 green-winged teal, and 40 wigeon.

Pool 13 (Mann Lake): Mann Lake control structure overtopped on May 10 and filled the lake to approximately 14 feet. The lake was lowered gradually as the river level dropped. Additional boards were taken out in September to remove as much water as possible. The west end of the pool saw some brood use and divers during the summer. In the fall migratory waterfowl use was also noted. The level at freeze up was approximately 10 feet.

Pool 14 (Sprague Lake): Sprague Lake overtopped on April 1 at several places through April 10 and again June 28 through approximately July 8. Severe erosion occurred to the township road to the north making it impassible until the water level dropped. This lake had some migratory bird use as well as mergansers, grebes, cormorants and great blue herons. Elevation at Freeze up was approximately 9.1 feet.

Pool 16 (Horseshoe Slough Group): The Banish "J" Dike was overtopped by April 4 and was partially under water for about 2 weeks. B-North continued to receive water from the north from off of the Refuge where the County Road Department breached an old railroad grade in 1997 to relieve flooding of County Road 3. When the water level dropped in the Wild Rice River on approximately July 8, all Pools were lowered a few inches by backing water through "A" dike into the Wild Rice River. The pools in the Horseshoe Slough Unit saw high numbers of broods due to the good ratio of open water to cattails. They also provided shallow feeding areas for broods.

The Sprague Lake Refuge Units (Pools 13, 14 & 16) had large concentrations of waterfowl on November 2, 1998 with 900 Canadas, 600 snow geese, 5,000 mallards, 440 gadwalls, 20 pintails, 120 shovelers, 120 green-winged teal, 160 wigeon, 240 ringnecks, 20 redheads, 2 canvasbacks, 120 lesser scaup, 200 ruddy ducks and 300 mergansers.

3. Impoundment Data

Please see the attached chart for capacities for each pool at various elevations. No formal inflow/outflow records were maintained. There are currently no functional gauges on pools that relate to mean sea level. Please see Section #2 above for elevation changes for the various pools.

4. 1999 Plans

The following plans for the water levels in the pools are the best levels for attaining management objectives. However, with ongoing repair to damaged dikes and the third year of expected high water, is not anticipated that we will attain them this year. All efforts will be made to manage pool levels at desired elevations without incurring additional damage to dikes from high water.

On three pools (Pool 2A, 5 and 13) invertebrate samplers will be installed this fall for monitoring of wetland response to draw downs and to give managers a tool in knowing when a specific pool is in need of a draw down.

Pool 1 (Lake Tewaukon): Maintain 1148.0 Mean Sea Level (MSL). This elevation will help to maintain the sport fishery habitat.

Parker Bay (east end of Lake Tewaukon): If possible, lower to maintain a 2½-3 foot depth for waterfowl production.

Pool 2 (Cutler Marsh): Try and maintain the pool at 1148.0 MSL to relieve pressure on damaged dikes and to facilitate dike repair on the DU cross dike. This will also encourage vegetative growth in the east side of the pool and provide mud flats for shore bird use. Care will be taken to ensure that water is not dropped too low to allow sheep to escape the Cutler Woods Area. Keep Pool 2 South of DU dike at 1148 to relieve pressure on the breached dike and to promote vegetative growth for erosion control.

Pool 3 (Maka Pool): Maintain pool at 1152.5 to facilitate repairs to the DU cross dike. Stabilize water as quickly as possible before over-water duck nesting is initiated. If needed, supply water to Pools 2A and 3A.

Nickeson Bottoms: Water levels will be dropped as the Wild Rice water levels will allow. This pool has very little vegetation or wildlife use. An attempt must be made to try and lower this pool from approximately 6 feet to a depth of 3 feet to improve vegetative growth and waterfowl use.

Pool 4 (River Pool): Maintain approximately 1160 MSL for duck nesting, especially over-water nesting, and stabilize as quick as possible before April 15. Maintain muskrat populations by keeping this pool at this elevation.

Pool 2A: Maintain at a water level of 1154. This will allow a 4 foot water depth for brood use. Invertebrate samplers will be installed during the fall for sampling to begin in the spring of 2000. If sampling indicates a sufficient number of samples then the pool will be drawn down in the year 2001 and invertebrate response will be measured.

Pool 3A: The pool will be filled to a level of 1156 for brood use.

Pool 5: Repairs were completed by a DU contractor to this structure by the end of 1998. Leave this pool dry for 1999. Invertebrate samplers will be installed in the fall. Then water will be added the following spring and invertebrate sampling will be conducted.

Pool 5A - Allow to fill 2-3 feet (elevation 1162) with water diverted from Hepi Lake.

Pool 6 - Maintain at a level of 1167. Current density of cattail makes excellent cover for northern harriers, marsh wrens, bitterns, and red-winged blackbirds.

Pool 7 - Maintain at a level of 1174. Current density of cattail makes excellent cover for northern harriers, marsh wrens, bitterns, and red-winged blackbirds.

Pool 7A: Divert water from Hepi Lake during spring runoff to fill to a maximum depth to flood cattails and maintain water through out the summer (elevation 1178 minimum). The pools will dry out rapidly through an average summer due to evaporation. For Pool 7A's active rookery, water levels should be managed to keep 1- 3 feet of water in the pool throughout the summer and fall.

Pool 8 (Hepi Lake): Control structures on the north and east ends were repaired in Dec 1998. As flood waters increase the pool level in the spring water should be diverted to fill Pools 5A, 6, 7 and 7A. If excess water exists after filling these pools water should be diverted out of 7A through its north structure. Pool should be kept at a 2-4 foot level to encourage vegetative growth. The culvert to the north of Hepi should remain closed until the channel from pool 9 to the Wild Rice is vegetated.

Pool 9: Due to construction Pool 9 was lowered last fall. Plans are to avoid filling this pool from Hepi to reduce impacts to the channel from pool 9 to the Wild Rice until it is vegetated. Hopefully snows and rains will not exceed the current freeboard in Pool 9.

Pool 10: Lower to a depth of 2½ feet to encourage submergent vegetation growth to maintain its highest use as a semi-permanent wetland.

Pool 11 (West White Lake): Maintain depth at 4-4½ feet to slow cattail invasion. If necessary pump water to Pool 12 to keep from flooding County Road 5. Maximum level should be 1150 for cattail control and no higher than 1151 to reduce impacts to County Road 5. To allow drop in East White Lake, block structure after spring runoff.

Pool 12 (East White Lake): Add no water to this pool unless there is a need to pump water from Pool 11 to protect County Road #5. If possible allow this pool to drop to a level of 1148. Allow gradual drying to reestablish cattails and to reduce bank erosion.

Pool 13 (Mann Lake): Maintain at current elevation (8 ft). Invertebrate samplers will be installed during the fall for sampling to begin in the spring of 2000. Repairs for this structure are planned for the year 2,000 by a DU contractor.

Pool 14 (Sprague Lake): Maintain maximum pool, about 8½ to 9 feet in order to maintain the sport fishery. If flood project is to begin this summer there may be a need to reduce the water level.

Pool 16 (Horseshoe Slough): Pools are at maximum level, no water is needed in the system. Once the Wild Rice River recedes lower Pool A to protect the Banish "J" dike and the Pool A dike. If flood project is to begin this summer there may be a need to reduce the water level. The railroad grade still has a cut in it and may raise the water levels in these pools further.

5. Location Map

Please see attached Refuge Map on which all management pools are marked.

Submitted By:

SLM Silvanic
Refuge Manager

Date: 2/5/99

Reviewed By:

Date: _____

Approved By:

Date: _____

Concurrence:

Date: _____

Attachments

TEWAUKON NATIONAL WILDLIFE REFUGE
Pools, Elevations and Acres

Pool No. & Name	Max. elevation (msl)	1985 Acres	1997 Acres *	1997 Volume (acre ft.) *	1998 Acres *	1998 Volume (acre ft.) *
Pool 1 - Tewaukon	1149	1015	>1067.77	>9366.92	1059.56	8303.05
- Parker's Bay	1149	95	>90.30	>371.36	>90.30	>371.36
Pool 2 - Cutler's Marsh	1152	246	246.62	825.73	246.62	825.73
Pool 2A	1152	30	24.19	45.84	>24.19	>45.84
Pool 3 - Maka Pool	1156	125	98.99	257.31	73.43	173.00
Pool 3A	1156	18			5.03	4.39
Pool 4 - River Pool	1159	108	25.82	31.71	>93.29	>206.92
Pool 5	1160	6	0.15	0.07	0.15	0.07
Pool 5A	1164	5	9.30	15.97	9.30	15.97
Pool 6	1169	6	>8.46	>20.99	7.18	13.15
Pool 7	1174	21	21.64	58.52	21.64	58.52
Pool 7A	1178	106	16.58	6.61	57.75	79.43
Pool 8 - Hepi Lake	1179	106	58.62	19.76	58.62	19.76
Pool 9	1167	10	8.54	15.20	11.10	35.35
Pool 10	1173	5.5	4.57	6.66	4.57	6.66
Pool 11 - West White Lake	1151	80	71.86	174.69	71.86	174.69
Pool 12 - East White Lake	1147	103	>97.75	>389.62	>97.75	>389.62
Pool 13 - Mann Lake	1207	57			>46.16	>163.31
Pool 14 - Sprague Lake	1209	186			>167.77	>722.97
Pool 16 - Horseshoe Slough		244				
- Pool 1 (A Pool)	1210	119.7			41.16	39.27
- Pool 2 (B Pool)	1206	42.5			>44.46	>120.02
- Pool 3 (C Pool)	1206	10.3			>10.25	>30.27
- Pool 4 (B West)	1206	+30.3			>44.83	>114.60
- Pool 5 (B North)	1206	24.5			>23.41	>31.98
- Pool 6 (C North)	1208	+2.8			8.57	7.22
- Pool 7 (C South & C East)	1206	14.5			21.83	50.77

* 1997-98 Pool acreages and volumes were calculated from information gathered during recently completed surveys of pool depths which were mapped for refuge management purposes. There are currently no functional gauges on pools that relate to mean sea level.

>Currently Area Tables do not go higher than this, however, water level was higher (see text for water level). Area Table will be expanded in the future.

1989 HERBICIDE COST SUMMARY

RANSOM COUNTY

CHEMICAL	12.25 gal 2,4-D @ \$7.25/gal.....	\$88.81
	6.13 gal Tordon 22-K @ \$71.00/gal	\$435.23
SALARY	Three men - 111 hours.....	\$1,309.85
TRUCK	1349 miles @ \$.45/mile.....	\$607.05
TOTAL		\$2,440.94

RICHLAND COUNTY

CHEMICAL	22.4 gal 2,4-D @ \$7.25/gal.....	\$162.40
	11.2 gal Tordon 22-K @ \$71.00/gal	\$795.20
SALARY	Three men - 125 hours.....	\$1,427.05
TRUCK	1221 miles @ \$.45/mile.....	\$549.45
	Red River Sportsmen - Smith WPA Richland Co.	\$400.00
TOTAL		\$3,334.10

SARGENT COUNTY

CHEMICAL	45.63 gal 2,4-D @ \$7.25/gal	\$330.82
	15.31 gal Tordon 22-K @ \$71.00/gal	\$1,087.01
SALARY	Three men - 260 hours.....	\$3,082.40
TRUCK	951 miles @ \$.45/mile.....	\$427.95
TOTAL		\$4,928.18

GRAND TOTAL	\$10,703.22
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ACREAGES:	Ransom County -	49.00	WPA
	Richland County -	89.75	WPA
	Sargent County -	162.00	NWR
	Sargent County -	20.50	WPA
	TOTAL ACRES	321.25	

158,175
 100
 100

1998 WONT TOWN

DATE	TIME	WPA	CROP	LEGAL DESCRIPTION	# OF ACRES	PEST	WIND INFO	TEMP	PESTICIDE USED	SUPPLIER OF PESTICIDE	GAL/ACRE 1 PT TORD/ 2 PT 2,4-D	LBS. AI # TORDON/ # 2,4-d	TANK MIX /AC	APPLI- CATOR INITIALS
5-27	NA	Arneson (63)	grass	136-58-17	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
5-27	0900	Blikre (70)	grass	136-58-28	2.0	spurge	SE5	73	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
6-8	NA	Chose (69,a)	grass	136-58-33	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
6-8	NA	Boeder (76,a)	grass	136-54-15	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
6-8	1600	Warner (306)	grass	136-54-23	.5	spurge	SE7	62	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
6-11	1500	Bueling (47)	grass	136-54-27/34	8.0	spurge	SE5	62	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
6-11	1530	Bueling (27)	grass	136-54-34	1.0	spurge	SE5	61	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
5-28	NA	Strander (98)	grass	135-58-26	Sheep	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
5-28	NA	Skonseng (67)	grass	135-58-26	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
5-28	NA	Peterson (28)	grass	135-58-26	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
6-8	NA	Shelver (31)	grass	135-55-3	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
6-8	1300	Compson (303)	grass	135-54-6/7	3.0	spurge	SE8	66	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
6-3	0930	Wiltse (11)	grass	135-54-4	15.0	spurge	N7	55	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
6-4	01000	Kaspari (33)	grass	135-54-4	15.0	spurge	NW6	56	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
6-8	0900	Kaspari (33,a)	grass	135-54-3	2.0	spurge	SE8	65	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
5-26	01200	Dick (342)	grass	134-58-3	11.0	spurge	SE6	77	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
5-26	01000	Holt (66)	grass	134-58-10	4.0	spurge	NE3	70	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
5-26	NA	Bachman (46a,b)	grass	134-58-8/17	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
5-26	NA	Bachman (46)	grass	134-58-17	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
5-28	0930	Reinke (58)	grass	134-58-30	11.0	spurge	NW8	75	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
5-29	NA	Kenyon (64)	grass	134-58-15	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
5-29	NA	Kenyon (68)	grass	134-58-15	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
5-29	NA	Grinstead (43)	grass	134-58-22	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
5-29	NA	Anderson (215)	grass	134-58-22	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
5-29	NA	Gjertson (317)	grass	134-58-22	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
5-29	NA	Schiffner (165)	grass	134-58-23	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
5-29	NA	Schiffner (299)	grass	134-58-27	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
5-29	NA	Weaver (97,a)	grass	134-58-26	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA
5-29	NA	Coit (255)	grass	134-58-35	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WHA

Total 72.5 AC.

SPRAYING RECORD (Hours/Fuel)

Date	County	WPA	Name	Regular Hours	Comp Time Hours	Gas	Diesel	Vehicle	Miles
5-26	Ransom	Holt	Bill	8	1				
5-26	" "	Dick	Bill	8					
5-27	" "	Bliknie	Bill	8					
5-27	" "	Jasper Smith	Bill	8					
5-28	" "	Buckmiller Rankie	Bill	8	1				
5-29	" "	Buckmiller Dick Magill	Bill	8					
6-3	Ranson	Kaspari Wilstie	Bill	4					
6-4	" "	Kaspari	Bill	4					
6-5	" "	Wiltes Kaspari ^{33A}	Bill	8					
6-8		Kaspari ^{33A}	Bill	8					
6-11	Ransom	Warner Buehing Metzger	Bill	8					
		Labor \$1181.62 Fuel \$108.73							
			Total	80 hrs	2 hrs	5.5 gal. \$5.00	110 gal. \$103.73	Total -	1198 mi.

DATE	TIME	Refuge 1998	CROP	LEGAL DESCRIPTION	NUMBER OF ACRES	PEST CONTROL	WIND INFO	TEMP	PESTICIDE USED	SUPPLIER OF PESTICIDE	GAL/ACRE 1 PT TORD/ 2 PT 2,4-D	LBS. AI # TORDON/ # 2,4-d	TANK MIX /AC	APPLI- CATOR INITIALS
6-12-98	0900	Sprague	grass	13055-26	3.0	spurge	N3	63	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-12	1200	Sprague	grass	130-55-25	4.0	spurge	NW3	70	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-15	01000	Sprague	grass	130-55-35	1.0	spurge	SE3	71	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-15	1200	Sprague	grass	130-55-34	2.0	spurge	SE4	74	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-15	1400	Sprague	grass	129-55-2	6.0	spurge	SE6	74	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-18	1400	Sprague	grass	130-55-35	.5	spurge	S3	76	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-19	01700	Sprague	grass	129-55-3	None	spurge	S5	60	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-19	01800	Sprague	grass	129-55-1	None	spurge	S6	61	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-12	1300	Sprague	grass	130-55-36	.5	spurge	N4	64	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-22	0700	Tewaukon	grass	129-53-5	2.0	spurge	NW4	61	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-22	01000	Tewaukon	grass	129-53-6	3.0	spurge	NW5	65	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-22	1200	Tewaukon	grass	129-53-36	3.0	spurge	NW5	70	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-22	1500	Tewaukon	grass	130-53-31	5.0	spurge	NW2	75	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-23	0900	Tewaukon	grass	130-53-31	13.0	spurge	SE8	70	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-23	1300	Tewaukon	grass	130-55-36	2.0	spurge	SE9	74	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-24	0800	Tewaukon	grass	130-54-36	2.0	spurge	SE6	68	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-24	0900	Tewaukon	grass	130-53-31	3.0	spurge	SE7	69	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-24	1200	Tewaukon	grass	129-53-32	2.0	spurge	SE7	70	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-24	1300	Tewaukon	grass	129-53-32	3.0	spurge	SE8	75	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-24	1400	Tewaukon	grass	129-53-36	4.0	spurge	SE	80	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-24	1500	Tewaukon	grass	130-54-36	3.0	spurge	SE	85	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-25	1200	Tewaukon	grass	130-54-35	3.0	spurge	SW5	76	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-24	1500	Tewaukon	grass	130-53-32	10.0	spurge	SE7	72	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
6-30	0900	Tewaukon	grass	129-54-35	3.0	spurge	NW5	68	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
7-8	01300	Tewaukon	grass	129-54-35	2.0	spurge	NW6	73	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
7-9	01100	Tewaukon	grass	130-54-36	1.0	spurge	E1	74	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
7-10	01300	Tewaukon	grass	130-53-36	8.0	spurge	SE3	86	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
7-14	01000	Tewaukon	grass	129-53-36	3.0	spurge	SW7	78	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
			grass			spurge			Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	

Total - 92.0 AC.

11.5 gal product Tordon @ \$7.14 = \$87.11
23 gal " 24D @ 11.03 = 253.69

23186 AI Tordon
86.48 186 AI 2,4D

1948

SPRAYING RECORD (Hours/Fuel)

Date	County	WPA	Name	Regular Hours	Comp Time Hours	@90.9/gal Gas	@94.3/gal Diesel	Vehicle	Miles
6-12	Sargent	Sprague	Bill	8					
6-16	"	"	Bill	8					
6-18	"	Sprague	Bill	3					
6-19		Sprague	Bill	6					
6-15		Sprague	Bill	8					
6-19	Sargent	Tewaukon	Bill + Neal	8					
6-22		Tewaukon	Bill + Neal	8	1				
6-23	Sargent	Tewaukon	Bill + Neal	8	1				
6-24	Sargent	Tewaukon	Bill + Neal	8					
6-30	Sargent	Tewaukon	Bill + Neal	8					
7-8	Sargent	Tewaukon	Bill + Neal	8					
7-9	Sargent	Tewaukon	Bill + Neal	8					
7-10	Sargent	Tewaukon	Bill + Neal	8					
7-14	Sargent	Tewaukon	Bill + Neal	8					
<div> <div>Total hrs</div> <div>Bill 107</div> <div>Neal 74</div> </div>				Total Cost					
				1541.87					
				885.78					
Total				95 hrs.	2 hrs.	4 gall. gas.	53 gall Diesel	Total	573 mi.
						\$3.64	\$49.98		

Total Cost \$2081.27

ESTIMATE APPLICATOR RECORDS

1998

Blank Forms

DATE	TIME	WPA	CROP	LEGAL DESCRIPTION	# OF ACRES	PEST	WIND INFO	TEMP	PESTICIDE USED	SUPPLIER OF PESTICIDE	GAL/ACRE 1 PT TORD/ 2 PT 2,4-D	LBS. AI # TORDON/ # 2,4-d	TANK MIX /AC	APPLI- CATOR INITIALS
7-9	NA	Palensky (137)	grass	132-58-4	Wet	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
7-9	NA	Widmer (172)	grass	132-58-3	Wet	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
7-9	NA	Gainor (134)	grass	132-54-14/23	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
7-9	NA	Douglas (174)	grass	132-54-14	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
7-9	NA	Gainor (170)	grass	132-54-13/24	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
7-9	NA	Hellen (181)	grass	132-54-24	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
7-9	NA	Brekke (183)	grass	132-54-24	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
7-1	1300	Bauer (10)	grass	131-58-12	10.0	spurge	NW3	80	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
Wet	NA	Bauer (10)	grass	131-57-7	Wet	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
Wet	NA	Saunders (157)	grass	131-56-31	Wet	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
Wet	NA	Asche (148)	grass	131-55-12	Wet	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
7-9	1400	Mahrer (94,a)	grass	131-55-24	2.0	spurge	W2	84	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
Wet	NA	Wyum (168)	grass	131-54-33	Wet	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
Wet	NA	Kaske (175)	grass	131-54-33	Wet	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
Wet	NA	Palensky (154)	grass	131-54-34	Wet	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
Bugs	NA	Even (126)	grass	130-56-5	Bugs	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
7-28	1400	Evanson (160)	grass	130-56-2	2.0	spurge	NW6	57	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
7-28	NA	Anderson (31)	grass	130-56-11	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
Wet	NA	Olson (150)	grass	130-56-14	Wet	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
7-29	1400	Olson/BN(151a)	grass	130-56-25	1.0	spurge	NW5	75	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
Wet	NA	Lunstad (167)	grass	130-55-5	Wet	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
Wet	NA	Klefstad (149)	grass	130-55-33	Wet	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
7-29	NA	Krause (158)	grass	129-53-4/5	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
7-30	8/1000	Evanson (163)	grass	129-56-2	6.0	spurge	N3	68	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
7-30	NA	Nelson	grass	130-55-33	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
			grass			spurge			Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
			grass			spurge			Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
			grass			spurge			Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH
			grass			spurge			Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	WH

Total 21.0 AC.

1998

SPRAYING RECORD (Hours/Fuel)

Date	County	WPA	Name	Regular Hours	Comp Time Hours	Gas	Diesel	Vehicle	Miles
7-9	Sargent	Palomby Ingher Bretke	Bill	8					
7-1	Sargent	Bauer	Bill	8					
7-28	Sargent	Anderson Evanston	Bill	8					
7-29	Sargent	Krause Olson	Bill	8					
7-30	Sargent	Nelson Evanston	Bill	8					
			total	40 hrs		2 gall. gas	51	total	528 mi
				\$40		2	\$19.00		

DATE	TIME	1998 wpa	CROP	DESCRIPTION	ACRES	PEST	INFC		USED	OF PESTICIDE	1 PT TORD/ 2 PT 2,4-D	# TORDON/ # 2,4-d	MLX /AC	CAUTION INITIALS
7-13	1000	Boehning (30)	grass	130-52-25	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-13	1100	Smith (28)	grass	130-52-35 129-52-2	6.0	spurge	W-6	84	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-22	1500	Novetzke (39)	grass	130-51-20	8.0	spurge	NW7	76	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-22	1300	Ford (36)	grass	130-51-22	3.0	spurge	NW7	74	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-23	0900	Kuehn (43)	grass	130-51-29/32	4.0	spurge	NW3	72	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-24	1500	Bladow (13)	grass	130-50-20	2.0	spurge	NW4	80	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-24	NA	Bladow (20)	grass	130-50-20	Sheep	spurge	NW4	80	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-14	1300	Wollitz (35)	grass	129-LTL-52-5/8	10.0	spurge	SW6	85	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-14	1400	Stenson (25)	grass	129-LTL-52-8	None	spurge	SW5	86	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-14	1500	Paetzke (32)	grass	129-LTL-52-5	None	spurge	SW8	86	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-14	1530	Paetzke (33)	grass	129-LTL-52-8	None	spurge	SW6	85	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-14	NA	Haaland (38)	grass	129-LTL-52-19	Too wet	spurge	SW6	85	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-14	NA	Vogeler (15)	grass	129-LTL-52-19	Too wet	spurge	SW6	85	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-14	1600	Leack (44)	grass	129-52-3	None	spurge	SW5	84	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-24	1100	Leack (44,a)	grass	129-52-4	1.0	spurge	N2	75	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-23	1200	Hegar (26,a)	grass	129-LTL-52-12/13	None	spurge	NW4	72	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-23	1300	Nechas (16)	grass	129-LTL-52-12	12.0	spurge	NW5	73	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-15	NA	Willprecht (51)	grass	129-LTL-52-12	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-15	NA	Gaukler (27)	grass	129-LTL-51-19	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-15	NA	Krause (23)	grass	129-LTL-51-21	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-15	NA	Ahrens (41,42)	grass	129-LTL-51-21	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-15	NA	Arndt (21)	grass	129-LTL-51-21	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-16	NA	Gunnness (34)	grass	130-50-35 129-50-2	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-16	NA	Boldt (53)	grass	129-50-2	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-16	NA	Kentz (37)	grass	129-50-2	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-27	01100	Elsen (50)	grass	129-50-2/11	6.0	spurge	NW6	128	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-27	NA	Biggs (12a)	grass	129-50-13	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-27	NA	Berndt (10)	grass	129-50-13/24	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-27	NA	Korth (22)	grass	129-50-26	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H

Total - 52.0 AC.

TIME	WPA	CROP	LEGAL DESCRIPTION	# OF ACRES	PEST	WIND INFO	TEMP	PESTICIDE USED	SUPPLIER OF PESTICIDE	GAL/ACRE 1 PT TORD/ 2 PT 2,4-D	LBS. AI # TORDON/ # 2,4-d	TANK MIX /AC	APPLI- CATOR INITIALS
7-27 NA	Biggs (12)	grass	129-50-25	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-27 NA	Biggs (12)	grass	129-50-30	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-27 NA	Anderson (49)	grass	129-50-36/25	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-27 NA	Anderson (49)	grass	129-50-30	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-27 NA	Anderson (47)	grass	129-50-31	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-27 NA	Larson (29)	grass	129-LTL-50-23	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-27 NA	Ostby (46)	grass	129-LTL-50-22	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-27 NA	Swanson (48)	grass	129-LTL-50-22/23	None	spurge	NA	NA	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-29 NA	Hartleben	grass	130-50-8	24	spurge	NW8	83	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-30 NA	HARTLEBEN	grass	130-50-8	8	spurge	N5	78	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
7-31 1300	Hartleben	grass	130-50-8	15	spurge	SE3	73	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
8-4 1400	Hartleben	grass	130-50-8	15	spurge	N5	82	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
8-5 1000	Hartleben	grass	130-50-8	15	spurge	N3	77	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
8-6 01100	Hartleben	grass	130-50-8	10	spurge	NW4	78	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
8-7 01100	Hartleben	grass	130-50-8	3.0	spurge	NE4	75	Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
	Sprayed with Platane	grass			spurge			Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	W/H
		grass			spurge			Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	
		grass			spurge			Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	
		grass			spurge			Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	
		grass			spurge			Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	
		grass			spurge			Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	
		grass			spurge			Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	
		grass			spurge			Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	
		grass			spurge			Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	
		grass			spurge			Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	
		grass			spurge			Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	
		grass			spurge			Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	
		grass			spurge			Tord/2,4-D	Ostlund	1-Tor/2-2,4	.25/.94	20	

Total 90.0 AC

<u>Total</u>	108 hrs.	\$4.09	\$69.78
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2/1 Argued
HERBICIDE APPLICATOR RECORDS

1.5043

Pesticide Applicator Records Blank form

[illegible]

HERBICIDE APPLICATOR RECORDS

[illegible]

Gypsy Moth Trap Record 1998

Directions:

One of these forms should be completed for each trap site, regardless of the number of traps placed at that site. Trap sites should remain constant from year to year. If it becomes necessary to change a trap site, please inform Carol Bell Randall (208) 765-7343 as soon as possible. Data from this form will be entered into the Cooperative Agricultural Pest Survey and should be as accurate as possible. Thank you for your help in this survey effort.

Basic Information:

Agency/ Management Area: Tewaukan NWR
(ex. USFS/ Lolo NF; USDI/ Yellowstone NP; BLM/ Garnette)

Trap Site Name: _____
(Per list provided with traps)

Legal Description of Trap Location:

T. 130 R. 54 ~~1/4~~ Sec. 36 OR Lat. _____ Long. _____
130 54 32 (ex SW1/4 Sec 25) (Degrees. Minutes. Seconds.)
County Sargent State ND

Important Dates:

Set out 6 5 98 No. of traps 4
Month Day Year
Removed 10 2 98 No. of traps 4
Month Day Year
No. lost/damaged 0
No. moths caught 0
Date results sent _____

Trapper's Information:

Name: Keith Frankki
Address: Tewaukan NWR
9754 143 1/2 Ave SE
Cayuga ND 58043
Phone: (701) 724-3598

Directions to Trap Site, Written and Sketch Map (Use Back):