Appendix A. Tewaukon NWR Complex Species Lists

Tewaukon National Wildlife Refuge Complex Bird List

(Species known to nest on the Complex are marked with an *)

Loons	
Common Loon	*Gavia immer*
Grebes	
Pied-billed Grebe*	*Podilymbus podiceps*
Horned Grebe	*Podiceps auritus*
Red-necked Grebe*	*Podiceps grisegena*
Eared Grebe*	*Podiceps nigricollis*
Western Grebe*	*Aechmophorus occidentalis*
Pelicans	
American White Pelican	*Pelecanus erythrorhynchos*
Cormorants	
Double-crested Cormorant*	*Phalacrocorax auritus*
Bitterns, Herons, and Egrets	
American Bittern*	*Botaurus lentiginosus*
Least Bittern*	*Ixobrychus exilis*
Great Blue Heron*	*Ardea herodias*
Great Egret*	*Anlea Alba*
Snowy Egret	*Egretta thula*
Cattle Egret	*Bubulcus ibis*
Green Heron*	*Butorides virescens*
Black-crowned Night Heron*	*Nycticorax nycticorax*
New World Vultures	
Turkey Vulture	*Cathartes aura*
Swans, Geese, and Ducks	
Greater White-fronted Goose	*Anser albifrons*
Snow Goose	*Chen caerulescens*
Canada Goose*	*Branta canadensis*
Tundra Swan	*Cygnus columbianus*
Wood Duck*	*Aix sponsa*
Gadwall*	*Anas strepera*
American Wigeon*	*Anas americana*
American Black Duck	*Anas rubripes*
Mallard*	*Anas platyrhyncos*
Blue-winged Teal*	*Anas discors*
Northern Shoveler*	*Anas clypeata*
Northern Pintail*	*Anas acuta*
Green-winged Teal*	*Anas crecca*
Canvasback*	*Aythya valisineria*
Redhead*	*Aythya americana*
Ring-necked Duck	*Aythya collaris*
Lesser Scaup*	*Aythya affinis*
Bufflehead	*Bucephala albeola*
Common Goldeneye	*Bucephala clangula*
Hooded Merganser	*Lophodytes curcullatus*
Common Merganser	*Mergus merganser*
Red-breasted Merganser	*Mergus serrator*
Ruddy Duck*	*Oxyura jamaicensis*

Osprey, Kites, Hawks, and Eagles		
Osprey		*Pandion haliaetus*
Bald Eagle		*Haliaeetus leucocephalus*
Northern Harrier*		*Circus cyaneus*
Sharp-shinned Hawk		*Accipiter striatus*
Cooper's Hawk		*Accipiter cooperii*
Northern Goshawk		*Accipiter gentilis*
Broad-winged Hawk		*Buteo platypterus*
Swainson's Hawk*		*Buteo swainsoni*
Red-tailed Hawk*		*Buteo jamaicensis*
Ferruginous Hawk		*Buteo regalis*
Rough-legged Hawk		*Buteo lagopus*
Golden Eagle		*Aquila chrysaetos*
Falcons and Caracaras		
American Kestrel*		*Falco sparverius*
Merlin		*Falco columbarius*
Peregrine Falcon		*Falco peregrinus*
Prairie Falcon		*Falco mexicanus*
Gallinaceous Birds		
Gray Partridge*	Introduced	*Perdix perdix*
Ring-necked Pheasant*	Introduced	*Phasianus colchicus*
Sharp-tailed Grouse		*Tympanuchus phasianellus*
Greater Prairie-Chicken		*Tympanuchus cupido*
Rails		
Virginia Rail*		*Rallus limicola*
Sora*		*Porzana carolina*
American Coot*		*Fulica americana*
Cranes		
Sandhill Crane		*Grus canadensis*
Plovers		
Black-bellied Plover		*Pluvialis squatarola*
American Golden-Plover		*Pluvialis dominica*
Semipalmated Plover		*Charadrius semipalmatus*
Killdeer*		*Charadrius vociferus*
Stilts and Avocets		
American Avocet*		*Recurvirostra americana*
Sandpipers and Phalaropes		
Greater Yellowlegs		*Ttinga melanoleuca*
Lesser Yellowlegs		*Tringa flavipes*
Solitary Sandpiper		*Tringa solitaria*
Willet*		*Catoptrophorus semipalmatus*
Spotted Sandpiper*		*Actitis macularia*
Upland Sandpiper*		*Bartramia longicauda*
Hudsonian Godwit		*Limosa haemastica*
Marbled Godwit		*Limosa fedoa*
Ruddy Turnstone		*Arenaria interpres*
Red Knot		*Calidris canutus*
Sanderling		*Calidris alba*
Semipalmated Sandpiper		*Calidris pusilla*
Least Sandpiper		*Calidris minutilla*
White-rumped Sandpiper		*Calidris fuscicollis*
Baird's Sandpiper		*Calidris bairdii*
Pectoral Sandpiper		*Calidris melanotos*
Dunlin		*Calidris alphina*
Stilt Sandpiper		*Calidris himantopus*
Long-billed Dowitcher		*Limnodromus scolopaceus*
Common Snipe*		*Gallinago gallinago*
Wilson's Phalarope*		*Phalaropus tricolor*
Red-necked Phalarope		*Phalaropus lobatus*

Skuas, Jaegers, Gulls, and Terns

Franklin's Gull		*Larus pipixcan*
Bonaparte's Gull		*Larus philadelphia*
Ring-billed Gull		*Larus delawarensis*
California Gull		*Larus californicus*
Herring Gull		*Larus argentatus*
Caspian Tern		*Sterna caspia*
Common Tern		*Sterna hirundo*
Forster's Tern*		*Sterna forsteri*
Black Tern*		*Chlidonias niger*

Pigeons and Doves

Rock Dove	Introduced	*Columba livia*
Mourning Dove*		*Zenaida macroura*

Cuckoos and Anis

Black-billed Cuckoo*	*Coccyzus erythropthalmus*
Yellow-billed Cuckoo	*Coccyzus americanus*

Typical Owls

Eastern Screech-Owl	*Otus asio*
Great Horned Owl*	*Bubo virginianus*
Snowy Owl	*Nyctea scandiaca*
Long-eared Owl	*Asio otus*
Short-eared Owl*	*Asio flammeus*

Nightjars

Common Nighthawk	*Chordeiles minor*
Whip-poor-will	*Caprimulgus vociferus*

Swifts

Chimney Swift	*Chaetura pelagica*

Hummingbirds

Ruby-throated Hummingbird*	*Archilochus colubris*

Kingfisher

Belted Kingfisher*	*Ceryle alcyon*

Woodpeckers

Red-headed Woodpecker	*Melanerpes erythrocephalus*
Downy Woodpecker*	*Picoides pubescens*
Hairy Woodpecker*	*Picoides villosus*
Northern Flicker*	*Colaptes auratus*

Tyrant Flycatchers

Olive-sided Flycatcher	*Contopus cooperi*
Eastern Wood-Pewee*	*Contopus virens*
Willow Flycatcher*	*Empidonax traillii*
Least Flycatcher*	*Empidonax minimus*
Eastern Phoebe	*Sayornis phoebe*
Great Crested Flycatcher	*Myiarchus crinitus*
Western Kingbird*	*Tyrannus verticalis*
Eastern Kingbird*	*Tyrannus tyrannus*

Shrikes

Loggerhead Shrike	*Lanius ludovicianus*
Northern Shrike	*Lanius excubitor*

Vireos

Yellow-throated Vireo	*Vireo flavifrons*
Warbling Vireo	*Vireo gilvus*
Philadelphia Vireo	*Vireo philadelphicus*
Red-eyed Vireo*	*Vireo olivaceus*

Crows, Jays, and Magpies

Blue Jay*	*Cyanocitta cristata*
Black-billed Magpie	*Pica pica*
American Crow*	*Corvus brachyrhynchos*

Larks

Horned Lark*	*Eremophila alpestris*

Swallows		
Purple Martin*		*Progne subis*
Tree Swallow*		*Tachycineta bicolor*
Northern Rough-winged Swallow*		*Stelgidopteryx serripennis*
Bank Swallow*		*Riparia riparia*
Cliff Swallow*		*Petrochelidon pyrrhonota*
Barn Swallow*		*Hirundo rustica*
Titmice and Chickadees		
Black-capped Chickadee*		*Poecile atricapillus*
Nuthatches		
Red-breasted Nuthatch		*Sitta canadensis*
White-breasted Nuthatch*		*Sitta carolinensis*
Creepers		
Brown Creeper*		*Certhia americana*
Wrens		
House Wren*		*Troglodytes aedon*
Winter Wren		*Troglodytes troglodytes*
Sedge Wren*		*Cistothorus platensis*
Marsh Wren*		*Cistothorus palustris*
Kinglets		
Golden-crowned Kinglet		*Regulus satrapa*
Ruby-crowned Kinglet		*Regulus calendula*
Thrushes		
Eastern Bluebird		*Sialia sialis*
Veery		*Catharus fuscescens*
Gray-cheeked Thrush		*Catharus minimus*
Swainson's Thrush		*Catharus ustulatus*
Hermit Thrush		*Catharus guttatus*
American Robin*		*Turdus migratorius*
Mimic Thrushes		
Gray Catbird*		*Dumetella carolinensis*
Brown Thrasher*		*Toxostoma rufum*
Starlings		
European Starling*	Introduced	*Sturnus vulgaris*
Wagtails and Pipits		
American (Water) Pipit		*Anthus rubescens*
Sprague's Pipit		*Anthus spragueii*
Waxwings		
Bohemian Waxwing		*Bombycilla garrulus*
Cedar Waxwing*		*Bombycilla cedrorum*
Wood Warblers		
Tennessee Warbler		*Vermivora peregrina*
Orange-crowned Warbler		*Vermivora celata*
Nashville Warbler		*Vermivora ruficapilla*
Yellow Warbler*		*Dendrocia petechia*
Chestnut-sided Warbler		*Dendroica pensylvanica*
Magnolia Warbler		*Dendroica magnolia*
Yellow-rumped Warbler		*Dendrocia coronata*
Black-throated Green Warbler		*Dendroica virens*
Palm Warbler		*Dendrocia palmarum*
Bay-breasted Warbler		*Dendroica castanea*
Blackpoll Warbler		*Dendrocia striata*
Black-and-white Warbler		*Mniotilta varia*
American Redstart*		*Setophaga ruticilla*
Ovenbird		*Seiurus aurocapillus*
Northern Waterthrush		*Seiurus noveboracensis*
Connecticut Warbler		*Oporornis agilis*
Mourning Warbler		*Oporornis philadelphia*
Common Yellowthroat*		*Geothlypis trichas*
Wilson's Warbler		*Wilsonia pusilla*
Canada Warbler		*Wilsonia canadensis*
Yellow-breasted Chat		*Icteria virens*

Tanagers

Scarlet Tanager	*Piranga olivacea*

Sparrows and Towhees

Eastern Towhee	*Pipilo erythrophthalmus*
American Tree Sparrow	*Spizella arborea*
Chipping Sparrow	*Spizella passerina*
Clay-colored Sparrow*	*Spizella pallida*
Field Sparrow*	*Spizella pusilla*
Vesper Sparrow*	*Pooecetes gramineus*
Lark Sparrow*	*Chondestes grammacus*
Lark Bunting*	*Calamospiza melanocorys*
Savannah Sparrow*	*Passerculus sandwichensis*
Grasshopper Sparrow*	*Ammodramus savannarum*
Baird's Sparrow*	*Ammodramus bairdii*
Le Conte's Sparrow	*Ammodramus leconteii*
Nelson's Sharp-tailed Sparrow	*Ammodramus nelsoni*
Fox Sparrow	*Passerella iliaca*
Song Sparrow*	*Melospiza melodia*
Lincoln's Sparrow	*Melospiza lincolnii*
Swamp Sparrow	*Melospiza georgiana*
White-throated Sparrow	*Zonotrichia albicollis*
Harris' Sparrow	*Zonotrichia querula*
White-crowned Sparrow	*Zonotrichia leucophrys*
Dark-eyed Junco	*Junco hyemalis*
Lapland Longspur*	*Calcarius lapponicus*
Smith's Longspur	*Calcarius pictus*
Chestnut-collared Longspur*	*Calcarius ornatus*

Cardinals, Grosbeaks, and Allies

Snow Bunting	*Plectrophenax nivalis*
Rose-breasted Grosbeak*	*Pheucticus ludovicianus*
Indigo Bunting	*Passerina cyanea*
Dickcissel	*Spiza americana*

Blackbirds and Orioles

Bobolink*	*Dolichonyx oryzivorus*
Red-winged Blackbird*	*Agelaius phoeniceus*
Western Meadowlark*	*Sturnella neglecta*
Yellow-headed Blackbird*	*Xanthocephalus xanthocephalus*
Rusty Blackbird	*Euphagus carolinus*
Brewer's Blackbird*	*Euphagus cyanocephalus*
Common Grackle*	*Quiscalus quiscula*
Brown-headed Cowbird*	*Molothrus ater*
Orchard Oriole*	*Icterus spurius*
Baltimore Oriole*	*Icterus galbula*

Finches

Purple Finch	*Carpodacus purpureus*
House Finch	*Carpodacus mexicanus*
Red Crossbill	*Loxia curvirostra*
Common Redpoll	*Carduelis flammea*
Pine Siskin	*Carduelis pinus*
American Goldfinch*	*Carduelis tristis*
Evening Grosbeak	*Coccothraustes vespertinus*

Old World Sparrows

House Sparrow*	Introduced	*Passer domesticus*

Mammals with ranges within the area of Tewaukon National Wildlife Refuge Complex:

*Documented sightings

Arctic Shrew	*Sorex articus*
Masked Shrew	*Sorex cinereus*
Northern Water Shrew	*Sorex palustris*
Pygmy Shrew	*Microsorex hoyi*
Northern Short-tailed Shrew*	*Blarina brevicauda*
Least Shrew	*Cryptotis parva*
Keen's Myotis	*Myotia keeni*
Little Brown Myotis*	*Myotis lucifungus*
Eastern Red Bat	*Lasiurus borealis*
Hoary Bat	*Lasiurus cinereus*
Silver-haired Bat	*Lasionycteris noctivagans*
Big Brown Bat	*Eptesicus fuscus*
Eastern Cottontail*	*Sylvilagus floridanus*
White-tailed Jackrabbit*	*Lepus townsendii*
Woodchuck*	*Marmota monax*
Franklin's Ground Squirrel*	*Citellus franklini*
Richardson's Ground Squirrel*	*Citellus richardsoni*
Thirteen-lined Ground Squirrel*	*Spermophilus tridecemlineatus*
Eastern Fox Squirrel*	*Sciurus niger*
Red Squirrel	*Tamiasciurus hudsonicus*
Plains Pocket Gopher*	*Geomys bursarius*
Plains Pocket Mouse	*Perognathus flavescens*
Beaver*	*Castor canadensis*
Western Harvest Mouse	*Reithrodontomys megalotis*
White-footed Mouse	*Peromyscus leucopus*
Deer Mouse*	*Peromyscus maniculatus*
Northern Grasshopper Mouse*	*Onychomys leucogaster*
Southern Red-backed Vole*	*Clethrionomys gapperi*
Prairie Vole	*Microtus ochrogaster*
Meadow Vole	*Microtus pennsylvanicus*
Common Muskrat*	*Ondatra zibethicus*
Meadow Jumping Mouse	*Zapus hudsonius*
Western Jumping Mouse*	*Zapus princeps*
Coyote*	*Canis latrans*
Red Fox*	*Vulpes vulpes*
Common Raccoon*	*Procyon lotor*
Long-tailed Weasel*	*Mustela frenata*
Least Weasel	*Mustela nivalis*
American Mink*	*Mustela vison*
American Badger*	*Taxidea taxus*
Striped Skunk*	*Mephitis mephitis*
White-tailed Deer*	*Odocoileus virginianus*
Moose*	*Alces alces*

Historical

American Bison	*Bison bison*
Bobcat	*Lynx rufus*
Elk or Wapiti	*Cervus canadensis*
Gray Wolf	*Canis lupus*
Grizzly Bear	*Ursus horribilis*
Mule Deer	*Odocoileus virginianus*
Pronghorn Antelope	*Antilocapra americana*
River Otter	*Lutra canadensis*

Amphibians and reptiles with ranges within the area of Tewaukon National Wildlife Refuge Complex:

*Documented sightings

Mudpuppy*	*Necturus maculosus*
Tiger Salamander*	*Ambystoma tigrinum*
Eastern Tiger Salamander*	*Ambystoma tigrinum tigrinum*
Blotched Tiger Salamander*	*Ambystoma tigrinum melanostictum*
Gray Tiger Salamander	*Ambystoma tigrinum diaboli*
American Toad*	*Bufo americanus*
Great Plains Toad*	*Bufo congnatus*
Canadian Toad*	*Bufo hemiophrys*
Woodhouse's Toad	*Bufo woodhousii*
Gray Treefrog	*Hyla vericolor*
Western Chorus Frog*	*Pseudacris triseriata*
Common Snapping Turtle*	*Chelydra serpentina*
Painted Turtle*	*Chrysemys picta*
Prairie Skink*	*Eumeces septentrionalis*
Smooth Green Snake	*Opheodrys vernalis*
Red-bellied Snake*	*Storeria occipitomaculata*
Plains Garter Snake*	*Thamnophis radix*
Common Garter Snake*	*Thamnophis sirtalis*

Native Fish in the Red River Basin (Peterka and Koel 1996)

Chestnut lamprey	*Ichthyomyzon castaneus*
Silver lamprey	*Ichthyomyzon unicuspis*
Lake sturgeon	*Acipenser fulvescens*
Longnose gar	*Lepistoseus osseus*
Bowfin	*Amia calva*
Goldeye	*Hiodon alosoides*
Mooneye	*Hiodon tergisus*
Ciscoe	*Coregonus artedii*
Whitefish	*Coregonus clupeaformis*
Quillback carpsucker	*Carpiodes cyprinus*
White sucker	*Catostomus commersoni*
Northern hogsucker	*Hypentelium nigricans*
Bigmouth buffalo	*Ictiobus cyprinellus*
Silver redhorse	*Moxostoma anisurum*
Golden redhorse	*Moxostoma erythrurum*
Shorthead redhorse	*Moxostoma macrolepidotum*
Greater redhorse	*Moxostoma valenciennesi*
Central stoneroller	*Campostoma anomalum*
Largescale stoneroller	*Campostoma oligolepis*
Spotfin shiner	*Cyprinella spiloptera*
Brassy minnow	*Hybognathus hankinsoni*
Common shiner	*Luxilus comutus*
Silver Chub	*Macrhybopsis storeriana*
Pearl dace	*Margariscus margarita*
Hornyhead chub	*Nocomis biguttatus*
Golden shiner	*Notemigonus chrysoleucas*
Pugnose shiner	*Notropis anogenus*
Emerald shiner	*Notropis atherinoides*
River shiner	*Notropis blennius*
Bigmouth shiner	*Notropis dorsalis*
Blackchin shiner	*Notropis heterodon*
Blacknose shiner	*Notropis heterolepis*
Spottail shiner	*Notropis hudsonius*
Rosyface shiner	*Notropis rubellus*
Sand shiner	*Notropis stramineus*
Weed shiner	*Notropis texanus*
Mimic shiner	*Notropis volucellus*
Northern redbelly dace	*Phoxinus eos*
Finescale dace	*Phoxinus neogaeus*
Bluntnose minnow	*Pimephales notatus*
Fathead minnow	*Platygobio gracilis*
Blacknose dace	*Rhinichthys atratulus*
Longnose dace	*Rhinichthys cataractae*
Creek chub	*Semotilus atromaculatus*
Black bullhead	*Ameiurus melas*
Yellow bullhead	*Ameiurus natalis*

Brown bullhead	*Ameiurus nebulosus*
Channel catfish	*Ictalurus punctatus*
Stonecat	*Noturus flavus*
Tadpole madtom	*Noturus gyrinus*
Central mudminnow	*Umbra limi*
Northern pike	*Esox lucius*
Banded killifish	*Fundulus diaphanus*
Burbot	*Lota lota*
Trout-perch	*Percopsis omiscomaycus*
Rock bass	*Ambloplites rupestris*
Green sunfish	*Lepomis cyanellus*
Pumpkinseed	*Lepomis gibbosus*
Orangespotted sunfish	*Lepomis humilis*
Bluegill	*Lepomis macrochirus*
Smallmouth bass	*Micropterus dolomieui*
Largemouth bass	*Micropterus salmoides*
White crappie	*Pomoxis annularis*
Black crappie	*Pomoxis nigromaculatus*
Rainbow darter	*Etheostoma caeruleum*
Iowa darter	*Etheostoma exile*
Least darter	*Etheostoma microperca*
Johnny darter	*Etheostoma nigrum*
Yellow perch	*Perca flavescens*
Logperch	*Percina caprodes*
Blackside darter	*Percina maculata*
River darter	*Percina shumardi*
Sauger	*Stizostedion canadense*
Walleye	*Stizostedion vitreum*
Freshwater drum	*Aplodinotus grunniens*
Mottled sculpin	*Cottus bairdi*
Brook stickleback	*Culaea inconstans*

Introduced (nonnative) Fish

Rainbow trout	*Oncorhynchus mykiss*
Brown trout	*Salmo trutta*
Brook trout	*Salvelinus fontinalis*
Common carp	*Cyprinus carpio*
Flathead chub	*Platygobio gracilis*
Muskellunge	*Esox masquinongy*
Tiger muskie	*Esox lucius X E.masquinongy*
White bass	*Morone chrysops*

Appendix B. Plant Species Mentioned in CCP and EA

Alumroot	*Heuchera richardsonii*
American elm	*Ulmus americana*
Baltic rush	*Juncus balticus*
Bearded wheatgrass	*Agropyron subscundum*
Big bluestem	*Andropogon gerardii*
Black-eyed susan	*Rudbeckia hirta*
Blue grama	*Bouteloua gracilis*
Box elder	*Acer negundo*
Buckbrush	*Symphoricarpos occidentalis*
Broad-leaved cat-tail	*Typha latifolia*
Bur oak	*Quercus macrocarpa*
Canada goldenrod	*Solidago canadensis*
Chokecherry	*Prunus virginiana*
Fowl mannagrass	*Glyceria striata*
Green needle grass	*Stipa viridula*
Grey headed coneflower	*Ratibidia pinnata*
Handsome sedge	*Carex formosa*
Hardstem bullrush	*Scirpus acutus*
Hoary puccoon	*Lithospermum canescens*
Hoary willow	*Salix candida*
Indian grass	*Sorghastrum nutans*
Intermediate wheatgrass	*Agropyron intermedium*
June grass	*Koeleria pyramidata*
Leadplant	*Amorpha canescens*
Little bluestem	*Andropogon scoparius*
Intermediate wheatgrass	*Agropyron intermedium*
Maximilian sunflower	*Helianthus maximilianii*
Meadow anemone	*Anemone canadensis*
Narrow-leaved blazing star	*Liatris punctata*
Needle-and-thread	*Stipa comata*
Nodding lady tresses	*Spiranthes cernua*
Northern reedgrass	*Calamagrostis stricta*
Pasture sage	*Artemisia ludoviciana*
Porcupine grass	*Stipa spartea*
Prairie cordgrass	*Spartina pecinata*
Prairie dogbane	*Apocynum cannabinum*
Prairie sandreed	*Calamovilfa longifolia*
Prairie smoke	*Geum triflorum*
Prairie wild rose	*Rosa arkansana*
Purple coneflower	*Echinacea angustifolia*
Purple prairie clover	*Dalea purpurea*
Red elm	*Ulmus rubra*
Sand bluestem	*Andropogon hallii*
Showy milkweed	*Asclepias speciosa*
Sideoats grama	*Bouteloua curtipendula*
Small white lady's slipper	*Cypripedium candidum*
Sneezeweed	*Helenium autumnale*
Softstem bulrush	*Scirpus tabernaemontani*
Stiff goldenrod	*Solidago rigida*
Stiff sunflower	*Helianthus rigidus*
Switchgrass	*Panicum virgatum*
Tall blazing star	*Liatris pycnostachya*
Thimbleweed	*Anemone cylindrica*
Western prairie fringed orchid	*Platanthera praeclara*
Western wheatgrass	*Agropyron smithii*
White ash	*Fraxinus americana*
White aster	*Aster ericoides*
White camass	*Zigadenus elegans*
White prairie clover	*Dalea candida*
Wild lily	*Lilium philadelphicum*
Yellow coneflower	*Ratibidia columnifera*

Introduced

Alfalfa	*Medicago sativa*
Canada thistle	*Cirsium arvense*
Kentucky bluegrass	*Poa pratensis*
Leafy spurge	*Euphorbia esula*
Purple loosestrife	*Lythrum salicaria*
Reed canary grass	*Phalaris arundinacea*
Russian olive	*Eleagnus angustifolia*
Smooth brome	*Bromus inermis*
White sweet clover	*Melilotus alba*
Yellow sweet clover	*Melilotus officinalis*

Appendix C. ND State Rare and Unique Plant Species

These plant species are pulled from the ND Natural Heritage Program data files and only include species that are found in the Tewaukon WMD and are of greatest concern (S1 or S2).

North Dakota Natural Heritage State Rankings
S1 - Critically imperiled in state
S2 - Imperiled in state

Common Name	Scientific Name	ND Heritage Ranking
Adder's-tongue fern	*Ophioglossum pusillum*	S2
Bicknells sunrose	*Helianthemum bicknellii*	S1
Blue Cohosh	*Caulophyllum thalictroides*	S1
Bog Violet	*Viola conspersa*	S2
Brook flatsedge	*Cyperus bipartitus*	S1S2
Delicate sedge	*Carex leptalea*	S2
Dotted smartweed	*Polygonum punctatum*	S2
Downy hawthorn	*Crataegus mollis*	S1
Dutchman's breeches	*Dicentra cucullaria*	S1
Dwarf spikerush	*Eleocharis parvula*	S1S2
Early Panic-grass	*Panicum praecocius*	S2
Foxtail sedge	*Carex alopecoidea*	S2
Green kneeled cottongrass	*Eriophorum viridicarinatum*	S1
Handsome sedge	*Carex formosa*	S1
Hooked crowfoot	*Ranunculus recurvatus*	S1
Large yellow lady's slipper	*Cypripedium planiipetalum*	S2
Large-leaved pondweed	*Potamogeton amplifolius*	S2
Loesel's Twayblade	*Liparis loeselii*	S2
Low flatsedge	*Cyperdus diandrus*	S2
Marsh bellflower	*Campanual aparinoides*	S2
Marsh horsetail	*Equisetum palustre*	S2
Meadow horsetail	*Equisetum pratense*	S2
Meadow onion	*Allium canadense*	S1
Moonwort	*Botrychium minganense*	S1
Nodding ladies tresses	*Spiranthes cernua*	S1
Oakfern	*Gymnocarpium dryopteris*	S1
Prairie mimosa	*Desmanthus illinoensis*	S1
Purple sandgrass	*Triplasis purpurea*	S1
Richardson's sedge	*Carex richardsonii*	S1
Sensitive fern	*Onoclea sensibilis*	S2
Showy lady's slipper	*Cypripedium reginae*	S2
Sicklepod	*Arabis canadensis*	S1
Slendar cottongrass	*Eriophorum gracile*	S1
Small yellow lady's slipper	*Cypripedium parviflorum*	S2
Spiral sedge	*Carex convoluta*	S1
Spring cress	*Cardamine bulbosa*	S1
Southern watermeal	*Wolffia columbiana*	S2
Spiny naiad	*Najas marina*	S1
Stout wood reed	*Cinna arundinacea*	S1
Sweetflag	*Acorus calamus*	S2
Upright pinweed	*Lechea stricta*	S1
Wahoo	*Euonymus atropurpureus*	S2
W. Prairie fringed orchid	*Patanthera praeclara*	S2
White lady's slipper	*Cypripedium candidum*	S2
Wooly beach-heather	*Hudsonia tomentosa*	S1
Zigzag Goldenrod	*Solidago flexicaulis*	S1S2

Appendix D. Tewaukon Complex Water Rights

Tewaukon National Wildlife Refuge Water Rights

Declaration of Filing dated September 1, 1934, for Lake Tewaukon (Pool 1) and East and West White Lakes (Pools 12 and 11) (including Cutlers Marsh - Pool 2) for 7,198 acre-feet storage and 4,251 acre-feet seasonal use from the Wild Rice River.

Declaration of Filing dated September 1, 1934, for 397 acre-feet storage and 312 acre-feet seasonal use, for Cloud's Lake, now called Hepi Lake (Pool 8), from an unnamed tributary. Water use in Pools 5 through 10 are covered under this Right, with Hepi Lake to be drawn down to fill these pools.

Permit No. 1261, for 7,139 acre-feet from the Wild Rice River (4,852 acre-feet storage and 2,287 acre-feet seasonal use) for additional storage and seasonal use in Lake Tewaukon, Cutlers Marsh, and West White Lake; 409 acre-feet seasonal use to replace water diverted from the watershed by Sargent County Water Conservation District project; and total storage and seasonal use for Pools 3 and 4. The priority date is December 28, 1964.

Permit No. 1262, for 1,130 acre-feet (635 acre-feet storage and 495 acre-feet seasonal use) for Sprague Lake (Pool 14) from an unnamed tributary with a priority date of December 28, 1964.

Permit No. 1263, for 236 acre-feet for Mann Lake (Pool 13) and 450 acre-feet for Horseshoe Slough (Pool 16) for a total of 686 acre-feet from the Wild Rice River with a priority date of December 28, 1964.

Permit No. 3816, for 571 acre-feet (474 acre-feet storage and 97 acre-feet annual use) from the Wild Rice River for the Nickeson Bottoms, a tract owned jointly by ND Game and Fish Department, Bureau of Reclamation, and the Service. The priority date is August 15, 1985.

Wild Rice Easement Refuge Water Rights

Declaration of Filing dated September 1, 1934, for 80 acre-feet storage and 120 acre-feet seasonal use from the Wild Rice River.

Storm Lake Easement Refuge Water Rights

Declaration of Filing dated September 1, 1934, for 729 acre-feet storage and 516 acre-feet seasonal use from an unnamed tributary within the Wild Rice/Red River basin.

Appendix E. Key Legislation/Policies

(in alphabetical order)

American Indian Religious Freedom Act (1978): Directs agencies to consult with native traditional religious leaders to determine appropriate policy changes necessary to protect and preserve Native American religious cultural rights and practices.

Americans With Disabilities Act (1992): Prohibits discrimination in public accommodations and services.

Antiquities Act (1906): Authorizes the scientific investigation of antiquities on Federal land and provides penalties for unauthorized removal of objects taken or collected without a permit.

Archaeological and Historic Preservation Act (1974): Directs the preservation of historic and archaeological data in Federal construction projects.

Archaeological Resources Protection Act (1979) as amended: Protects materials of archaeological interest from unauthorized removal or destruction and requires Federal managers to develop plans and schedules to locate archaeological resources.

Architectural Barriers Act (1968): Requires federally owned, leased, or funded buildings and facilities to be accessible to persons with disabilities.

Bald and Golden Eagle Protection Act (1940): The Act prohibits the taking or possession of and commerce in bald and golden eagles, with limited exceptions. The enacting clause of the original Act stated that the Continental Congress in 1782 adopted the bald eagle as the national symbol; that the bald eagle became the symbolic representation of a new nation and the American ideals of freedom; and that the bald eagle threatened with extinction.

Clean Water Act (1977): Requires consultation with the Corps of Engineers (404 permits) for major wetland modifications.

Emergency Wetlands Resources Act (1986): The purpose of the Act is "To promote the conservation of migratory waterfowl and to offset or prevent the serious loss of wetlands by the acquisition of wetlands and other essential habitat, and for other purposes."

Endangered Species Act (1973): Requires all Federal agencies to carry out programs for the conservation of endangered and threatened species.

Executive Order 11987, Exotic Organisms (1977): This Executive Order requires Federal agencies, to the extent permitted by law, to: restrict the introduction of exotic species into the natural ecosystems on lands and waters owned or leased by the United States; encourage States, local governments, and private citizens to prevent the introduction of exotic species into natural ecosystems of the U.S.; restrict the importation and introduction of exotic species into any natural U.S. ecosystems as a result of activities they undertake, fund, or authorize; and restrict the use of Federal funds, programs, or authorities to export native species for introduction into ecosystems outside the U.S. where they do not occur naturally.

Executive Order 11988, Floodplain Management (1977): Each Federal agency shall provide leadership and take action to reduce the risk of flood loss and minimize the impact of floods on human safety, and preserve the natural and beneficial values served by the floodplains.

Executive Order 11990, Protection of Wetlands (1977): This order directs all Federal agencies to avoid, if possible, adverse impacts to wetlands and to preserve and enhance the natural and beneficial values of wetlands. Each agency shall avoid undertaking or assisting in wetland construction projects unless the head of the agency determines that there is no practicable alternative to such construction and that the proposed action includes measures to minimize harm. Also, agencies shall provide opportunity for early public review of proposals for construction in wetlands, including those projects not requiring an EIS.

Executive Order 12898, Environmental Justice (1994): This order provides minority and low_income populations an opportunity to comment on the development and design of Reclamation activities. Federal agencies shall make achieving environmental justice part of their missions by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low_income populations.

Executive Order 12996 Management and General Public Use of the National Wildlife Refuge System (1996): Defines the mission, purpose, and priority public uses of the National Wildlife Refuge System. It also presents four principles to guide management of the System.

Executive Order 13007 Indian Sacred Sites (1996): Directs Federal land management agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, avoid adversely affecting the physical integrity of such sacred sites, and where appropriate, maintain the confidentiality of sacred sites.

Executive Order 13084, Consultation and Coordination With Indian Tribal Governments (1998): The United States has a unique legal relationship with Indian tribal governments as set forth in the Constitution of the United States, treaties, statutes, Executive orders, and court decisions. Since the formation of the Union, the United States has recognized Indian tribes as domestic dependent nations under its protection. In treaties, our Nation has guaranteed the right of Indian tribes to self-government. As domestic dependent nations, Indian tribes exercise inherent sovereign powers over their members and territory. The United States continues to work with Indian tribes on a government_to_government basis to address issues concerning Indian tribal self-government, trust resources, and Indian tribal treaty and other rights.

Federal Aid in Fish Restoration Act of August 9, 1950 (16 U.S.C. 777-777k), as amended: This Act, commonly referred to as the "Dingell-Johnson Act", provides aid to the States for management and restoration of fish having material value in connection with sport or recreation in marine or fresh waters. Funds from an excise tax on certain items of sport fishing tackle are appropriated to the Secretary of Interior annually and apportioned to States on a formula basis for approved land acquisition, research, development and management projects.

Federal Aid in Wildlife Restoration Act of September 2, 1937 (16 U.S.C. 669-669i), as amended: This Act, commonly referred to as the "Pittman-Robertson Act", provides to States for game and nongame wildlife restoration work. Funds from an excise tax on sporting arms and ammunition are appropriated to the Secretary of the Interior annually and apportioned to States on a formula basis for approved land acquisition, research, development and management projects and hunter safety programs.

Federal Noxious Weed Act (1990): Requires the use of integrated management systems to control or contain undesirable plant species; and an interdisciplinary approach with the cooperation of other Federal and State agencies.

Fish and Wildlife Coordination Act of March 10, 1934 (16 U.S.C. 661-66c), as amended: This Act authorizes the Secretary of the Interior to assist Federal, State and other agencies in development, protection, rearing and stocking fish and wildlife on Federal lands, and to study effects of pollution on fish and wildlife. The Act also requires consultation with the Fish and Wildlife Service and the wildlife agency of any State wherein the waters of any stream or other water body are proposed to be impounded, diverted, channelized or otherwise controlled or modified by any Federal agency, or any private agency under Federal permit or license, with a view to preventing loss of, or damage to, wildlife resources in connection with such water resource projects. The Act further authorizes Federal water resource agencies to acquire lands or interests in connection with water use projects specifically for mitigation and enhancement of fish and wildlife.

Fish and Wildlife Act (1956): Established a comprehensive national fish and wildlife policy and broadened the authority for acquisition and development of refuges.

Fish and Wildlife Coordination Act (1958): Allows the Fish and Wildlife Service to enter into agreements with private landowners for wildlife management purposes.

Food Security Act of 1985 (Title XII, Public Law 99-198, 99 Stat. 1354; December 23, 1985), as amended: This Act authorizes acquisition of easements in real property for a term of not less than 50 years for conservation, recreation, and wildlife purposes.

Land and Water Conservation Fund Act (1965): Uses the receipts from the sale of surplus Federal land, outer continental shelf oil and gas sales, and other sources for land acquisition under several authorities.

Migratory Bird Conservation Act (1929): Establishes procedures for acquisition by purchase, rental, or gift of areas approved by the Migratory Bird Conservation Commission.

Migratory Bird Hunting and Conservation Stamp Act (1934): Authorized the requirement of an annual stamp for the hunting of waterfowl whose proceeds go towards the purchase of habitat for waterfowl and other wildlife. Duck stamps are also purchased for entry into some refuges, by conservationist and for stamp collections. Authorized the opening of part of a refuge to waterfowl hunting.

Migratory Bird Treaty Act (1918): Designates the protection of migratory birds as a Federal responsibility. This Act enables the setting of seasons, and other regulations including the closing of areas, Federal or nonfederal, to the hunting of migratory birds.

National Environmental Policy Act (1969): Requires the disclosure of the environmental impacts of any major Federal action significantly affecting the quality of the human environment.

National Historic Preservation Act (1966) as amended: Establishes as policy that the Federal Government is to provide leadership in the preservation of the nation's prehistoric and historic resources.

National Wildlife Refuge System Administration Act of 1966 as amended by the National Wildlife Refuge System Improvement Act of 1997, 16 U.S.C. 668dd-668ee. (Refuge Administration Act): Defines the National Wildlife Refuge System and authorizes the Secretary to permit any use of a refuge provided such use is compatible with the major purposes for which the refuge was established. The Refuge Improvement Act clearly defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation and photography, or environmental education and interpretation); establishes a formal process for determining compatibility; established the responsibilities of the Secretary of Interior for managing and protecting the System; and requires a Comprehensive Conservation Plan for each refuge by the year 2012. This Act amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966.

National Wildlife Refuge System Improvement Act of 1997: Sets the mission and administrative policy for all refuges in the National Wildlife Refuge System. Clearly defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation and photography, or environmental education and interpretation); establishes a formal process for determining compatibility; establishes the responsibilities of the Secretary of the Interior for managing and protecting the System; and requires a Comprehensive Conservation Plan for each refuge by the year 2012. This Act amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966.

Native American Graves Protection and Repatriation Act (1990): Requires Federal agencies and museums to inventory, determine ownership of, and repatriate cultural items under their control or possession.

North American Wetlands Conservation Act of December 13, 1989 (16 U.S.C. 4401-4412). Public Law 101-233 provides funding and administrative direction for implementation of the North American Waterfowl Management Plan and the Tripartite Agreement on wetlands between Canada, U.S. and Mexico.

Refuge Recreation Act (1962): Allows the use of refuges for recreation when such uses are compatible with the refuge's primary purposes and when sufficient funds are available to manage the uses.

Rehabilitation Act (1973): Requires programmatic accessibility in addition to physical accessibility for all facilities and programs funded by the Federal government to ensure that anybody can participate in any program.

Water Resources Planning Act (1965): This Act establishes a cabinet_level Water Resources Council to study, coordinate and review water and related land resources requirements, policies and plans, and authorizes funding for states to plan and implement related programs.

Appendix F.
Environmental Assessment

Tewaukon National Wildlife Refuge Complex

including
Tewaukon National Wildlife Refuge
and
Tewaukon Wetland Management District

Comprehensive Conservation Plan

Prepared April 2000

Completed by Tewaukon NWR Complex Staff

Table of Contents

I. Purpose and Need for Action

The purpose of this Environmental Assessment (EA) is to determine the possible environmental consequences that the implementation of the Tewaukon National Wildlife Refuge Complex Comprehensive Conservation Plan (CCP) could have on the quality of the biological, physical, and human environment, as required by the National Environmental Policy Act of 1969. This assessment analyzes three levels of management intensity on the Tewaukon National Wildlife Refuge Complex (Complex). The preferred alternative, the CCP, is an intensive habitat and wildlife management program alternative designed to incorporate state of the art science based management practices and monitoring. The no action, or current management, alternative is science-based but narrower in scope than the CCP. This alternative reflects flat funding and no increases in staffing. The third alternative, custodial, that was considered is a management option that reflects the uncertain nature of Federal budgets. Frequently, downsizing, rightsizing, and cutting Complex programs are considered during budgeting processes. This alternative describes a reduced management and public use approach.

The U.S. Fish and Wildlife Service (Service) agreed to prepare refuge CCPs for each administrative unit of the Refuge System during the development of the National Wildlife Refuge System Improvement Act of 1997. Refuge managers are required to complete a CCP that describes how Refuge System management units will be acquired and managed to benefit wildlife. The Plan should also describe how available research will be incorporated into management. The management of the Complex should also be monitored and evaluated to determine if the desired habitat and wildlife responses occur. The Plan must address what Complex wildlife-dependent recreation and visitor opportunities are compatible and appropriate. The planning process also provides opportunities for the public and State and Federal agencies to provide input.

The CCP facilitates management continuity and describes management actions that will be made to achieve upland and wetland restoration, management, and enhancement for the next 15 years. The CCP is intended to provide long-range guidance for the management of the Tewaukon National Wildlife Refuge Complex (Complex) based on careful consideration of the physical and biological characteristics of the land base. It is designed to further achieve the U.S. Fish and Wildlife Service and National Wildlife Refuge System missions and the Tewaukon Complex goals and objectives which emphasize the protection and enhancement of wildlife and their habitats.

The planning team (see CCP List of Preparers) identified a need to better define what the future of Complex management should be in order to meet the intent of Complex establishing legislation, other refuge management legislation, and inform the public, State and Federal agencies, and interested groups and organizations. Some of the critical issues and challenges identified by the planning team and the public for consideration during the analysis of alternatives and development of the CCP (preferred alternative) are described next. These issues represent significant habitat, wildlife population, and public use aspects of Complex management that were used to evaluate the alternatives. The habitat and wildlife issues reflect local, regional, and National concerns. Locally, participants in the public input process indicated they would like to see additional emphasis on managing Complex habitats to benefit sport fish, white-tailed deer, and pheasants. Participants also indicated that Complex weed control efforts were important and that these efforts should continue and be improved. Public use issues are generally local and Complex specific, but have a national aspect since they are similar to public use issues throughout the National Wildlife Refuge System. Locally, participants in the public input process were interested in maintaining and increasing Complex hunting and fishing opportunities.

All references in this Environmental Assessment are included in Appendix K. Literature Cited.

Wildlife Habitat Fragmentation and Alteration

What was once a vast expanse of grass interspersed with wetlands, streams, and rivers in southeast North Dakota has been transformed into cropland bisected by roads, planted trees, railroad tracks, and other developments. Complex lands are some of the few sites that provide prairie ecosystem habitat in what has become a severely fragmented landscape.

The combined effects of human settlement and development have resulted in significant alterations to the native flora and fauna throughout the Northern Great Plains. These landscape scale alterations have affected Complex lands as well. Elk, bison, grizzly bears, and wolves are just a few of the wildlife species that have disappeared from the prairies of North Dakota. Prairies comprised of tall grasses including big bluestem, Indian grass, and porcupine grass with splashes of colorful wildflowers like golden Alexander, purple prairie clover, white lady's slipper, and blazing stars have been converted to cropland or are dominated by nonnative plants including Kentucky bluegrass, smooth brome, leafy spurge and Canada thistle. Many of the prairie butterflies and insects that once fluttered from coneflower to blazing star are gone or inhabit tiny remnant pockets of prairie.

As the wildlife species that once inhabited Complex lands changed in response to habitat alterations, the diversity of prairie wildlife populations declined and places for people to enjoy the diversity of these species were reduced. Wildlife habitat loss and declining species diversity continues.

Grasslands and Tallgrass Prairie - Threatened and Declining

Currently, less than 5 percent of native tallgrass prairie is left in North Dakota. The rest of the prairie was plowed up for crop production or developed. As a result, relatively few large contiguous blocks of native prairie remain. The largest area of tallgrass prairie left in eastern North Dakota exists on the Sheyenne National Grassland (50,000 acres), which is administered by the U.S. Forest Service. Most of the remaining native prairie lies around larger wetland edges, wet areas, rocky, and sandy areas that are difficult to convert to cropland. Many of the remaining native prairie sites are threatened due to an increase in irrigated agricultural practices and the development of large land leveling equipment. In 1998, more than 21,700 acres existed of irrigated crops, mainly potatoes and corn in the District (Ransom, Sargent, and Richland Counties). In 1990, irrigated crops were isolated and limited to only a few producers (ND Ag Statistics 1998). The once undesirable sandy soils of the Sheyenne Delta in Ransom and Richland Counties and southwestern Sargent County have become prime areas for irrigated crop production.

Approximately 3,716 acres of native prairie exist on the Complex. Most of these prairie areas are presently dominated by cool season nonnative grasses, such as smooth brome and Kentucky bluegrass. These nonnative grasses reduce plant diversity and vegetative structure and make habitats less attractive for the range of wildlife species that historically occupied prairie grassland habitats. Other nonnative, invasive plants include leafy spurge, Canadian thistle, Russian olive trees, and sweet clover. On many of these prairie acres, native warm and cool season grasses and forbs comprise less than 20 percent of the total vegetation. Trees have been planted in and around the perimeter of many of the prairies further shrinking the useable grassland area for many species of prairie birds and butterflies.

From a socio-economic standpoint, the impact of invasive plants and noxious weeds on cropland and pastures is routinely estimated to be in the millions of dollars in North Dakota. Weed control on Complex lands was identified by the public as an important program that would help limit the spread and the associated economic impacts of these species on adjacent lands.

As prairie habitats are lost and the plant communities that comprise them become more fragmented, prairie dependent wildlife species will also become increasingly rare.

Wetland Habitat and Value Declines

Early settlers in the midwest found numerous shallow wetlands or potholes scattered across the plains. These areas provided places for water, food, and hay for livestock. As development and agriculture expanded, many wetlands were drained or filled. An estimated 60 percent of the original wetland area has been drained in North Dakota (Tiner 1984). The rate of wetland loss in North Dakota continues at approximately 15,000 to 20,000 acres annually. Draining and filling wetlands to convert them for agricultural development or other types of development are the primary ways wetlands are being lost. Additional threats to wetlands include the gradual siltation of basins caused by soil erosion from adjacent cropland and the cultivation of entire wetland basins (Kantrud et al. 1989). Herbicide and insecticide use also has the potential to highly impact wildlife by eliminating food and cover (Hudson et al. 1984, Hill and Camardese 1986).

Prairie wetland ecosystems have many values to people and wildlife and provide important functions in the natural landscape. Wetlands can help to slow the flow of water runoff which can trap sediments and chemicals before the water flows into nearby streams and rivers. Upland and wetland plants can even absorb some of these nutrients and chemicals and turn them into organic matter. These filtering and trapping functions help to improve water quality of drinking water for human consumption, water for livestock, fish, and habitat for other aquatic wildlife. Wetlands also hold water and release it slowly over the surface and into the groundwater. This provides natural flood control during the springtime and helps to recharge aquifers. Many hunting, fishing, and wildlife observation enthusiasts enjoy the variety of recreation that wetlands provide. The diversity of habitats in a prairie wetland ecosystem provides associated wildlife with all their life needs. Wetlands are some of the most productive areas in the world. They provide food, water, and shelter to hundreds of wildlife species. Waterfowl, shorebirds, wading birds, songbirds, and some hawks all depend on wetlands as essential breeding, nesting, feeding, and resting areas. Many other species like ring-necked pheasants, grouse, white-tailed deer, and other animals rely on wetlands for winter cover from the harsh winds and temperatures. Wetlands also provide cover, food, and spawning areas for northern pike, minnows, freshwater mussels, and other aquatic species. As wetland habitat is lost, wetland values and opportunities decline for humans and wildlife.

Native Grassland Migratory Bird Population Declines

Herkert (1995) looked at the data from the North American Breeding Bird Survey between 1993 and 1996 and found that grassland migratory bird species are declining faster than any other group of breeding species in the Midwestern United States. Bobolinks and western meadowlarks showed the greatest decline (Herkert 1995). Habitat fragmentation is one of the causes of population decline in grassland birds (Samson 1980, Herkert 1994, Vickery et al. 1994). Habitat size is important for some grassland birds (Samson 1980, Herkert 1994, Vickery et al. 1994) and the amount of edge (the area where two different habitats overlap or are adjacent such as grassland and woodlands) of that patch of habitat is also important (Helzer and Jelinski 1999). Less than 1 percent of native prairie remains in North Dakota. As the native prairie and other grasslands are lost to agriculture and development, the amount of habitat for grassland birds also declines. In the southeastern part of North Dakota where land is intensively farmed, Complex grassland habitat is limited for this group of migratory birds.

Increased Public Use and Recreation Demands

Developing tourism has been a strategy in North Dakota economic development plans. Wide open spaces and associated fish and wildlife resources are a recurring theme in tourism marketing. Travelers are finding out about North Dakota. The number of visitors to the Complex has increased by 40 percent since 1990. More bird-watchers, vacationers, and out-of-state visitors stop in than ever before. The number of pheasant hunters and waterfowl hunters has also increased in the southeastern part of the State due to the population boom in Fargo and Wahpeton. Many of our visitors travel from Minnesota where the Complex is a convenient day-trip. As the number of visitors continues to grow, the demand for recreation and outreach will continue to expand.

During public input meetings, participants indicated they wanted more lakes open to fishing, longer boating seasons and hours, more hunting opportunities, and more access on the Tewaukon National Wildlife Refuge (Refuge). To meet the demands of a growing public without compromising the Complex's purpose, a comprehensive Public Use Plan should be developed to look at opportunities and the impacts to wildlife populations and habitat.

A variety of strategies have been used on the Complex to provide habitat for migratory birds and other wildlife. Early Complex acquisition and management efforts focused on planting upland cover on former cropland, developing water, and providing some crops as a food source. As the science of wildlife management evolves and the life needs of wildlife species are better understood, Refuge Managers need to incorporate new findings and techniques to refine or change management. Managers must also continue to evaluate what types of recreation, interpretation, and education should be offered on the Complex.

II. Alternatives Including the Proposed Action

The Proposed Action identified in this EA is an enhanced management alternative. Based upon input received during the public input comment period, the Service has made adjustments to its proposed alternative. This EA serves as a companion document for the draft Complex CCP. Both of these documents will be available for public review and comment prior to the issuance of a final CCP and EA. The public input process is described in detail in the CCP.

Development of Alternatives

Alternatives Considered and Eliminated from the EA

Several alternatives were considered when developing the EA. Some of the alternatives that were discussed but were eliminated from the detailed analysis are listed below.

Maximized Public Use Alternative

This alternative would have developed the Complex as a recreational area. All areas would have been opened to the public and many new facilities would have been built. Development might include wildlife hiking trails, parking lots, expansion of the Visitor Center and exhibits, expanding hunting seasons, and opening additional wetlands to fishing. This alternative was not analyzed in detail because it conflicts with the Complex purpose of serving as a refuge and breeding ground for migratory birds and other wildlife and the intent of the National Wildlife Refuge System Improvement Act, putting wildlife first.

Maximize Habitat Management and Eliminate Public Use Alternative

This alternative would have focused entirely on managing all Complex lands for wildlife with no public use except on Waterfowl Production Areas, where hunting, fishing, and trapping are permitted by regulation. The Refuge would be closed to all hunting, fishing, wildlife observation, and interpretation. All funds and effort would be directed to restoring, enhancing, and managing the Complex for the benefit of native flora and fauna. This alternative was not included because Congress and the Service have historically recognized the importance of providing compatible wildlife-dependent public uses on refuges.

The following three alternatives were developed in further detail and considered possible proposed actions. The alternatives represent a range of management intensity and focus that considers wildlife and their habitats first, specifically native prairie wetland ecosystem species. After discussion, research, and evaluation, Alternative C, Implementing the Enhanced Management Alternative described in the CCP, was selected as the preferred alternative.

Alternative A - Custodial

This alternative describes a custodial level of management for the Complex. The custodial alternative emphasizes almost total exclusion of human intervention from wildlife habitat and population management. This alternative is sometimes discussed by Regional and Washington, D.C. offices as a way to reduce costs or transfer resources to other priority programs in the Fish and Wildlife Service or to other parts of the country. Under this alternative, only basic obligations such as protection of government property, or actions required by law, like noxious weed control, would be carried out. Management and operations of the Complex would be restricted to what is minimally required by local, State, or Federal law.

No upland manipulation (haying, grazing, burning, interseeding) or water manipulation would take place except for noxious weed control. All agricultural areas would be taken out of production and seeded to grassland cover. Refuge habitats would evolve through the succession of native annual and perennial species as well as nonnative species.

Managed Refuge pools, including Lake Tewaukon, would be allowed to return to their natural drying and flooding cycles. No attempt to hold water back would occur; all water control structure boards on the four main dams on the Wild Rice River would be set at as close to natural elevation as possible, and remain there. All smaller water control structures would be removed, returning wetland edges and shorelines to their natural elevations. No information on water quality, water rights, or water use would be developed or gathered. Wildfires would not be suppressed except when they threatened Refuge buildings and adjacent private property.

No additional easement or fee title acquisition would be pursued. The Service would continue to enforce easements and regulations on the District.

Cultural resource sites on the Complex would continue to receive protection.

All Refuge roads would be closed (including the road around Lake Tewaukon). No public use, environmental education or outreach would occur on the Refuge including hunting, fishing, and wildlife observation. Hunting, trapping, and fishing would continue on WPAs according State regulations. Facilities (i.e., boat docks, signs, comfort stations, and auto tour) would be removed or donated to other agencies or groups. Environmental education programs would be discontinued, displays, and exhibits would not be maintained and would be removed as they deteriorated. The Refuge would be patrolled as a closed area.

Funding for the Complex would decrease to provide only necessary funding to support one manager and one maintenance worker, both with law enforcement duties.

Alternative B - No Action (Continue Current Management)

The No Action alternative would continue management of existing habitats, wildlife, programs, and facilities at current levels, and would not include extensive management and restoration of grassland habitats or wetland management improvements. Interpretive, educational and administrative programs and facilities would not change.

Refuge management would continue at current levels. Approximately 10 percent of uplands would be treated per year. There would be no attempt to increase wildlife and habitat management activities. The "No Action" alternative would not involve extensive restoration of upland habitats or the interseeding of planted grasslands to a mixture of native plants. Existing grasslands would support the nesting migratory birds they have in the past. No new effort would be made to manage and improve grasslands for nesting migratory birds and other wildlife. Active management practices such as prescribed fire, grazing, haying, mowing, and interseeding would not be expanded beyond current levels. Habitat data collection would continue at current levels. Integrated pest management would be emphasized. Noxious weed control would continue at the same level but would not be expanded. Natural processes, like fire, would be managed on a case-by-case basis depending on scheduled habitat management and risks to government and private property.

Wetland management emphasis would focus on waterfowl production and migration habitat. Tewaukon and Sprague Lakes would be primarily managed as open water rest areas. Total wetland acres would remain the same unless increased by natural flooding. No new actions would be planned to improve water use and water quality data collection or acquire additional water rights. Management actions that protect wildlife habitat, such as easement law enforcement, would continue at current levels. Additional biological information on Complex resources would not be expanded beyond incidental surveys. Land acquisition would continue at same rate.

Cultural resources would continue to receive protection through law enforcement.

Access roads would be managed as they are currently including minor upgrades and regular maintenance. Recreational opportunities would include current programs available under existing approved hunting, fishing, and public use plans. Only Lake Tewaukon and Sprague Lake would be open to fishing, and the Refuge would be open to limited deer and pheasant hunting. These opportunities would be limited so the Refuge would function as a refuge and breeding ground for migratory birds and other wildlife as described in establishing legislation. Hunting, trapping, and fishing would continue on WPAs according State regulations. Public use facilities would remain essentially the same and would be maintained. New interpretive signs, exhibits, and viewing opportunities would not be developed. Refuge law enforcement would continue at current levels. Environmental education and outreach would continue at the current level. No additional partners or funding would be pursued.

Complex funding would remain at the level needed to support current staffing and programs.

Alternative C - Implement the CCP (Proposed Action)

This alternative implements the Complex CCP goals and objectives and is the proposed action.

This alternative emphasizes native prairie and wetland ecosystem protection, management, and reestablishment. Management that favors native fauna and flora of the tallgrass prairie ecosystem will be emphasized. Some planted grasslands will be restored to a more diverse mix of native grasses and forbs. Increased management to improve habitat for migratory grassland nesting birds, rare prairie butterflies, and plant communities will be planned, conducted, and monitored. Grassland management for nesting waterfowl on the Complex will be continued and improved. Noxious weed control will continue and will be expanded to develop new ways to reduce or eliminate weeds. Integrated pest management would be emphasized.

Management of water levels in Refuge pools will continue for waterfowl production and resting areas but will be refined to correspond with water depths and stages between dry and flooded that occur in natural non-managed wetlands in order to benefit a greater range of species including shorebirds and wading birds. Tewaukon and Sprague Lakes will be primarily managed as open water rest areas. Water rights on the Complex will be clarified. The Refuge water use database will improve by the installation of data loggers and efforts will be initiated to collect better water quality data and improve water quality. Additional biological information on Complex resources will be expanded beyond incidental surveys to include baseline data collection, population trend data, and floristic surveys. Land acquisition will continue to focus on areas within the approved Refuge boundary, WPA round-outs, and increased efforts to purchase wetland and grassland easements and develop cooperative agreements with landowners on private land.

Cultural resources would continue to be protected and interpretative opportunities would be expanded. Additional cultural surveys would be conducted on the Complex.

Access roads would be managed at current levels including minor upgrades and regular maintenance. Recreational public use on the Refuge will be enhanced by improving existing facilities and programs. Only Lake Tewaukon and Sprague Lake would be open to fishing, and the Refuge would continue to be open to limited deer and pheasant hunting. Hunting opportunities would still be limited so the Refuge would function as a refuge and breeding ground for migratory birds and other wildlife as described in establishing legislation. Hunting and fishing programs will be reviewed to determine if opportunities exist to improve the quality of these public uses.

The Complex law enforcement program will become more effective. Improved resource and public safety protection will be achieved by adding law enforcement staff, funding, and increasing patrol time. Additional staff may provide the resources needed to expand fishing hours or provide additional hunting opportunities on the Refuge.

The Complex staff will expand educational and outreach programs to meet the increasing visitation and public interest in Complex environmental education programs. This will include developing new brochures, creating three new interpretive exhibits in the Visitor Center, expanding the Visitor Center, developing two walking trails, a Tewaukon web site, and increasing educational outreach to schools and community groups. Funding will be requested to staff the Visitor Center for extended hours, especially peak weekend visitor periods.

Additional Complex funding and staff would be needed to accomplish the goals and objectives in the CCP. Additional staff needed would include an outdoor recreation planner, assistant refuge manager, law enforcement officer, biological technicians, maintenance staff, an administrative support assistant, fire management officer, and a private lands person. Additional seasonal staff would be required from spring through fall to implement the management strategies on the Complex.

An increase in office space, facilities, and equipment will be needed to support the additional staff.

III. Affected Environment

Location

The Tewaukon Complex is composed of the Tewaukon National Wildlife Refuge (Refuge) and the Tewaukon Wetland Management District (District). The Complex is located in the drift prairie of southeastern North Dakota. The Refuge was established in 1945 and is approximately 8,343 acres in size. The District was established in 1958 and is comprised of over 14,000 acres of Waterfowl Production Areas (WPA), 35,000 acres of wetland easements, 10,386 acres of grassland easements, and 112 wetland and 45 grassland acres in FmHA easements in Ransom, Sargent, and Richland Counties.

Historical Landscape

Four major glacial periods impacted the northern plains during the Pleistocene Age (Pielou 1992). The most recent was the Wisconsin glacial stage which reached its maximum extent about thirteen thousand years ago (Mayewski et al. 1981). All the dominant landscape features of the Prairie Pothole Region are products of that geological event including prairie wetlands or “potholes” and the rich soil that gave rise to the tallgrass prairie.

Historically, the Complex landscape was a mix of tallgrass prairie and a variety of shallow and deep wetlands. No nonnative weed species were present at that time. Numerous native plant and wildlife species existed on the prairie and wetlands. Historical processes which maintained the vegetative and dependent wildlife communities included fire (Higgins et al. 1989), periodic defoliation by large herds of grazing animals (bison and elk), and weather (Eldridge 1992; Barbour et al. 1987).

As settlement of the Northern Great Plains increased, agriculture became the focus in the early- to mid- 1900’s. The rich landbase became devoted to agricultural production and drastically changed the grassland landscape (Duebbert et al. 1981). European settlement also drastically reduced the frequency and size of two of the processes which shaped the prairie grassland communities. The roaming herds of bison and elk were reduced in size and the scope of their impacts on habitat changed. Suppression of fire efforts of European settlers also increased. Settlers after the 1930’s began adding shelterbelts and wooded areas to the landscape to control soil erosion by the wind. The prairie that was once a treeless plain began to be invaded by woody species.

The Biological Environment
Grasslands and Tallgrass Prairie

Tewaukon NWR Complex is part of the tallgrass prairie ecosystem located in the southeastern portion of North Dakota. Tallgrass prairie is arguably one of the most fragmented landscapes in the country since much of it has been converted for agricultural production. Prior to acquisition, the majority of the Refuge and Waterfowl Production Areas were farmed. The remaining tallgrass prairie areas on the Complex (approximately 3,716 acres) are located in very wet areas, steep banks along wetlands and rivers, or in poor soils. They survive because these areas were undesirable as farmland, or were maintained as pasture for livestock.

The prairies evolved with two forms of periodic disturbance, grazing by large herbivores and fire. These processes were slowly removed from the landscape as settlers moved into the area and agriculture expanded. As a result, many of the native prairies today are heavily invaded by nonnative plants such as leafy spurge, smooth brome, Canada thistle, and Kentucky bluegrass. Many of the native grasses and forbs have been lost or are now a minor component of the prairie. Prescribed burning and grazing have been reincorporated into the management of the native prairie on the Complex in an attempt to invigorate the native plants and restore the prairie community.

Managing, protecting, and restoring tallgrass plant communities was identified by the planning team and other resource management professionals as an important issue during the CCP planning process.

Approximately 3,100 acres of dense nesting cover (DNC) has been planted on many fields in the Complex by Service personnel to provide habitat for ground nesting birds, primarily waterfowl. DNC fields lose their sweet clover component soon after the first year of planting and many DNC fields on the Complex have lost their alfalfa and wheat grass components as well. These fields are now dominated by nonnative grass species such as smooth brome and Kentucky bluegrass. These fields must be dug up and replanted every 10 years or so to maintain their attractiveness to nesting birds.

Planted native grass acres equal 2,581 on the Complex. Areas planted to native grasses are composed of 3 to 4 warm season native grasses usually big bluestem, Indian grass, switchgrass, and little bluestem. These fields are managed by spring prescribed burns and are in fair-to-good condition. Warm season native grass fields offer little in the way of species or structural diversity. Several of the fields are used as seed sources. More species of grasses and forbs are needed to mimic natural prairie communities which should support more diverse wildlife populations.

Approximately 2,866 acres of Complex tame grass fields are primarily composed of smooth brome and Kentucky bluegrass. These fields vary in their origin. Some were once planted to brome for rangeland or hayland when it was in private ownership, while others were once DNC or alfalfa fields which have become completely dominated by these cool season grasses. The vegetative structure and species composition of these fields dictates their attractiveness to migratory birds.

Wetlands

The Prairie Pothole Region (Figure 4) is named for the density of wetlands scattered across the landscape. Wetlands found in the southern Drift Prairie make up 13 percent of all wetlands in North Dakota and a great majority of these are less than 15 acres in area (Stewart 1975). A diversity of ephemeral, temporary, seasonal, semipermanent, and permanent wetlands in varying conditions can be found on the Complex.

Fens and alkali ponds are very rare; none have been documented on Complex lands. Approximately 38 managed semipermanent and permanent wetlands are on the Refuge. Historically, management of these wetlands has centered around holding water for waterfowl breeding, resting, and migration areas.

Managing, protecting, and restoring prairie wetland complexes was identified by the planning team and other resource management professionals as an important issue during the CCP planning process. How the Service enforced provisions of wetland easements, real property interests that were purchased to protect wetlands, was identified by the public as an important issue during the CCP planning process.

Native Grassland Migratory Birds

The Prairie Pothole Region is the principal waterfowl production area in the lower 48 states. North Dakota is a key State in this region. Twenty-one species of waterfowl breed in North Dakota (Stewart 1975). Twenty-one species of waterfowl use the Complex as a resting area during migration. Twelve species of ducks (mallard, gadwall, blue-winged teal, green-winged teal, widgeon, shoveler, pintail, lesser scaup, canvasback, redhead, wood duck, ruddy duck) and Canada geese nest on the Complex. Annual numbers of waterfowl fluctuate with wetland conditions. Waterfowl are commonly found on Complex lands and are popular game species that attract large numbers of visitors.

Other breeding grassland migratory birds on the Complex include the: bobolink, savannah sparrow, grasshopper sparrow, clay-colored sparrow, upland sandpiper, Le Conte's sparrow, vesper sparrow, short-eared owl, northern harrier, and Swainson's hawk. These birds use a variety of grassland habitats on the Complex as nesting, feeding, and resting areas.

Managing, protecting, and restoring grassland plant communities that support diverse and self-sustaining native breeding grassland bird populations was identified by the planning team and other resource management professionals as an important issue during the CCP planning process.

Other Migratory Birds

Thirty-seven species of shorebirds and 28 species of sandpipers commonly cross the interior Plains during spring and fall migrations (Skagen 1997). Habitat use by migratory shorebirds is concentrated in small shallow wetlands or wet muddy areas. Shorebirds inhabit North Dakota from mid-March through mid-October depending on weather and water conditions. Eighteen species of shorebirds breed in North Dakota (Stewart 1975). Twelve shorebird species have been documented by Refuge staff as breeding on the Complex.

Like other wetland dependent birds, the number of wading birds (herons, egrets, rails, bitterns) using the Complex fluctuates with the availability of water. A heron colony has existed on the Refuge since 1993 when water returned to southeastern North Dakota. Great blue herons, great egrets, double-crested cormorants, and black-crowned night herons nest in the colony located in dead trees in Pool 7A. No records of a heron colony on the Refuge were recorded prior to 1993.

Raptors, including eagles, hawks, falcons, and owls, are found on the Complex. The three most common hawks nesting on the Tewaukon NWR are the red-tailed hawk, northern harrier, and the Swainson's hawk. Great horned owls are the most common owl nesting on the Refuge. Several species of raptors migrate through the Refuge in the spring and fall including peregrine falcons, kestrels, ospreys, short-eared owls, golden eagles, sharp-shinned hawks, and cooper's hawks. The most notable migrants are bald eagles which follow the waterfowl migration and can be regularly seen around Lake Tewaukon and Sprague Lake in the spring and fall. During the winter, some raptors from Alaska, Canada, or northern Minnesota, including snowy owls, goshawks, and saw-whet owls, can be found on Complex lands.

Some woodland migratory bird species have increased in number in North Dakota from 1967 to 1993 such as the western kingbird, brown thrasher, and song sparrows. Other species like American robins, house sparrows, cliff swallows, and barn swallows are associated with people, trees, and structures (Johnson et al. 1997) and are found on the Complex.

Resident Birds

Only one species of native upland bird, the sharp-tailed grouse, is found on the Complex. Sharp-tailed grouse are few in number and spotted occasionally on the Complex. Ring-necked pheasants are commonly found on Complex lands and are a popular game species that attract large numbers of visitors. Black-capped chickadees, white-breasted nuthatches, brown creepers, woodpeckers, and blue jays are the other resident native birds that are found on the Complex. Managing Complex habitat to specifically benefit pheasants was identified as an important issue by the public during the CCP planning process.

Mammals

White-tailed deer are the only large mammals on the Complex. Occasionally, moose have been spotted near the Refuge or associated with WPAs. Deer are commonly found on Complex lands and are a popular game species that attract large numbers of visitors. Managing Complex habitat to specifically benefit deer was identified by the public as an important issue during the CCP planning process.

A small herd (1-15 animals) of pronghorn antelope resides in the Forman and Rutland area but do not spend much time on Complex lands.

Medium-sized mammals on the Complex include mink, muskrat, red fox, coyote, badger, beaver, jackrabbits, woodchuck, raccoon, striped skunk, and cottontails. No thorough inventory of the small mammals have been conducted on the Refuge or District. The following small mammals have been observed thirteen-lined ground squirrel, Franklin's ground squirrel, jumping mouse, and plains pocket gopher.

Fish

Lake Tewaukon and Sprague Lake have historically been managed at depths that support recreational fisheries. Northern pike, walleye, perch, and channel catfish are some of the sport fish in the two lakes. Native fish that exist in other wetlands and in the rivers are fathead minnows, bullheads, and sticklebacks. The common carp and the tiger muskie are two nonnative fish that were introduced into the lakes.

Managing and improving Refuge recreational fish populations, increasing the number of Complex wetlands that support recreational fish populations, and providing fishing opportunity was identified by the planning team, other resource management professionals, and the public as important issues during the CCP planning process.

Reptiles and Amphibians

Reports of reptile and amphibian species in the District include work by Hoberg and Gause (1992). Four species of toads (great plains, American, Canadian, and woodhouse's) and three species of frogs (northern leopard, wood frog, and western chorus) have been documented in the District (Hoberg and Gause 1992). Hoberg and Gause (1992) reported the occurrence of tiger salamanders, mudpuppys (Ransom County), northern prairie skink, western painted turtles, common snapping turtles, plains garter snakes, and western hognose snakes. Red-bellied snakes have been observed by Tewaukon staff on the Hartleben WPA and the Tewaukon Refuge. No thorough inventory of reptiles and amphibians has been conducted on the Refuge or District.

Threatened and Endangered Species

The bald eagle is the only federally endangered or threatened wildlife species documented on the Complex. This species is currently proposed for delisting as populations have recovered. Bald eagles can regularly be observed on Complex lands during migration periods. One threatened plant species, the western prairie fringed orchid is found on tracts that have been protected by grassland easements. By purchasing easements, the Service has bought the right to eliminate tillage or conversion native prairie sites where orchids are found.

Several species that are considered rare and unique by the U.S. Fish and Wildlife Service or the State of North Dakota exist on Complex lands including: black tern, ferruginous hawk, loggerhead shrike, regal fritillary and Dakota skipper butterflies.

Riparian and Native Woodlands

Complex native riparian vegetation, both woodlands and grasslands, are primarily located within the Wild Rice, Sheyenne, and Red River of the North floodplains. Grassland riparian vegetation is comprised of prairie cordgrass, northern reedgrass, a variety of sedges, and rushes. The native riparian woodlands are normally deciduous trees such as cottonwoods and willows and are found where moisture conditions allow for their growth.

The Physical Environment

Climate and Air Quality

Southeastern North Dakota climate is characterized by the extreme cold of winter, hot summers and rapid fluctuations of temperature. Periodic droughts and wet cycles occur over several years or sometimes within a year. Temperatures range from -35 degrees to 110 degrees Fahrenheit. Intense thunderstorms occur frequently during the summer; snow and high winds can produce blizzard conditions in the winter. Prevailing winds are from the northwest with the highest wind speeds normally occurring in the springtime. The wind exceeds 25 mph during 185 days of the year. Total annual precipitation is about 20.77 inches and is normally heaviest in late spring and early summer. The growing season is approximately 90 days long.

No special air quality standards exists for the Complex, but air quality in this area meets the six Federal Environmental Protection Agency standards set for particulate matter, sulfur dioxide, nitrous oxide, ozone, carbon monoxide, and lead. Permits from the ND Health Department are applied for prior to prescribed burning done on the Complex with ND Air Pollution Control Rules.

Soils

The soils within the three Counties comprising the Complex have been inventoried by the U.S. Soil Conservation Service. The dominant soils of Sargent County are Forman-Aastad loams. Ransom County soils are dominated by the Barnes Soil Association. Fargo silty clay and Embden-Tiffany are the two most common soil types in Richland County.

The majority of the upland sites in the Complex have high organic matter, nutrients, and adequate topsoil to establish and support grassland stands. Rolling topography generally limits water erosion to isolated drainage areas, but exposed soils can be subject to severe wind erosion if snow cover is limited. Upland areas with grass cover generally form a resilient sod which is not easily penetrated. Bare soil areas between bunch grasses or sites of animal burrows can be rapidly colonized by annual plants or invader plants.

Generally, these soils are extremely valuable for production agriculture. Despite the challenges presented by precipitation extremes and short growing seasons, the soils support small grain, row crop, and livestock production that generates the most common source of income in the State.

Hydrology

The most prominent wetland features throughout the Complex are glaciated "prairie potholes." These prairie wetlands are more numerous in Sargent and Ransom Counties (outside of the Red River Valley) but are found within the entire District. It is the richness and diversity of these wetlands that have historically been of primary interest to the Service in North Dakota. These prairie wetlands are extremely productive and very attractive to both migratory and resident wildlife. They serve as breeding, nesting, and rest areas for many migratory birds and as wintering habitat for many species of resident wildlife.

The Wild Rice River and its tributaries are the water source for the Tewaukon NWR. The Wild Rice River and its tributaries collect spring runoff from the Sisseton hills located to the south of the Refuge. Water enters the Refuge from the west and south and flows east through a series of impoundments. The Wild Rice River eventually enters the Red River of the North as is the case with the other major river systems in the District.

Wetland drainage and channelization of Wild Rice River tributaries has increased the amount of water, nutrients, and sediments coming into the Refuge.

The Sheyenne River in Ransom County is also a major tributary in the District that flows into the Red River of the North.

Unique Natural Resources

The Complex does not have any unique resources that would qualify as resource natural areas, wilderness, or wild and scenic rivers.

Cultural Resources

Two limited archaeological investigations have been done on the Refuge and only limited work has been done on a few of the Waterfowl Production Areas.

The majority of the cultural resource information for the Tewaukon NWR has been compiled in Jackson and Toom's 1999 report, "Cultural Resources Overview Studies of the Tewaukon National Wildlife Refuge, Sargent County, North Dakota and the Waubay National Wildlife Refuge, Day County, South Dakota." An additional report "Archaeological Test Excavations at Lake Tewaukon (325A211) documents a proto-historic occupation site in southeastern North Dakota (Haberman, 1978).

Historic (A.D. 1780 to present) sites on the Refuge include the Langie family cemetery on the western shore of Lake Tewaukon and the campsite of General Sibley's military troops at Camp Parker in July 1863 on the eastern shore of Parker's Bay. Several historic trails are near or cross Waterfowl Production Areas. These trails include the Fort Ransom-Fort Wadsworth Trail, the 1863 General Sibley Expedition, Colonel McPhail's return route in 1862, and parts of the Fort Abercrombie-Fort Wadsworth Trail. An expedition to determine the suitability for a railroad occurred in 1853 - 1855 crossing Richland and Ransom Counties was documented by Issac Stephens.

Less than 5 percent of the Tewaukon NWR has been surveyed for cultural resources. The majority of the cultural sites that have been documented are in gently sloping to moderately-well to well-drained soils.

Socio-economic Environment

Recreational Resources - Public Use

Tewaukon Refuge is the largest tract of publicly owned land in Sargent County and is a popular destination for approximately 15,000 people per year. The Refuge provides visitors with an auto tour route, opportunities for environmental education and interpretation, hunting, fishing, and wildlife observation. The Waterfowl Production Areas are open to the public for hunting, fishing, and trapping according to State regulations. An estimated 30,000 people use the District lands.

The Complex is approximately 90 miles southwest of Fargo, the largest city in North Dakota, 60 miles southwest of Wahpeton, and over 200 miles west of Minneapolis, MN. Several smaller towns of less than 1,000 people are located throughout the District.

An eight mile auto tour route is located along the north shore of Lake Tewaukon. It is open from May 1 through September 30 and closed in the spring and fall to minimize disturbance to migrating birds.

Hunting and fishing are the most popular activities on the Refuge. Many hunters are from the local area but an increasing number of hunters come from Minnesota and Fargo, ND. Hunting for two species is allowed on the Refuge, white-tailed deer and ring-necked pheasants. Hunters have two options to hunt white-tailed deer, an archery season and Refuge permit rifle season. The Refuge is also open to a Youth Deer firearms season in September. The Refuge pheasant season opens after the deer rifle season in November. Fishing is allowed on Lake Tewaukon and Sprague Lake year-round. Boat access for fishing is restricted to May 1 through September 30 to limit disturbance to migrating waterfowl. Five boat ramps (one accessible), an accessible fishing dock, picnic facilities, and outdoor rest rooms are located at the two lakes.

Hunting on the District is also very popular. Waterfowl Production Areas are open to all hunters, anglers, and trappers according to State regulations. No managed fisheries exist in WPA waters. White-tailed deer, waterfowl, and pheasant are the most popular species hunted on the District. With the majority of land owned by private individuals and posted closed to public hunting, WPAs offer important opportunities for public hunting.

No hiking trails exist on the Refuge. The east side of the Refuge is open to walking access for wildlife observation. One walking prairie trail has been developed on the Hartleben WPA.

Economics

Until recently North Dakota was predominately rural, but more than 50 percent of the State's residents now live in urban areas. Settlement began in southeastern North Dakota in the mid- to late-1800's. The Fargo population has grown from 32,580 people in 1940 to 180,000 people in 1998 (includes the Fargo and Cass County metro area). Fargo continues to grow at a rate of 1.5 percent each year. Wahpeton, a city of approximately 10,000 is located in Richland County and is approximately 60 miles east of the Complex. Wahpeton's population has a growth rate similar to Fargo's. The County seats are Forman for Sargent County, Lisbon for Ransom County, and Wahpeton for Richland County. The economic base of the State was predominately agriculture, but as North Dakota becomes more urban, agriculture related employment accounts for less than 50 percent of the work force. The growing employment sectors are retail, professional services, and durable manufacturing.

Approximate land acreage totals for the three Counties are as follows: Sargent County - 532,000 acres; Ransom - 592,000 acres; and Richland County - 927,424 acres. Land use is predominately agriculture. The majority of crop acres in the Complex are utilized for wheat (spring), soybeans, corn, and sugar beets in the Red River Valley. Average yields

vary by County. Cash rental rates in 1998 on agricultural lands ranged from $45.00 - $82.50/acre in Richland County, $35.00 - $57.00/acre in Sargent County, and $32.50 - $55.00/acre in Ransom County. Grazing occurs on a smaller scale in the three Counties. Approximately 92,000 head of cattle were reported in 1998 in all of the three Counties (ND Ag Statistics 1998) with an average pasture rental rate of $7.73/AUM (animal unit month).

Wildlife observation is the number one recreational activity in the United States today. This recreational activity is part of a new type of tourism, labeled "Eco-tourism." It is growing as the human population increases and becomes more urban and is looking for places to get away to natural areas for recreation. A 1995 Fish and Wildlife Service study was conducted on the economic impacts national wildlife refuges have on local economics. One of the 15 refuges chosen was the Upper Souris NWR in northwest North Dakota. The study found that over 46,000 visitors spent approximately $1.03 million during trips to this Refuge in 1995. Demands for lodging, food, gas, fishing, and hunting equipment and other goods created 32 jobs in two counties. Fish and Wildlife Service lands can boost local economies enormously.

Rural southeast North Dakota residents face increasing socio-economic challenges. The agricultural profit margin for the family farm is shrinking and operations are becoming bigger, diversifying, or failing to survive. Small towns are losing population, services, and tax revenue. In many ways, the Refuge fits into the picture as a small business would, by employing eight full-time people who spend money in the surrounding community. In addition, locally purchased supplies, machinery, and equipment used to accomplish Complex operations supports community businesses. Complex recreational visitors also generate local business income. Management activities like Complex grazing, farming, and haying provide business opportunities for area agricultural producers.

An issue that hinders acquisition efforts and strains Service/community relationships is Refuge Revenue Sharing. The Service Revenue Sharing payment has seldom been paid in full, and when it is, it still does not equal the tax revenue paid by other County residents. Service efforts in the Complex will always be less effective until the Revenue Sharing payment is comparable to local taxes.

The majority of Refuge and District users and neighbors understand that the Service manages Refuge lands for migratory birds and WPAs for waterfowl production, and most have a general appreciation for the value of wildlife and their habitats. Refuge visitors also appreciate the variety of recreational opportunities that Complex lands offer. However, these visitors expect the land to be managed and not ignored. Their opinions of the Service, wildlife agencies, environmental groups, and wildlife in general are greatly influenced by the way these lands are managed. If a WPA is ignored, allowing the habitat condition to decrease in quality and noxious weeds to increase in abundance, opinions quickly become negative. However, if the land is managed well and wildlife populations and habitat conditions are productive, opinions become positive and wildlife benefits both on- and off-Service managed lands. As with all public land management, communication, cooperation, and education between the local community and managers drives public perception of the agency and its management.

Environmental Justice

In accordance with Executive Order 12898, Federal Actions to address Environmental Justice in Minority Populations and Low-Income Populations, Federal agencies must identify and address disproportionately high and adverse human health or environmental effects of their programs policies and activities on minority populations and low-income populations. The evaluations considered potential impacts, including social and economic, cultural, and physical and biological resources.

IV. Environmental Consequences
Alternative A: Custodial
Wildlife Habitat Fragmentation and Alteration

This alternative would not address habitat fragmentation since opportunities to acquire, manage, or protect important wildlife habitat would be suspended. The Service would not capitalize on any opportunities to acquire key habitat that would help to prevent fragmentation. In addition, a reduced habitat management strategy would result in the slow, but inevitable colonization of key habitats like native prairie by trees and nonnative plants. Upland habitats would become less attractive to grassland nesting birds as the vegetative structure and species diversity of Complex grasslands decline. An overall decline of plant and animal species richness would occur.

Grassland and Tallgrass Prairie

In the short-term, nesting cover for migratory birds would increase as croplands would be seeded to grassland cover.

With the exception of an occasional wildfire, this management alternative would eliminate all major defoliation and disturbance events required to maintain diverse and healthy grasslands. Residual vegetation would build up suppressing new growth. Height, density, and diversity of vegetation would decline. This would be especially apparent on the native prairie areas where the native plant diversity would decline as tracts evolve into monotypic stand of nonnative grasses. Nonnative plant species would increase due to the decreased health of the native plants and their subsequent inability to compete. Prairie butterfly populations would decrease as the native prairie areas are treated too infrequently. The essential nectar and larval food sources for prairie butterflies of prairie grasses and forbs would disappear as the grasslands lose diversity because of the decrease in disturbance events. Attempts to convert grasslands to diverse native prairie plant communities would not be sustained and prairie dependent species would not increase.

The diversity and structure in Dense Nesting Cover (DNC) fields would also decrease without periodic disturbance. These fields would also evolve into monotypic stands of nonnative grass species. Woody species such as buckbrush and Russian olive trees would invade the grasslands. No degraded grassland tracts would be reseeded to diverse native plant communities. Under this alternative, weed control would continue to be conducted at levels required to meet legislative standards, but no new techniques would be explored. Weed control should ensure that the impact to adjacent landowners from Complex weeds does not increase.

Law enforcement would continue on all Complex uplands and grassland easements to help prevent this resource from being hayed early, converted to cropland, or developed.

Wetlands

Wetlands would not be managed and conditions would be the result of natural processes as wetlands go through the range of drying and flooding. Wetlands would not be managed to hold water for longer periods of time; instead, they would fluctuate seasonally and yearly. A greater range of habitat conditions would provide conditions for a greater range of wildlife species. The levels of Lake Tewaukon and Sprague Lake would mimic original shallow levels which may encourage vegetative growth. These lakes may not provide open water migratory bird resting habitat if vegetation responds. Shallow lake levels would decrease the amount of bank erosion around these lakes and reduce carp, which should reduce sedimentation and turbidity. Overall water quality on the Refuge is not likely to improve if efforts to address watershed impacts along the Wild Rice River are not taken. Non-managed wetlands would continue to function naturally except for the exclusion of fire and grazing processes, which should not measurably affect their productivity. Law enforcement would continue on all Complex lands and the Service's wetland easement interests would be enforced. No efforts to protect additional wetland habitat interests through acquisition would occur.

Native Grassland Migratory Birds

Initially, more nesting cover would be available for birds after cropland was seeded. Waterfowl nesting attempts would still be driven by area wetland conditions. Over time, under the custodial alternative, waterfowl production would decrease as the health, density, and vigor of Complex grasslands declines. Most of the grasslands would become unattractive for nesting ducks. Predator control would be discontinued, and waterfowl nest success would decline below population sustaining levels. Complex wetlands would still provide good resting and feeding areas for migrating waterfowl. No cropland food source for waterfowl would exist on the Refuge which may make the Refuge less attractive to migrating waterfowl and might cause additional problems for adjacent landowners.

Use of grasslands on the Complex by migratory grassland nesting birds such as the bobolink, grasshopper sparrow, upland sandpiper, etc., and prairie butterflies would decrease. As the grasslands change to less diverse stands of nonnative grasses and grassland structure deteriorates, use by nesting grassland birds would decline. The invasion of more woody plants would also make complex lands less attractive to grassland nesting birds as they avoid selecting nest sites adjacent to trees.

Other Migratory Birds

Wetland dependent migratory birds such as yellow-headed blackbirds, herons, egrets, cormorants, shorebirds, marsh wrens, and others would be positively affected by this alternative. Managed wetlands would reach a greater range of conditions (dry to full) than they do currently. A broader range of conditions will make them more biologically productive over time. The plant biomass, that develops as wetlands dry out, will support a large waterbird response when they refill. As wetlands dry out, additional habitat will be available for shorebirds. Wetland migratory bird use would still be dependent on local and regional wetland conditions.

Species that are dependent on trees, such as yellow warblers, thrushes, and Northern orioles, may be negatively affected by this alternative if native woodlands decline over time.

Resident Birds

Initially, more nesting cover would be available for birds after cropland was seeded. Over time, under the custodial alternative grassland nesting populations would decrease as the health, density, and vigor of the Complex grasslands declines.

The only native game bird that occasionally uses the Refuge is the sharp-tailed grouse. Grouse may initially colonize the Refuge as croplands are seeded down, but are unlikely to be attracted to the upland cover as species structure and diversity decline. Despite more extensive grasslands, grouse are likely to remain incidental on all Complex lands. Additionally, grassland easements which protect grassland habitats from conversion would not be acquired under this alternative. Grassland habitat is the main limiting factors for sharp-tailed and prairie chickens on the Complex. These species would initially benefit from this alternative but would continue to decline as grassland habitats on the District are converted to cropland or development.

Ring-necked pheasant populations may decline under this alternative. Managing habitat for pheasants generally consists of providing alternating blocks of grassland nesting cover, tree and shrub plantings for winter cover, and croplands for food sources. Seeding down all Refuge croplands would not provide the same amount or type of habitat that is currently available. Predator control would also be discontinued under this alternative. Increased predator numbers may reduce the nest success and recruitment of all grassland nesting birds, including pheasants.

Managing Complex habitat to specifically benefit pheasants was identified by the public as an important issue during the CCP planning process. The public perception that the seeding of Refuge cropland to grass would be detrimental to pheasant populations can be anticipated in this alternative. Pheasant hunting would also be terminated under this alternative which would be very unpopular. The perception that pheasant populations would decline and the elimination of pheasant hunting would generate political pressure to maintain food plots for pheasants and permit hunting seasons.

These impacts are not anticipated on District lands where hunting would still occur.

Mammals

Deer are commonly found on Complex lands and are a popular game species that attract large numbers of visitors. Deer hunting would be terminated under this alternative. Managing Complex habitat to specifically benefit deer was identified by the public as an important issue during the CCP planning process.

Refuge deer numbers are likely to increase under this alternative, and while they may obtain some food from sources on the adjacent ND State Wildlife Management Area, expanding populations may damage Refuge vegetation and are likely to damage crop and hay supplies on adjacent private lands. Larger deer populations and damage to surrounding crops and hay supplies would generate political pressure to maintain food plots for deer and permit hunting seasons. These impacts are not anticipated on District lands where hunting would still occur.

Small predators such as raccoon, skunk, and fox would not be controlled under this alternative, and their numbers would be self-regulating. Their populations would be higher under this alternative.

Fish

Managing Complex wetlands to support recreational fishing was identified by the public as an important issue during the CCP planning process.

Managing Refuge lakes at historic shallow levels is likely to eliminate the recreational fisheries in Tewaukon and Sprague Lakes. The Lake Tewaukon aerator would no longer be used. Water would not be deep enough in these lakes for fish to survive the winter. While the reduction of other species, such as carp, may result in small improvement in water quality, agricultural runoff throughout the watershed has a much greater impact on water quality. It is likely that any water quality improvement caused by the reduction in carp numbers will not be measurable.

The likelihood that the recreational fish population in these lakes would be lost would generate political pressure to maintain the two lakes at elevations that support this activity and would decrease public support of the Refuge.

No fisheries are established on District lands.

Reptiles and Amphibians

Little impacts to these populations are anticipated with this alternative though these species may do slightly better on the croplands that are seeded back to grass.

Endangered and Threatened Species

The only endangered wildlife species component on Complex lands is migration habitat for bald eagles. No significant impact would occur under this alternative.

Western prairie fringed orchid populations on grassland easement tracts would still be monitored. No effort would be made to continue to protect prairie habitats that contain these species from being converted to cropland or other development through additional easement and fee acquisition. Chances for this species to maintain self-sustaining stable populations would decrease.

Rare species and species of concern (wildlife and plant species) on District lands would be adversely affected. The white lady's slipper, Dakota skipper, and the powesheik skipper populations on the Hartleben WPA would decline as habitat management is phased out, native prairie deteriorates, and essential native nectar sources and grasses decrease. No future reintroduction of extirpated species would be considered.

Riparian and Native Woodlands

Riparian vegetation may develop along the Wild Rice River corridor and become more diverse between managed Refuge pools once fixed elevations are established. Native woodlands would not be managed; they may deteriorate over time or be self-supporting. Dependent migratory birds such as yellow warblers and Northern orioles would follow suit.

Physical Environment

Climate and Air Quality

A reduced impact would occur on air quality under this alternative as fewer fossil fuel burning engines would be needed under minimum management. This reduced impact is not likely to be measurable. Prescribed burning would be discontinued under this alternative, and air quality impacts would be reduced. However, eliminating prescribed fire would not eliminate fire from Complex lands. Wildfires would still burn Complex vegetation although the frequency of fires would be reduced. Fuel loading may yield larger and more intense fires and total air quality impacts may be the same as the other alternatives.

Soil and Water Quality

Some small improvement in soil loss due to wind and water erosion could be anticipated as well as increases in organic matter as cropland is seeded to grass under this alternative. The nutrient cycle that is triggered by fire and grazing disturbance would be infrequent.

Complex water quality would be expected to decline as watershed agricultural impacts continued.

Hydrology

Restoring wetlands to natural levels would result in a slight increase in flow in the Wild Rice River. No other impacts would be anticipated.

Cultural Resources

Cultural resources on the Complex would still be protected by law enforcement. No additional interpretative facilities or programs would be continued or developed. Existing interpretive displays and panels would not be maintained. No additional areas would be surveyed.

Socio-economic Environment

Recreational Resources - Public Use

All public use would be eliminated on the Refuge including hunting, fishing, and wildlife observation under this alternative. All facilities would be removed. Refuge roads would not be maintained. The Visitor Center would not be staffed. Waterfowl Production Areas would still be open to hunting, fishing, and trapping only. No new facilities or opportunities would be developed on the WPAs. Environmental education and outreach would cease on the Complex. Under this alternative, the Refuge would be closed to all visitors. As a result, demand for outdoor recreation would increase on other lands in the Complex.

The lost recreation opportunity would generate political pressure to restore these opportunities or transfer the management of the Refuge to another agency.

Economics

Under this alternative, the number of wildlife-dependent visits to the area would decrease dramatically. A corresponding decrease in the amount of money spent in the local communities on lodging, food, and supplies would be expected. Eliminating haying, farming, and grazing on the Complex would greatly reduce the economic benefit local producers gain from conducting Complex land management. The decrease in staff working at the Complex would reduce the amount of revenue in local communities generated by staff living in the area. Supplies and services purchased through local businesses would be reduced. Weed control conducted at levels required to meet legislative standards should ensure that the impact to adjacent landowners from Complex weeds does not increase.

Environmental Justice

Considering social and economic impacts, actions under this alternative are not known to cause disproportionately high and adverse human health impacts in any population and no such impacts would be expected to occur as a result of the Custodial alternative. No adverse or disproportionately high socioeconomic impacts to low-income or minority populations are expected to occur under this alternative.

Alternative B: No Action - Continue Current Management

Wildlife Habitat Fragmentation and Alteration

This alternative would help limit habitat fragmentation since opportunities to acquire, manage, or protect important wildlife habitat will be pursued. This effort would be opportunistic depending on Service project emphasis and available sources of funding. As a result, the Service may be able to capitalize on opportunities to acquire key habitat that would help to prevent fragmentation. A limited habitat management strategy would result in the slow, but inevitable, colonization of key habitats like native prairie by trees and nonnative plants. Upland habitats would become less attractive to grassland nesting birds as the vegetative structure and species diversity of Complex grasslands decline. An overall long-term decline of plant and animal species richness throughout the Complex would occur.

Grasslands and Tallgrass Prairie Habitats

At the current rate of habitat management, about 10 percent of the uplands on the Complex are actively managed annually. This management effort is not spread evenly throughout the Complex. Some grassland areas have never or very rarely been managed due to lack of time, money, or staff. Under this No Action alternative, these areas would continue to be left unmanaged and the deterioration of grassland quality and corresponding wildlife response described under the custodial alternative would occur.

Grasslands that are currently being managed would continue to be managed at the same rate with the same tools and methods. Under these management activities, some grassland habitat conditions would continue to decline while some would maintain their present condition; others, such as native prairie, would be adequately managed. If the current level of grassland habitat management on the Complex continues, the long-term overall grassland condition would decline. At the current staffing and funding levels, it is not possible to manage an adequate amount of habitat in a timely fashion. As a result, many of the Complex grasslands receive too much rest from disturbance. Attempts to diversify grassland stands would continue, but these efforts would be sporadic and inconsistent. Grassland nesting cover for migratory birds would not be maximized on the Refuge as some lands would be managed for crop production.

Under this alternative, weed control would continue to be conducted at levels required to meet legislative standards and new techniques would be explored. Weed control should ensure that the impact to adjacent landowners from Complex weeds does not increase.

Law enforcement would continue on all Complex lands and grassland easements to help prevent this resource from being hayed early, converted to cropland, or developed.

Wetlands

Wetlands managed under this alternative would not reach their full potential in productivity and wildlife use. Managing for stable water levels limits the extremes that wetlands go through during the natural drying and flooding cycles. These cycles produce the greatest vegetative diversity and biomass. Invertebrate productivity and wildlife use closely follows drying and flooding cycles. Large permanent wetlands created by artificially holding water for longer periods of time are less productive than wetlands under going drying and flooding cycles. Under natural conditions many of these wetlands would be semipermanent or seasonal in nature. Some water use information would be collected, but additional information that would complete the water use data needs would not be collected. Tewaukon and Sprague Lakes would be managed as open water rest areas for migratory birds. These lake levels would support carp populations (despite management) which will contribute to turbidity in these waters. These lake levels also cause more bank erosion than would be caused if they were managed at historic shallow levels. In the No Action alternative, non-managed wetlands would undergo natural cycles so they would not be affected.

Law enforcement efforts would continue on all Complex lands and wetland easements would be enforced.

It is likely that water quality on the Refuge would continue to decline because no efforts will be initiated to look at watershed impacts in the Wild Rice River drainage.

Native Grassland Migratory Birds

Over time, under the No Action alternative, waterfowl populations would decrease as the long-term health, density, and vigor of the Complex grasslands declined. Waterfowl nesting attempts would still be driven by area wetland conditions, but most of the Complex grasslands would become unattractive for nesting ducks as species composition and structure declined. Depending on funding and personnel, predator control would still be utilized on the Refuge to try and maintain waterfowl nesting success at or above population sustaining levels. If predator control efforts are sustained, waterfowl nest success should be adequate to maintain populations. The Complex wetlands would still provide good resting areas for migrating waterfowl, and croplands would provide a limited food source.

Use of grasslands on the Complex by migratory grassland nesting birds, such as the bobolink, grasshopper sparrow, upland sandpiper, etc., and prairie butterflies would decrease. Over the long-term, as the grasslands change to less diverse stands of nonnative grasses and grassland structure deteriorates, use by nesting grassland birds would decline. The invasion of more woody plants would also make Complex lands less attractive to grassland nesting birds as they avoid selecting nest sites adjacent to trees.

Other Migratory Birds

Wetland dependent migratory birds, such as yellow-headed blackbirds, herons, egrets, cormorants, shorebirds, marsh wrens and others, would not be measurably affected by this alternative. Managed wetlands would not reach the range of conditions (dry to full) that they would under the custodial or enhanced management alternatives. As a result, they would be less biologically productive over time. The plant biomass that develops as wetlands dry out which supports a large waterbird response when they refill, would not be as dramatic when wetlands are managed for more stable conditions. Less habitat would be available for shorebirds than when management regimes do not include long, draw down periods. Wetland migratory bird use would still be dependent on local and regional wetland conditions.

Species that are dependent on trees, such as yellow warblers, thrushes and Northern orioles, may be negatively affected by this alternative if native woodlands decline over time.

Resident Birds

Over time, under the No Action alternative, grassland nesting bird populations would decrease as the health, density, and vigor of the Complex grasslands declines.

The only native game bird that occasionally uses the Refuge is the sharp-tailed grouse. Grouse are not likely to be affected by this alternative and are likely to remain incidental on all Complex lands

Ring-necked pheasants would be expected to remain stable under this alternative. Managing habitat for pheasants generally consists of providing alternating blocks of grassland nesting cover, tree and shrub plantings for winter cover, and croplands for food sources. These habitat components would be retained under this alternative providing the same amount and types of habitat that are currently available. If upland conditions decline markedly over the long-term, nesting habitat would be less suitable and pheasant populations could slowly decline. Predator control would also benefit this species. Winter weather will still be the primary limiting factor that affects pheasant populations.

Managing Complex habitat to specifically benefit pheasants was identified by the public as an important issue during the CCP planning process. The public perception would be that Complex management will continue to support pheasant populations. Pheasant hunting would also be continued under this alternative which would be popular. Since pheasant populations would be supported by Refuge habitats and pheasant hunting would continue, political pressure to maintain more food plots and plant additional tree and shrub habitat for pheasants would be limited.

These impacts are not anticipated on District lands where hunting would still occur and cropping is only used for a few years to re-establish grassland cover.

Mammals

Deer are commonly found on Complex lands and are a popular game species that attract large numbers of visitors. Deer hunting will be continued under this alternative. Managing Refuge habitat to specifically benefit deer was identified by the public as an important issue during the CCP planning process.

Refuge deer numbers are likely to remain stable under this alternative. Croplands that provide winter food for deer would be maintained. Deer populations would be maintained at levels that habitat can support. Deer populations would be managed at levels that limit damage to surrounding crops and hay supplies which would limit political pressure to maintain additional food plots for deer.

These impacts are not anticipated on District lands where hunting would still occur and cropping is only used for a few years to reestablish grassland cover.

Some short-term seasonal reductions in the Refuge populations of small furbearers, such as skunk, raccoon, red fox, and mink, would be anticipated in the years when predator management would be instituted. These species quickly return to previous levels as young of the year animals from the surrounding area disburse.

It is likely that most other Complex mammal populations would not be affected by this alternative and remain stable.

Fish

Managing Complex wetlands to support recreational fishing was identified by the public as an important issue during the CCP planning process.

Managing Tewaukon and Sprague Lakes as open water migration rest areas would provide habitat capable of supporting recreational fisheries. The Lake Tewaukon aerator would be utilized to help prevent winter-kill. Size limits on predator fish and other management techniques would be utilized to attempt to reduce carp populations. While the reduction of other species, such as carp, may result in small improvement in water quality, agricultural runoff throughout the watershed has a much greater impact on water quality. It is likely that any water quality improvement caused by the reduction in carp numbers will not be measurable.

Managing Tewaukon and Sprague Lakes at current elevations would provide habitat that is likely to retain the recreational fish population in these lakes and support a popular recreational fishery. Sprague Lake would still be expected to winter-kill occasionally.

Sport fish populations would be managed at levels that support recreational fishing in two large lakes, which would limit political pressure to manage additional wetland fisheries.

No fisheries are established on District lands.

Reptiles and Amphibians

Little impacts to these populations are anticipated with this alternative.

Endangered and Threatened Species

Since the only endangered wildlife species component on Complex lands is migration habitat for bald eagles, no significant impact would occur under this alternative.

Western prairie fringed orchid populations on grassland easement tracts would still be monitored. Efforts will continue to protect prairie habitats that contain these species from being converted to cropland or other development through easement and fee acquisition. These efforts may not be enough to ensure self-sustaining stable populations.

Rare species and species of concern (wildlife and plant species) on District lands would be adversely affected over the long-term. The white lady's slipper, Dakota skipper, and the powesheik skipper populations on the Hartleben WPA would decline if habitat management is not adequate and native prairie deteriorates. Essential native plant nectar sources and grasses would be expected to decrease. Prairie butterfly populations would decrease as the native prairie areas are treated too infrequently. Attempts to convert grasslands to diverse native prairie plant communities would only be opportunistic and based on additional funds. Prairie dependent wildlife species would not increase.

No future reintroduction of extirpated species would be considered.

Riparian and Native Woodlands

Riparian vegetation would remain stable on the Complex and would not be affected by this alternative. Native woodlands would not be managed, they may deteriorate over time, or be self supporting. Dependent migratory birds, such as yellow warblers and Northern orioles, would follow suit.

Physical Environment

Climate and Air Quality

Similar types and amounts of management would occur in this alternative as currently occur, which should not change the impact on air quality by running fossil fuel burning engines. Prescribed burning would continue at rates similar to those that are currently being used. Some impacts to air quality could be anticipated from this management activity. Some of these impacts are mitigated by burn prescriptions that ensure smoke is carried aloft. Permits from the ND Health Department are applied for prior to prescribed burning done on the Complex to comply with ND Air Pollution Control Rules.

Soil and Water Quality

Some small amount of soil loss due to wind and water erosion would be anticipated on Refuge croplands. Managing Tewaukon and Sprague Lakes at higher levels would cause more bank erosion than would be caused if they were managed at historically shallow levels. Complex water quality would be expected to decline due to cumulative agricultural impacts throughout watersheds.

The nutrient cycle that is triggered by fire and grazing disturbance as a result of upland management efforts would be more frequent.

Hydrology

No impacts would be anticipated. Managed wetland water use data would be incomplete.

Cultural Resources

Cultural resources on the Complex would be protected. No additional interpretative facilities or programs would be continued or developed. No additional areas would be surveyed and no new data would be collected other than what would be incidentally gathered as a result of pre-construction surveys.

Socio-economic Environment

Recreational Resources - Public Use

Under this alternative, public use would continue on the Refuge at current levels including hunting, fishing, and wildlife observation. All facilities would be maintained and may be upgraded when special funding opportunities arise. Areas of the Refuge that are closed to public entry during certain times of the year to limit disturbance to migratory birds and resident wildlife would remain closed. Refuge roads and trails would be maintained. The Visitor Center would be staffed during the work week. Waterfowl Production Areas would still be open to hunting, fishing, and trapping. New facilities or opportunities would only be considered and developed on WPAs when special funding opportunities arise. No new opportunities or public use facilities associated with these activities would be developed. Environmental education and outreach would continue at current levels, but may fluctuate depending on staffing. Over the long-term, current staff may not be able to provide adequate visitor center hours, materials, or law enforcement. Wildlife observation visits would increase in the short-term but would decrease over time. As the diversity of wildlife and habitat decreased so would the public's interest in visiting the Complex. Law enforcement would continue at the same minimal level.

Maintaining recreational opportunities would limit political pressure to provide these opportunities or transfer the management of the Refuge to another agency.

Economics

Under this alternative, the number of visitors to the area would be expected to continue to increase over the long-term. A corresponding increase in the amount of money spent in the local communities on lodging, food, and supplies would be expected. Utilizing area producers to accomplish Complex upland management such as haying, farming, and grazing would continue to provide economic benefits for local producers. Weed control efforts would ensure that the impact to adjacent landowners from Complex weeds does not increase. These impacts should decrease over time as new more effective techniques are utilized.

A constant number of staff working at the Complex would maintain the amount of local revenue generated by staff living in the area and supplies and services purchased through the local community.

Environmental Justice

Considering social and economic impacts, actions under this alternative are not known to cause disproportionately high and adverse human health impacts in any population, and no such impacts would be expected to occur as a result of the No Action alternative. No adverse or disproportionately high socio-economic impacts to low-income or minority populations are expected to occur under this alternative.

Alternative C: The Proposed Action -Implement the CCP
Wildlife Habitat Fragmentation and Alteration

This alternative would help limit habitat fragmentation since opportunities to acquire, manage, or protect important wildlife habitats would be pursued. Habitat acquisition and protection efforts would focus on diverse native prairie sites that have high wetland densities or unique prairie characteristics. By emphasizing partnerships and utilizing matching sources of funding, the opportunity to protect and enhance habitat may be approached strategically. Large blocks of cover would be protected which would provide grassland nesting birds and other prairie species important habitat components needed to maintain self-sustaining populations. As a result, the Service may be able to capitalize on opportunities to acquire key habitat that would help to prevent fragmentation.

An enhanced habitat management strategy would be employed to limit colonization of key habitats like native prairie by trees and nonnative plants. Upland habitats would be managed to improve plant structure and diversity in order to improve this habitat for grassland nesting birds and other prairie dependent species like butterflies. Management would be utilized to improve the vegetative structure and species diversity of planted cover to benefit a greater diversity of wildlife species. An overall long-term improvement of plant and animal species richness throughout the Complex would be the result.

Grasslands and Tallgrass Prairie Habitats

Implementing the CCP under this alternative will improve protection, enhancement, and restoration of native plant communities on the Complex.

Preventing the conversion of the remaining 65,000 acres of native prairie on private land in the District is a high priority if much of the native flora and dependent fauna of the tallgrass prairie ecosystem is to be preserved for scientific study, genetic sources, and public enjoyment. Under this alternative, the Service, in cooperation with partners, would protect remaining native prairie tracts by purchasing fee title or easement interests or utilize any other forms of cooperative agreements with landowners that prevent prairie conversion. Currently, the Service has protected 10,400 acres of native prairie with grassland easements from willing sellers. An estimated 57,000 acres are targeted for protection in this alternative. Additional funding for the grassland easement program through grants and other sources, such as appropriated Land and Water Conservation funds, Ducks Unlimited, and Nature Conservancy funds, would need to be sought and secured. Enforcement of existing grassland easement interests would continue to be conducted to ensure that easement terms are met.

Enhancing Complex grasslands would include manipulations such as weed or nonnative species control, increasing the diversity of native plants (interseeding or fire management), or increasing the vegetative heights of the stands. Under the CCP, strategies control of nonnative species (i.e., leafy spurge, Canada thistle, Russian olives) would continue to be an important priority. A variety and combination of techniques (chemical, mechanical, and biological) would be used to reduce the density of these species in Complex grasslands. Reducing the density of nonnative species also reduces the competition for resources by native species. The amount of useable habitat available for native grassland birds, prairie butterflies, and ground nesting waterfowl would increase.

Implementation of the CCP will target restoring Complex planted grassland fields (DNC, nonnative, and warm season native plantings) to a more diverse native floral community. The objective of this management focus is to improve this habitat for a greater diversity of grassland nesting birds and other species. A total of 1,700 acres would be targeted over the next 15 years on the Complex. Diverse managed grasslands would provide a range of vegetative heights attractive to ground nesting birds like mallards, bobolinks, upland sandpipers, and northern harriers. Overall, wildlife species diversity supported by Complex grassland habitats should increase.

Planted cover that is not targeted for management designed to improve native vegetative diversity would be maintained with various techniques including prescribed burning, grazing, and mowing when appropriate.

Wetlands

Under this alternative, managed wetlands would reach their potential in productivity and wildlife use. Improved management would yield a range and variety of wet and dry stages and wetland vegetation response that mimics the productivity of natural cycles. These stages produce the greatest vegetative diversity and biomass. Invertebrate productivity and wildlife use closely follows drying and flooding cycles. Large permanent wetlands created by artificially holding water for longer periods of time do not have the productivity that wetlands undergoing drying and flooding cycles do. Tewaukon and Sprague Lakes would be managed as open water rest areas for migratory birds. These lake levels will support carp populations (despite management), which would contribute to turbidity in these waters. These lake levels also cause more bank erosion than would be caused if they were managed at historic shallow levels. In this alternative, non-managed wetlands would undergo natural cycles and fire frequency would increase which may improve nutrient cycles.

Law enforcement would continue on all Complex lands and wetland easements would be enforced to ensure that the real property interest purchased is maintained and that wetlands are not burned, drained, leveled, or filled. If partnerships within the Wild Rice River Watershed can be pursued successfully, water quality in the Wild Rice River should improve.

With the implementation of this alternative the protection of over 1800 acres of wetland habitat in the District would be accomplished using easements, fee title, and cooperative agreements.

Native Grassland Migratory Birds

Over time, under the enhanced management alternative the potential for waterfowl populations should increase as the long-term health, density, and vigor of the Complex grasslands improves. Waterfowl nesting attempts would still be driven by area wetland conditions. Over time, most of the Complex grasslands would become more attractive for nesting ducks. Predator control would be utilized on the Refuge to try and maintain waterfowl nesting success at or above population sustaining levels. If predator control efforts are sustained, waterfowl nest success should be adequate to maintain populations. The Complex wetlands would still provide good resting areas for migrating waterfowl and should provide food sources under improved water management. Croplands would provide a food source for migrating waterfowl.

Use of grasslands on the Complex by migratory grassland nesting birds, such as the bobolink, grasshopper sparrow, upland sandpiper, etc., and prairie butterflies should improve. Over the long-term, as grassland diversity and structure improves, use by nesting grassland birds would improve. The reduction of woody plants would also make Complex lands more attractive to grassland nesting birds as they avoid selecting nest sites adjacent to trees.

Other Migratory Birds

Wetland dependent migratory birds, such as yellow-headed blackbirds, herons, egrets, cormorants, shorebirds, marsh wrens, and others, would be positively affected by this alternative. Managed wetlands would undergo a wide range of conditions (dry to full). As a result, they would be more biologically productive over time. The plant biomass that develops as wetlands dry out would support a large waterbird response when they refill. More habitat would be available for shorebirds when management regimes include long draw down periods. Wetland migratory bird use would still be dependent on local and regional wetland conditions.

Resident Birds

Over time, under the enhanced management alternative, grassland nesting bird populations would increase as the health, density, and vigor of the Complex grasslands increases.

The only native game bird that occasionally uses the Refuge is the sharp-tailed grouse. Grouse are not likely to be affected by this alternative and are likely to remain incidental on all Refuge lands. Grassland easements should protect grassland habitats from conversion is the limiting factor for sharp-tailed grouse and prairie chickens on the Complex. These species should benefit from this alternative.

Ring-necked pheasants would be expected to remain stable under this alternative. Managing habitat for pheasants generally consists of providing alternating blocks of grassland nesting cover, tree and shrub plantings for winter cover, and croplands for food sources. Some of these habitat components would be retained under this alternative providing similar types of habitat to those that are currently available. If upland conditions improve markedly over the long-term, nesting habitat would be more suitable and pheasant populations may improve. Predator control would also benefit this species. Winter weather will still be the primary limiting factor that effects pheasant populations.

Managing Complex habitat to specifically benefit pheasants was identified by the public as an important issue during the CCP planning process. Complex habitats would continue to support pheasant populations. Pheasant hunting would also be continued under this alternative which would be popular.

These impacts are not anticipated on District lands where hunting would still occur and cropping is only used for a few years to reestablish grassland cover.

Mammals

Deer are commonly found on Complex lands and are a popular game species that attract large numbers of visitors. Deer hunting will be continued under this alternative. Managing Refuge habitat to specifically benefit deer was identified by the public as an important issue during the CCP planning process.

Refuge deer numbers are likely to remain stable under this alternative. Croplands that provide winter food for deer would be maintained. Deer populations would be maintained at levels that habitat can support. Deer populations would be managed at levels that limit damage to surrounding crops and hay supplies which would limit political pressure to maintain additional food plots for deer.

These impacts are not anticipated on District lands where hunting would still occur and cropping is only used for a few years to reestablish grassland cover.

Some short-term seasonal reductions in the Refuge and selected WPA populations of small furbearers, such as skunk, raccoon, red fox, and mink, would be anticipated in the years when predator management would be instituted. These species would quickly return to previous population levels as young of the year animals from the surrounding area disburse.

It is likely that most other Complex mammal populations would not be affected by this alternative and would remain stable.

Fish

Managing Complex wetlands to support recreational fishing was identified by the public as an important issue during the CCP planning process.

Managing Tewaukon and Sprague Lakes as open water migration rest areas would provide habitat capable of supporting recreational fisheries. The Lake Tewaukon aerator would be utilized to help prevent winter-kill. Size limits on predator fish and other management techniques would be utilized to attempt to reduce carp populations. While the reduction of other species, such as carp, may result in small improvement in water quality, agricultural runoff throughout the watershed has a much greater impact on water quality. It is likely that any water quality improvement caused by the reduction in carp numbers would not be measurable.

Managing Tewaukon and Sprague Lakes at current elevations would provide habitat that is likely to retain the recreational fish population in these lakes and support a popular recreational fishery. Sprague Lake would still be expected to winter-kill occasionally.

Sport fish populations would be managed at levels that support recreational fishing in two large lakes which would limit political pressure to manage additional wetland fisheries.

No fisheries are established on District lands.

Reptiles and Amphibians

Few impacts to these populations would be anticipated with this alternative. Surveying these populations would provide important baseline data on Complex populations.

Endangered and Threatened Species

Since the only endangered wildlife species component on Complex lands is migration habitat for bald eagles, no significant impact would occur under this alternative.

Western prairie fringed orchid populations on grassland easement tracts would still be monitored. Increased efforts would be made to continue to protect prairie habitats that contain these species from being converted to cropland or other development through easement and fee acquisition. These acquisitions should improve chances for this species to maintain self-sustaining stable populations.

Populations of rare species and species of concern (wildlife and plant species) on District lands would be positively affected over the long-term. The white lady's slipper, Dakota skipper, and the powesheik skipper populations on the Hartleben WPA would remain stable and may improve as habitat management techniques become more refined.

Native prairie health and vigor would improve, and essential native nectar sources and grasses would be perpetuated. Prairie butterfly populations would remain stable or increase. As the native prairie areas are treated, species composition should improve and competing nonnative vegetation should decrease. Attempts to convert planted grasslands to diverse native prairie plant communities would be strategically and systematically applied to the landscape. Prairie dependent species are expected to increase.

Reintroduction of extirpated species would be considered if habitat parameters are achieved.

Riparian and Native Woodlands

Riparian vegetation would remain stable on the Complex. Additional efforts would be made to identify, protect, and reestablish riparian habitats throughout the Complex which would support dependent migratory bird populations. Native woodlands would be evaluated and be managed to ensure they are self supporting. These woodlands should support dependent migratory birds such as yellow warblers, thrushes, and Northern orioles.

Physical Environment

Climate and Air Quality

Since increased levels of management would occur under this alternative, the impact on air quality by running fossil fuel burning engines would increase. Prescribed burning frequency would increase. Some negative impact to air quality could be anticipated from this management activity. Some of these impacts would be mitigated by burn prescriptions that ensure smoke is carried aloft. Permits from the ND Health Department are applied for prior to prescribed burning done on the Complex to comply with ND Air Pollution Control Rules.

Soil and Water Quality

Some small amount of soil loss due to wind and water erosion could be anticipated on Refuge croplands. Managing Tewaukon and Sprague Lakes at higher levels would cause more bank erosion than would be caused if they were managed at historic shallow levels. Complex water quality would be expected to improve if projects designed to evaluate and improve site specific sources of nutrients and sediments are implemented.

The nutrient cycle that is triggered by fire and grazing disturbance as a result of upland management efforts would be more frequent.

Hydrology

No significant impacts would be anticipated. Managed wetland water use data would be improved and Complex water sources may be more efficiently used as a result.

Cultural Resources

Cultural resources on the Complex would be protected. Additional interpretative and storage facilities would be developed. Additional areas would be surveyed and new data would be collected which would provide additional background information about Complex cultural resources.

Socio-economic Environment

Recreational Resources - Public Use

Under this alternative, public use, including hunting, fishing, and wildlife observation, would continue on the Refuge at current levels. Opportunities to expand fishing hours or hunting opportunities could be considered if staffing and funding are increased.

All existing facilities would be maintained and new educational and interpretive exhibits, trails and platforms, and brochures would be developed. The visitor center would be expanded and open for additional hours on weekends coinciding with peak visitation. Maps, bird lists, brochures, and a Complex web site would be improved and developed to provide visitors with additional information.

Waterfowl Production Areas would still be open to hunting, fishing, and trapping. Maps would be developed to provide Complex visitors with better information about WPAs.

The enhanced habitat management and protection objectives should increase the diverse and unique native fauna and flora which in turn should increase the number of visitors that are interested in wildlife observation and photography to areas with rare and unique species.

Increased visitor use, even if determined compatible, would have some negative impacts on habitat, plants, and wildlife species. These negative impacts would be avoided by utilizing stipulations that limit public use activities to certain areas, times, and locations during the year. Limits on boat and vehicle traffic on the Refuge during the fall and spring waterfowl migration periods would continue. Areas of the Refuge that are closed to public entry during certain times of the year to limit disturbance to migratory birds, nesting birds, and resident wildlife would remain closed.

Maintaining recreation opportunities would limit political pressure to provide these opportunities or transfer the management of the Refuge to another agency. Over the long-term, as outdoor recreation visits increase on the Complex, current staff may not be able to provide adequate visitor center hours or law enforcement.

Environmental education and outreach would continue at current levels, and would increase as staffing does. Outreach efforts would continue and increase with area schools, fairs, community events, wildlife clubs, State, and Federal congressional offices

Economics

Under this alternative, the number of visitors to the area would be expected to continue to increase over the long-term. A corresponding increase in the amount of money spent in the local communities on lodging, food, and supplies would be expected. Utilizing area producers to accomplish Complex upland management such as haying, farming, and grazing would continue to provide economic benefits for local producers. Weed control and grassland management conducted more intensively would ensure that the impact to adjacent landowners from Complex weeds does not increase. The impact from these species would decrease over time.

An increased number of staff working at the Complex would increase the amount of local revenue generated by staff living in the area. An increase in management activities would increase the amount of supplies and services required.

Environmental Justice

Considering social and economic impacts, actions under this alternative are not known to cause disproportionately high and adverse human health impacts in any population and no such impacts would be expected to occur as a result of the Enhanced Management alternative. No adverse or disproportionately high socio-economic impacts to low-income or minority populations are expected to occur under this alternative.

A summary of some of the environmental consequences under each alternative are listed in Table 1. Evaluation on environmental consequences were divided in to short-term (15 years) and long-term (greater than(>) 50 years).

Table 1. Summary of Environmental Consequences						
	Alternative A Custodial		**Alternative B Current Level of Management**		**Alternative C Implement the CCP**	
	15 years	>50 years	15 years	>50 years	15 years	>50 years
HABITAT:						
Grasslands						
Protection through acquisition	-	--	-	--	+	+ +
Management	-	--	-	--	+	+ +
Restoration	-	--	o	-	+	+ +
Nonnative plant control	o	-	-	-	+	+ +
Wetlands						
Protection through acquisition	-	--	-	--	+	+ +
Managed wetlands	+	+	o	-	+	+ +
Natural wetlands	o	o	o	o	+	+ +
Native Woodlands	o	-	o	o	+	o
Cropland for wildlife food	-	--	o	o	o	-
WILDLIFE:						
Waterfowl	-	--	o	-	+	+ +
Migratory Grassland Birds	-	-	-	--	+	+ +
Native Wildlife						
Deer	+	-	o	o	o	o
Prairie butterflies	-	-	o	-	+	+ +
Reptiles & Amphibians	o	o	o	o	+	+ +
Nonnative Wildlife	+	+ +	o	+	--	-
Endangered Species	o	-	o	o	+	+
Predator Control	--	--	o	o	+ +	+ +
RECREATION-PUBLIC USE:						
Refuge Sport Fisheries	--	--	o	o	+	+
Refuge Hunting	--	--	o	o	+	+
District Hunting	+	+ +	o	o	+	+
Interpretation	--	--	o	-	+	+ +
Wildlife Observation & Photography	--	--	o	-	+	+ +
Environmental Education	--	--	o	-	+	+
Public Outreach	--	--	o	-	+	+
Ecosystem Partners	--	--	o	-	+ +	+ +
AIR QUALITY:	-	--	o	o	o	o
WATER QUALITY:	-	--	-	--	+	+ +
CULTURAL RESOURCES:						
Protection	o	o	o	o	+	+
Interpretation	--	--	o	o	+	+
SOCIO-ECONOMIC:						
Tourist Revenue	--	--	o	o	+ +	+ +
Agriculture Revenue	--	--	o	o	+	o
Business Revenue	--	--	o	o	+ +	+ +

LEGEND:
+ + Large Increase
+ Moderate Increase
o No Change
- Moderate Decrease
-- Large Decrease

Consultation and Coordination

The planning team consisted of Tewaukon Complex staff, a representative from the ND Game and Fish Department, and the Regional Office Planning Branch. A review team was made up of a variety of people including biologists and scientists from the Fish and Wildlife Service Regional Office and U.S. Geological Services, nongovernmental organizations, and interested individuals.

Public input for the development of this environmental assessment and CCP was gathered on issues in the Complex at a series of five open houses and through written comments on an Issues Worksheet. The open houses provided participants an opportunity to learn about the Refuge and District purposes, mission and goals, and current management issues. People attending were provided the chance to speak with Service representatives and to share their comments and concerns about current management. Attendees were also asked to suggest ways they would like to see Complex management change.

Prior to the public meetings, the Complex staff discussed the planning process with local County commissioners, sportsmen's groups, and other interested groups and advertised in the local media. Information on the planning process was also displayed at local cafes and businesses frequented by community members.

The Tewaukon Complex staff received a number of comments from our meetings, Issues Worksheets, and verbal discussions. Most of the local comments dealt with very specific issues. Many of the issues documented by the core planning team and the public can be grouped by category and include:

Wildlife Habitat Fragmentation and Alteration

- Declining native prairie plant and grassland bird populations
- Waterfowl nesting habitat
- Habitat fragmentation
- Predator control
- Private land initiatives

Grassland and Tallgrass Prairie Habitats

- Tallgrass prairie protection and emphasis
- Management of Complex lands including weed control, haying, burning, water management

Wetland habitat

- Wetland protection and management
- Water quality and rights

Increased Public Use

- Expanded recreational opportunities including hunting, fishing, wildlife observation, and camping
- Farming on the Refuge, increasing and decreasing the acreage
- More management for resident wildlife (deer and pheasant)
- Need for more law enforcement

Public feedback was generally supportive of the majority of current Complex land and wildlife management practices and programs. Socio-economic concerns raised during the planning process include increased wetland drainage and flooding, commercial uses of Federal lands, use of eminent domain to acquire Service lands, Refuge Revenue sharing shortfalls as compared to assessed taxes, wildlife crop depredation, and vandalism and trespassing on the Complex.

During the course of the planning process, the review team made up of Service staff, scientists, and nongovernment partners have had access to information on objectives and alternatives being considered. Written and verbal comments have been exchanged. This Environmental Assessment (EA) is the first opportunity that these groups and the general public have had to review the entire planning effort. This EA is expected to be available to the public by July 2000. A 30-day comment period will be provided. A final CCP is expected to be released by October 1, 2000.

A mailing list of all persons that commented or requested notification is available in Appendix N.

Appendix G. Compatibility Determinations

Station Name: Tewaukon National Wildlife Refuge Complex
Date Established:

Tewaukon National Wildlife Refuge: June 26, 1945
Tewaukon Wetland Management District: August 1, 1958

Establishing and Acquisition Authorities: The Tewaukon National Wildlife Refuge, located in Sargent County in southeastern North Dakota, was originally established as an easement refuge by Executive Order No. 6910 on November 26, 1934. Tewaukon was then established as a Refuge under the authority of Public Land Order 286 on June 26, 1945; additional lands were added with the approval of the Migratory Bird Conservation commission, under the authority of the Migratory Bird Conservation Act.

Tewaukon Wetland Management District was authorized by Congress with the passage of Public Law 85-585 on August 1, 1958. The first tract of land acquired in the District was in 1961. Additional lands were added to the District under the authority of the Migratory Bird Hunting and Conservation Stamp Tax. The Tewaukon WMD is comprised of approximately of 105 Waterfowl Production Areas (WPA's) (over 14,000 acres), 35,000 acres of wetland easements, 10,400 acres of grassland easements, and 112 wetland and 45 acres of grassland in FmHA easements located in Richland, Ransom, and Sargent Counties, North Dakota. Enabling legislation includes: the Migratory Bird Hunting and Conservation Stamp Act (16 USC 718-718h, 48 Stat. 452), and the Wetlands Loan Act (16 USC 715k-3 - 715k-5; Stat. 813). Funds appropriated under the Wetlands Loan Act, are merged with duck stamp receipts in the fund and appropriated to the Secretary for the acquisition of migratory bird refuges under provisions of the Migratory Bird Conservation Act (16 USC 715 et seq.; 45 Stat. 1222), as amended, and since August 1, 1958, (P.L. 85-585; 72 Stat. 486) for acquisition of "Waterfowl Production Areas."

Purpose(s) for which Established: For lands acquired under the Executive Order, dated April 24, 1943, the purpose of the acquisition is to reserve and set apart certain public lands for the use of the Department of the Interior as a refuge and breeding ground for migratory birds and other wildlife.

- For lands acquired under Public Land Order 286, dated June 26, 1945, the purpose of the acquisition is "... as a refuge and breeding ground for migratory birds and other wildlife..."
- For lands acquired under the Migratory Bird Conservation Act, 16 U.S.C. S 715d, as amended, the purpose of acquisition is "... for uses as an inviolate sanctuary, or for any other management purpose, for migratory birds." 16 U.S.C. S 715d (Migratory Bird Conservation Act)
- For District lands acquired under the Public Law 85-585, dated August 1, 1958, the purpose of the acquisition is to assure the continued availability of habitat capable of supporting migratory bird populations at desired levels.
- For lands acquired under the Migratory Bird Hunting and Conservation Stamp Tax, 16 U.S.C. S 718, as amended, for the purpose: " ... as Waterfowl Production Areas" subject to go ... all of the provisions of such Act [Migratory Bird Conservation Act] ... except the inviolate sanctuary provisions ... 11 16 U.S.C. S 718© (Migratory Bird Hunting and Conservation Stamp Tax).

National Wildlife Refuge System Mission: The Mission of the National Wildlife Refuge System is "to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of fish, wildlife, and plant resources and their habitats within the United Sates for the benefit of present and future generations of Americans."

Description of Proposed Use: Wildlife Observation, Wildlife Photography, Interpretation and Environmental Education

Provide opportunities that support wildlife-dependent recreation, education, and outreach to the public. From general observations conducted in the Refuge visitor center and along Lake Tewaukon and Sprague Lake, it is estimated that over 20,000 visitors utilize Tewaukon National Wildlife Refuge annually for wildlife/wildland observation, photography, interpretation/education, picnicking, and hiking. The majority of the use is focused on the east side of County Road 12 which includes the visitor center, Lake Tewaukon, the Prairie Lake Auto Tour, several picnic areas, and a scenic overlook. The District has substantially less visitation for the above uses (300 visits). A recent addition of a prairie walking trail at the Hartleben WPA is expected to increase this use.

Interpretation and environmental education services are provided when staff are available and include talks or guided tours for groups such as school groups, scouts, 4-H clubs, and special groups. The public is invited to participate in Refuge open houses and other events throughout the year.

The Comprehensive Conservation Plan proposes to continue with the above uses and add the following to improve interpretation and access for visitors:

- Develop a wildlife observation platform and interpretive hiking trail.
- Improve visitor center availability to visitors with staff and expansion of hours of operation during times of high use.
- Improve and expand the visitor center displays and group presentation area.
- Develop new Refuge brochures and update old brochures to new Service standards.
- Develop a tallgrass prairie interpretive trail near the visitor center.
- Develop and maintain a web site for the Complex.

Availability of resources:
Currently, sufficient resources are available to continue the existing wildlife-dependent recreation. The additional items to be added from the Comprehensive Conservation Plan are tied to funding requests in the form of the attached RONS projects (Appendix J).

Anticipated impacts of the use:
Some disturbance to wildlife will occur in areas of the Refuge frequented by visitors. However, with limiting of areas open to public use and Refuge road closures at specific times of the year, these impacts can be lessened (See CCP Wildlife Disturbance Section). Monitoring of activities and their impacts and limiting the location and time of year for wildlife-dependent visits will maintain use at an acceptable level.

Justification:
Based upon biological impacts described in the CCP and in the Environmental Assessment, it is determined that wildlife observation, wildlife photography, interpretation, and environmental education within the Tewaukon Complex will not materially interfere with or detract from the purposes for which this Complex was established.

One of the secondary goals of the National Wildlife Refuge System is to provide opportunities for the public to develop an understanding and appreciation for wildlife when found compatible. The four uses are identified as priority public uses in the National Wildlife Refuge System Improvement Act of 1997 and will help meet that goal at the Tewaukon NWR Complex with only minimal conflicts with the wildlife conservation mission of the Refuge System.

Determination: Wildlife Observation, Wildlife Photography, Interpretation, and Environmental Education are compatible.

Stipulations necessary to ensure compatibility:
- During peak concentrations of migratory waterbirds, areas will be closed and access limited to minimize any wildlife disturbance**.**
- Monitor use, regulate access and maintain necessary facilities to prevent habitat degradation in high public use areas.
- Monitor levels of use and effects on wildlife.
- Implement additional educational and interpretive programs that discuss wildlife disturbance.

Description of proposed use: Recreational Fishing

Lake Tewaukon and Sprague Lake are utilized as open water rest areas for migratory birds. A secondary use is public sport fishing according to State and Federal Regulations. Year-round bank fishing is allowed with seasonally limited access and boat fishing from May 1 through September 30 to avoid conflicts with migratory bird use of the Lakes. Visitors participating in this use at the Refuge are estimated at 9,000 per year. Facilities available include five boat ramps (two are accessible), picnic areas, fishing docks, informational kiosks, parking areas, and rest room facilities. A kids fishing day is held in conjunction with the Tewaukon Field Day sponsored by the ND Extension Service. A fishing tournament is held each year by local sportsmen's groups with proceeds going towards Lake developments. The CCP does not propose any additional improvements beyond maintaining the existing use. The District Waterfowl Production Areas are legally open to fishing as per their establishing legislation and the Federal Code of Regulations.

Availability of resources:

Currently, sufficient resources are available to continue the existing recreational fishing.

Anticipated impacts of the use:

Fishing and other human activities cause disturbance to wildlife (see CCP Section on Wildlife Disturbance). Impacts could occur during waterbird nesting season. However, the physical characteristics of these lakes and their shorelines make them poor areas for breeding waterbird populations.

Justification:

When Refuge and flowage easements were secured in the 1930's, it was with the understanding that recreational fishing use of the lake would be continued and improved. Recreational fishing, on Lake Tewaukon and Sprague Lake, causes minimal disturbances for waterbirds and benefits other wildlife species.

Based upon biological impacts described in the CCP and in the Environmental Assessment, it is determined that recreational fishing within the Tewaukon Complex will not materially interfere with or detract from the purposes for which this Complex was established.

One of the secondary goals of the National Wildlife Refuge System is to provide opportunities for public fishing when compatible, and it is identified as a priority public use in the National Wildlife Refuge System Improvement Act of 1997. Recreational fishing at the Tewaukon NWR Complex will support this goal with only minimal conflicts with the wildlife conservation mission of the Refuge System.

Determination: Recreational fishing is compatible.

Stipulations necessary to ensure compatibility:

- Both lakes will be closed to boat fishing and open to limited bank fishing during the spring and fall migrations periods for waterbirds.
- Parking lot, road, trail, and related access facilities will be maintained as necessary to prevent erosion or habitat damage.
- No additional lakes or marshes on the Refuge will be open to fishing.
- Boat use will be limited to recreational fishing (no jet skis, power boating, etc.,).
- Limit access for ice fishing to established areas (boat ramps and normal County and township roads).
- Waterfowl production areas will maintain only natural fish populations (no stocking).
- Monitor existing use to ensure that facilities are adequate and disturbance to wildlife continues to be minimal.

Description of proposed use: Recreational Hunting

Tewaukon National Wildlife Refuge is open to pheasant hunting and white-tailed deer hunting in the fall. Visitation for these activities is estimated at 4,000. Parking areas are made available for this use. The District Waterfowl Production Areas are legally open to hunting as per their establishing legislation and the Federal Code of Regulations. The CCP does not propose any additional improvements beyond maintaining the existing use.

Availability of resources:

Currently, sufficient resources are available to continue the existing recreational hunting.

Anticipated impacts of the use:

Recreational hunting will remove individual animals from the wildlife populations ensuring that carrying capacity is not exceeded (possibly impacting other species habitat). Some wildlife disturbance will occur during the hunting season.

Justification:

Hunting is a legitimate wildlife management tool that is used to manage deer populations. This is necessary to ensure that populations above the carrying capacity are controlled to reduce impacts to habitat and other wildlife that also depend upon that habitat. Some wildlife disturbance will occur during the hunting seasons. Proper zoning, regulations, and Refuge seasons will be designated to minimize any negative impact to wildlife populations using the Refuge. Based upon biological impacts presented in the CCP and in the Environmental Assessment, it is determined that recreational hunting within the Tewaukon Complex will not materially interfere with or detract from the purposes for which this Complex was established.

One of the secondary goals of the National Wildlife Refuge System is to provide opportunities for public hunting when it is found to be compatible, and it is identified as a priority public use in the National Wildlife Refuge System Improvement Act of 1997. Recreational pheasant hunting on the Tewaukon NWR Complex will support this goal, with only minimal conflicts with the wildlife conservation mission of the Refuge System and purposes of the Refuge.

Determination: Recreational hunting is compatible.

Stipulations necessary to ensure compatibility:

- Use of nontoxic shot is required on the Refuge for pheasant hunting and the District for waterfowl hunting and upland game hunting to minimize exposure to lead by waterfowl.
- Hunting must be in accordance with Federal and State regulations (seasons predominately open after migrating waterbirds have left the Complex).
- Hunting on Tewaukon NWR will take place in a manner that will minimize disturbance to migrating waterbirds.
- Hunting will be evaluated to provide a safe hunt (reduce the conflict of the variety of hunting seasons).
- The Refuge deer hunt will be coordinated with the ND Game and Fish Department to determine number of permits to manage the populations.
- Monitor these uses to assure they do not interfere with and are compatible with other wildlife-dependent recreational activities.

Description of proposed use: Trapping

Provide for trapping on the Tewaukon National Wildlife Refuge and on District lands. Trapping includes recreational fall trapping and spring predator trapping. Provide for recreational trapping in the fall and winter on the Refuge. Provide for spring predator trapping to improve upland nesting bird success on the Complex. The District Waterfowl Production Areas are legally open to trapping according to State regulations as per their establishing legislation and the Federal Code of Regulations.

Availability of resources:

Currently, insufficient funding and staffing exists to manage the recreational trapping and spring predator trapping on the Complex. Trapping funding requests are described in the Comprehensive Conservation Plan as Refuge Operation Needs System (RONS) projects (Appendix J). The Refuge recreational trapping would require additional management staff to administer the program (manager listed in RONS Project 1) and the spring predator trapping requires staff, funding of contracted trapper, monitoring of predator populations, and upland bird production (RONS Projects 12 and 2).

Anticipated impacts of the use:

Trapping removes individual animals from wildlife populations, and predator populations are temporarily reduced up to and during the nesting season. Spring predator trapping allows for the increased nesting success of upland nesting birds. Direct mortality would occur of target animals, some vegetation trampling by personnel, and some minor increase in general wildlife disturbance in trapping areas due to human and vehicular traffic. The possibility of injury exists to nontarget wildlife that are caught in traps such as badgers, weasels, an occasional rabbit, domestic dogs, and feral cats.

Justification:

Recreational trapping removes excessive wildlife populations and provides public recreational opportunity. Spring predator trapping will benefit upland nesting birds, including many species of waterfowl, when predator populations are reduced during the nesting season. Long-term negative effects to these predator populations will not take place as conducted trapping activities cannot feasiblely remove enough animals to permanently impact these populations. An environmental assessment of trapping is available at the Refuge office for review (U.S. Fish and Wildlife Service 1994).

Determination: Trapping is compatible with additional funding.

Stipulations necessary to ensure compatibility:

- Trapping will be conducted in a manner that will remove only targeted upland nest predators.
- Recreational trapping will occur within regular State seasons and will not conflict with other public uses.
- Trapping for predators outside of the regular season will be coordinated with the ND Game and Fish Department.
- Detailed trapping records will be maintained for Refuge trappers, staff trappers, and contracted trappers.
- No trapping will take place in areas of high public use especially surrounding Lake Tewaukon and Sprague Lake.
- No exposed bait would be placed near traps that might attract eagles or other raptors.
- Traps used will be legal traps as per the State of North Dakota and snares for specialize spring trapping.
- Traps must be checked at least once every 24 hours.
- Monitoring of nest success in areas targeted for predator removal to determine effectiveness and need for next years trapping (only when nest success falls below 30 percent Mayfield will trapping be conducted - see section on Waterfowl in CCP).

Description of proposed use: Management Tools with Economic Uses: Farming, Grazing, Haying

Continue upland management activities that are conducted under permit by private individuals such as haying, grazing, and farming. Currently, these economic uses are used as management tools to manage habitat for wildlife. Up to 500 acres are farmed each year in the Complex including Refuge fields and food plots on WPA's. Cattle grazing is currently used as a management tool on the Gainor WPA (about 800 acres) and sheep grazing is used on the Refuge and District to control leafy spurge (about 200 acres). Haying is used on the Refuge and District to improve grassland conditions with approximately 450 acres hayed per year by cooperators. The CCP proposes to maintain the number of crop acres and may include increasing grazing and haying if these tools are required for improving habitat. Projects in the CCP will improve the administrative and monitoring aspects of these programs.

Availability of resources:

Current resources are stretched thin to maintain existing programs. If additional staff support was available, these programs could be expanded to utilize these tools more effectively and monitoring could be accomplished. RONS Project Number 1, listed in Appendix J, would accomplish the goals of the CCP and improve the existing program.

Anticipated impacts of the use:

Current management affects approximately 10 percent of the upland habitat annually. This would increase to approximately 15 percent under the CCP. This management is not evenly distributed over the entire Complex, and the percentage of upland receiving optimum management is considered to be much less that 10 percent. General habitat conditions on the Complex would gradually deteriorate due to long periods of non-prescribed rest. While some wildlife disturbance does occur with these activities, the benefits to wildlife far outweigh these disturbances. No cultural resources would be impacted. No impact to endangered species should occur; however, habitat suitability for the Dakota skipper, regal fritillary, and white lady's slipper would continue to deteriorate without some form of defoliation treatment.

Justification:

Upland habitat conditions would deteriorate without the use of a full range of upland management tools. Exotic and noxious weed species would increase, and habitat diversity would decrease causing a decline in wildlife diversity. Migratory bird production and diversity would decrease as habitat suitability for these species declined. Consumptive and non-consumptive wildlife oriented recreational opportunities would decline as wildlife diversity and populations decreased. Although the prescribed management techniques listed in the proposed use are not adequate in scope to prevent such declines from taking place in all upland habitat sites, the limited upland management which does take place will diversify and improve treated grasslands. An environmental assessment that evaluates upland habitat management (including these uses) is available at the Refuge office for review (U.S. Fish and Wildlife Service 1994).

Determination: Farming, Grazing, Haying are compatible when used as management tools.

Stipulations necessary to ensure compatibility:

- General and special conditions are required for each permit to ensure consistency with management objectives.
- Farming permittees are restricted to a list of approved chemicals which are less detrimental to wildlife, use only necessary amount to control problem spots, and report their use yearly.
- Farming permittees must leave a portion of the crop for wildlife use.
- Farming permittees must not cut or plow under clover until after July 15 and alfalfa after July 1.
- Farming permittees must obtain permission from the Refuge Manager to work in the fields after opening of waterfowl season.
- Grazing permittees will be restricted to after June 1 to avoid some disturbance to nesting birds.
- Cattle grazing permittees are required to follow a short-term rotational grazing system to provide appropriate stimulation of grasses.
- Grazing permittees must comply with State Livestock Health Laws.
- Haying will be restricted to after July 15 to avoid disturbance to nesting birds.
- Haying permittees are required to report and mow noxious weeds in their areas.

Signatures:

Project Leader:

_____ _____

Sandra M. Siekaniec Date
Tewaukon National Wildlife Refuge Complex

Concurrence:

_____ _____

Refuge Supervisor Date

_____ _____

Assistant Regional Director, Refuges and Wildlife Date

Appendix H. ND/SD Draft Ecosystem Goals and Objectives

Grassland Habitat Goals and Objectives

Mission: Protect, restore, and maintain North and South Dakota's native prairie and other grasslands to ensure its diversity and abundance of native flora and fauna.

Goal A: Prevent degradation and conversion of native prairie grassland to other uses.

Objectives:

- Locate, categorize, evaluate, and map existing native grassland within the Dakotas for baseline information within the next five years.
- Protect grasslands by easement on 50,000 acres of grassland per year for the next 10 years.
- By the year 2003, develop and implement public education programs to promote awareness and advocacy for native prairie.
- Maintain and develop partnerships to protect 10,000 acres native prairie over the next 10 years.

Goal B: Establish and maintain a network of large prairie grassland including native and planted grasslands on public and private lands.

Objectives:

- Promote and implement prescribed burning and rotational grazing on a minimum of 20 percent of private lands to enhance and maintain healthy native prairie.
- By the year 2003, develop a public education program on types of defoliation and importance of proper defoliation of native prairie.
- Over the next 10 years, develop partnerships to enhance and manage native prairie, including invasion by alien species.
- Develop criteria within six months and identify within the next five years the most biologically significant landscape to meet the needs of trust species and species of special concern.
- Develop criteria and treat a minimum of 20 percent of agency-owned grasslands annually.

Goal C: Reduce fragmentation effects to flora and fauna in native prairie communities. Maintain and develop corridors between large prairie conservation reserves to facilitate dispersion of native species and enhance gene flow.

Objectives:

- Develop an education program by the year 2003 to help the public understand why corridors are important.
- By 2003, develop management plans for these corridors to ensure they are properly managed to maintain the health and vigor of the plants.
- By 2003, develop statewide plans to determine where corridors are needed to connect blocks of native prairie.
- Develop and maintain corridors between large grassland landscape within five years of identification to reduce fragmentation. In addition, create public support for seeding native grasses and forbs along road rights-of-way.
- Use road rights-of-way, where applicable, to develop corridors by planting native grasses and forbs.
- Seek other avenues to develop, retain, and enhance corridors where road rights-of-way will not be sufficient.
- Over the next 10 years, maintain and develop statewide partnership programs to get people involved in identifying methods and locations for corridors, and their management.

Goal D: Protect, restore, and enhance trust species and species of special concern.

Objectives:

- Identify what species are in trouble and why by the year 2003.
- Develop at least three management approaches within the next 10 years for each species not covered at the landscape level.
- Develop education programs of why these species are important to conserve, what approaches will be taken for their recovery, and what the public can do to help.
- Develop statewide partnership programs to get people involved in species recovery.

Goal E: Maintain and increase planted grasslands.

Objectives:

- Within the next two years, identify the key areas to maintain and to increase planted grasslands.
- By 2003, develop a plan to connect the different corridors.

Goal F: Protect native prairie from industrial/chemical contamination.

Objectives:

- Identify what contaminants are entering native prairie and what adverse impact each contaminant may have on native prairie.
- Develop a plan on how to prevent and/or reduce further contaminants from entering native prairie.
- Develop a public education program explaining what contaminants are out there, what impact they are having, how to reduce or eliminate these, and how the public can help.

Wetlands and Watershed Goals and Objectives

Mission: Protect, restore, manage, and create wetlands and their watersheds in North Dakota and South Dakota to ensure the abundances of fish and wildlife species for the benefit of the American public.

Goal A: Increase recognition of wetland values by the various publics (community, conservation, communication, Congressional, and corporate entities) and develop a wetland advocacy.

Objective:

- Over the next three years, implement informational and educational opportunities that develop advocates for wetland conservation.

Goal B: Prevent or reduce the conversion or degradation of wetland habitats, and restore, replace, and enhance wetland habitats, qualities, and functions for trust species and species of concern.

Objectives:

- Annually protect 10,000 acres of wetlands, and 20,000 acres of uplands through fee, easement, and PFFW agreements for the next 10 years in North Dakota.
- Assist partners and other agencies in protecting, creating, restoring, managing, and enhancing 5,000 acres of wetlands and associated uplands annually in North Dakota.
- Develop partnerships with neighbors and local conservation organizations to annually manage 20 percent of Service uplands for trust species and species of concern.
- On a statewide (ND) basis, assure that easement violations are brought to conclusion within a one year period.
- Over the next 10 years, prepare easement maps for all North Dakota wetland easements.

Goal C: Maintain and restore the quality and health of existing prairie wetlands in order to preserve their natural productivity, longevity, and function.

(Objectives 1 and 2, Goal B, support this)

Goal D: Protect the water supply and property interests of wetlands on Service lands or easements.

Objective:

- File for water rights on eligible Service properties or easements over the next 10 years.

Riparian Goals and Objectives

Mission: Maintain, restore, and enhance riparian, floodplain, and watershed functions to river systems for the benefit of trust resources, Fish and Wildlife Service properties, and the American public.

Goal 1: Reduce the conversion of riparian habitats.

Objectives:

- Inventory and determine the quality of riparian habitats within North and South Dakota which influence National Wildlife Refuges by 2003 to provide baseline information.
- Implement a public education program in North and South Dakota by 2003 to promote a public appreciation and understanding for the benefits of and the threats to riparian habitats.

Goal 2: Maintain, restore, or enhance riparian habitats, quality, functions, and biotic communities.

Objectives:

- Use existing programs and opportunities in North and South Dakota by 2008 to provide river buffer zones on 10 percent of the 2 to 5 year floodplain 50 miles upstream of National Wildlife Refuges.
- Facilitate the location and control of all purple loosestrife populations upstream of national wildlife refuges in North and South Dakota by 2003 to maintain quality habitat.
- Use existing programs and opportunities in North and South Dakota by 2003 to restore or enhance the functions of oxbow wetlands within 50 miles of national wildlife refuges.
- National wildlife refuges with river impoundments in North and South Dakota shall collect water quality and biotic community data from inflows, outflows, and impoundment pools to determine baseline parameters by the year 2003.
- Support State efforts to monitor water quality and biotic communities in impaired waters in North and South Dakota to promote compliance with State water quality standards.
- Conserve, restore, and enhance aquatic systems and fish populations in North and South Dakota to provide increased recreational opportunities by increasing fishing access, education and outreach, and partnership opportunities by 2003.

Goal 3: Conserve and recover endangered, threatened, and species of special concern.

Objectives:

- Inventory endangered, threatened, and species of special concern along riparian corridors in North and South Dakota by 2001 to provide baseline information.
- Develop strategies for conserving and recovering endangered, threatened, and species of special concern along riparian habitat in North and South Dakota by 2003 to prevent any species from becoming listed.

Goal 4: Conserve, restore, enhance and create habitat resources in watersheds that influence the quality and quantity of water flowing into rivers and streams.

Objectives:

- Use existing oversight, coordination, and technical assistance to promote sound watershed management on an additional 10,000 acres in North and South Dakota by 2003.
- Use existing programs and opportunities in North and South Dakota by 2003 to conserve, enhance, or restore grasslands and wetlands in the immediate vicinity of national wildlife refuges to provide quality water runoff.

Missouri River Goals and Objectives

Goal 1: Reestablish the natural form and function and prevent degradation for prioritized riverine sections.

Objectives:

- Achieve a more ecologically beneficial hydrograph below Ft. Peck, Garrison, Ft. Randall, and Gavins Point Dams by working with COE, States, and other stakeholders by 2000.
- Work with the COE, States, and stakeholders to achieve compatible ecologically beneficial water quality parameters including temperature, sediment transport, and turbidity by 2003.
- Work with local zoning authorities and regulators to develop and implement policies that influence floodplain development and bank stabilization to maintain/restore river functions by 2003.
- Increase functional habitat base in prioritized riverine sections through restorations, creations, and modification/enhancement where opportunities allow. Attempt one major project per year beginning in 1999.
- Continue an environmental contaminants presence on the Missouri River that monitors conditions, identifies issues and problem areas, and develops strategies for rehabilitation.
- Promote restoration of river functions and values through proactive outreach.

Goal 2: Conserve and recover endangered, threatened, and species of special concern in riverine and impounded reaches.

Objectives:

- Augment current pallid sturgeon populations in: 1) Missouri and Yellowstone Rivers above Lake Sakakawea, and 2) below Ft. Randall through hatchery production to develop a genetically sound natural population structure by 2004.
- Achieve a 5-year average fledged success rate of 0.79 for 325 pairs of least terns, and 1.44 for 350 pairs of piping plovers below Garrison and Gavins Point Dams by 2004.
- Develop recovery actions or conservation plans for the sicklefin chub and the sturgeon chub by 1999, and seek funding and implementation of plans by 2000.
- Establish priority and complete status reviews for species of special concern, such as the blue sucker, flathead chub, western silvery and plains minnows, initiating one species per year beginning in 1999.

Goal 3: Fulfill commitments for mitigation of fishery resources brought about by construction of the mainstem dams.

Objectives:

- Through hatcheries, management, and conservation, support State fisheries objectives for the Missouri River and its impoundments annually.

Appendix I. Existing Partnerships

Tewaukon Complex works with a variety of organizations and individuals on natural resource projects such as the following:

Drift Prairie Wetland Enhancement North American Wetland Conservation Act Grant cooperators:

- ✓ North American Wetlands Conservation Council
- ✓ ND Game and Fish Department
- ✓ Ducks Unlimited
- ✓ The Nature Conservancy
- ✓ North Dakota Wetlands Trust
- ✓ Delta Waterfowl Foundation
- ✓ Barnes County Wildlife Federation
- ✓ Cass County Wildlife Club
- ✓ private landowners

North Dakota Jr. Duck Stamp Contest contributors:

- ✓ Cogswell Gun Club
- ✓ Tewaukon Rod and Gun Club
- ✓ Red River Sportsmen's Club
- ✓ Hannaford Conservation and Wildlife
- ✓ Rutland Sportsmens Club
- ✓ Barnes County Wildlife Federation
- ✓ American Foundation for Wildlife
- ✓ ND Chapter of The Wildlife Society
- ✓ Richland County Wildlife
- ✓ Cass County Wildlife Club
- ✓ United Sportsmen of Jamestown
- ✓ Falkirk Mining Company
- ✓ Lake Region Improvement Club
- ✓ Bottineau County Wildlife Federation
- ✓ Dakota Territory Gun Collectors

Fishery Habitat Improvement:

- ✓ ND Game and Fish Department
- ✓ Tewaukon Rod and Gun Club
- ✓ Cogswell Gun Club
- ✓ Rutland Sportsmens Club

U.S. Department of Agriculture:

- ✓ Natural Resources Conservation Service - easements, EQUIP, and CRP programs
- ✓ Farm Service Agency - easement program
- ✓ APHIS-depredation program
- ✓ biological weed control

U.S. Bureau of Reclamation:

- ✓ Kraft Slough Acquisition and Management

ND Game and Fish Department:

- ✓ wildlife surveys, habitat management, wildlife law enforcement

Partners For Wildlife program:

- ✓ private landowners

Sargent County Extension Service:

- ✓ youth programs, community projects

Water Quality Monitoring:

- ✓ Sisseton-Wahpeton Sioux Tribe
- ✓ North Dakota Department of Health
- ✓ Wild Rice Conservation District

Adopt-A-WPA:

- ✓ Sargent County Pheasants Forever
- ✓ Red River Sportsmen's Club

Annual Tewaukon Fishing Derby and projects:

- ✓ Cogswell Gun Club
- ✓ Tewaukon Rod and Gun Club

Other cooperators and projects include: local law enforcement agencies; The Wahpeton Zoo, conservation districts (no-till drill, native seed harvest); Ducks Unlimited (water control structures, predator fences); The North Dakota Wetlands Trust (grassland easements, water control structure repair); The Delta Waterfowl Foundation (predator research); Rural Fire Districts (wildfire suppression on- and off-Refuge); various universities (research); and the General Federation of Women's Cultura Club of Hankinson (native prairie restoration, walks, and nature trail).

Appendix J. RONS and MMS Project Worksheets

1 **Tewaukon NWR** *62660*

HABITAT RESTORATION Upland Restoration

MEASURES: 1500 refuge acres will be restored; 100 off-refuge acres will be restored

Also includes work on Also includes work on Tewaukon WMD - outputs off refuge are for the district

Many grassland fields on the Refuge and District have deteriorated to monotypic stands of exotic smooth brome and Kentucky bluegrass which provide little benefit for nesting grassland species including declining native grassland migratory birds, waterfowl, and butterflies. To improve nesting cover and maintain nesting success will require habitat management. This project would involve management of these areas including haying, burning, grazing, chemical treatments, interseeding, and weed management (including biological control). Use of cooperators can accomplish haying, seeding, and some weed management.

ADDITIONAL FUNDS NEEDED ($000):

	One-Time	Recurring Base	First Year Need
Construction Costs.....			
Operations: Personnel Costs.....	35	80	
Equipment Cost.....	40		
Facility Cost.....	4		
Services/Supplies.....	25	15	
Miscellaneous Costs.....	5	5	
TOTAL Operations Cost.....	109	100	209

ADDITIONAL PERMANENT STAFF NEEDED:

	FTEs	Cost ($000)
Managers.....	1.0	$58
Biologists.....		$0
Resource Specialists.....		$0
Education/Recreation Staff.....		$0
Law Enforcement.....		$0
Clerical/Administrative.....		$0
Maintenance/Equipment Operation.....	0.5	$22
TOTAL FTEs Needed.....	1.5	$80

EMPHASIS: 0% Critical health & safety - deferred maintenance; 0% Critical health & safety - capital improvement; 0% Critical resource protection - deferred maintenance; 0% Critical resource protection - capital improvement; 0% Critical mission - deferred maintenance; 0% Compliance & other deferred maintenance; 0% Other capital improvements

OUTCOMES*:	ES	WF	OMB	HEC	IAF	SDA	RW	PED	FAR	PRC	TOT
		60	20	10			10				100

PLANNING LINKS: Station Goal/Objective; FWS Ecosystem Goal/Plan; Station Step-down Mgmt Plan

CCP Draft: Refuge Habitat Objective to maintain 80% of DNC fields with 7.87 inches visual obscurity for optimal nesting habitat for ground nesting birds. District Habitat Objective to maintain 30% of DNC fields in high management WPAs & 10% of DNC in moderate management WPAs with 7.87 inches visual obscurity. Refuge Master Plan and Upland Management Plan objectives provide for optimum nesting habitat for ducks. Increasing the vegetative diversity and structure will make the fields more attractive to waterfowl and native grassland birds as nesting cover and provide better protection from mammalian and aerial predators.

PROJECT #: .....97020..... **RANK - STATION:** .....1..... **DISTRICT:** ...091... **REGION:** ...171... **NATIONAL:**

2 **Tewaukon NWR** *62660*

MONITORING & STUDIES Surveys & Censuses

MEASURES: 10 wildlife surveys will be conducted; 2 habitat surveys will be conducted; 15 % of survey will be off-refuge

Also includes work on Tewaukon WMD - outputs off refuge are for the district

Conduct essential data gathering & analysis to enable sound management on Tewaukon NWR & WMD. Flora & fauna inventories in the tallgrass prairie ecosystem will result in basic distribution & relative frequencies of occurrence of plants & animals on these areas. Information will be collected on migratory & resident birds, mammals, reptiles, amphibians, & fish. This information is critical for development of Comprehensive Conservation Plan, step-down plans & Prairie Pothole Joint Venture. This will allow evaluation of mgmt. practices on native flora & fauna of the tall grass prairie & identify opportunities to preserve & enhance declining, rare, & unique flora & fauna on Service land. The tallgrass prairie ecosystem has less than 1% of its original land base & as a result grassland nesting birds & other species are declining.

ADDITIONAL FUNDS NEEDED ($000):

	One-Time	Recurring Base	First Year Need
Construction Costs.....			
Operations: Personnel Costs.....	35	88	
Equipment Cost.....	40		
Facility Cost.....	4		
Services/Supplies.....	7	10	
Miscellaneous Costs.....	35	35	
TOTAL Operations Cost.....	121	133	254

ADDITIONAL PERMANENT STAFF NEEDED:

	FTEs	Cost ($000)
Managers.....		$0
Biologists.....	2.0	$88
Resource Specialists.....		$0
Education/Recreation Staff.....		$0
Law Enforcement.....		$0
Clerical/Administrative.....		$0
Maintenance/Equipment Operation.....		$0
TOTAL FTEs Needed.....	2.0	$88

EMPHASIS: 0% Critical health & safety - deferred maintenance; 0% Critical health & safety - capital improvement; 0% Critical resource protection - deferred maintenance; 0% Critical resource protection - capital improvement; 0% Critical mission - deferred maintenance; 0% Compliance & other deferred maintenance; 0% Other capital improvements

OUTCOMES*:	ES	WF	OMB	HEC	IAF	SDA	RW	PED	FAR	PRC	TOT
	5	30	40	25							100

PLANNING LINKS: Station Goal/Objective; Station Step-down Mgmt Plan; Legal Mandate; FWS Ecosystem Goal/Plan

CCP Draft links to all Refuge and District habitat and wildlife objectives (47). Project is necessary to provide a baseline for Service monitoring and evaluation to identify rare and endangered species, species of special concern, and to be able to evaluate management activities implemented through approved management plans for adaptive management.

PROJECT #: 97005 **RANK - STATION:** 2 **DISTRICT:** 046 **REGION:** 067 **NATIONAL:**

3 **Tewaukon NWR** *62660*

HABITAT MANAGEMENT Pest Plant Control

MEASURES: 5000 acres will be treated; 5000 acres infested by target species; 3000 acres will be treated chemically; 1000 acres will be treated mechanically; 1000 acres will be treated biologically

Also includes work on Tewaukon WMD

Much of our native prairie and grasslands are becoming invaded by noxious plants like leafy spurge, Canada thistle, purple loosestrife & Russian Olive trees. If the plants aren't controlled, they will spread. This will make their eradication more costly and reduce diversity of the vegetative and animal communities. These plants are currently increasing despite current efforts. Also several new species have invaded areas including musk thistle and bull thistle. It is also critical to our public support to manage our weeds effectively. Purchase chemicals & biological control agents to control leafy spurge, Canada thistle, purple loosestrife & Russian Olive trees. Mechanically remove treated trees. Work with sheep grazers to cooperatively graze spurge infested areas.

ADDITIONAL FUNDS NEEDED ($000):

	One-Time	Recurring Base	First Year Need
Construction Costs.....			
Operations: Personnel Costs.....	5	40	
Equipment Cost.....	30		
Facility Cost.....	3		
Services/Supplies.....	15	15	
Miscellaneous Costs.....	5	5	
TOTAL Operations Cost.....	58	60	118

ADDITIONAL PERMANENT STAFF NEEDED:

	FTEs	Cost ($000)
Managers.....		$0
Biologists.....		$0
Resource Specialists.....		$0
Education/Recreation Staff.....		$0
Law Enforcement.....		$0
Clerical/Administrative.....		$0
Maintenance/Equipment Operation.....	1.0	$40
TOTAL FTEs Needed.....	1.0	$40

EMPHASIS: 0% Critical health & safety - deferred maintenance; 0% Critical health & safety - capital improvement; 0% Critical resource protection - deferred maintenance; 0% Critical resource protection - capital improvement; 0% Critical mission - deferred maintenance; 0% Compliance & other deferred maintenance; 0% Other capital improvements

OUTCOMES*:	ES	WF	OMB	HEC	IAF	SDA	RW	PED	FAR	PRC	TOT
		10	10	70			10				100

PLANNING LINKS: Station Goal/Objective; Station Step-down Mgmt Plan; FWS Ecosystem Goal/Plan; Legal Mandate

Draft CCP: Refuge Habitat Objective #2 - to reduce by 15% all nonnative plants, Objective #10 - to reduce by 10% nonnatives in wetlands. District habitat objective #1 strategy - to reduce nonnative plants by 15%. Upland Management Plan-to reduce noxious weeds & increase biological diversity of uplands. Tewaukon WMD "Systems Documentation" Objective statement - demonstrate optimizing the practice of wildlife & wildlands management, help assure the survival in a natural state of plants & animal species, & optimize the abundance & diversity of native wildlife on each WPA.

PROJECT #: .....97009..... **RANK - STATION:** ....3..... **DISTRICT:** ..018... **REGION:** ..084... **NATIONAL:**

4 **Tewaukon NWR** *62660*

HABITAT RESTORATION Upland Restoration

MEASURES: 150 refuge acres will be restored; 20 off-refuge acres will be restored

Also includes work on Tewaukon WMD (outputs for off refuge acres are for the district)

Tallgrass prairie is disappearing at a rapid rate & along with it unique wildlife communities. Both the Refuge & District Waterfowl Production Areas contain some native Tallgrass sod. However, some of the areas consist of degraded domestic grasses,cropland,CRP or seeded monocultures of native grasses which have little wildlife value. These areas need to be hayed,sprayed & interseeded with a mixture of native grasses & forbs to restore the Tallgrass prairie. Mgmt. will include a mixture of burning, mowing & spot spraying for noxious weeds as necessary. Once established,the native stands will provide good waterfowl, prairie wildlife, & other resident wildlife habitat. This is one of the top priorities to the ecoteam & other partners. Remaining tallgrass prairie is less than 1% & provides for declining native grassland birds.

ADDITIONAL FUNDS NEEDED ($000):

	One-Time	Recurring Base	First Year Need
Construction Costs.....			
Operations: Personnel Costs.....		22	
Equipment Cost.....	160		
Facility Cost.....	3		
Services/Supplies.....	55	55	
Miscellaneous Costs.....	15	15	
TOTAL Operations Cost.....	233	92	325

ADDITIONAL PERMANENT STAFF NEEDED:

	FTEs	Cost ($000)
Managers.....		$0
Biologists.....		$0
Resource Specialists.....		$0
Education/Recreation Staff.....		$0
Law Enforcement.....		$0
Clerical/Administrative.....		$0
Maintenance/Equipment Operation.....	0.5	$22
TOTAL FTEs Needed.....	0.5	$22

EMPHASIS: 0% Critical health & safety - deferred maintenance; 0% Critical health & safety - capital improvement; 0% Critical resource protection - deferred maintenance; 0% Critical resource protection - capital improvement; 0% Critical mission - deferred maintenance; 0% Compliance & other deferred maintenance; 0% Other capital improvements

OUTCOMES*:	ES	WF	OMB	HEC	IAF	SDA	RW	PED	FAR	PRC	TOT
		25	20	50			5				100

PLANNING LINKS: Station Goal/Objective; Station Step-down Mgmt Plan; FWS Ecosystem Goal/Plan

Draft CCP: Refuge Habitat Objective #1 - maintain existing tallgrass prairie in good condition, Objective #3 - provide six sites for declining grassland birds in good habitat, Objective #5 - convert 600 acres of nonnative an warm season native grasses to a diverse native floral community, Wildlife Objective #3 - monitoring of four tallgrass prairie indication bird species for feedback on tallgrass habitat treatments, Wildlife Objective #5 - monitoring of relative abundance of three rare butterflies for feedback on tallgrass habitat treatments. District Habitat

PROJECT #: ....97001..... **RANK - STATION:** ....4..... **DISTRICT:** ..072... **REGION:** ..110... **NATIONAL:**

5 **Tewaukon NWR** *62660*

RESOURCE PROTECTION Law Enforcement

MEASURES: 200 incidents will be documented; 500 other public contacts will be made; 100 cases will be assisted; 300 sites will be better secured

Also includes work on Tewaukon WMD

The Refuge Complex has over 32,000 acres of easement agreements protecting wetlands & grasslands, 14,000 acres of Waterfowl Production Areas & 8,400 acres on the Refuge. Enforcement of these areas can be time consuming & requires documentation of easement activities & many permittee contacts. This effort would inform landowners about the easement on their land & provide information as to its regulations & implications. Efforts would also involve mapping of protected wetlands, enforcement of migratory bird regulations, assistance to public safety for visitors, enforcement of fishing regulations & protection of refuge facilities & equipment. Increased urbanization in Fargo & Wapheton will increase the visitor use on the refuge for fishing, hunting, bird watching & hiking. Currently two collateral duty officers is insufficient.

ADDITIONAL FUNDS NEEDED ($000):

	One-Time	Recurring Base	First Year Need
Construction Costs.....			
Operations: Personnel Costs.....	35	58	
Equipment Cost.....	50		
Facility Cost.....	2		
Services/Supplies.....	30	20	
Miscellaneous Costs.....	65	10	
TOTAL Operations Cost.....	182	88	270

ADDITIONAL PERMANENT STAFF NEEDED:

	FTEs	Cost ($000)
Managers.....		$0
Biologists.....		$0
Resource Specialists.....		$0
Education/Recreation Staff.....		$0
Law Enforcement.....	1.0	$58
Clerical/Administrative.....		$0
Maintenance/Equipment Operation.....		$0
TOTAL FTEs Needed.....	1.0	$58

EMPHASIS: 0% Critical health & safety - deferred maintenance; 0% Critical health & safety - capital improvement; 0% Critical resource protection - deferred maintenance; 0% Critical resource protection - capital improvement; 0% Critical mission - deferred maintenance; 0% Compliance & other deferred maintenance; 0% Other capital improvements

OUTCOMES*:	ES	WF	OMB	HEC	IAF	SDA	RW	PED	FAR	PRC	TOT
		70	20	10							100

PLANNING LINKS: Legal Mandate; Station Goal/Objective; FWS Ecosystem Goal/Plan

Draft CCP Refuge Wildlife Disturbance Objectives (3), Refuge Public Use Goal & Objectives- management of public use & safety. District Habitat Objective #5 - protect grassland easements, Habitat Objective #9 - protect wetland easements, District public use goal & objectives (4). Refuge Administration Act/Prohibitive Acts Provisions-monitor & protect wetland resources acquired by the USFWS including wetland easements. This will help Tewaukon to monitor land owner changes, provide information to current landowners, & attempt to reduce the number of easement violations which occur due to lack of knowledge. Would also protect other properties & enforce migratory bird regulations

PROJECT #: 97007 **RANK - STATION:** 5 **DISTRICT:** 999 **REGION:** 999 **NATIONAL:**

6 **Tewaukon WMD** *62664*

COORDINATION ACTIVITIES Private Land Activities (excluding restoration)

MEASURES: 25 landowners will be assisted; 3500 acres will be affected; 30 % effort will be for uplands; 15 % effort will be for wetlands; 55 % effort will be for deepwater/riverine habitats

This project would promote habitat for wildlife on private lands including upland restoration, riverine protection, grazing systems, predator exclosures, nesting structures, food plots etc. and seek other opportunities to improve wildlife habitat. It is especially critical to work with adjacent landowners to the refuge to improve water quality coming into the refuge. This can be accomplished with riparian protection and grazing systems. The refuge currently has a very high fecal coliform bacteria count. This work would be done with partners including NAWCA, USDA (CRP, WHIP programs), Wetland Trust and conservation districts. Concerns are that some of the existing programs will expire and land currently in CRP or tallgrass prairie will be lost.

ADDITIONAL FUNDS NEEDED ($000):

	One-Time	Recurring Base	First Year Need
Construction Costs.....			
Operations: Personnel Costs.....	35	48	
Equipment Cost.....	35		
Facility Cost.....	2		
Services/Supplies.....	5	50	
Miscellaneous Costs.....	5	5	
TOTAL Operations Cost.....	82	103	185

ADDITIONAL PERMANENT STAFF NEEDED:

	FTEs	Cost ($000)
Managers.....		$0
Biologists.....	1.0	$48
Resource Specialists.....		$0
Education/Recreation Staff.....		$0
Law Enforcement.....		$0
Clerical/Administrative.....		$0
Maintenance/Equipment Operation.....		$0
TOTAL FTEs Needed.....	1.0	$48

EMPHASIS: 0% Critical health & safety - deferred maintenance; 0% Critical health & safety - capital improvement; 0% Critical resource protection - deferred maintenance; 0% Critical resource protection - capital improvement; 0% Critical mission - deferred maintenance; 0% Compliance & other deferred maintenance; 0% Other capital improvements

OUTCOMES*:	ES	WF	OMB	HEC	IAF	SDA	RW	PED	FAR	PRC	TOT
		50	20	30							100

PLANNING LINKS: Station Goal/Objective; FWS Ecosystem Goal/Plan

Draft CCP Refuge Partnership Goal and Objectives (2), District Habitat Objective #3 - preserve the remaining tallgrass prairie, District Partnership Goal and Objective. Ecosystem Goal (tallgrass prairie) - Preserve all remaining tallgrass prairie sites in North Dakota and develop and implement a plan to restore up to 5% of the original tallgrass prairie base to functioning tallgrass prairie.

PROJECT #: ....97032..... **RANK - STATION:** ....6..... **DISTRICT:** ..999... **REGION:** ..999... **NATIONAL:**

Over the past several years the station staff (including seasonals) as increased from 10 to 16. Offices intended for one occupant are being shared by two and additional staff increases are expected (up to 10 additional for minimum staffing). This project would add safe staff work space, storage for sensitive and costly equipment and administrative staff to handle additional work loads. Construct of a 5,000-s.f. addition to the refuge office to improve refuge staff working conditions. Cost includes furnishing of the office and storage space. Increasing of office space for employees will provide an increase in employee efficiency, moral, & accomplishment of management goals. Current conditions tend to distract employees making accomplishment of work difficult.

ADDITIONAL FUNDS NEEDED ($000):

	One-Time	Recurring Base	First Year Need
Construction Costs	1,000		
Operations: Personnel Costs		39	
Equipment Cost	70		
Facility Cost	6		
Services/Supplies	15	15	
Miscellaneous Costs		10	
TOTAL Operations Cost	91	64	155

ADDITIONAL PERMANENT STAFF NEEDED:

	FTEs	Cost ($000)
Managers		$0
Biologists		$0
Resource Specialists		$0
Education/Recreation Staff		$0
Law Enforcement		$0
Clerical/Administrative	1.0	$39
Maintenance/Equipment Operation		$0
TOTAL FTEs Needed	1.0	$39

EMPHASIS: 5% Critical health & safety - deferred maintenance; 15% Critical health & safety - capital improvement; 0% Critical resource protection - deferred maintenance; 0% Critical resource protection - capital improvement; 7.5% Critical mission - deferred maintenance; 12.5% Compliance & other deferred maintenance; 60% Other capital improvements

OUTCOMES*:	ES	WF	OMB	HEC	IAF	SDA	RW	PED	FAR	PRC	TOT
		50	15	15			10	10			100

PLANNING LINKS: Station Goal/Objective; Legal Mandate

Draft CCP: this will assist in the accomplishment of all Refuge and District Goals and Objectives for the CCP. Increasing of office space for employees will provide an increase in employee efficiency, moral, & accomplishment of management goals. Current conditions tend to distract employees making accomplishment of work difficult. Additional storage space will provide for protection of government purchased equipment for longer life and security of equipment. Additional administrative staff will allow for more efficient processing of required paperwork for the increase in staff.

PROJECT #: 98033 **RANK - STATION:** 7 **DISTRICT:** 999 **REGION:** 999 **NATIONAL:**

8 **Tewaukon NWR** *62660*

PUBLIC EDUCATION & RECREATION Provide Visitor Services

MEASURES: 5000 new visitors will be served; 15000 existing visitors will be served; 80 % will support the top 6 priority public uses; 20 % will support non-priority public uses

Also includes work on Tewaukon Wetland Management District

Currently a need exists for better visitor services on the Refuge and outreach for the Complex. Most of our use occurs during weekend hours when the contact station is not open. Due to large growing population centers within 100 miles our use may be larger than currently estimated. This results in an uninformed public on refuge resources. Project would provide staffing of office on weekends, staff for refuge tours, improve/expand visitor center, produce professional leaflets to educate and interpret refuge resources. Build an interpretive nature trail and wildlife observation platform for visitors. Develop interpretive panels for outdoor kiosks. Staff would also work with local sportsmen's groups to improve refuge visitor facilities. Develop Complex web site, refuge video, Jr. Duck Stamp and conduct outreach.

ADDITIONAL FUNDS NEEDED ($000):

	One-Time	Recurring Base	First Year Need
Construction Costs	1,500		
Operations: Personnel Costs	50	58	
Equipment Cost	90		
Facility Cost	5		
Services/Supplies	100	30	
Miscellaneous Costs	25	25	
TOTAL Operations Cost	270	113	383

ADDITIONAL PERMANENT STAFF NEEDED:

	FTEs	Cost ($000)
Managers		$0
Biologists		$0
Resource Specialists		$0
Education/Recreation Staff	1.0	$58
Law Enforcement		$0
Clerical/Administrative		$0
Maintenance/Equipment Operation		$0
TOTAL FTEs Needed	1.0	$58

EMPHASIS: 2% Critical health & safety - deferred maintenance; 8% Critical health & safety - capital improvement; 2% Critical resource protection - deferred maintenance; 8% Critical resource protection - capital improvement; 6% Critical mission - deferred maintenance; 10% Compliance & other deferred maintenance; 64% Other capital improvements

OUTCOMES*:	ES	WF	OMB	HEC	IAF	SDA	RW	PED	FAR	PRC	TOT
								70		30	100

PLANNING LINKS: Station Goal/Objective; Station Step-down Mgmt Plan

Draft CCP: Refuge Public Use Goal and Objectives (9), Refuge Partnership Goal and Objectives (2), District Public Use Goal and Objectives (4), District Partnership Goal and Objective. Refuge Master Plan Objective #2: to provide for public observation of wildlife species in their natural environment and #3: to provide limited day use recreation, including public hunting where and when such activities are compatible with primary management objectives of the refuge.

PROJECT #: 97003 **RANK - STATION:** 8 **DISTRICT:** 999 **REGION:** 999 **NATIONAL:**

9 **Tewaukon NWR** *62660*

HABITAT MANAGEMENT Fire Management

MEASURES: 1500 refuge acres burned under prescription; 15 refuge burns will be conducted; 50 non-refuge acres will be burned under prescription; 10 wildfires will be suppressed

Also includes work on Tewaukon WMD, Waubay Complex, Sand Lake Complex, Kulm WMD

The prescribed fire program at the Tewaukon NWR Complex is growing and will greatly expand in the near future as responsibilities increase. There is a need to bring in a fire ecologist to review the habitat and the prescribed burning program to help the Complex achieve its goals of improving habitat with the use of management ignited fire. Information to be gathered will include condition of the habitat, exotic species or weeds that can be controlled by fire, best times of the year to burn for specific goals and burn schedules. This information will help managers to evaluate current management and decide on more effective management by the use of fire at specific times.

ADDITIONAL FUNDS NEEDED ($000):

	One-Time	Recurring Base	First Year Need
Construction Costs.....			
Operations: Personnel Costs.....	40	48	
Equipment Cost.....	30		
Facility Cost.....	4		
Services/Supplies.....	20	10	
Miscellaneous Costs.....	55	35	
TOTAL Operations Cost.....	149	93	242

ADDITIONAL PERMANENT STAFF NEEDED:

	FTEs	Cost ($000)
Managers.....		$0
Biologists.....		$0
Resource Specialists.....	1.0	$48
Education/Recreation Staff.....		$0
Law Enforcement.....		$0
Clerical/Administrative.....		$0
Maintenance/Equipment Operation.....		$0
TOTAL FTEs Needed.....	1.0	$48

EMPHASIS: 0% Critical health & safety - deferred maintenance; 0% Critical health & safety - capital improvement; 0% Critical resource protection - deferred maintenance; 0% Critical resource protection - capital improvement; 0% Critical mission - deferred maintenance; 0% Compliance & other deferred maintenance; 0% Other capital improvements

OUTCOMES*:	ES	WF	OMB	HEC	IAF	SDA	RW	PED	FAR	PRC	TOT
		40	30	20			10				100

PLANNING LINKS: FWS Ecosystem Goal/Plan; Station Goal/Objective

Draft CCP: Refuge Habitat Objectives (11), District Habitat Objectives (12). Station objectives include: Preserve, restore and enhance the diverse native floral communities on the Refuge and District.

PROJECT #: 99042 **RANK - STATION:** 9 **DISTRICT:** 999 **REGION:** 999 **NATIONAL:** 999

10 **Tewaukon NWR** *62660*

RESOURCE PROTECTION Cultural Resource Management

MEASURES: 10 investigations will be conducted; 20 sites will be documented; 500 museum property items will be maintained

Also includes work on Tewaukon WMD

Tewaukon NWR is located in the Sisseton-Wapheton Sioux Native American Reservation and has several located cultural and archeological sites. However the majority of the refuge and district has not been inventoried. Various Federal laws, regulations and executive orders require Federal agencies to locate, protect, interpret, record, evaluate and nominate significant prehistoric and historic resources on Federal land. This would assist in historical records and management direction for the Complex Comprehensive Conservation Plan. Would also assist with existing management of cultural and archeological items in storage and displayed.

ADDITIONAL FUNDS NEEDED ($000):

	One-Time	Recurring Base	First Year Need
Construction Costs.....			
Operations: Personnel Costs.....	30		
Equipment Cost.....	10		
Facility Cost.....	2		
Services/Supplies.....	10	15	
Miscellaneous Costs.....	5	5	
TOTAL Operations Cost.....	57	20	77

ADDITIONAL PERMANENT STAFF NEEDED:

	FTEs	Cost ($000)
Managers.....		$0
Biologists.....		$0
Resource Specialists.....		$0
Education/Recreation Staff.....		$0
Law Enforcement.....		$0
Clerical/Administrative.....		$0
Maintenance/Equipment Operation.....		$0
TOTAL FTEs Needed.....		$0

EMPHASIS: 0% Critical health & safety - deferred maintenance; 0% Critical health & safety - capital improvement; 0% Critical resource protection - deferred maintenance; 0% Critical resource protection - capital improvement; 0% Critical mission - deferred maintenance; 0% Compliance & other deferred maintenance; 0% Other capital improvements

OUTCOMES*:	ES	WF	OMB	HEC	IAF	SDA	RW	PED	FAR	PRC	TOT

PLANNING LINKS: Station Goal/Objective; Legal Mandate

Draft CCP: Refuge Public Use Objective # 8 - preserve and protect existing cultural resources, Refuge Public Use Objective # 9 - promote public awareness of cultural resources, District Public Use Objective #3 - Conduct cultural resource inventories on WPAs, District Public Use Objective # 4 - preserve and protect cultural resources on the District. Station Goal/Objective includes the protection and inventory of archeological and cultural sites. Archaeological Resource Protection Act, NWRS Improvement Act, Refuge Recreation Act, Executive Order.

PROJECT #: 99040 **RANK - STATION:** 10 **DISTRICT:** 999 **REGION:** 999 **NATIONAL:** 999

11 **Tewaukon NWR** *62660*

RESOURCE PROTECTION Water Rights Management

MEASURES: 20 % effort will be for identification; 80 % effort will be for quantification; 15 water rights will be supported or protected

Also includes work on Tewaukon WMD, Storm Lake Easement Refuge and Wild Rice Easement Refuge

Currently no accurate way to quantify water use on the Refuge. Water is critical to the Refuge for its main purpose of waterfowl management. Project would install water measurement devices (data loggers for pools and a laptop to download the information).to protect Refuge water rights & to provide information on use to the State. Measurement devices are used to quantify the extent of each water right & then to determine whether the Refuge is receiving the water it is legally entitled to & to document continuing beneficial use. Currently station only has known water rights for the refuge & easement refuges. WPAs & wetland easements do not have water rights & they need protection from drainage due to lowering of water table by irrigators or public water companies. Need to research water rights for WPAs & wetland easements in our three counties.

ADDITIONAL FUNDS NEEDED ($000):

	One-Time	Recurring Base	First Year Need
Construction Costs.....			
Operations: Personnel Costs.....	40		
Equipment Cost.....	355		
Facility Cost.....			
Services/Supplies.....	20	5	
Miscellaneous Costs.....	22	25	
TOTAL Operations Cost.....	437	30	467

ADDITIONAL PERMANENT STAFF NEEDED:

	FTEs	Cost ($000)
Managers.....		$0
Biologists.....		$0
Resource Specialists.....		$0
Education/Recreation Staff.....		$0
Law Enforcement.....		$0
Clerical/Administrative.....		$0
Maintenance/Equipment Operation.....		$0
TOTAL FTEs Needed.....		$0

EMPHASIS: 0% Critical health & safety; 50% Critical resource protection; 50% Critical mission; 0% Other important needs

OUTCOMES*:	ES	WF	OMB	HEC	IAF	SDA	RW	PED	FAR	PRC	TOT
		60	15	15			10				100

PLANNING LINKS: Station Goal/Objective

Draft CCP: Refuge Habitat Objective #6 - provide for 20% of each wetland category (ie deep, shallow) for migratory birds, Refuge Habitat Objective # 7 - protect existing and clarify water rights on Refuge Wetlands. District Habitat Objective # 7 - clarification of district water rights to provide long term protection of water resources.

PROJECT #: .....98029..... **RANK - STATION:** ....11.... **DISTRICT:** ..099... **REGION:** ...173... **NATIONAL:**

12 **Tewaukon NWR** *62660*

FISH & WILDLIFE MANAGEMENT Pest, Predator & Exotic Animal Control

MEASURES: 700 mammals will be removed; 3 exclusionary fenced areas will be maintained

Also includes work on Tewaukon WMD

The largest obstacle to waterfowl nesting success on the Refuge and District are predators. Nest success can be increase by the removal of predators (skunk, raccoon, mink, fox) in the spring before nesting and when water conditions are favorable for duck production and grassland bird production. This project would improve duck nest success on the refuge by conducting wide spread trapping of these species. It would also focus on monitoring the predator populations to improve knowledge of when to properly apply the methods without total detriment to their populations. Many of the areas on in the District are heavily farmed leaving little residual cover for safe waterfowl and grassland bird nesting. Predators tend to concentrate on the areas with grass cover (like WPAs) resulting in very low nest success. Wide spread spring trapping, predator exclosure fences and nesting islands will be used in the district to increase nest success 60%.

ADDITIONAL FUNDS NEEDED ($000):

	One-Time	Recurring Base	First Year Need
Construction Costs.....			
Operations: Personnel Costs.....	15		
Equipment Cost.....	80		
Facility Cost.....	2		
Services/Supplies.....	195	30	
Miscellaneous Costs.....	35	25	
TOTAL Operations Cost.....	327	55	382

ADDITIONAL PERMANENT STAFF NEEDED:

	FTEs	Cost ($000)
Managers.....		$0
Biologists.....		$0
Resource Specialists.....		$0
Education/Recreation Staff.....		$0
Law Enforcement.....		$0
Clerical/Administrative.....		$0
Maintenance/Equipment Operation.....		$0
TOTAL FTEs Needed.....		$0

EMPHASIS: 0% Critical health & safety - deferred maintenance; 0% Critical health & safety - capital improvement; 0% Critical resource protection - deferred maintenance; 0% Critical resource protection - capital improvement; 0% Critical mission - deferred maintenance; 0% Compliance & other deferred maintenance; 0% Other capital improvements

OUTCOMES*:	ES	WF	OMB	HEC	IAF	SDA	RW	PED	FAR	PRC	TOT
		90	10								100

PLANNING LINKS: Station Goal/Objective

Draft CCP: Refuge Wildlife Objective # 1 - maintain an average upland duck nesting success of at least 30% (Mayfield) for increased waterfowl production on the Refuge, District Wildlife Objective #1 - maintain an average upland duck nesting success of at least 30% (Mayfield) for increased waterfowl production on the District. Refuge Master Plan Goal #1 Provide Optimum nesting habitat for ducks.

PROJECT #: .....98003..... **RANK - STATION:** ...12... **DISTRICT:** ...999... **REGION:** ...999... **NATIONAL:**

RMIS - Maintenance Management System (MMS)
Record View

Station: Tewaukon NWR HQ: Tewaukon NWR

Main ecosys: Missouri Main Stem

Org code: 62660 State: ND Cong dist: ND00

Project no.: 89008 Project no. subelement:

Prop desc: Dozer, cat d-7; Prop #: 632821

Project title: Replace deteriorated dozer

Project desc: Replace deteriorated heavy equipment (dozer) with a low ground pressure dozer D5M. The older style dozer is heavy an easier to get stuck in wet areas. Concerned with the weight of and safe hauling of the larger dozer. Have been having difficulties finding parts for the older dozer. D5M dozer is capable of accessing wetter areas for dike repairs and water structure rehabilitation.

Measures: Number of vehicles: 1

Cost estimate: $148 Engineering cost included in cost est:

Cost est date: 1997 Cost est method: Contractor Quote FY group: B

Backlog: $148 FY completed: FY obligations: $0

Cumulative obligations: $0

Fund source: R = *Resource Management* Percent complete: 0%

Other possible fund source:

○ TEA21 (Refuge Roads)	○ Quarters	○ Other
○ TEA21 (Other)	○ RecFee	
○ Title V	○ Contaminants	
○ Fire	○ Supplemental	

Fix type: ○ Repair/rehab ◉ Replace ○ Remove Condition assessment: Fair

Emphasis:

CHS	CRP	CM	OI	TOT
0	30	0	70	100

Type:

DM	CI	TOT
100	0	100

Safety? ☒ I

Outcomes:

ES	WF	OMB	HEC	IAF	SDA	RW	FAR	PED	PRC	TOT
0	60	20	0	0	0	10	0	0	10	100

Maint code: 780 = *Agr/Const/Industrial Vehicles*

Station rank: 2 Dist rank: Reg rank: 124 Nat rank: 2

DOI rank: 420

RO support needs: ☐ Engineering ☒ Contracting ☐ Force Account [

Project notes:

This new equipment will assist in repairs to flood damage and 12 yr. maintenance backlog which is not possible with the existing equipment due to wet working conditions.

Updated 1/6/98

RMIS - Maintenance Management System (MMS)
Record View

Station: Tewaukon NWR HQ: Tewaukon NWR

Main ecosys: Missouri Main Stem

Org code: 62660 State: ND Cong dist:

Project no.: 99043 Project no. subelement:

Prop desc: 1 Ton Diesel Truck Prop #: 624585

Project title: Replace worn 1986 1 ton Diesel Truck

Project desc: Replace worn 1986 1 ton Diesel Truck (mileage 26662). Utilized for fencing and hauling of materials to job sites.

Measures: Number of trucks: 1

Cost estimate: $45 Engineering cost included in cost est:

Cost est date: 1999 Cost est method: Vendor/List Price FY group: 9999

Backlog: $45 FY completed: FY obligations: $0

Cumulative obligations: $0

Fund source: R = *Resource Management* Percent complete: 0%

Other possible fund source:

○ TEA21 (Refuge Roads)	○ Quarters	○ Other
○ TEA21 (Other)	○ RecFee	
○ Title V	○ Contaminants	
○ Fire	○ Supplemental	

Fix type: ○ Repair/rehab ◉ Replace ○ Remove Condition assessment: Poor

Emphasis:

CHS	CRP	CM	OI	TOT
0	20	0	80	100

Type:

DM	CI	TOT
100		100

Safety? ☐

Outcomes:

ES	WF	OMB	HEC	IAF	SDA	RW	FAR	PED	PRC	TOT
0	40	20	20	0	0	10	0	0	10	100

Maint code: 778 = *Trucks, Light (<8,500 lbs.)*

Station rank: 3 Dist rank: 999 Reg rank: 999 Nat rank: 2342

DOI rank: 380

RO support needs: ☐ Engineering ☒ Contracting ☐ Force Account [

Project notes:

Updated 5/6/99

RMIS - Maintenance Management System (MMS)
Record View

Station: Tewaukon NWR HQ: Tewaukon NWR

Main ecosys: Missouri Main Stem

Org code: 62660 State: ND Cong dist: ND00

Project no.: 97003 Project no. subelement:

Prop desc: Signs & Kiosk panels Prop #: S001860

Project title: Replace 25 worn and faded public safety signs and interpretive panels

Project desc: Replace 12 worn and faded public safety signs (ice fishing, ice conditions, etc.) signs and interpretive 3x4 panels and monuments in high public use areas on the Refuge. Many of the signs and panels are over 15 years old and have become faded and unreadable. Replace one vandalized interpretive panel on historic values and Native American cultures in the area. Replace 12 wooden hunter parking signs.

Measures: Number of signs: 1

Cost estimate: $39 Engineering cost included in cost est:

Cost est date: 1999 Cost est method: Historical/Manager FY group: C

Backlog: $39 FY completed: Estimate FY obligations: $0

Cumulative obligations: $0

Fund source: R = *Resource Management* Percent complete: 0%

Other possible fund source:

○ TEA21 (Refuge Roads)	○ Quarters	◉ Other
○ TEA21 (Other)	○ RecFee	
○ Title V	○ Contaminants	
○ Fire	○ Supplemental	

Fix type: ○ Repair/rehab ◉ Replace ○ Remove Condition assessment: Poor

Emphasis:

CHS	CRP	CM	OI	TOT
20	10	0	70	100

Type:

DM	CI	TOT
100	0	100

Safety? ☒ C

Outcomes:

ES	WF	OMB	HEC	IAF	SDA	RW	FAR	PED	PRC	TOT
0	25	15		0	0		0	10	50	100

Maint code: 556 = *Signs*

Station rank: 5 Dist rank: Reg rank: 999 Nat rank: 2

DOI rank: 480

RO support needs: ☐ Engineering ☒ Contracting ☐ Force Account [

Project notes:

These signs not only guide our visitors to points of interets and interpret managment activies but also address many important safety concerns on the Refuge. Current hunter parking signs have become worn and make it difficult for visitors to locate safe parking areas for the Refuge hunting season. Tactile panels for four kiosks approx. 4K each, regular panels (3) 2K each, 8x5 panels 3K each. Possibility of partners for the historical monuments. General Sibley monument was previously purchased by local sportsmen's clubs.

Updated 1/6/98

RMIS - Maintenance Management System (MMS)
Record View

Station: Tewaukon NWR HQ: Tewaukon NWR

Main ecosys: Missouri Main Stem

Org code: 62660 State: ND Cong dist: ND00

Project no.: 20087 Project no. subelement: A (20087-A)

Prop desc: Replace dikes 16-2 & 16-3 Prop #: 126

Project title: Replace control structure and repair dike of Horseshoe Pool B and Pool C

Project desc: Replace the water control structure in Pool B (16-2) and repair the existing dike. Worn structures can cause additional damage to adjacent structures and private landowner property. This structure provides marsh habitat for all types of waterbirds and other wildlife.

Measures: Number of structures: 1

Cost estimate: $50 Engineering cost included in cost est: $8

Cost est date: 2000 Cost est method: Historical/Manager FY group: 9999

Backlog: $50 FY completed: Estimate FY obligations: $0

Cumulative obligations: $0

Fund source: C = *Construction* Percent complete: 0%

Other possible fund source:

○ TEA21 (Refuge Roads)	○ Quarters	○ Other
○ TEA21 (Other)	○ RecFee	
○ Title V	○ Contaminants	
○ Fire	○ Supplemental	

Fix type: ◉ Repair/rehab ○ Replace ○ Remove Condition assessment: Fair

Emphasis:

CHS	CRP	CM	OI	TOT
5	10	10	75	100

Type:

DM	CI	TOT
80	20	100

Safety? ☒ C

Outcomes:

ES	WF	OMB	HEC	IAF	SDA	RW	FAR	PED	PRC	TOT
0	60	20	10	0	0	10	0	0	0	100

Maint code: 440 = *Water Control Structures*

Station rank: 7 Dist rank: 999 Reg rank: 999 Nat rank: 2354

DOI rank: 346

RO support needs: ☒ Engineering ☒ Contracting ☐ Force Account [

Project notes:

This project needs to be accomplished in conjunction with the adjacent Pool 16-3 (C Pool). C Pool information is available in 20087B

Updated 3/27/2000

RMIS - Maintenance Management System (MMS)
Record View

Station: Tewaukon WMD HQ: Tewaukon NWR

Main ecosys: Missouri Main Stem

Org code: 62664 State: ND Cong dist:

Project no.: 99045 Project no. subelement:

Prop desc: 1 ton vehicle Prop #: 624659

Project title: Replace worn 1 ton vehicle

Project desc: Replace worn 1991 Dodge Utility 1 ton. Used for spraying of weeds on the refuge and district to comply with State regulations.

Measures: Number of trucks: 1

Cost estimate: $45 Engineering cost included in cost est:

Cost est date: 1999 Cost est method: Vendor/List Price FY group: 9999

Backlog: $45 FY completed: FY obligations: $0

Cumulative obligations: $0

Fund source: R = *Resource Management* Percent complete: 0%

Other possible fund source:

○ TEA21 (Refuge Roads)	○ Quarters	○ Other
○ TEA21 (Other)	○ RecFee	
○ Title V	○ Contaminants	
○ Fire	○ Supplemental	

Fix type: ○ Repair/rehab ◉ Replace ○ Remove Condition assessment: Fair

Emphasis:

CHS	CRP	CM	OI	TOT	Type:	DM	CI	TOT	Safety? ☐
0	0	0	100	100		100		100	

Outcomes:

ES	WF	OMB	HEC	IAF	SDA	RW	FAR	PED	PRC	TOT
0	30	20	20	0	0	20	0	0	10	100

Maint code: 778 = *Trucks, Light (<8,500 lbs.)*

Station rank: 8 Dist rank: 999 Reg rank: 999 Nat rank: 2345

DOI rank: 300

RO support needs: ☐ Engineering ☒ Contracting ☐ Force Account [

Project notes:

Updated 5/6/99

RMIS - Maintenance Management System (MMS)
Record View

Station: Tewaukon NWR HQ: Tewaukon NWR

Main ecosys: Missouri Main Stem

Org code: 62660 State: ND Cong dist:

Project no.: 96002 Project no. subelement:

Prop desc: Interpretive map display Prop #: 624739

Project title: Replace deteriorated Refuge map display

Project desc: The Refuge map display is located in the Refuge Visitor Center and is used extensively to orient visitors to the Refuge natural resource features, recreational facilities and opportunites, roads, trail, and boundaries. The current map display is faded and worn from years of use and does not meet accessibility requirements. The replacement map display would be user friendly, and more accessible to visitors.

Measures: Number of contact points: 1

Cost estimate: $30 Engineering cost included in cost est:

Cost est date: 1998 Cost est method: Historical/Manager Estimate FY group: 9999

Backlog: $30 FY completed: FY obligations: $0

Cumulative obligations: $0

Fund source: R = *Resource Management* Percent complete: 0%

Other possible fund source:

○ TEA21 (Refuge Roads)	○ Quarters	○ Other
○ TEA21 (Other)	○ RecFee	
○ Title V	○ Contaminants	
○ Fire	○ Supplemental	

Fix type: ○ Repair/rehab ◉ Replace ○ Remove Condition assessment: Fair

Emphasis:

CHS	CRP	CM	OI	TOT
0	25	50	25	100

Type:

DM	CI	TOT

Safety? ☐

Outcomes:

ES	WF	OMB	HEC	IAF	SDA	RW	FAR	PED	PRC	TOT
0	20	10	0	0	0	10	0	40	20	100

Maint code: 560 = *Visitor Contact Points*

Station rank: 10 Dist rank: 999 Reg rank: 999 Nat rank: 2356

DOI rank: 450

RO support needs: ☐ Engineering ☒ Contracting ☐ Force Account [

Project notes:

The display is important in guiding our visitors to safe and enjoyable places to recreate and away from wildlife sensative areas that are closed to the public.

Updated 4/7/2000

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Appendix L. Waterfowl Production Areas Priority Management Tables

WPA Units	County	Acres	Mean Pair Density	Unique Resources	Priority Level
Englevale Complex	Ransom	1,187.75	68 pair		High
Smith/Tanner/Buckmiller	Ransom	646.62	68 pair		High
Strander/Skonseng/Peterson	Ransom	280.30	45-68 pair	Tallgrass prairie	High
McCann/McGill/Isley	Ransom	324.93	45-68 pair	Tallgrass prairie	High
Weaver/Coit/Schiffner	Ransom	403.53	68 pair	Tallgrass prairie	High
Biggs/Berndt	Richland	479.35	27-45 pair	Tallgrass prairie Rare butterflies	High
Biggs/Anderson/Anderson/ Larson/Swanson/Ostby	Richland	609.47	27-45 pair	Tallgrass prairie	High
Krause/Ahrens/Arndt	Richland	117.85	45-68 pair	Tallgrass prairie	High
Bladow	Richland	275.97	45-68 pair		High
Gunness/Boldt/Hentz/Elsen	Richland	657.10	27-45 pair	Tallgrass prairie Rare butterflies White lady's slipper	High
Hartleben/Aaser/Prochnow	Richland	1,627.23	27-45 pair	Tallgrass prairie Rare butterflies White lady's slipper	High
Kuehn	Richland	317.52	68 pair	Tallgrass prairie	High
Willprecht/Nechas/Hegar	Richland	240.96	45 pair		High
Chris Schuler/East Leack	Richland	240.00	45 pair	Tallgrass prairie	High
Wollitz/Paetzke/Stenson	Richland	506.46	45-68 pair		High
Palensky/Widmer	Sargent	449.64	93-113 pair	Tallgrass prairie	High
Evanson	Sargent	169.52	93 pair		High
Evanson/Anderson	Sargent	198.80	93 pair		High
Gainor	Sargent	843.96	45 pair	Tallgrass prairie	High
Krause	Sargent	200.00	68 pair	Tallgrass prairie Rare butterflies	High
Nelson/Klefstad	Sargent	390.16	68 pair		High
Palensky/Wyum/Kaske	Sargent	238.83	68 pair		High

WPA Units	County	Acres	Mean Pair Density	Unique Resources	Priority Level
Blikre/Chose	Ransom	129.09	27-45 pair		Moderate
Compson	Ransom	162.08	27-45 pair		Moderate
Warner	Ransom	160.00	27 pair		Moderate
Wiltse/Kaspari	Ransom	239.16	27-45 pair		Moderate
Ford	Richland	128.94	68 pair	Tallgrass prairie small tract	Moderate
Gaukler	Richland	162.71	45 pair		Moderate
Smith	Richland	159.81	68 pair		Moderate
Vogeler/Haaland	Richland	162.41	27 pair		Moderate
Asche	Sargent	159.44	68 pair		Moderate
Bauer	Sargent	322.52	45 pair		Moderate
Even	Sargent	84.86	68 pair		Moderate
Litchfield	Sargent	156.68	45 pair		Moderate
Mahrer	Sargent	119.20	68 pair		Moderate
Olson/BN	Sargent	157.37	68 pair		Moderate
Olson, H.	Sargent	159.24	68 pair		Moderate
Saunders	Sargent	143.29	68 pair		Moderate

WPA Units	County	Acres	Mean Pair Density	Unique Resources	Priority Level
Arneson	Ransom	40.00	27 pair		Low
Bachmans	Ransom	100.19	68 pair		Low
Boeder	Ransom	99.78	45 pair		Low
Bueling, A.	Ransom	55.08	27-45 pair		Low
Bueling, L.	Ransom	56.28	27-45 pair		Low
Carlson	Ransom	43.62	93 pair		Low
Dick, L.	Ransom	32.11	45 pair		Low
Kaspari, L.	Ransom	55.00	27 pair		Low
Metzen	Ransom	52.50	27-45 pair		Low
Reinke/Anderson	Ransom	84.36	45 pair		Low
Shelver	Ransom	85.32	27 pair		Low
Boehning	Richland	97.06	45 pair		Low
Korth	Richland	47.46	27-45 pair	Tallgrass prairie small tract	Low
West Leack	Richland	80.00	45 pair		Low
Novetszke	Richland	60.08	45 pair		Low
Lunstad	Sargent	52.93	68-93 pair		Low

Appendix M: Section 7 Consultation

Intra-Service Section 7 Consultation has been initiated with the Bismarck field office of Ecological Services and will be completed prior to the final approval of this Plan.

Appendix N: Mailing List

Federal Officials

- Congressman Earl Pomeroy - Fargo, ND and Washington, D.C.
- Senator Kent Conrad - Fargo, ND and Washington, D.C.
- Senator Byron Dorgan - Fargo, ND and Washington, D.C.

Federal Agencies

- Air Quality Branch- U.S. EPA
- USDA - Aphis
- BIA - Billings Area Office
- Bureau of Reclamation
- Bureau of Land Management
- Corps of Engineers- Bismarck, ND and St. Paul, MN
- Dakota Resource Council
- EPA, Region 8
- FSA - Ransom, Richland, and Sargent Counties
- NPS -Theodore Roosevelt National Park
- NRCS - Ransom, Richland, and Sargent Counties
- USFS - Sheyenne Grasslands
- USFWS Albuquerque, NM; Anchorage, AK; Arapaho NWR; Arlington, VA; Arrowwood NWR; Atlanta, GA; Crescent Lake/N. Platte, NE; Denver, CO; Devils Lake WMD, ND; ES, Bismarck, ND; Fort Snelling, MN; Hadley, MA; HAPET, Bismarck, ND; Juneau, AK; Lake Andes NWR, SD; Air Quality Branch, Lakewood, CO; Medicine Lake NWR, MT; Missouri River Fisheries WAO, Bismarck, ND; Portland, OR; Sacramento, CA; Sherwood, OR; Sand Lake NWR, SD; Shepherdstown, WV; Washington, D.C.; Waubay NWR, SD; WHO, Bismarck, ND
- USGS - BRD Fort Collins, CO and Jamestown, ND

State Officials

- ND Game and Fish Department
  Dean Hildebrand; Brian Kietzman; Tim Phalen
- ND State Historic Preservation Officer
- Representative Kathy Hawken
- Representative Scott Kelsh
- Representative Christopherson
- Representative Wesley Belter
- Representative Rick Berg
- Representative Leroy Bernstein
- Representative Al Carlson
- Representative John Dorso
- Representative Steve Gorman
- Representative Howard Grumbo
- Representative Roy Hausauer
- Representative Robert Huether
- Representative Kim Koppelman
- Representative Douglas Payne
- Representative Sally Sandvig
- Representative Al Soukup
- Representative Allan Stenehjem
- Representative Laurel Thoreson
- Representative Pam and Bill Gulleson
- Senator Tony Grindberg
- Senator Joel Heitkamp
- Senator Judy Lee
- Senator Tim Mathern
- Senator Donna Nalewaja
- Senator Carolyn Nelson
- Senator Jens Tennefos
- Senator Russel Thane

State Agencies

- P MN DNR - Fisheries
- P MN DNR
- P MN Pollution Control Ag
- P ND Dept of Health
- P ND Forest Service
- P ND State Water Commission
- P NDSU Extension Service, Fargo and Sargent, Ransom, and Richland Counties
- P North Dakota Ag Department

City/County/Local Governments

- P Cass County Commissioners
- P Mayor Carl Taubert
- P Mayor Morris Saxerud
- P Mayor Neil Anderson
- P Mayor James Banish
- P Mayor John Banish
- P Mayor Orville Bergh
- P Mayor Robert Billing
- P Mayor Marty Bjugstad
- P Mayor Ronald Boehning
- P Mayor Steven Domm
- P Mayor Bruce Furness
- P Mayor Robert Fust
- P Mayor Marilyn Gunderson
- P Mayor Debra Heitkamp
- P Mayor Brad Hejtmanek
- P Mayor Dennis Klosterman
- P Mayor Gary Meyer
- P Mayor Ed Morrow
- P Mayor Ronald Narum
- P Mayor Larry Palluck
- P Mayor Mitch Papke
- P Mayor Duane Pollert
- P Mayor Grover Riebe
- P Ransom County Sheriff's Office; Weed Board; Commissioners; Water Resource District
- P Richland County Sheriff's Office; Weed Board; Commissioners; Historical Society; Water Resource District
- P Sargent County Sheriff's Office; Water Resource District; Commissioners; Weed Board
- P Twnshp Officer Duane Baldwin
- P Twnshp Officer Sonja and Grant Gulleson
- P Twnshp Officer Luann Anderson
- P Twnshp Officer Perry Anderson
- P Twnshp Officer Marcia Asche
- P Twnshp Officer Ray Bartholomay
- P Twnshp Officer Mark Bartle
- P Twnshp Officer Leroy Berg, Jr
- P Twnshp Officer Alfred Biggs
- P Twnshp Officer Richard Birklid
- P Twnshp Officer Ralph Bladow
- P Twnshp Officer Jim Bosse
- P Twnshp Officer Leslie Brandvold
- P Twnshp Officer Renae Branson
- P Twnshp Officer David Breuer
- P Twnshp Officer Beverly Brezicka
- P Twnshp Officer Elmer Buckhaus
- P Twnshp Officer Glora Claeys
- P Twnshp Officer Mark Fahsholz
- P Twnshp Officer Russell Falk
- P Twnshp Officer Mark Gauslow
- P Twnshp Officer Tom Geffre

P Twnshp Officer Audrey Gilles
P Twnshp Officer Doris Gregor
P Twnshp Officer Harry Hakanson
P Twnshp Officer Lynn Hansen
P Twnshp Officer Cindy Hanson
P Twnshp Officer Sandra Hanson
P Twnshp Officer Barbara Hayen
P Twnshp Officer Don Heitkamp
P Twnshp Officer Vernon Heitkamp
P Twnshp Officer Ken Heley
P Twnshp Officer Wayne Heley
P Twnshp Officer Gladys Humphrey
P Twnshp Officer Clarence Ihme
P Twnshp Officer Norma Jensen
P Twnshp Officer Dale Johnson
P Twnshp Officer Kenneth Johnson
P Twnshp Officer Thomas Kaczynski
P Twnshp Officer Myron Keller
P Twnshp Officer Doran Kersting
P Twnshp Officer Marian Klaman
P Twnshp Officer David Larson
P Twnshp Officer John Larson
P Twnshp Officer Ted Lee
P Twnshp Officer Hermann Lentz
P Twnshp Officer Ronald Lenzen
P Twnshp Officer James Lingen
P Twnshp Officer Russell Martinson
P Twnshp Officer Robert McDaniel
P Twnshp Officer Joyce McDougall
P Twnshp Officer Wayne Meslow
P Twnshp Officer Mike Moellenkamp
P Twnshp Officer James Moffet
P Twnshp Officer Bonita Nelson
P Twnshp Officer Randy Pearson
P Twnshp Officer Bruce Peterson
P Twnshp Officer Jeff Peterson
P Twnshp Officer Wesley Robertsdahl
P Twnshp Officer Karla Schimelfenig
P Twnshp Officer Joan Schlecht
P Twnshp Officer Shera Schneider
P Twnshp Officer Karen Schultz
P Twnshp Officer Michael Schutt
P Twnshp Officer Thomas Smith
P Twnshp Officer Joann Solberg
P Twnshp Officer Terry Spelhaug
P Twnshp Officer Bruce Stein
P Twnshp Officer Janice Swanson
P Twnshp Officer Joseph Thane
P Twnshp Officer Donald Thiel
P Twnshp Officer Donald Vosburg
P Twnshp Officer Josephine Voss
P Twnshp Officer Beverly Walstead
P Twnshp Officer Allen Weber
P Twnshp Officer Connie White
P Twnshp Officer Anita Woodbury
P Twnshp Officer Renee Zimbelman
P Western Governors Association
P Wild Rice SCD

Organizations

- 4 Corners Wildlife Club
- Agassiz Env. Ed Committee
- Alice Wildlife Inc.
- American Birding Association
- Barnes Co Wildlife Federation
- Bluestem Co.
- Board Grazing Committee
- CARE - Washington, D.C.
- Cass Co Wildlife Club
- Cogswell Gun Club
- Crookston Gun Club
- Cure
- Dakota Resource Council
- Dakota Wildlife Trust
- Defenders of Wildlife
- Delta Waterfowl
- Dickey Co Wildlife Federation
- Ducks Unlimited
- Environmental Defense Fund
- Fargo Area Sportsmen
- Ft Ransom Sportsmen Club
- Grand Forks Co Wildlife Fed
- International Coalition
- Izaak Walton League
- Kaste, Inc
- Keep ND Clean, Inc
- Kindred Wildlife Club
- L.A.N.D.
- Lac Qui Parle Prairie Preserve.
- Lake Region Wildlife Club
- Lewis and Clark Wildlife Club
- Ludden Sportsmen Club
- Mark Sahli
- Minn-kota Sportsmen Club
- Minnesota Deer Hunters Assoc
- MN Wildlife Federation
- MN Waterfowl Association
- MN Bow Hunters, Inc.
- MN Conservation Federation
- MN State Archery Assoc
- North American Prairies Co.
- National Audubon Society, Washington, D.C. and Fargo, ND
- National Wildlife Refuge Assoc., Colorado Springs, CO
- Native American Fish and Wildlife Society
- Nature Conservancy, MN and Washington, D.C.
- North Dakota Farm Bureau, Forman, ND
- ND Wildlife Federation
- ND Water Education Foundation
- ND Birding Association
- ND Chapter of The Wildlife Society
- ND Natural Science Society
- ND Soil and Water Conservation Society
- ND Stockmen's Association
- Nobles Co Envirn. Service
- Pheasants Forever, Ransom and Sargent Counties, and MN Chapter
- Phillips Petroleum Company
- Prairie Woods Elc
- Prairie Restorations
- Prairie Visions
- Prairie Wetlands Resource Center
- Red River Area Sportsmen
- Red River Valley Potato Growers Association
- Richland Wildlife Club
- Rutland Sportsmen Club

- Safari Club International
- Sierra Club, Fargo, ND and Washington D.C.
- Sisseton-Wahpeton Sioux Tribe
- Tewaukon Rod and Gun Club
- The Conservation Fund
- The International Coalition
- The Nature Conservancy, Bismarck, ND and Minnesota
- The Prairie Is My Garden
- Trumpeter Swan Society
- Trust For Public Land
- TWS - Central Mountain and Plains Society
- Wetlands Trust
- Wilderness Society
- Wildlife Forever
- Wildlife Forever
- Wildlife Management Institute
- Wildlife of America

Newspapers, Radio, TV

- Bird Dog News
- Daily News
- Detroit Lakes Tribune
- Enderlin Independent
- Fargo Forum
- Fergus Falls Daily Journal
- Fertile Journal
- Flickertails
- Gun Dog News
- Hawley Herald
- KBMW Radio
- KCCM MN Public Radio
- KDDR Radio
- KDSU Radio
- KFGO Radio
- KFNW Radio
- KOVC Radio
- KQDJ Radio
- KQLX Radio
- KQWB Radio
- KSJB Radio
- KTHI-TV
- KXJB-TV
- Lake Park Journal
- MN Ornithologist's Newsletter
- Morris Sun and Tribune
- Northland Outdoors
- Oakes Times
- Outdoor News
- Ransom County Gazette
- Richland County News
- Sportsman's News
- St Paul Pioneer Press
- Star Tribune
- The Teller
- Tony Dean Outdoors
- WDAY Radio
- WDAY-TV

Schools/ Universities

- Enderlin Public School
- Fairmount Public School
- Hankinson Public School
- Institute for Policy Research
- Kindred Public School
- Lidgerwood Public School
- Lisbon Public School
- Milnor Public School
- Minot State University
- North Sargent Public School
- North Dakota State University
- Sargent Central School
- Sheldon Public School
- South Dakota State University
- Southwest State University
- St John's School
- University of Minnesota
- University of North Dakota
- Wahpeton High School
- West Fargo Middle School
- Wyndmere Public School
- Zimmerman Grade School

Individuals

Richard Anderson
Elvoy Askerooth
Mark Askerooth
Bruce Atterberg
Roland Barvels
Wayne Beyer
Richard Biewer
George Bishoff
Karen Blilie
David Breker
Delores Breker
Anna Busta
Kent Carpenter
Brendan Ciesynski
Lysle Coleman
Don Dathe
James Diekman
Roger Dienert
Greg Donaldson
Steven Dunn
Lee Dusek
Terry Dusek
Michael Dwyer
Patrick Freeberg
Phillip Freeman
Louie Gaukler
Coletta German
Tawny Gilles
Randy Gjestuang
Janet Green
Randall and Collin Greenley
Jerry Haahr
Dan Hare
Brittany Hasbargen
Charles Haus
Warren Henderson
Dale Henry
Betty Hewitt
Geddy Hicks
Andy Hoflen
Quentin Hoistad
Ray Holcomb
Alexis Holtz
Dan Jacobson
Mark Jensen
Paul Kadoun
Ron Lenzen
Paula Lewis
Mike Lindsey
William Manikowski
Jim Marquette
Wayne Mattson
Clayton McLaen
Dennis McLaen
Milton McLaen
Scott Mcleod
Darin Mille
Bill Mitchell
Norm Moody
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Appendix O: Glossary

Academia: pertaining to colleges or universities.

Accessible: areas and activities allowing the physical access of areas to people of different abilities especially those with physical impairments.

Adaptive Resource Management (ARM): refers to a process in which decisions are implemented within a framework of scientifically driven experiments to test predictions and assumptions inherent in the management plan. Analysis of results help managers determine whether current management should continue as is or whether is should be modified to achieve desired conditions.

Advocacy: the act or process of supporting a cause or proposal; to actively support.

Amphibians: a class of cold-blooded vertebrates including frogs, toads or salamanders.

Anadromous: fish which swim up rivers from the sea at certain seasons for breeding (i.e., salmon).

Avian Cholera: is a contagious disease resulting from infection by the bacterium *Pasteurella multocida* that affects migratory birds. High concentration of the bacteria con be found for several weeks in waters where birds die from the disease. The bacteria can be transmitted through ingestion by birds and other animals scavenging off of diseased carcasses, direct contact between birds, and by air borne particulate. (Field Manual of Wildlife Diseases, 1999-001).

Baseline: a set of critical observations or data used for comparison or a control.

Big Game: large animals sought for hunting or fishing for sport including species such as white-tailed deer, antelope, mule deer, and elk.

Biological Control: reduction in numbers or elimination of unwanted species by the introduction of natural predators, parasites or diseases.

Biomass: the total amount of living material, plants and/or animals, above and below the ground in a particular habitat or area.

Biotic: pertaining to life or living organisms; caused or produced by or comprising living organisms.

Botulism: (Avian botulism) is a often fatal disease of birds that results when they ingest toxin produced by the bacterium, *Clostridium botulinum*. The bacteria persists in spores in wetland soil and are resistant to heating and drying and can remain viable for many years. Botulism outbreaks occur during the summer and fall when air temperatures are high and decaying vegetation is present. These conditions enable the spores to germinate. The cycle for botulism starts with birds dying, maggots begin feeding on carcass, maggots with the toxic bacteria are eaten by other birds, those birds die and the cycle continues. (Field Manual of Wildlife Diseases, 1999-001).

Breeding Bird Survey (BBS): a cooperative program of the U.S. Fish and Wildlife Service and the Canadian Wildlife Service for monitoring population changes in North American breeding birds by using point counts along roads (Koford et al. 1994).

Bureau of Reclamation: a Federal government water management agency whose mission is to assist in meeting the increasing water demands of the west while protecting the environment and the public's investment in these structures. Responsible in the District for carrying out the Garrison Diversion Unit Reformulation Act of 1986 and implementing the wetland wildlife mitigation in the Kraft Slough area.

Calcareous: refers to soils with moderate to large amounts of calcium, usually calcium carbonate.

Categorical Exclusion (CE, CX, CATEX, CATX): a category of actions that do not individually or cumulatively have a significant effect of the human environment and have been found to have no such effect in procedures adopted by a Federal agency pursuant to the National Environmental Policy Act (40 CFR 1508.4)

Central Migratory Bird Flyway: migrating birds follow specific pathways in their travel from their wintering grounds to their nesting grounds. Several major pathways are evidenced by their travels. The Central flyway occurs along the great plains states.

Climax: a community that has reached a steady state under a particular set of environmental conditions; a relatively stable plant community; the final stage in ecological succession.

Colony: the nests or breeding place of a group of birds (such as herons) occupying a limited area.

Compatibility: a wildlife-dependent recreational use or any other use of a refuge that, in the sound professional judgement of the Refuge Manager, will not materially interfere with or detract from the fulfillment of the Mission of the System or the purposes of the refuge (Draft Service Manual 603 FW 3.6). A compatibility determination supports the selection of compatible uses and identified stipulations of limits necessary to ensure compatibility.

Comprehensive Conservation Plan (CCP): A document that describes the desired future conditions of the refuge; and provides long-range (15-year) guidance and management direction for the refuge manager to accomplish the purposes of the refuge, contribute to the mission of the System, and to meet other relevant mandates (Draft Service Manual 602 FW 1.5)

Cool Season Grasses: begin growth earlier in the season and often become dormant in the summer. These grasses will germinate at lower temperatures (65 to 75 ^{0}F). Examples of cool season grasses at Refuge are green needle grass, porcupine grass, intermediate wheatgrass and tall wheatgrass, smooth brome, quackgrass, and Kentucky bluegrass..

Cultural Resources: the remains of sites, structures, or objects used by people in the past.

Cultural Resource Inventory: A professionally conducted study designed to locate and evaluate evidence of cultural resources present within a defined area. Inventories may involve various levels, including background literature search (Class I), sample inventory of project site distribution and density over a larger area (Class II), or comprehensive field examination to identify all exposed physical manifestation of cultural resources (Class III).

Data Loggers: equipment that when installed in water impoundments will be able to read the water level remotely at anytime of the year and save the data for managers to assist in carrying out the goals of the water management plan.

Defoliation: the removing of vegetative parts, to strip of leaves from animals and fire.

Dense nesting cover (DNC): a composition of grasses and forbs that allow for a dense stand of vegetation which protects nesting birds from the view of predators. Usually consists of one to two species of wheatgrass, alfalfa, and sweet clover.

Depredation: Damage inflicted upon agricultural crops or ornamental plants by wildlife.

Drawdown: the act of manipulating water levels in an impoundment to allow for the natural drying out cycle of a wetland.

Drift Prairie: an area of small, gently rolling hills, dotted with thousands of small wetlands with densities of up to 100 wetlands per square mile. It was formed by the melting and retreat of the Wisconsin glacier about 10,000 years ago.

Drift Prairie Wetland Enhancement Project: a project within the Prairie Pothole Joint Venture that includes 14 Counties in southeastern North Dakota (Barnes, Cass, Eddy, Griggs, Ransom, Richland, Sargent, Steele, Trail, and portions of Dickey, Foster, LaMoure, Stutsman, and Wells counties). Various governmental and non-governmental agencies are working together to protect, enhance, and restore wetlands and uplands. Funded by the North American Wetlands Conservation Act.

Easement Refuges: areas where easements for flowage and refuge purposes and filing of water rights were purchased. A perpetual agreement with the landowner and any successive landowners that provided the exclusive and perpetual right and easement to flood with water, and to maintain and operate an artificial lake, and/or to raise the water level of a natural lake or stream, by means of dams, dikes, fills ditches, spillways and other structures for water conservation, drought relief, and for migratory bird and wildlife conservation purposes, and/ or upon said land and waters to operate and maintain a wildlife conservation demonstration unit and a closed refuge and reservation for migratory birds and other wildlife.

Ecological Diversity: The variety of life and its processes, including the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur (USFWS Manual 052 FW 1.12B).

Ecosystem: a dynamic and interrelating complex of plant and animal communities and their associated non-living environment; the totality of components of all kinds that make up a particular environment (Koford et al. 1994).

Emergent: a plant rooted in shallow water and having most of the vegetative growth above water. Examples are cattail and hardstem bulrush.

Endangered Species (Federal): A plant of animal species listed under the Endangered Species Act that is in danger of extinction throughout all or a significant portion of its range.

Endangered Species (State): A plant or animal species in danger of becoming extinct of extirpated in North Dakota within the near future if factors contributing to its decline continue. Populations of these species are at critically low levels or their habitats have been degraded or depleted to a significant degree.

Environmental Assessment (EA): a concise public document, prepared in compliance with the National Environmental Policy Act, that briefly discusses the purpose and need for an action, alternative to such action, and provides sufficient evidence and analysis of impacts to determine whether to prepare an environmental impact statement or finding of no significant impact (40 CFR 1508.9).

Extinction: the complete disappearance of a species from the earth; no longer existing. (Koford et al. 1994).

Extirpated: the elimination of a species from an island, local area or region (Koford et al. 1994); to destroy completely; wipe out.

Fauna: all the vertebrate and invertebrate animals of an area; the animals characteristic of a region, period or special environment.

Fen: A fen, also called an alkaline bog, is a wetland primarily composed of organic soil material (peat or muck) that take thousands of years to develop.

Feral: having escaped from domestication and become wild.

Flora: all the plant species of an area; plant or bacterial life characteristic of a region, period or special environment.

Floristic: referring to studies of the species composition of plant associations (Koford, et al. 1994); of or relating to flowers.

Forb: a broad-leaved, herbaceous plant; a seed producing annual, biennial or perennial plant that does not develop persistent woody tissue but dies down at the end of a growing season.

Fulfilling the Promises: a document that has the visions and recommendations on leadership in serving wildlife, habitat and people to fulfill the promise of America's National Wildlife Refuge System first made by President Theodore Roosevelt in 1903 to preserve wildlife and habitat for its own sake and the benefit of the American People (Fulfilling the Promise: The National Wildlife Refuge System, July 1999).

Geographic Information System (GIS): a computer system capable of storing and manipulating spatial data; a set of computer hardware and software for analyzing and displaying spatially referenced features (i.e., points, lines and polygons) with nongeographic attributes such as species and age (Koford et al. 1994).

Goal: descriptive, open-ended and often broad statements of desired future conditions that convey a purpose but do not define measurable units (Draft Service Manual 620 FW 1.5).

Global Positioning System (GPS): a system which by using satellite telemetry can pinpoint exact locations of places on the ground.

Grassland Easements: a legal perpetual agreement between willing landowners and the Service to permanently keep land in grass for wildlife. Land covered by a grassland easement may not be cultivated. Mowing, haying and grass seed harvesting must be delayed until after July 15 of each year. Grazing is not restricted.

Habitat: the place or environment where a plant or animal naturally or normally lives and grows.

Habitat fragmentation: the alteration of a large habitat to create isolated patches of the original habitat that are interspersed with a variety of other habitat types (Koford, et al. 1994); the process of reducing the size and connectivity of habitat patches, making movement of individuals or genetic information between parcels difficult or impossible.

Habitat and Population Evaluation Team (HAPET): a team of Service scientists who with GIS and research data devised the Thunderstorm Map which indicates the areas preferred by mating and nesting ducks in the Prairie Pothole Region. This map is used to focus management efforts, restoration efforts and protection efforts in the area.

Herbivory: an animal feeding on plants

Holistically: ecology views humans and the environment as a single system; relating to or concerned with wholes or with complete systems rather than with the analysis of, treatment of, or dissection into parts.

Impoundment: A body of water created by collection and confinement within a series of levees or dikes thus creating separate management units although not always independent of one another.

Incompatible: any use (recreational or nonrecreational) of a refuge that, in the sound professional judgement of the Director of the Service, **will** materially interfere with or detract from the fulfillment of the Mission of the System or the purposes of the refuge. Incompatible uses are not allowed to occur on Service areas.

Indicator species: A species of plant or animal that is assumed to be sensitive to habitat changes and represents the needs of a larger group of species.

Interseeding:: a technique of planting in which seed is sowed directly into an existing turf. It protects the valuable soil resource and also promotes less competition from weed species that would invade in a plow seeding operation.

Introduced species: a species present in an area due to deliberate release by humans (including re-introductions, transplants, and restocked species) or due to accidental release through escape or indirect assistance (Koford et al. 1994).

Inviolate Sanctuary: A place of refuge or protection where animals and birds may not be hunted.

Lacustrine: relating to, formed in, living in, or growing in lakes.

Lek: an assembly area where animals (such as the sharptail grouse) carry on breeding and courtship behavior.

Mayfield method: a method used to calculate the rate of nesting success based on the number of days that a nest was under observation (i.e., nest days of “exposure”); developed by Mayfield in 1975(Koford et al. 1994).

Maintenance Management System (MMS): a national database which contains the unfunded maintenance needs of each refuge. Projects included are those required to maintain existing equipment, buildings and to correct safety deficiencies for the implementation of approved plans, and meet goals, objectives, and legal mandates.

Mechanical Control: reduction in numbers or elimination of unwanted species through the use of mechanical equipment such as mowers, clippers etc.

Mesic: characterized by, relating to or requiring a moderate amount of moisture; having a moderate rainfall.

Migration: regular, extensive, seasonal movements of birds between their breeding regions and their "wintering" regions (Koford et al. 1994); to pass usually periodically from one region or climate to another for feeding or breeding.

Migratory birds: birds which follow a seasonal movement from their breeding grounds to their "wintering" grounds. Waterfowl, shorebirds, raptors, and song birds are all migratory birds.

Migratory Bird Hunting and Conservation Stamp Act: Authorized the requirement of an annual stamp for the hunting of waterfowl whose proceeds go towards the purchase of habitat for waterfowl and other wildlife. Duck stamps are also purchased for entry into some refuges, by conservationist and for stamp collections.

Migratory Bird Treaty Act: Designates the protection of migratory birds as a Federal responsibility. This Act enables the setting of seasons, and other regulations including the closing of areas, Federal or nonfederal, to the hunting of migratory birds.

Mississippi Migratory Bird Flyway: migrating birds follow specific pathways in their travel from their wintering grounds to their nesting grounds. The Mississippi flyway where birds follow the general path of the Mississippi River.

Mitigation: measures designed to counteract environmental impacts or to make impacts less severe.

Mixed-grass Prairie: a transition zone between the tallgrass prairie and the shortgrass prairie dominated by grasses of medium height that are approximately two to four feet tall. Soils are not as rich as the tallgrass prairie and moisture levels are less. This causes changes in the vegetative composition and plants characteristic of this area include little bluestem, Junegrass and needlegrasses.

Monitoring: the process of collection information to track changes of selected parameters over time.

National Environmental Policy Act of 1969 (NEPA): Requires all agencies, including the Service, to examine the environmental impacts of their actions, incorporate environmental information, and use public participation in the planning and implementation of all actions, Federal agencies must integrate NEPA with other planning requirements, and prepare appropriate NEPA documents to facilitate better environmental decision making (from 40 CFR 1500).

National Wildlife Refuge (NWR): a designated area of land, water, or an interest in land or water within the National Wildlife Refuge System.

National Wildlife Refuge System (System): Various categories of areas administered by the Secretary of the Interior for the conservation of fish and wildlife, including species threatened with extinction, all lands, waters and interests therein administered by the Secretary as wildlife refuges, areas for the protections and conservation of fish and wildlife that are threatened with extinction, wildlife ranges, game ranges, wildlife management areas, or waterfowl production areas.

National Wildlife Refuge System Improvement Act of 1997: Sets the mission and administrative policy for all refuges in the National Wildlife Refuge System. Clearly defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation); establishes a formal process for determining compatibility; establishes the responsibilities of the Secretary of the Interior for managing and protecting the System; and requires a Comprehensive Conservation Plan for each refuge by the year 2012. This Act amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966.

Native Species: species which are part of the original plant and animals of an area. In general, meaning from the same continent (Johnson and Larson, 1999).

Necrotic Enteritis: Necrotic enteritis has occurred on highly alkaline lakes and wetlands where sodium, magnesium, and sulfate levels have been relatively high. The bacteria that causes necrotic enteritis is normally found in nonlethal amounts in intestines of healthy animals. It is believed that abrupt dietary changes, stress, infections from other diseases, and bacterial imbalances could be the reason this bacteria is suddenly produced at higher rate causing death. In southern Canada, geese can die soon after their arrival following their diet change from grass in northern regions to grain. These birds are also using alkaline bodies of water which seems to upset the normal bacterial balance.

Neotropical Migrant: a bird species that breeds north of the United States and Mexican border and winters primarily south of this border.

ND Natural Heritage Program: A State program administered by the ND Parks and Recreation Department. The Natural Heritage Program will protect and preserve elements of North Dakota's natural heritage on private and public lands, for the benefit of present and future generations before such areas are destroyed.

North American Waterfowl Management Plan (NAWMP): the North American Waterfowl Management Plan, signed in 1986, recognizes that the recovery and perpetuation of waterfowl populations depends on restoring wetlands and associated ecosystems throughout the United States and Canada. It established cooperative international efforts and Joint Ventures composed of individuals; corporations; conservation organizations; and local State, provincial, and Federal agencies drawn together by common conservation objectives. Tewaukon Complex falls into the Prairie Pothole Joint Venture.

North American Wetland Conservation Act (NAWCA): an act to conserve North American wetland ecosystems and waterfowl and the other migratory birds and fish and wildlife that depend upon such habitats. The act established a council to review project proposals and provided funding for the projects. This act was passed to further implement the North American Waterfowl Management Plan and included Canada, Mexico, and the United States.

Objective: An objective is a concise target statement of what will be achieved, how much will be achieved, when and where it will be achieved, and who is responsible for the work. Objectives are derived from goals and provide the basis for determining management strategies. (Draft Service Manual 602 FW 1.5).

Parasitism: an intimate association between species of two or more kinds, one in which a parasite obtains benefits from a host which it usually injures.

Partners in Flight: a Western Hemisphere program designed to conserve neotropical migratory birds and officially endorsed by numerous Federal and State agencies and nongovernment organizations; also known as the Neotropical Migratory Bird Conservation Program (Koford et al. 1994).

Patch: a part or area distinct from that around it; area distinguished from their surroundings by environmental conditions.

Perennial: plants which live for three years or more (Johnson and Larson 1999).

Prairie Pothole Region: an area rich in natural depressions that capture precious water in a relatively dry prairie landscape which provides the most productive breeding habitat in North America for waterfowl and many other birds. Covers portions of Iowa, Minnesota, Montana, North Dakota, South Dakota, Alberta, Saskatchewan, and Manitoba.

Predation: a mode of life in which food is primarily obtained by the killing or consuming of animals.

Preferred Alternative: this is the alternative determined to best achieve the Refuge purpose, vision, and goals; contributes to the Refuge System mission, addresses the significant issues; and is consistent with principles of sound fish and wildlife management.

Prescribed Burning: Controlled application of fire to the landscape that allows the fire to be confined to a predetermined area while producing the intensity of heat and rate of spread required to achieve planned management objectives.

Priority Public Uses: six uses authorized by the Improvement Act to have priority and are found to be compatible with the refuge purposes. This includes hunting, fishing, wildlife observation and photography, environmental education, and interpretation

Raptor: a carnivorous bird (as a hawk, falcon, or vulture) that feeds wholly or chiefly on meat taken by hunting or on carrion (dead carcases).

Refuge Operating Needs System (RONS): a national database which contains the unfunded operational needs of each refuge. Projects included are those required to implement approved plans, and meet goals, objectives, and legal mandates.

Resident species: a species inhabiting a given locality throughout the year, nonmigratory species. Examples include white-tailed deer, sharp-tailed grouse, muskrat, raccoon, mink, and fox.

Riffle: a shallow, extending across the bed of a river; also a rapid; to form, flow over, or move in riffles.

Riparian: refers to areas adjacent to water; influenced by water associated with streams or rivers.

Rough Fish: a fish that is neither a sport fish nor an important food for sport fishes (i.e., carp).

Scoping: the process of obtaining information from the public for input into the planning process.

Sediments: material deposited by water, wind, or glaciers.

Shelterbelts: single to multiple rows of trees and/or shrubs planted around cropland or buildings to block or slow down the wind.

Shorebird: any of a suborder (Charadrii) of birds (as a plover or snipe) that frequent the seashore or mud flat areas.

Spatial: relating to, occupying, or having the character of space.

Special Use Permit: a permit for special authorization from the refuge manager required for any refuge service, facility, privilege, or product of the soil provided at refuge expense and not usually available to the general public through authorizations in Title 50 CFR or other public regulations (Refuge Manual 5 RM 17.6)

Species of Concern (Federal): species which are (1) documented or apparent population declines, (2) small or restricted populations, or (3) dependence on restricted or vulnerable habitats.

Species Richness: the absolute number of species in an assemblage or community; the number of species in a given area (Koford et al. 1994).

Stakeholder: a person who has an interest in activities of the Complex.

Strategy: a specific action, tool or technique or combination of actions, tools and techniques used to meet unit objectives (Draft Service Manual 602 FW 1.5).

Tallgrass Prairie: a habitat zone dominated by grasses of tall height that are approximately four to eight feet tall. Soils are rich and precipitation is the more than in any other prairie area. The vegetative composition and plants characteristic of this area include big bluestem, Indian grass, prairie cordgrass, switchgrass, and needlegrasses.

Tewaukon National Wildlife Refuge Complex (Complex): a management unit of the Service that is located in the Southeast corner of North Dakota (see Map 1). The Complex encompasses the Refuge including the Sprague Lake Unit, the Storm Lake Easement Refuge, the Wild Rice Easement Refuge and the Tewaukon Wetland Management District (WMD).

Threatened Species (Federal): Species listed under the Endangered Species Act that are likely to become endangered within the foreseeable future throughout all or a significant portion of their range.

Threatened Species (State): a plant or animal species likely to become endangered in North Dakota within the near future if factors contributing to population decline or habitat degradation or loss continue.

Thunderstorm Map: a map which depicts areas (wetland complexes) that are preferred by mating and nesting ducks in the Prairie Pothole Region. This map is used to focus management efforts, restoration efforts, and protection efforts in the area.

Till: unstratified glacial drift consisting of clay, sand, gravel, and boulders intermingled.

Turbidity: the cloudy condition of a water body caused by suspended silt, mud, pollutants, or algae.

U.S. Fish and Wildlife Service (Service, FWS): the principal Federal agency responsible for conserving, protecting, and enhancing fish and wildlife and their habitats for the continuing benefit of the American people. The Service manages the 93-million-acre National Wildlife Refuge System comprised of more than 500 national wildlife refuges and thousands of waterfowl production areas. It also operates 65 national fish hatcheries and 78 ecological service field station, the agency enforces Federal wildlife laws, manages migratory bird populations restores national significant fisheries, conserves and restores wildlife habitat such as wetlands, administers the Endangered Species Act, and helps foreign governments with their conservation efforts. It also oversees the Federal Aid program which distributes of millions of dollars in excise taxes on fishing and hunting equipment to State wildlife agencies.

U.S. Geological Survey: a Federal government agency whose mission is to provide reliable scientific information to describe and understand the earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.

Visual Obscurity: a measurement of the density of a plant community; the height of vegetation that blocks the view of predators to a nest.

Wading Birds: birds that have long legs that enable them to wade in shallow water. Includes egrets, great blue herons, black crowned night heron, and bitterns.

Warm Season Grasses: begin growth later in the season (early June). These grasses require warmer soil temperatures to germinate and actively grow when temperatures range from approximately 85 to 95^0F. Examples of warm season grasses are switchgrass, big bluestem, Indian grass, little bluestem, and tall wheatgrass.

Waterfowl Production Areas (WPA): prairie wetlands with associated uplands managed to provide nesting areas for waterfowl and owned in fee title by the Service. These lands are purchased from willing sellers with funds from Duck Stamp sales. They are open to public hunting, fishing, and trapping according to State and Federal regulations.

Waterfowl: Includes ducks, geese, and swans.

Watershed: the region or area draining into a river, river system, or body of water.

Western Hemisphere Shorebird Reserve Network (WHSRN): consists of wildlife agencies, scientists, private conservation groups, and governments who endeavor to preserve and manage wetland habitat on a hemispheric scale to aid shorebird survival.

Wetland Easements: a perpetual agreement entered into by a landowner and the Service. The easement covers only the wetlands specified in the agreement. In return for a single lump sum payment the landowner agrees not to drain, burn, level, or fill wetlands covered by the easement.

Wetland Management District (WMD): an area covering several Counties that acquires (with Federal Duck Stamp funds), restores, and manages prairie wetland habitat critical to waterfowl and other wetland birds. The Tewaukon Management District covers the Counties of Ransom, Richland, and Sargent.