Wildrose Wetland Restoration Project

Platte River Whooping Crane Habitat Maintenance Trust, Inc.
2550 N. Diers Ave., Suite H
Grand Island, NE 68803

Final Report
July 2, 1996

U.S. Fish & Wildlife Service
Cost Share Agreement No. 14-48-0006-92-925
DCN: 64412-2-0363
Funding: 64412-1261-0000

Wildrose Wetland Restoration Project

Platte River Whooping Crane Maintenance Trust, Inc.
2550 N. Diers Ave, Suite H
Grand Island, NE 68803

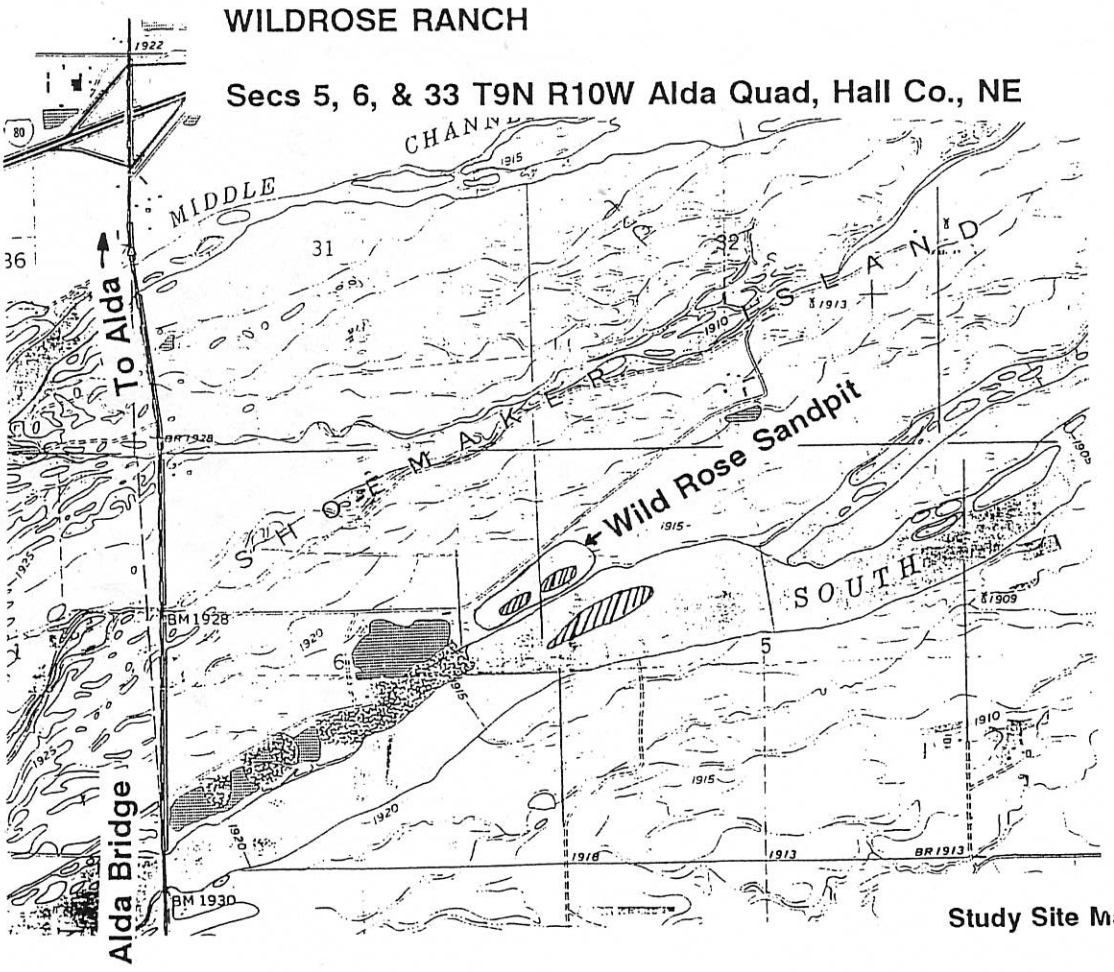
Introduction

The purpose of this project was to enhance the habitat around an abandoned sand and gravel operation on lands owned and managed by the Platte River Trust at the Wildrose Ranch. The site is located next to the middle channel of the Platte River, south of the I-80 Alda Interchange in sections 5 and 6, T9N R10W, Hall Co., Nebraska (see map Figure 1). During the first stages of the gravel extraction, the topsoil was removed from a wet meadow site near the river channel and stock-piled in a long berm at the edge of the meadow. This material remained in the berm for a period of 5 to 7 years during the period when mining of the gravel deposits was occurring. Approximately 40 acres of the wet meadow site was converted as a result of the gravel extraction to a combination of open-water marsh, a relatively deep lake (30 feet or more), and two large sand spoil piles. Topsoil from the stock-piled berm was redeposited along the lake margin in 1993 to enhance shallow water shoals and other habitats used by migratory birds and waterfowl. In addition, the sand spoil piles were also enhanced to provide nesting habitat for least terns and piping plovers.

Methods

The first step in the restoration was to dynamite the basin. This was necessary because the shoreline along the lake was unstable and unsafe for operating the heavy equipment needed to redeposit soil in the basin. Large cavities remained in the lake as a result of the dredging operation. When these cavities collapsed as a result of the dynamiting, several shoreline areas dropped into the basin. A number of large catfish were also killed.

The second step in the restoration was to begin returning fill to the basin along the lake margin. A contractor was hired to remove approximately 48,500 cubic yards of soil and subsoil from the stock-piled berm and to return it to the lake using a dozer and an earth scraper. The work was conducted under an Army Corps of Engineers Section 404 General Permit 88-02 (permit NE 2SB OXT 2 92-50673, Appendix A). A Hall County floodplain permit (Appendix B) was also issued. The contractor spent approximately 2 weeks on the earthwork, at a cost of approximately $15,000. The Trust also used its own H & H dredge to excavate areas immediately adjacent to the sand spoil piles to create two islands surrounded by a protective moat. These islands were also covered with clean sand to create an unvegetated site suitable for least tern and piping plover nesting habitat.



Study Site Maps - Page 2

Figure 1. Site location map of the Wildrose Ranch wetland restoration.

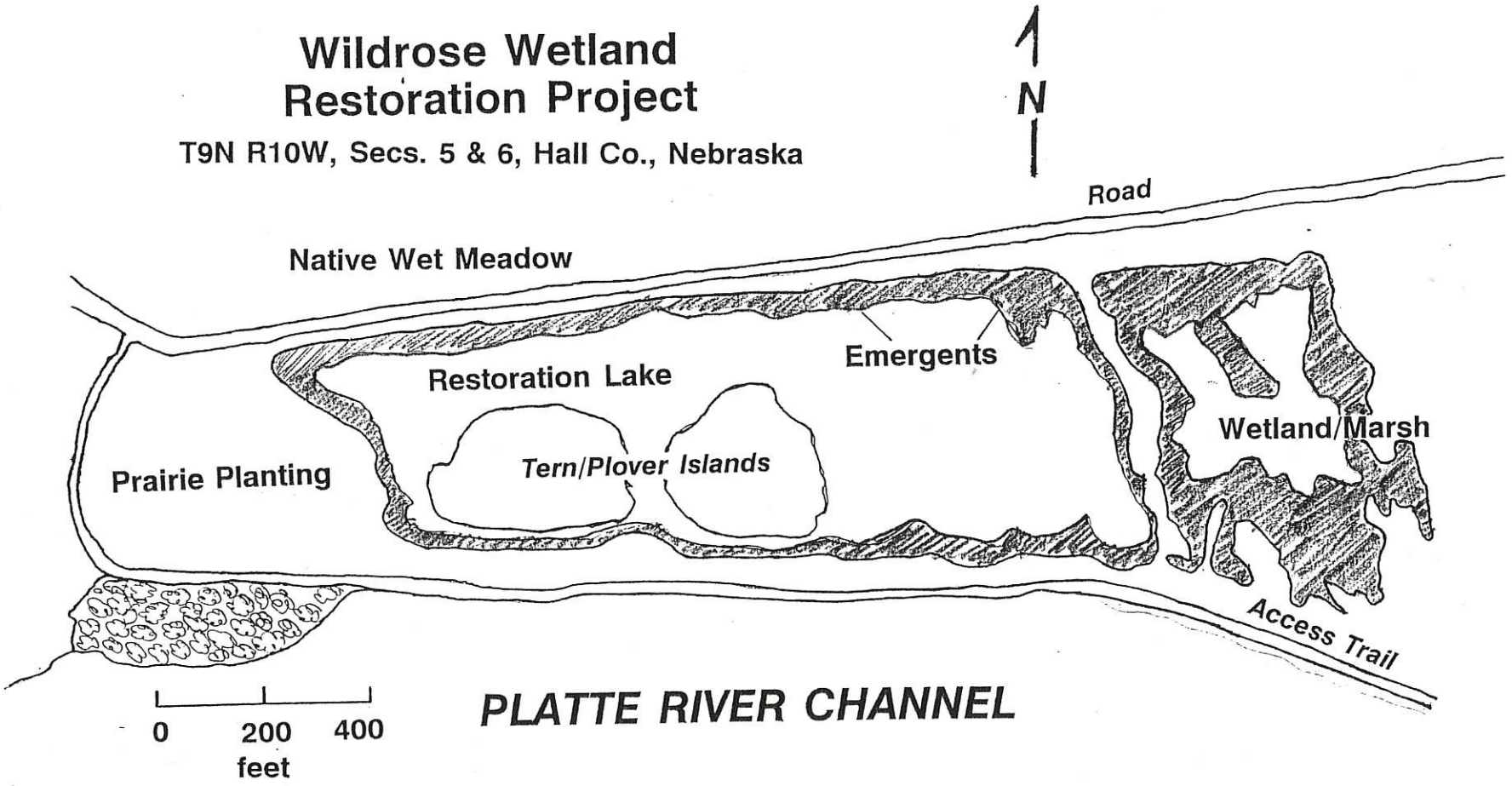


Figure 2. Detail wetland restoration plan. Shallows were developed along the lake margin by depositing spoil back into the basin. The tern and plover islands were enhanced by dredging a moat around them and depositing clean sand on the top. The adjacent upland was re-seeded with a native prairie mix of grasses and forbs.

Along the shoreline, where shallows were created, tubers of marsh emergents, including burreed (*Sparganium eurycarpum*), river bulrush (*Scirpus fluviatilis*), and soft-stem bulrush (*Scirpus validus*), were planted to encourage the growth of a diverse plant community that would occupy most of the shoreline, thereby discouraging dominance by cattail (*Typha x glauca*). In addition, a number of wetland species were seeded along the north and west edge of the basin, including burreed, soft-stem bulrush, blue vervain (*Verbena hastata*), water plaintain (*Alisma plantago-aquatica*), smartweeds (*Polygonum lapathifolium*, *P. hydropiperoides*, *P. persicaria*), rice cut-grass (*Leersia oryzoides*), red-osier dogwood (*Cornus stolonifera*), Torreyi's rush (*Juncus torreyi*), and cordgrass (*Spartina pectinata*). A few seeds of the less aggressive narrow-leaf cattail (*Typha angustifolia*) were also scattered along the margin. On the uplands around the lake, the remaining sand and gravel deposits were scraped and smoothed, and topped with a layer of topsoil. A mixture of native grasses (big bluestem, Indiangrass, switchgrass, little bluestem) and forbs (purple and white prairie clovers, bundleflower, goldenrods, asters, and others) was planted on the surrounding upland in the spring of 1994.

Vegetation development and bird use at the restoration site was monitored in both 1994 and 1995. Two wetland areas were compared in the analysis. Just to the east of the restoration area, a wetland was created as part of the initial development for additional gravel mining. This area had been allowed to re-vegetate naturally, without any seeding, and was used as a basis for comparison with the planned restoration site. A quantitative assessment of the 2 areas was conducted by estimating plant cover (vertical projection of the plants on the ground), in meter-square plots located along transects that extended from the lake margin towards its center. Open water areas were also included in the survey. Data from the individual plots were averaged to provide an overall estimate of cover (and open water) for the majority of species found at the 2 locations. Species composition and cover were compared to determine differences in biodiversity and successional development.

Bird use of the site was monitored by recording the presence of species from several viewing points along the roadway located to the north of the wetland. Surveys were conducted weekly using binoculars and spotting scopes. These data were then tallied by month in order to identify changes in bird use before (pre-1993) and after (post 1993) the restoration work. Birds using the area after the restoration may be over-emphasized in the counts, however, because a greater sampling effort was undertaken during that period. In any case, the bird census data documents species use during the 2 periods, and indicates the general shifts that have occurred as the habitat has changed.

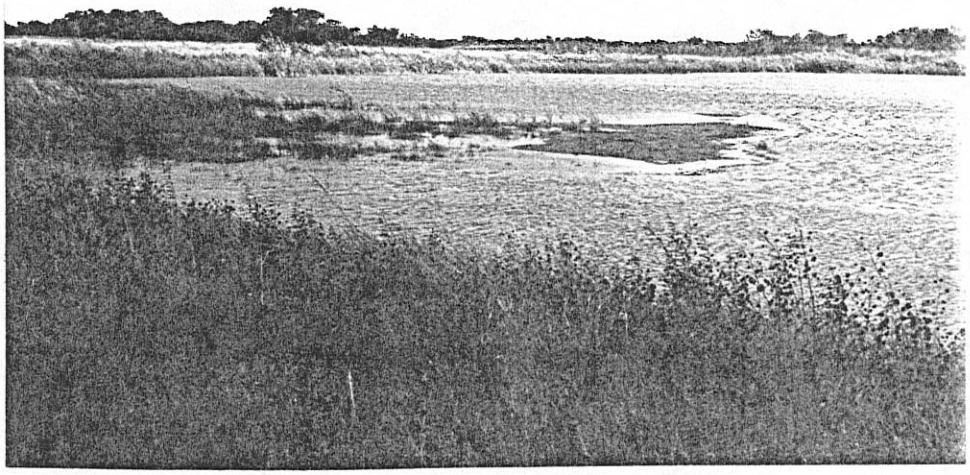


Figure 3. View of wetland emergents and mudflats along the north edge of the restoration site. Prairie species were planted on the high bank in the foreground. Bulrush and spikerush dominate the newly vegetated wetland edge (Photo September 1995).

Figure 4. View of the wetland edge and one of the tern and plover nesting island sites on the south edge of the restoration site. Emergents are beginning to form around the edge of the spoil pile, and invading the surface of the island (Photo September 1995).

Table 1. Wildrose wetland vegtation survey (September 1995). Values represent relative % cover of species in the eastern wetland complex and along the edge of the planned restoration.

SPECIES		East Wetland	Planned Wetland
3-square	*Scirpus pungens*	27.8	26.6
Cattail	*Typha x glauca*	19.1	2.9
Open Water		17.1	11.8
Spikerush	*Eleocharis macrostachya*	5.4	12.0
River Bulrush	*Scirpus fluviatilis*	4.5	3.4
Cottonwood	*Populus deltoides*	4.4	1.3
Panicled Muhly	*Muhlenbergia asperifolia*	2.4	--
Torrey's Rush	*Juncus torreyi*	2.1	--
Coyote Willow	*Salix interior*	2.0	3.5
Cordgrass	*Spartina pectinata*	2.0	5.3
Saltgrass	*Distichlis spicata*	--	5.2
Diamond Willow	*Salix rigida*	1.6	4.0
Water Sedge	*Carex aquatilis*	1.5	2.0
Softstem Bulrush	*Scirpus validus*	1.4	3.6
Little Spikerush	*Eleocharis acicularis*	1.3	2.0
Purple Loosestrife	*Lythrum salicaria*	1.2	--
Little-flower Aster	*Aster ericoides*	1.1	1.5
Burreed	*Sparganium eurycarpum*	--	1.5
Illinois Bundleflower	*Desmanthus illinoensis*	0.6	1.3
White Aster	*Aster simplex*	0.5	2.6
Goldenrod	*Solidago canadensis*	0.5	0.8
Water Smartweed	*Polygonum nutans*	--	0.8
American Bugleweed	*Lycopus americanum*	--	0.8
Water Plantain	*Alisma plantago-aquatica*	--	0.7
Giant Reed	*Phragmites australis*	--	0.4
Switchgrass	*Panicum virgatum*	0.4	2.0
Redtop	*Agrostis stolonifera*	0.3	--
Dogbane	*Apocynum sibiricum*	0.3	--
Meadow Loosestrife	*Lythrum alatum*	0.3	--
Smooth Brome	*Bromus inermis*	0.3	--
Ammania	*Ammania coccinea*	0.1	2.2
Swamp Milkweed	*Asclepias incarnata*	0.2	1.3
Frogfruit	*Phyla lanceolata*	0.2	0.1
Reed Canary Grass	*Phalaris arundinacea*	0.2	0.1
Witchgrass	*Panicum capillare*	0.2	--
Dudleyi's Rush	*Juncus dudleyi*	0.2	--
Western Ragweed	*Ambrosia psilostachya*	0.2	--
Barnyard Grass	*Echinochloa crus-galli*	0.2	--
Rough Sunflower	*Helianthus petiolaris*	0.2	--
Foxtail Barley	*Hordeum jubatum*	0.1	--
Western Wheat	*Agropyron smithii*	0.1	--
Rice Cut-grass	*Leersia oryzoides*	--	0.1
Blue Lobelia	*Lobelia siphilitica*	--	0.1
Beggars-tick	*Bidens cernua*	--	0.1
Totals		100.0 %	100.0 %

Results

Because lake levels at the site were relatively high in 1993, when the earth work was undertaken, it was difficult to push the fill material very far beyond the margin of the basin. High water levels in 1994 and 1995 also inhibited development of marsh emergents and other wetland species that were planted and seeded. In addition, several large precipitation events resulted in rather severe erosion along the western edge of the lake. Although this left an uneven margin on the adjacent upland, it did provide additional fill for the basin and contributed to the development of shallow-water areas near the lake margin.

The emergent and wetland plants that developed along the lake margin and associated mudflats are shown in Figures 3 and 4. Figure 3 shows the northern edge of the wetland and dominance by cattail, softstem bulrush, and spikerush (*Eleocharis macrostachya*). Illinois bundleflower (*Desmanthus illinoensis*) and switchgrass (*Panicum virgatum*) are visible along the upland edge in the foreground. In Figure 4, a mixture of weedy species and wetland species is shown along the south shoreline. In the background, one of the tern and plover nest islands is shown. A rim of wetland species is developing along the island margin, however, weedy species have also begun to colonize the open sand area on the island, reducing its value for nesting.

Vegetation cover data are presented in Table 1 for the two wetland sites. Because water levels during the growing season were high in both 1994 and 1995, vegetation development at the reseeded site occurred rather slowly, and was confined to the upper portion of the shallows. Hopefully, as water levels recede, vegetation will develop on lower sites located further towards the lake center. In many respects vegetation on the reseeded site resembled that on the naturally re-vegetated site. Three-square and spikerush were the dominants in both locations. However, cattail was less abundant at the re-seeded site, as we had hoped. Big river bulrush, cordgrass (*Spartina pectinata*), soft-stem bulrush, burreed, water plantain (*Alisma plantago-aquatica*), ammania (*Ammania coccinea*), smartweed (*Polygonum* spp.), and swamp milkweed (*Asclepias incarnata*), were more abundant in the re-seeded site.

A number of species in the planted seed mix, including dogbane (*Apocynum sibiricum*), smartweeds (*Polygonum nutans*), bugleweed (*Lycopus americanum*), giant reed (*Phragmites australis*), rice cut-grass (*Leersia oryzoides*), blue lobelia (*Lobelia siphilitica*), and beggars-ticks (*Bidens cernua*) had developed on the restoration site but they were not present in the east wetland. The presence of these species, a diversity of emergent species, and a relatively low abundance of cattail, suggests that a highly diverse wetland community should develop along the lake margin. The presence of extensive willow (*Salix exigua*, *S. rigida*) and cottonwood (*Populus deltoides*) seedlings along the margins, however, indicates that some tree and shrub control and removal will probably be necessary to prevent these species from dominating the edge of the lake.

Table 2. Wildrose wetland restoration bird survey. B = bird use before restoration (June 1990 - August 1993); A = bird use after restoration (September 1993 - September 1995).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Common Loon							B					
Pied-billed Grebe				A	A	A		A	A	A		
Horned Grebe			BA	A	A							
Eared Grebe			A	BA	A							
American White Pelican				A	A				B			
Double-crested Cormorant				A	A				A	A		
American Bittern					A							
Great Blue Heron				A	A	A	A	A	A	A		
Great Egret				A	A	A		BA	A			
Little Blue Heron								A				
Cattle Egret					A	A						
Black-crowned Night-Heron				BA	A							
White-faced Ibis				B	A							
Greater White-fronted Goose		A	A			A						
Snow Goose		A	A									
Ross' Goose				A								
Canada Goose		A	A	A	A	A	A	A	A	A		
Wood Duck						A	A					
Green-winged Teal		A	A	A	A	A		A	A	A	A	
Mallard		A	A	A	A	A	A	A	A	A	A	
Northern Pintail		A	A	A	A			A		A	A	
Blue-winged Teal			A	A	A	A		A		A		
Cinnamon Teal			A									
Northern Shoveler			A	A	A	A		A				
Gadwall			A	A	A					A		
American Wigeon			A	A	A					A	A	
Canvasback			BA	BA	A					A	BA	
Redhead			BA		A	B					A	
Ring-necked Duck			A	A	A				A	A		
Greater Scaup				A								
Lesser Scaup			A	A	A					A		
Common Goldeneye			A	A						A		
Bufflehead		BA	A	A	A					A	A	
Hooded Merganser			BA		A	BA	A				A	
Common Merganser			A	A	A							
Red-breasted Merganser		B	A	A	A							
Ruddy Duck			BA	A	A	A				A		
Osprey				A				BA				
Bald Eagle		A	A									
Northern Harrier			A	A	A			A				
Red-tailed Hawk				A	A							
Peregrine Falcon					BA							
Ring-necked Pheasant				A								
Sora					A							
American Coot			A	A	A							
Black-bellied Plover					A							
Semipalmated Plover				B			A					
Piping Plover				BA	BA	BA	BA	BA				
Killdeer			BA	BA	BA	BA	BA	BA	BA	BA		
American Avocet				B	A		A	A				
Greater Yellowlegs			A	A		A		A	A	A		
Lesser Yellowlegs				A	A		A	A		A		

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Willet				B	A							
Spotted Sandpiper					A	BA	A	A				
Hudsonian Godwit				B	A							
Marbled Godwit					A	A						
Whimbrel					B							
Sanderling				BA	A				A			
Semipalmated Sandpiper			A	BA			A	A				
Least Sandpiper						A		A		A		
White-rumped Sandpiper					A	A						
Baird's Sandpiper			A	BA				A				
Pectoral Sandpiper				B					A			
Dunlin				A								
Long-billed Dowitcher			A		A							
Common Snipe			A	A								
Franklin's Gull					A		A					
Bonaparte's Gull				B								
Ring-billed Gull			A		A							
Caspian Tern								B				
Forster's Tern				B	A	A		A				
Least Tern					BA	BA	BA	BA				
Black Tern					A	A	A	A				
Mourning Dove						A	A		A			
Great Horned Owl						A						
Belted Kingfisher			A	A			A	A	A			
Willow Flycatcher					A							
Tree Swallow				A	A							
N. Rough-winged Swallow				A	A							
Bank Swallow				A	A	A						
Cliff Swallow					A	A	A	A				
Barn Swallow				A	A	A		A				
American Crow					A							
Marsh Wren					A							
American Water Pipit				B								
Bell's Vireo					A							
Yellow Warbler					A	A						
Yellow-rumped Warbler					A							
Palm Warbler					A							
Common Yellowthroat					A							
Dickcissel					A							
Clay-colored Sparrow					A							
Vesper Sparrow				A	A							
Lark Sparrow					A							
Savannah Sparrow				A	A				A			
Sharp-tailed Sparrow					A							
Song Sparrow					A			A				
White-crowned Sparrow					A							
Harris' Sparrow					A							
Chestnut-collared Longspur				A								
Red-winged Blackbird					A	A						
Western Meadowlark				A				A				
Yellow-headed Blackbird					A							
Common Grackle						A						
American Goldfinch								A				

Species Totals
B = Pre-restoration 32
A = Post-restoration 105

Bird surveys indicated rather large shifts in species use between the pre- and post-restoration periods (Table 2). Thirty-two species were recorded before the restoration, while 105 were recorded during the post-restoration period. One notable difference was the increased shorebird, wading bird, and waterfowl use after the development of shallows and vegetated lake margins. Waterfowl produced 6 broods of Canada geese at the site in 1994 and at least 4 broods in 1995, where none had been produced during the pre-restoration period. In May 1996, 60 white-faced ibis, 25 cattle egrets, approximately 500 yellow-headed blackbirds, and numerous ducks were observed at the site. Blue-winged teal, mallard, and wood duck broods have also used the site following the restoration. Waterbirds were particularly attacted to the shallow shoals and the creation of loafing and feeding habitat for shorebirds and waterfowl. Large numbers of migratory shorebirds have been seen wading and feeding at the site (Figure 5). The development of emergent vegetation such as cattail, burreed, and bulrush has also improved the feeding habitat for wading species. Such species have been observed feeding on frogs, fish and aquatic insects. Double crested cormorants have been seen on the lake fishing in deep-water zones for channel catfish, while fathead minnows and catfish also provide important food sources for piscivorous birds including osprey, belted kingfisher, and the endangered least tern.

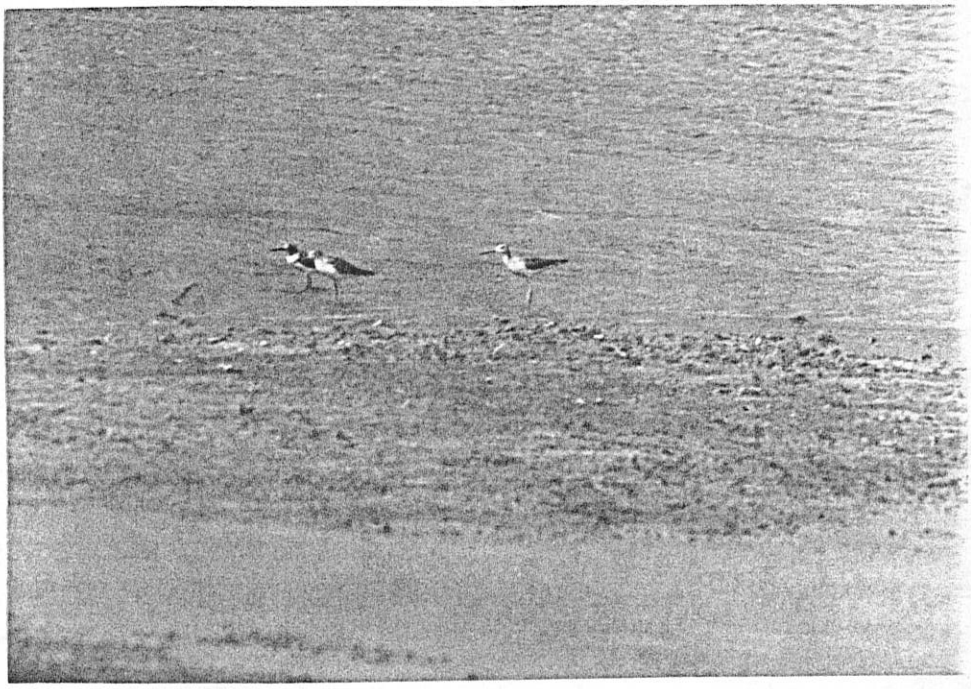


Figure 5. Shorebirds using shallows and mudflat areas created as a result of the wetland restoration work (Photo September 1995).

Although least terns and piping plovers nested and foraged in the restoration site, nesting success was disappointing. In 1994 there were 4 piping plover nests and 22 least tern nests at the site, but only 3 least terns fledged. In 1995, the situation was even worse; there were only 2 piping plover and 2 least tern nests, and no birds were fledged. Predation (primarily by coyotes) was the main cause of nest failure. The water-filled moat constructed around the islands was not sufficient to keep coyotes from reaching the nests. Coyotes were also able to jump an electrified fence designed to keep them out of the nesting area. We are continuing to investigate ways to reduce predation and improve the nesting success for least terns and piping plovers at this and other sites.

Discussion and Conclusion

The wetland enhancement undertaken with this project at the Wildrose sandpit site has provided a significant improvement in the availability of avian habitat. In the two years since completion of earthwork at the site, a diverse aquatic plant community has developed along the margins of the sandpit lake. Upland areas planted to native grasses and forbs are also progressing towards a typical native grassland community. Bird use of the site has increased as feeding, loafing, and nesting habitat has expanded. Waterfowl broods have been produced, and extensive wading bird use has occurred since shallow water areas were developed along the lake margin. The high water levels encountered during this project, however, were a hindrance to the development of shallow-water habitat areas. Ideally, such restoration work should be attempted in the fall when water levels are normally at their lowest.

Changes in vegetation and bird use will likely occur as wetland development proceeds. These changes will continue to be monitored over the next several years. Because the site is still in the early stages of succession, plant communities could change significantly. As a result, bird use undoubtedly will change as well. For this reason, caution should be taken in interpreting the vegetative and bird-use data presented here. Substantial habitat management may be needed in the future to maintain the quality of the habitat under the present conditions. The data presented here may be quite valuable in planning and implementing future habitat enhancements at other sandpit sites. There are many active sandpits along the banks of the Platte that may eventually be abandoned as gravel mining operations. Although the habitat that was created as a result of this restoration is quite different from native wetlands found along the river, the techniques used here could serve as the basis for wetland enhancement at numerous sandpit sites throughout the river valley.

APPENDIX A: Corps 404 Permit

PLATTE RIVER
WHOOPING CRANE
MAINTENANCE TRUST, INC.

2550 North Diers Avenue
Suite H
Grand Island, NE 68803-121
Telephone: (308) 384-4633
FAX: (308) 384-4634

15 September 1993

Mr. John Peterson
Department of Army
Corps of Engineers
1430 Central Ave.
Kearney, NE 68847

Dear John,

This letter is to notify you that we have begun work under the Department of the Army Permit Number NE 2SB OXT 2 92-50673 which involves a wetland restoration plan at the Wildrose Ranch (Sec 5 & 6, T9N R10W, Hall Co., Nebraska). This activity is being conducted under General Permit 88-02.

We will also notify your office when the work is completed.

Sincerely,

Paul J. Currier
Deputy Director

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
215 NORTH 17TH STREET
OMAHA, NEBRASKA 68102-4978

May 27, 1993

REPLY TO
ATTENTION OF
Regulatory Branch
1430 Central Ave., Kearney, NE 68847

Platte River Whooping Crane
Maintenance Trust, Inc.
Mr. Gary Lingle
2550 North Diers Avenue, Suite H
Grand Island, Nebraska 68803-1214

Dear Mr. Lingle:

Reference is made to your application for a Department of the Army permit for the proposed restoration plan in Platte River wetlands located in Sections 5 and 6, Township 9 North, Range 10 West, Hall County, Nebraska.

Based on the information submitted, the proposed activity meets the criteria established for General Permit 88-02 and has been assigned permit number NE 2SB OXT 2 92-50673. In accordance with 33 CFR 325.5(c)(1), the restoration plan is authorized without further processing provided the conditions of General Permit 88-02 (copy enclosed) are strictly adhered to. This does not preclude the requirement to obtain state or local concurrence as required by law.

Any changes to the submitted permit application may require additional Department of the Army authorization.

If you have any questions, please contact Mr. Keith Tillotson at the above address or at (308) 234-1403.

Sincerely,

John Peterson
Acting State Supervisor, Kearney Regulatory Office,
Regulatory Branch, Operations Division

Enclosures

DEPARTMENT OF THE ARMY PERMIT

Permittee "GENERAL PUBLIC"

Permit No. GENERAL PERMIT NO. 88-02 (11649)

Issuing Office OMAHA DISTRICT, CORPS OF ENGINEERS

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description:

To allow the retention of or the discharge of dredged or fill material in waters of the United States within the Omaha District in conjunction with voluntary and/or enforcement related restorations (either Corps of EPA ordered).

See Appendix A for conditions authorized for this General Permit

See Appendix B for duration and applicability.

Project Location:

All waters of the United States as regulated by Section 404 of the Clean Water Act and Section 10 of the River and Harbor Act.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on August 31, 1993. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

See Appendix A

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(XX) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(XX) Section 404 of the Clean Water Act (33 U.S.C. 1344).

( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

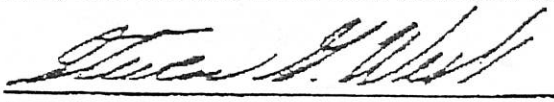
6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

_____ _____

(PERMITTEE) *(DATE)*

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.



August 30, 1988

(DISTRICT ENGINEER) *(DATE)*

Steven G. West
Colonel, Corps of Engineers

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

_____ _____

(TRANSFEREE) *(DATE)*

* U.S. GOVERNMENT PRINTING OFFICE: 1988 717 425

APPENDIX A

1. Authorization under this General Permit is appropriate if:

a. The restoration is essentially complete and the project is determined to be no longer functional.

b. The responsible party cannot gain any economic benefit from the material to remain in place or to be placed.

c. Residual impacts on both natural and human resources must be determined as minor or nonexistent.

d. The material must not include any toxic pollutants other than trace amounts.

e. The fill will not include those materials listed in the January 8, 1988, fill material prohibitions as issued by the Omaha District.

GENERAL PUBLIC
GENERAL PERMIT 88-02 (11649)

APPENDIX B

1. Duration and applicability of General Permit 88-02.

a. Cumulative impacts of the permit will be subject to review two years and five years after issuance.

b. The provisions of this General Permit do not apply to projects that:

(1) Effect historic, cultural or archeological sites or practices as provided in the National Historic Preservation Act of 1966.

(2) Effect sites included in the National Register of Historic Landmarks as published periodically in the Federal Register.

(3) Effect sites included in the current listing of the National Register of Historic Places or sites known to be eligible for such listing.

2. In all cases, an interagency review will be undertaken prior to allowing authorization under this General Permit. The lead agency (either the Corps or EPA) will insure that all conditions of the General Permit have been met.

3. The District Engineer retains the authority to override this General Permit and require an individual permit on a case by case basis.

APPENDIX B: Floodplain Permit

APPLICATION FOR A DEVELOPMENT PERMIT
pertaining only to Section 6.11, Special Flood Hazard Area
of the Hall County Zoning Resolution

Identification or description of work to be done:
Restoration of wetlands by placing fill material from a sandpit back into and along the edge of the sandpit lake. A Dept. of Army permit NE 25B 0XT 2 92-50673 has been issued for this project.

Legal description of the property on which the work is to be done:
Sections 5 and 6, T9N R10W, Hall County, Neb.
Project area is adjacent to the Platte River channel

Proposed use or occupancy of the property:
Fill areas will be re-seeded with wetland plants in order to create shallow-water wetland habitat for migratory bir

Plans and specifications are hereby attached for the proposed work.

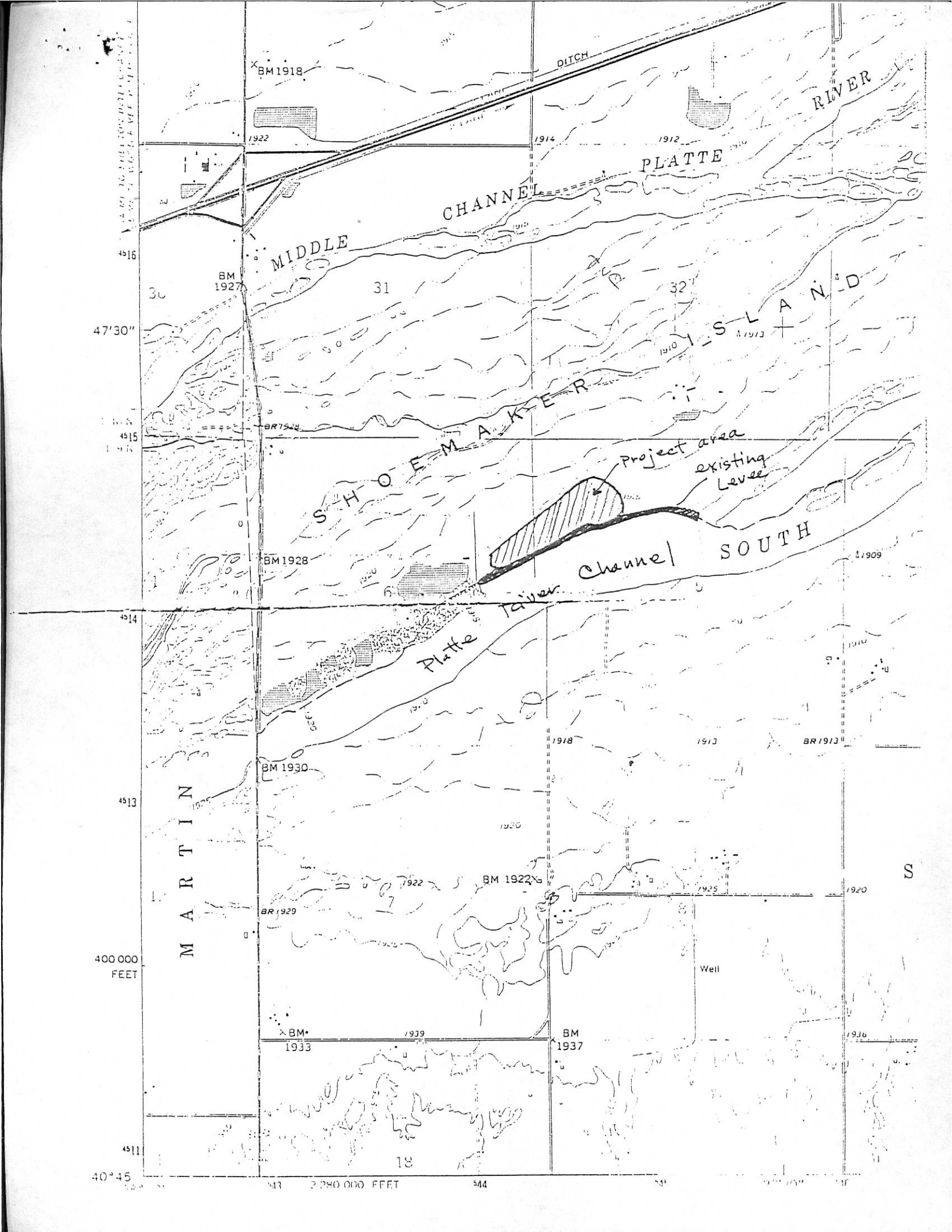
Property owner for Platte River Whooping Crane Trust

This Development Permit is hereby (granted, denied) as per Hall County flood hazard regulations in that the proposed work (does, does not) infringe upon the delineated floodway as shown on the maps entitled "Flood Boundary and Floodway Map" for Hall County in Nebraska, from the Federal Emergency Management Agency dated August 1, 1980 and September 29, 1986, or as amended by FEMA.

6-29-93
Date

Max Baerwald
Hall County Building Inspector

Other Comments:


DITCH
BM 1918
1922
1914
1912
PLATTE RIVER
MIDDLE CHANNEL
BM 1927
30
31
32
ISLAND
47'30"
SHOEMAKER
BR 1918
Project area
existing Levee
BM 1928
SOUTH
Platte River Channel
1909
1918
1913
BR 1913
BM 1930
MARTIN
1922
BM 1922
1920
BR 1929
400 000 FEET
Well
BM 1933
1939
BM 1937
1936
18
40°45
2 280 000 FEET