

# **Implementation of the Whooping Crane Monitoring Protocol**

**Spring 2008**

**FINAL REPORT**

Prepared by

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20 June 2008

# **Implementation of the Whooping Crane Monitoring Protocol Spring 2008**

**Final Report Prepared by  
AIM Environmental Consultants**

**For the  
Governance Committee of the  
Platte River Recovery Implementation Program**

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Assessment Impact Monitoring Environmental Consultants (AIM) was awarded a contract to assist the Governance Committee in implementing specific monitoring associated with the *Platte River Recovery Implementation Program*. The specific task was to implement the protocols developed by the Technical Advisory Committee entitled *Monitoring Whooping Crane Migrational Habitat Use in the Central Platte River Valley* and *Rebar Marker Placement Protocol* during the spring and fall migrations. The contract specified the implementation of the draft protocol dated 16 September 2005 along with guidelines presented in the *Request for Proposal*. The term of the contract was January 1, 2008 through December 31, 2010. I present the results of the spring 2008 Whooping Crane migration pursuant to the *Contract for Services* dated 2 February 2008.

## **Study Area and Methods**

The study area was the Platte River reach between U.S. Highway 283 (near Lexington) and Chapman, Nebraska. This reach is about 90 miles long and includes an area extending 3.5 miles either side of the outermost banks of the Platte River. I hired and trained thirteen technicians and conducted field work from 21 March through 29 April 2008. A set of six data sheets was provided by Headwaters Corporation and all data were entered into a Microsoft Access 2000 database template developed by the former Executive Director's Office.

Two air services were contracted and aerial surveys were conducted along specified routes near sunrise from 21 March through 29 April 2008 as weather permitted. Censuses were initiated no earlier than 30 minutes before sunrise and typically were completed within 2 hours. Start times were delayed when weather/visibility conditions dictated. Flights were cancelled due to unsafe weather or mechanical problems. Cessna 172's were equipped with GPS units and each had two observers to conduct the surveys. Waypoints for each survey route were programmed into the GPS units onboard the aircraft. Surveys were flown at an altitude of 750' and at a speed of about 100 mph.

The study area was divided into two legs. The east leg surveyed the Platte River reach between Chapman and the Minden (Highway 10) bridges and the west leg surveyed from the

Minden to the Lexington (Highway 283) bridges. Each census began flying upstream (east to west) along the south side of the main river channel with both observers looking out the passenger side of the aircraft. This provided optimum light conditions such that observers looked away from the rising sun thereby minimizing glare off reflective surfaces. Start points were alternated for each leg to address the concern that one end of the river transect would always be flown earlier than the other end. On the east leg, day one began at Chapman, flew the river west to Minden then flew a predetermined route back to Chapman. Day two began at Wood River, flew the river to Minden, returned along a predetermined route back to Chapman, then flew the rest of the river transect from Chapman to Wood River. The start points for the west leg were Minden and Odessa bridges. Day one began at Minden, flew the river west to Lexington then flew a predetermined route back to Minden. Day two began at Odessa, flew the river to Lexington, returned along a predetermined route back to Minden, then flew the rest of the river transect from Minden to Odessa. When the initial portion of the river transect was completed, one of 7 possible return routes located along the centerline of the main channel and 1, 2, and 3 miles north and south of the river respectively was flown with observers looking out opposite sides of the aircraft.

Four ground observers were stationed along the survey routes. Communication between the ground observers and the aircraft was accomplished through the use of two-way radios. In the event of a possible Whooping Crane sighting by the air crew, the ground person nearest the sighting was contacted and immediately dispatched to the location in an effort to confirm the identity of the white object. Each technician had a set of color infrared aerial photos of the river (photos were developed by WEST, Inc. and have been used since October 2001). The photos were inserted in polypropylene sheet protectors that enabled the observer to mark sighting locations on the photo for later reference. Efforts were made to photograph Whooping Cranes from the air using digital cameras. In addition, a GPS reading of the location was taken by air crew.

If a Whooping Crane was located by ground personnel, habitat use and activity monitoring commenced. These observations were continuous until the bird was either lost from view or went to roost for the night. Each Whooping Crane sighting was assigned a unique number and later compared with the U.S. Fish and Wildlife Service's (USFWS) sighting records in Grand Island. A Whooping Crane sighting was defined as:

"...the observation of a single whooping crane or a group of whooping cranes that are migrating together through the area. Confirmed sightings in the same general area (within a reasonable distance of daily crane activities) along the Platte and within one to several days of another sighting is assumed to be the same bird/bird group, unless: 1) the number of birds differs, 2) the bird(s) constitute a bird/bird group in addition to those already known to be in the general area, or 3) the original birds were observed to migrate from the valley or are known to have moved to a different area of the valley. This assumption is necessary because individual cranes cannot be distinguished; very few birds are marked and continuous surveillance of a crane or crane group using the study area is not possible." (Aransas – Wood Buffalo Population Whooping Crane Contingency Plan 2006, Whooping Crane Committee of the Central Flyway Council).

Profiles were measured at Whooping Crane roost sites and ten predetermined decoy locations on riverine sites using surveying equipment owned by the Program. Three parallel transects 25m apart were established perpendicular to the general flow of the river at each site such that the middle transect crossed the crane or decoy location. Elevation measurements were taken about every 3m along each transect using a stadia and transit. End points were determined when an obstruction greater than 1.5 m in height was encountered such that it formed a visual barrier to a crane. A 24-inch long steel rebar stake was driven level with the ground into the high bank or other location along one of the transects so that water elevation could be determined at a later date. A second rebar marker was driven level with the ground in case the first stake was lost due to bank sloughing. A GPS location was recorded for each stake. Stream flow data was collected from the U.S. Geological Survey (USGS) at gauging stations located at Overton, Kearney, and Grand Island. Leica laser rangefinders were used to measure the length of sandbars and distance to visual obstructions >1.5m. Whooping Crane movements, behavior, and diurnal habitat use was recorded when possible. All monitoring activities followed USFWS guidelines. Martha Tacha, USFWS Coordinator for the Cooperative Whooping Crane Tracking Project, kept our team apprised of the latest sighting reports and census results from the wintering grounds on a regular basis. Tom Stehn, refuge manager of Aransas National Wildlife Refuge in Texas, conducted surveys on the wintering grounds and provided the results via email. Landowner permission was obtained prior to entering any property.

Whooping Crane decoys were placed at 15 randomly selected locations provided by Headwaters Corporation (Table 1) for the purposes of determining survey detection rates. Five locations were off-river and the others were in the river channel. The air crew did not know when or where the decoys were placed. Observations of Whooping Crane decoys by the air crew were reported to the ground crew for confirmation.

A toll-free telephone number for the public to report Whooping Crane sightings was sponsored by the Platte River Whooping Crane Habitat Maintenance Trust. This volunteer effort was known as *Whooper Watch*. AIM personnel distributed *Whooper Watch* flyers to prominent bird-watching centers alerting the public of this number. All Whooping Crane sightings reported to officials by the public were classified as opportunistic locates. Following a report, ground crew procedures were implemented as outlined above.

## Results

### *Opportunistic Locates.*—

We received 5 reports of possible Whooping Cranes from the public, Whooper Watch, or USFWS. One resulted in a confirmed Whooping Crane sighting on April 14.

### ***Aerial Survey.--***

#### CONFIRMED WHOOPING CRANE SIGHTINGS-

Of a possible 40 morning flights per leg, the West Leg completed 26 (65%) flights while the East Leg flew 28 (70%). Fog, low ceiling, precipitation, and high winds were factors in cancellations. We recorded 1 confirmed Whooping Crane sighting on transect 2SW (Figure 1). This was the first time a confirmed sighting occurred on a transect other than the river or 1 mile north or south.

#### INDEX OF USE-

We completed 108 (68%) aerial survey transects out of a possible 160. One Whooping Crane sighting was made on these transects (2SW). This resulted in an index of use (frequency of occurrence) of .01 sightings per transect. No sightings occurred on river transects.

#### OPPORTUNISTIC FLIGHTS-

Two Whooping Crane sightings were considered opportunistic during the regular aerial surveys. Both sightings occurred when the plane deviated from the survey route at the request of the ground observer. No additional flights were deployed.

#### OTHER WHITE OBJECT SIGHTINGS-

Three on-ground follow-ups were conducted on objects other than Whooping Cranes at the request of the air crew. These resulted in confirmation of Sandhill Cranes, American White Pelicans, or no finding.

### ***Searcher Efficiency Trials.—***

Whooping Crane decoys were placed at 15 locations between March 20 and April 29 (Table 1). The air observers detected a decoy at five sites for an overall detectability rate of 33%. When broken down by strata, there was a 0% and 50% detectability rate for strata 0-3.5 and 0 respectively. Factors contributing to the poor detectability rate included decoys located in woodlands, decoys in the “blind spot” below the underbelly of the aircraft, and inexperienced observers.

Table 1. Random locations of decoys for detectability trials.

Strata	Random number	Date Placed	Detected?	Notes	Actual X	Actual Y
0-3.5	30	4/5/2008	no		545173	4517306
0-3.5	31	4/22/2008	no		539158	4513230
0-3.5	29	4/5/2008	no	in trees	538060	4513831
0-3.5	32	4/29/2008	no		511057	4502515
0-3.5	28	4/7/2008	no	in trees	459041	4503102
0	59	4/21/2008	yes		545822	4514694
0	57	4/22/2008	no		527619	4508289
0	63	4/23/2008	yes		526791	4508087
0	61	3/29/2008	yes		499711	4501191
0	60	4/2/2008	no		496758	4500531
0	56	4/23/2008	no		474253	4503113
0	58	4/5/2008	yes		469148	4503687
0	62	4/23/2008	no		462620	4504000
0	64	3/29/2008	no		448999	4504615
0	55	4/14/2008	yes		443444	4505524

***Use-Site Characteristics, Diurnal Movements, and Activity.--***

FLOW-

Streamflow measured at the USGS gauging stations located near Grand Island, Kearney, and Overton was generally below the median streamflow for each site during the survey (Figures 2-4). Median flows were exceeded when hydropower generation releases occurred. Note all flow data are provisional and subject to revision. Table 2 depicts the minimum and maximum values for unit (instantaneous) flows at each station.

Table 2. Discharge values (cfs) at USGS gauging stations (provisional data).

	Overton	Kearney	Grand Island
Minimum	318	415	636
Date	3/31	3/26	3/21
Maximum	2160	3380	2150
Date	4/12	4/11	4/13

RIVERINE/WETLAND USE SITES-

We collected riverine channel profile data at 10 Whooping Crane decoy locations and one Whooping Crane roost site (data entered into Microsoft Access database). A total of 448

stations (3 readings at each station) from 33 transects were surveyed. This was the first year of implementing this protocol that a Whooping Crane group roosted in an off-river palustrine wetland site. Photographs depicting the habitat used at the Whooping Crane Use Site are shown in Figures 5-6).

#### DISTANCE TO VISUAL OBSTRUCTION, SUBSTRATE, AND WATER DEPTH-

Visual obstructions from Whooping Crane use sites are given in Table 4. Substrate was characterized clay/silt, a category not encountered in prior years. The average water depth throughout the wetland area was 3-5 inches.

Table 4. Location, visual obstruction distance (m), substrate, and roost depth (m) at the Whooping Crane wetland roost site.

Use Site ID	UTM X	UTM Y	VO North Distance	VO East Distance	VO South Distance	VO West Distance	Clay/Silt %	Roost Depth
1	441816	4503264	100	200	100	200	100	- .12

#### DIURNAL USE SITES-

Diurnal movements and activity data was collected when possible. We documented 6 diurnal use locations in 1 section during 6 days of observation (Figure 1). Whooping Cranes were observed within 0.3-1.5 miles from their off-river wetland roost location.

#### CRANE-USE DAYS

Crane-Use days were calculated by multiplying the number of Whooping Cranes by the number of days present. For this calculation, we assumed that a Whooping Crane observed during the morning aerial survey was present the previous day. Whooping Cranes were believed to be present in the study area 8 (15%) of the 40 days of the survey based on an interview with a local landowner (Joe Jeffrey, personal communication) We documented the presence of 1 Whooping Crane group that contained 3 birds. A total of 27 crane-use days was recorded (Table 6).

Table 6. Whooping Crane dates of occurrence and crane-use days.

Crane Group	Number of Cranes	Dates of Occurrence	# of days present	Crane-Use Days
2008SP01-06	3	April 11-19	9	27

#### LAND-COVER CLASS-

Emergents, Open Water Canal, Ag-Corn, and Ag-Soybeans were the cover-types Whooping Cranes were observed using during the day. Three locations were AG-Corn, 1 was AG-Soybeans, 1 was Open Water Canal, and 1 was Emergents. All of the known nocturnal roost

locations (100%) were in Emergents. The other suspected roost location was in Open Water pit/pond/lake.

**ACTIVITY-**

A total of 52.75 hours of continuous and instantaneous use (time budget) data of Whooping Cranes was collected by ground personnel during 6 days of observation. Only the juvenile Whooping Crane was monitored since it was the only individual that could be positively identified. This bird constituted the “focus” crane as per protocol guidelines. All observations were in diurnal use locations. The breakdown of observation time in various habitats is depicted in Table 7. Most (57%) of the diurnal activity recorded occurred in Emergents followed by corn (32%), soybeans (11%), and open water canal (1%). Two hundred eleven data points of activity (time budget) were recorded. Feeding (70%) was the most frequently observed activity followed by preening (12%), resting (8%), alert (7%), and courtship (2%) (Table 8).

Table 7. Count of instant points by habitat.

Habitat	n	Hours	Percent
Ag-Corn	67	16.75	32%
Ag-SoyBean	23	5.75	11%
Emergents	120	30	57%
Open Water Canal	1	.25	<1%
TOTAL	211	52.75	

Table 8. Whooping Crane activity by habitat.

Habitat	Activity	n	Total	pct
Ag-Corn	Alert	7	67	10%
Ag-Corn	Feeding	53	67	79%
Ag-Corn	Preening	2	67	3%
Ag-Corn	Courtship	2	67	4%
Ag-Corn	Resting	3	67	4%
Ag-Soybean	Feeding	19	23	83%
Ag-Soybean	Preening	2	23	9%
Ag-Soybean	Resting	2	23	8%
Emergents	Alert	7	120	6%
Emergents	Courtship	1	120	1%
Emergents	Feeding	76	120	63%
Emergents	Preening	22	120	18%
Emergents	Resting	12	120	10%
Open Water Canal	Courtship	1	1	100%



### ***Search Effort.--***

Ground searches were initiated on 2 occasions. A total of 3 hours was expended in this effort and 53 miles were driven. Search duration extended from 1 to 2 hours. Objects were located on one occasion (50%) and resulted in a leucistic Sandhill Crane. Searches were terminated when the object was found or after a sufficient search effort was made.

### ***Program ID and U.S. Fish & Wildlife Service ID Comparisons.--***

Table 9 compares the Program numbering system with the USFWS database (Martha Tacha, personal communication). We had one group of Whooping Cranes present in the study area during the survey.

Table 9. Comparison of Program Crane ID and USFWS Crane ID.

<b>Program Crane ID (Prefix 2008SP)</b>	<b>Program Name</b>	<b>USFWS Crane ID</b>	<b>Dates of Occurrence</b>	<b># of cranes</b>
01-06	Jeffrey's wetland	08A-24	4/11-19	3

### ***Summary of Confirmed Sightings in the U.S.--***

The number of confirmed Whooping Crane sightings in Nebraska was 12 including that contained herein (Martha Tacha, personal communication). As of 8 May 2008, there were 38 confirmed sightings in the United States as follows: Montana- 2; North Dakota- 6; South Dakota- 7; Nebraska-12; Kansas- 8; Oklahoma- 2; and Texas- 1. A record 266 Whooping Cranes were expected to migrate from their wintering grounds this spring.

## **Discussion and Recommendations**

This was the pilot year for the *Rebar Marker Placement Protocol*. The placement of rebar did add some time and additional expense to the project; however, it was minimal. We estimate that implementation of this protocol added about 10-15 minutes to the amount of time it took to survey each river channel profile location. All such locations were decoy sites this season. Feedback from follow-up surveys of these sites by the surveying team will aid the Technical Advisory Committee in determining the efficacy of this effort.

We offer the following comments/suggestions to the Technical Advisory Committee as a result of this season's effort.

### ***Data Sheets***

- Add "Use Site ID" and "Crane Group ID" to the Aerial Observations form.
- Add "walking" as an activity to the "..... Instantaneous and Continuous Use Site Monitoring" sheet.
- Change "..... Instantaneous and Continuous Use Site Monitoring" to Time Budget.

### ***Microsoft Access Database***

- Correct the “Aerial Surveys II” form so that the correct number of flights appears in the “WC Flight Surveys” table. Currently, an extra line is added in the table.
- Correct the “Use Site Monitoring” form so that the correct number of records appears in the “WC Use Instantaneous Points” table. Duplicate points are added in the table.
- Present discharge during use and when measured including dates for both in a Table.
- Add “Crane Group ID” to the Use Characteristics form.
- Add “Use Site ID” and “Crane Group ID” to the Aerial Observations form and link it to the Whooping Crane locations Table.
- Change Ground Monitoring to Ground Search
- Delete “activity” in locations subform of Use Site Monitoring form.
- Delete “vegetation” in the instant points subform of the Use Site Monitoring form.
- Automate “instant point ids” in the Use Site Monitoring form.
- Round the UTM’s to whole numbers in the Decoy Information table.
- Add a query to calculate count and percent of time in various habitats from the Use Locations table.
- Incorporate additional USFWS confirmed sightings of Whooping Cranes on the Platte River into this database so that it is all inclusive.

### ***Methods***

- 210 decoys have been placed since the inception of the Whooping Crane monitoring protocol. Consider whether it is necessary to continue collecting river profile information at decoy locations.
- Eliminate transect 3 from the aerial survey since no observations of Whooping Cranes have occurred on these transects to date and the likelihood of observing Whooping Cranes on these transects is remote given the time of day flights occur.
- Update aerial photos of river with aerial survey routes overlaid on them.

## **Spring 2008 Expenses**

The cost of the field implementation of this project was about \$51,029. The total cost of the Spring 2008 effort was about \$53,467.

## **Supplements**

Original Data Sheets

CD containing the Microsoft Access database, MS Word final report file, and selected photographs.

Figure 1. Whooping Crane Use Site 1 (blue) and diurnal use areas (yellow) about 1 mile SW of the J-2 return in Gosper County. The red dot indicates a suspected stock pond roost site.

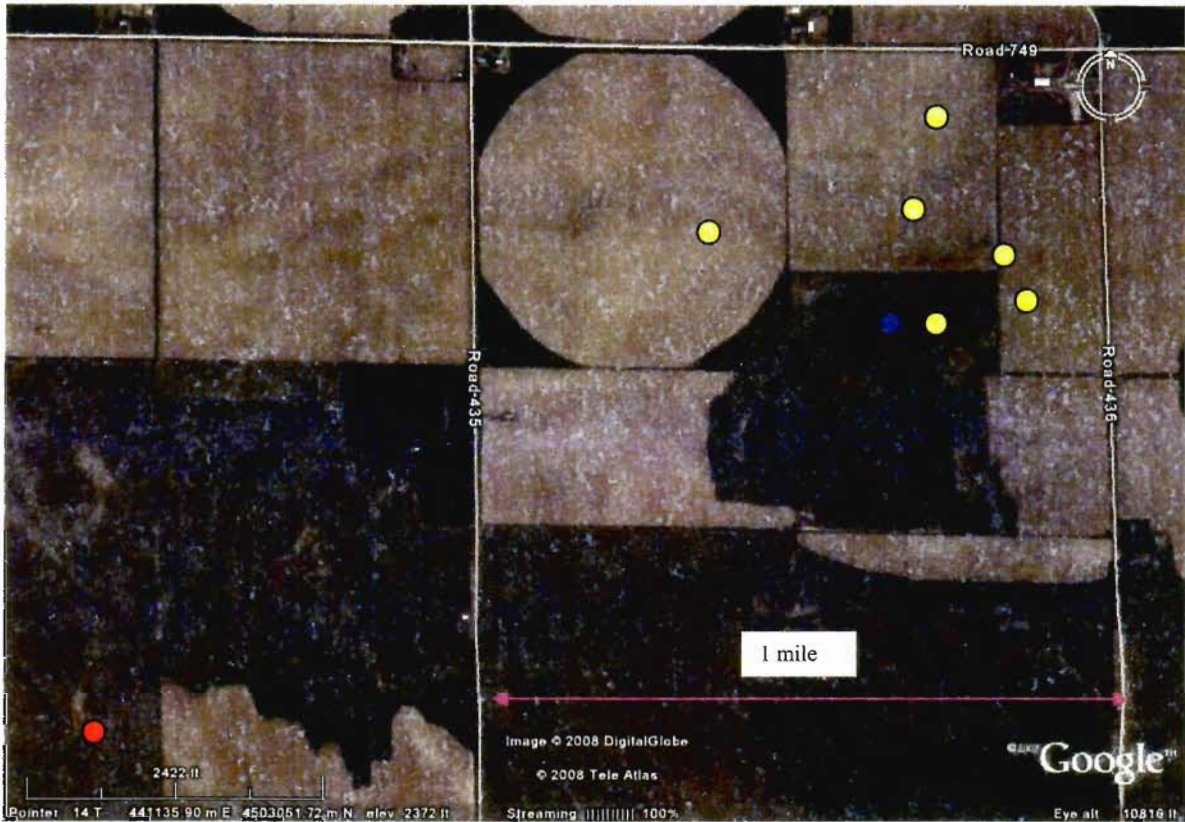


Figure 2. Platte River discharge (cfs) at Grand Island.

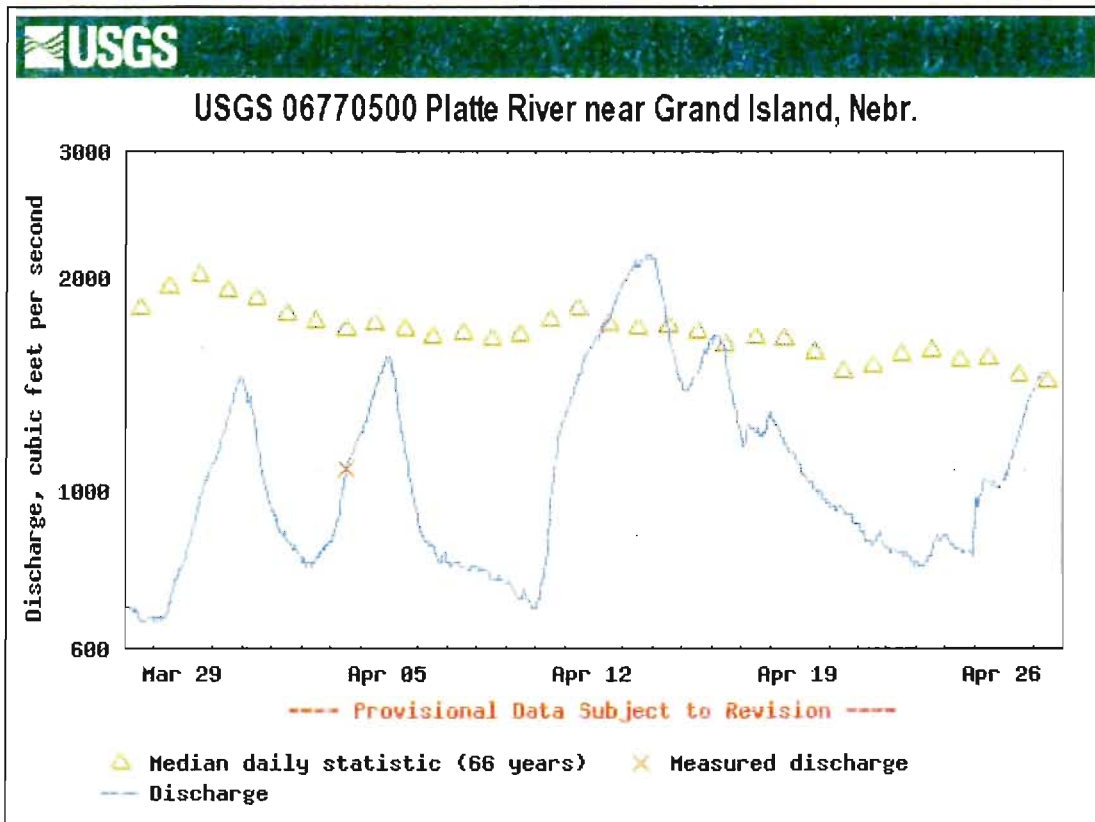


Figure 3. Platte River discharge (cfs) at Kearney.

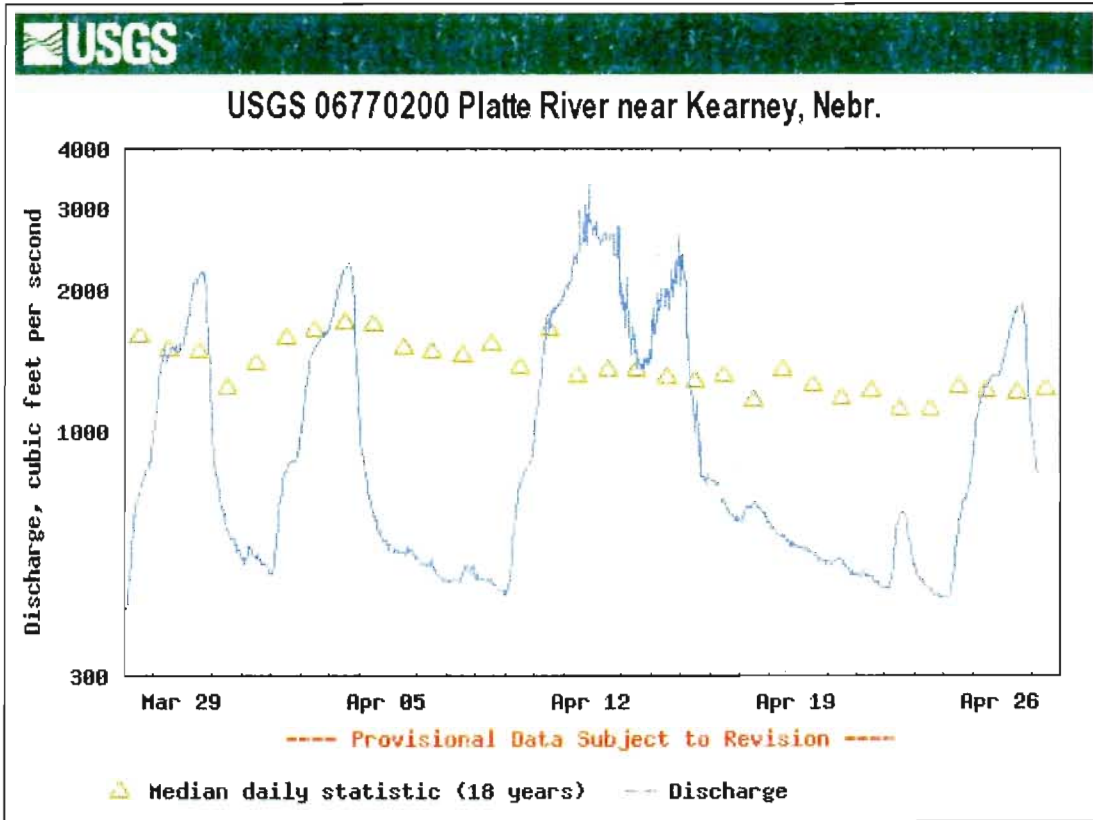


Figure 4. Platte River discharge (cfs) at Overton.

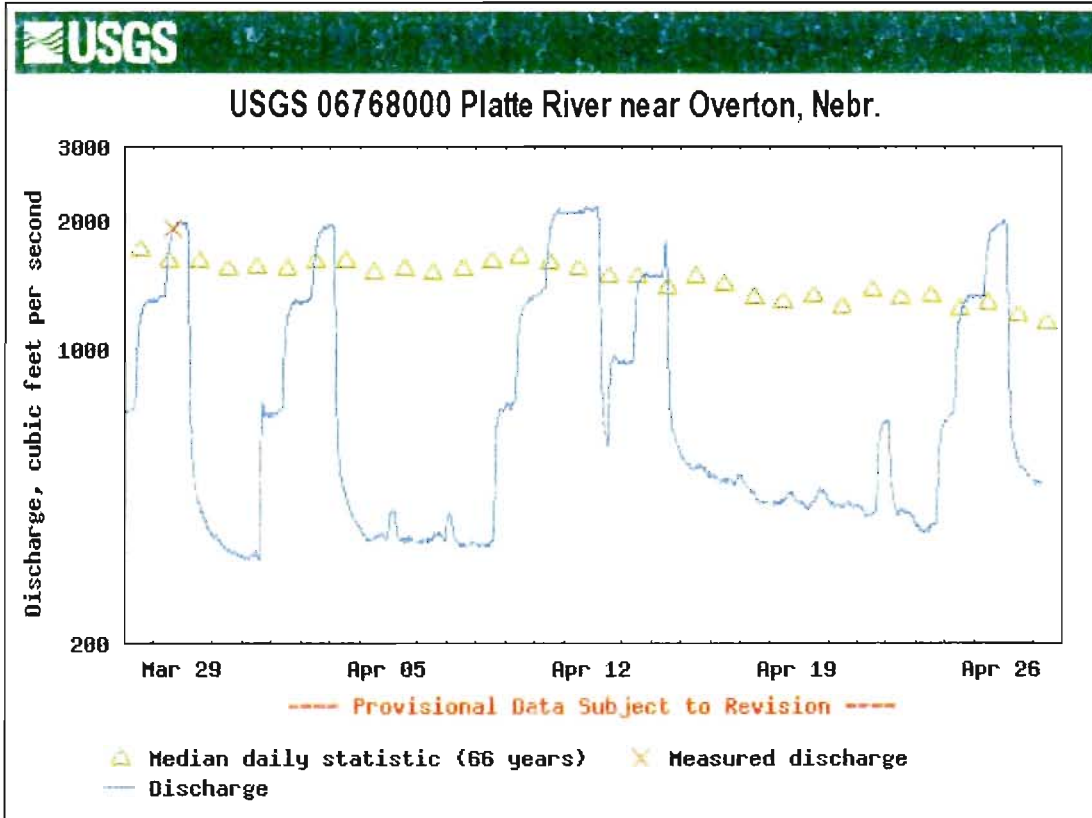




Figure 5. Palustrine wetland habitat at Whooping Crane Use Site 1 near Jeffrey's Island (Sec 10 T8 R21 Gosper County).



East View



North View



West View



South View

Figure 6. Aerial view of Whooping Crane Use Site 1 and Whooping Crane family using the wetland.



Looking north northeast.



Looking south.