

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

**Fall 2004**

**FINAL REPORT**

Prepared by

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Final Report Prepared by  
AIM Environmental Consulting

For  
Committee's of the  
Platte River Cooperative Agreement

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Assessment Impact Monitoring Environmental Consulting (AIM) was awarded a contract to assist the Governance Committee and Technical Committee in implementing the *1997 Cooperative Agreement for Platte River Research and Other Efforts Relating to Endangered Species Habitats Along the Central Platte River, Nebraska* (Cooperative Agreement). Our specific task was to implement the protocol developed by the Technical Committee entitled *Monitoring Whooping Crane Migrational Habitat Use in the Central Platte River Valley* (Appendix A) during the fall 2004 and spring 2005 migration. The contract specified the implementation of the draft protocol dated 14 January 2004 along with guidelines presented in the *Request for Proposal* dated 23 August 2004. We present the results of fall 2004 Whooping Crane migration pursuant to the *Work Order Agreement* dated 14 September 2004.

## Study Area and Methods

The study area was the Platte River reach between U.S. Highway 283 (near Lexington) and Chapman, Nebraska. This reach was about 90 miles long and included an area extending 3.5 miles either side of the outermost banks of the Platte River. We hired and trained thirteen technicians. Personnel from the Executive Director's Office (EDO) and the U.S. Fish & Wildlife Service office in Grand Island assisted with the training. Field work was conducted from 9 October through 16 November 2004. A set of six data sheets was provided by the EDO (Appendix B) and all data were entered into a Microsoft Access 2000 database template developed by the EDO. A **Supplement** dated 1 February 2005 was submitted separately and contains original data sheets used during this project.

Two air services were contracted and aerial surveys were conducted along specified routes near sunrise from 9 October through 10 November 2004 as weather permitted. Censuses were initiated no earlier than 30 minutes before sunrise and typically were completed within 2 hours. Start times were delayed up to 2 hours 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 (Appendix B). 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. 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 (Appendix A, page 9) 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 determine 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 the location of Whooping Cranes 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 use site 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 sighting records in Grand Island. USFW's definition of a sighting (p. 3-3, Draft Baseline Report 5/30/2001) is:

“...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.”

Channel profiles were measured at Whooping Crane use sites and decoy locations at riverine sites using surveying equipment on loan from EDO and the Central Platte Natural Resources District. 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 transit and rod. End points were determined when an obstruction greater than 1.5m in height was encountered such that a crane could not be seen through the obstruction. Stream flow data was collected from the U.S. Geological Survey 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. Landowner permission was obtained prior to entering any property. All monitoring activities followed U.S. Fish & Wildlife Service guidelines.

Whooping Crane decoys were placed at 15 randomly selected locations provided by the EDO (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.

Wally Jobman, the Whooping Crane Migration Coordinator for the U.S. Fish and Wildlife Service, kept our team apprised of the latest sighting reports and census results from the wintering grounds. Tom Stehn, refuge manager of Aransas National Wildlife Refuge in Texas, conducted weekly Whooping Crane surveys on the wintering grounds and provided the results via email. The EDO established a toll-free telephone number for the public to report Whooping Crane sightings. The number was maintained and operated by the Platte River Whooping Crane Habitat Maintenance Trust. AIM personnel distributed flyers to prominent bird-watching centers notifying the public of this number (Appendix B). 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.—***

On November 5, a hunter reported 6 Whooping Cranes (4 adults and 2 juvenals) landed on the river east of Grand Island downstream of the U.S. 34 bridge. They remained at that location for a short period of time, then flew about 1/4 mile downstream where they roosted for the night (Figure 1; Appendix C, pp. 6-7). They were confirmed by Platte River Whooping Crane Trust personnel and later reported to AIM personnel. This information was passed on to the aerial survey crew who located the cranes the next morning from the air (see below).

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

#### **CONFIRMED WHOOPING CRANE SIGHTINGS-**

Of a possible 33 morning flights per leg, the West Leg completed 28 (85%) flights while the East Leg flew 26 (79%). Fog, low ceiling, precipitation, mechanical problems, and high winds were factors in cancellations. We recorded 1 sighting of six Whooping Cranes on the

river transect on 6 November 2004 (Figures 1 and 2; Appendix C, p. 6). These birds were opportunistically located the evening before thus the air crew had prior knowledge of their presence.

#### INDEX OF USE-

We completed 108 aerial survey transects out of a possible 132 (82%). Three flights were aborted after take-off due to weather or mechanical problems. One Whooping Crane sighting was made on these transects. This results in an index of use of 0.01 sightings per transect.

#### OTHER WHITE OBJECT SIGHTINGS-

We conducted one on-ground follow-up of a reported unidentified white bird by the east leg air crew. Ground personnel were unable to locate the bird; however, the west leg air crew was dispatched to the area after they completed their survey and confirmed the presence of a Great Egret (Appendix C, p. 5).

The air crew reported a dead large white bird underneath powerlines at two locations in the Lexington to Jeffrey's Island reach. An on-ground search identified the carcasses as American White Pelicans (Appendix C, p. 5). Another dead pelican was found underneath a powerline on the median of I-80 just west of the Kearney Canal near Elm Creek.

#### *Searcher Efficiency Trials.—*

A single Whooping Crane decoy was placed at 15 locations between October 8 and November 2 (Table 1). The air observers detected a decoy at nine sites for an overall detectability rate of 60% (Appendix C, pp. 1-3). When broken down by strata, there was a 20% and 80% detectability rate for strata 0-3.5 and 0 respectively.

Table 1. Random locations of decoys for detectability trials.

Decoy ID	Strata	Utmx	UtmY	Habitat	Date Placed	Detected?
1	0-3.5	542746	4512719	Agriculture other crops	11/02/04	N
2	0-3.5	507887	4504045	Wooded river within floodplain	10/12/04	N
3	0-3.5	548126	4517406	Lowland grass	10/12/04	N
4	0-3.5	440157	4507422	Barren beach/bar	10/09/04	Y
5	0-3.5	471534	4501698	Agriculture corn	10/31/04	N
6	0	530924	4509038	Wetted channel	10/18/04	Y
7	0	507642	4501883	Wetted channel	10/08/04	Y
8	0	539812	4511693	Wetted channel	10/19/04	Y
9	0	470167	4504044	Wetted channel	10/11/04	N
10	0	446932	4504804	Wetted channel	10/09/04	N
11	0	508440	4501941	Wetted channel	10/08/04	Y
12	0	443755	4505722	Wetted channel	10/11/04	Y
13	0	551161	4516489	Wetted channel	10/17/04	Y
14	0	540121	4511946	Wetted channel	10/19/04	Y
15	0	548373	4515157	Shrubs inside floodplain	10/18/04	Y

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

**FLOW-**

Streamflow measured at the USGS gauging stations located near Grand Island, Kearney, and Overton (Figures 3-5) was well below the median streamflow for each site throughout the study period. Note all flow data are provisional and subject to revision. The Grand Island gauging station first recorded streamflow on October 10 after being dry since August 3. The leading edge of flowing water was about one mile below this gauging station on October 18 (Appendix C, p. 7). Table 2 depicts the min/max values for daily and unit (instantaneous) flows at each location during this study.

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

	<b>Overton</b>	<b>Kearney</b>	<b>Grand Island</b>
Min Daily	212	188	0
Date	10/15	11/7	10/9
Max Daily	670	942	306
Date	10/20	11/10	11/9
Min Unit	171	207	0
Date	11/7	10/15-16	10/9
Max Unit	2520	1030	469
Date	10/15	10/23	10/24
Max Daily Range	2325	803	103
Date	10/15	10/16	10/22

The greatest range in flow during a 24-hour period was 2325 cfs on October 15 when it went from 195 cfs to 2520 cfs at the Overton gauge, nearly a 13-fold increase in discharge (Table 2). The streamflow when Whooping Cranes were observed on the river and when river channel profiles were measured are shown in Table 3.

Table 3. Flow conditions during Whooping Crane use and channel profile measurements.

Use Site	Location ID	Use Date	Use Time	Measured Date	Measured Time	GI Discharge (cfs)	
						Use	Measured
2	A	5-Nov	1530	16-Nov	1250	238	392
1	A	6-Nov	0647	13-Nov	1345	221	314

**RIVERINE USE SITES-**

We collected river channel profile data at 2 Whooping Crane use locations and 9 decoy locations (Figures 6 and 7; Appendix C, pp. 1-7). Profiles were not collected at decoy sites with a dry riverbed. Data were entered into a Microsoft Access database. A total of 989 stations (3

readings at each station) were surveyed. Of these, 23 were removed due to errors and 966 stations were used in the database. Photographs depicting the habitat used were taken at both use sites (pp. 5-7 in Appendix C). Use Site 1 was the only roost found (Figures 1-2).

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

Visual obstructions from Whooping Crane riverine use sites are given in Table 4 (Appendix C, pp. 5-7). Substrate was characterized as primarily coarse sand. The average water depth at the roost location was  $0.11 \pm 0.01$  m. The values reflect slightly higher flows at the time measurements were taken (Table 3).

Table 4. Visual obstruction distance (m), substrate, and depth at two Whooping Crane riverine use sites.

Use Site ID	UTM X	UTM Y	VO Upstream Distance	VO Right Distance	VO Downstream Distance	VO Left Distance	Fine Sand %	Coarse Sand %	Depth (m)	Mgmt Practices
1	561826	4526485	187	221	219	268	10	90	.18	Recently disked by waterfowl hunters
2	561375	4526271	110	158	193	61	10	90	.04	Shredded by waterfowl hunters

**UNOBSTRUCTED WIDTH-**

Table 5 depicts unobstructed width at riverine use locations. The average width of the channel for Use Site 1 was  $363 \pm 0.5$  m and Use Site 2 was  $220 \pm 6$  m.

Table 5. Unobstructed channel width at riverine use sites (units in m).

Use Site ID	Profile ID	Transect	Obstr Width
1	28	Middle	363
1	29	Downstream	364
1	30	Upstream	364
2	31	Middle	219
2	32	Upstream	226
2	33	Downstream	215

**PROGRAM ID AND U.S. FISH & WILDLIFE SERVICE ID COMPARISONS-**

The U.S. Fish & Wildlife Service classified both Program sightings (2004FA01 to 02) as 04B-55 in the USFWS database as (Wally Jobman, personal communication). Table 6 compares

the Program numbering system with the USFWS database. We believe they migrated from the area on November 6 since they were not observed again.

Table 6. Comparison of Crane Group ID between Program and USFWS during fall 2004.

Program Crane ID	USFWS Crane ID	Dates of Occurrence	# of adults	# of juvenals	Total # of birds
2004FA-01	04B-55	11/06	4	2	6
2004FA-02	04B-55	11/05	4	2	6

LAND-COVER CLASS-

Wetted channel was the only cover-type Whooping Cranes were observed using.

ACTIVITY- Activity data were not collected because the birds were not observed by ground personnel.

***Search Effort.--***

Ground searches were initiated on two occasions. A total of 18.3 hours was expended in this effort (17.1 hours on the ground and 1.2 hours in the air). In addition, 329 miles were driven. Search duration extended from 1 to 10 hours. Searches occurred primarily in the morning hours and were generally terminated when the object was found and/or the 2-hour period was reached. An extended search occurred on November 6 when 6 Whooping Cranes were observed during the aerial survey. The ground crew was unsuccessful in spotting these Whooping Cranes as they departed from the riverine roost and did not locate them in the fields. They apparently migrated from the area that morning.

## **Discussion and Recommendations**

The number of confirmed Whooping Crane sightings in Nebraska was two including the one contained herein (Wally Jobman, personal communication). As of 4 January 2005, there were 69 confirmed sightings in the United States as follows: North Dakota- 18; South Dakota- 3; Nebraska- 2; Kansas- 23; Oklahoma- 17; Texas- 4; New Mexico- 1; and Colorado- 1. On December 1, a record 216 Whooping Cranes were counted on their wintering grounds in the vicinity of Aransas National Wildlife Refuge in Texas.

Our team members were directed by the Project Manager to critique methodologies, data sheets, etc. for the purposes of offering suggestions to the Technical Committee. The following comments are offered as a collective result of this year's effort.

***Data Sheets***

- Provide space for vital information on *every* sheet e.g. date, location, observer, time, etc.



- Add *Miles Driven* to the “Ground Monitoring Observations” form.
- Add *Flow* at nearest downstream and upstream gauge on the “Aerial Flight Observations” form.
- Edit the “...Use Site Characteristics” form as follows:
  - Add *Use Date*.
  - Add spaces for flow for both the measurement date and the use date for the nearest upstream and downstream gauging stations.
  - Add *Legal Description*.
  - Change the diagram to *Upstream, Left Bank, Downstream, and Right Bank*.
- Edit the “...Use Site Profiles” form as follows:
  - Add *Page \_\_ of \_\_* .
  - Add *Use Date*.
  - Add *Bank & Obstruction/waters edge* option under Locations.
  - Options for UTM box should read *North/Left or South/Right*.
  - Add *Count* column.

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

- Eliminate repetitive data entry in Profiles form for elevation units and possibly count.
- Incorporate streamflow information from the Overton, Kearney, and Grand Island gauging stations.
- Allow more space for notes/comments where appropriate.
- Need to account for multiple start points on Aerial Surveys form or where appropriate.
- Need to account for Opportunistic Locates (this was addressed during QAQC sessions but may need more consideration).

## **Fall 2004 Expenses**

The cost of field implementation of this project was about \$40,126. The cost of Draft Report was \$4191 and Final Report preparation was \$3165. The total estimated cost for the Fall 2004 effort was about \$47,482 (73% of the approved budget).

## **List of Appendices**

Appendix A. *Monitoring Whooping Crane Migrational Habitat Use in the Central Platte Valley* draft dated January 14, 2004.

Appendix B. Set of Data Sheets, Sighting Report Flyer, and Survey Transect Waypoints.

Appendix C. Photographs.

## **Supplement Contents**

Original Data Sheets                      80 pp.

Figure 1. Whooping Crane Riverine Use Sites 1 (magenta) and 2 (yellow). (UTM Use Site 1 = 561826, 4526685; Use Site 2 = 561375, 4526271).



Figure 2. Whooping Crane roost site (T11 R8 Sec 29 Hamilton County; Use Site 1) looking northwest. The circle and dots indicate approximate juxtaposition of the cranes (white dots = adults; red dots = juvenals).



Figure 3. Platte River mean daily flows (top) and total discharge (below) at Grand Island.

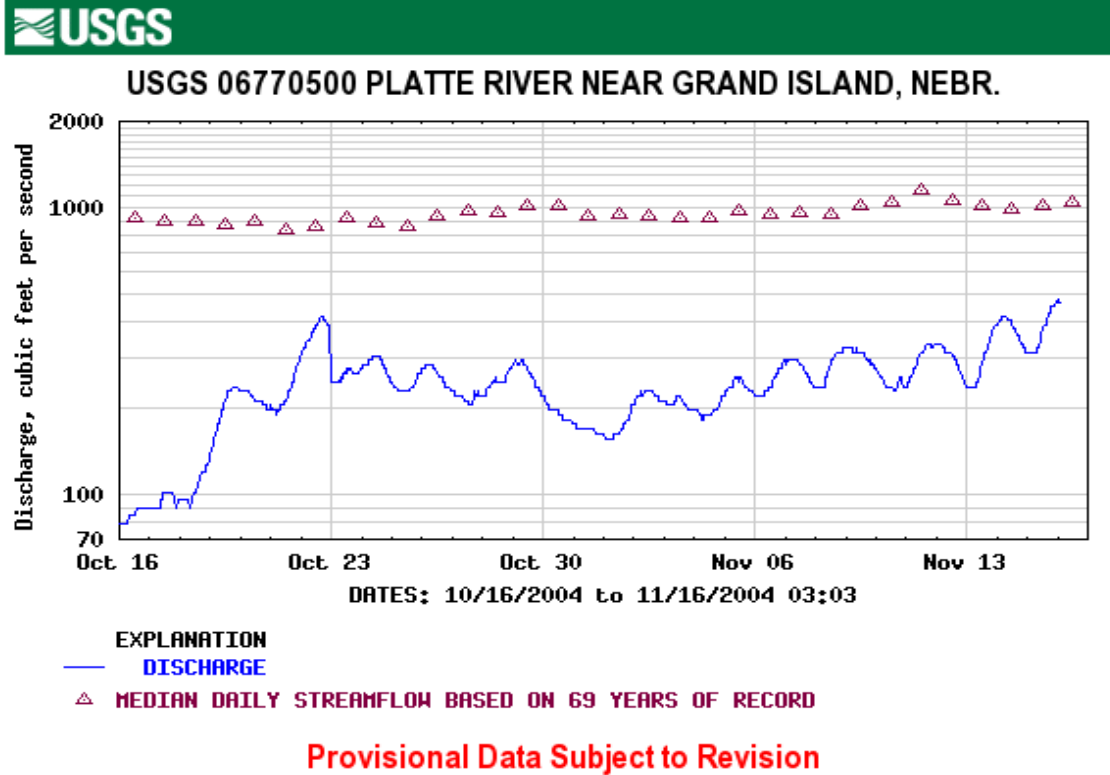
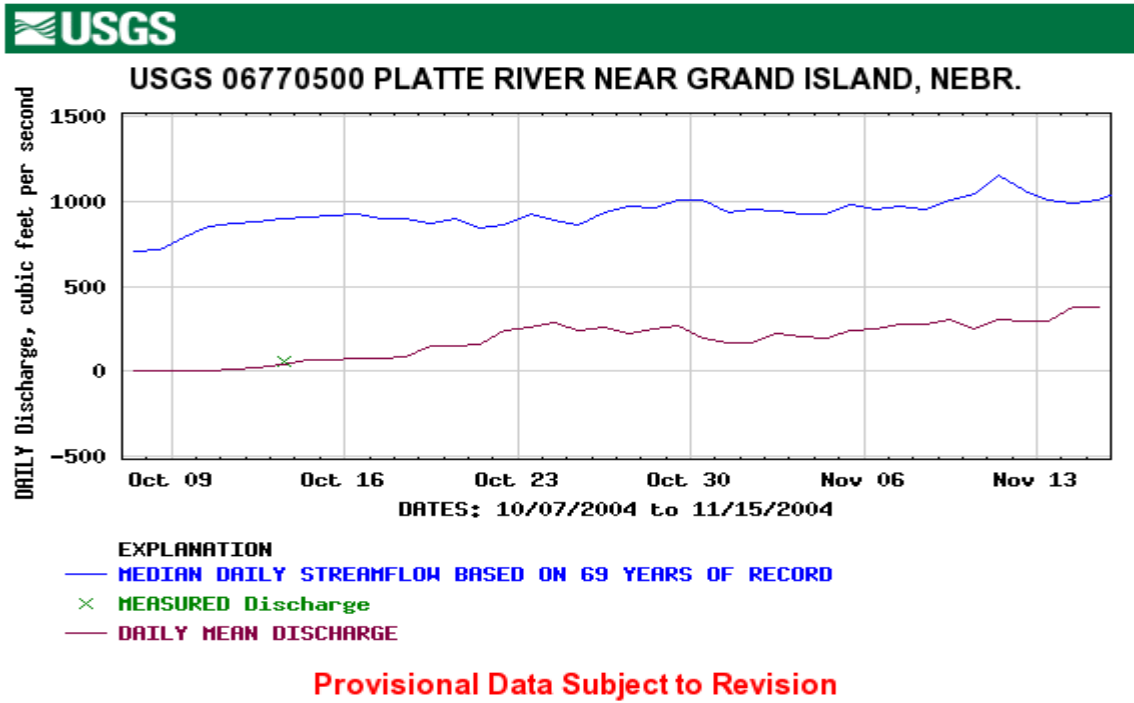


Figure 4. Platte River mean daily flows (top) and total discharge (below) at Kearney.

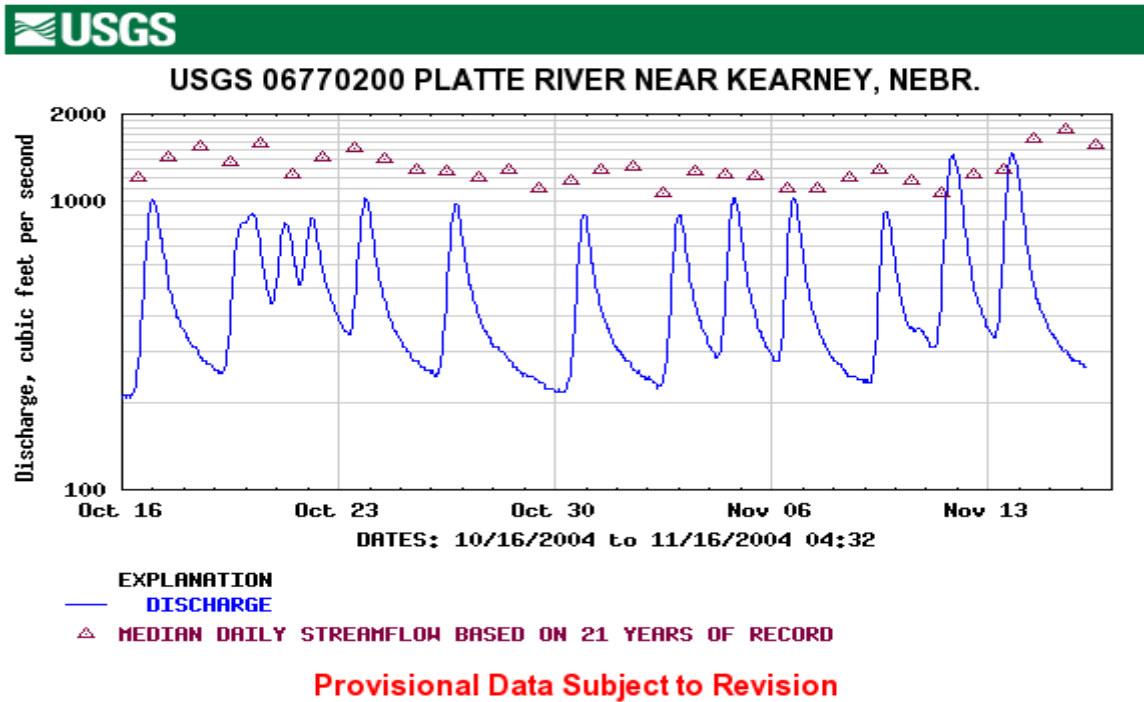
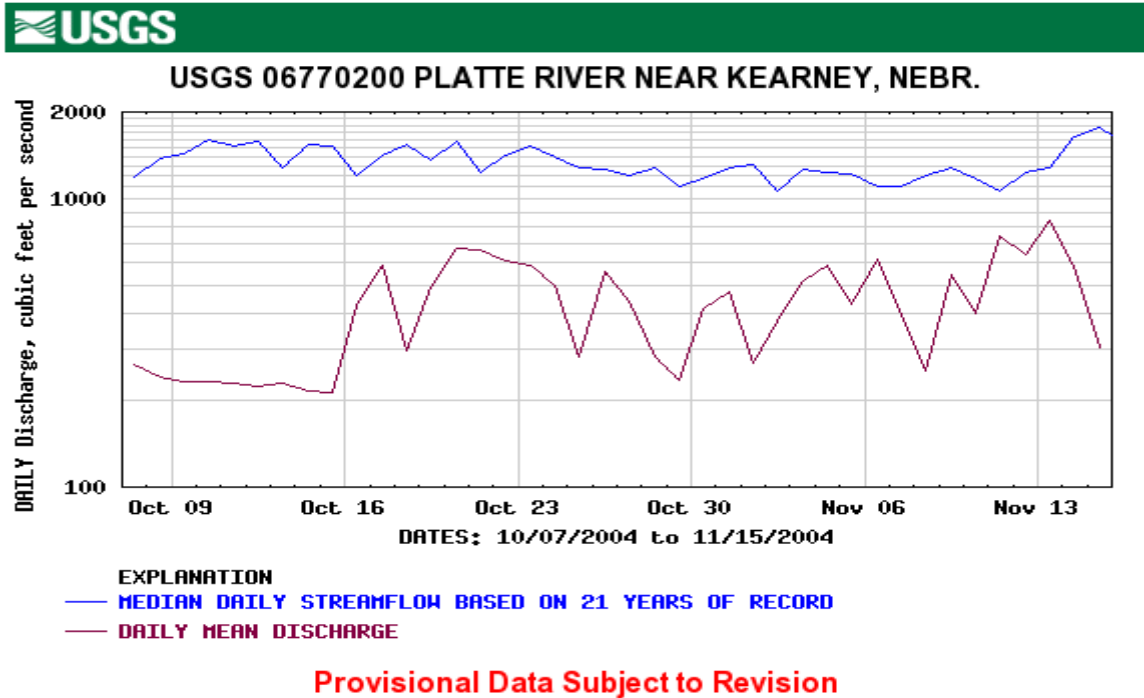


Figure 5. Platte River mean daily flows (top) and total discharge (below) at Overton.

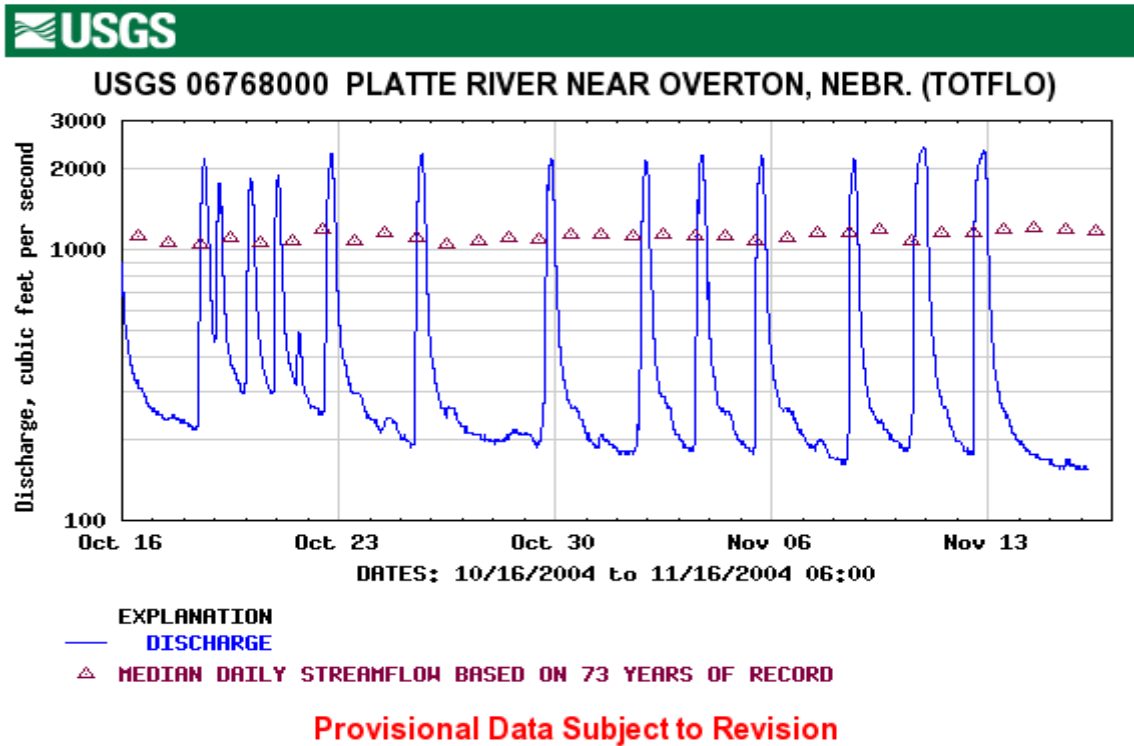
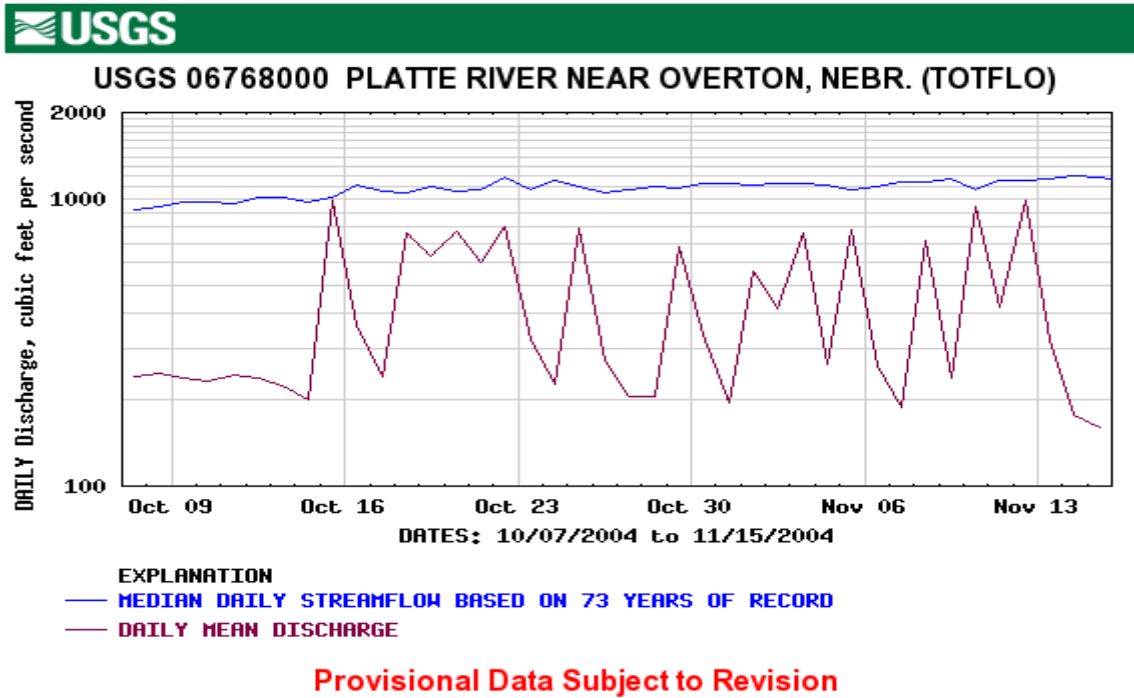
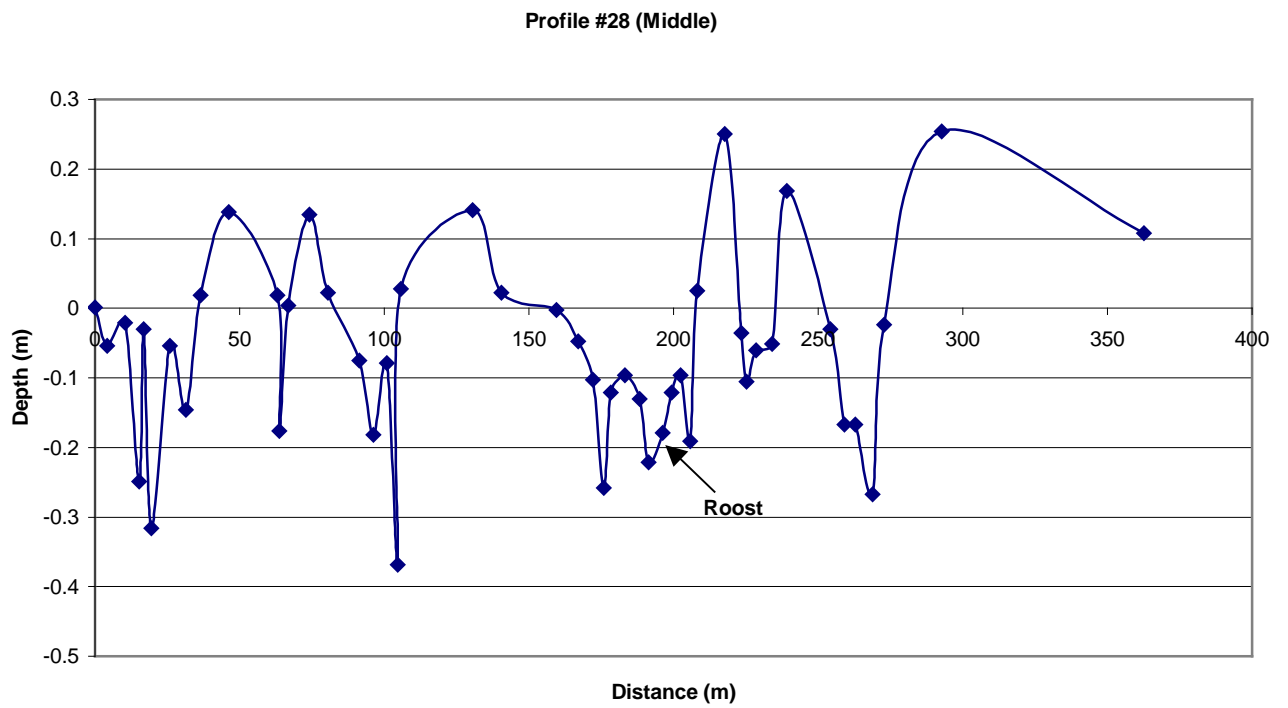
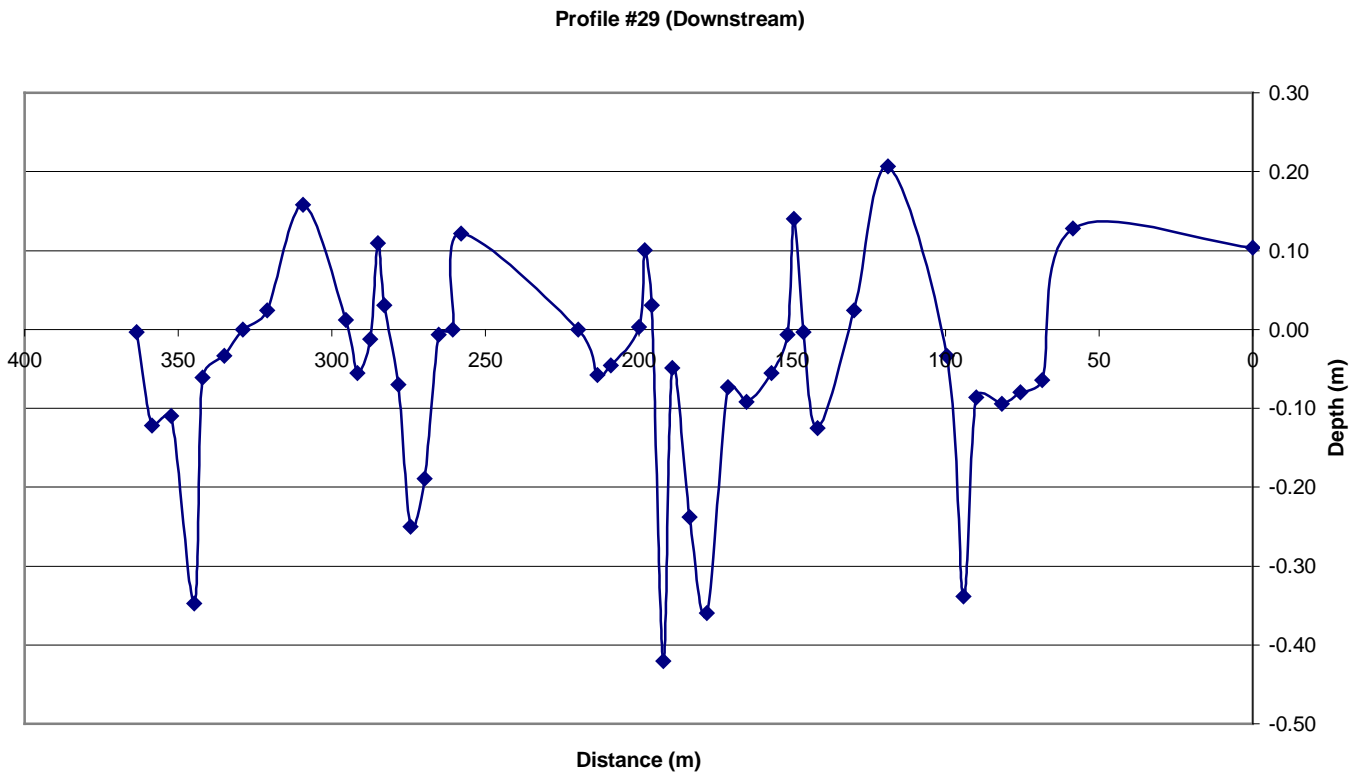


Figure 6. River channel profile at Use Site 1 (left to right bank). Arrow indicates roost location.





Profile #30 (Upstream)

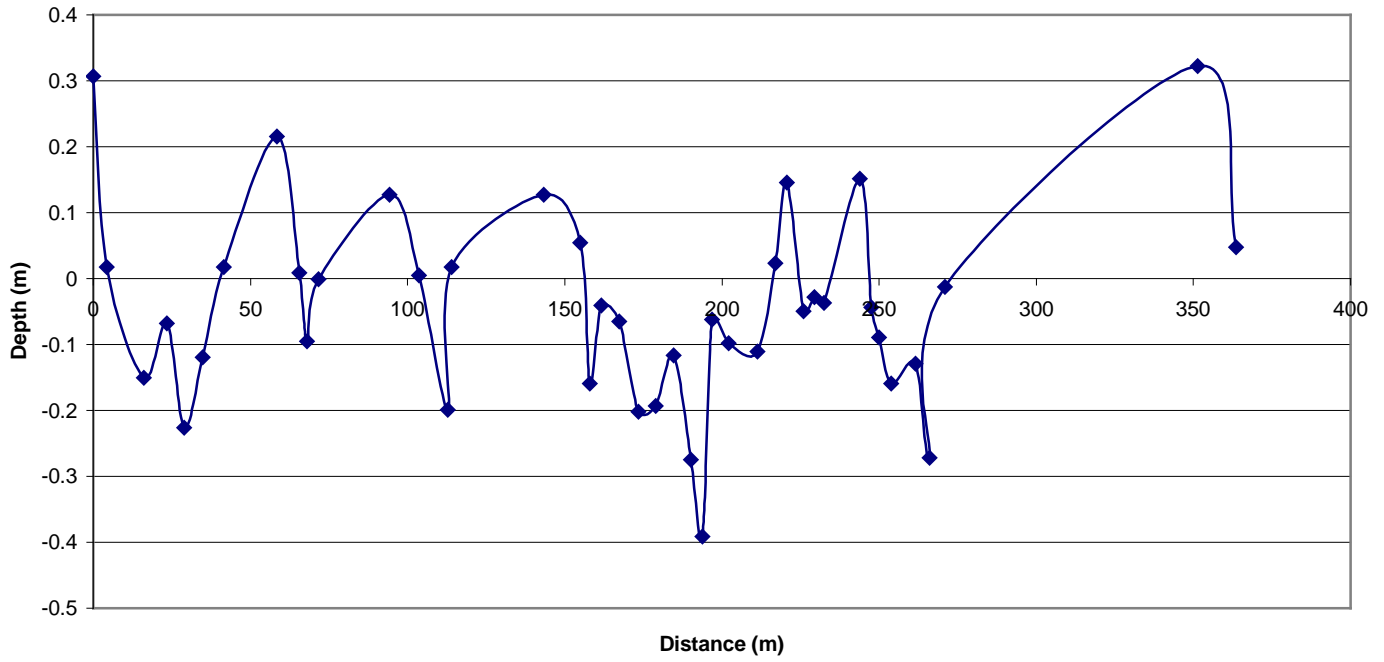
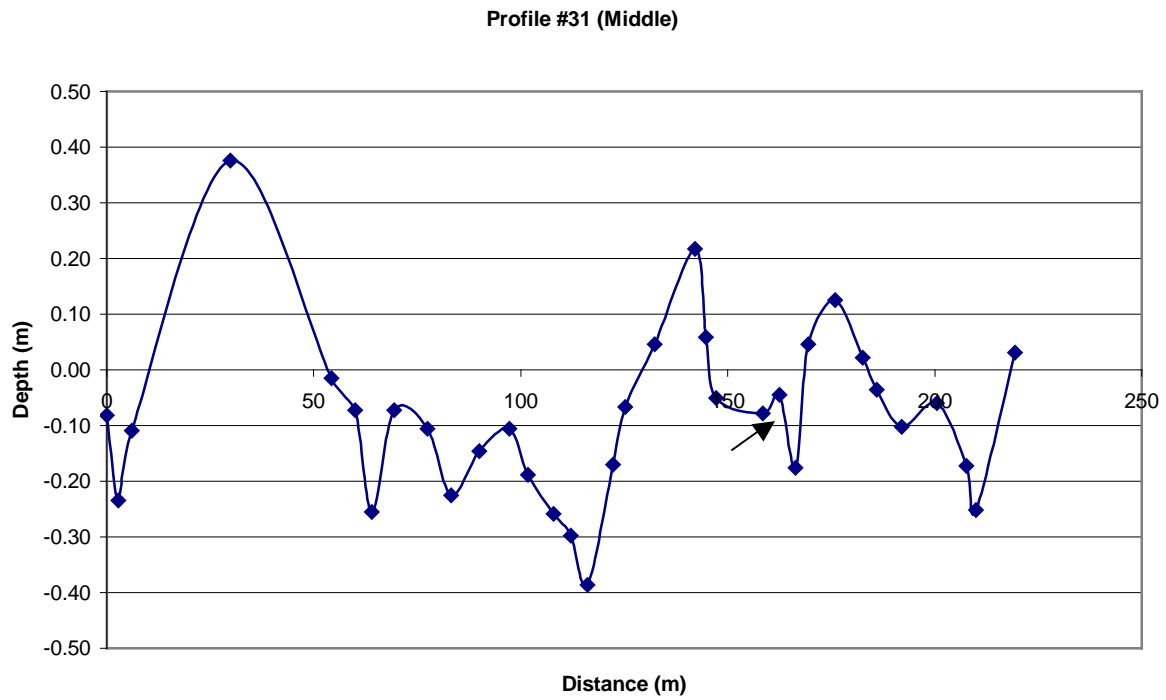
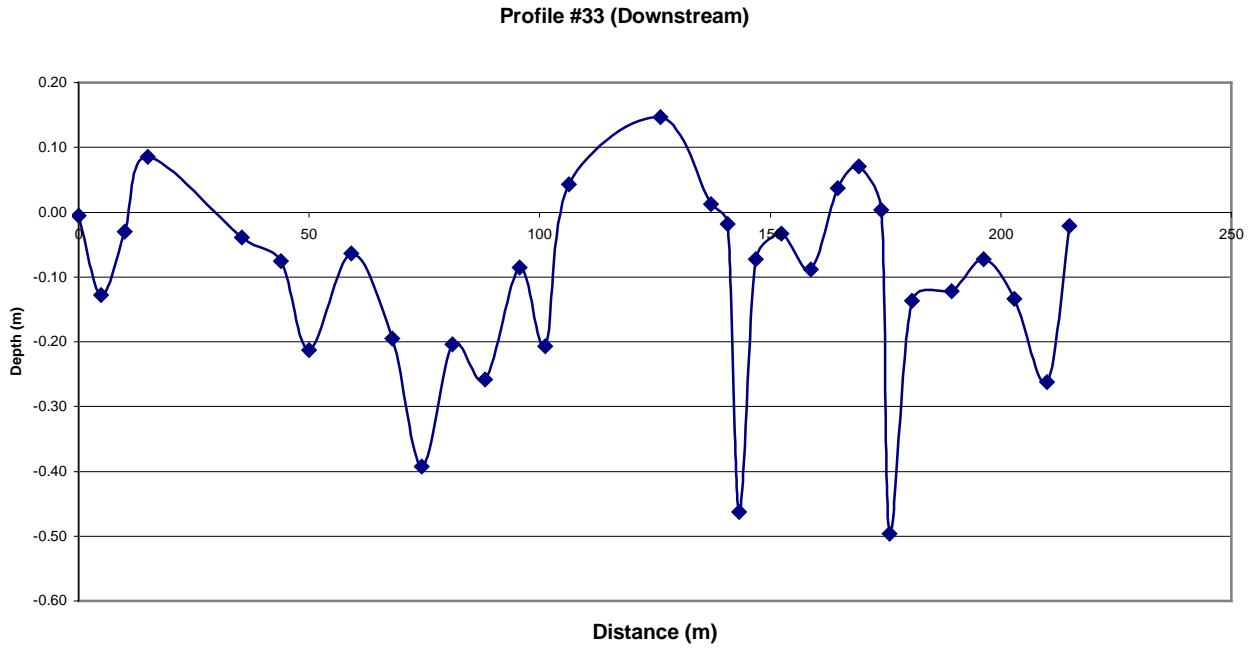


Figure 7. River channel profile at Use Site 2 (left to right bank). Arrow indicates approximate location of cranes.



Profile #32 (Upstream)

