

RECREATION USE STUDY REPORT

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INTERIM RECREATION USE TELEPHONE SURVEY RESULTS

# LOUP RIVER HYDROELECTRIC PROJECT FERC PROJECT No. 1256

## INTERIM RECREATION USE TELEPHONE SURVEY RESULTS



AUGUST 26, 2010



**Loup River Hydroelectric Project  
FERC Project No. 1256**

**Study 8.0  
Recreation Use  
Interim Recreation Use  
Telephone Survey Results**

**August 26, 2010**

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## STUDY 8.0 INTERIM RECREATION USE TELEPHONE SURVEY RESULTS

### 1. INTRODUCTION

The Loup River Hydroelectric Project (Project) is located in Nance and Platte counties, Nebraska, where water is diverted from the Loup River and routed through the 35-mile-long Loup Power Canal, which empties into the Platte River near Columbus. The Project includes various hydraulic structures, two powerhouses, and two regulating reservoirs. The portion of the Loup River from the Diversion Weir to the confluence with the Platte River is referred to as the Loup River bypass reach.

The Loup River Public Power District (Loup Power District or the District) has an established policy of providing public access and recreational opportunities at the Project. This includes the Loup Power Canal, the two regulating reservoirs (Lake Babcock and Lake North), five developed recreation areas, three multi-use trails, and the 485-acre Loup Lands Wildlife Management Area (WMA). The only areas within the 5,200-acre Project Boundary that are not accessible to the public are those that present safety or security concerns and those that have had significant vandalism issues.

The District estimates that the Project attracts 150,000 visitors annually. District recreation facilities are open to the public between May 1 and October 31 and at other times, weather permitting. The District conducted a recreation use study to gather data regarding existing recreation use of Project facilities. As part of the recreation use study, the District performed a Recreation Use Telephone Survey (telephone survey). This interim report documents the findings of the telephone survey.

### 2. GOALS AND OBJECTIVES OF STUDY

The goal of the recreation use study is to determine the public awareness, usage, perception, and demand of both the Project's existing recreation facilities (including fisheries) and the Loup River bypass reach (including the Loup Lands WMA), to determine if potential improvements are needed, and to develop a Recreation Management Plan to address existing and future recreation needs.

The following objectives of the recreation use study are relevant to the telephone survey:

1. To determine the public's perception and awareness of Project recreation facilities.
2. To collect data for use in the preparation of a Recreation Management Plan for the District's facilities.

### 3. STUDY AREA

The Project's recreation facilities primarily serve residents of Nance and Platte counties; therefore, the study area for the telephone survey is these two counties.

### 4. METHODOLOGY

#### *Task 1 Data Collection*

Consistent with the Revised Study Plan (Loup Power District, July 27, 2009), the District contracted a professional market research firm, The MSR Group, to conduct a telephone survey of residents in Nance and Platte counties. The telephone survey was conducted by professional research interviewers from the Omaha call center of The MSR Group between May 26 and June 9, 2010. The survey sampled 400 randomly listed households with zip codes in Nance and Platte counties in order to determine the general awareness and perception of the Project's recreational opportunities.

Notable methods and key understandings associated with the telephone survey are as follows:

- The District's telephone survey instrument incorporated study clarifications noted in FERC's Study Plan Determination (FERC, August 26, 2009).
- The MSR Group conducted a 12-minute telephone survey with adults (age 18 and older) in Nance and Platte counties using the survey instrument provided by the District (see Attachment A).
- To help eliminate any non-response bias, each telephone number from the sample list was called a minimum of 5 times before declaring that the number was unreachable.
- For a sample of 400 respondents, the maximum sampling error<sup>1</sup> is  $\pm 4.9$  percent at the 95 percent confidence level. In other words, if the same survey were conducted 100 times, 95 of those times the results would be no more than 4.9 percentage points higher or lower than the results if the entire population were interviewed. This estimate of sampling error assumes through random selection that all members of the survey area have a known, equal chance of being included in the study's sample.

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<sup>1</sup> Sampling error attempts to define how large a difference there is likely to be between the results obtained from the survey sample and what the results would be if the entire population were to be interviewed.

**Task 2 Data Analysis**

The responses to the telephone survey were tabulated by The MSR Group and provided to the District in three forms:

- An executive report that summarizes the telephone survey results in graphical form (see Attachment B).
- A listing of verbatim responses to questions that allowed for a free-form response (questions 3A, 3B, 3C, 4AA, 4AB, 4C, and 6A) (see Attachment C).
- Cross-tabulations of survey responses by county, age group, and gender (see Attachment D).

**5. RESULTS AND DISCUSSION**

Notable findings of the telephone survey are summarized below. More detailed findings, including cross-tabulations, are provided in Attachments B, C, and D.

*Demographic Summary*

Tables 5-1, 5-2, and 5-3 summarize the demographic makeup of survey respondents by county, age group, and gender.

**Table 5-1. Survey Respondents by County**

County	Percentage of Respondents
Nance	11.8
Platte	88.3

Notes:

<sup>1</sup> 2009 Nance County population = 3,460 persons (U.S. Census Bureau, August 16, 2010a).

<sup>2</sup> 2009 Platte County population = 32,515 persons (U.S. Census Bureau, August 16, 2010b).

**Table 5-2. Survey Respondents by Age Group**

Age	Percentage of Respondents
18 to 24	2.0
25 to 34	10.0
35 to 44	22.8
45 to 54	24.5
55 to 64	16.5
65 or older	24.3



**Table 5-3. Survey Respondents by Gender**

Gender	Percentage of Respondents
Male	37.5
Female	62.5

*Awareness of Loup Power District Recreation Facilities*

The telephone survey indicates an overall awareness among respondents that the District provides recreational opportunities. Specifically, less than 1 percent of all respondents were NOT aware of any District recreation facilities. Awareness of specific District recreation facilities varied among respondents. The recreation facilities with the greatest and least respondent awareness are highlighted as follows:

- Lake North Park and Lake Babcock Park have the highest awareness, both with more than nine out of ten respondents aware of each.
- The District’s three trail facilities had the lowest awareness, with less than five out of ten respondents aware of each.

*Usage of Loup Power District Recreation Facilities*

Of the respondents who mentioned that they are aware of the following recreation sites, the percentage who say that someone from their household visited the site within the last 12 months is indicated below (provided in descending order of visitation):

- Lake Babcock Park – 57%
- Lake North Park – 55%
- Headworks Park – 36%
- Bob Lake Trail – 32%
- Columbus Powerhouse Park – 29%
- Two Lake Trail – 27%
- Robert White Trail – 25%
- Tailrace Park – 22%
- Headworks OHV Park – 20%

Respondents most frequently mentioned location as the reason why they use District recreation sites. Conversely, respondents who have not visited District recreation sites in the last year most frequently indicate the reason as “too busy” or “not

interested in recreation.” Table 5-4 summarizes the months of highest and lowest use for each of the District’s nine recreation sites.

**Table 5-4. Months of Highest and Lowest Recreation Use by Site**

Site	Month of Highest Use	Month of Lowest Use
Headworks Park	July	December
Headworks OHV Park	July	February
Lake Babcock Park	July	January
Lake North Park	July	February
Columbus Powerhouse Park	July	December
Tailrace Park	July	November/December
Two Lakes Trail	July	February
Bob Lake Trail	July	January/December
Robert White Trail	July	February/December

As indicated in Table 5-4, there is a significant lack of use of the District’s recreation sites during the winter months. The following data suggest that the existing survey schedule for Study 8.0, Recreation Use, noted in the Revised Study Plan (Loup Power District, July 27, 2009) as ending on October 31, 2010, is sufficient to obtain necessary recreation user data for incorporation into the District’s pending Recreation Management Plan.

Of the respondents who mentioned that they are aware of the following recreation sites, the percentage of respondents stating that no one from their household visited the specified recreation site between November 1, 2009, and February 28, 2010, is indicated by the percentage ranges below (provided in descending order of non-visitation):

- Lake North Park – 94.8 to 96.7 percent
- Headworks OHV Park – 92.9 to 97.6 percent
- Lake Babcock Park – 92.8 to 96.2 percent
- Tailrace Park – 91.4 to 94.3 percent
- Columbus Powerhouse Park – 90.0 to 96.0 percent
- Headworks Park – 89.9 to 96.6 percent
- Trails – 88.0 to 100.0 percent

To put the above information into context, an average of greater than 50 percent of the respondents who are aware of the District’s recreation areas indicate that they visited the areas during July.

*Ratings of Loup Power District Recreation Facilities*

The telephone survey asked respondents to rate the District’s recreation facilities. Among the recreation facilities inquired upon, trails were the highest rated facility, with almost 7 out of 10 respondents rating them as “Excellent” or “Above Average.” Table 5-5 summarizes the percentage of respondents rating the District’s recreational facilities as Excellent/Above Average, Average, or Below Average/Poor.

**Table 5-5. Ratings of District Recreation Facilities**

Facility	Rating (percent <sup>1</sup> )		
	Excellent/ Above Average	Average	Below Average/ Poor
Trails	67.6	16.5	0.4
Campgrounds	33.1	40.5	3.2
Parking Lot	32.8	58.5	2.5
Picnic Area	33.5	51.8	3.2
Off-Highway Vehicle Park	29.6	40.5	1.1
Shoreline Fishing Area	26.5	36.3	5.6
Children’s Playground	22.8	40.8	12.0
Restroom Facilities	17.6	50.7	14.5
Swimming Beach	14.8	33.2	19.8
Boat Ramps	14.8	26.8	3.5

Note:

<sup>1</sup> Percentages do not total 100 due to “Not Applicable” ratings.

*Importance of Recreational Opportunities*

The telephone survey also asked respondents to rate the importance of the recreational opportunities provided by the District. The results were as follows:

- When respondents who are aware of District sites were asked to rate the importance of recreational opportunities, relaxing/hanging out and trails were rated as most important; conversely, jet skiing and water skiing were rated as least important.
- When respondents who are NOT aware of District sites were asked to rate the importance of recreational opportunities, children’s playground and

relaxing/hanging out were rated as most important; conversely, jet skiing and motorized boating were rated as least important.

## 6. STUDY VARIANCE

This study has been performed consistent with the methods outlined in the District's Revised Study Plan (Loup Power District, July 27, 2009) and as modified via FERC's Study Plan Determination (FERC, August 26, 2009). No discernable study variance occurred.

## 7. REFERENCES

- FERC. August 26, 2009. Letter from Jeff C. Wright, Director, Office of Energy Projects, FERC, to Neal D. Suess, President/CEO, Loup Power District, regarding Study Plan Determination for the Loup River Hydroelectric Project.
- Loup Power District. October 16, 2008. Pre-Application Document. Volume 1. Loup River Hydroelectric Project. FERC Project No. 1256.
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- U.S. Census Bureau. August 16, 2010a. "Nance County, Nebraska." *State and County QuickFacts*. Retrieved on August 24, 2010. <http://quickfacts.census.gov/qfd/states/31/31125.html>.
- U.S. Census Bureau. August 16, 2010b. "Platte County, Nebraska." *State and County QuickFacts*. Retrieved on August 24, 2010. <http://quickfacts.census.gov/qfd/states/31/31141.html>.

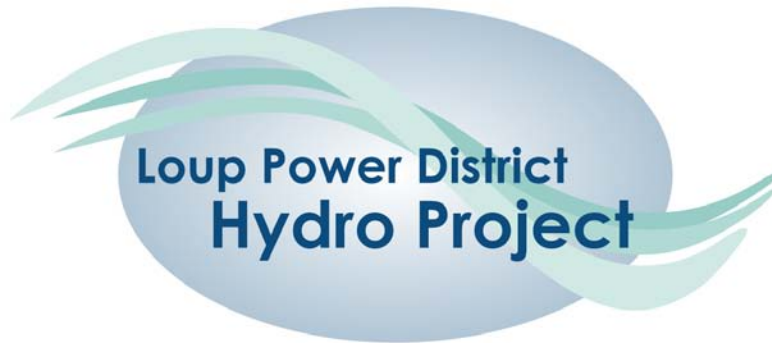
GENERAL RECREATION USE REPORT

# LOUP RIVER HYDROELECTRIC PROJECT FERC PROJECT No. 1256

## GENERAL RECREATION USE



FEBRUARY 11, 2011



**Loup River Hydroelectric Project  
FERC Project No. 1256**

# **Study 8.0 Recreation Use General Recreation Use Report**

**February 11, 2011**

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- Attachment A Recreation Use of the Loup River Bypass Reach Study Plan
- Attachment B Loup Power Canal Field Observation Forms
- Attachment C Loup Power Canal Survey Responses – Supplemental Tables
- Attachment D Public Comments Regarding Fishing Opportunities
- Attachment E Interim Recreation Use Telephone Survey Results
- Attachment F Loup River Bypass Reach Field Observation Forms

## STUDY 8.0                    GENERAL RECREATION USE REPORT

### 1.        INTRODUCTION

The Loup River Hydroelectric Project (Project) is located in Nance and Platte counties, Nebraska, where water is diverted from the Loup River and routed through the 35-mile-long Loup Power Canal, which empties into the Platte River near Columbus. The Project includes various hydraulic structures, two powerhouses, and two regulating reservoirs. The portion of the Loup River from the Diversion Weir to the confluence with the Platte River is referred to as the Loup River bypass reach.

The Loup River Public Power District (Loup Power District or the District) has an established policy of providing public access and recreational opportunities at the Project. This includes the Loup Power Canal, the two regulating reservoirs (Lake Babcock and Lake North), five developed recreation areas, three multi-use trails, and the 485-acre Loup Lands Wildlife Management Area (WMA). The only areas within the 5,200-acre Project Boundary that are not accessible to the public are those that present safety or security concerns and those that have had significant vandalism issues. District recreation areas are open to the public between May 1 and October 31 and at other times, weather permitting.

In 2010, the District conducted a comprehensive recreation use study, which included both a recreation use survey and an angler use and harvest (creel) survey, to gather data regarding existing recreation use of Project facilities, including use by anglers. The results of the recreation use survey are presented in this report while the results of the creel survey are presented in this Second Initial Study Report, Appendix F2, Creel Survey Report. The data collected from this recreation use study, including both the recreation use survey and the creel survey, and Study 10.0, Land Use Inventory, will be used by the District in the development of a Recreation Management Plan for District facilities. The Recreation Management Plan will outline District plans for enhancing existing recreation facilities and meeting future recreation demands.

In its Study Plan Determination, dated August 26, 2009, the Federal Energy Regulatory Commission (FERC) added the requirement for two interim recreation reports—Interim Recreation Use Telephone Survey Results and Interim General Recreation Use Report—to determine if recreation use survey period(s) should be extended. The Interim Recreation Use Telephone Survey Results were filed on August 26, 2010, as part of the District’s Initial Study Report. The Interim General Recreation Use Report was filed on September 15, 2010. Both reports were prepared in accordance with FERC’s Study Plan Determination. In addition to providing limited results from data collection activities available at the time of submittal, the reports focused on data collection pertinent to recreation use outside of the District’s existing survey schedule.

## 2. GOALS AND OBJECTIVES OF STUDY

The goal of the recreation use study is to determine the public awareness, usage, perception, and demand of both the Project’s existing recreation facilities (including fisheries) and the Loup River bypass reach (including the Loup Lands WMA), to determine if potential improvements are needed, and to develop a Recreation Management Plan to address existing and future recreation needs.

The objectives of the recreation use study are as follows:

1. To measure recreation usage of Project recreation facilities (including fisheries) and the Loup River bypass reach (including the Loup Lands WMA).
2. To document the types of recreation use occurring at Project recreation facilities and along the Loup River bypass reach.
3. To determine whether Project recreation facilities meet current demand.
4. To determine the public’s perception and awareness of Project recreation facilities, including fisheries, and to identify the impact of Project operations on recreation experiences.
5. To determine what species anglers are targeting and catching, including catch rates.
6. To collect data for use in the preparation of a Recreation Management Plan for the District’s facilities.

## 3. STUDY AREA

Almost all of the 5,200 acres within the Project Boundary are open and accessible for public recreation. Although non-angling recreation use was documented along the entire Loup Power Canal, special emphasis was placed on the recreation areas listed below and depicted in Figure 3-1 (Sheets 1 through 5):

- Headworks Park – parking areas, camp sites, picnic areas, identified fishing sites, and Headworks [Off-highway Vehicle] OHV Park
- Loup Lands WMA – all three tracts (Tracts G, H, and D) in accordance with FERC’s Study Plan Determination dated August 26, 2009
- Lake Babcock Park (aka Loup Park) – parking areas, camp sites, picnic areas, shoreline, and in Lake Babcock
- Lake North Park – parking areas, camp sites, picnic shelters, shoreline, and in Lake North
- Columbus Powerhouse Park – parking area, picnic area, and identified fishing sites

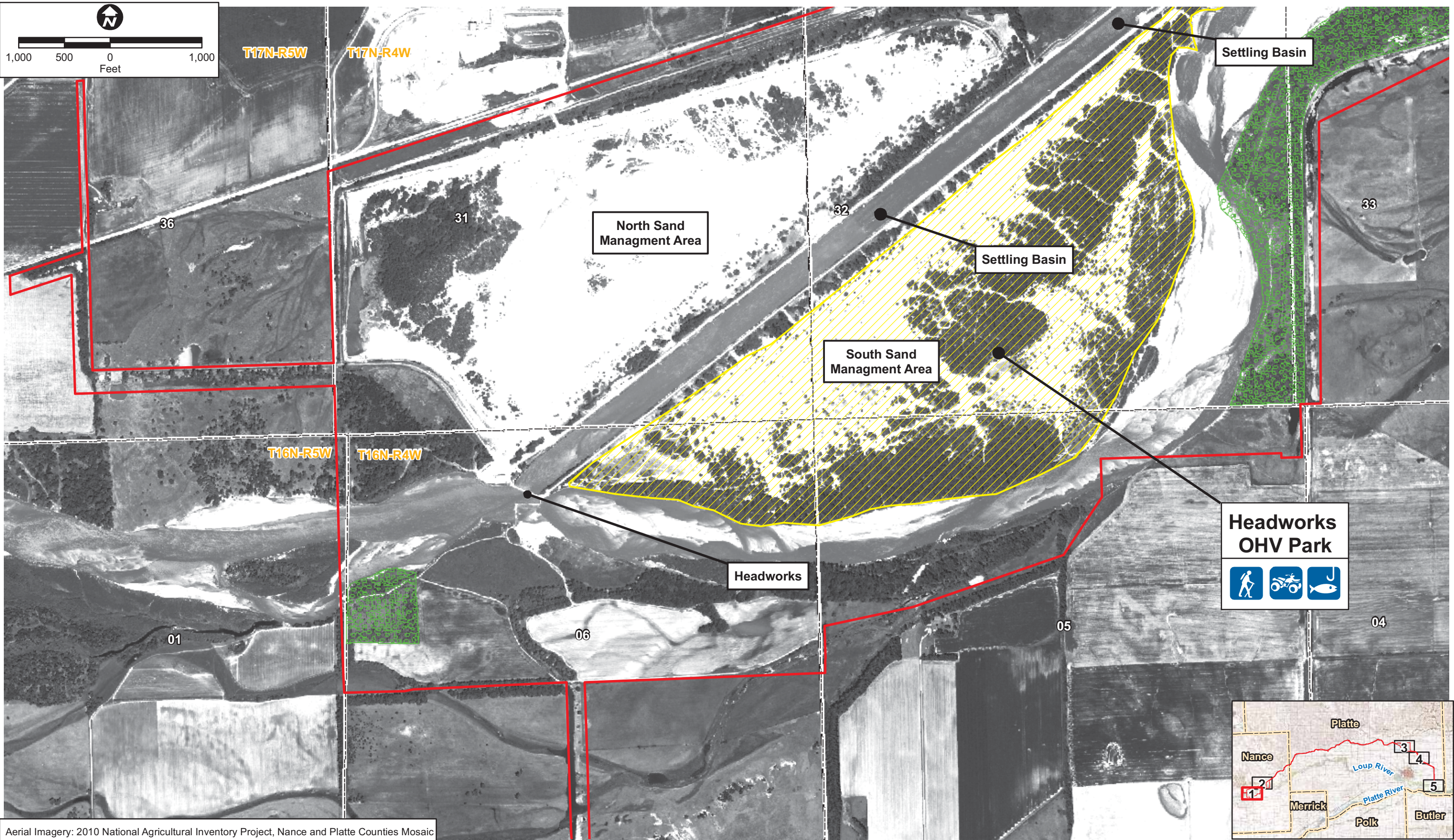
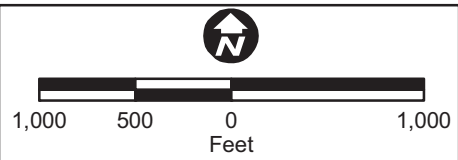
- Tailrace Park – parking area, identified fishing sites, and playground

In addition, non-angling recreation use was documented along the Loup River bypass reach. The locations used to access the Loup River bypass reach are listed below from west to east and are shown in Figure 3-2:

- District property immediately south of the Diversion Weir
- Headworks Park (Weir Park Camp)
- Loup Lands WMA
- Don Dworak WMA
- Nebraska Highway 39 Loup River Bridge
- George D. Syas WMA
- 370<sup>th</sup> Avenue Loup River Bridge
- Looking Glass Creek WMA
- Pawnee Park
- U.S. Highway 81 Loup River Bridge

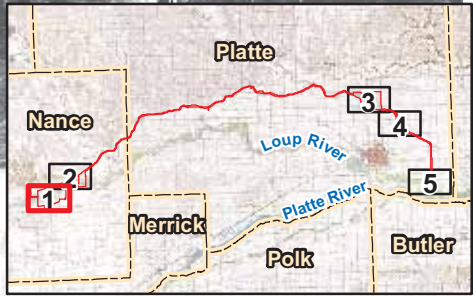
Additional detail on these public access locations is provided in Section 5.7, Loup River Bypass Reach Recreation Facility Inventory.

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Aerial Imagery: 2010 National Agricultural Inventory Project, Nance and Platte Counties Mosaic

**Headworks  
OHV Park**



Legend	
Approximate Project Boundary	Swimming
Section Line	Restrooms
Corporate Limits	Potable Water
County Line	Wheel Chair Accessible Restroom
Park / Recreation	Fishing
Loup Lands Wildlife Management Area	Boat Ramp
Bicycle	Picnic
Off-Road Vehicle	Parking
RV Hookup	Playground
Hiking	Camping
Grill	

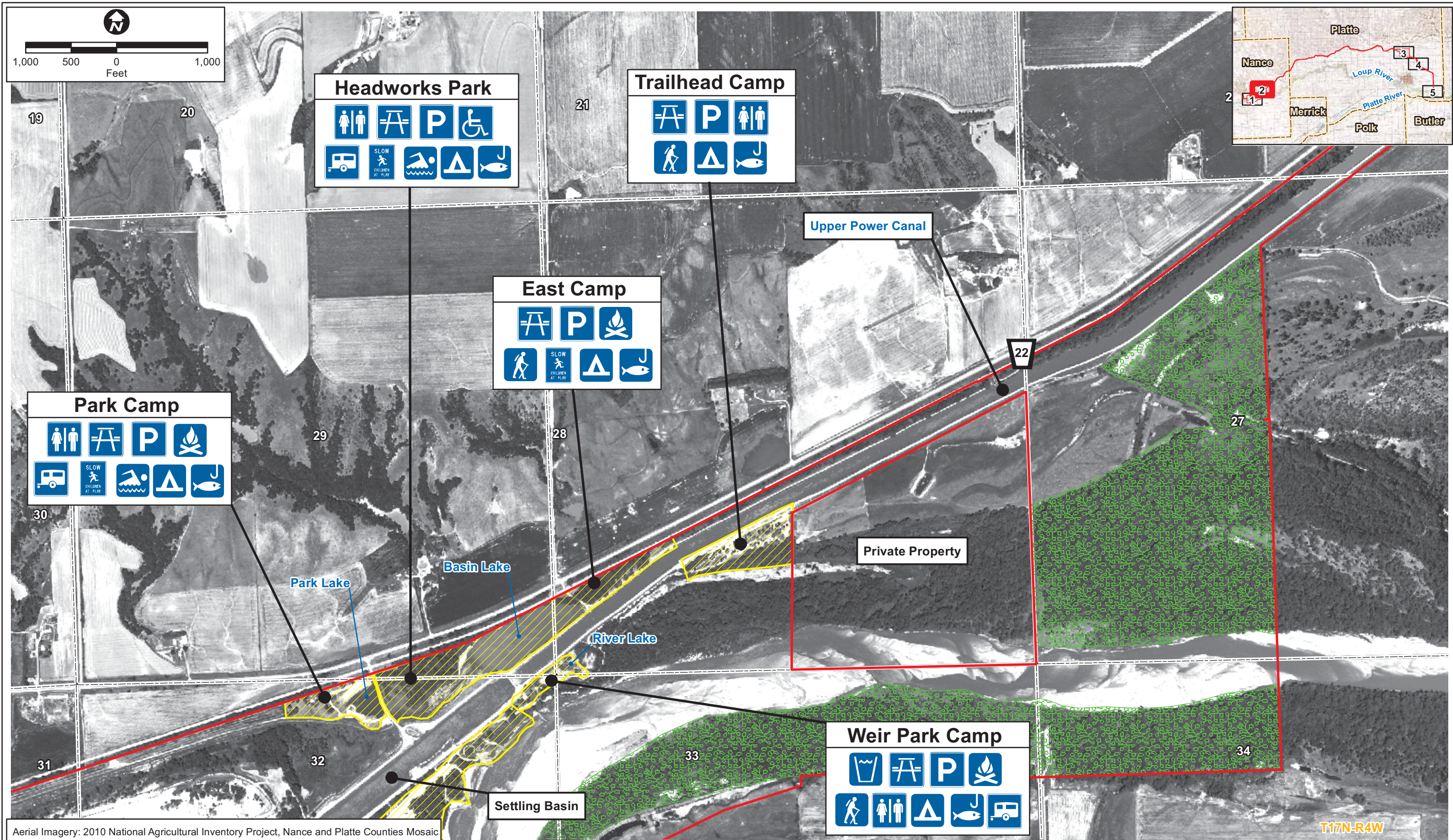


**Recreational Facilities**

Loup River Hydroelectric Project  
FERC Project No. 1256  
Study 8.0 Recreation Use



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Aerial Imagery: 2010 National Agricultural Inventory Project, Nance and Platte Counties Mosaic

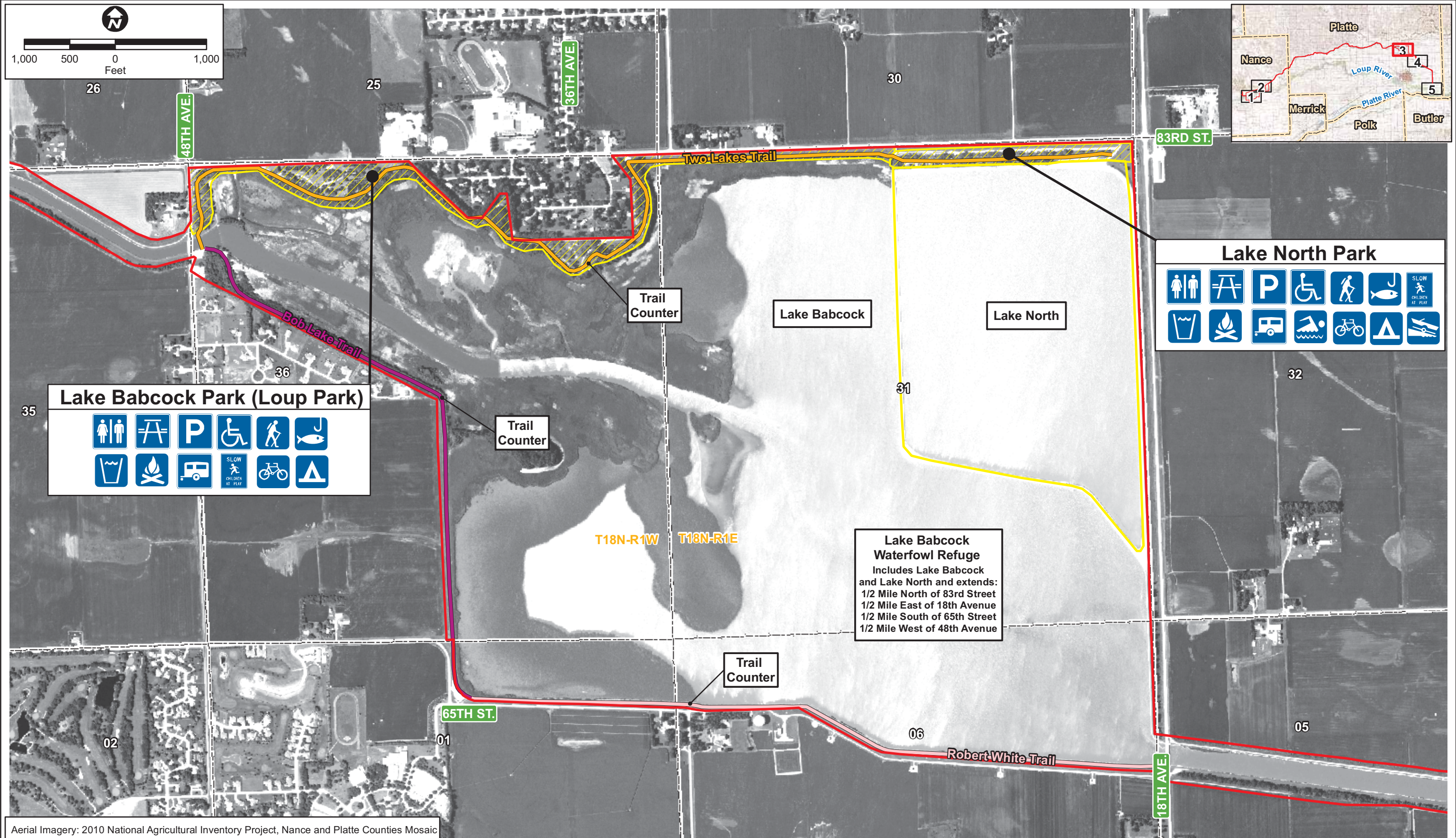
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Legend	
	Approximate Project Boundary
	Section Line
	Corporate Limits
	County Line
	Park / Recreation
	Loup Lands Wildlife Management Area
	Swimming
	Bicycle
	Boat Ramp
	Restrooms
	Picnic
	Parking
	Potable Water
	Wheel Chair Accessible Restroom
	Fishing
	Off-Road Vehicle
	RV Hookup
	Playground
	Hiking
	Camping
	Grill



<p><b>Recreational Facilities</b></p> <p>Loup River Hydroelectric Project          FERC Project No. 1256          Study 8.0 Recreation Use</p>	<p>Sheet 2 of 5</p>	<p>DATE</p> <p>February 2011</p>
	<p>FIGURE SERIES</p> <p>3-1</p>	
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**Lake North Park**


**Lake Babcock Park (Loup Park)**


**Lake Babcock Waterfowl Refuge**  
 Includes Lake Babcock and Lake North and extends:  
 1/2 Mile North of 83rd Street  
 1/2 Mile East of 18th Avenue  
 1/2 Mile South of 65th Street  
 1/2 Mile West of 48th Avenue

Aerial Imagery: 2010 National Agricultural Inventory Project, Nance and Platte Counties Mosaic

**Legend**

Approximate Project Boundary	Park / Recreation	Swimming	Restrooms	Potable Water	Off-Road Vehicle	Hiking
Section Line	Loup Lands Wildlife Management Area	Bicycle	Picnic	Wheel Chair Accessible Restroom	RV Hookup	Camping
Corporate Limits		Boat Ramp	Parking	Fishing	Playground	Grill
County Line						



**Recreational Facilities**

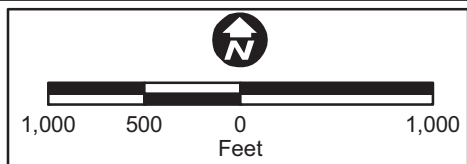
Loup River Hydroelectric Project  
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DATE  
February 2011

FIGURE SERIES  
3-1

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**Columbus Powerhouse Park**

Columbus Powerhouse

Columbus

Aerial Imagery: 2010 National Agricultural Inventory Project, Nance and Platte Counties Mosaic

Legend	
	Approximate Project Boundary
	Section Line
	Corporate Limits
	County Line
	Park / Recreation
	Loup Lands Wildlife Management Area
	Swimming
	Restrooms
	Potable Water
	Off-Road Vehicle
	Hiking
	Bicycle
	Picnic
	Wheel Chair Accessible Restroom
	RV Hookup
	Camping
	Boat Ramp
	Parking
	Fishing
	Playground
	Grill



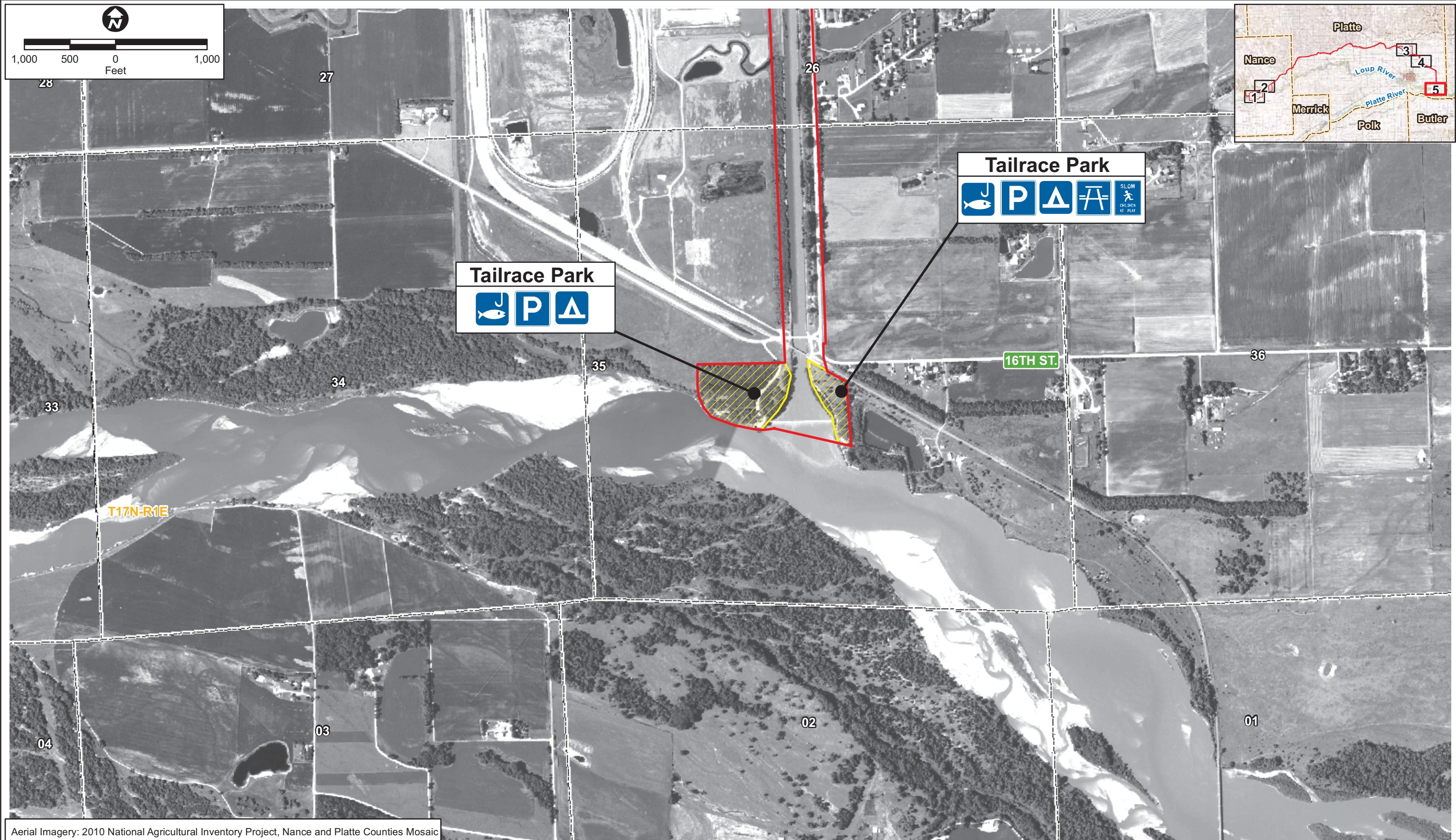
### Recreational Facilities

Loup River Hydroelectric Project  
FERC Project No. 1256  
Study 8.0 Recreation Use

Sheet 4 of 5

DATE	February 2011
FIGURE SERIES	3-1

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Aerial Imagery: 2010 National Agricultural Inventory Project, Nance and Platte Counties Mosaic

Legend	
Approximate Project Boundary	Swimming
Section Line	Bicycle
Corporate Limits	Boat Ramp
County Line	Restrooms
Park / Recreation	Picnic
Loup Lands Wildlife Management Area	Parking
Potable Water	Wheel Chair Accesible Restroom
Off-Road Vehicle	Fishing
Motorcycle	Playground
Hiking	Grill
RV Hookup	Camping



**Recreational Facilities**

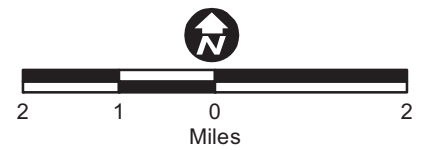
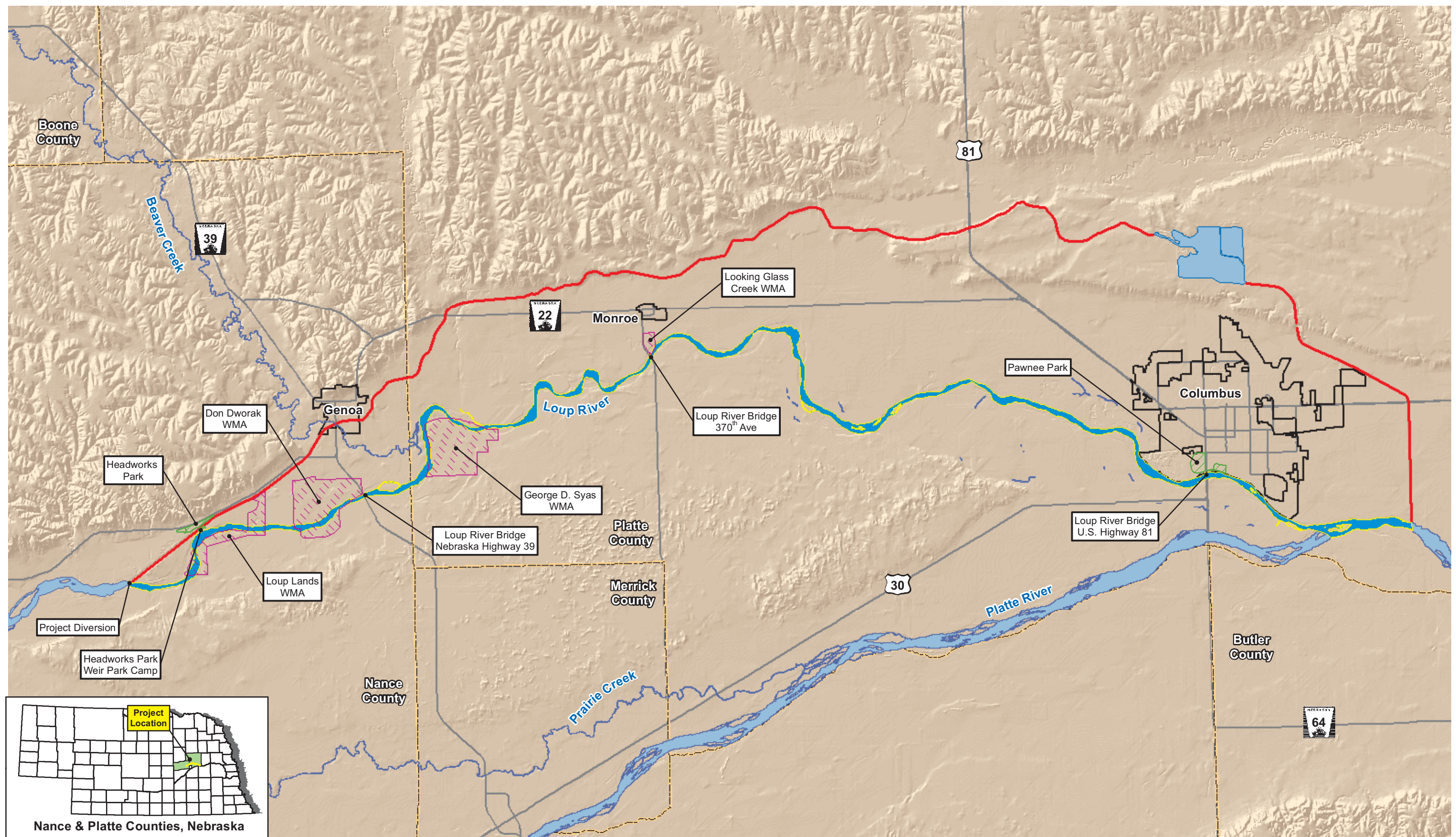
Loup River Hydroelectric Project  
 FERC Project No. 1256  
 Study 8.0 Recreation Use

Sheet 5 of 5

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DATE	February 2011
FIGURE SERIES	3-1

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Streams/Lakes: USGS National Hydrography Dataset, Roads: ESRI-Streetmap, Parks: Loup Power District, WMA: Nebraska Game and Parks Commission.

**Legend**

- Loup Power Canal
- Major Road
- Loup River Bypass Reach
- River / Waterway
- Public Parks
- Wildlife Management Area (WMA)
- Corporate Limits
- County Line



**Loup River Bypass Reach  
Public Access Locations**

Loup River Hydroelectric Project  
FERC Project No. 1256  
Study Area 8.0 Recreation Use

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DATE	February 2011
FIGURE	3-2

## 4. METHODOLOGY

The methodology used to complete the recreation use study included four tasks, described below.

### *Task 1 Pre-Survey Activities*

Pre-survey activities were completed as follows:

- Recreation Use of the Loup River Bypass Reach Study Plan – In response to FERC’s Study Plan Determination requirement to survey the Loup River bypass reach for recreation use, the District initiated a separate study plan to detail this effort. The District provided the study plan to FERC, the National Park Service (NPS), and the Nebraska Game and Parks Commission (NGPC) for review. The comments received were incorporated, and the study plan was finalized. This study plan is provided as Attachment A.
- Survey Proctor Training – District staff and District representatives attended NGPC survey proctor training on February 11, 2010. During this training, final survey schedules were established in accordance with NGPC protocols for randomizing survey efforts.
- Outreach – To encourage public participation in the in-person recreation use surveys and the telephone surveys, the District prepared press releases, paid newspaper advertisements, and website updates to announce the surveys. In addition, signs notifying recreation users of the in-person survey were posted at multiple entry points to the District’s recreation facilities.

### *Task 2 Data Collection*

An inventory, including a physical description, of recreation facilities was conducted at District-owned recreation sites located along the Loup Power Canal and at public access locations used during the recreation use survey along the Loup River bypass reach. Findings of the facility inventory were used to determine a baseline for analysis during this recreation use study.

Data collection was conducted via in-person surveys, windshield mail-back surveys, and field observations. Consistent with the NGPC-produced survey schedule, surveys began on May 4, 2010; included Memorial Day, Independence Day, and Labor Day; and concluded on October 30, 2010.

Three infrared trail counters were installed and began collecting user data, including data on both pedestrians and bicyclists, on May 1, 2010. One trail counter was installed at an approximate midpoint of each the District’s three trails: 1) Two Lakes Trail, 2) Bob Lake Trail, and 3) Robert White Trail (see Figure 3-1, Sheet 3 of 5). Trail counts were collected through October 31, 2010.

A telephone survey of residents in Nance and Platte counties was conducted by a professional market research firm between May 26 and June 9, 2010. The survey sampled 400 randomly identified households with zip codes in Nance or Platte County to determine the public's general awareness and perception of the Project's recreational opportunities. Detailed methods of the telephone survey are provided in the District's Initial Study Report, dated August 26, 2010.

### *Task 3 Data Analysis*

Survey responses were analyzed for trends and notable observations. Both count and percentage values along with verbatim responses were analyzed. Narrative explanations of findings were developed to accompany collected count and percentage data and to highlight the most applicable and relevant findings.

Use estimates (including annual, average weekday, average weekend day, and holiday weekend day) for each recreation facility were prepared using the following methodology:

1. Survey responses for 2010 were cross-tabulated according to survey location, survey date, and survey time.
2. Using these survey response cross tabulations, average hourly recreation use estimates for each District-owned recreation site were determined for the periods of analysis indicated above. (Average hourly recreation use estimates applied only to May 1 to October 31, determined to be the primary recreation period.)
3. The average hourly use values determined in Step 2 were then divided by 0.15 to determine an adjusted average hourly use estimate. This conversion was applied based on a consistent survey rate of 15 percent of all observed recreation users (see Table 5-6). Adjusted average hourly use estimates applied only to the primary recreation period of May 1 to October 31.
4. Adjusted average hourly use estimates by analysis period were summed to determine adjusted average daily use estimates. (The adjusted average daily use estimates assume no recreational activity during the overnight hours of 11:00 p.m. to 6:00 a.m. and apply only to the primary recreation period of May 1 to October 31).
5. Adjusted average daily use estimates were then used to estimate the annual use of each recreation site. Based on collected survey data, it was assumed that recreation use outside of the primary recreation period of May 1 to October 31 is 20 percent of the estimated use values calculated for the primary recreation period (see Tables 5-19 and 5-20).

The ability of existing District recreation facilities to meet both current and future recreation demand was determined based on the following data:

- Comparison of District park area and trail length with National Recreation and Park Association (NRPA) guidelines as discussed in Nebraska’s Statewide Comprehensive Outdoor Recreation Plan (SCORP) for 2011 to 2015<sup>1</sup> (NGPC, 2010)
- Population trends for Nance and Platte counties
- NGPC 2009 statewide recreation survey results relative to the public’s perception of available recreation resources and trends in recreation facility use (NGPC, 2010)

Based on estimated use values, determined using the methods described above, the percentage of capacity at which all District recreation facilities are operating was to be determined; however, further investigation of the stated methods determined that alternate capacity analyses were necessary. These analyses are listed below and are further defined in Section 6, Study Variance:

- Responses to the in-person recreation use surveys along the Loup Power Canal relative to respondents’ satisfaction with District facilities and potential capacity concerns
- Anecdotal observations by District staff relative to capacity
- RV/camper and tent counts (specific to individual developed recreation sites and conducted in association with 2010 in-person recreation use surveys and field observations) compared to available RV and tent sites at each respective recreation site

#### *Task 4 Recreation Management Plan*

Development of the Recreation Management Plan will be based on the findings included herein and in Study 10.0, Land Use Inventory. Submittal of the Recreation Management Plan is scheduled for spring or summer 2011.

## 5. RESULTS AND DISCUSSION

The results of the recreation use survey are summarized in Section 5.1, and a full discussion of the analyses follows in Sections 5.2 through 5.8. The discussion provides tabular and graphical data that support this study’s conclusions.

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<sup>1</sup> The referenced SCORP was released for public comment in December 2010, during the writing of this General Recreation Use Report, and supersedes the Nebraska SCORP referenced in previous Project relicensing documents.



## 5.1 Summary of Results

### 5.1.1 Facility Inventory

The facility inventory taken along the Loup Power Canal and the Loup River bypass reach determined that District-owned facilities include a variety of developed recreation amenities. Conversely, with the exception of the District's Headworks Park (specifically, Weir Park Camp) and the City of Columbus's Pawnee Park, locations that provide public access to the Loup River bypass reach consist of undeveloped WMAs that include no recreation amenities beyond gravel parking areas.

### 5.1.2 Loup Power Canal Survey Responses

Based on collected survey responses, those who recreate along the Loup Power Canal most commonly:

1. Live within 25 miles of District facilities.
2. Use District facilities because they are close to home.
3. Recreate either alone or with a single guest.
4. Do not stay overnight.
5. Visit District facilities on a weekly basis.
6. Visit during the summer months of May, June, July, and August.
7. Describe themselves as white (non-Hispanic, Latino, or Spanish).
8. Earn an annual household income between \$26,000 and \$50,000.

Notable exceptions to the above list include users of the Headworks OHV Park. This group often travels well over 25 miles to access the unique recreation opportunity afforded by Headworks OHV Park. As they reside in areas farther removed from District facilities, their frequency of visitation is two to three times per year and corresponds with the spring and fall Nebraska Off Highway Vehicle Association (NOHVA) jamborees.

Fishing from shore, relaxing/hanging out, camping, and OHV riding were the most commonly cited activities in which respondents participate. Similarly, these activities, along with wildlife/scenic viewing and picnicking, were noted as the most important activities by respondents.

Respondents generally gave District recreation facilities high ratings. District trails and Headworks OHV Park received the highest ratings, whereas restrooms and parking received the lowest.

### 5.1.3 Trail Counts

Collected trail count data suggest the following:

1. The most trail use occurs in May; trail traffic is very consistent from June through September and decreases in October.
2. Two Lakes Trail receives 59.5 percent of the total trail traffic; Bob Lake Trail receives 25.7 percent; and Robert White Trail receives 14.8 percent.
3. Trail traffic is generally consistent throughout the work week and increases slightly on the weekend.
4. Two Lakes Trail receives a daily average of 71.9 trips/day; Bob Lake Trail receives 31.0 trips/day; and Robert White Trail receives 17.9 trips/day.
5. Essentially no trail users are present between 9:00 p.m. and 6:00 a.m. Trail use begins at approximately 6:00 a.m. and is moderate and consistent through the morning hours. Trail use increases following the lunch hour and remains consistent through approximately 8:00 p.m., when usage drops off sharply.

### 5.1.4 Use Estimates of District Recreation Sites

The estimated average weekend recreation use is roughly three times that of the estimated average weekday use. Overall, Headworks Park is the most frequently visited recreation site, followed by Lake North Park. Whereas visits to Lake North Park are highest on weekdays, visits to Headworks Park are highest during the weekend, including holiday weekends. Memorial Day weekend was the busiest time for District recreation facilities in 2010. Independence Day weekend visitation was down and likely affected by rain events recorded in the study area (Nebraska Rainfall Assessment and Information Network [NeRAIN], December 3, 2010). In total, and based on 2010 survey and observation data, the District's entire recreation system is estimated to receive approximately 82,000 annual user visits.

### 5.1.5 Capacity of and Demand for District Recreation Sites

Overall, District facilities provide adequate recreation capacity for the population of Nance and Platte counties. Exceptions include camping capacity at Headworks Park and Lake North Park when holiday weekends coincide with desirable weather, and camping capacity at Headworks Park during the spring and fall NOHVA jamborees. Additional demand on District recreation facilities is not anticipated, as the population of Nance and Platte counties is essentially static and the findings of the NGPC 2009 statewide recreation survey indicate that outdoor recreation is generally decreasing in Nebraska (NGPC, 2010).

### 5.1.6 Loup River Bypass Reach Survey Responses

Based on collected survey responses, those who recreate along the Loup River bypass reach most commonly:

1. Live within 25 miles of the Loup River bypass reach.
2. Recreate either alone or with a single guest.
3. Do not stay overnight.
4. Visit the Loup River bypass reach on a weekly basis.
5. Visit the Loup River bypass reach during the summer months of May, June, July, and August.
6. Access the Loup River bypass reach from Headworks Park, Pawnee Park, or private property.
7. Have never visited Loup Lands WMA.
8. Describe themselves as white (non-Hispanic, Latino, or Spanish).
9. Earn an annual household income between \$26,000 and \$50,000.

A notable exception to the above list is the timing of visitation at the Loup Lands WMA. Respondents who visit the WMA indicate that the greatest number of visits occur in the fall and spring, concurrent with Nebraska hunting seasons and prime morel mushroom season.

Fishing from shore, relaxing/hanging out, swimming/wading, hiking, camping, mushroom hunting, walking/running, and OHV riding were the most commonly cited activities in which respondents participate.

### 5.1.7 Need for Additional Data Collection

Data collected during both the in-person survey of recreation use conducted along both the Loup Power Canal and Loup River bypass reach and the telephone survey of recreation use suggest that minimal recreation occurs outside of the May 1 to October 31 period encompassed by the District's data collection efforts to date. Therefore, the District proposes that no additional data collection is necessary in 2011.

## 5.2 Loup Power Canal Recreation Facility Inventory

An inventory of District recreation facilities located at the District's developed recreation sites was taken by District representatives to establish a baseline condition for developing the Recreation Management Plan. The following provides the inventory findings.

### 5.2.1 Headworks Park

Headworks Park encompasses a number of smaller recreation areas as well as Headworks OHV Park. Headworks OHV Park is one of the premier OHV/all-terrain vehicle (ATV) riding areas in Nebraska (see Figure 3-1, Sheet 1 of 5). Additionally, Headworks Park offers a lake for swimming and camping and access to the Loup River bypass reach.

Park Camp and the adjacent East Camp, both smaller areas within Headworks Park, lie directly adjacent to the Central Nebraska Railroad right-of-way, which is directly south of Nebraska State Highway 22 (see Figure 3-1, Sheet 2 of 5). The Loup Power Canal forms the southern border of both. Park Camp has intermittent tree growth (primarily green ash, cottonwoods, and American elm), is surrounded by a gravel road, and contains mowed fescue and bluegrass in the campground area. East Camp contains large cottonwood trees that are interspersed throughout the area.

Weir Park Camp and Trailhead Camp, also smaller areas within Headworks Park, are located south of the Loup Power Canal. Weir Park Camp is located between the canal and the Loup River bypass reach. The area contains pine, poplar, cottonwood, and Siberian elm trees. Trailhead Camp is bordered on the east by private property.



Photo 1. OHV riders at Headworks OHV Park.



Photo 2. Picnic shelter in Weir Park Camp.

### *Basic Site Information*

Basic site information for Headworks Park is as follows:

- **Location** – Six miles west of Genoa on Nebraska State Highway 22, adjacent to the Diversion Weir
- **Size** – 10 acres, with the associated 1,200-acre Headworks OHV Park
- **Recreation uses** – Camping, picnicking, swimming, fishing, and OHV riding
- **Camping** – Electrical hookups and primitive camping available during the summer
- **Camping reservations** – No reservations accepted; limit of 7 days per month (30-day period) in the District’s park system
- **Restrooms** – Primitive restrooms available during the summer
- **Trails** – Approximately 50 miles of sandy OHV trails along the Loup River bypass reach
- **Other services** – Playground areas, potable water, picnic tables, and barbeque grills

**Inventory of Amenities**

To account for all of the available amenities, all inventoried recreation areas in and associated with Headworks Park are jointly presented in Table 5-1.

Park Camp contains a total of sixteen 20-amp and 30-amp outlets as well as one 50-amp outlet in the northwest corner of the campground. An additional six outlets are located at Weir Park Camp.

**Table 5-1. Inventory – Headworks Park**

Classification	Specific Amenities	Count
Camping	RV Outlets	23
	RV Sites <sup>1</sup>	46
	Tent Sites <sup>2</sup>	50
	Fire Pit	24
Aquatics	Safety Buoy with Rope	2
	Swimming Beach	1
Playground Equipment	Swing	12
	Slide	2
	Merry-Go-Round	1
	Teeter Totter	2
	Spring Rocker	2
Picnic	Picnic Shelter	2
	Picnic Table	34
	Barbeque Grill	12
Convenience	Primitive Restroom	3
	Bench	4
	Trash Receptacle	5
	Hydrant	3

Notes:

- <sup>1</sup> RVs often “double park” around the provided RV outlets, resulting in twice as many RV sites as compared to outlets.
- <sup>2</sup> Estimate of sites adequate and available for tent camping. These sites do not include electrical hookups or designated pads.

### *Accessibility*

Access is good around Park Lake, especially on the north and south sides of the lake, for wading, swimming, and fishing. Wheelchair access is available at the picnic shelter in Park Camp.

The bridge crossing of the Loup Power Canal provides good vehicular access to Weir Park Camp. A notable amount of fishing occurs from the bridge and on both sides of the Loup Power Canal, immediately downstream of the bridge. Good wheelchair access exists near the Weir Park Camp picnic shelter and restrooms; however, other locations contain soft, uneven ground.

#### 5.2.2 Lake Babcock Park (Loup Park)

Loup Park overlooks Lake Babcock and its associated wetlands (see Figure 3-1, Sheet 3 of 5). The east portion of the park includes a camping area with electrical hookups and a large picnic shelter. An abundance of trees and shrubs (including cottonwoods, ash, willows, elms, locusts, jack pines, ponderosa pines, honeysuckle, sumac, and hawthorne) grow throughout the park. Emergent aquatic vegetation (including cattails, bulrush, reeds, and American lotus) lines the lake shore. Several bat and wood duck houses are present in large cottonwood trees along the shoreline. Residential homes are located adjacent to the campground, picnic shelter, and other areas within the park.

On the northwest portion of Lake Babcock, near Castner's Crossing, there is a small access area that includes a limestone cobble parking lot and a wheelchair-accessible bridge. Fishermen congregate at a fishing area located on the Loup Power Canal where it enters Lake Babcock. An informational kiosk presents maps and ecological posters. A small dirt boat ramp is also present.



Photo 3. Picnic and playground area in Loup Park (East).



Photo 4. Campground area in Loup Park (East).



### *Basic Site Information*

Basic site information for Loup Park is as follows:

- **Location** – Along the north and west shores of Lake Babcock, approximately 3 miles north of Columbus
- **Size** – 40 acres
- **Recreation uses** – Camping, picnicking, biking, running, and walking
- **Camping** – Electrical hookups and primitive camping available during the summer
- **Camping reservations** – No reservations accepted; limit of 7 days per month (30-day period) in the District’s park system
- **Restrooms** – Primitive restrooms available during the summer
- **Trails** – Two Lakes Trail, a paved pedestrian/bike trail, traverses the park area and connects Loup Park and Lake North Park. Castner’s Crossing Bridge, at the west end of the park, connects Two Lakes Trail with Bob Lake Trail and Robert White Trail, which skirt the west and south sides of Lake Babcock, respectively. Free parking is provided at trailheads.
- **Other services** – Playground areas, potable water, picnic tables, and barbeque grills

### *Inventory of Amenities*

Table 5-2 provides an inventory of available recreation amenities at Loup Park. A total of 15 RV outlets (each with 20-amp and 30-amp circuits) are spread across three of the smaller recreation areas within Loup Park. To account for all of the available amenities, all inventoried recreation areas in Loup Park are jointly presented in Table 5-2.

**Table 5-2. Inventory – Loup Park**

Classification	Specific Amenities	Count	Classification	Specific Amenities	Count
Camping	RV Outlets	15	Picnic	Picnic Shelter	1
	RV Sites <sup>1</sup>	30		Picnic Table	47
	Tent Sites <sup>2</sup>	120		Barbeque Gill	23
	Fire Pit	9	Convenience	Primitive Restroom (Wheelchair accessible)	1
Aquatics	Boat Ramp	1		Bench	10
	Safety Buoy with Rope	1		Trash Receptacle	23
Playground Equipment	Swing	16	Miscellaneous	Hydrant	6
	Slide	2		Informational Kiosk	1
	Merry-Go-Round	2	<i>Intentionally Left Blank</i>		
	Teeter Totter	4			
	Horse Totter	2			
	Hanging Equipment (rings, bar)	2			
	Spring Rocker	2			

Notes:

- <sup>1</sup> RVs often “double park” around the provided RV outlets, resulting in twice as many RV sites as compared to outlets.
- <sup>2</sup> Estimate of sites adequate and available for tent camping. These sites do not include electrical hookups or designated pads.

**Accessibility**

Access to Loup Park and Lake Babcock is generally good in most locations. Two Lakes Trail conveys non-motorized traffic throughout the park, and a gravel road provides vehicle access to all locations within the park. Limestone cobble secondary roads, surrounding the established campground areas and playground areas, provide access during the recreation season. Most area campgrounds and playgrounds are wheelchair accessible.

Fishing access to Lake Babcock is generally limited to the Castner’s Crossing location. Limited shoreline access results from the thick emergent vegetation that is present along Lake Babcock’s perimeter. The boat ramp, located on the west side of the lake, near Castner’s Crossing, provides lake access via boat.

### 5.2.3 Lake North Park

Lake North Park is located directly south of 83<sup>rd</sup> Street between 18<sup>th</sup> and 33<sup>rd</sup> Avenues, north of Columbus (see Figure 3-1, Sheet 3 of 5). The park is situated on level ground along the north shore of Lake North and contains a campground, picnic shelter, and large parking lot. An accessible blacktop road completely encircles Lake North.



Photo 5. Camping in Lake North Park.



Photo 6. South end of Lake North, including fish structure.

#### *Basic Site Information*

Basic site information for Lake North Park is as follows:

- **Location** – Along the north bank of Lake North, off 83<sup>rd</sup> Street
- **Size** – 14-acre park adjoining 200-acre Lake North
- **Recreation uses** – Boating, water skiing, camping, swimming, picnicking, and fishing
- **Camping** – Electrical hookups and primitive camping available during the summer
- **Camping reservations** – No reservations accepted; limit of 7 days per month (30-day period) in the District’s park system
- **Restrooms** – Primitive restrooms available during the summer
- **Trails** – Maintained pedestrian/bicycle trails available year round
- **Other services** – Playground areas, potable water, picnic tables, barbeque grills, swimming beaches, and boat ramps/docks

**Inventory of Amenities**

Table 5-3 provides an inventory of available recreation facilities at Lake North Park. The campground contains 12 RV outlets, each with a 20-amp and 30-amp circuit. Four tent outlets are also available on the east side of the park.

**Table 5-3. Inventory – Lake North Park**

Classification	Specific Amenities	Count	Classification	Specific Amenities	Count
Camping	RV Outlets	12	Picnic	Picnic Shelter	1
	RV Sites <sup>1</sup>	25		Picnic Table	23
	Tent Outlet	4		Barbeque Gill	11
	Tent Sites <sup>2</sup>	100	Convenience	Primitive Restroom (Wheelchair accessible)	2
	Fire Pit	7		Bench	2
Aquatics	Boat Ramp	2	Miscellaneous	Trash Receptacle	10
	Swimming Beach	2 miles		Informational Kiosk	1
Playground Equipment	Swing	8	<i>Intentionally Left Blank</i>		
	Slide	2			
	Teeter Totter	3			
	Horse Totter	2			
	Hanging Equipment (rings, bar)	2			

Notes:

- <sup>1</sup> RVs often “double park” around the provided RV outlets, resulting in twice as many RV sites as compared to outlets.
- <sup>2</sup> Estimate of sites adequate and available for tent camping. These sites do not include electrical hookups or designated pads.

**Accessibility**

Most of the campground area, parking lot, and shoreline on the north side of Lake North is accessible via a blacktop strip running east and west (running the entire length of the campground area), allowing wheelchair access within 10 feet of the shoreline. In addition, the winding concrete-surfaced Two Lakes Trail is easily accessible, and two boat docks provide lake access during the summer.

#### 5.2.4 Columbus Powerhouse Park

Columbus Powerhouse Park is located immediately south of the Columbus Powerhouse on the west side of the Loup Power Canal (see Figure 3-1, Sheet 4 of 5). Fishing is common, along with casual day use. The developed park area is level, has maintained grass, and is surrounded by a maintained access road.



Photo 7. Fishermen downstream of the Columbus Powerhouse.

#### *Basic Site Information*

Basic site information for Columbus Powerhouse Park is as follows:

- **Location** – Along the west bank of the Loup Power Canal, immediately downstream of the Columbus Powerhouse and on 3<sup>rd</sup> Avenue approximately 3 miles north of Columbus
- **Size** – 4 acres
- **Recreation uses** – Picnicking, fishing, and camping
- **Camping** – A limited number of primitive camping sites available on weekends during the summer
- **Camping reservations** – No reservations accepted; limit of 7 days per month (30-day period) in the District’s park system

- **Restrooms** – Primitive restrooms available during the summer
- **Trails** – Graveled paths for short walks around the park
- **Other services** – Playground, picnic tables, and barbeque grills (Swimming in the Loup Power Canal is not permitted and is posted as such.)

*Inventory of Amenities*

Table 5-4 provides an inventory of available recreation facilities at Columbus Powerhouse Park. The park contains no electrical hookups or hydrants.

**Table 5-4. Inventory – Columbus Powerhouse Park**

Classification	Specific Amenities	Count
Camping	Primitive Camp Sites	Space-Available Basis <sup>1</sup>
Playground Equipment	Swing	2
	Slide	1
	Merry-Go-Round	1
	Teeter Totter	1
Picnic	Picnic Table	5
	Barbeque Gill	2
Convenience	Primitive Restroom (Wheelchair accessible)	1
	Trash Receptacle	8

Note:

<sup>1</sup> Primitive camping sites are available during the summer as space allows. These sites do not include electrical hookups or designated pads.

*Accessibility*

The primary recreation activity at Columbus Powerhouse Park is shore fishing; however, access to the Loup Power Canal shore is difficult. The shoreline lies approximately 30 feet below the elevation of the developed park and associated parking facilities, which are separated from the shore by a steep grade. Able-bodied fishermen can gain shore access by the means listed below; no wheelchair-accessible fishing opportunities are present:

- Walking a long staircase near the apron of the powerhouse
- Walking on steep, undeveloped paths on the south side of the park where Lost Creek enters the Loup Power Canal

- Walking a rocky and winding path near the flow disbursement structure immediately upstream in Lost Creek

### 5.2.5 Tailrace Park

Tailrace Park is located where the Loup Power Canal enters the Platte River (see Figure 3-1, Sheet 5 of 5). The park contains two areas that are divided by the Loup Power Canal but are connected by a vehicle-accessible bridge north of the park. It offers a canal/riverine recreational opportunity with primary emphasis on fishing below the Tailrace Weir, also called the Outlet Weir. The area is dominated by riparian vegetation, including cottonwoods, green ash, and eastern red cedar (an extensive cedar forest is present on the west side only). Most of the area on the east side is level, with undulating elevations more common on the west side. Playground equipment is located on the east side of the park.

#### *Basic Site Information*

Basic site information for Tailrace Park is as follows:

- **Location** – The Loup Power Canal confluence with the Platte River, 3 miles east of Columbus on 8<sup>th</sup> Street and 1 mile south of U.S. Highway 30
- **Size** – 9 acres
- **Recreation uses** – Fishing and casual recreation
- **Camping** – A limited number of primitive camping sites available during the summer
- **Camping reservations** – No reservations accepted; limit of 7 days per month (30-day period) in the District’s park system
- **Restrooms** – None
- **Trails** – None
- **Other services** – Playground area with views of both the Loup Power Canal and Platte River; swimming not permitted (posted) due to rapid, turbulent water in the Tailrace Canal

#### *Inventory of Amenities*

Table 5-5 provides an inventory of available recreation facilities at Tailrace Park.



**Table 5-5. Inventory – Tailrace Park**

Classification	Specific Amenities	Count
Camping	Primitive Camp Sites	Space-Available Basis <sup>1</sup>
Playground Equipment	Swing	1
	Slide	1
	Merry-Go-Round	1
Aquatics	Safety Buoy with Rope	2
Convenience	Trash Receptacle	7

Note:

<sup>1</sup> Primitive camping sites are available during the summer as space allows. These sites do not include electrical hookups or designated pads.

### *Accessibility*

Fishing access is primarily present on the west side of the Loup Power Canal, where able-bodied fishermen have substantial access. However, wheelchair access and access by the elderly are very limited. Fishing on the east side of the Loup Power Canal is primarily restricted to a small area near the Tailrace Weir (via a set of narrow steps) and off a rugged point on the southern extreme of the District’s property. Trees and concrete armoring along the east bank of the river make fishing access difficult.

### 5.3 Loup Power Canal Survey Responses

Survey data collected and notable observations made during the 2010 recreation use survey along the Loup Power Canal are provided below. Observation forms completed in association with the 2010 recreation use survey along the Loup Power Canal to document observed recreation use are provided as Attachment B.

Table 5-6 indicates the number of survey days, surveys conducted, and recreation users observed during 2010 data collection activities. Table 5-6 also presents the percentage of observed recreation users who were surveyed. As shown, this is generally around 15 percent.

**Table 5-6. Recreation Use Surveys and User Counts (Loup Power Canal)**

	May	June	July	Aug	Sept	Oct	Total
Survey Days	10 <sup>1</sup>	10	11 <sup>1</sup>	10	11 <sup>1</sup>	10	62
Recreation Use Surveys Conducted	190	173	243	150	158	110	1,024
Users Observed	1,293	1,093	1,627	1,098	782	627	6,520
Percentage of Observed Users Surveyed	14.7	15.8	14.9	13.7	20.2	17.5	15.7

Note:

<sup>1</sup> Includes two survey days on a holiday weekend (Memorial Day, Independence Day, or Labor Day).

The vast majority (89 percent) of survey respondents describe themselves as white (non-Hispanic, Latino, or Spanish), as shown in Table 5-7. More than 9 percent of survey respondents describe themselves as white (Hispanic, Latino, or Spanish). No other racial groups were heavily represented among survey respondents.

**Table 5-7. Racial Composition of Survey Respondents (Loup Power Canal)**

Race	Count	Percent
(No Answer)	6	0.6
White (non-Hispanic, Latino, or Spanish)	898	89.3
White (Hispanic, Latino, or Spanish)	96	9.5
American Indian or Alaska Native	3	0.3
Black, African American, or Negro	1	0.1
Asian or Pacific Islander	1	0.1
Other	1	0.1
Total	1,006	100.0

The most common annual household income range reported by survey respondents was \$26,000 to \$50,000 (34 percent). Respondent frequency generally decreased as income increased. It is also notable that more than 19 percent of respondents did not provide an answer to this question, as shown in Table 5-8.

**Table 5-8. Annual Household Income of Survey Respondents  
 (Loup Power Canal)**

Income	Count	Percent	Income	Count	Percent
(No Answer)	192	19.1	\$51,000 - \$75,000	176	17.5
\$0 - \$25,000	188	18.7	\$76,000 - \$100,000	72	7.1
\$26,000 - \$50,000	346	34.4	Over \$100,000	32	3.2
Total Count: 1,006					

Table 5-9 presents the results of Survey Question No. 2:

“What are the ages of the people in your party today?”

Collected data suggest that children ages 12 and under are the most common users of District recreation sites along the Loup Power Canal. Aside from the “12 and under” age range, the distribution of recreation users was relatively evenly distributed amongst all other age ranges.

**Table 5-9. Age of Users (Loup Power Canal)**

Age	Count	Percent
12 and Under	693	21.7
13-18	359	11.3
19-24	347	10.9
25-30	355	11.1
31-36	286	9.0
37-42	293	9.2
43-49	271	8.5
50-55	214	6.7
56-61	143	4.5
62+	227	7.1
Total	3,188	100.0

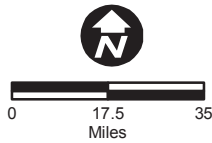
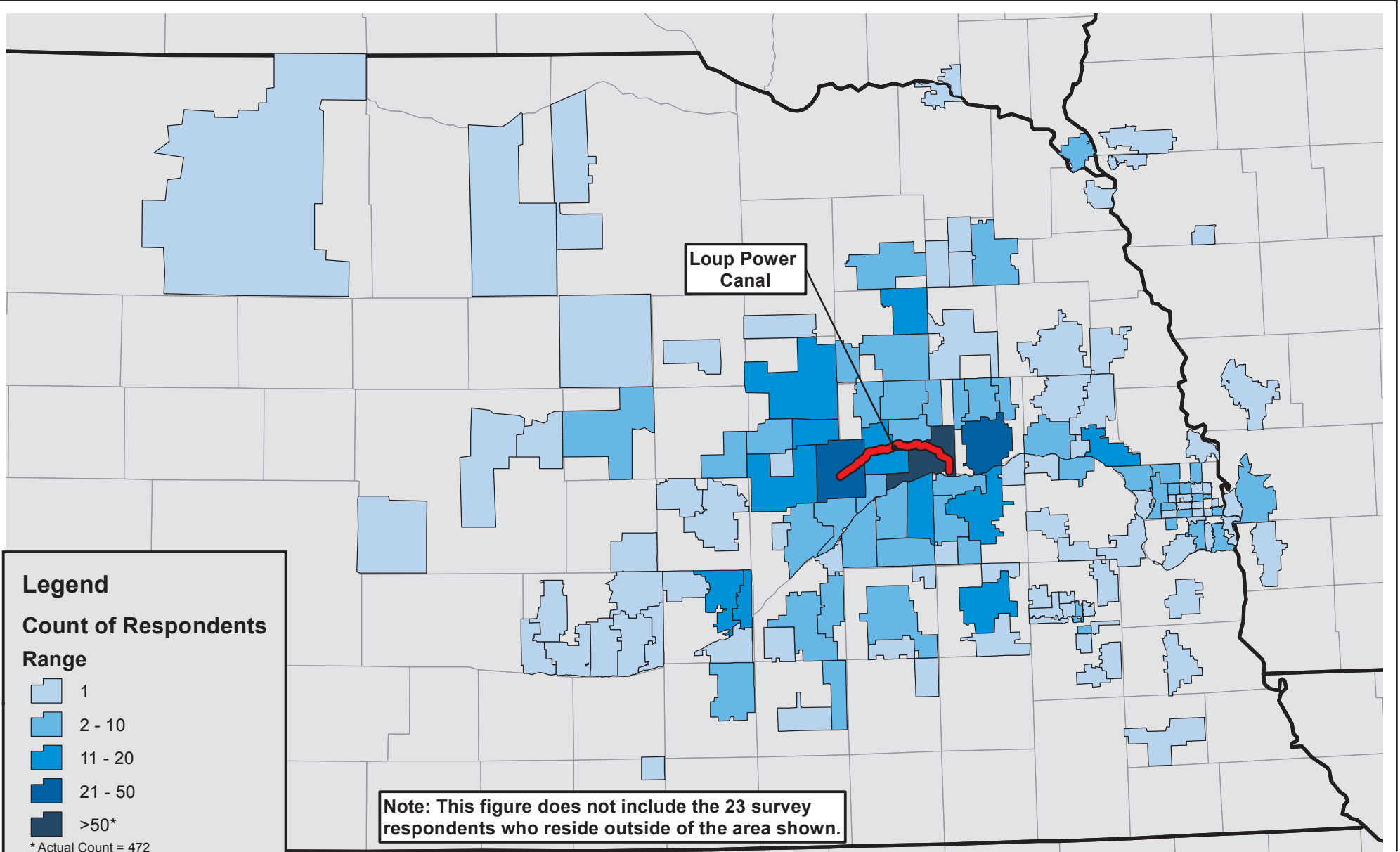
Table 5-10 presents the results of Survey Question No. 4:

“What is your zip code?”

The residence (by state) of survey respondents was determined based on the zip codes provided. As shown in Table 5-10, more than 96 percent of survey respondents provided Nebraska zip codes. More specifically, more than 46 percent of survey respondents provided a Columbus, Nebraska, zip code. No other single state accounted for more than 1 percent of survey responses. Figure 5-1 illustrates the residence of survey respondents by zip code.

**Table 5-10. Residence of Users (Loup Power Canal)**

State	Count	Percent	State	Count	Percent	State	Count	Percent
Nebraska	980	96.4	Minnesota	2	0.2	N. Carolina	1	0.1
Iowa	9	0.9	Nevada	2	0.2	Texas	1	0.1
S. Dakota	6	0.6	Alabama	1	0.1	Utah	1	0.1
Colorado	4	0.4	Arizona	1	0.1	Washington	1	0.1
Oklahoma	3	0.3	California	1	0.1	Wyoming	1	0.1
Kansas	2	0.2	<i>Intentionally Left Blank</i>					
Total Count: 1,016								



## Residence of Canal Survey Respondents by Zip Code

Loup River Hydroelectric Project  
FERC Project No. 1256  
Study 8.0 Recreation Use

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DATE	February 2011
FIGURE	5 - 1

### 5.3.1 Size of Party

Table 5-11 presents the results of Survey Question No. 1:

“How many people are in your party today?”

More than half (51 percent) of survey respondents were either alone or accompanied by a single guest. As the party size grew, the frequency of occurrence decreased, with the exception of parties of more than 10 being more prevalent than parties of 9 to 10.

**Table 5-11. Size of Party (Loup Power Canal)**

Number in Party	Count	Percent
(No Answer)	2	0.2
1-2	523	51.1
3-4	215	21.0
5-6	113	11.0
7-8	67	6.5
9-10	40	3.9
10+	64	6.3
Total	1,024	100.0

### 5.3.2 Miles Traveled to District Facilities

Table 5-12 presents the results of Survey Question No. 3:

“How many miles did you travel from your home to this location?”

More than 60 percent of survey respondents traveled 25 miles or less to District recreation facilities, while almost 92 percent traveled 100 miles or less. Twenty survey respondents traveled over 400 miles before spending time at District recreation facilities.

The vast majority of the survey respondents who traveled more than 25 miles were enjoying the unique recreation opportunities offered by Headworks OHV Park. The following lists the percent and count of survey respondents within the designated mileage ranges that were surveyed at Headworks Park:

- 26 to 50 miles – 53 percent (91/172)
- 51 to 100 miles – 63 percent (96/152)
- Over 100 miles – 74 percent (58/78)

**Table 5-12. Miles Traveled (Loup Power Canal)**

	Headworks Park	Lake Babcock Park (Loup Park)	Lake North Park	Columbus Powerhouse Park	Tailrace Park	Loup Power Canal	Total	
Miles Traveled	Percent of Specific Survey Respondents who Traveled the Designated Distance						Count	Percent
(No Answer)	0.0	0.0	0.9	2.0	0.8	0.0	4	0.4
0-25	33.8	77.1	74.0	76.5	79.3	72.9	618	60.4
26-50	24.6	9.4	13.9	11.8	9.1	14.8	172	16.8
51-100	25.9	12.5	7.8	5.9	5.8	10.3	152	14.8
101-200	13.2	1.0	0.4	2.0	0.0	1.3	54	5.3
201-300	0.3	0.0	0.0	0.0	0.0	0.6	2	0.2
300-400	0.0	0.0	0.0	0.0	1.7	0.0	2	0.2
400+	2.2	0.0	3.0	2.0	3.3	0.0	20	1.9
Total Count	370	96	231	51	121	155	1,024	NA

Note:

NA = Not applicable.

### 5.3.3 Overnight Stays

Tables 5-13 and 5-14 present the results of Survey Question No. 6:

“If you plan to or have stayed overnight, how many nights will/did you stay?  
Where will/did you stay?”

#### *Type of Overnight Stay*

Those respondents who either provided no answer or stated that they were not partaking in an overnight stay comprised more than 64 percent of all survey respondents. Of the 362 survey respondents involved in an overnight stay, more than 67 percent (244) were staying in an RV or trailer. Of the survey respondents who cited “Other” as their overnight accommodations, nearly all stated that they slept in their vehicles.

**Table 5-13. Type of Overnight Stay (Loup Power Canal)**

Type of Overnight Stay	Respondent Count	Percentage of All Respondents	Percentage of Overnight Respondents
Day Use Respondents			
(No Answer)	9	0.8	NA
Not an overnight visit	653	63.8	
Total Day Use Respondents	662	64.6	
Overnight Respondents			
RV/Trailer	244	23.8	67.4
Tent at developed campground	60	5.9	16.6
Tent at undeveloped campground	45	4.4	12.4
Other	13	1.3	3.6
Total Overnight Respondents	362	35.4	100.0
Overall Total	1,024	100.0	100.0

Note:

NA = Not applicable.

*Duration of Overnight Stay*

Of the 368 survey respondents who were involved in an overnight stay, the greatest number of respondents (142 respondents, or 38 percent) were staying for two nights. Furthermore, over 80 percent of overnight respondents planned to stay for three or fewer nights.



**Table 5-14. Duration of Overnight Stay (Canal)**

Duration of Overnight Stay	Respondent Count	Percentage of Overnight Respondents
1 night	75	20.4
2 nights	142	38.6
3 nights	79	21.5
4 nights	28	7.6
5 nights	16	4.3
6-9 nights	27	7.3
10 or more nights	1	0.3
Total	368 <sup>1</sup>	100.0

Note:

<sup>1</sup> Total does not match total in Table 5-13 because not all overnight visitors answered both questions.

#### 5.3.4 Access Needs Related to Physical Disabilities

Table 5-15 presents the results of Survey Question No. 16:

“Do you have any access needs related to physical disabilities?” (Respondents were also asked whether they found site access to be adequate, regardless of whether they indicated a disability.)

Collected data suggest that the vast majority (96 percent) of recreation users do not have access needs related to physical disabilities. Of the survey respondents who did indicate special access needs, multiple respondents stated that they would appreciate improved shore fishing opportunities through Americans with Disabilities Act-compliant paved paths.

**Table 5-15. Need for Special Access Accommodations (Loup Power Canal)**

Requirement of Special Access Needs	Count	Percent
(No Answer)	10	1.0
Yes	25	2.4
No	989	96.6
Total	1,024	100.0

Table 5-16 presents the survey results with respect to adequacy of access, by site.

**Table 5-16. Adequacy of Site Access (Loup Power Canal)**

	Headworks Park	Lake Babcock Park (Loup Park)	Lake North Park	Columbus Powerhouse Park	Tailrace Park	Loup Power Canal	Total
	Percent						
(No Answer)	0.3	2.1	0.00	0.00	0.8	2.6	0.8
Yes	98.9	97.9	99.6	98.0	98.4	92.9	98.0
No	0.8	0.00	0.4	2.0	0.8	4.5	1.2
Total Count	370	96	231	51	121	155	1,024

### 5.3.5 Reason for Recreating at District Facilities

Table 5-17 presents the results of Survey Question No. 5:

“Why do you choose to use Loup Power District recreation sites?”

More than 70 percent of survey respondents stated that they use District recreation facilities because the facilities are close to home. Of the survey respondents who cited “Other” as their reason for recreating, the following responses were common: OHV/ATV riding (64), good fishing opportunities (52), and trails (7). Additionally, 54 survey respondents stated that they recreate at District facilities for all of the reasons listed in Table 5-17.

**Table 5-17. Reason for Recreation Use (Loup Power Canal)**

Reason for Use of District Recreation Facilities	Count	Percent
(No Answer)	58	5.7
Location – close to home	721	70.4
Other	150	14.6
Provides the facilities we need.	49	4.8
Facilities are free.	29	2.8
Facilities are well maintained.	9	0.9
Don’t know where other facilities are located.	4	0.4
Facilities are safe.	4	0.4
Total	1,024	100.0

### 5.3.6 Frequency of Visitation – Location of Survey

Table 5-18 presents the results of Survey Question No. 7:

“Over the last 12 months, how often have you visited this Loup Power District recreation site?”

Of the 370 respondents surveyed at Headworks Park, half indicated their frequency of visitation as two to three times per year. This may correspond with the twice annual NOHVA jamboree, which takes place at Headworks OHV Park. Respondents surveyed at Lake North Park, Columbus Powerhouse Park, Tailrace Park, and the Loup Power Canal most commonly cited weekly visitation.

**Table 5-18. Frequency of Site Visitation (Loup Power Canal – Location of Survey)**

Frequency	Headworks Park	Lake Babcock Park (Loup Park)	Lake North Park	Columbus Powerhouse Park	Tailrace Park	Loup Power Canal	Total
	Percent						
(No Answer)	2.4	4.2	1.3	1.9	2.5	3.2	2.4
Weekly	9.2	25.0	37.7	41.2	38.8	39.3	26.8
Several Times per Month	15.7	18.7	16.0	15.7	21.5	18.1	17.1
Once per Month	21.9	19.8	13.4	19.6	11.6	15.5	17.5
2 to 3 Times per Year	50.8	32.3	31.6	21.6	25.6	23.9	36.2
Total Count	370	96	231	51	121	155	1,024

### 5.3.7 Visitation by Month – Location of Survey

Tables 5-19 and 5-20 present the results of Survey Questions Nos. 8 and 10:

“What months do you typically use this Loup Power District recreation site?”

“What months do you typically use other Loup Power District recreation sites?”

Collected data suggest that the greatest amount of recreation occurs during the summer months of May, June, July, and August. Cumulatively, these four months account for 66 percent of the collected responses. Following peak summer use, collected data suggest that visitation moderates in September and October before further declining during the winter months. Use appears to become more frequent

again in April. Overall, use of District recreation sites outside of the existing survey schedule is limited, and no additional recreation use survey in 2011 is warranted.

**Table 5-19. Visitation by Month (Loup Power Canal – Location of Survey)**

Month	Headworks Park	Lake Babcock Park (Loup Park)	Lake North Park	Columbus Powerhouse Park	Tailrace Park	Loup Power Canal	Total
	Percent						
(No Answer)	0.1	0.0	0.1	0.0	0.0	0.0	0.0
January	1.5	1.0	1.3	2.0	1.4	1.7	1.5
February	1.6	0.8	1.4	2.4	1.8	1.8	1.6
March	3.4	4.3	3.9	4.0	4.0	4.7	3.9
April	5.7	6.6	7.8	6.7	7.2	9.1	7.0
May	14.2	16.5	16.5	15.8	16.0	15.0	15.4
June	16.4	17.3	16.9	15.8	17.3	15.8	16.6
July	17.7	17.1	16.9	16.2	17.4	15.6	17.0
August	16.9	17.9	17.2	16.2	17.9	15.5	16.9
September	10.2	9.7	8.5	8.8	8.9	9.7	9.5
October	7.4	5.0	5.0	6.4	3.8	6.1	6.0
November	3.1	2.5	2.7	3.0	2.4	3.0	2.8
December	1.8	1.3	1.8	2.7	1.9	2.0	1.9
Total Count	1,896	485	1,198	297	626	936	5,438

**Table 5-20. Visitation by Month (Loup Power Canal – Other District Facilities)**

Month	Count	Percent
(No Answer)	157	3.15
January	85	1.70
February	88	1.76
March	207	4.15
April	364	7.29
May	749	15.01
June	801	16.05
July	813	16.29
August	804	16.11
September	406	8.13
October	263	5.27
November	152	3.05
December	102	2.04
Total	4,991	NA

Note:  
 NA = Not applicable.

Survey respondents were also asked Survey Question No. 9:

“Over the last 12 months, how often have you used other Loup Power District recreation sites?”

Responses generally indicated a lack of visitation to District facilities outside of the location of the documented survey. That is, an average of approximately 60 percent of respondents stated that they have not recreated at other District recreation areas or the Loup Power Canal. Additionally, an average of nearly 95 percent of respondents stated that they have not recreated along District trails. Responses are detailed in Attachment C.

### 5.3.8 Use of Non-District Recreation Sites

Table 5-21 presents the results of Survey Question No. 11:

“Do you use recreation sites in the area that are not owned and operated by Loup Power District, and if yes, which one(s)?”

Collected data suggest that the vast majority (more than 93 percent) of survey respondents do not use nearby recreation areas that are not owned and operated by the District. Of those respondents who indicated that they do use other recreation sites, 30 (more than 44 percent) cited use of the George D. Syas WMA and 13 (more than 19 percent) noted use of the Loup River bypass reach.

**Table 5-21. Use of Non-District Recreation Sites**

Use of Other Sites	Count	Percent
(No Answer)	2	0.2
No	954	93.2
Yes	68	6.6
Total	1,024	100.0

### 5.3.9 Activity Participation

Attachment C contains tabular data relative to Survey Questions Nos. 12 and 13:

“Please indicate the activities that you have participated in or plan to participate in during your visit to this Loup Power District site.”

“What recreation activities have you participated in during the past 12 months at this Loup Power District site?”

Data collected in association with these two survey questions suggest that fishing from shore” (23 percent respondent participation) and relaxing/hanging out (22 percent respondent participation) are the most popular activities at all recreation sites along the Loup Power Canal. Camping was also found to be a popular activity at Headworks Park, Lake Babcock Park (Loup Park), and Lake North Park. OHV riding was a commonly cited activity at Headworks Park.

Of the 18 activities included in the survey questionnaire, the following six activities had the greatest respondent participation across both survey questions and are listed in descending order of participation:

1. Fishing from shore (the most participation with 1,294 responses)
2. Relaxing/hanging out (1,181 responses)
3. Camping (822 responses)
4. Off-highway vehicles (492 responses)
5. Wildlife/scenic viewing (419 responses)
6. Picnicking (294 responses)

The following six activities, listed in ascending order of participation, had the lowest respondent participation across both survey questions:

1. Non-Motorized Boating (the least participation with 13 responses)
2. Water Skiing (17 responses)
3. Jet Skiing (30 responses)
4. Hiking (44 responses)
5. Biking (51 responses)
6. Hunting (51 responses)

In addition to the activities listed in the survey, the following “other” activities received numerous responses:

- Motorized boating (42 responses)
- Walking/running (16 responses)
- Hunting/target shooting (8 responses)
- Tubing/kayaking/windsurfing (7 responses)
- Dog activities (3 responses)
- Horseback riding (3 responses)

#### 5.3.10 Importance of Recreation Opportunities

Table 5-22 and the following summary present the results of Survey Question No. 17:

“Please indicate how important the following outdoor recreational opportunities are to you.”

**Table 5-22. Importance of Recreation Activities**

Activity/Facility	Level of Importance (percent)					
	(No Answer)	Very Important	Important	Neutral	Unimportant	Very Unimportant
Camping	0.2	28.2	30.8	35.4	4.4	1.0
Hiking	0.3	5.1	11.9	68.2	10.1	4.4
Biking	0.6	5.5	14.9	66.3	9.2	3.5
Walking/ Running	0.5	10.1	23.0	57.8	6.0	2.6
Trails	0.4	18.3	24.2	50.4	4.9	1.8
Hunting	0.5	17.0	16.1	55.5	7.5	3.4
Fishing	0.2	47.9	27.9	19.9	3.2	0.9
Swimming	0.3	11.4	25.7	54.8	5.2	2.6
Motorized Boating	0.3	7.1	15.5	65.1	8.1	3.9
Personal Watercraft	0.5	3.8	7.9	71.8	10.2	5.8
Water Skiing	0.4	3.2	8.3	72.2	10.7	5.2
Non-Motorized Boating	0.6	3.0	11.1	71.2	9.9	4.2
Wildlife/Scenic Viewing	0.4	21.9	36.5	37.8	1.7	1.7
Picnicking	0.4	15.4	34.9	45.3	2.6	1.4
Relaxing/ Hanging Out	0.2	42.1	37.0	19.3	0.7	0.7
Playground	0.5	12.2	21.5	58.9	4.8	2.1
OHV Park	0.8	24.1	11.8	50.8	7.8	4.7
Total Count: 1,024						

*Camping*

More than 58 percent of respondents indicated that camping opportunities are either “Important” or “Very Important.” An additional 35 percent indicated a neutral position relative to camping opportunities.



### *Hiking*

The majority of respondents (68 percent) have a neutral position relative to hiking opportunities.

### *Biking*

The majority of respondents (66 percent) have a neutral position relative to biking opportunities.

### *Walking/Running*

The majority of respondents (57 percent) have a neutral position relative to walking/running opportunities.

### *Trails*

Half of the respondents have a neutral position relative to trails. In addition, considerably more respondents feel that trails are either “Important” or “Very Important” compared to those who feel that trails are either “Unimportant” or “Very Unimportant” (42 percent vs. 6 percent).

### *Hunting*

Fifty-five percent of the respondents have a neutral position relative to hunting. The data also show that more respondents feel hunting is either “Important” or “Very Important” compared to those who feel that hunting is either “Unimportant” or “Very Unimportant” (33 percent vs. 11 percent).

### *Fishing*

More than 75 percent of the respondents indicated that fishing is either “Important” or “Very Important.” An additional 19 percent indicated a neutral position relative to fishing opportunities.

### *Swimming*

Fifty-four percent of the respondents have a neutral position relative to swimming. In addition, more respondents feel that swimming is either “Important” or “Very Important” compared to those who feel that swimming is either “Unimportant” or “Very Unimportant” (37 percent vs. 7 percent).

### *Motorized Boating*

The majority of respondents (65 percent) have a neutral position relative to motorized boating. In addition, more respondents feel that motorized boating is either “Important” or “Very Important” compared to those who feel that motorized boating is either “Unimportant” or “Very Unimportant” (22 percent vs. 12 percent).

### *Personal Watercraft*

The majority of respondents (71 percent) have a neutral position relative to personal watercraft opportunities. In addition, more respondents feel that personal watercraft opportunities are either “Unimportant” or “Very Unimportant” compared to those who feel that personal watercraft opportunities are either “Important” or “Very Important” (16 percent vs. 11 percent).

### *Water Skiing*

The majority of respondents (72 percent) have a neutral position relative to water skiing opportunities. In addition, more respondents feel that water skiing opportunities are either “Unimportant” or “Very Unimportant” compared to those who feel that water skiing opportunities are either “Important” or “Very Important” (16 percent vs. 11 percent).

### *Non-Motorized Boating*

The majority of respondents (71 percent) have a neutral position relative to non-motorized boating opportunities. In addition, a nearly equal amount of respondents feel that non-motorized boating opportunities are either “Important” or “Very Important” compared to those who feel that non-motorized boating opportunities are either “Unimportant” or “Very Unimportant.”

### *Wildlife/Scenic Viewing*

The majority of respondents value wildlife and scenic viewing opportunities, as more than 58 percent of respondents indicated that wildlife and scenic viewing opportunities are either “Important” or “Very Important.” An additional 37 percent indicated a neutral position relative to wildlife and scenic viewing opportunities.

### *Picnicking*

Half of the respondents value picnicking, as they indicated that picnicking is either “Important” or “Very Important.” An additional 45 percent indicated a neutral position relative to picnicking.

### *Relaxing/Hanging Out*

The majority of respondents value this activity, as more than 79 percent of respondents indicated that relaxing or hanging out is either “Important” or “Very Important.” An additional 19 percent indicated a neutral position relative to this activity.

### *Children’s Playground*

The majority of respondents (58 percent) have a neutral position relative to playgrounds. In addition, more respondents feel that playground equipment is either

“Important” or “Very Important” compared to those who feel that the equipment is either “Unimportant” or “Very Unimportant” (33 percent vs. 7 percent).

*OHV Park*

Half of the respondents (50 percent) have a neutral position relative to the OHV Park. In addition, more respondents feel that the park is either “Important” or “Very Important” compared to those who feel that it is either “Unimportant” or “Very Unimportant” (36 percent vs. 12 percent).

5.3.11 Facility Ratings

Table 5-23 and the following summary present the results of Survey Question No. 14:

“Please give a general rating for the facilities you have used at this Loup Power District recreation area” (respondents were also asked to explain any provided rankings of “Below Average” or “Poor”).

**Table 5-23. Facility Ratings**

Facility	Rating (percent)					Total Count
	Excellent	Above Average	Average	Below Average	Poor	
Campgrounds	30.3	<b>42.1</b>	26.3	1.1	0.2	452
Trails	<b>42.8</b>	41.9	15.3	0.0	0.0	322
Shoreline Fishing Area	14.4	<b>44.0</b>	37.6	2.8	1.2	648
Swimming Beach	24.0	<b>42.4</b>	29.5	3.2	0.9	217
Boat Ramps	14.3	<b>42.9</b>	40.2	1.3	1.3	77
Picnic Areas	23.2	<b>43.2</b>	32.5	0.4	0.7	271
Children’s Playgrounds	15.6	<b>43.7</b>	38.3	1.8	0.6	167
OHV Park	<b>48.9</b>	34.4	16.3	0.4	0.0	270
Restroom Facilities	7.4	27.9	<b>43.0</b>	14.1	7.6	433
Parking Lot	8.2	37.7	<b>52.6</b>	1.3	0.2	475

Note:

<sup>1</sup> Data provided do not include respondents who did not answer or who answered as not applicable.

When considered together, District recreation facilities were rated as “Excellent” or “Above Average” by more than 62 percent of survey respondents. The ratings for specific facilities are presented below:

### *Campgrounds*

- More than 72 percent of respondents rated District campgrounds as “Excellent” or “Above Average.”
- The respondents who rated District campgrounds as “Below Average” or “Poor” specifically cited the need for grass mowing, weed spraying, and pad leveling at Headworks Park campgrounds.
- Of the 1,024 survey respondents, 571 (55 percent) stated that campgrounds are not applicable to their recreational experience.

### *Trails*

- More than 84 percent of respondents rated District trails as “Excellent” or “Above Average.”
- No respondents rated District trails as “Below Average” or “Poor.”
- Of the 1,024 survey respondents, 699 (68 percent) stated that trails are not applicable to their recreational experience.

### *Shoreline Fishing*

- More than 58 percent of respondents rated shoreline fishing opportunities as “Excellent” or “Above Average.”
- Thirty-seven percent of respondents rated shoreline fishing opportunities as “Average”
- Of survey respondents, 373 (36 percent) stated that shoreline fishing opportunities are not applicable to their recreational experience.
- The respondents who rated District shoreline fishing opportunities as “Below Average” or “Poor” cited the following reasons:
  - Abundance of snags – due to the rocky shoreline and trees in the Loup Power Canal
  - Steep banks along the Loup Power Canal
  - Overgrown vegetation along the shoreline
  - Trash at shoreline fishing access locations
  - Lack of submerged structure in Lake North

- Comments and suggestions concerning improved fishing opportunities at District fisheries have been received from a private citizen since the initiation of Project relicensing. These comments are included as Attachment D.

#### *Swimming Beach*

- More than 66 percent of respondents rated the swimming beach as “Excellent” or “Above Average.”
- Twenty-nine percent of respondents rated the swimming beach as “Average.”
- The respondents who rated the District’s swimming beach as “Below Average” or “Poor” cited the need for additional sand (less gravel) and for cleaning/raking.
- Of the 1,024 survey respondents, 804 (78 percent) stated that the swimming beach is not applicable to their recreational experience.

#### *Boat Ramps*

- More than 57 percent of respondents rated the District’s boat ramps as “Excellent” or “Above Average.”
- Forty percent of respondents rated the boat ramps as “Average.”
- The respondents who rated the District’s boat ramps at Lake North as “Below Average” or “Poor” cited ramp grade and a lack of traction as problematic (one respondent noted that moss was prevalent and needed to be removed).
- Of the 1,024 survey respondents, 941 (91 percent) stated that boat ramps are not applicable to their recreational experience.

#### *Picnic Areas*

- More than 66 percent of respondents rated District picnic areas as “Excellent” or “Above Average.”
- Thirty-two percent of respondents rated the picnic areas as “Average.”
- The respondents who rated the District’s picnic areas as “Below Average” or “Poor” did not provide specific concerns.
- Of the 1,024 survey respondents, 750 (73 percent) stated that picnic areas are not applicable to their recreational experience.

### *Children's Playgrounds*

- More than 59 percent of these respondents rated the equipment as “Excellent” or “Above Average.”
- Thirty-eight percent of respondents rated the equipment as “Average.”
- The respondents who rated the District’s playground equipment as “Below Average” or “Poor” stated that the District does not provide enough equipment and that the existing equipment is outdated.
- Of the 1,024 survey respondents, 855 (83 percent) stated that playground equipment is not applicable to their recreational experience.

### *OHV Park*

- More than 83 percent of respondents rated Headworks OHV Park as “Excellent” or “Above Average.”
- The lone respondent who rated Headworks OHV Park as “Below Average” cited the need for a permanent restroom and improvements to the entrance trail. (No respondents rated Headworks OHV Park as “Poor.”)
- Of the 1,024 survey respondents, 750 (73 percent) stated that Headworks OHV Park is not applicable to their recreational experience.

### *Restrooms*

- The greatest number of respondents rated restroom facilities as “Average.”
- Respondents who rated restroom facilities as “Below Average” or “Poor” cited the following reasons:
  - Restrooms were dirty and/or did not contain toilet paper.
  - Restrooms were in poor condition.
  - Restrooms lacked running water and/or shower (Headworks Park).
  - Restrooms lacked power/light (Headworks Park).
- Of the 1,024 survey respondents, 588 (57 percent) stated that restroom facilities are not applicable to their recreational experience.

### *Parking*

- The greatest number of respondents rated parking facilities as “Average.”
- Respondents who rated parking facilities as “Below Average” or “Poor” specifically cited a lack of drainage at Headworks Park as the primary concern.

- Of the 1,024 survey respondents, 539 (52 percent) stated that parking facilities are not applicable to their recreational experience.

### 5.3.12 Interference with Activities

Table 5-24 presents the results of Survey Question No. 15:

“Did anything interfere with your recreation activities today?” (Respondents who answered “Yes” were asked to please explain.)

Collected data suggest that the vast majority (87 percent) of recreation users experience no interference with their recreation activities while recreating along the Loup Power Canal. Of the survey respondents who stated that their recreation activities had been interfered with, the overwhelming majority cited the weather (wind/rain) as the cause. Other commonly cited causes of interference included:

- OHV/ATV operation late at night
- Bugs (mosquitoes and Asian beetles were specifically cited)
- Unleashed dogs

**Table 5-24. Interference with Activities (Loup Power Canal)**

Presence of Interference	Count	Percent
(No Answer)	12	1.2
No	899	87.8
Yes	113	11.0
Total	1,024	100.0

### 5.3.13 Requested Improvements to District Recreation Facilities

Tables 5-25 through 5-30 present the results of Survey Question No. 18:

“Please identify any other recreation activities or facilities that are not currently available at Loup Power District sites that the public would be interested in using?”

#### *Headworks Park*

Table 5-25 lists facility improvements noted by more than one recreation user surveyed at Headworks Park. Other requested improvements noted only once during 2010 surveys are as follows: waste disposal, bait shop, noise enforcement/signs, wider gate access, brochures, motocross track, and horseshoes.

**Table 5-25. Requested Improvements – Headworks Park**

Respondents (Count)	Category	Specific Comment(s)
65	Power	Provide additional outlets; provide power in restrooms
45	Shower	Install showers in restroom and OHV area
17	Water	Provide potable water in restroom and park via hydrant
16	Restroom	Improve cleanliness; add capacity; provide doors on stalls
14	OHV/ATV	Provide additional jumps, paths, parking, outlets, and a separate campground with amenities
11	Fishing	Provide cleaning station
9	Picnic	Add picnic tables
6	Playground	Add and improve equipment
5	Trash	Provide dumpsters
4	Shelter	Provide a storm shelter and cover for picnic tables
3	Volleyball	Provide net
3	River Access	Improved path to shore

*Lake Babcock Park (Loup Park)*

Table 5-26 lists facility improvements noted by more than one recreation user surveyed at Lake Babcock Park (Loup Park). Other requested improvements noted only once during 2010 surveys are as follows: posted speed limits, fish cleaning station, ice fishing access, more walleye, additional camper pads, security at night, helmet requirement for OHVs, dump station, water fountain, handicap dock, additional signage, horseshoe pits, and dog park.



**Table 5-26. Requested Improvements – Lake Babcock Park (Loup Park)**

Respondents (Count)	Category	Specific Comment(s)
8	Restrooms	Improve cleanliness; spray for bugs; install at Castner’s Crossing
5	Showers	Install in restroom
5	Fire Pits	Install additional pits
4	Bugs	Spray for mosquitoes
2	Picnic	Add picnic tables
2	Playground	Improve equipment
2	Trails	Improve trails

*Lake North Park*

Table 5-27 lists facility improvements noted by more than one recreation user surveyed at Lake North Park. Other requested improvements noted only once during 2010 surveys are as follows: more parking stalls, security, spraying for mosquitoes, more or improved playground equipment, smoother trails, volleyball nets, and horseshoes.

**Table 5-27. Requested Improvements – Lake North Park**

Respondents (Count)	Category	Specific Comment(s)
24	Fishing	Provide cleaning station; restock lake; provide fish structure
14	Restrooms	Improve cleanliness; install lights and electrical outlets
11	Showers	Install showers in campgrounds, in restrooms, and near the beach
10	Beach	Provide more sand on the beach
9	Outlets	Provide more capacity
6	Boat Ramps	Install on south side; add buoys; provide bilingual signage
5	Dump Station	Install dump station
4	Picnic	Add picnic tables, particularly along the beach
3	Camping	Provide more spots
3	Trash	Provide more cans, particularly along trails
2	Fire Pits	Install additional pits
2	Weeds	Mow more frequently

***Columbus Powerhouse Park***

Table 5-28 lists facility improvements noted by more than one recreation user surveyed at Columbus Powerhouse Park. Other requested improvements noted only once during 2010 surveys are as follows: trash cans, trees, fewer sandburs, fewer weeds.

**Table 5-28. Requested Improvements – Columbus Powerhouse Park**

Respondents (Count)	Category	Specific Comment(s)
3	Restrooms	Install light; provide a restroom on the north end of the park
3	Fishing	Provide a cleaning station; stock walleye
2	Lighting	Improve lighting

***Tailrace Park***

Table 5-29 lists facility improvements noted by more than one recreation user surveyed at Tailrace Park. Other requested improvements noted only once during 2010 surveys are as follows: barbeque pits, less rocks, graffiti cleaned up, storm shelter, bilingual signs, security/police patrol, and equipment rental.

**Table 5-29. Requested Improvements – Tailrace Park**

Respondents (Count)	Category	Specific Comment(s)
39	Restrooms	Provide restroom/shower facilities
15	Litter	Clean up litter; provide trash cans
12	Fishing	Provide cleaning station; add fish habitat; construct a fishing pier; expand shoreline
5	Water	Provide running water/fountain
3	Picnic	Add picnic tables
3	Lighting	Install additional lighting

***Loup Power Canal***

Table 5-30 lists facility improvements noted by more than one recreation user surveyed along the Loup Power Canal, outside of the District’s developed recreation sites. Other requested improvements noted only once during 2010 surveys are as follows: a map, keeping ATVs out of the park, more trees.

**Table 5-30. Requested Improvements – Loup Power Canal**

Respondents (Count)	Category	Specific Comment(s)
20	Fishing	Improve habitat; provide cleaning station(s); mow weeds; stock fish; start a fishing club; improve access; improve fisheries near Genoa; remove snags; construct fishing bridges
10	Access	Provide wheelchair access; provide access to both sides of the canal
8	Restrooms	Add capacity; improve facilities with faucets; provide facility at the Monroe Powerhouse
4	Trails	Surface trails; improve maintenance
4	Trash	Provide trash cans
4	Camping	Provide more spots with power outlets
4	Water	Provide showers, pump, and faucet
2	Boat Ramps	Provide ramps for canal access
2	Fire Pits	Provide fire pits

#### 5.4 Trail Counts

User data were collected using infrared trail counters on Two Lakes Trail, Bob Lake Trail, and Robert White Trail. The results are presented below.



Photo 8. Bicycle riders on the District’s trail network.

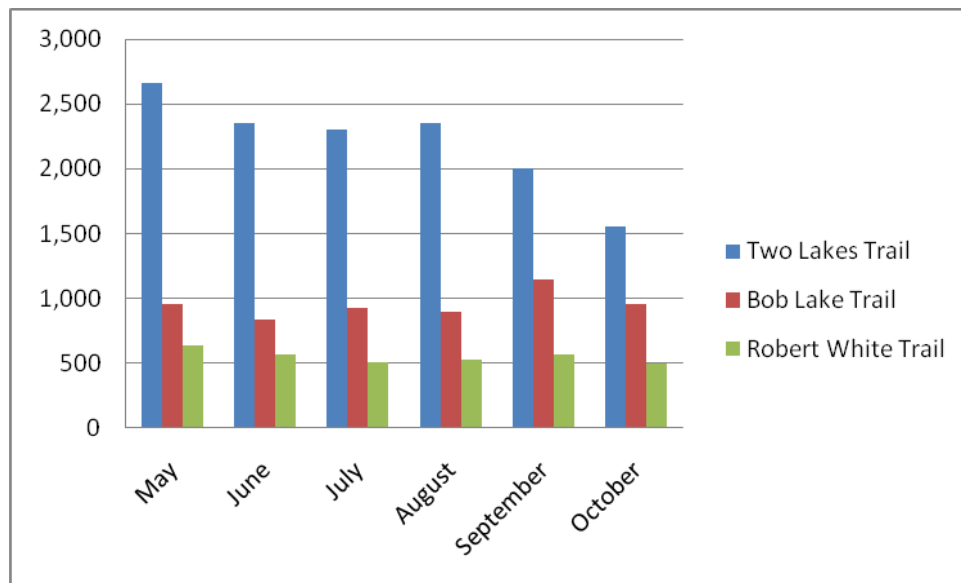
Table 5-31 quantifies trail traffic by month, and Figure 5-2 graphically depicts the same measure. Collected data suggest that the most trail use occurs in May and that trail traffic from June through September is very consistent. The data also show a decrease in trail traffic in October. The amount of traffic present on each representative trail is also provided. As shown, Two Lakes Trail receives 59.5 percent of the total trail traffic, while Bob Lake Trail and Robert White Trail receive 25.7 and 14.8 percent, respectively.

**Table 5-31. Trail Counts – Monthly**

Trail Name	May	June	July	Aug	Sept	Oct	Total Counts	Monthly Average	Percentage of Total
Two Lakes	2,660	2,351	2,306	2,349	2,008	1,550	13,224	2,204	59.5
Bob Lake	960	838	922	894	1,147	951	5,712	952	25.7
Robert White	634	562	511	526	569	493	3,295	549	14.8
Total	4,254	3,751	3,739	3,769	3,724	2,994	22,231	NA	100.0

Note:

NA = Not applicable.



Note: Based on Average Daily Traffic (ADT).

**Figure 5-2. 2010 Monthly Trail Counts**

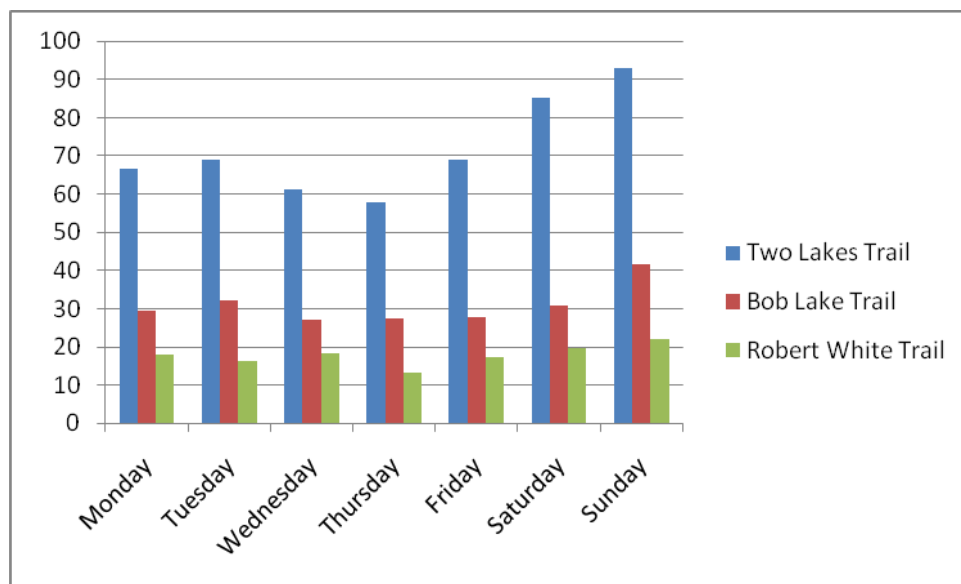
Table 5-32 quantifies trail traffic by specific day of the week; Figures 5-3 and 5-4 provide graphical depictions. The data suggest that trail traffic is generally consistent throughout the work week and increases slightly on the weekend. The daily average of trail counts is also provided for each trail. As shown, Two Lakes Trail receives a daily average of 71.9 trips per day, while Bob Lake Trail and Robert White Trail receive 31.0 and 17.9 trips per day, respectively (see Table 5-32).

**Table 5-32. Trail Counts – Days of the Week**

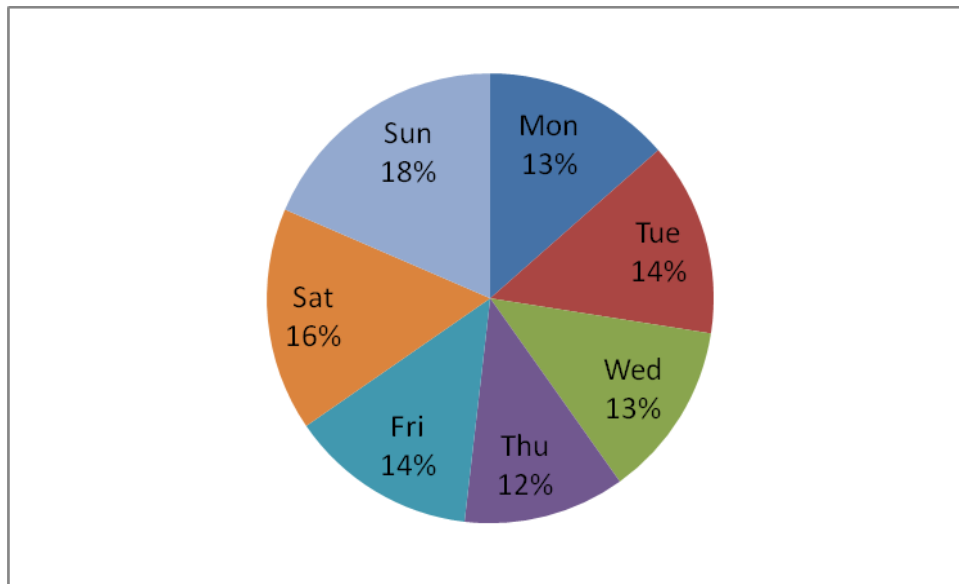
Trail Name	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Daily Average
Two Lakes	66.6	69.0	61.2	58.0	69.1	85.1	92.8	71.9
Bob Lake	29.6	32.3	27.2	27.6	27.8	30.9	41.5	31.0
Robert White	18.1	16.4	18.4	13.1	17.4	19.6	22.1	17.9
Percentage of Total	13.5	13.9	12.7	11.7	13.6	16.1	18.5	NA

Note:

NA = Not applicable.



**Figure 5-3. Average Daily Trail Counts**



**Figure 5-4. Total Percentage of Trail Traffic by Day of the Week**

Table 5-33 quantifies trail traffic during 2010 summer holiday weekends. The data suggest that trail traffic is higher during the Memorial Day and Labor Day weekends, with the most use being recorded on Memorial Day weekend. Recorded trail use was below normal during Independence Day weekend and was likely influenced by recorded rain events in the study area (NeRAIN, December 3, 2010).

**Table 5-33. Trail Counts – Holiday Weekends**

		Two Lakes	Bob Lake	Robert White
Memorial Day	Total Counts <sup>1</sup>	525	170	73
	Average Daily Count <sup>1</sup>	175	57	24
	Percentage of Overall Daily Average <sup>2</sup>	212.5	169.6	123.6
Independence Day	Total Counts <sup>1</sup>	217	84	63
	Average Daily Count <sup>1</sup>	72	28	21
	Percentage of Overall Daily Average <sup>2</sup>	87.8	83.8	106.7
Labor Day	Total Counts <sup>1</sup>	368	164	66
	Average Daily Count <sup>1</sup>	123	55	22
	Percentage of Overall Daily Average <sup>2</sup>	149.0	163.6	111.8

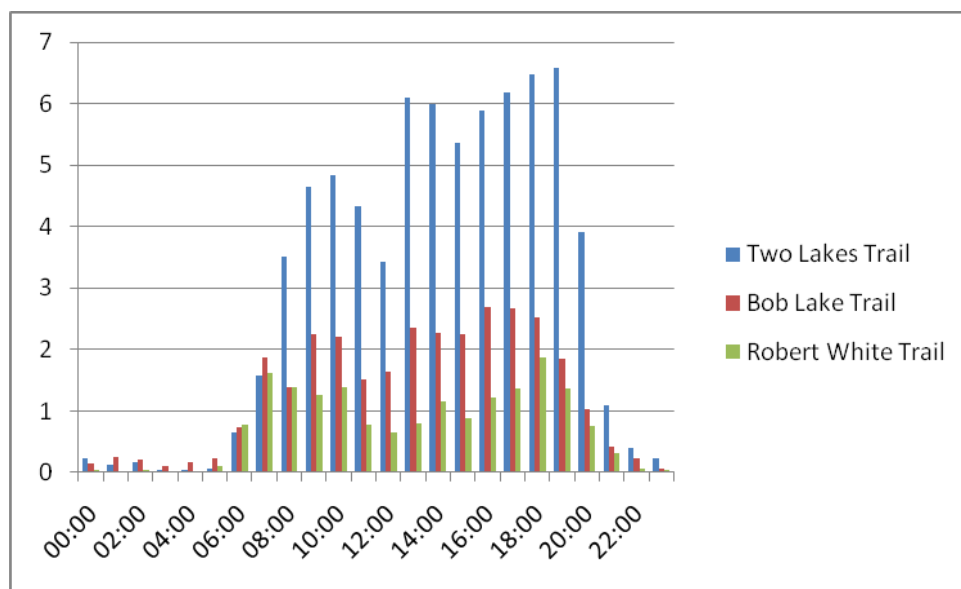
Notes:

<sup>1</sup> Total Count and Average Daily Count include trail use data collected from Saturday through Monday of the holiday weekend.

<sup>2</sup> Overall Daily Averages are 82.35 users per day on Two Lakes Trail, 33.42 users per day on Bob Lake Trail, and 19.68 users per day on Robert White Trail and were calculated using Saturday through Monday counts for the entire survey period.

Figure 5-5 graphically depicts trail traffic according to the hours of the day. Not unexpectedly, collected data suggest that essentially no trail users are present between 9:00 p.m. and 6:00 a.m. Trail use begins at approximately 6:00 a.m. and receives moderate and consistent use through the morning hours. Trail use increases following the lunch hour and remains consistent through approximately 8:00 p.m., when usage drops off sharply. The mean hourly trail use is provided as follows:

- Two Lakes Trail – 3.0 trips per hour
- Bob Lake Trail – 1.3 trips per hour
- Robert White Trail – 0.7 trip per hour



**Figure 5-5. Trail Traffic by Time of Day**

## 5.5 Telephone Survey

The Interim Recreation Use Telephone Survey Results, which were required by FERC’s Study Plan Determination, were filed as part of the District’s Initial Study Report on August 26, 2010. The Interim Recreation Use Telephone Survey Results included the comprehensive findings of the telephone survey performed in association with this recreation use study. The methods and associated findings of the telephone survey are not repeated within the body of this report, but are included as Attachment E.

## 5.6 Loup Power Canal Use, Capacity, and Demand

The findings relative to recreational use, capacity, and demand, derived from the 2010 recreation use surveys performed along the Loup Power Canal, are provided below. Estimation methodologies are detailed in Section 4.

### 5.6.1 Recreation Use Estimates

Based on recreation use estimates derived from 2010 survey results and listed in Table 5-34, the following note when and where recreation users are most likely to use District recreation facilities<sup>2</sup>:

- Estimated average weekend day recreation use is roughly three times that of the estimated average weekday use.
- Lake North Park receives the most visitation on weekdays, while Headworks Park receives the most visitation during the weekend, including holiday weekends.
- Overall, Headworks Park is the most frequently visited recreation site, followed by Lake North Park. Conversely, Columbus Powerhouse Park receives the fewest visitors amongst the District's developed recreation sites.
- Memorial Day weekend was the busiest time for District recreation facilities in 2010 as it received approximately 150 percent of the total visitors expected on an average weekend day during the recreation season.
- Independence Day weekend saw slightly less visitation compared to the estimated average weekend visitation; however, weather likely played a factor in below-average visitation, as rain was recorded in the area on both July 4 and July 5, 2010 (NeRAIN, December 3, 2010).
- Labor Day weekend saw slightly increased visitation compared to the estimated average weekend visitation.

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<sup>2</sup> All provided observations are based on use estimates specific to the primary recreation season of May 1 to October 31, as determined by survey responses that verify this period as the most frequently used.



**Table 5-34. Recreation Site Average Daily and Average Annual Use**

Type of Analyzed Day	Headworks Park	Lake Babcock Park (Loup Park)	Lake North Park	Columbus Powerhouse Park	Tailrace Park	Loup Power Canal	Total
Estimated Average Daily Use							
Weekday <sup>1</sup>	50	30	70	20	40	50	260
Weekend (All Weekends) <sup>2</sup>	320	60	150	30	70	90	720
Weekend (Non-Holiday Weekend Only) <sup>3</sup>	320	60	130	30	60	90	690
Weekend (Holiday Weekend Only) <sup>4</sup>	300	60	200	40	90	100	790
Memorial Day Weekend <sup>5</sup>	370	90	280	70	130	80	1,020
Independence Day Weekend <sup>5,6</sup>	240	10	150	40	120	50	610
Labor Day Weekend <sup>5</sup>	280	70	160	30	30	160	730
Estimated Annual Use							
2010	26,600	7,900	19,200	4,300	10,400	13,200	81,600

Notes:

- <sup>1</sup> Includes all Tuesdays, Wednesdays, Thursdays, and Fridays for the recreation period of May 1 through October 31. Also includes all Mondays not associated with Memorial Day, Independence Day, or Labor Day weekend.
- <sup>2</sup> Includes all Saturdays and Sundays, regardless of whether they are associated with a holiday weekend, for the recreation period of May 1 through October 31.
- <sup>3</sup> Includes all Saturdays and Sundays that are not associated with a holiday weekend for the recreation period of May 1 through October 31.
- <sup>4</sup> Includes the Saturdays, Sundays, and Mondays associated with the Memorial Day, Independence Day (observed on Monday, July 5, 2010), and Labor Day weekends.
- <sup>5</sup> Includes the Saturday, Sunday, and Monday of the designated holiday weekend.
- <sup>6</sup> Weather likely limited visitation, as rain was recorded in the area on both July 4 and July 5, 2010 (NeRAIN, December 3, 2010).

## 5.6.2 Capacity of District Recreation Sites

### *Recreation Use Survey Findings*

A very small minority of the 1,024 participants who responded to the recreation use survey along the Loup Power Canal cited any concerns or frustrations related to overcrowding. Of the 1,012 respondents to Survey Question No. 15: “Did anything

interfere with your recreation activities today,” only 3 persons (0.3 percent – all surveyed on non-holiday weekends that did not correspond with the NOHVA Jamboree) stated that overcrowding had interfered with their recreation (see Section 5.3.12).<sup>3</sup>

Additionally, in responding to Survey Question No. 14: “Please give a general rating for the facilities you have used at this Loup Power District recreation area,” the overwhelming majority of respondents rate the facilities as “Average” or better (“Above Average” or “Excellent”).

Concurrent with the recreation use survey along the Loup Power Canal, conducted on 62 days between May 1 and October 31, 2010 (see Table 5-6), survey proctors also recorded RV and tent counts at developed recreation sites and along undeveloped portions of the Loup Power Canal. When compared to the number of existing RV and tents sites at the various recreation areas (see Section 5.2), capacity exceedances were very limited and only occurred at Headworks Park. Noted exceedances at Headworks Park occurred on Memorial Day weekend and during the October NOHVA jamboree and are detailed as follows:

- May 29, 2010 (Saturday of Memorial Day weekend) – 90 RVs/campers were counted. This represents an exceedance of 44 units when compared to the 46 available RV sites.
- October 2, 2010 (Saturday of NOHVA jamboree) – 118 RVs/campers were counted. This represents an exceedance of 72 units when compared to the 46 available RV sites.
- October 2, 2010 (Saturday of NOHVA jamboree) – 61 tents were counted. This represents an exceedance of 11 units when compared to the 50 available tent sites.

#### *Anecdotal District Observations*

Use of District recreation facilities varies both seasonally and throughout the week, with heaviest use occurring in the summer, on weekends and holidays, and during the NOHVA spring and fall jamborees. Overall, the District’s recreation facilities are frequently used by the public with limited periods of overcrowding. Select District facilities (most notably Lake North Park and Headworks Park) may reach full capacity during holiday weekends. Additionally, Headworks Park overflows during NOHVA jamborees. To accommodate this, NOHVA has historically made arrangements with an adjacent landowner to lease pasture space for overflow camping during the jamborees. Aside from these occasions, there is ample capacity for recreation use.

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<sup>3</sup> It should be noted that Project surveys were performed on both weekdays and weekends, including Memorial Day, Independence Day, and Labor Day weekends.

### 5.6.3 Demand for District Recreation Sites

Nebraska’s SCORP for 2011 to 2015 states that “there is no consensus in the field of recreation planning on the best practice in measuring current and future demand for outdoor recreation resource and facilities” (NGPC, 2010). This suggests that the assignment of demand of District recreation facilities is difficult, regardless of the amount of recreational survey data collected. The following discussion attempts to address the demand discussion.

#### *Demand Standards – Level of Service*

NRPA developed guidelines in 1971, 1983, and 1995 that outlined how many acres of park and how many miles of trail there should be in a community based on its population. The 1995 guidelines indicated that there should be 10 acres of park per 1,000 people and 1 mile of trail per 8,000 people. These numbers help define a level of service or minimum park and recreation infrastructure capacity required to satisfy a community’s park and recreation needs. NGPC recognizes this as a commonly used method, and many planners and engineering firms focus on these numbers for legal purposes because no other standards exist for recreation facilities (NGPC, 2010).

Considering the NRPA guidelines and the U.S. Census Bureau’s 2009 population estimates for Nance (3,460) and Platte (32,515) counties (U.S. Census Bureau, July 2009), the population of the combined counties (35,975) would require 360 park acres and 4.5 miles of trail. U.S. Census Bureau data suggest that the populations of the City of Columbus as well as Nance and Platte counties have been essentially static over the past decade, as shown in Table 5-35.

**Table 5-35. Local Population Trends**

Location	2000	2008/2009	Change (Count)	Change (Percent)
Nance County	4,038 <sup>1</sup>	3,460 <sup>2</sup>	-578	-14.3
Platte County	31,662 <sup>1</sup>	32,515 <sup>2</sup>	853	2.7
Nance and Platte Counties Combined	35,700 <sup>1</sup>	35,975 <sup>2</sup>	275	0.8
City of Columbus	20,971 <sup>1</sup>	21,270 <sup>3</sup>	299	1.4

Notes:

- <sup>1</sup> Source: U.S. Census Bureau, 2000, “Census 2000 Summary File 1 100-Percent Data,” *American FactFinder*, retrieved on December 2, 2010, <http://factfinder.census.gov>.
- <sup>2</sup> Source: U.S. Census Bureau, July 2009, “2009 Population Estimates,” *American FactFinder*, retrieved on December 2, 2010, <http://factfinder.census.gov>.
- <sup>3</sup> Source: U.S. Census Bureau, 2009, “2006-2008 American Community Survey,” *American FactFinder*, retrieved on December 2, 2010, <http://factfinder.census.gov>.

The sizes of the District’s multiple recreation sites are shown in Table 5-36. With 1,762 acres of land available for public recreation and an additional 800 aquatic acres, District facilities more than exceed the NRPA guideline. Not included in these figures (see Table 5-36) is the consideration that nearly the entire 5,200 acre Project Boundary is publicly accessible for recreation. Also, the City of Columbus has an extensive series of developed public parks, and NGPC maintains several additional WMAs in Nance and Platte counties. In summary, available recreation facilities exceed the NRPA guideline for Nance and Platte counties.

**Table 5-36. Size of District Recreation Sites**

Recreation Site	Area (acres)	Recreation Site	Area (acres)
Developed Terrestrial Recreation Sites		Undeveloped Terrestrial Recreation Sites	
Headworks Park	10	Headworks OHV Park	1,200
Lake Babcock Park	40	Loup Lands WMA	485
Lake North Park	14	Total	1,685
Columbus Powerhouse Park	4		
Tailrace Park	9	Aquatic Recreation Sites	
Total	77	Lake Babcock	600
		Lake North	200
		Total	800
Total Recreation Area: 2,562 acres			

The District’s developed trail system exceeds the NRPA guideline for trails. The District’s trail system provides 5.2 miles of developed and maintained pedestrian/bicycle trail: 2.4-mile Two Lakes Trail, 1.3-mile Bob Lake Trail, and 1.5-mile Robert White Trail. Additionally, an estimated 50 miles of OHV trails are publicly accessible at Headworks OHV Park.

### 5.7 Loup River Bypass Reach Recreation Facility Inventory

An inventory of public access locations along the Loup River bypass reach was taken by District representatives in association with the 2010 survey of District recreation facilities. This portion of the 2010 survey was conducted based on a request from NPS in its comments on the Recreation Use of the Loup River Bypass Reach Study Plan (NPS, March 23, 2010). The following provides the inventory findings.

Public access locations along the Loup River bypass reach include a District-owned park, NGPC-managed WMAs, public transportation right-of-way, and a City of Columbus park. With the exception of the District’s Headworks Park (specifically,

Weir Park Camp) and the City of Columbus’s Pawnee Park, these areas are undeveloped. Constructed recreation facilities at the WMAs are limited to small gravel parking areas and associated signage (generally used to post applicable use regulations). Specific survey locations and associated parking facilities are listed below from west to east and are shown in Figure 3-2:

- District property immediately south of the Diversion Weir – No developed facilities or designated parking areas
- Headworks Park (Weir Park Camp) – See detailed inventory below
- Loup Lands WMA – Two designated parking areas
- Don Dworak WMA – One designated parking area
- Nebraska Highway 39 Loup River Bridge – No developed facilities or designated parking areas
- George D. Syas WMA – Five designated parking areas
- 370<sup>th</sup> Avenue Loup River Bridge – No developed facilities or designated parking areas
- Looking Glass Creek WMA – Two designated parking areas
- Pawnee Park – See detailed inventory below
- U.S. Highway 81 Loup River Bridge – No developed facilities or designated parking areas

Weir Park Camp is a developed District recreation area located within the District’s larger Headworks Park (see Figure 3-1, Sheet 2 of 5 and Figure 3-2). It is located between the Loup Power Canal and the Loup River bypass reach and contains the following recreation facilities: five fire pits, five picnic tables, a dumpster, two barbeque grills, two benches, three water hydrants, one picnic shelter, one ATV-style rocking horse, one swing set (four swings), and two life preservers.

The City of Columbus’s Pawnee Park encompasses 153 acres and offers a living tree museum, rose garden, 1904 steam locomotive, bell tower, Andrew Jackson Higgins Memorial, playground areas, sand volleyball courts, disc golf, fishing, winter ice skating, horseshoe pits, tennis courts, skate park, 2,000-seat stadium with field and track, one large picnic shelter (850 people), and one small shelter (250 people). Additionally, the park includes the Pawnee Plunge Water Park (City of Columbus, November 29, 2010).

## 5.8 Loup River Bypass Reach Survey Responses

Survey data collected and notable observations made during the 2010 recreation use survey along the Loup River bypass reach are provided below. Observation forms completed in association with the 2010 recreation use survey along the Loup River bypass reach to document observed recreation use are provided as Attachment F.

Table 5-37 indicates the number of survey days, surveys conducted, and recreation users observed during 2010 data collection activities. Table 5-37 also presents the percentage of observed recreation users who were surveyed. As shown, this is generally around 15 percent.

**Table 5-37. Recreation Use Surveys and User Counts  
(Loup River Bypass Reach)**

	May	June	July	August	September	October	Total
Survey Days	3	6	3	4	4	4	22
Recreation Use Surveys Conducted	17	20	19	21	24	1	102
Users Observed	202	138	142	97	82	1	662
Percentage of Observed Users Surveyed	8.42	14.49	13.38	21.65	29.27	100.00	15.41

The vast majority (92 percent) of survey respondents describe themselves as white (non-Hispanic, Latino, or Spanish), as shown in Table 5-38. Nearly 5 percent of survey respondents describe themselves as white (Hispanic, Latino, or Spanish). No other racial groups were heavily represented among survey respondents.

**Table 5-38. Racial Composition of Survey Respondents  
(Loup River Bypass Reach)**

Race	Count	Percent
(No Answer)	2	2.0
White (non-Hispanic, Latino, or Spanish)	93	92.1
White (Hispanic, Latino, or Spanish)	5	4.9
Asian or Pacific Islander	1	1.0
American Indian or Alaska Native	0	0.0
Black, African American, or Negro	0	0.0
Other	0	0.0
Total	101	100.0

The most common annual household income range reported by survey respondents was \$26,000 to \$50,000 (46 percent), as shown in Table 5-39. Respondent frequency generally decreased as income increased.

**Table 5-39. Annual Household Income of Survey Respondents  
 (Loup River Bypass Reach)**

Income	Count	Percent	Income	Count	Percent
(No Answer)	20	19.8	\$51,000 - \$75,000	15	14.9
\$0 - \$25,000	6	5.9	\$76,000 - \$100,000	5	5.0
\$26,000 - \$50,000	47	46.5	Over \$100,000	8	7.9
Total Count: 101					

Table 5-40 presents the results of Survey Question No. 14:

“What are the ages, and corresponding gender, of the people in your party today?”

Collected data suggest that male users outnumber female users along the Loup River bypass reach at an approximate ratio of 2:1. The most common age ranges of users within surveyed parties were: 1) 12 and under, 2) 19 to 24, and 3) 50 to 55. The most commonly encountered age/gender demographic was males under 12 years of age. This demographic encompassed more than 11 percent of all encountered users. Beyond this age range, the distribution of male users throughout other age ranges was relatively evenly distributed. Among female users, 19 to 24 year olds were the most common.

**Table 5-40. Age and Gender of Users (Loup River Bypass Reach)**

Age Range	Male			Female			Total	
	Count	Percent of Age Range	Percent of All Users	Count	Percent of Age Range	Percent of All Users	Count	Percent of All Users
12 and Under	27	69.2	11.5	12	30.8	5.1	39	16.6
13-18	8	57.1	3.4	6	42.9	2.6	14	6.0
19-24	16	51.6	6.8	15	48.4	6.4	31	13.2
25-30	15	62.5	6.4	9	37.5	3.8	24	10.2
31-36	12	52.2	5.1	11	47.8	4.7	23	9.8
37-42	15	79.0	6.4	4	21.1	1.7	19	8.1
43-49	13	68.4	5.5	6	31.6	2.6	19	8.1
50-55	14	51.9	5.9	13	48.2	5.5	27	11.4
56-61	13	65.0	5.5	7	35.0	3.0	20	8.5
62+	13	68.4	5.5	6	31.6	2.6	19	8.1
Total Count	146	NA	NA	89	NA	NA	235	NA
Total Percent	62.1	NA	62.0	37.9	NA	38.0	NA	100.0

Note:

NA = Not applicable.

Table 5-41 presents the results of Survey Question No. 13:

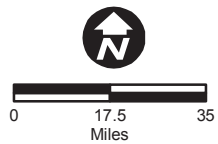
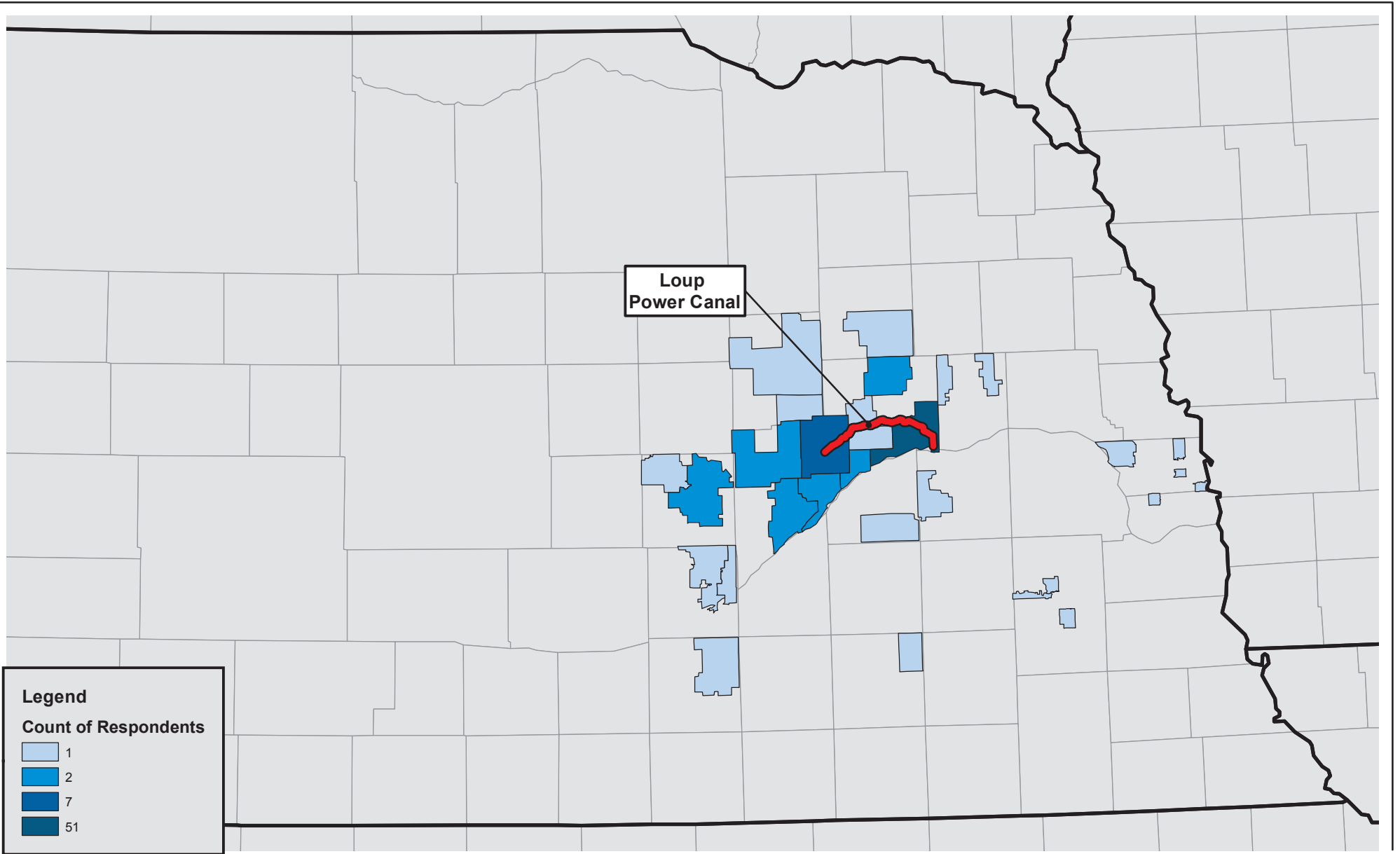
“What is your zip code?”

The residence (by state) of survey respondents was determined based on the zip codes provided. As shown in Table 5-41, 95 percent of survey respondents provided Nebraska zip codes. More specifically, more than 52 percent of survey respondents provided a Columbus, Nebraska, zip code. No other single state accounted for more than one survey response. Figure 5-6 illustrates the residence of survey respondents by zip code.



**Table 5-41. Residence of Users (Loup River Bypass Reach)**

State	Count	Percent
Nebraska	93	95.0
Kansas	1	1.0
North Carolina	1	1.0
New York	1	1.0
Pennsylvania	1	1.0
South Dakota	1	1.0
Total	98	100.0



## Residence of Bypass Survey Respondents by Zip Code

Loup River Hydroelectric Project  
FERC Project No. 1256  
Study 8.0 Recreation Use

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DATE  
February 2011

FIGURE  
5 - 6

### 5.8.1 Size of Party

Table 5-42 presents the results of Survey Question No. 1:

“How many people are in your group today?”

More than half (63 percent) of survey respondents were either alone or accompanied by a single guest. As the party size grew, the frequency of occurrence decreased, with the exception of parties of more than 10 being more prevalent than parties of 9 to 10.

**Table 5-42. Size of Party (Loup River Bypass Reach)**

Number in Party	Count	Percent
(No Answer)	1	1.0
1-2	64	63.4
3-4	20	19.8
5-6	7	6.9
7-8	4	4.0
9-10	0	0.0
10+	5	4.9
Total	101	100.0

### 5.8.2 Miles Traveled to Loup River Bypass Reach

Table 5-43 presents the results of Survey Question No. 2:

“How many miles did you travel from your home to this location today?”

More than 70 percent of survey respondents traveled 25 miles or less to access the Loup River bypass reach, while more than 90 percent traveled 100 miles or less. Eight survey respondents traveled over 100 miles before recreating along the Loup River bypass reach.

**Table 5-43. Miles Traveled (Loup River Bypass Reach)**

Miles Traveled	Count	Percent
(No Answer)	2	2.0
0-25	71	70.3
26-50	7	6.9
51-100	13	12.8
101-200	4	4.0
201-300	0	0.0
300-400	0	0.0
400+	4	4.0
Total	101	100.0

### 5.8.3 Overnight Stays

Tables 5-44 and 5-45 present the results of Survey Question No. 3:

“If you plan to or have stayed overnight, how many nights will/did you stay?  
 Where will/did you stay?”

#### *Type of Overnight Stay*

Those respondents who stated that they were not partaking in an overnight stay comprised more than 77 percent of all survey respondents. Of the 23 survey respondents who were involved in an overnight stay, more than 60 percent (14) were staying in an RV or trailer. The respondents who cited “Other” as their overnight accommodations noted stays in their vehicle, the New World Inn in Columbus, and along the Platte River.

**Table 5-44. Type of Overnight Stay (Loup River Bypass Reach)**

Type of Overnight Stay	Respondent Count	Percentage of All Respondents	Percentage of Overnight Respondents
Day Use Respondents			
Not an overnight visit	78	77.2	NA
Overnight Respondents			
(No Answer)	1	1.0	4.3
RV/Trailer	14	13.8	60.9
Other	4	4.0	17.4
Tent at developed campground	2	2.0	8.7
Tent at undeveloped campground	2	2.0	8.7
Total Overnight Respondents	23	22.8	100.0
Overall Total	101	100.0	100.0

*Duration of Overnight Stay*

Of the 23 survey respondents who were involved in an overnight stay, the greatest number of respondents (30 percent) were staying for four nights. Furthermore, more than 91 percent of overnight respondents planned to stay four or fewer nights.

**Table 5-45. Duration of Overnight Stay (Loup River Bypass Reach)**

Duration of Overnight Stay	Respondent Count	Percentage of Overnight Respondents
1 night	4	17.4
2 nights	6	26.1
3 nights	4	17.4
4 nights	7	30.5
5 nights	1	4.3
6-9 nights	1	4.3
10 or more nights	0	0.00
Total	23	100.0

#### 5.8.4 Frequency of Visitation – Loup River Bypass Reach

Table 5-46 presents the results of Survey Question No. 4:

“Over the last 12 months, how frequently did you recreate on the Loup River (between Headworks Park and Columbus and not including the Loup Power Canal)?”

Nearly half of all survey respondents stated that they visit the Loup River bypass reach on a weekly basis. Beyond the weekly visitors, visitation frequency was generally evenly distributed among those visiting several times a month, monthly, and annually.

**Table 5-46. Frequency of Visitation (Loup River Bypass Reach)**

Frequency	Count	Percent
(No Answer)	2	2.0
Weekly	48	47.5
Several times a month	14	13.9
Monthly	17	16.8
Annually	20	19.8
Total	101	100.0

#### 5.8.5 Visitation by Month – Loup River Bypass Reach

Consistent with the data provided in Section 5.3.7 for the Loup Power Canal, this section presents the recreation use along the Loup River bypass reach by month. As indicated in Table 5-47, use of the Loup River bypass reach for recreation is limited outside of the 2010 survey period, and additional recreation use survey in 2011 does not seem warranted. Table 5-47 presents the results of Survey Question No. 5:

“During what months do you typically visit this reach of the Loup River?”

Collected data suggest that the greatest amount of recreation occurs during the summer months of May, June, July, and August. Cumulatively, these four months account for 59 percent of the collected responses. Following peak summer use, collected data suggest that visitation moderates in September and October before further declining during the winter months. Use appears to become more frequent again in April.

**Table 5-47. Visitation by Month (Loup River Bypass Reach)**

Month	Count	Percent
January	11	1.9
February	12	2.1
March	27	4.7
April	49	8.5
May	83	14.3
June	85	14.7
July	86	14.9
August	87	15.0
September	56	9.7
October	43	7.4
November	23	4.0
December	16	2.8
Total	578	100.0

#### 5.8.6 Recreation Activities – Loup River Bypass Reach

Table 5-48 presents the results of Survey Question No. 6:

“Please indicate the activities that you have participated in or plan to participate in during your visit to this reach of the Loup River.”

Collected data suggest that fishing from shore, relaxing/hanging out, swimming/wading, hiking, and camping are the most popular activities along the Loup River bypass reach. Of the respondents who indicated that they participate in “Other” recreation activities: walking/running (21), OHV riding (8), and mushroom hunting (5) were common responses.

**Table 5-48. Recreation Activities (Loup River Bypass Reach)**

Activity	Count	Percent
(No Answer)	1	0.5
Relaxing/Hanging Out	39	18.3
Other	39	18.3
Fishing from Shore	36	16.9
Swimming/Wading	22	10.3
Hiking	22	10.3
Camping	20	9.4
Wildlife/Scenic Viewing	14	6.6
Hunting	12	5.6
Biking	7	3.3
Non-Motorized Boating	1	0.5
Fishing from Boat	0	0.0
Tubing	0	0.0
Total	213	100.0

**5.8.7 Impairment of Recreational Enjoyment – Loup River Bypass Reach**

Table 5-49 presents the results of Survey Question No. 7:

“Did anything decrease your enjoyment during your visit to the Loup River today?” (Respondents who answered “Yes” were asked to please explain.)

Collected data suggest that the vast majority (85 percent) of recreation users experience no impairment while recreating along the Loup River bypass reach. Of the survey respondents who cited impairments, the following were most commonly noted:

- More signage indicating access locations would be beneficial
- OHV riders interfered with recreational enjoyment
- Lack of showers and electricity at Headworks Park



**Table 5-49. Impairment of Recreational Enjoyment (Loup River Bypass Reach)**

Presence of Impairment	Count	Percent
(No Answer)	4	4.0
No	86	85.1
Yes	11	10.9
Total	101	100.0

### 5.8.8 Frequency of Use – Loup River Public Access Locations

Table 5-50 presents the results of Survey Question No. 8:

“Over the last 12 months, how often have you used the following sites to access the Loup River (not the Loup Power Canal)?”

Collected data suggest that access to Loup River bypass reach is most common and frequent at Headworks Park and Pawnee Park. Additionally, the data show that very few people access the Loup River bypass reach from the other surveyed public access locations (see Figure 3-2); those who do access the Loup River bypass reach from other locations most commonly state that they do so on a monthly basis.

**Table 5-50. Frequency of Use – Loup River Bypass Reach  
Public Access Locations**

Loup River Bypass Reach Public Access Location	(No Answer)	Annually	Monthly	Several Times/Month	Weekly	Never
	Percent					
Area South of Diversion Weir	3.0	5.0	7.9	5.0	6.9	72.3
Headworks Park (Weir Park Camp)	2.0	10.9	12.9	11.9	6.9	55.5
Loup Lands WMA	1.0	3.0	5.9	4.0	0.0	86.1
Don Dworak WMA	1.0	4.0	4.0	2.0	1.0	88.1
N-39 Bridge	3.0	2.0	4.0	3.0	0.0	88.1
George D. Syas WMA	3.0	6.9	6.9	3.0	0.0	80.2
370 <sup>th</sup> Ave. Bridge	4.0	1.0	5.9	2.0	0.0	87.1
Looking Glass Creek WMA	5.0	5.9	5.0	1.0	1.0	82.2
Pawnee Park	5.0	9.9	5.9	5.0	33.7	40.6
U.S. 81 Bridge	8.9	2.0	0.0	0.0	3.0	86.1
Averages	3.6	5.1	5.8	3.66	5.3	76.6
Total Count	101					

### 5.8.9 Frequency of Visitation – Loup Lands WMA

Table 5-51 presents the results of Survey Question No. 9:

“Over the last 12 months, how often have you visited the Loup Lands WMA?”

More than 77 percent of survey respondents stated that they have never visited the Loup Lands WMA. Among those respondents who indicated that they have visited the Loup Lands WMA, most stated that they visited once per year while others visited more frequently, some as often as once per week.

**Table 5-51. Frequency of Visitation (Loup Lands WMA)**

Frequency of Visitation	Count	Percent
Never	78	77.1
Annually	10	9.9
Monthly	5	5.0
Several times a month	5	5.0
Weekly	3	3.0
Total	101	100.0

#### 5.8.10 Visitation by Month – Loup Lands WMA

Table 5-52 presents the results of Survey Question No. 10:

“During what months do you typically visit the Loup Lands WMA?”

Collected data suggest that the greatest amount of visitation occurs concurrent with the fall and spring hunting seasons. September is noted to receive the most visitation; multiple popular Nebraska hunting seasons open in September. Heightened visitation in April and May also occurs concurrent with Nebraska’s spring turkey hunting season and prime morel mushroom hunting season. Visitation drops off dramatically in January and remains minimal through March.

**Table 5-52. Visitation by Month (Loup Lands WMA)**

Month	Count	Percent
(No Answer)	79	40.5
January	3	1.6
February	2	1.0
March	6	3.1
April	12	6.2
May	13	6.7
June	10	5.1
July	10	5.1
August	10	5.1
September	17	8.7
October	13	6.7
November	10	5.1
December	10	5.1
Total	195	100.0

#### 5.8.11 Recreation Activities – Loup Lands WMA

Table 5-53 presents the results of Survey Question No. 11:

“Please indicate the activities that you have participated in, or plan to participate in, during your visit to the Loup Lands WMA.”

Collected data suggest that hunting and camping are the most popular recreation activities at the Loup Lands WMA. Fishing from shore, wildlife/scenic viewing, and relaxing/hanging out were also popular responses. The lone respondent who participates in “Other” activities specified these activities as fishing via set lines and photography.

**Table 5-53. Recreation Activities (Loup Lands WMA)**

Activity	Count	Percent
(No Answer)	79	60.3
Hunting	11	8.4
Camping	11	8.4
Fishing from Shore	9	6.8
Wildlife/Scenic Viewing	8	6.1
Relaxing/Hanging Out	8	6.1
Hiking	3	2.3
Biking	1	0.8
Other	1	0.8
Total	131	100.0

5.8.12 Impairment of Recreational Enjoyment – Loup Lands WMA

Table 5-54 presents the results of Survey Question No. 12:

“Did anything decrease your enjoyment during your visit to the Loup Lands WMA?”

No survey respondents reported any impairment to their recreational enjoyment.

**Table 5-54. Impairment of Recreational Enjoyment (Loup Lands WMA)**

Presence of Impairment	Count	Percent
(No Answer)	79	78.2
No	22	21.8
Yes	0	0.0
Total	101	100.0

## 6. STUDY VARIANCE

Changes to the Recreation Use study plan, which was approved with modifications by FERC in its Study Plan Determination on August 26, 2009, were minor and are as follows:

- To determine the percent of capacity at which District recreation facilities currently operate, and in the absence of a universally recognized method for capacity determination, the following were evaluated:
  - Responses to the 2010 in-person recreation use surveys along the Loup Power Canal
  - Anecdotal observations by District staff relative to capacity
  - RV/camper and tent counts compared to available RV and tent sites at each respective recreation site
- The recreation use surveys along the Loup River bypass reach were to end on September 30, 2010, as stated in the District’s Recreation Use of the Loup River Bypass Reach Study Plan. The study plan stated that if notable recreation use was observed during July and August, the recreation use survey of the Loup River bypass reach could be extended through October. To clarify this statement, the District defined notable as “a mean count of 15 people recreating within the Loup River bypass reach on weekdays and 30 people recreating within the Loup River bypass reach on weekend days.” As stated in the District’s Interim General Recreation Use Report, observed recreation use along the Loup River bypass reach exceeded this threshold, but was concentrated at two general locations:
  - The Headworks (including Headworks Park and the area south of the Diversion Weir)
  - Pawnee Park (including the U.S. Highway 81 bridge)

Excluding these two locations, a total of 13 people were observed recreating within the Loup River bypass reach during July and August. Further, a substantial portion of the observations at the Headworks and Pawnee Park: 1) included recreation users who could be surveyed in coordination with the ongoing recreation use survey along the Loup Power Canal; 2) included recreation use along City of Columbus recreation facilities that are in no way affected by, or associated with, the Project (that is, hikers and bicyclists observed along the paved bicycle path at Pawnee Park); or 3) included recreation use that is not anticipated to occur in October (that is, swimming or wading).

Because the recreation use observed through September 30, 2010, and that which was expected to occur beyond September, could be captured via the recreation use survey scheduled to continue through October 31, 2010, along the Loup Power Canal, and because negligible recreation use has been observed at all survey locations between Headworks Park and Pawnee Park, the District proposed to FERC that the Loup River bypass reach survey not be extended through October. Instead, the District instructed survey proctors to broaden the survey scope only at Headworks Park. The broadened scope included the survey of recreation users accessing the Loup River bypass reach at this location.

Considering the preceding information, FERC staff stated in a September 29, 2010, telephone conversation with District representatives that it did not intend to require additional recreation use survey activities of the Loup River bypass reach beyond September 30, 2010, and that the survey scope at the Headworks should be expanded as noted.

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# LOUP RIVER HYDROELECTRIC PROJECT FERC PROJECT NO. 1256

## CREEL SURVEY



FEBRUARY 11, 2011



**Loup River Hydroelectric Project  
FERC Project No. 1256**

# **Study 8.0 Recreation Use Creel Survey Report**

**February 11, 2011**

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## STUDY 8.0            CREEL SURVEY REPORT

### 1.        INTRODUCTION

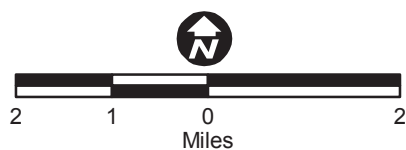
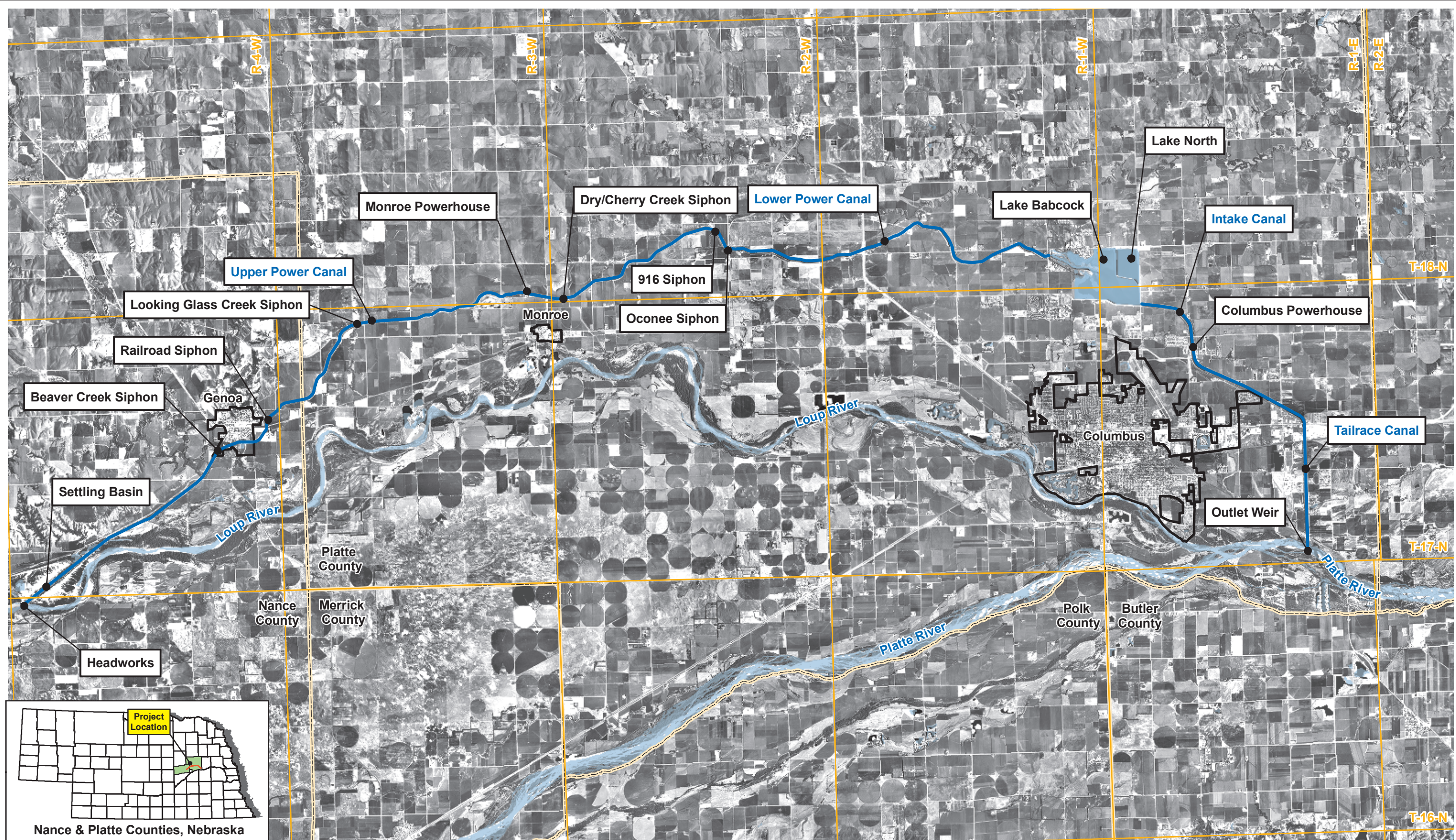
The Loup River Hydroelectric Project (Project) is located in Nance and Platte counties, Nebraska, where water is diverted from the Loup River and routed through the 35-mile-long Loup Power Canal, which empties into the Platte River near Columbus. The Project includes various hydraulic structures, two powerhouses, and two regulating reservoirs. The portion of the Loup River from the Diversion Weir to the confluence with the Platte River is referred to as the Loup River bypass reach.

Figure 1-1 shows the location of the Project and identifies the Project components. Specifically, the Project begins at the Headworks, where water is diverted from the Loup River into the Settling Basin and the Loup Power Canal. The Upper Power Canal carries the water to the Monroe Powerhouse, and then the Lower Power Canal carries the water from the Monroe Powerhouse into two regulating reservoirs, Lake Babcock and Lake North, which supply water to the Columbus Powerhouse via the Intake Canal. From the Columbus Powerhouse, water discharges to the Tailrace Canal, which in turn discharges to the Platte River, downstream of the confluence of the Loup and Platte rivers.

The Loup River Public Power District (Loup Power District or the District) has an established policy of providing public access and recreational opportunities, including fishing, at the Project. This includes the Loup Power Canal and the two regulating reservoirs (Lake Babcock and Lake North).

In 2010, the District conducted a comprehensive recreation use study, which included both a recreation use survey and an angler use and harvest (creel) survey, to gather data regarding existing recreation use of Project facilities, including use by anglers. The results of the recreation use survey are presented in this Second Initial Study Report, Appendix F1, General Recreation Use, while the results of the creel survey are presented in this report. The data collected from this recreation use study, including both the recreation use survey and the creel survey, and Study 10.0, Land Use Inventory, will be used by the District in the development of a Recreation Management Plan for District facilities. The Recreation Management Plan will outline District plans for enhancing existing recreation facilities and meeting future recreation demands. This creel survey report may also be used by the Nebraska Game and Parks Commission (NGPC) to evaluate fishery management strategies for the Loup Power Canal.

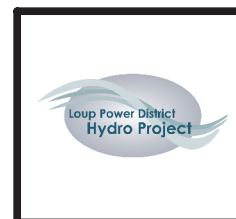
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Aerial Imagery: 2006 National Agricultural Inventory Project, Nance and Platte Counties Mosaic.  
Streams/Lakes: 2000 Tiger Line Files, Platte and Nance Counties.

**Legend**

- Loup Power Canal
- Corporate Limits
- Township/Range
- County Line



**Project Location**

Loup River Hydroelectric Project  
FERC Project No. 1256  
Study 8.0 Recreation Use - Creel Survey © 2011 Loup River Public Power District

DATE  
February 2011

FIGURE  
1-1

Prior the District's 2010 creel survey, a creel survey had not been conducted along the Loup Power Canal since NGPC conducted successive surveys in 1996 and 1997. During the NGPC surveys, a progressive-count access-point angler use survey was conducted within the Loup River Basin, including the Loup Power Canal, to document fishing pressure, catch, harvest, and angler perceptions of the fisheries (NGPC, June 1997 and April 1998).

## 2. GOALS AND OBJECTIVES OF STUDY

The goal of the District's overall recreation use study is to determine the public awareness, usage, perception, and demand of both the Project's existing recreation facilities (including fisheries) and the Loup River bypass reach (including the Loup Lands Wildlife Management Area (WMA), to determine if potential improvements are needed, and to develop a Recreation Management Plan to address existing and future recreation needs.

The objectives of the recreation use study are as follows:

1. To measure recreation usage of Project recreation facilities (including fisheries) and the Loup River bypass reach (including the Loup Lands WMA).
2. To document the types of recreation use occurring at Project recreation facilities and along the Loup River bypass reach.
3. To determine whether Project recreation facilities meet current demand.
4. To determine the public's perception and awareness of Project recreation facilities, including fisheries, and to identify the impact of Project operations on recreation experiences.
5. To determine what species anglers are targeting and catching, including catch rates.
6. To collect data for use in the preparation of a Recreation Management Plan for the District's facilities.

As this report focuses on creel survey efforts, the results and discussion provided herein are intended to satisfy the above-listed objectives specific to angling.

## 3. STUDY AREA

The study area encompassed by the District's creel survey includes the entire 35-mile length of the Loup Power Canal, beginning at the Project Headworks and ending at the Loup Power Canal's confluence with the Platte River. Included in the Study Area are the two regulating reservoirs: Lake Babcock and Lake North. For survey design purposes, the 35-mile canal was not divided into segments; the data presented in this report apply to the entire length of the Loup Power Canal. The principal features of the Project are described below, generally from upstream to downstream.



### 3.1 Settling Basin

Water diverted from the Loup River enters the Settling Basin. The Settling Basin is designed for very slow flow velocity to allow heavier sediment materials to settle out of the water before it enters the much narrower, faster flowing Upper Power Canal. Therefore, flow velocity through the Settling Basin is less than 1 foot per second. The Settling Basin is approximately 2 miles long and has a bottom width of 200 feet and a nominal depth of 16 feet. Hydraulic capacity of the basin is 3,500 cubic feet per second (cfs), and maximum basin water surface elevation is 1,572 feet.

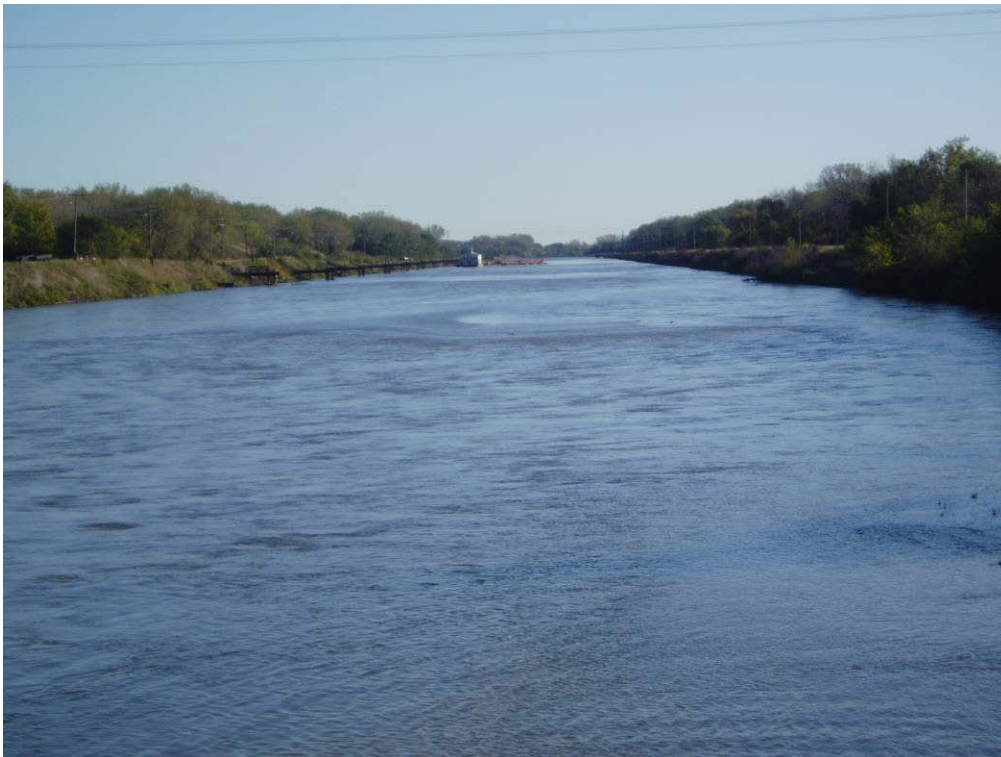


Photo 1. View of the Settling Basin from the Project Headworks.

### 3.2 Upper Power Canal

The Upper Power Canal parallels the south side of the Nebraska Central Railroad (formerly Union Pacific Railroad) from the Settling Basin to Genoa, Nebraska, where it dips under Beaver Creek through an inverted siphon (Beaver Creek Siphon). The 10-mile canal segment then skirts along the south side of Genoa until it dips under the railroad in another siphon (Railroad Siphon). The Upper Power Canal continues along the north side of the Loup River Valley, crosses under Looking Glass Creek in a third siphon (Looking Glass Creek Siphon), and continues to the Monroe Powerhouse. All three siphons are three-barrel concrete structures designed as rigid boxes and are capable of passing the maximum canal flow of 3,500 cfs at a velocity of 5.22 feet per second.

From the Settling Basin to the Looking Glass Creek Siphon, the Upper Power Canal has a bottom width of 73 feet and a normal water depth of 14.3 feet. Freeboard is 5 feet, and the design velocity is 2.25 feet per second. Much of this upstream canal segment is constructed in sand. From the Looking Glass Creek Siphon to the Monroe Powerhouse, the Upper Power Canal has a bottom width of 39 feet and a normal water depth of 19.5 feet. The canal bottom profile slopes only 3 inches per mile.

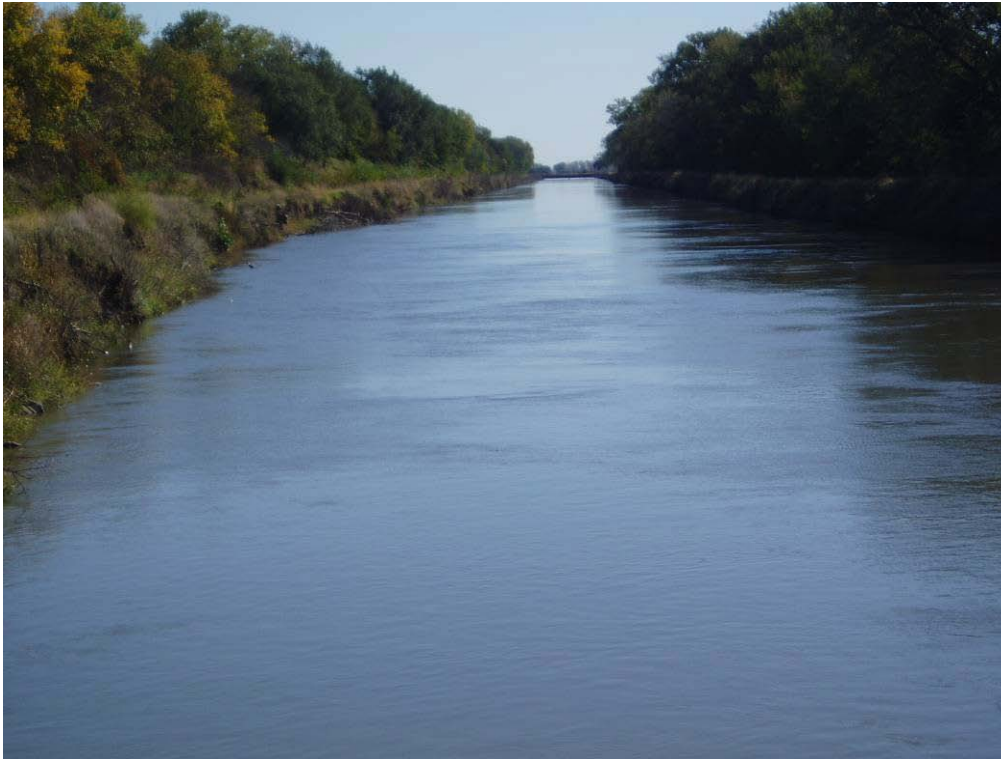


Photo 2. Typical view of the Upper Power Canal.

### 3.3 Lower Power Canal

The Lower Power Canal extends approximately 13 miles from the Monroe Power House to Lake Babcock, a regulating reservoir, and has a bottom width of 39 feet and a water depth of 19.5 feet. The Lower Power Canal dips under two siphons, the Dry/Cherry Creek Siphon and the Oconee Siphon (at the Union Pacific Railroad). These siphons, like those on the Upper Power Canal, are three-barrel concrete structures designed as rigid boxes. Additionally, the 916 Siphon carries Lost Creek under the Lower Power Canal.



Photo 3. Typical view of the Lower Power Canal.

### 3.4 Lake Babcock

Lake Babcock, the Project's original regulating reservoir, is located 3 miles north of Columbus, Nebraska. Its purpose is to temporarily pond water for later release through the Columbus Powerhouse during peak load periods. Lake Babcock was created in a natural depression by building compacted earth embankments on the north, east, and south sides. The lake covers 760 acres at its full pool elevation of 1,531 feet. The original storage capacity of 11,000 acre-feet was drastically reduced by sediment deposition during the first 25 years of Project operation, prior to the construction of Lake North, discussed in Section 3.5. When Lake North was opened, it was estimated that Lake Babcock had a storage capacity of 2,400 acre-feet at an elevation of 1,531 feet and 1,050 acre-feet at an elevation of 1,529 feet. In 1995, when the lake was last surveyed, these values had dropped to approximately 2,270 acre-feet and 730 acre-feet, respectively. Daily fluctuation of the reservoir surface averages about 2 feet; however, in certain circumstances, it can be as much as 3 feet.

The open water portion of the lake experiences substantial wave buildup on windy days. Therefore, much of the shore is protected with riprap. In addition, a substantial reach of embankment near the outlet and bordering Lake North is protected with a concave seawall constructed of concrete.



Photo 4. View of Lake Babcock from the south dike at the outlet.

### 3.5 Lake North

After 25 years of Project operation, sediment accumulation in Lake Babcock had substantially reduced its ponding capacity. The District determined that the best solution to the problem was to build a second regulating reservoir adjacent to and connected with Lake Babcock. This new regulating reservoir, named Lake North, was completed in 1962. It was constructed by adding new compacted earth embankments to the north and east and using existing Lake Babcock embankments to the south and west. Lake North covers 200 acres at an elevation of 1,531 feet, providing 2,080 acre-feet of storage.

A concrete control structure in the south dike links the two regulating reservoirs. The control structure is located such that Lake North does not experience the rapid sedimentation that occurred in Lake Babcock; therefore, Lake North is a major recreation feature of the Project. A set of steel stoplogs are stored at the control structure, and they can be installed to isolate the regulating reservoirs as necessary for maintenance or emergency purposes.

To control erosion, much of the Lake North shoreline has been lined with steel sheet pile protection and concrete riprap.



Photo 5. View of Lake North from the boat launch area in the northeast corner.

### 3.6 Intake Canal

Water exiting Lake Babcock flows 1.5 miles through the Intake Canal to the Columbus Powerhouse. The Intake Canal was designed for a capacity of 4,800 cfs, which is the hydraulic capacity of the turbine generating units in the Columbus Powerhouse. The bottom width of the Intake Canal is 108 feet when it leaves Lake Babcock. This width reduces to 94 feet as the Intake Canal approaches the Powerhouse Inlet Structure. The embankments for the Intake Canal were constructed of compacted earth fill, similar to the reservoir dikes. Intake Canal water depth varies from 17.2 to 22.2 feet, depending on the reservoir stage and rate of flow. The slope of the canal profile is 3 inches per mile. Flow velocity in the canal varies from 1.4 to 2.0 feet per second.



Photo 6. View of the Intake Canal as it exits Lake Babcock.

### 3.7 Tailrace Canal

After passing through the Columbus Powerhouse, water is discharged to the Tailrace Canal for its return to the river basin. The Tailrace Canal is approximately 5.5 miles long and has a bottom width of 42 feet and a normal water depth of about 19 feet. This canal was designed to carry a nominal 4,800 cfs at a velocity of 3 feet per second. The Tailrace Canal was excavated along its entire length, and the slope of the hydraulic gradient is 0.0007 foot/foot.



Photo 7. View of the Tailrace Canal from the Columbus Powerhouse.

### 3.8 Outlet Weir

The Outlet Weir, also called the Tailrace Weir, is located at the confluence of the Tailrace Canal and the Platte River. It is east of Columbus and approximately 2 miles downstream of the confluence of the Loup River with the Platte River. This concrete overflow weir has a straight 700-foot-long crest. The transition from canal section to this width is 550 feet long. The flow characteristics and accessibility of the Outlet Weir make this a popular fishing, viewing, and recreation area.



Photo 8. View of the Outlet Weir from the west bank.

#### 4. METHODOLOGY

The methodology used to complete the District’s creel survey included three tasks, described below.

##### *Task 1 Pre-Survey Activities*

Pre-survey activities were completed as follows:

- Survey Proctor Training – District staff and District representatives attended NGPC survey proctor training on February 11, 2010. During this training, final survey schedules were established in accordance with NGPC protocols for randomizing survey efforts.
- Outreach – To encourage public participation in the creel survey, the District prepared press releases, paid newspaper advertisements, and website updates to announce the survey. In addition, signs notifying anglers of the survey were posted at multiple entry points to the District’s recreation facilities.

##### *Task 2 Data Collection*

The creel survey was conducted along the entire length of the Loup Power Canal, from the Diversion Weir on the Loup River to the canal’s confluence with the Platte River. The survey was conducted by District representatives, in collaboration with



NGPC’s Northeast District Office, and spanned the 2010 open water fishing season (May 1 through October 31).

A progressive count bus-route creel survey design was used to gather data from anglers. Data collection was conducted on 10 randomly selected days per month (6 weekdays and 4 weekend days) throughout the daylight hours.

Surveys were conducted by one team of two proctors on weekdays and two teams of two proctors on weekend days and holidays. Proctors used only access locations reachable by vehicle and rotated survey start locations and start times between the Project Headworks and Tailrace Canal in accordance with the randomly generated survey schedule. Interviews and pressure counts were conducted concurrently.

### *Task 3 Data Analysis*

Data collected from angler interviews and pressure counts were entered and analyzed using NGPC’s Creel Survey Computer System. Estimates of fishing pressure per angler hours; mean party size; mean trip length; catch, release, and harvest by species; and catch, release, and harvest rates (fish per angler hour) by species were computed.

Questions relative to the following were not specifically asked in conjunction with the creel survey:

- The number of miles traveled to reach the Loup Power Canal
- The angler’s race
- The angler’s annual household income
- The angler’s level of satisfaction with the fishery

However, all respondents to the District’s general recreation use survey (which included persons taking part in various forms of recreation, including anglers) were asked these questions. The results included herein relative to these questions from the general recreation use survey are specific to those respondents who indicated that they had fished or planned to fish, either from shore or boat, during their visit to the Loup Power Canal.

## **5. RESULTS AND DISCUSSION**

The results of the District’s 2010 creel survey are summarized in Section 5.1, and a full discussion of the analyses follows in Sections 5.2 through 5.6. The discussion provides tabular and graphical data that support this study’s conclusions.

Table 5-1 indicates the total number of surveys conducted and the average number of creel surveys conducted per survey day in 2010.

**Table 5-1. Number of Surveys Conducted**

	May	June	July	August	September	October	Total
Survey Days	10	10	10	10	10	10	60
Creel Surveys Conducted	90	67	85	71	86	40	439
Average Surveys per Survey Day	9.00	6.70	8.50	7.10	8.60	4.00	7.32

Table 5-2 provides the common and scientific names of fish species referenced in this creel survey report.

**Table 5-2. Common and Scientific Names of Applicable Fish Species**

Common Name	Scientific Name
bluegill	<i>Lepomis macrochirus</i>
bighead carp	<i>Hypophthalmichthys nobilis</i>
buffalo spp.	<i>Ictiobus spp.</i>
channel catfish	<i>Ictalurus punctatus</i>
common carp	<i>Cyprinus carpio</i>
crappie spp.	<i>Pomoxis spp.</i>
flathead catfish	<i>Pylodictis olivaris</i>
freshwater drum	<i>Aplodinotus grunniens</i>
gizzard shad	<i>Dorosoma cepedianum</i>
goldeye	<i>Hiodon alosoides</i>
hybrid striped bass	<i>Morone saxatilis x Morone chrysops</i>
largemouth bass	<i>Micropterus salmoides</i>
northern pike	<i>Esox lucius</i>
sauger	<i>Sander canadensis</i>
walleye	<i>Sander vitreus</i>
white bass	<i>Morone chrysops</i>
yellow bullhead	<i>Ameiurus natalis</i>

## 5.1 Summary of Results

### 5.1.1 Fishing Pressure per Angler Hours

Total fishing pressure along the Loup Power Canal during the 2010 open water fishing season is estimated to be 32,766 angler hours, or 119 angler hours per hectare (ha). Angler effort estimates are highest for the months of September (7,739 hours) and May (6,531 hours), and shore fishing is estimated to account for over 94 percent of the angler hours expended (as opposed to fishing from a boat). The 2010 creel survey estimates that angler effort in 2010 was 265 percent and 118 percent of the estimated angler hours associated with the 1996 and 1997 NGPC surveys, respectively.

Revised 03/08/11

### 5.1.2 Catch, Release, and Harvest Estimates

Anglers fishing the Loup Power Canal between May 1 and October 31, 2010, harvested an estimated 8,973 fish (all species and fishing methods combined), including an estimated channel catfish harvest of 4,185, which was nearly 47 percent of the overall harvest. The overall and channel-catfish-specific harvests were most abundant in October despite estimated catch values peaking in May. Other species commonly harvested in 2010 included freshwater drum (22.2 percent), crappie species (12.4 percent), and white bass (9.1 percent).

The estimated number of fish caught and released on the Loup Power Canal from May 1 to October 31, 2010, is 11,843. Release estimates exceeded the number of fish harvested for every species except white bass, bluegill, and sauger.

### 5.1.3 Catch, Release, and Harvest Rates

The average harvest rate for all anglers fishing the Loup Power Canal from May 1 to October 31, 2010, was 0.30 fish per angler hour. The highest estimated catch rates occurred in May (1.31 fish per angler hour) and October (0.86 fish per angler hour), respectively. The highest estimated harvest rate occurred in October (0.57 fish per angler hour).

The average channel catfish harvest rate (for anglers targeting channel catfish) was 0.22 fish per angler hour. The highest associated catch rates occurred in July (0.65 fish per angler hour) and October (0.52 fish per angler hour), while the highest estimated harvest rate occurred in May and October (0.35 fish per angler hour).

### 5.1.4 Angler Demographics and Satisfaction

More than 99 percent of the anglers surveyed along the Loup Power Canal between May 1 and October 31, 2010, were Nebraska residents. More specifically, over 58 percent of surveyed anglers reside in Platte County, Nebraska (which includes the City of Columbus).

Revised 03/08/11

Angling parties averaged 1.75 members in size, indicated a mean completed trip length of 2.90 hours, and **made** an estimated **11,299** angler **trips**.

The majority of the surveyed anglers (64.5 percent) were targeting channel catfish, while 9.7 and 9.3 percent were targeting “anything” and walleye/sauger, respectively.

According to collected data, the vast majority (over 87 percent) of anglers described themselves as white (non-Hispanic, Latino, or Spanish). Additionally, more than 11 percent of anglers described themselves as white (Hispanic, Latino, or Spanish). The most common annual household income range reported by anglers was \$26,000 to \$50,000 (over 42 percent). Respondent frequency generally decreased as income increased.

Fifty-seven percent of respondents rated shore fishing opportunities along the Loup Power Canal as “Excellent” or “Above Average.” An additional 35 percent of respondents rated shore fishing opportunities as “Average.”

## 5.2 Fishing Pressure per Angler Hours

Multiple analyses related to estimates of fishing pressure per angler hour derived from survey data collected between May 1 and October 31, 2010, along the Loup Power Canal are detailed below.

### 5.2.1 Angler Hours by Month

As indicated in Table 5-3, total fishing pressure along the Loup Power Canal during the 2010 open water fishing season is estimated to be 32,766 angler hours. Table 5-3 also suggests that angler effort was highest during the months of September and May, respectively.

**Table 5-3. Estimated Angler Hours by Month**

	May	June	July	August	September	October	Total
Hour Estimate	6,531	5,075	5,575	4,574	7,739	3,272	32,766
(Standard Error)	(1,271.90)	(975.75)	(381.00)	(253.92)	(1,069.33)	(520.47)	(NA)

Note:

NA = Not applicable.

### 5.2.2 Angler Hours by Type

Revised 03/08/11

When the **estimated area of fishable water within** the Loup Power Canal (**275** hectares) is considered in relation to the estimate of total angler hours, a value of approximately **119** angler hours per hectare is derived, as shown in Table 5-4.

With regard to the type of fishing that occurs along the Loup Power Canal (boat vs. shore fishing), Table 5-4 shows that shore fishing accounts for more than 94 percent of the angler hours expended.

Revised 03/08/11

**Table 5-4. Estimated Angler Hours by Type**

Area (ha)	Boat			Shore			Combined	
	Angler Hours	Percent of Total	Hours/ha	Angler Hours	Percent of Total	Hours/ha	Angler Hours	Hours/ha
275	1,740	5.3	6.3	31,026	94.7	112.8	32,766	119.1

5.2.3 Angler Hours by Year

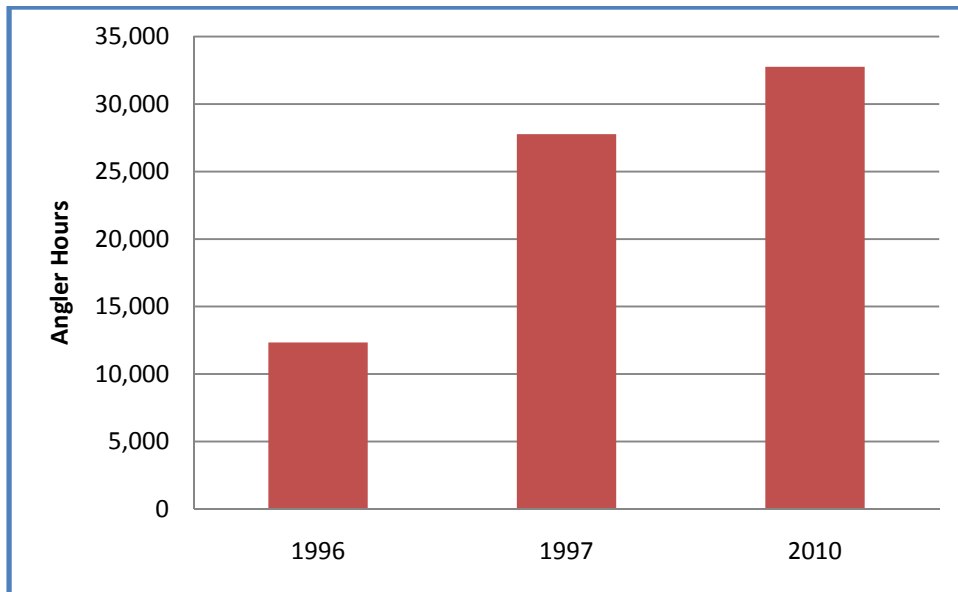
The 2010 creel survey estimates that angler effort in 2010 was 265 and 118 percent of the estimated angler hours associated with the 1996 and 1997 NGPC surveys, respectively, as shown in Table 5-5 and Figure 5-1.

**Table 5-5. Estimated Angler Hours by Survey Year**

Year	Estimated Hours	Reference
1996 <sup>1</sup>	12,343	NGPC, June 1997
1997 <sup>2</sup>	27,767	NGPC, April 1998
2010 <sup>3</sup>	32,766	District’s creel survey, 2010

Notes:

- <sup>1</sup> Survey period spanned July through October (4 months).
- <sup>2</sup> Survey period spanned April through October (7 months).
- <sup>3</sup> Survey period spanned May through October (6 months).



**Figure 5-1. Estimated Angler Hours by Survey Year**

### 5.3 Catch, Release, and Harvest Estimates

Multiple analyses related to catch, release, and harvest estimates derived from survey data collected between May 1 and October 31, 2010, along the Loup Power Canal are detailed below.

#### 5.3.1 Total Fish Harvest

Anglers fishing the Loup Power Canal between May 1 and October 31, 2010, harvested an estimated 8,973 fish (all species and fishing methods combined), including an estimated channel catfish harvest of 4,185, which is nearly 47 percent of the overall harvest, as shown in Table 5-6. Other species commonly harvested in 2010, and quantified in Table 5-6, included freshwater drum (22.2 percent), crappie species (12.4 percent), and white bass (9.2 percent). Additional species harvested included bluegill, flathead catfish, walleye, sauger, striped bass hybrid, northern pike, goldeye, gizzard shad, buffalo, bullhead species, common carp, and bighead carp. Collectively, these species made up 9.5 percent of the estimated total fish harvest.

**Table 5-6. Estimated Fish Harvest**

	Channel Catfish	Freshwater Drum	Crappie	White Bass	Other <sup>1</sup>	Bluegill	Flathead Catfish	Walleye	Sauger	Total
Harvest Estimate (Standard Error)	4,185 (387.7)	1,991 (255.4)	1,113 (580.6)	820 (193.5)	388 (NA)	219 (139.6)	155 (50.1)	64 (31.2)	38 (32.5)	8,973
Percent of Total	46.7	22.2	12.4	9.2	4.3	2.4	1.7	0.7	0.4	100.0

Notes:

NA = Not applicable

<sup>1</sup> “Other” includes goldeye, gizzard shad, common and bighead carp, buffalo, yellow bullhead, northern pike, and hybrid striped bass.

### 5.3.2 Fish Caught and Released

Catch and release, either mandated by length-limit regulations or voluntary, is an important part of the Loup Power Canal sport fishery. As indicated in Table 5-7, the estimated number of fish caught and released on the Loup Power Canal from May 1 to October 31, 2010, is 11,843.<sup>1</sup> Release estimates exceeded the number of fish harvested for every species except white bass, bluegill, and sauger.<sup>2</sup>

**Table 5-7. Estimated Count of Fish Caught and Released**

	Channel Catfish	Crappie	Freshwater Drum	Other <sup>1</sup>	White Bass	Flathead Catfish	Bluegill	Walleye	Sauger	Total
Catch and Release Estimate (Standard Error)	5,503 (1,143.8)	3,037 (1,668.0)	2,145 (368.0)	448 (NA)	211 (96.5)	186 (57.6)	147 (64.6)	128 (36.8)	38 (26.6)	11,843
Percent of Total	46.5	25.6	18.1	3.8	1.8	1.6	1.2	1.1	0.3	100.0

Notes:

NA = Not applicable.

<sup>1</sup> “Other” includes goldeye, gizzard shad, common and bighead carp, buffalo, yellow bullhead, northern pike, and hybrid striped bass.

### 5.3.3 Catch, Release, and Harvest by Month

Table 5-8 provides catch (including separate release and harvest) values for notable species by month. As shown, catch values were highest in May; more than 29 percent of the total estimated catch occurred during this month alone. Monthly harvest was most abundant in October, despite the estimated catch for October being roughly half that of May.

<sup>1</sup> The estimate of released fish is based on anglers’ ability to recall what they released and therefore may be biased up or down.

<sup>2</sup> The number of sauger harvested versus released was equal (38 fish were harvested and 38 fish were released). Additionally, estimates of the number of released sauger may be biased by an angler’s ability to correctly distinguish the species from walleye, a species of similar appearance.

**Table 5-8. Estimated Catch (Release and Harvest) by Month**

Fish Species		Value <sup>1,2</sup>						
		May	June	July	August	September	October	Total
Channel Catfish	Catch	766 (161.2)	1,205 (228.0)	2,778 (1,003.1)	1,468 (175.5)	1,484 (281.3)	1,987 (500.3)	9,688 (1,201.9)
	Release	385 (135.6)	781 (206.7)	2,089 (1,032.6)	749 (180.7)	753 (218.7)	746 (316.9)	5,503 (1,143.8)
	Harvest	381 (70.8)	424 (108.5)	689 (143.8)	719 (156.2)	731 (162.7)	1,241 (249.3)	4,185 (387.7)
Freshwater Drum	Catch	1,102 (289.7)	1,003 (209.9)	497 (107.7)	604 (122.7)	479 (195.6)	450 (256.3)	4,135 (508.5)
	Release	720 (224.4)	513 (152.7)	225 (70.1)	194 (62.1)	237 (117.3)	256 (198.1)	2,145 (368.0)
	Harvest	382 (91.3)	490 (124.3)	273 (115.3)	410 (114.1)	242 (102.7)	194 (67.6)	1,991 (255.4)
Crappie	Catch	3,902 (2,220.4)	39 (27.4)	0	59 (34.6)	28 (23.8)	123 (70.4)	4,151 (2,222.1)
	Release	2,926 (1,666.9)	0	0	41 (23.1)	0	70 (54.0)	3,037 (1,668.0)
	Harvest	976 (577.5)	39 (27.4)	0	17 (14.9)	28 (23.8)	53 (45.1)	1,113 (580.6)
White Bass	Catch	81 (36.9)	43 (25.5)	0	45 (23.7)	525 (169.4)	335 (151.2)	1,029 (232.6)
	Release	34 (26.3)	28 (15.1)	0	8 (5.9)	37 (25.8)	104 (87.7)	211 (96.5)
	Harvest	47 (25.9)	15 (12.6)	0	37 (23.6)	489 (166.0)	232 (92.3)	820 (193.5)
Other <sup>3</sup>	Catch	109	155	254	61	145	112	836
	Release	50	84	139	30	145	0	448
	Harvest	59	71	115	31	0	112	388
Bluegill	Catch	0	0	81 (45.7)	0	85 (47.0)	200 (168.8)	366 (181.1)
	Release	0	0	50 (37.4)	0	57 (40.5)	40 (33.8)	147 (64.6)
	Harvest	0	0	31 (26.4)	0	28 (23.8)	160 (135.0)	219 (139.6)
Flathead Catfish	Catch	61 (27.7)	122 (62.9)	73 (32.6)	9 (7.4)	73 (41.3)	0	338 (86.9)
	Release	61 (27.7)	95 (48.8)	30 (13.1)	0	0	0	186 (57.6)
	Harvest	0.0	27 (14.2)	46 (23.5)	9 (7.4)	73 (41.3)	0	155 (50.1)



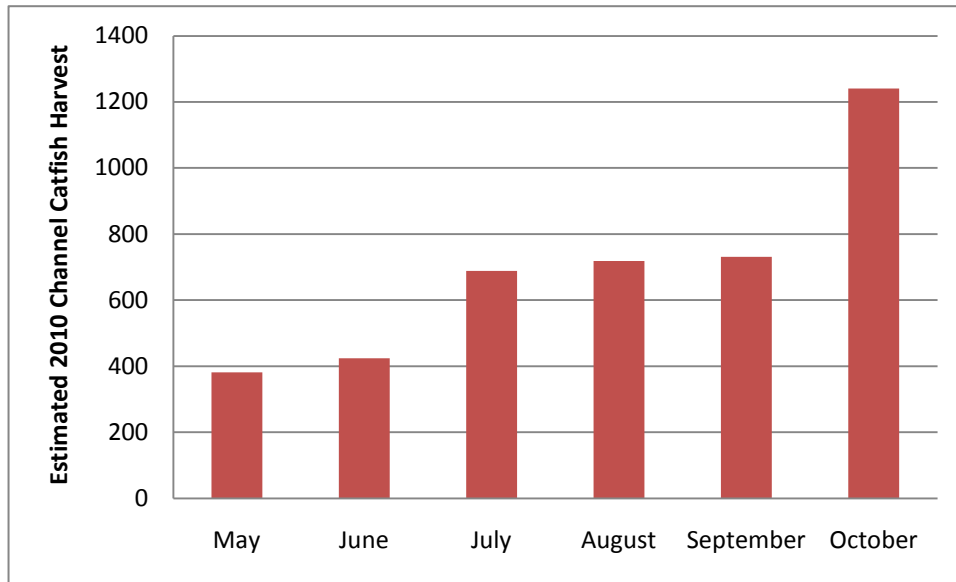
Fish Species		Value <sup>1,2</sup>						
		May	June	July	August	September	October	Total
Walleye	Catch	156 (24.6)	27 (23.2)	0	9 (7.4)	0	0	192 (34.6)
	Release	92 (27.6)	27 (23.2)	0	9 (7.4)	0	0	128 (36.8)
	Harvest	64 (31.2)	0	0	0	0	0	64 (31.2)
Sauger	Catch	0	0	0	0	76 (42.0)	0	76 (42.0)
	Release	0	0	0	0	38 (26.6)	0	38 (26.6)
	Harvest	0	0	0	0	38 (32.5)	0	38 (32.5)
Totals	Catch	6,177	2,594	3,683	2,255	2,895	3,207	20,811
	Release	4,268	1,528	2,533	1,031	1,267	1,216	11,843
	Harvest	1,909	1,066	1,154	1,223	1,629	1,992	8,973

Notes:

- <sup>1</sup> Standard error provided in parentheses for those values to which it applies.
- <sup>2</sup> In some instances, the sum of the release and harvest values does not equal the associated catch value due to significant figure rounding discrepancies.
- <sup>3</sup> “Other” includes goldeye, gizzard shad, common and bighead carp, buffalo, yellow bullhead, northern pike, and striped bass hybrid.

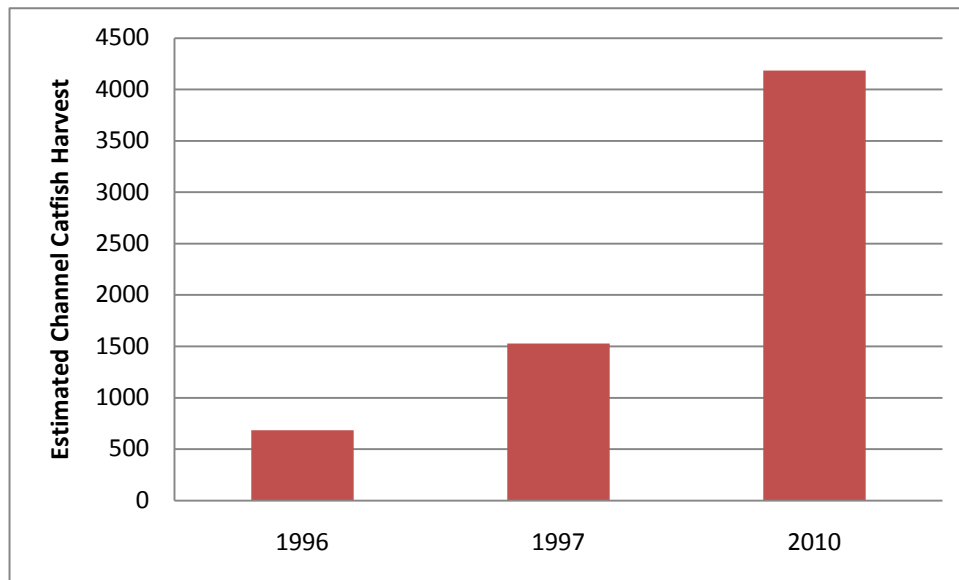
### 5.3.4 Channel Catfish Harvest Estimates

As depicted in Figure 5-2, the channel catfish harvest was approximately 400 fish per month in May and June, increased to approximately 700 fish per month from July through September, and peaked at over 1,200 harvested fish in October.



**Figure 5-2. Estimated Channel Catfish Harvest**

In comparison to Loup Power Canal channel catfish harvest estimates derived from 1996 and 1997 NGPC angler use and harvest surveys, a considerable increase in channel catfish harvest was estimated for 2010. Figure 5-3 graphically depicts the increased harvest.



**Figure 5-3. Estimated Channel Catfish Harvest by Survey Year**

Table 5-9 quantifies the percentage of completed fishing trips in which a certain number of channel catfish were harvested. Over 41 percent of fishing trips completed between May 1 and October 31, 2010, resulted in no channel catfish harvest. A notable percentage of anglers harvested one (24.5 percent) or two (20.8 percent) channel catfish per completed trip. No surveys indicated channel catfish harvest exceeding six fish.

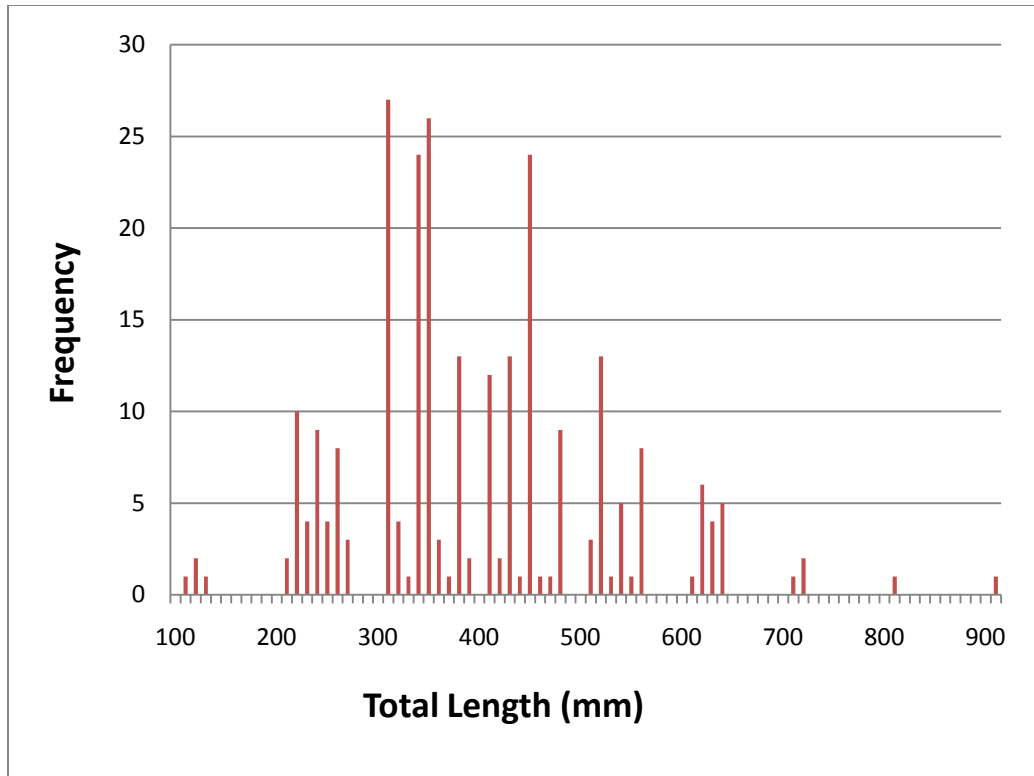
**Table 5-9. Number of Channel Catfish Harvested per Completed Trip**

Channel Catfish Harvested per Angler <sup>1</sup>	Percent
0	41.5
1	24.5
2	20.8
3	7.5
4	0.0
5	1.9
6	3.8
> 6	0.0

Note:

- <sup>1</sup> The 2010 Nebraska inland waters bag and possession limits for channel catfish are 10 and 20, respectively. These limits apply to the Loup Power Canal as no special bag or possession limits were applied to the Canal in 2010.

The length frequencies of angler-harvested channel catfish were developed and are presented in Figure 5-4. Channel catfish of a preferred length (greater than 610 millimeters [mm]), including large channel catfish over 700 millimeters, were harvested.



**Figure 5-4. Length Frequencies of Harvested Channel Catfish**

#### 5.4 Catch, Release, and Harvest Rates

The catch per unit effort (CPUE) estimates derived from survey data collected between May 1 and October 31, 2010, along the Loup Power Canal are detailed below.

##### 5.4.1 Combined Species Catch per Unit Effort

The average harvest rate for all anglers fishing along the Loup Power Canal from May 1 to October 31, 2010, was 0.30 fish per angler hour, as shown in Table 5-10. The highest estimated catch rates occurred in May (1.31 fish per angler hour) and October (0.86 fish per angler hour), respectively. The highest estimated harvest rate occurred in October (0.57 fish per angler hour).

**Table 5-10. All Species Catch, Release, and Harvest Rate Estimates**

	Value <sup>1,2</sup>						
	May	June	July	August	September	October	Average
Catch Rate (Fish/Hour)	1.31	0.58	0.71	0.41	0.40	0.86	0.71
Release Rate (Fish/Hour)	0.96	0.41	0.48	0.15	0.17	0.28	0.41
Harvest Rate (Fish/Hour)	0.36	0.17	0.23	0.25	0.23	0.57	0.30

Notes:

- <sup>1</sup> In some instances, the sum of the release rate and harvest rate values does not equal the associated catch rate value due to significant figure rounding discrepancies.
- <sup>2</sup> Provided values result from the effort expended by all anglers.

#### 5.4.2 Channel Catfish Catch per Unit Effort

The average channel catfish harvest rate for anglers targeting channel catfish along the Loup Power Canal from May 1 to October 31, 2010, was 0.22 fish per angler hour, as shown in Table 5-11. The highest estimated catch rates occurred in July (0.65 fish per angler hour) and October (0.52 fish per angler hour), respectively. The highest estimated harvest rate occurred in May and October, during which anglers harvested 0.35 fish per angler hour.

**Table 5-11. Channel Catfish Catch, Release, and Harvest Rate Estimates**

	Value <sup>1,2</sup>						
	May	June	July	August	September	October	Average
Catch Rate (Fish/Hour)	0.42	0.35	0.65	0.37	0.23	0.52	0.42
Release Rate (Fish/Hour)	0.07	0.23	0.47	0.18	0.10	0.17	0.20
Harvest Rate (Fish/Hour)	0.35	0.12	0.18	0.19	0.13	0.35	0.22

Notes:

- <sup>1</sup> In some instances, the sum of the release rate and harvest rate values does not equal the associated catch rate value due to significant figure rounding discrepancies.
- <sup>2</sup> Provided values result only from the effort expended by anglers specifically targeting channel catfish.

## 5.5 Angler Demographics

Multiple characteristics of the anglers surveyed along the Loup Power Canal between May 1 and October 31, 2010, are detailed below.

Although questions relative to the number of miles traveled to reach Loup Power Canal, the angler's race, and the angler's annual household income were not specifically asked in conjunction with the creel survey, these questions were asked of all respondents to the District's general recreation use survey (which included persons taking part in various forms of recreation, including anglers). The results included herein relative to these questions from the general recreation use survey are specific to those respondents who indicated that they had fished or planned to fish, either from shore or boat, during their visit to the Loup Power Canal.

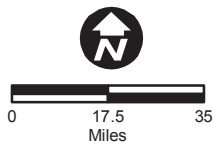
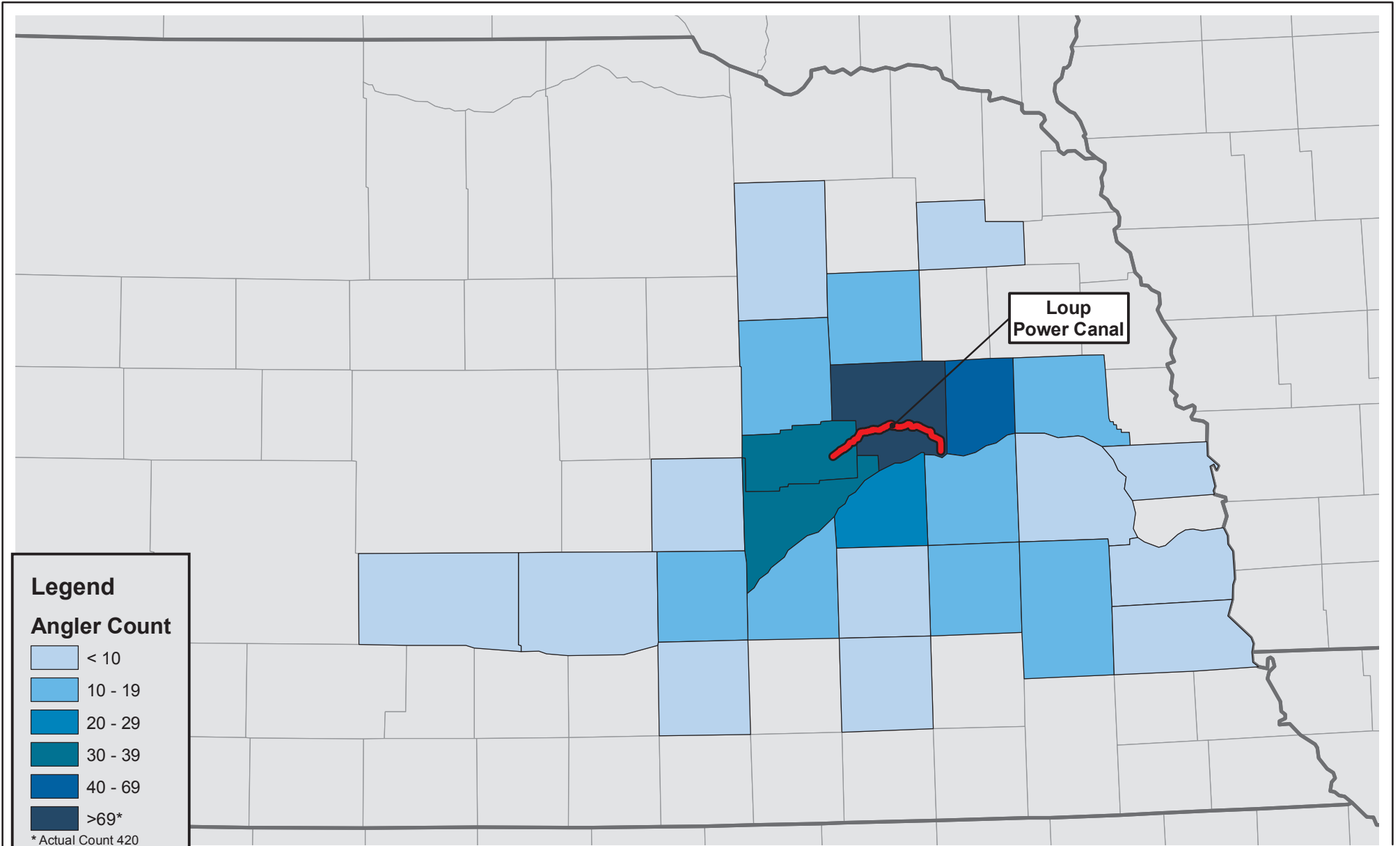
### 5.5.1 Origin of Anglers

As depicted in Table 5-12 and Figure 5-5, more than 99 percent of anglers surveyed along the Loup Power Canal between May 1 and October 31, 2010, were Nebraska residents. More than 58 percent of the surveyed anglers were from Platte County, Nebraska (which includes the City of Columbus and the majority of the Project Boundary). Other represented Nebraska counties and states are listed in Table 5-12.

Similarly, as depicted in Table 5-12, more than 67 percent of surveyed anglers traveled 25 miles or less to access the Loup Power Canal, while more than 96 percent traveled 100 miles or less. The 96 percent of anglers who traveled 100 miles or less very nearly correlates with the 99 percent of anglers who indicated a Nebraska residency; this is consistent with the approximate 100-mile distance to the nearest north, south, and east border state.

**Table 5-12. Residence of Surveyed Anglers**

State	County	Count	Percent
Georgia	Unknown	1	0.1
Oklahoma	Unknown	2	0.3
Nebraska  Total Count = 710 Total Percent = 99.6	Platte	420	58.9
	Colfax	65	9.1
	Nance	37	5.2
	Merrick	31	4.3
	Polk	24	3.4
	Dodge	17	2.4
	Madison	16	2.2
	Hall	15	2.1
	Hamilton	15	2.1
	Butler	12	1.7
	Lancaster	11	1.5
	Boone	10	1.4
	Seward	10	1.4
	Douglas	8	1.1
	Howard	4	0.6
	Antelope	2	0.3
	Buffalo	2	0.3
	Cass	2	0.3
	Saunders	2	0.3
	Wayne	2	0.3
Adams	1	0.1	
Dawson	1	0.1	
Fillmore	1	0.1	
Otoe	1	0.1	
York	1	0.1	
Total		713	100.0



## Residence of Surveyed Anglers by County

Loup River Hydroelectric Project  
FERC Project No. 1256  
Study 8.0 Recreation Use - Creel Survey © 2011 Loup River Public Power District

DATE  
February 2011

FIGURE  
5 - 5



**Table 5-13. Miles Traveled to the Loup Power Canal**

Miles Traveled	Shore Anglers		Boat Anglers		Total	
	Count <sup>1</sup>	Percent <sup>1</sup>	Count <sup>1</sup>	Percent <sup>1</sup>	Count <sup>1</sup>	Percent <sup>1</sup>
0-25	421	67.3	20	76.9	441	67.7
26-50	112	17.9	1	3.9	113	17.4
51-100	70	11.2	4	15.4	74	11.4
101-200	13	2.1	1	3.8	14	2.2
201-300	1	0.2	0	0.0	1	0.1
300-400	1	0.2	0	0.0	1	0.1
400+	7	1.1	0	0.0	7	1.1
Total	625	100.0	26	100.0	651	100.0

Note:

<sup>1</sup> Count and percent are derived from anglers surveyed during the District’s general recreation use survey (as discussed in Section 5.5).

Revised 03/08/11

**5.5.2 Party Size, Trip Length, Pressure, and Angler Trips**

As indicated in Table 5-14, the mean completed trip length (boat and shore anglers combined) for the Loup Power Canal from May 1 through October 31, 2010, during the daylight period was 2.90 hours. Table 5-14 also specifies that angling parties averaged 1.75 members in size. The total number of angler trips (11,299) was estimated by dividing the estimated pressure (angler hours) by the mean completed trip length.

Revised 03/08/11

Revised 03/08/11

**Table 5-14. Party Size, Trip Length, Pressure, and Angler Trips (2010)**

Mean Party Size	Mean Completed Trip Length (hours)	Total Angler Hours	Total Angler Trips
1.75	2.90	32,766	11,299

**5.5.3 Fish Species Sought by Anglers**

Table 5-15 illustrates that anglers surveyed along the Loup Power Canal between May 1 and October 31, 2010, targeted a diverse array of fish species and that the majority of these anglers (64.5 percent) were specifically targeting channel catfish. Anglers not targeting a specific fish species (those fishing for “anything”) were the second most prevalent (9.7 percent), while those targeting walleye or sauger accounted for 9.3 percent of the surveyed anglers. Beyond the three most common

targets of angling parties, other targeted fish species were freshwater drum, flathead catfish, crappie, carp, striped hybrid bass, largemouth bass, white bass, and bluegill, as shown in Table 5-15.

**Table 5-15. Fish Species Sought**

	Channel Catfish	Anything	Walleye/Sauger	Freshwater Drum	Flathead Catfish	Crappie	Other <sup>1</sup>	White Bass	Bluegill	Total
Anglers Targeting Species	460 <sup>2</sup>	69	66	39	28	23	15	11	2	713
Percent of Total	64.5	9.7	9.3	5.5	3.9	3.2	2.1	1.5	0.3	100.0

Notes:

- <sup>1</sup> “Other” includes carp and minnow family, hybrid striped bass, and largemouth bass.
- <sup>2</sup> Includes 20 anglers who were seeking catfish but did not specify channel catfish or flathead catfish.

#### 5.5.4 Racial Composition of Survey Respondents

Table 5-16 depicts angler responses to the question “How would you describe your race?” Collected data suggest that the vast majority (over 87 percent) of anglers describe themselves as white (non-Hispanic, Latino, or Spanish). Additionally, more than 11 percent of anglers describe themselves as white (Hispanic, Latino, or Spanish). No other racial groups were heavily represented among surveyed anglers.

**Table 5-16. Racial Composition of Surveyed Anglers**

Race	Count <sup>1</sup>	Percent <sup>1</sup>
White (non-Hispanic, Latino, or Spanish)	556	87.7
White (Hispanic, Latino, or Spanish)	74	11.6
American Indian or Alaska Native	2	0.3
Black, African American, or Negro	1	0.2
Other	1	0.2
Asian or Pacific Islander	0	0.0
Total	634	100.0

Note:

- <sup>1</sup> Count and percent are derived from anglers surveyed during the District’s general recreation use survey (as discussed in Section 5.5).

### 5.5.5 Annual Household Income of Survey Respondents

Table 5-17 depicts angler responses to the question “Which of the following ranges includes your yearly household income (the income ranges listed in Table 5-17 were provided to respondents as options)?” The most common annual household income range reported by anglers was \$26,000 to \$50,000 (over 42 percent). Respondent frequency generally decreased as income increased.

**Table 5-17. Annual Household Income of Anglers**

Income	Shore Anglers		Boat Anglers		Total	
	Count <sup>1</sup>	Percent <sup>1</sup>	Count <sup>1</sup>	Percent <sup>1</sup>	Count <sup>1</sup>	Percent <sup>1</sup>
\$0 - \$25,000	135	27.7	4	20.0	139	27.4
\$26,000 - \$50,000	211	43.3	6	30.0	217	42.8
\$51,000 - \$75,000	91	18.7	5	25.0	96	18.9
\$76,000 - \$100,000	37	7.6	3	15.0	40	7.9
\$100,000+	13	2.7	2	10.0	15	3.0
Total	487	100.0	20	100.0	507	100.0

Note:

<sup>1</sup> Count and percent are derived from anglers surveyed during the District’s general recreation use survey (as discussed in Section 5.5).

## 5.6 Angler Satisfaction

Anglers’ attitudes about fishing and their preferences concerning management options are important considerations for a fishery. Historically, fishery biologists have primarily focused their efforts on understanding biological aspects of fish populations and monitoring sport fish harvest and use. Recently, biologists have realized the necessity and value of understanding angler attitudes, level of satisfaction, and preferences. Consequently, more attitude, preference, and satisfaction data have been collected in recent years. Angler responses are helpful in evaluating whether current management practices and regulations are providing a fishery that meets angler needs and expectations (South Dakota Department of Game, Fish and Parks, 2009).

Although a question relative to angler satisfaction was not specifically asked in coordination with the creel survey, this type of question was asked of all respondents to the District’s general recreation use survey (which included persons taking part in various forms of recreation, including anglers). The results included herein relative to this question from the general recreation use survey are specific to those respondents who indicated that they had, or planned to, fish (either from shore or boat) during

their visit to the Loup Power Canal. Because over 94 percent of angler effort occurs from shore, as shown in Table 5-4, satisfaction results are limited to shore fishing.

Table 5-18 provides ratings specific to shore fishing opportunities along the Loup Power Canal (including Lake Babcock and Lake North). Collected data suggest that the majority of respondents are satisfied with the shore fishing opportunities along the Loup Power Canal; 57 percent of these respondents rated shore fishing opportunities as “Excellent” or “Above Average.” An additional 35 percent of respondents rated shore fishing opportunities as “Average.” The respondents who rated shore fishing opportunities as “Below Average” or “Poor” cited the following reasons:

- Abundance of snags due to the rocky shoreline and trees in the canal
- Steep banks along the canal
- Overgrown vegetation along the shoreline
- Trash at shoreline fishing access locations
- Lack of submerged structure in Lake North

**Table 5-18. Shore Fishing Ratings**

Rating	Count <sup>1</sup>	Percent <sup>1</sup>
(No Answer)	2	0.3
Excellent	91	14.5
Above Average	267	42.5
Average	218	34.7
Below Average	16	2.6
Poor	8	1.3
NA	26	4.1
Total	628	100.0

Note:

NA = Not applicable

<sup>1</sup> Count and percent are derived from anglers surveyed during the District’s general recreation use survey (as discussed in Section 5.6).

## 6. STUDY VARIANCE

This study has been conducted consistent with the Recreation Use study plan, which was approved with modifications by the Federal Energy Regulatory Commission (FERC) in its Study Plan Determination on August 26, 2009. No discernable study variance has occurred. Coordination with NGPC throughout the creel survey,

including NGPC's error check of final data inputs, ensured that applied methods were consistent with applicable study methods.

## 7. REFERENCES

- FERC. August 26, 2009. Letter from Jeff C. Wright, Director, Office of Energy Projects, FERC, to Neal D. Suess, President/CEO, Loup Power District, regarding Study Plan Determination for the Loup River Hydroelectric Project.
- NGPC. June 1997. Angler Use and Fish Community Dynamics in the Middle Loup and Loup River Basins and Sherman Reservoir. Annual Progress Report (March - November 1996). Fisheries Division.
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- South Dakota Department of Game, Fish and Parks. 2009. Annual Fish Population and Angler Use and Sportfish Harvest Surveys on Lewis and Clark Lake and the Lower Missouri River, South Dakota, 2009. Annual Report No. 10-07.