



Initial Study Results Meeting Summary

Project:	Loup River Hydroelectric Project FERC Project No. 1256		
Subject:	Initial Study Results Meeting Summary		
Meeting Date:	September 9, 2010, 8:30 am – 5:00 pm	Meeting Location:	New World Inn, Columbus, NE
Notes by:	Loup Power District		

NOTES revised October 26, 2010 per comments received from attendees.

Loup River Public Power District (Loup Power District or the District) filed its Initial Study Report (ISR) with the Federal Energy Regulatory Commission (FERC) on August 26, 2010, as part of relicensing the Loup River Hydroelectric Project (FERC Project No. 1256) and in accordance with the regulations of FERC's Integrated Licensing Process (ILP) (18 Code of Federal Regulations [CFR] 5). Subsequently, the Initial Study Results were presented to FERC and other relicensing participants during the Initial Study Results Meeting held on September 9, 2010, at the New World Inn (265 33rd Street) in Columbus, Nebraska. The proceedings of that meeting are presented in this Initial Study Results Meeting Summary, which follows the organization of the agenda for the meeting.

The meeting agenda and handout of the slide presentation are included as Attachments A and B, respectively.

Welcome and Introductions

Neal Suess (Loup Power District) and Stephanie White (HDR) provided those attending the Initial Study Results Meeting with an overview of the agenda and the goals for the meeting. The meeting goals and the list of attendees are provided below.

Meeting Goals

The goals of the Initial Study Results Meeting were the following:

- To present the results of completed studies identified in the Revised Study Plan and Study Plan Determination.
- To discuss any proposals to modify the study plan (by the District or other participants) in light of study progress and data collected.

Attendees:

The following agency and District representatives attended the Initial Study Results Meeting:

Name	Organization	Name	Organization
Chris Pracheil	NDEQ	Janet Hutzel (via phone)	FERC
Shuhai Zheng	NDNR	Nick Jayjack	FERC
Frank Albrecht	NGPC	Isis Johnson	FERC
Richard Holland	NGPC	Paul Makowski	FERC
Joel Jorgensen	NGPC	Mike Gutzmer	New Century Environmental LLC
Michelle Koch	NGPC	Bob Clausen	Loup Power District
Jeff Schuckman	NGPC	Jim Frear	Loup Power District
Dave Tunink	NGPC	Theresa Petr	Loup Power District
Justin King	NPPD	Neal Suess	Loup Power District
Jim Jenniges	NPPD	Ron Ziola	Loup Power District
John Shadle	NPPD	Pat Engelbert	HDR
Randy Thoreson (via phone)	NPS	Gary Lewis	HDR
Jerry Kenny	PRRIP	Matt Pillard	HDR
Mary Bomberger-Brown	TPCP	Lisa Richardson	HDR
Tom Econopouly (via phone)	USFWS	Scott Stuewe	HDR
Mike George	USFWS	Wendy Thompson	HDR
Robert Harms	USFWS	George Waldow	HDR
Jeff Runge	USFWS	Stephanie White	HDR
Lee Emery	FERC		

Integrated Licensing Process Overview

Lisa Richardson (HDR) discussed the overall relicensing process for the Loup River Hydroelectric Project (Project). She also gave a brief summary of the Study Plan Determination.

FERC issued its Study Plan Determination on August 26, 2009. In the Study Plan Determination, they removed three studies, the deletion of which had already been agreed to by the participating agencies:

- Water Temperature in the Platte River
- Fish Sampling
- Creel Survey

FERC approved three studies without modification:

- Fish Passage
- Land Use Inventory
- Section 106 Compliance

FERC also modified six studies based on agency comments:

- Sedimentation
- Hydrocycling
- Water Temperature in the Loup River Bypass Reach
- Flow Depletion and Flow Diversion
- Recreation Use
- Ice Jam Flooding on the Loup River

Finally, Richardson briefly discussed the next steps in the process, which include preparation of this Initial Study Results Meeting Summary and an opportunity for relicensing participants to submit comments.

2010 Weather

Lisa Richardson discussed the weather experienced in Nebraska during this past spring. Spring 2010 brought high winds, higher than normal precipitation, and widespread flooding throughout Nebraska. Richardson shared that the majority of Nebraska's 93 counties, including areas within the Loup and Platte River basins, were subjected to heavy flooding, and many counties, including Nance and Platte counties, were declared disaster areas by the governor. Therefore, the weather has had ramifications on topographic and hydraulic surveys and associated studies which were discussed later.

Progress Update for Ongoing Studies

Members of the Project team from HDR provided progress updates for the five studies that are ongoing:

- Study 2.0, Hydrocycling
- Study 4.0, Water Temperature in the Loup River Bypass Reach
- Study 5.0, Flow Depletion and Flow Diversion
- Study 8.0, Recreation Use
- Study 12.0, Ice Jam Flooding on the Loup River

After each progress update was given, the other meeting attendees had an opportunity to ask questions and offer comments on the respective study.

Study 2.0, Hydrocycling

Progress Update:

Pat Engelbert (HDR) and Matt Pillard (HDR) presented the progress update of the hydrocycling study. It was noted that cross section information was obtained in mid-April, May, and June due to high flows. End of the nesting season cross sections were collected in early September. The results of the hydrocycling study will be provided in the Updated Initial Study Report on January 6, 2011.

Discussion:

- Q: Lee Emery (FERC) asked how much higher than normal the flows have been this year.
A: Pat Engelbert (HDR) responded that flow is normally in the hundreds of cubic feet per second (cfs) during August, and this year, flows have been in the thousands of cfs.
- Q: Isis Johnson (FERC) asked where the identified time frames for nesting and departures came from.
A: Matt Pillard (HDR) responded that there is not a set date when the birds arrive and when they leave, but rather it is a range of time. These time frames were developed with coordination from the Nebraska Game and Parks Commission and the Tern and Plover Conservation Partnership as well as with the body of knowledge of existing historical data.
- Q: Paul Makowski (FERC) asked if the sediment transport component within HEC-RAS would be used to model sediment.
A: Pat Engelbert (HDR) explained that the team would evaluate that based on available data. Engelbert indicated that they would evaluate the effects of project operations using the sediment

transport calculations that were performed for the sedimentation study and evaluating the “run-of-river” alternative. It would be very difficult to calibrate a sediment transport model with the limited amount of sediment data available.

CLARIFICATION: Mr. Engelbert’s statement at the ISR meeting that “Initially we will set up the model and make some runs to provide us an idea of how things have changed.” was meant to indicate that the HEC-RAS models would be developed and executed and the hydraulics between the two cross sections would be compared. However, per FERC’s request, the District will also use the sediment transport module within HEC-RAS.

Study 4.0, Water Temperature in the Loup River Bypass Reach

Progress Update:

Lisa Richardson (HDR) presented the progress update of the study of water temperature in the Loup River bypass reach. It was noted that this study has missing data due to high flow and washout of a gage. It was determined at the RSP meetings that the critical time for data collection is in Late July/ Early August; however, due to higher than normal flows, data collection occurred August 13-23. The results of the study of water temperature in the Loup River bypass reach will be provided in the Updated Initial Study Report on January 6, 2011.

Discussion:

- Q: David Tunink (NGPC) asked how, with the higher than normal flows this year, analysis for low flows would be handled.
A: Lisa Richardson (HDR) explained that even with no low flows, water temperature standards have been exceeded.
- Q: Chris Pracheil (NDEQ) asked if historic data includes bypass temperature data.
A: Richardson noted that there is no historic temperature data in the bypass reach. The only historic temperature data near the Project has been collected from one gage on the Platte River near Louisville.
- Q: Jeff Runge (USFWS) asked if the Columbus gage is located where it was gaged in the 1970s and 1980s.
A: Richardson noted that the Columbus gage is in the same location on the U.S. Highway 81 bridge.

Study 5.0, Flow Depletion and Flow Diversion

Progress Update:

Pat Engelbert (HDR) and Matt Pillard (HDR) presented the progress update of the flow depletion and flow diversion study. It was noted that cross section information was obtained for the ungaged sites in mid-April, May, and June due to high flows. Low flow cross sections were collected in early September. The results of the flow depletion and flow diversion study will be provided in the Updated Initial Study Report on January 6, 2011.

Discussion:

- Q: Mike George (USFWS) asked what characteristics are being referred to when we say Loup River characteristics both above and below the diversion.
A: Pillard (HDR) noted that the data collection methodology was discussed with the Nebraska Game and Parks Commission and the U.S. Fish and Wildlife Service. The characteristics that would be

observed include the width of sandbars, whether sandbars are isolated or point bars, whether they are vegetated or unvegetated, and whether the banks were vegetated or unvegetated.

Study 8.0, Recreation Use

Progress Update:

Lisa Richardson (HDR) presented the progress update of the recreation use study. It was noted that a study plan for Recreation Use of the Loup River Bypass Reach was developed in coordination with the National Park Service, the Nebraska Game and Parks Commission, and FERC. The results of the recreation use study will be provided in the Updated Initial Study Report on January 6, 2011.

Discussion:

- Q: Randy Thoreson (NPS) asked why the study area for the recreation survey of the Loup River bypass reach presented in the slide show at the Initial Study Results Meeting (slide 37) appears to be different than the study area discussed in the Initial Study Report (pages 8-1 and 8-2). Thoreson pointed out that the slide show indicates that the Loup River bypass reach survey includes 2 public parks, 4 wildlife management areas, and 3 public road bridges but that the Initial Study Report lists only the Loup Lands Wildlife Management Area (WMA).
A: Lisa Richardson (HDR) explained that the entire bypass reach is being studied, and the locations listed on the slide indicate where the public can access the Loup River bypass reach. For the purpose of the study, we are not collecting recreation data at the non-District-owned public parks, but instead, we are using those parks as locations where we can access and observe the river.
- Q: Thoreson asked if FERC is going to determine whether the recreation surveys should be extended into the winter and if he would have an opportunity to comment on that before a decision is made.
A: Janet Hutzler (FERC) noted that a decision would be made based on the results of the telephone surveys and that FERC would accept agency comments prior to making that decision.
- Q: Thoreson asked why creel surveys were not conducted in the Loup River bypass reach.
A: Richardson explained that FERC's Study Plan Determination specifically required only recreation surveys on the bypass reach. Although the survey proctors are noting whether people are fishing in the Loup River bypass reach, the actual Nebraska Game and Parks Commission creel survey is not being conducted. The purpose of the creel survey on the canal is to help the District manage those fisheries, and this is not a purpose for the District beyond the Project Boundary.

Study 12.0, Ice Jam Flooding on the Loup River

Progress Update:

George Waldow (HDR) presented the progress update of the study of ice jam flooding on the Loup River. It was noted that the District contracted the U.S. Army Corps of Engineers (USACE) Omaha District to conduct this study. The results of the study of ice jam flooding on the Loup River will be provided in the Updated Initial Study Report on January 6, 2011.

Discussion:

- Q: Lee Emery (FERC) asked if ice jams typically happen at the Highway 39 bridge.
A: George Waldow (HDR) noted that there is a long history of ice jams near Genoa, but they are not necessarily at the bridge. Waldow also noted that the District has compiled historical information about pre-Project flood and ice jam conditions. The history of ice jams before and after the Project was constructed are being evaluated. Neal Suess (Loup Power District) added that this study was requested because of a 1993 USACE report on Columbus flooding and ice jams.

Presentation of Study Results

Members of the Project team from HDR provided results for the studies that have been completed:

- Study 7.0, Fish Passage
- Study 8.0, Recreation Use (Telephone Survey)
- Study 10.0, Land Use Inventory
- Study 11.0, Section 106 Compliance
- PCB Fish Tissue Sampling
- Study 1.0, Sedimentation

After the results of each study were given, the other meeting attendees had an opportunity to ask questions and offer comments on the respective studies.

Study 7: Fish Passage

Study Results:

Scott Stuewe (HDR) presented the study results of the fish passage study. The key points were as follows:

- The Diversion Weir is submerged less than 1 percent of the spawning season and is generally a barrier to fish passage due to high flow velocities.
- The Sluice Gate Structure does not provide a fish pathway due to limited operation and high flow-through velocities.
- An alternative fish pathway around the Diversion Weir on the right bank of the Loup River exists (on average) less than 1 day out of every spawning season.

Discussion:

- Q: Lee Emery (FERC) asked if the right bank alternative is the right bank looking downstream on the other end of the weir.
A: Scott Stuewe (HDR) indicated that the right bank is looking downstream.
- Q: Richard Holland (NGPC) noted that most of the analysis dealt with average velocities and asked how those average velocities were calculated.
A: Stuewe explained that for the sluice gates, different openings using different flows were averaged. For the Diversion Weir, velocity could be calculated only when the water was going over the weir, which was so infrequent that the average was very small.
- Q: Holland asked how the analysis would change if minimum velocities or a lower quartile velocity were used because fish would not gravitate toward average or higher velocities trying to pass a structure but would look for minimum velocity areas.
A: There was group discussion on this topic and it was noted that fish do seek out the lowest velocities and will take advantage of those opportunities. It was agreed that the use of average velocities underestimates the amount of fish passage that takes place.

Study 8.0, Recreation Use (Telephone Survey)

Study Results:

Lisa Richardson (HDR) presented the study results of the telephone survey portion of the recreation use study. The key points were as follows:

- A 12-minute telephone survey of 400 residents in Nance and Platte counties was conducted by The MSR Group between May 26 and June 9, 2010.
- 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.
- There is a significant lack of use of the District's recreation sites during the winter months. 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, varied from 88 percent to 97.6 per cent. To put this 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.
- 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."
- The telephone survey also asked respondents to rate the importance of the recreational opportunities provided by the District. The results were as follows:
 - Respondents who are Aware of District Facilities
 - Most Important – relaxing/hanging out and trails
 - Least Important – jet skiing and water skiing
 - Respondents who are Not Aware of District Facilities
 - Most Important – children's playground and relaxing/hanging out
 - Least Important – jet skiing and motorized boating

Discussion:

- Randy Thoreson (NPS) wanted to acknowledge that the information collected will be used for the recreation management plan, and that it provides good information for that plan. Lisa Richardson (HDR) confirmed this.
- Q: Janet Hutzel (FERC) asked if the distribution of ages was representative of the county's demographics.
A: Neal Suess (Loup Power District) said they were a pretty typical representation because the younger generation tends to move away. Suess noted that Nance County's average age is probably a bit older and Platte County's average age is a bit younger because of Columbus.
- Q: Hutzel asked if cross-country skiing took place on the trails during winter.
A: Lisa Richardson (HDR) noted that the trails are not groomed for cross-country skiing but are used for running and walking. Suess added that the trails could be used for cross-country skiing if people wanted, but affirmed that the trails are not groomed for it. Ron Ziola (Loup Power District) noted that winter weather in the area and the very flat terrain are not conducive to skiing.
- Q: Lee Emery (FERC) asked where the swimming areas are.
A: Richardson noted that the survey did not ask about specific swimming areas. There are swimming facilities in multiple places, including the Headworks and Lake North, but not at Lake Babcock.
- Q: Emery asked if recreation activities such as trapping, ice fishing, and hunting occur at the Project.
A: Suess stated that ice fishing can be done at Lake North and that some people do trapping and hunting in the wooded areas.

- Q: Emery asked about the scale of that activity.
A: Ziola noted that it would be small as the lakes reside within a Wildlife Management Area (WMA), where hunting is prohibited. Ziola also noted that state hunting laws do not allow hunting in or near Columbus and Genoa. There would be only about 50 miles of the canal where hunting would be allowed (approximately 25 miles of canal, with both banks usable for hunting), but the canal right-of-way is small and typically bounded by private property.
- Q: David Tunink (NGPC) asked if the telephone numbers used for survey participants were all landline phones. Tunink noted that younger people often have cell phone rather than landline phones, and this may be why there was not much participation from the younger generation.
A: Richardson stated that the telephone numbers were likely landline phones, but that would have to be confirmed.
- Q: Michelle Koch (NGPC) asked if any consideration was given to a bilingual survey and whether the non-English speaking population was accurately represented in the surveys.
A: Richardson stated that a bilingual survey was not conducted as there is a limited Spanish speaking population in the Project area.
- Q: Emery noted that most of the anglers that he saw when he visited the Project the day before were Hispanic. Emery asked if any of the survey proctors speak Spanish and could ask the survey questions in Spanish.
A: Richardson stated that the survey proctors did not perform the survey in Spanish.
- Q: Koch expressed concern that Hispanic people were not accurately represented in the survey.
A: Suess explained that some of the survey proctors can speak Spanish, and Ziola noted that often one member in the group of Hispanic people can speak English and serve as an interpreter. Ziola also noted that all survey proctors wear lined yellow reflective vests and white ball caps so that the public knows they are not state officials and look more approachable and friendly. Ziola stated that they are getting Hispanic in-person interviews and that Hispanics are being represented.
- Mike Gutzmer, primary survey proctor for the in-person surveys, noted that he was often able to get surveys from the Hispanic population through a younger member of the family who was able to interpret or through survey proctors who were able to speak a little bit of Spanish.
- Richardson noted that demographic data is being collected, so when the data is analyzed, we will be able to determine what percentage of the survey respondents were Hispanic.
- Q: Mary Bomberger-Brown (TPCP) thought that the responses to the telephone survey seemed female biased and asked if there were any patterns in responses based on gender. Are females more likely to use the facilities in some ways and males in other ways.
A: Richardson stated that the data exists and that more analysis will be done when the recreation management plan is developed.

Study 10.0, Land Use Inventory

Study Results:

Lisa Richardson (HDR) presented the study results of the land use inventory study. The key points were as follows:

- Field-verified land use maps were developed and show land uses both inside and within 500 feet outside of the Project Boundary. Public access locations were identified and included in the maps as well.
- Potential land use conflicts were identified, and it was determined that all of the adjacent land uses are compatible with the Project.
- Future land use plans for Nance County and the City of Columbus do not indicate future land use changes that would be incompatible with the Project.
- Restricted Operations Areas are safely separated from publicly accessible areas and do not conflict with recreation opportunities
- Approximately 90 percent of the Project lands are accessible to the public from numerous locations.

Discussion:

- Q: Lee Emery (FERC) noted that there are 5,000 acres of Project lands and asked about the distribution of this land.
A: Lisa Richardson (HDR) stated that of the over 5,000 acres of Project lands, most is along the canal, but there is a larger area at the Headworks and the two regulating reservoirs.
- Q: Randy Thoreson (NPS) asked if the Loup River bypass reach was included in the land use inventory.
A: Richardson noted that it was not included because the land use inventory took place within and adjacent to the Project Boundary. Neal Suess (Loup Power District) added that the District does not own the bypass reach or any land along it. The District owns only the canal and 50 to 100 feet along the canal. The land use inventory included the Loup Lands WMA because the District owns this land.
- Q: Isis Johnson (FERC) asked if the Project Boundary includes the Loup River bypass reach or if the District has any other easements or rights around the bypass reach.
A: Neal Suess (Loup Power District) stated that the bypass reach is the normal riverbed with private ownership on both sides of that. The District does not have any other easements or rights around the bypass reach.
- Q: Mike George (USFWS) asked if there are irrigation intakes in the Loup River bypass reach. George noted that it might be useful information for the land use inventory because of the nature of the water demand.
There was group discussion of irrigation use along the bypass and the canal. In the end Nick Jayjack (FERC) noted that the issue of irrigation and how it would be addressed was discussed during scoping and can be found in the meeting transcripts on FERC's website. Richardson noted that the documents are on Loup Power District's relicensing website as well.
- Q: Jeff Runge (USFWS) asked if FERC has a regulatory role in the access authorizations, or agreements.
A: Jayjack explained that if they are not part of the license, then they are not under FERC's jurisdiction. These issues, particularly water rights, are a state issue and FERC does not get involved with those.
- Q: Thoreson asked if an actual inventory and analysis of what is available at each recreation site will be included in the recreation management plan.
A: Richardson explained that that is occurring as part of the recreation use study and would also be included in the recreation management plan.

Study 11.0, Section 106 Compliance

Study Results:

Lisa Richardson (HDR) presented the study results of the Section 106 compliance study, which included four components. The key points and discussion for each component were as follows:

Phase IA Archaeological Overview:

- The Phase IA Archaeological Overview was completed in late summer/early fall of 2009.
- The study determined that field exams were necessary for eight areas within the Project Boundary that appear to be undisturbed since the 1930s, or that are within or near documented archaeological sites.
- Nebraska SHPO concurred with recommendations in Phase IA Archaeological Overview on November 11, 2009
- The Phase IA Archaeological Overview was filed with FERC as privileged information on December 4, 2009.

Phase I/II Archaeological Inventory and Evaluation:

- The Phase I/II Archaeological Inventory and Evaluation was completed in summer 2010.
- Eighty-three shovel tests were completed:
 - Prehistoric archaeological material was found in three tests.
 - Historic artifacts were recovered from four tests.
- One site is recommended eligible for listing on the National Register of Historic Places (NRHP).
- Other sensitive areas of the canal corridor were identified for management through consultation with Nebraska SHPO.
- The Phase I/II Archaeological Inventory and Evaluation report includes recommendations that coordination with Nebraska SHPO be required prior to earth-moving or earth-disturbing activities in the aforementioned areas.
- The Phase I/II Archaeological Inventory and Evaluation report was submitted to Nebraska SHPO for concurrence on August 27, 2010.

Discussion:

- Q: Janet Hutzel (FERC) asked what was meant by “other sensitive areas” She also if any mitigation is being proposed.
A: Lisa Richardson (HDR) stated that these areas could potentially contain additional artifacts, but at this time, they are not determined to be eligible for listing on the NRHP. These results are included in the Phase I/II Archaeological Inventory and Evaluation report but have not been discussed with Nebraska SHPO yet. Mitigation has not been considered at this point. The first steps are to confer with Nebraska SHPO about the findings of the report and to get concurrence from Nebraska SHPO on what areas need to be monitored as part of that agreement.

Ethnographic Documentation:

- Initial coordination with tribes has occurred through both FERC and the District.
 - Six tribes with historical presence in the area include the Ponca Tribe of Oklahoma, Ponca Tribe of Nebraska, Omaha Tribe, Pawnee Tribe, Winnebago Tribe, Santee Sioux Nation.
 - No tribes responded with information related to places that are of traditional religious and cultural importance.
 - The Winnebago Tribe will not be participating in relicensing as it does not have any land in either Nance or Platte County.
- The tribes were provided an opportunity to review the Phase IA Archaeological Overview, but none responded

- The Phase I/II Archaeological Inventory and Evaluation was provided to the tribes for comment. The District will follow up with the tribes in the next few weeks to ensure that they received the report and if they have any comments or wish to consult on it.

Discussion:

- Q: Janet Hutzel (FERC) asked whether copies had been sent to the tribes, noting that she hadn't heard the last statement clearly.
A: Lisa Richardson (HDR) explained that copies of the Phase I/II Archaeological Inventory and Evaluation had been sent to the chairman of each tribe and that a copy of the letter was sent to each tribal historic preservation officer.
- Q: Hutzel asked if the documentation from the Winnebago Tribe noting that the tribe does not wish to participate in relicensing had been filed with FERC.
A: Lisa Richardson (HDR) noted that the Winnebago Tribe responded directly to FERC's letter via e-mail, so that document should be filed with FERC, but she will check to ensure that it is.

Historic Building Inventory and Evaluation:

- The Project is a historic district eligible for listing on the NRHP.
- Eligible elements include 16 properties that exhibit individual eligibility and 21 properties that lack individual eligibility but contribute to the historic district.
- The historic district also includes numerous non-contributing properties that are not eligible for listing on the NRHP.
- The Historic Building Inventory and Evaluation report was submitted to Nebraska SHPO on August 27, 2010, for concurrence.

Historic Properties Management Plan and Executed Programmatic Agreement:

- The Historic Properties Management Plan will be developed following review and approval of the field studies for archaeology, ethnography, and the historic district.
- The Programmatic Agreement will be developed and executed following review and approval of the field studies for archaeology, ethnography, and the historic district as well as approval of the Historic Properties Management Plan.

Discussion:

- Q: Janet Hutzel (FERC) asked if the Historic Properties Management Plan would be developed in consultation with tribes as well as with Nebraska SHPO.
A: Lisa Richardson (HDR) explained that the intent is to consult with the tribes though there really has been no tribal participation to date. The District will send them copies and allow them to comment.
- Q: Hutzel asked if there will be follow-up on the Section 106 Compliance study in the January meeting when updated initial study results are discussed.
A: Richardson explained that concurrence with Nebraska SHPO, consultation with the tribes, and a status update for the Historic Properties Management Plan will be part of the January meeting.

PCB Fish Tissue Sampling

Study Results:

Lisa Richardson (HDR) presented the study results of the PCB fish tissue sampling. The key points were as follows:

- This was not an official relicensing study, but a question had been raised by agencies during scoping about contamination and NDEQ agreed to conduct additional fish tissue sampling in 2009 in the Project area.
- NDEQ conducted sampling at two locations along the Project:
 - Lake Babcock was sampled on August 11, 2009.
 - Tailrace Canal (U.S. Highway 30 bridge) was sampled on August 12, 2009.
- Fillets were provided to the EPA Region VII laboratory in Kansas City, Kansas, for PCB analysis.
- PCB (Aroclor 1248, 1254, and 1260) concentrations at each site were below the applicable reporting limits.
- Results have not been officially reported by NDEQ, but data will be included in NDEQ's 2009 Fish Tissue Report once all statewide data have been assessed.
- NDEQ stated that “the current fish consumption advisory for the Loup Power Canal will likely be removed following completion of the 2009 Fish Tissue Report in late 2010 or early 2011.”

Discussion:

- Q: Frank Albrecht (NGPC) asked if there is a standard size or age of the fish tested for PCBs.
A: Chris Pracheil (NDEQ) explained that carp are in the 21-inch range, likely 18 to 24 inches. The EPA-approved methods for fish tissue sampling take into consideration bioaccumulation and biomagnifications. They target fish that they assume would accumulate the material and the size that would have time to biomagnify.
- C: Jeff Runge (USFWS) noted that USFWS had recommended a measurement of sediment samples. However, FERC’s Study Plan Determination included an indirect measure of PCBs in sediment through fish tissue sampling. Runge noted that PCB-contaminated fish in the middle section (between the Monroe and Columbus powerhouses) would cause concern that maybe there is a potential for PCB-latent sediment. Two aspects of concern are PCBs within the fish tissue and any discharges that would be released into the canal system and would eventually make their way into the lower Platte River, which is currently an impaired waterbody. The idea behind the fish tissue sampling was to help answer those questions.
- Q: Runge also asked what the difference is between reporting limits identified in the report and actual water quality limits.
A: Pracheil explained that fish tissue limits are not the same as water quality standard parameters. NDEQ has tested for PCBs in the water column at numerous sites throughout the state but has not found PCBs in the water column. Sampling was conducted in Lake Babcock to determine if there was contamination above the Tailrace because there is potential for fish from the lower Platte River to enter the Tailrace during a high flow event. It is difficult to determine whether contaminated fish are in the Tailrace because of the Loup Power Canal or if they are coming from a contaminated section of the lower Platte River into the Tailrace. Although this can’t be answered, the Lake Babcock sample helps point to the direction that the Loup Power Canal above the Tailrace does not have PCB contamination.
- Q: Runge asked if “at or below the reporting limits” means that there is no contamination present.
A: Pracheil explained that NDEQ’s assessment method is to take the reporting limit and divide by two, and that is the number applied to all of NDEQ’s assessment criteria. This is more conservative so there is less risk to the consumer.
- Q: Runge asked why the carp species was used rather than another common species like catfish and whether there would be the same levels of contamination for both species.

A: Pracheil stated that the collection technique somewhat limits the success for some species. NDEQ tries to get both a predator and a bottom-feeder species from every sample site, but the fish have to meet the requirements for size considerations. Bass are considered a predator species, and both carp and catfish are bottom-feeder species. NDEQ's methodology for testing is available on its website. Carp are easier to catch, so that species often fills the role of bottom-feeder in NDEQ's methodology. In Lake Babcock, Pracheil was unsure if they attempted to get another species; the methodology specifies carp as that is what was on the impaired waterbodies list.

- Jeff Schuckman (NGPC) noted that if fish tissue samples are needed from other species, NDEQ could contact NGPC because they routinely conduct fish sampling and would be willing to help out.

Study 1.0, Sedimentation

Study Results:

Pat Engelbert (HDR), Matt Pillard (HDR), and Scott Stuewe (HDR) presented the study results of the sedimentation study, which included four objectives. The key points and discussion for each objective were as follows:

Objective 1:

- Both rivers at all locations studied are clearly not supply limited.
- Spatial analysis of effective and dominant discharge reveals that they increase in a downstream direction in a manner consistent with natural river processes.
- The effective discharge, and associated river morphology, has not changed since 1928.
- Sediment transport calculations show that the channel geometries are in "regime." Nothing appears to be constraining either the Loup or Platte River from maintaining the hydraulic geometry associated with the effective discharges.
- The combinations of slopes, sediment sizes, and effective discharges result in all locations being well within the braided river morphologies, with none being near any thresholds of transitioning to another morphology.

Discussion:

- Q: Chris Pracheil (NDEQ) asked if the suspended sediment load in the Platte and Loup rivers is a composite suspended sampling from USGS and if bed load is incorporated into any of these calculations as well.
A: Pat Engelbert (HDR) explained that for bed load in the Platte and Loup rivers, a composite of the bed material samples and suspended samples was used to calculate the d50 used in Yang's equation to create the sediment discharge rating curves. The d50 of the suspended is a smaller material, and the d50 of the bed material is a coarser material. Therefore, we felt that this composite better represented the total bed material load.
- Q: Mary Bomberger-Brown (TPCP) asked why the amount of dredged material since 1975 was nearly half the amount dredged prior to 1975.
A: Engelbert explained that there are probably several reasons, including a change in farming practices (terracing and land leveling) and the construction of upstream structures (Calamus Reservoir and Sherman Reservoir). Neal Suess (Loup Power District) added that the District did not change its operating practices at all during that time.
- Q: Isis Johnson (FERC) asked how the total sediment discharge was calculated.
A: Engelbert explained that the amount of flow for a given day was multiplied by the sediment discharge rating curve (the amount of sediment for a particular discharge), which is in tons per cubic feet per second (cfs). This results in a tons calculation by using an adjustment factor to get the units correct. George Waldow (HDR) noted that this is an established methodology, and Gary Lewis

(HDR) added that this procedure is adopted by all of the agencies that work with or represent the Platte River.

- Q: Tom Econopouly (USFWS) asked if the y-axis was tons on slide 118 and how that relates to the dominant discharge of 3,500 cfs.
A: Engelbert explained that the total amount of sediment transported in tons was indeed represented by the y-axis. The dominant discharge is 3500 cfs; however, it was not graphically shown. The red line on the graph showing the 3,500 cfs does not correspond to the y-axis units. The average tons per day were determined from total tons, and the dominant discharge corresponding to that average daily sediment transport was found from the sediment rating curve.
- Q: Nick Jayjack (FERC) asked about the significance of the USBR 1.5-year analysis on the regime graphs.
A: Engelbert explained that previously, a common estimate of the channel forming flow was the 1.5-year flood, but current technologies do not require such estimates for sand bed systems.
- Q: Jeff Runge (USFWS) asked how the total yield was calculated for North Bend.
A: Engelbert explained that the Missouri River Basin Commission used established methodology to determine what the supply to those locations would be based on all erosion processes, including sheet, rill, and bed and bank. There is a table in the initial study report that lists the Missouri River Basin Commission yields.
- Q: Runge asked if the Platte River between Columbus and North Bend only has a certain amount of capacity to continue to add to the supply.
A: Gary Lewis (HDR) explained that transport capacity will not necessarily move all of the yield in braided systems, which are defined as rivers with sediment supplies in much greater excess than the ability to transport it. The best estimate of yield is what it is transporting whenever a river is in equilibrium. Missouri River Basin Commission methods are an indicator of whether the yield exceeds the capacity. Lewis noted that probably what is being transported is what is being delivered because the river is in dynamic equilibrium. The key point is that by the procedure that was applied and agreed to in the study plan, the yield exceeded capacity of the transport, so the study sites are not supply limited. Transport capacities are not additive as you move downstream. The capacity at a particular location is based on hydraulics—slope, width, depth, velocity—and sediment size. Because the river hydraulics change, the capacity will change. The capacities and yields are calculated independently using different methodologies.
- Q: Runge asked if more sediment is being transported away or through North Bend than what is being supplied from Columbus and Duncan.
A: Engelbert explained that the transport capacity numbers cannot really be added. The capacity is based on the river condition at Duncan and the river condition at Columbus. You cannot add the capacity of the two and get the resulting capacity.
- Q: Runge asked if changes in local hydraulic characteristics result in the difference.
A: Engelbert noted that calculations for the Platte River near Columbus have not been completed yet but will be based on 1 year's measurements as opposed to the capacities being developed based on 30 or 50 years of hydraulic measurements.
- Q: Richard Holland (NGPC) asked if the capacity indicates the amount of sediment that the water will hold.
A: Engelbert explained that capacity indicates the amount of bed material sediment the water will convey, if transporting at capacity.
- Q: Holland asked what determines sediment size and capacity and if we have any indication about particle size and distribution.
A: Engelbert explained that the sediment size and capacity are based on USGS measurements and Yang's Unit Stream Power equation. Bed sediment samples, suspended sediment samples, and daily flow (function of velocity and depth) were used to calculate the capacity. The particle sizes by gage are in the initial study report or attachments; sizes are different at the study sites, not the same. Lewis added that if flows decline, transport declines. Engelbert noted that a spatial relationship based on the

gaging stations was evaluated. Holland stated that things are completely different 100 miles downstream. Engelbert explained that the District was tasked to evaluate the calculations at a point within 5 miles of the Tailrace and a point upstream of the Tailrace, which is being done.

- George Waldow (HDR) noted that the yield or supply were each calculated additively as you go downstream. The analysis does not allow only the capacity amount be added to the supply as you go downstream. The analysis is only one indicator of capacity, not absolute values. At best, this tool is an approximation of a complicated system. However, yield or supply exceeds capacity at all locations. No studies in the literature disagree with this. Lewis provided the definition of dynamic equilibrium, saying that it doesn't mean it is always the same; it varies, but around a constant trend. The Corps describes a stream system with variability (in width, depth, bars, and braids) but not deviating from a long-term condition trend. We need to look at parameters like effective discharge. Engelbert added that the budget analysis performed for this sedimentation study is part of that.
- Q: Joel Jorgensen (NGPC) asked if the model is able to measure the errors and bring the error values forward so that they can be identified.
A: Engelbert explained that the data has uncertainty but not error, and because the data was analyzed over a 25-year period, any random errors are likely smoothed out. Waldow clarified that rather than error, Joel is referring to imprecision.
- Q: Holland and Jorgensen noted that it would be useful to know the percent error (for example, 1 percent or 50 percent), or a measurement of the imprecision. Jorgensen also asked if there are error values for the components that go into Yang's equation.
A: Lewis noted that USGS rates their records as good, fair, and poor, and in the USGS manual, they list a confidence range of 5 to 15 percent. We did a sensitivity analysis on Yang's equation, and we erred on the side of conservative rather than understating or overstating the capacity. We relied on USGS flow and other measurements.
- Q: Michelle Koch (NGPC) asked if the yield of total supply available is just free-flowing sediment or if it also includes the sediment trapped in stabilized sandbars or other stabilization structures.
A: Engelbert explained that the total supply available accounted for the sediment being removed from the system. The Missouri River Basin Commission accounted for sediment being trapped at structures or taken out of the system, but did not analyze sediment in stabilized sandbars. For example, at Loup's diversion structure, they took the total amount and accounted for sediment being removed in the settling basin. In addition, they accounted for an amount of suspended sediments being conveyed through the system with half of that sediment being trapped in the system and the other half returning to the Platte River system at the Tailrace.
- Q: Runge asked if the sediment analysis for the Platte River at Duncan and the Loup River at Columbus could be added to see how close of an agreement there is with the values at North Bend.
A: Engelbert explained that hydrographs are being developed at the area just downstream of the confluence based on gage data at Duncan and on the Loup and that historic reach gains and losses were accounted for. Runge noted that this would help from a precision standpoint if they were in close agreement and could shed some light as to the precision.
- Q: Jayjack asked if the capacity numbers were calculated and the yield numbers were from published sources. If so, he asked if we have a good idea of the uncertainty involved with the capacity numbers.
A: Engelbert confirmed this and stated that whether the rivers are supply limited or not supply limited is just one piece of the overall puzzle.
- Q: Paul Makowski (FERC) wanted to draw the distinction between uncertainty, error, and variability. Makowski noted that there is a lot of variability with the sediment discharge rating curve and asked if a confidence interval could be added and what the bands would be.
A: Engelbert explained that a sensitivity analysis was conducted, and that 25 years of data were used to reduce the variation. The rating curves showing the variation in suspended loads are an indication of these bands.
- Q: Econopouly pointed out that there was almost 50 percent more capacity at Genoa than Columbus and asked about the factor of data.

A: Engelbert explained that it is a factor of the data used to develop the sediment discharge rating curve. At Genoa, there were 25 years of measurements to use, but at Columbus, there was only 1 year of measurements to develop the sediment discharge rating curve. Engelbert agreed that the results are somewhat inconsistent.

- Q: Econopouly asked why two points marked on Chang's regime morphology chart, which were bankfull discharge rather than effective discharge, were not used.

A: Lewis explained that those charts and data points were used in a U.S. Bureau of Reclamation (USBR) report on Platte River history. He noted that there is no reason to use bankfull or 1.5-year flows as estimates of channel-forming flow because effective discharge calculations are the current methodology. Bankfull flow is not easily found on a braided river where the yield exceeds the transport, forming a "backbone" along the river valley.

- C: Holland noted that when focusing on specific habitat features, there is a need to look at different types of flow events, such as bankfull flow. There are two different ways of looking at how sediment is used and what sediment is doing to the river.

Objective 2:

- Literature and analysis clearly indicate that both rivers are in dynamic equilibrium with no indications of aggradation or degradation or channel geometry changes over time.
- Literature and calculations demonstrate that the Loup River bypass reach and the lower Platte River are in regime and well seated within regime zones classified as braided streams.

Discussion:

- Jeff Runge (USFWS) noted that the purpose of this meeting is to develop information to propose any necessary changes in methodology. Runge suggested that the trends and channel gradation information from the 1999 USGS report be updated as a study modification; he noted this would be included in the USFWS' comment letter. Lee Emery (FERC) asked if Runge thought the findings would change with this additional work. Runge indicated he was unsure. Emery also noted that the cost and benefit of doing this additional work would be a consideration when FERC makes a determination on modifications. It was also clarified that study modifications should follow FERC's 7 study request criteria (same as for initial study requests).
- Q: Michelle Koch (NGPC) asked why 1985 was chosen as the starting date.
A: Engelbert explained that it was to correlate the date with bird data available. In addition, USGS had electronic data from 1984, so it was a good representative era of 25 years to begin with 1985. These years had wet, dry, and normal year designations, and it was considered to be a good representative time frame.

Objective 3:

- It was determined that the system is in dynamic equilibrium and the Project does not affect morphology in this reach of the Platte; therefore, it is inferred that the Project does not affect pallid sturgeon or least tern and piping plover habitat parameters related to sediment transport.
- No further analysis is needed based on the RSP methodology, but analysis of plots of interior least tern and piping plover nest counts against sediment transport parameters was completed due to timing of other study activities.
 - There is not a significant relationship between interior least tern and piping plover nest counts and sediment transport parameters.
 - No evidence from this analysis was discovered that would suggest a potential relationship between nest counts and sediment transport parameters.

Discussion:

- Q: Chris Pracheil (NDEQ) asked if transforming some of the discharge parameters might have given a different correlation. Pracheil also stated that an R^2 of 0.3 is usually considered significant in biological settings.
A: Matt Pillard (HDR) explained that a linear regression was performed as described in the study plan.
- C: Joel Jorgensen (NGPC) shared a number of comments related to the statistical analysis of the data:
 - Noted that the data preparation should have been explained and that there may be pseudoreplication issues with the analysis. Is the data normally distributed? If not, is linear regression appropriate?
 - Suggested that rather than using parametric tests, nonparametric tests should have been used because the data aren't normally distributed.
 - Noted that the small data set may cause issues with the analysis and that specific statistical tests for significance were not referenced in the report
 - Noted that most of the analysis may be influenced by outliers; suggested that the outliers be reviewed to see why they outliers exist, possibly because of data inconsistencies
 - Suggested that linear regression is not appropriate for the data because in some cases the analysis would result in a negative value, which is not possible..
 - Suggested looking at a generalized linear model for regression. Using a model-based approach you can build competing models and compare the relative strength of the models against each other that would allow interactions between the x variables.
 - Another possible choice is logistic regression.
- Jorgensen noted that he will provide written comments regarding the analysis.
- Mike George (USFWS) noted that he did not see the system as linear either; if it were linear, then at either end, you will not have nesting. He noted that the value in linear regression was to show that the relationship is not linear .
- G. Lewis noted that in order to do some of the statistical analysis suggested, such as a principal component model, there needs to be a model that you are trying to fit. He also noted that to do a multivariate analysis you have to have an idea of how the variables relate to each other in order to do the work.
- Joel Jorgenson (NGPC) noted that if there is good justification not to do any sort of additional analysis, then provide that discussion in the report.

Objective 4:

- It was determined that the system is in dynamic equilibrium and the Project does not affect morphology in this reach of the Platte; therefore, it is inferred that the Project does not affect pallid sturgeon habitat parameters related to sediment transport.
 - The Lower Platte River geomorphology is in dynamic equilibrium.
 - The literature review states that the lower Platte River is appropriate pallid sturgeon habitat.
 - Recent sturgeon captures show species occupation.
- No further analysis is needed based on the Revised Study Plan methodology.

Discussion:

- Q: Richard Holland (NGPC) asked if the sampling that occurred 30 miles west of Columbus was a one-time sampling event and noted that that was not part of the original objectives of the UNL study.
A: Scott Stuewe (HDR) confirmed that it was a one-time sampling event and noted Holland's comment.

Next Steps

Lisa Richardson (HDR) discussed the next steps for the completed studies and the remaining studies.

For the completed studies, the next steps are as follows:

- September 24, 2010 – District submits meeting summary
- October 24, 2010 – Agencies file meeting summary disagreements and submit requests for modification to on-going studies
- November 24, 2010 – District responds to summary comments and study modification requests
- December 27, 2010 – FERC resolves comments and study modification requests

For the remaining studies, the next steps are as follows:

- January 6, 2011 – Submittal of Updated Initial Study Report to FERC
- January 20, 2011 – Updated Initial Study Report Agency Meeting

Discussion:

- There was discussion about the interrelatedness of Sedimentation with the Hydrocycling and Flow Depletion and Flow Diversion studies. USFWS indicated that because of this, they may hold some of their comments until after all of the study results are available. This led to a question of whether FERC will address study modifications in October 2010 or wait until spring 2011 when all study results and comments are available. FERC is considering this issue.