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UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Loup River Public Power District
Project No. 1256-029-Nebraska

Loup River
Hydroelectric Project
(FERC No. 1256-029)
Study Plan Discussion

Holiday Inn Express
Columbus, Nebraska
May 27, 2009

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P A R T I C I P A N T S

MR. FRANK ALBRECHT, NEBRASKA GAME AND PARKS
MS. JEAN ANGELL,
NEBRASKA DEPARTMENT OF NATURAL RESOURCES
MS. MARY BOMBERGER BROWN,
TERN AND PLOVER CONSERVATION PARTNERSHIP
MR. ANTHONY BYRNE, NEW CENTURY ENVIRONMENTAL
MR. QUINN DAMGAARD, HDR ENGINEERING, INC.
MR. PAT ENGELBERT, HDR ENGINEERING, INC.
MR. MICHAEL GUTZMER, NEW CENTURY ENVIRONMENTAL
MR. ROBERT HARMS, US FISH AND WILDLIFE SERVICE
MR. RICHARD HOLLAND,
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MR. JIM JENNIGES, NEBRASKA PUBLIC POWER DISTRICT
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MS. MICHELLE KOCH,
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MR. GARY LEWIS, HDR ENGINEERING, INC.
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LOWER LOUP NATURAL RESOURCES DISTRICT
MS. THERESA PETR, LOUP POWER DISTRICT
MR. MATT PILLARD, HDR ENGINEERING, INC.
MS. LISA RICHARDSON, HDR ENGINEERING, INC.
MR. JEFF RUNGE, US FISH AND WILDLIFE SERVICE
MR. JOHN SHADLE, NEBRASKA PUBLIC POWER DISTRICT
MR. NEAL SUESS, LOUP POWER DISTRICT
MR. DAVE TUNINK, NEBRASKA GAME AND PARKS COMMISSION
MR. DAVID TURNER, FERC
MR. GEORGE WALDOW, HDR ENGINEERING, INC.
MS. STEPHANIE WHITE, HDR ENGINEERING, INC.
MR. RON ZIOLA, LOUP POWER DISTRICT

VIA TELEPHONE:
MR. RANDY THORESON, NATIONAL PARK SERVICE
MR. MARK IVY, FERC
MS. KIM NGUYEN, FERC

1 (Whereupon, the following proceedings were
2 had, to-wit:)

3 STEPHANIE WHITE: You all have live
4 microphones on your tables. We'll pass those around
5 primarily so that the conference phone feature of
6 today's meeting works. I'm going to let Neal kick
7 us off, and then I'll spend a minute talking about
8 the meeting today, what you can expect and what some
9 of the materials are.

10 NEAL SUESS: Thanks, Stephanie.
11 First of all, I want to welcome you all back to
12 Columbus again. It's been about a month since we
13 met last. Hopefully you've all thought about our
14 meeting from a month ago, or at least those of you
15 that were here, those of you that weren't.

16 I've talked to some of the folks that were
17 here. We made a lot of progress in that last month.
18 As you can see from the proposed study plan slide
19 that we have up here, we talked about a lot of
20 things over the last couple of weeks and made a lot
21 of progress.

22 At this point in time, again, I want to
23 welcome you a little bit. If you've got a cell
24 phone, put it on vibrate or silent, and that way
25 we're not bugging everybody at that point in time.

1 And I think we just want to go around the
2 room and have everybody introduce themselves and who
3 they are. And again, I'm Neal Suess. I'm the
4 president and CEO of Loup Power District. So grab a
5 microphone and pass it on down until you get to one.
6 We'll start over here with Theresa.

7 THERESA PETR: Good morning. I'm
8 Theresa Petr from Loup Power District.

9 PAT ENGELBERT: Pat Engelbert with
10 HDR.

11 GEORGE WALDOW: George Waldow with
12 HDR.

13 GARY LEWIS: Gary Lewis, HDR.

14 QUINN DAMGAARD: Quinn Damgaard, HDR.

15 JEFF RUNGE: Jeff Runge, US Fish and
16 Wildlife Service.

17 JERRY KENNY: Jerry Kenny, Platte
18 River Recovery Implementation Program.

19 JOHN SHADLE: John Shadle, Nebraska
20 Public Power District.

21 JIM JENNIGES: Jim Jenniges, Nebraska
22 Public Power District.

23 MATT PILLARD: I'm Matt Pillard with
24 HDR.

25 MICHELLE KOCH: Michelle Koch,

1 Nebraska Game and Parks Commission.

2 RICHARD HOLLAND: Rick Holland,
3 Nebraska Game and Parks Commission.

4 DAVE TUNINK: Dave Tunink, Game and
5 Parks Commission.

6 FRANK ALBRECHT: Frank Albrecht,
7 Nebraska Game and Parks Commission.

8 ROBERT HARMS: I'm Bob Harms, Fish
9 and Wildlife Service.

10 DAVID TURNER: David Turner, FERC.

11 JEAN ANGELL: Jean Angell, Department
12 of Natural Resources.

13 STEPHANIE WHITE: Try it again.

14 JEAN ANGELL: Jean Angell, Department
15 of Natural Resources.

16 LISA RICHARDSON: Lisa Richardson
17 with HDR. I'm the project manager for the
18 relicensing team.

19 RON ZIOLA: Ron Ziola, Loup Power
20 District.

21 MICHAEL GUTZMER: Mike Gutzmer, New
22 Century Environmental.

23 ANTHONY BYRNE: Tony Byrne, New
24 Century Environmental.

25 NEAL SUESS: And who do we have on

1 the phone with us this morning?

2 RANDY THORESON: Randy Thoreson,
3 National Park Service.

4 *(No introduction by*
5 *Ms. Mary Bomberger Brown,*
6 *Mr. Robert Clausen, or*
7 *Mr. Robert Mohler.)*

8 NEAL SUESS: And Randy, are you able
9 to hear us okay?

10 RANDY THORESON: There's a couple
11 that didn't make it out, but mostly it came through
12 okay.

13 NEAL SUESS: Okay. We're going to
14 try to -- if you hold it close to your mouth when
15 you're talking into the microphone, it works a
16 little bit better.

17 Again, I want to thank everybody for
18 coming today. Stephanie is going to --

19 KIM NGUYEN: Sorry to interrupt,
20 Neal. This is Kim Nguyen and Mark Ivy at FERC.

21 NEAL SUESS: Oh, sorry, Kim, sorry,
22 Mark. I didn't know you guys were there. I
23 appreciate you guys being on the phone this morning.
24 I know it's difficult traveling. And if you're out
25 here, you know, it's probably going to snow later

1 today, just to let you guys all know that. So it's
2 about 10 degrees out, or at least it feels like it,
3 anyway. I want to thank George for bringing the
4 weather with him from Minneapolis.

5 Anyway, again, thanks everybody for
6 showing up today and for being on the phone. I'm
7 going to have Stephanie talk a little bit about the
8 meeting goals, the agenda and the protocol for
9 today's meeting. It's going to be real similar to
10 the meetings that we've had in the past on the study
11 plans, and we are going to go through every study
12 plan over the next couple of days.

13 This is a two-day meeting, today and
14 tomorrow. We will try to get through it as quickly
15 as we can, but obviously there's a lot of detail and
16 data that we have to go through and discuss as we go
17 through that.

18 So at this point in time, I'm going to
19 turn it back over to Stephanie and let you deal with
20 everything. Thanks, Stephanie.

21 STEPHANIE WHITE: Okay. You all
22 should have in front of you a handout, or those of
23 you who are calling in today, in front of us we have
24 exactly what was posted on the website. So you'll
25 see the front page of your handout is today's

1 agenda. It's pretty easy. On the back of it is
2 tomorrow's agenda.

3 We don't have scheduled breaks. Rather,
4 we'll take those as needed by the court reporter or
5 the group, or we might get to a point in our
6 discussion today where we just have to call a break
7 and go get some fresh air and come back in.

8 Bathrooms are straight in the back. There
9 are a couple of new folks here who have joined us
10 for the first time. The bathrooms are straight back
11 there. We'll have lunch catered out back here
12 again, Ron, like we did last time.

13 We'll go through some material today that
14 we covered and reached consensus on as a group at
15 our last meeting. We'll spend most of our time on
16 the items we have not covered yet as a group.

17 You'll see a couple of new things. Off to
18 my left shoulder is a board called the proposed
19 study plan. This is in the handout. Lisa will give
20 me the slide in a second so you can see what I'm
21 talking about.

22 LISA RICHARDSON: Slide No. 6.

23 STEPHANIE WHITE: Slide No. 6. This
24 is what we started out with in the very beginning of
25 this discussion period. We started out with

1 12 proposed study plans. This has become a working
2 board for us, so you can see that we collapsed two
3 of them at the recreation meeting.

4 Eight and nine now have been combined into
5 one recreation use study. No. 3 was removed at the
6 last big meeting that we all participated in. And
7 then 13 was also added, so we're going to talk about
8 PCB sampling of the settling basin for the first
9 time today. Also, ice jamming is on the agenda for
10 the first time today as a group.

11 So we'll work through those just like we
12 did last time. We'll have a couple of presentations
13 this morning, and then I'll pass out the green,
14 yellow and red cards that we've used to vote --
15 essentially vote on goals and wording and
16 objectives.

17 Any questions before we move on?

18 There will, no doubt, today or tomorrow
19 we'll come to some points where we all might have to
20 agree to disagree. We'll document that. We have a
21 court reporter here today, like we did at the
22 previous meeting and at the recreation user's group
23 meeting. So we'll get everything on the record, and
24 that will be posted on the web for you to study
25 afterwards as well.

1 With that, I'm going to hand it over to
2 Lisa, and Lisa can walk over the -- through the
3 first couple of slides. And I'll run your slides
4 for you.

5 LISA RICHARDSON: Can I sit from
6 here, or do you want me to stand up?

7 STEPHANIE WHITE: You can. You can
8 do it yourself.

9 LISA RICHARDSON: Okay. On Slide
10 No. 2, this is a list of the key dates for the
11 Project. And those first three dates are the
12 meetings that we've already had, the larger group
13 meeting in April; on May 5 we had a meeting with the
14 Nebraska SHPO, State Historic Preservation Office,
15 to discuss the culture resources study; May 11 we
16 met with a series of folks, Game and Parks, National
17 Park Service and some others to discuss recreation
18 studies. Those are eight, nine and ten. And, of
19 course, today we're at the second study plan meeting
20 where we're going to be discussing the others in
21 detail.

22 Some upcoming dates are -- that June 25
23 date is prescribed by the FERC ILP process as to
24 when agency comments are due on the proposed study
25 plan. As we said last time, we would like to get as

1 many of your comments and have discussion in this
2 type of meeting to try to resolve any issues that
3 you might have, but that is the date that if you
4 have comments or study requests that you want to
5 make, you need to make it by that date.

6 And in doing so, you need to use the FERC
7 study request criteria that are shown on the -- on
8 the board over there and are on the next slide.
9 Those criteria are: To improve the goal and
10 objective of the study; the relevant resource
11 management groups or the relevant public interest,
12 two or three; background and existing information;
13 the Project nexus, why the study is needed related
14 to the Project effects; the proposed methodology;
15 and information on the proposed level of effort.

16 You'll notice on the calendar there, we
17 have July 1 was a date that we had sent out earlier
18 in the year, probably in February or so, saying,
19 Reserve this date just in case we need to get
20 together again. We'll decide at the end of the day
21 tomorrow if we think we need another large group
22 discussion, or maybe it will be a small discussion
23 with one or two agencies, if needed.

24 July 27, then, is, again, the FERC ILP
25 prescribed date as to when the District's revised

1 study plan is due to FERC. So we'll be submitting
2 that on or before that date. That will be the
3 latest version of the study plan.

4 Then August 26 -- between July 27 and
5 August 26, FERC will be reviewing the study plan and
6 preparing some comments and study requests that they
7 receive, and they will prepare the study plan
8 determination, which identifies what -- what needs
9 to be done, what studies need to be done, how they
10 should be done. That's the final decision on that.

11 And then September 15, as I mentioned last
12 time, that's the dispute resolution filing deadline.
13 So for agencies with mandatory conditioning
14 authority, that's another opportunity to request
15 that something be changed in the study plan.

16 So any questions on the dates?

17 Okay. Next slide, Slide 3, this is the
18 same as is on the board. This is the study request
19 criteria. Again, that's what needs to be used for
20 any comments submitted on that June 25 date.

21 Last time we had some -- just a little bit
22 of discussion about protection, mitigation and
23 enhancement measures. And I wanted to just talk
24 about those a little bit now as they relate to the
25 rest of the process.

1 Basically, the key points are that the
2 study results, the studies that we're talking about
3 today and that will be performed over the next
4 couple of years, the results of those studies may
5 identify a need for some sort of protection,
6 mitigation and enhancement measures.

7 And the District will then include in
8 their -- as part of the proposed action, some
9 potential PM&E measures. They don't have anything
10 picked out yet, but those will kind of present
11 themselves as the study results are known. So that
12 will be included in the application.

13 Agencies will have an opportunity to
14 comment on the application and may suggest
15 modifications to the PM&E measures or additional
16 measures, and then FERC reviews the license
17 application and the comments and makes the final
18 determination on what will go into the license --

19 RANDY THORESON: Lisa, you're fading
20 in and out a little bit.

21 LISA RICHARDSON: Sorry, Randy.

22 RANDY THORESON: Yeah, thank you.

23 LISA RICHARDSON: Did you need me to
24 repeat anything?

25 RANDY THORESON: Nope.

1 LISA RICHARDSON: I feel like I'm on
2 American Idol or something.

3 So are there any questions about the PM&E
4 measures? Okay. We'll move on.

5 Stephanie, I think we're back to you.

6 STEPHANIE WHITE: Okay. So the
7 purpose of the study plan -- again, this is a review
8 for most of you in the room today -- was really to
9 identify studies needed to provide information for
10 evaluation of a new Project license relative to NEPA
11 and ESA evaluations. That was the purpose of the
12 original document that was issued by the District.

13 The goal of this meeting and each meeting
14 that we've had together during this discussion plan
15 has been to seek consensus on the methods and
16 activities associated with those studies.

17 Specifically, these two days will be devoted to the
18 discussion of the aquatic resources studies, which
19 are Studies 1, 2, 4, 5, 6, 7, 12 and 13. So the
20 majority of our study plans will be discussed in
21 this forum and fall under the heading of aquatic
22 resources.

23 Again, so for those of you on the phone,
24 just moved into Slide 6, which is the board that we
25 talked about earlier. I expect to see some changes

1 on this board or this slide even at the conclusion
2 of today, and certainly at the conclusion of
3 tomorrow. We'll keep working until we, as a group,
4 can reach consensus.

5 We're going to spend a little bit of time
6 this morning letting Neal talk about the operations
7 of the District. So this portion of our
8 presentation is entitled the Loup Power District
9 Operations Overview. And this is to give you an
10 understanding of how this program runs, how the
11 hydrological features fit into what it is that the
12 District does.

13 So Neal, I'm going to give this to you.
14 You're welcome to stand or sit.

15 NEAL SUESS: Thanks, Stephanie.

16 First of all, I want to give you a little
17 bit of background on Loup Power District. We were
18 formed in 1933, basically to help with economic
19 development in the area around Columbus, and part of
20 that was to build the canal and the powerhouses that
21 are at Monroe and Columbus.

22 At that time, Lake Babcock was also built
23 as part of that. It was a plan that was hatched
24 really back in the 1800s by Mr. Babcock, who came up
25 with the plan for that, and it just kind of sat

1 until about 1933 when the economy was really hurting
2 in the area here. Lake North was added in the 1960s
3 to have an additional reservoir at -- for the
4 Columbus Powerhouse.

5 And at that point in time, Loup Power
6 District was a statewide agency. We owned
7 transmission lines throughout the state. We sold
8 power to various power districts throughout the
9 state. And we were a local power district at that
10 point in time also, but we were a statewide agency
11 and went that way with it.

12 The Monroe Powerhouse and the Columbus
13 Powerhouse are the only two generation facilities
14 that we at Loup Power District own. We own no other
15 power facilities that generate power. All the other
16 power in the state is owned by either municipalities
17 or the large power districts, NPPD, OPPD and Lincoln
18 Electric System. So again, this relicensing is for
19 the only power facility that we do own at this point
20 in time.

21 Again, the Project was conceived
22 specifically for the purpose of being able to meet
23 peak demand and the ability to cycle the unit at the
24 Columbus Powerhouse. The Monroe Powerhouse, as
25 we've talked about a number of times, is a run of

1 the river type unit, whatever water comes in at
2 Genoa, at the Headworks, goes through the Monroe
3 Powerhouse.

4 We don't have any way to store or pond
5 that particular water, so what comes in goes through
6 the Monroe Powerhouse. We do have a bypass at the
7 Monroe Powerhouse, which we've discussed before.

8 However, at Columbus we do have the
9 regulating reservoirs at both -- for both
10 Lake Babcock and Lake North, and that provides us
11 the capabilities of being able to peak with the
12 Columbus Powerhouse to meet the needs of the state.

13 And I say meet the needs of the state
14 because all of the electricity generated at the
15 Monroe Powerhouse and at the Columbus Powerhouse is
16 sold to NPPD under contract. We do not keep any of
17 it for ourselves. It all goes to NPPD to help meet
18 NPPD's needs for all the power districts and the
19 municipalities that they serve.

20 And just a little bit of background on
21 NPPD, they provide service to 91 of the 93 counties
22 in the state of Nebraska, so they are covering most
23 of the state of Nebraska, the power supply needs of
24 those guys. So we're a huge and integral part of
25 what NPPD needs as far as their power needs go.

1 Given all that, we operate the Project,
2 but NPPD dispatches the Project. In other words, we
3 provide -- we provide our water intake to NPPD, but
4 NPPD says, Here's how much we'd like you to generate
5 in a given hour over a given day at these particular
6 levels. So we rely pretty heavily on NPPD to tell
7 us where they need us to dispatch, again, to meet
8 their total load and total requirement needs for all
9 of their customers, not just Loup Power District.

10 So that's where we get into the peaking
11 mode. And during both the winter and the summer,
12 NPPD generally has what we consider a double peaking
13 type system where they peak in the morning and then
14 they peak again in the afternoon.

15 And so a lot of times what you'll see with
16 our operation is -- at the Columbus Powerhouse is
17 we'll be down at night. In the morning, sometime
18 around, maybe, 5 o'clock or so, we will start
19 ramping up. We'll run for about four, five, six
20 hours, shut back down again or go to some lower
21 level, and then late in the afternoon, say around
22 the 4, 5, 6 o'clock time period, we'll ramp back up
23 to meet the nighttime load needs and run until
24 basically NPPD gets over their peak, and then shut
25 down again. So that's been our typical operation.

1 And again, we've developed that in conjunction with
2 NPPD, really, again, to meet NPPD's needs.

3 John, I don't think I've said anything
4 there that is different from what you guys do.

5 JOHN SHADLE: No.

6 NEAL SUESS: But we also have a
7 contract with NPPD. And the thing that is important
8 is that every megawatt hour that we generate, NPPD,
9 you know, pays us for that megawatt hour of
10 generation. If we don't generate, NPPD does not pay
11 us.

12 And so it's very, very critical to us to
13 have that water because that helps us -- that helps
14 our -- all of our customers, you know, keep our
15 costs down. I mean, if we don't generate -- you
16 know, we're taking care of a canal and powerhouses
17 that aren't providing any benefit to our rate
18 payers, so it's very, very important for us to have
19 all the water that's possible that we take out of
20 the Loup River.

21 We do generate, again, for the benefit of
22 NPPD, for their most effective and economic point,
23 but it's all dollars -- it is dollars to us. And
24 really what it does is helps reduce our costs. We
25 purchase all of our power back from NPPD. And so

1 our hydro mix just goes to NPPD, and it's part of
2 their total energy mix. We buy all of our power
3 from NPPD and pay NPPD for that power, but -- and
4 then we provide the retail power to those customers
5 in the four counties -- Boone, Platte, Colfax and
6 Nance -- basically in the communities of those
7 areas.

8 So what we do with the revenue from the
9 hydro facility is it helps us with our capital
10 needs. It also helps us with our overall operation
11 and keeps the rates -- the retail rates to our
12 customers low.

13 So I guess where I'm really trying to get
14 at is to the extent that we don't have water, or to
15 the extent that water is not available to us, that
16 takes dollars away from our retail customers and
17 basically affects the cost to our retail customers,
18 basically raises the cost to them, which obviously
19 we don't want to do, which we're trying to protect
20 through all of this process.

21 So -- but in addition to that, in addition
22 to when it affects us, it also affects all of NPPD's
23 customers in the fact that if we don't have that
24 ability to peak or if that ability is modified, NPPD
25 is not able to dispatch us to the benefit of the

1 system, and they have to buy power on the open
2 market, which is obviously much more costly than
3 what we have out of the hydroelectric facilities.

4 So that's kind of a little bit of
5 background of where we're at as far as our
6 operations go. I don't believe there's any other
7 slides, Stephanie --

8 STEPHANIE WHITE: No.

9 NEAL SUESS: -- at this point in
10 time. But I guess if you guys have any questions
11 about our operations, just where we're at and what I
12 said -- I want you to understand, we try to take all
13 the water that we can, for the obvious reason that
14 as we generate power with that water, that helps
15 both us and NPPD as far as our economics go. So
16 we're very, very protective of our water, and we try
17 to do that.

18 Basically, we will take all of the water
19 up to 3,500 cubic feet per second that we can into
20 the canal. There is some leakage, obviously, up at
21 the -- at the Headworks that we just can't control,
22 given the fact that the equipment is 75 years old,
23 but we do try to maintain and take in as much water
24 as possible that's coming into the Loup River on any
25 given day.

1 And the only time we basically let any
2 bypass go is when we're above the 3,500 cubic feet
3 per second, or whatever leakage there might happen
4 to be at that point in time, or if there happens to
5 be something that we can't take -- from an
6 operational standpoint, that we can't take water in
7 and then we have to bypass it to maintain the system
8 conditions and maintain the safety of our employees
9 and of the canal as a whole.

10 That's a little bit of background on us.
11 Does anybody have any questions as to where we're at
12 right now?

13 KIM NGUYEN: Yes, I do. Can you hear
14 me?

15 NEAL SUESS: Yes.

16 KIM NGUYEN: In your contract with
17 NPPD, is there a requirement -- a minimum
18 requirement for generation?

19 NEAL SUESS: Yes, there is. We are
20 required -- I believe it's, like, a 90 percent
21 requirement, Ron? I'd have to go back and look at
22 it, Kim, but we have a requirement to take as much
23 water as we can to generate as much power as we can.
24 And I believe -- and I'd have to go back and look at
25 that contract and see what that is, Kim, but I

1 believe there's a 90 percent requirement in that
2 contract.

3 KIM NGUYEN: Ninety percent for the
4 water, or is there a generation number?

5 NEAL SUESS: There is no minimum
6 generation number, but there is a requirement in the
7 contract that says we will take -- and, again, I'd
8 have to go back and look at that contract -- it's,
9 like, 90 percent of the water available to us at the
10 Headworks, that we need to take that to the extent
11 that we can and generate power out of that to
12 provide to NPPD, and that was in our contract with
13 NPPD.

14 STEPHANIE WHITE: John, it looked
15 like you had a question.

16 JOHN SHADLE: Just maybe a comment
17 more than a question. This is John Shadle, Nebraska
18 Public Power District.

19 Just to maybe follow up on Neal's comments
20 with regard to peak power, you know, until people --
21 habits start changing or whatever or not and they
22 don't get up at 5 o'clock in the morning and demand
23 the power when they come home at night, or whatever,
24 we will find some kind of replacement for that
25 power, be it fossil or whatever.

1 So these hydro units are very important in
2 our mix of power or whatever or not. They're easily
3 brought up, they're easily brought down, and it's
4 very critical to Nebraska Public Power District as
5 far as our energy mix.

6 STEPHANIE WHITE: Kim, could you hear
7 that? Our microphones are breaking in and out. I
8 want to make sure you caught it.

9 RANDY THORESON: No. This is Randy.
10 We could not hear it very well.

11 NEAL SUESS: Let me -- I guess I can
12 summarize for John just a little bit.

13 Basically, you know, until people's habits
14 change and until the way they use power change,
15 right now, it's very critical for Loup Power
16 District's operation as far as NPPD's total
17 generation mix. Our units are very capable of
18 ramping up and down quickly to meet the power
19 demands of the people.

20 And right now, people utilize more power
21 in the mornings, starting about 5 o'clock when they
22 get up until about 8, 8:30 when they go to work, and
23 then when they come home at night, from the 4:30 to
24 5 o'clock time period, and this extends all the way
25 out to 11 o'clock, 12 o'clock, especially during the

1 summer when NPPD is meeting irrigation needs of the
2 customers throughout the state.

3 And it's very, very critical for us to be
4 able to provide that power to NPPD to really help
5 the economics of the state out. I've said that
6 before. But just reiterating what John said, that
7 capability provides -- and the ability, really, to
8 go up and down on a very quick note, very quick time
9 period, provides the operation necessities that NPPD
10 seeks in some of its power generation.

11 NPPD has quite a bit of baseload power,
12 which sits and operates on a fairly regular basis
13 but cannot ramp up and down. Our hydroelectric
14 facilities can ramp up and down fairly quickly, and
15 that provides some operating flexibility that we
16 give to NPPD that -- you know, we get paid, again, a
17 flat dollar per megawatt hour for whatever we
18 generate based on NPPD's costs during the year.

19 And irregardless -- I mean, and that's,
20 again, what we get paid for that generation, and
21 that's critical to us in helping keep our retail
22 rates low. We have low retail rates. And it also
23 helps the state keep their rates low because we have
24 some of the lowest rates in the country, and we want
25 to maintain that. We think it's very important from

1 an economic development standpoint, from a business
2 development standpoint, it's important that our
3 rates maintain their low level so we can attract
4 businesses and attract people into the state of
5 Nebraska. And we work very, very hard with NPPD and
6 the state to make sure that that's where we're at.

7 GEORGE WALDOW: This is George Waldow
8 from HDR.

9 Neal, you did not mention it, so I'm going
10 to point out that the reason that you get paid the
11 same amount for on and off peak generation is
12 because in many instances, utilities either buy or
13 sell power at a differential rate, whether it's on
14 peak or off peak.

15 In this case, because of the unique
16 relationship that NPPD has with Loup Power District
17 and NPPD, as Neal said, has the -- makes the call on
18 dispatching this power, they didn't feel the need to
19 differentiate whether it was on peak or off peak
20 because it's de facto under their control as far as
21 when they utilize the energy or the power.

22 NEAL SUESS: Yeah, thanks for that
23 clarification, George. And again, you know, it was
24 a negotiation between us and NPPD in the power
25 contract. And you know, we -- we are happy with

1 that contract. NPPD is happy with the contract.

2 But again, that ability to dispatch the
3 unit to their needs makes it what's attractive and
4 valuable to NPPD as far as the whole state goes. It
5 is very important to NPPD to be able to dispatch
6 that. Because other than your own hydros, I think
7 we're the only one that you can do that with.
8 Because Central tells you when they're going to
9 dispatch, don't they, John, if I remember the
10 contract right?

11 JOHN SHADLE: I think we have some
12 say-so with regard to Central's situation, Neal, and
13 I think we do also get some power from Wahoo. I
14 don't know exactly what our relationship is with
15 Wahoo with regard to bringing pumps on and off that
16 are --

17 NEAL SUESS: Yeah, so really other
18 than your -- you have some of that, but other than,
19 obviously, your own gas-fired units, you really
20 don't have the opportunity to cycle with anything
21 other than the Columbus hydro at this point in time.

22 JOHN SHADLE: Right.

23 NEAL SUESS: So that -- that does
24 provide that advantage.

25 JOHN SHADLE: And I don't want to,

1 you know, beat this dead horse or whatever, or not,
2 but this is a renew -- you know, we could debate
3 whether or not it's a renewable resource or
4 whatever, or not, but if we're going to be looking
5 to replace those things, it will be with fossil
6 fuels and other things that are maybe less
7 environmentally friendly. So I'd just like to keep
8 that in the forefront, if I could.

9 NEAL SUESS: And I know there's a lot
10 of people out there that don't call it renewable. I
11 do call it renewable, so I don't care what anybody
12 else says about it. It's a renewable resource in my
13 mind.

14 So anyway, that's a little bit of the
15 background of our operations and where we're at and
16 why we have proposed what we have to this point in
17 time.

18 And I'm going to turn it back over to you,
19 Stephanie, and let you guys move forward, unless
20 there are other questions at this point in time.

21 KIM NGUYEN: One more, Neal. Is the
22 power sales contract on your website somewhere, or
23 how can I get a copy?

24 NEAL SUESS: I don't believe it's on
25 the website, but we will put a copy of the contract

1 on the website if you want it, Kim. We will make
2 sure that it's available to everybody to take a look
3 at.

4 KIM NGUYEN: Yes, please. Thank you.

5 NEAL SUESS: We will do that.

6 STEPHANIE WHITE: Any other questions
7 for Neal? Okay. You can take that right over to
8 Lisa.

9 The next thing on our agenda today --
10 we're running a little bit ahead, 15 minutes ahead
11 at this point, but I bet we'll probably catch up.

12 The next thing on the agenda is an
13 overview of Scoping Document 2. Lisa will talk a
14 little bit about what was in that document. The
15 Study Plan No. 13 was a direct result of Scoping
16 Document No. 2, so I'll let her talk about that.

17 LISA RICHARDSON: Thanks, Stephanie.
18 I'll try to speak as close to this as I can.

19 And I guess what I'm going to summarize
20 here, Jeff, at the last meeting, you asked about
21 what are the differences in what was in Scoping
22 Document 2 versus what was in the original scoping
23 document and how have those things been addressed.
24 And then you sent out a follow-up e-mail after the
25 meeting with kind of that same question, and we

1 indicated that we would be addressing it. So this
2 is intended to get to that question.

3 These are the -- a list of the items that
4 were added or different in Scoping Document 2 than
5 were in Scoping Document 1. The first one was an --
6 related to the bypass reach temperature.

7 I guess I'll say, on the slides -- on the
8 phone, we're on Slide No. 9.

9 So our response to that inclusion of the
10 bypass reach temperature, the emphasis on the
11 Diversion Weir to Beaver Creek was added to
12 Scoping Document 2, and our study plan will also
13 include that -- that emphasis, as we discussed last
14 time, with our objective. We modified an objective
15 to include that emphasis as was included in
16 Scoping Document 2.

17 The second item was related to fish
18 passage. FERC had indicated -- in our original
19 study plan, we talked about fish passage related
20 to -- specifically to channel catfish, and FERC
21 indicated that they wanted fish passage to be
22 examined related to all affected species. And in
23 our study plan, we will revise that to indicate
24 that. We will be able to look at what are the
25 velocities and flow, and how does that relate to the

1 swimming speeds of all fish that may be affected,
2 not just channel catfish.

3 The next item was PCBs. FERC had
4 indicated in Scoping Document 2 a concern related to
5 the effects of Project operations on PCB
6 mobilization within the settling basin, and we have
7 prepared -- since Scoping Document 2 was issued and
8 the proposed study plan was issued, we've begun
9 preparing a 13th study, which is PCB sampling at the
10 settling basin. We'll be discussing that this
11 afternoon -- or I'm sorry, that's on the agenda for
12 tomorrow. But we'll be discussing that new study
13 and our concept and what we're proposing.

14 The next item was an issue that FERC added
15 related to irrigation. Basically, it was in
16 response to the comments that had been received at
17 the scoping meetings. FERC included an assessment
18 of the effect of any change to Project diversions on
19 irrigation from the canal. That is something that
20 we haven't specifically changed the study plan or
21 added to the study plan, but it would be discussed
22 and FERC would analyze it, just an assessment, but
23 there's no study related to that.

24 These next ones on Slide 10 are similar to
25 that one. There was a comment about the Nebraska

1 Natural Legacy Project Tier 1 Species, including
2 evaluating the need for conservation and management
3 actions. That was a comment that was received
4 during scoping. FERC added that to
5 Scoping Document 2. That's also something that will
6 be evaluated as part of the environmental review.
7 No specific studies related to that.

8 The same on whooping crane foraging
9 habitat, FERC indicated that as affecting the bypass
10 reach. Again, not a specific study being proposed,
11 but we will evaluate that as the normal course of
12 our environmental review.

13 Off-road vehicle recreation, this was a
14 comment that would have been added to Scoping
15 Document 2 in response to the large number of
16 comments we received related to ATV or OHV
17 recreation, and just the idea that that would be --
18 the assessment of providing those opportunities
19 would be included in the EA and in our environmental
20 evaluation as part of the license application. And
21 the same thing for trail recreation, assessment of
22 providing opportunities for that type of recreation
23 as well.

24 So those were the items that we identified
25 that were different in Scoping Document 2 than were

1 included in Scoping Document 1 and a little bit of
2 an overview of how we're addressing those items.

3 STEPHANIE WHITE: Any questions for
4 Lisa or for David, I suppose? You can speak on
5 behalf of FERC today. Any questions about Scoping
6 Document No. 2?

7 MARK IVY: Lisa, this is Mark Ivy. I
8 was wondering if you could clarify what you mean by
9 assessment of providing opportunities under the OHV
10 trail recreation.

11 LISA RICHARDSON: Mark, I believe
12 there I was trying to quote what FERC had identified
13 in Scoping Document 2. Let me pull that out.

14 KIM NGUYEN: Yeah, we're looking at
15 it too. Just a second.

16 DAVID TURNER: This is David. I
17 think where we were going with that is that
18 typically, if we look at recreational opportunities
19 at a project, we're looking at what are the demand
20 and needs of the project, how are they meeting those
21 demands and needs. And obviously there's a huge
22 contingency and issues associated with that.

23 There may not be any need to enhance above
24 what is already being provided, but that's generally
25 what we're looking at from an assessment point of

1 view, what's being -- what's being utilized in the
2 project, how is it being utilized, what effects is
3 it having not only on the natural environment, but
4 is the project meeting those needs and those
5 demands, is there something that we should be
6 considering requiring our licensees to do to better
7 enhance those recreation opportunities to the extent
8 it's possible.

9 There may not be anything at all; there
10 may be something. So that's kind of what we're
11 looking at there when we say assessment of those
12 opportunities.

13 RANDY THORESON: This is Randy from
14 NPS. I have a similar question. What format would
15 that be, or is it folded in with the EA?

16 LISA RICHARDSON: I guess, Randy and
17 Mark, we were paraphrasing what was in Scoping
18 Document 2. Specifically it says that -- and this
19 is FERC's response -- We have identified the issue
20 of providing trail opportunities on lands within the
21 Project boundary and will provide our assessment in
22 the EA. I guess I read that to mean analysis.

23 DAVID TURNER: Exactly. This is
24 David again.

25 It's, again, whether or not, depending on

1 your recreational surveys, what those indicate
2 may -- just play it out. You may -- you're doing
3 some proposed recreation surveys of the parties.
4 They may say, We need to see some more trail
5 enhancements. We'll look at that in terms of what
6 benefits that would provide, how much it would cost,
7 and see if it would be something that we would want
8 to provide. And we would do that in the EA, so --

9 LISA RICHARDSON: Does that help,
10 Randy?

11 RANDY THORESON: Yes. For me, it
12 does.

13 LISA RICHARDSON: Okay. Any
14 other questions?

15 MARK IVY: Yeah, I just want to make
16 sure everyone is on the same page with what was
17 being said here.

18 LISA RICHARDSON: Any other
19 questions? I guess, Jeff, I know you brought this
20 up as an issue a couple times. Does that address
21 what you were wanting to know about the differences
22 with Scoping Document 2?

23 JEFF RUNGE: Yes.

24 STEPHANIE WHITE: Any other comments
25 or questions about Scoping Document No. 2? We can

1 come back to these during our discussion if we find
2 we need further clarification as it relates to a
3 proposed study plan.

4 But right now I'm going to let Lisa
5 transition into the next part of today, which is to
6 give you an overview of the work that has happened
7 on Studies 8 through 11, which we call the
8 Recreation, Land Use and Aesthetics group. It
9 started out as Studies 8, 9, 10 -- and 11 actually
10 wasn't part of that group, but we'll give you an
11 update on Study 11 as well.

12 So Lisa, I'll let you do that.

13 LISA RICHARDSON: Okay. Moving on to
14 Slide No. 11, Studies 8 through 10 -- which were
15 essentially the recreation studies, the recreation,
16 land use and aesthetics -- were discussed in a
17 meeting at the District's offices on May 11. As I
18 mentioned earlier, the Game and Parks and the
19 National Park Service, FERC, and some local
20 recreation agencies were in attendance, both CART
21 and NOHVA were there.

22 And we discussed in detail Studies 8, 9
23 and 10, and the result of that -- of those meetings
24 are up here on the slide. Study 8, the
25 recreation -- the original title was recreation user

1 survey, but that study -- it was determined at that
2 meeting that that would be combined with the creel
3 survey. So we're not going to go out and do a
4 separate recreation use survey and a separate creel
5 survey. We're going to combine those and do all of
6 that at one time.

7 Our study plan had originally proposed a
8 separate survey of NOHVA, kind of getting to the
9 idea that there were so many comments from the NOHVA
10 group during scoping. The discussion on May 11, all
11 the groups agreed that that was not necessary, to
12 specifically single out a group. So ATV or OHV
13 recreation is a topic in the overall recreation use
14 survey, but we're not sending anything out
15 specifically to NOHVA.

16 And a final item on Study No. 8 is the
17 folks who were at that meeting were going to provide
18 comments on survey questions that were included in
19 the proposed study plan. Mark, I did receive your
20 comments. I haven't received comments from anybody
21 else. But if you have anything, Game and Parks or
22 others, if you want to send it in in the next couple
23 of days, that would be great. So that's where Study
24 No. 8 ended up.

25 Study No. 9 is the creel survey. And as I

1 discussed with 8, that was agreed to be combined
2 with the recreation use survey. And because of
3 that, the methodology will be revised slightly. The
4 original methodology included an instantaneous
5 count, and that would not be reasonable with the new
6 methodology of including recreation use in that.

7 Study No. 10 was also discussed, and
8 that's the land use inventory. That study really
9 remained unchanged. There's -- we'll just continue
10 with that study as it was originally proposed.
11 There were no modifications requested or needed.

12 Any questions about the recreation
13 studies?

14 MARK IVY: Lisa, I just want to make
15 a quick comment. We agreed in principle to look at
16 whether or not we can combine those two studies, but
17 we need to see the revised methodology before we can
18 say we're not going to do both those studies.

19 LISA RICHARDSON: Okay. We'll note
20 that.

21 Okay. Moving on to No. -- Study No. 11,
22 which is Section 106 compliance. On May 5, we had a
23 meeting at the District's offices with the State
24 Historic Preservation Office, members from there.
25 We went over the Section 106 plan and took those

1 folks on a tour of the District's facilities.

2 And the result of that meeting is that
3 that study plan also remains unchanged. The SHPO
4 was satisfied with the studies that are proposed as
5 far as the potential archaeological survey, the
6 documentation package for the historic district, and
7 the information to be included. So that particular
8 study, there was no changes to that either.

9 Any questions or comments related to
10 Study No. 11?

11 RANDY THORESON: This is Randy again.
12 Can you hear me?

13 LISA RICHARDSON: Yes.

14 RANDY THORESON: Oh, I'm sorry,
15 there's a buzz at this end. (Inaudible.)

16 LISA RICHARDSON: I'm sorry, Randy,
17 what was that?

18 RANDY THORESON: Can you hear me
19 okay?

20 LISA RICHARDSON: We can hear you
21 now.

22 RANDY THORESON: Are you wanting the
23 comments on Studies 8 through 11 by June 25, or
24 hopefully before that?

25 LISA RICHARDSON: I guess our intent

1 is if there are things that we need to discuss back
2 and forth, we'd like to be able to do that before
3 your deadline for filing formal comments. So the
4 deadline for comments is June 25, but if there are
5 things that we can discuss back and forth and come
6 to agreement on before that date, which would maybe
7 eliminate the need for formal comments, that's, of
8 course, our preference. We want to work
9 collaboratively before those comments are due.

10 RANDY THORESON: Thank you.

11 LISA RICHARDSON: Okay. Now, I'd
12 like to do just a brief little recap of our April 21
13 meeting.

14 We -- the primary focus of that was the
15 aquatic resources discussion, however, we did
16 provide an overview of the entire study plan,
17 1 through 12, in the morning last time, gave you a
18 quick overview of the goals, objectives and
19 activities.

20 We also provided an overview of the study
21 requests or elements that were made as part of
22 scoping that we did not include in our proposed
23 study plan and provided some discussion or provided
24 some rationales to why we didn't include specific
25 pieces and then provided an opportunity for comment

1 and discussion on that. There wasn't really any
2 discussion or disagreement on those particular items
3 at the last meeting. We also sought consensus on
4 the goals and objectives for Studies 1 through 5 and
5 7, which, as we call them, are the aquatic resources
6 studies.

7 After that meeting, we put together a memo
8 that outlined the outcomes of that meeting,
9 basically identifying the goals and objectives as we
10 were able to identify them from our notes and from
11 reviewing the transcript, as to how the goals and
12 objectives ended up at the end of that meeting. We
13 sent that out early last week. We also -- there was
14 a meeting transcript prepared, and that was also
15 posted to the website. That's available for anybody
16 to review.

17 So I think that kind of summarizes where
18 we were at on the April 21 meeting. Are there any
19 questions related to what was discussed or decisions
20 that were made at the April 21 meeting, comments on
21 the outcomes?

22 ROBERT HARMS: Bob Harms, Fish and
23 Wildlife Service. I have a question about the --
24 I'm assuming that we need to take the time to review
25 that document -- we need to take the time to review

1 that document to make sure that it accurately
2 reflects our comments from the April 21 meeting and
3 then get those back to you?

4 STEPHANIE WHITE: Before we answer, I
5 want to make sure, Randy and Kim, could you hear
6 Bob's comment?

7 KIM NGUYEN: I could.

8 STEPHANIE WHITE: Okay, great.

9 RANDY THORESON: Yeah, I could hear.
10 A little fuzzy, but I could hear it.

11 LISA RICHARDSON: Okay. I guess our
12 intent is not to re-dig into everything this morning
13 on all those, but if you have comments, we have an
14 opportunity to discuss them.

15 ROBERT HARMS: Yeah, that's not my
16 intent for asking this question. It's just that we
17 need to -- my question is, I guess, we need to look
18 at that not at this meeting, but provide some
19 comments to it if we have any?

20 LISA RICHARDSON: If you have any,
21 yeah, I guess you should provide us comments. My
22 hope is that we're all in agreement on those now.
23 Because if those change after today, that's going to
24 kind of throw a wrench into discussion of the
25 activities, which is what we're going to do today.

1 So I guess we maybe should have made that a little
2 more clear.

3 ROBERT HARMS: And it just came out?

4 LISA RICHARDSON: It was sent out
5 last week.

6 ROBERT HARMS: We will look that
7 document over ASAP and provide any comments. We may
8 not have any, we may have some back to you all.

9 STEPHANIE WHITE: Okay, Jeff.

10 JEFF RUNGE: Yeah, there is certain
11 study objectives that we discussed. And in a few
12 instances, we never mutually agreed on a certain
13 objective, but it was something that HDR would take
14 back and think about and rewrite. And there's a
15 certain number of those objectives here that we can
16 bring up when we talk about specific methods.

17 STEPHANIE WHITE: You're going to see
18 those today, actually. We've asterisked the ones
19 that we didn't reach consensus on at the last
20 meeting, and those we will open up for some
21 discussion today. So if you catch one, Jeff, that
22 we haven't noted in the slides, please bring that up
23 today.

24 JEFF RUNGE: Yes, definitely. And
25 like I said, it's probably more appropriate to

1 discuss them as these sections come up.

2 STEPHANIE WHITE: Right.

3 LISA RICHARDSON: Right. And I know
4 that when we talked about the objectives, some of
5 the objectives, there was general agreement on the
6 objective, but it was somewhat dependent on how the
7 methods ended up. So we understand that that will
8 be part of the discussion today. But again, we're
9 not going to go in detail over every objective
10 because we feel like we did get pretty good
11 consensus on most of them last time.

12 STEPHANIE WHITE: That was a good
13 question, Bob. Anything else before we dig into
14 Study No. 12?

15 Okay. Let's move into Study No. 12, which
16 is Ice Jam Flooding on the Loup River. This is the
17 first time -- yep, there's a question in the corner
18 from Jeff. Here you go, Jeff.

19 JEFF RUNGE: I've got a couple of
20 questions for FERC, and I really don't know the
21 proper place to introduce these questions. But
22 since we're getting into the specific sections here,
23 I'd like to have these addressed prior to the
24 specific sections.

25 I guess are these studies intended to be

1 all-inclusive and will be incorporated into the EIS
2 and the action alternatives, or I guess has FERC,
3 through experience, found that there is always
4 supplemental evaluations that are needed? Because
5 right now we don't have action alternatives on the
6 table, and it's very hard to customize your studies
7 based on what these action alternatives may be.

8 And since I've got the mike here, I'll
9 just lead off to my second question. One of the
10 seven study criteria is some relative cost
11 associated with these individual projects and with
12 these studies as a whole, and I didn't know if FERC
13 had information available that looked at similar
14 type projects? Similar type projects, I'm not sure
15 how you would say they were similar, maybe based on
16 average annual megawatts produced, but it would be
17 good to see a comparison of what the current budget
18 is or what the anticipated budget is for this Loup
19 Power District and how that compares to other
20 projects.

21 STEPHANIE WHITE: So there are two
22 questions on the table. And I saw David take the
23 mike, so I'll let you answer them in whichever order
24 you choose.

25 DAVID TURNER: With regard to the

1 first one, these studies are intended to develop the
2 information base on which we will all develop our
3 PM&E measures. Those will become the action
4 alternatives.

5 So yes, this is your chance now, and this
6 is everybody's chance now to say what the issues
7 are, what kind of information base do we need to
8 address those questions, and to develop our proposed
9 PM&E measures.

10 When the application is filed, the door is
11 closed for getting additional information. We're
12 not going to seek additional study requests as we
13 typically did in our traditional licensing process.
14 It doesn't mean that the commission may review
15 something and have the opportunity to ask on its own
16 for additional information, but this is the time in
17 which we want to seek the kind of information you
18 believe is necessary to address the issues that
19 we've identified. So this is the base on which we
20 make our decision.

21 With regards to your second question and
22 the study request, I think you misconstrued what
23 we're trying to define there with that level of
24 effort and cost.

25 When we put together the study request

1 criteria in conjunction with industry, Fish and
2 Wildlife Service, fisheries, the Tribes, when we put
3 together the integrated licensing process, the whole
4 conglomerate basically said -- in evaluating studies
5 and trying to define studies that are really
6 relevant to a project, we came up with seven
7 criteria. And they're intended to be guidelines
8 that help the parties and the commission evaluate
9 those studies.

10 In the last one, in terms of level of
11 effort and cost, it is really geared towards two
12 aspects. One, trying -- well, the whole thing is
13 really geared towards trying to define a study,
14 telling the applicant and the commission, and
15 working together to try to define how to go about
16 gathering the information.

17 We don't want the historical problem of,
18 We want this kind of information, and the applicant
19 goes off and does its thing and comes back and says,
20 That didn't answer the question. That's not what we
21 intended. We want to work through this thing to
22 find out how that information should be gathered in
23 consistency so we all know that this is the
24 information base we're going to work from.

25 Part of those questions are level of

1 effort and cost. When we say, We want you to go do
2 X, Y and Z, it carries with it a certain cost. And
3 this that we want you to do, this is the cost it
4 has.

5 When the commission comes down to a
6 disagreement in our study determination, we're going
7 to look at the applicant's proposal. He may propose
8 something different, and that will carry with it a
9 certain cost in terms of the level of effort.

10 The commission is going to try to weigh
11 the quality of the information it gathered for that
12 lesser cost of a study versus the Cadillac or
13 something that somebody else wants and what
14 incrementally do you get at. So it really isn't
15 geared towards what the applicant can afford to do,
16 but the quality of information you get relative to
17 that cost.

18 Does that answer your questions?

19 JEFF RUNGE: Yes.

20 STEPHANIE WHITE: Any other process
21 questions before we delve into our first study
22 today?

23 Okay. Let's talk about study -- proposed
24 Study Plan No. 12, which is Ice Jam Flooding in the
25 Loup River. Now, through some -- some discussions

1 with the DNR, the material we're going to talk about
2 today is a little bit different from what was
3 originally published in our original study plan. So
4 already, this one has evolved a little bit to help
5 respond to some of the concerns that the DNR issued.

6 I'm going to let George walk through this
7 study in its entirety, so we'll start with the goal,
8 we'll walk through the objectives and the
9 activities, and then we'll come back and we'll
10 discuss this goal as a group.

11 So George, go ahead.

12 GEORGE WALDOW: Thank you, Stephanie.

13 To clarify further what Stephanie just
14 told you, when we put the proposed study plan
15 together, we had not been able to meet as
16 extensively with DNR staff as we had hoped to do,
17 through no one's fault. It was simply workload and
18 availability of time.

19 And so we put together the best -- the --
20 the best approach that we could. And as Stephanie
21 said, we have had additional discussions with DNR.
22 We think we understand a little better what they
23 were looking for, and so the modifications -- some
24 modifications are embedded, and I'll describe those
25 as we go forward. Could I have the next slide,

1 please?

2 STEPHANIE WHITE: Yes. Can those of
3 you on the phone hear George?

4 KIM NGUYEN: Yes.

5 RANDY THORESON: Yes.

6 STEPHANIE WHITE: All right.

7 GEORGE WALDOW: Okay. Thank you.

8 The goal that was on the screen is the
9 same exact goal that was in the original proposed
10 study plan. The changes occur in the objectives.
11 We're now looking at Objective 1, and this -- this
12 objective has changed. It originally started out
13 with three objectives. We've since reduced that to
14 two.

15 And Objective 1 now reads, To characterize
16 the available information -- and then we list it as
17 ice observation reports, associated atmospheric
18 temperature data, and associated gage flow data --
19 and its relevance to performing a quantitative or
20 qualitative analysis.

21 And under that -- let me back up a minute.

22 The objective actually is a combination of
23 what was previously Objectives 1 and 2, with the
24 addition of the term quantitative in response to
25 DNR's significance given to that term.

1 And then the associated activities that
2 we'd now combine under this objective is to collect
3 and review the DNR ice reports for the Loup River.
4 These are reports that were taken since 1993 through
5 the current year.

6 Activity No. 2 is, To collect flow and
7 temperature data, and that was previously included.
8 Activity 3 is to review historic ice jam and related
9 flood information. We think this was important for
10 reasons we'll get into later. But basically, the
11 Corps studies did not go back prior to the existence
12 of the hydro project.

13 Finally, Review Project operations
14 relative to ice jam flood events. And we determined
15 that the District has -- although they're not in
16 electronic files, they do have records of when
17 they've operated and released flow -- or curtailed
18 diversion of flow due to frazil ice in the Loup
19 River.

20 And finally, we added this element,
21 Coordinate with the Corps of Engineers or other
22 qualified entity regarding the suitability of the
23 available data for performing a qualitative or
24 quantitative analysis.

25 Next slide, please.

1 STEPHANIE WHITE: It's right in front
2 of you, George.

3 GEORGE WALDOW: Thank you.

4 Objective 2 is, To perform a qualitative
5 analysis to determine if a relationship can be found
6 between Project operations and the occurrence or
7 severity of ice jam flooding in the Loup River
8 bypass reach.

9 This objective hasn't changed much. The
10 text was revised slightly, but probably not with
11 regard to its initial content. I'll leave that to
12 you to compare against the original document.

13 And the activities that are proposed under
14 this objective to address it would be, Update the
15 1994 Corps of Engineers report, which included
16 tables and graphs relative to the bypass reach.
17 That would be done utilizing the previously
18 mentioned data that's now available.

19 And, Plot the flows in the Loup River
20 Power Canal and the Loup River bypass reach from
21 November to April of each of the intervening years.
22 And the purpose of that would be to actually compare
23 the flow that was in the canal and in the bypass
24 reach over this winter ice period for each year, and
25 this will demonstrate when water was diverted and

1 how much water was diverted whenever conditions
2 warranted it.

3 And as background, I'll add that for those
4 that weren't part of the original discussion on this
5 element, the way that the Project is operated is
6 when the District needs to curtail their diversion
7 activity when there is floating frazil ice coming
8 down the river.

9 And the reason for that is if the ice is
10 admitted into the canal system through the settling
11 basin, the tendency would be when the water slows
12 down, for the ice to bulk up in the canal system and
13 the possibility exists for it to freeze and form a
14 block so that they would not be able to divert water
15 until the spring thaw. So the policy has always
16 been when there's ice floating down the river, to
17 close the diversion gates until that ice passes by
18 the intake works.

19 I think that's the last slide. So we
20 can --

21 STEPHANIE WHITE: It is.

22 GEORGE WALDOW: -- unless there's
23 questions here, we can go back to the -- are we
24 going to do our cards?

25 STEPHANIE WHITE: Yep. So let's

1 start with the goal. We'll go back and discuss that
2 first as a group. As George -- there's one question
3 over here. Hang on.

4 LISA RICHARDSON: Can you explain the
5 cards? Jean wasn't here last time, Bob wasn't here.

6 STEPHANIE WHITE: Yep.

7 NEAL SUESS: Stephanie, I guess I
8 just want to add a little bit to what George says
9 about our operation, and maybe this is an important
10 point for everybody to understand.

11 In the winter, or when it starts getting
12 cold, what the District tries to do is form an
13 icecap at the intake structure and in the settling
14 basin in order to let the water flow underneath the
15 icecap into the settling basin. And to the extent
16 ice comes into the settling basin, it has a tendency
17 to basically block water from coming into the
18 settling basin, and therefore causes diversion into
19 the bypass reach.

20 Obviously, what the District would like to
21 have is to form that icecap to allow the flow to
22 come in similar to a tunnel where it's -- where the
23 water is isolated where we can take in water at that
24 point in time. And then, you know, any water that
25 we can't take goes down the bypass reach.

1 I think it's important for everybody to
2 note that -- two things. You know, once ice starts
3 forming, we bypass water into the bypass reach, once
4 that frazil ice starts forming. Because again, if
5 it -- if we do get a jam, either at the intake
6 structure or in the settling basin, all the water is
7 going to go past the diversion structure and into
8 the bypass reach because we don't have the ability
9 to take water at that point in time.

10 So the District is very, very limited, to
11 a degree, as to what our operations can do during
12 ice events as far as regulating flow into the bypass
13 reach. If we have the icecap, we generally can take
14 a set specific amount of water, and then everything
15 else goes down the bypass reach.

16 If ice does start forming and would have
17 the -- for whatever reason, would block either in
18 the settling basin or the intake structure, that
19 water is going to be bypassed and go into the bypass
20 reach.

21 And so I just want everybody to understand
22 that a little bit as we move forward into this goal
23 and in the discussion of the ice jam flooding on the
24 Loup River.

25 STEPHANIE WHITE: George?

1 GEORGE WALDOW: Thank you, Neal.

2 That's an excellent summary.

3 And I would add to that, Ron is sitting
4 there being very patient, but I'll try and explain
5 what he helped us understand when we were speaking
6 with DNR. And that is that the -- the goal that
7 Loup operates with in the wintertime, in addition to
8 forming this ice tunnel that Neal describes, is
9 basically to maintain that tunnel by maintaining a
10 constant or very relative constant flow through the
11 canal system. And that's -- that's made easier, of
12 course, because the river variation typically isn't
13 that great during the winter.

14 And it's important, when there's ice in
15 the canal system, that the flow not increase
16 drastically because it has the potential -- the ice
17 has formed around the bridge piers, and it would
18 have the potential to lift the piers right out of
19 the river bottom, canal bottom.

20 So the thing that the District is looking
21 for in the winter is two part, establish the ice
22 cover, and two, not mess with it, but operate the
23 Project on a very consistent daily flow rate all the
24 way down to the regulating basins. Those would be
25 the two -- the two elements.

1 And their ability to change from that
2 operation, as Neal said, is really limited pretty
3 dramatically by the physical conditions of the -- of
4 the configuration of the Project and winter ice
5 conditions.

6 Another issue is in the spring when there
7 tends to be a rapid thaw sometimes accompanied by
8 precipitation, there's a breakup event, that it's
9 described as. And when the ice breaks up, the river
10 is rising and all of a sudden you get a potential
11 for a spring flow event, that all of a sudden these
12 winter conditions are no longer present. And that's
13 when there's a lot of broken ice, sheets of ice
14 broken and coming down the river along with trash,
15 trees, debris.

16 And so Loup, at that point in time, has to
17 curtail their diversion so they don't take in this
18 additional material, in addition to ice, but tree
19 branches and limbs and all these other things that
20 they don't want in their settling basin. And so
21 they curtail the operations until these flows are
22 past or somewhat lessened so they can reopen the
23 gates.

24 STEPHANIE WHITE: Any other questions
25 of an operational nature? Okay.

1 Now, we have one microphone per side of
2 the table. So when you're speaking -- I'm going to
3 keep this one in my pocket, but I'll pinch hit as
4 needed.

5 I'd like to go through and talk about this
6 goal. You all note that you've got a set of cards
7 on your -- right in front of your place. So those
8 of you that have been with us for the last couple of
9 meetings know how we play this piece.

10 Red -- after we go through the discussion
11 that we've gone through today on the study plan,
12 red -- it's how you feel about this goal, whether or
13 not it's objectionable. The red means, This
14 absolutely cannot stand, we need to discuss; yellow
15 is, I'm okay with it, there are a couple of concerns
16 I have that I'd like to talk about; and green
17 indicates that this goal is okay as it stands.

18 So just to get a quick sense of how you
19 feel about this goal, the goal of the study of Ice
20 Jam Flooding on the Loup River is, To qualitatively
21 determine if the operations of the Loup Power Canal
22 has a material effect on the formation of ice jams
23 or a material effect on the severity of flooding
24 caused by ice jams in the Loup River bypass reach.
25 That's the goal.

1 Let's take a quick pulse of your cards.

2 Again, red, I strongly object; yellow, I have some
3 questions; green, It's fine as is.

4 All right. I see -- I've got a -- your
5 vote?

6 FRANK ALBRECHT: Do we get one vote
7 or two?

8 STEPHANIE WHITE: You may all vote.

9 Okay. So I've got a couple of yellows and
10 a red. Jean, I'm going to let you start and I'll
11 pass the microphone down to you and then we'll just
12 pass it down on this side of the table. Go ahead,
13 Jean.

14 JEAN ANGELL: This is Jean Angell
15 from the Department of Natural Resources. We did
16 meet with HDR and Loup Power about our concerns, and
17 mostly about the ice jam flooding on the Loup River.

18 Just a cursory look at what is said here
19 as the goals, one would think it's just fine. In
20 looking in depth at what was said at the meeting,
21 though, DNR does not want a qualitative study, they
22 want a quantitative study. They want a study of all
23 the information, not just the information since the
24 1993 flood.

25 There is a lot of information prior --

1 including that flood and prior, and the Army Corps
2 of Engineers and the Cold Regions Research and
3 Engineering Lab did a study and they noted they
4 certainly needed more data, but they had concerns
5 even then.

6 The concerns were, of course, the
7 operation of Loup Power, is there -- is the
8 operation of Loup Power somehow contributing to
9 flooding on the Loup River. And we believe a
10 qualitative study is not going to get there.

11 Certainly, they will likely want to do a
12 qualitative study first just to update the study
13 that was done in 1994, but we believe that that just
14 is not going to get there as far as answering the
15 question, Is the operation of Loup Power District
16 causing any flooding, adding to the flooding, things
17 like that.

18 As far as the objectives and associated
19 activities --

20 STEPHANIE WHITE: I might just stop
21 you right there, if I can. Let's hold our
22 discussion right now on the goal. And Jean, I think
23 your primary concern was that as it states now, it's
24 qualitative only, and it sounded like your primary
25 concern was that it include a quantitative component

1 as well.

2 JEAN ANGELL: Yeah, that is the
3 biggest concern we have. And if the -- if the
4 section that says, Or is there a material effect on
5 the severity of flooding caused by ice jams in the
6 Loup River bypass reach, if that includes not just
7 the winter operation but the year-round operation,
8 then that's fine as well.

9 STEPHANIE WHITE: So it's two things,
10 really. It's year-round analysis --

11 JEAN ANGELL: Correct.

12 STEPHANIE WHITE: -- and it's
13 quantitative analysis.

14 JEAN ANGELL: Correct.

15 STEPHANIE WHITE: Okay. So those are
16 the two concerns.

17 I think, David, did you show a yellow card
18 as well? Go ahead.

19 DAVID TURNER: Actually, Jean kind of
20 got to one of my questions, so I won't raise that
21 one, but I do have another question.

22 So is DNR's concern, when you -- your last
23 qualification there was year-round operations. Is
24 there any evidence that there is problems with
25 flooding year-round, or is it just the icing issues

1 in the wintertime?

2 JEAN ANGELL: No, there's no evidence
3 that Loup's operation year-round causes flooding.
4 We are concerned about the ice jam flooding.

5 What the concern was that was initially
6 raised by the Corps in their Section 22 study was
7 they believed that the operation of Loup most of the
8 year taking the water out of that river and there
9 being very little water going down that certain
10 reach, it's changed the morphology of the river.

11 They're -- they were concerned about has
12 the sedimentation changed, has the channel degraded,
13 things like that, the morphology. Also, because of
14 that change and the less water, are there more
15 things growing in the floodplain, are there more
16 things growing in the channel, has the channel
17 narrowed.

18 STEPHANIE WHITE: Okay. Mary, did
19 you also have a comment?

20 MARY BOMBERGER BROWN: Yeah. Thank
21 you.

22 Ice jams and flooding are tremendously
23 useful in constructing and maintaining nesting and
24 migratory habitat for the terns and the plovers and
25 for the whooping cranes. So I would like to see an

1 aspect in here touching on whether the ice jams
2 are -- and the flooding is clearing and maintaining
3 sandbars in this stretch of the Loup River.

4 It's a way of improving and maintaining
5 and constructing necessary migratory and nesting
6 habitat for these three species, and I think it
7 would be useful to include that at this point in the
8 study.

9 STEPHANIE WHITE: Okay. So for those
10 of you participating on the phone, I've written down
11 three things regarding Study 12, and still we're
12 talking about goal.

13 One is the inclusion of a quantitative
14 analysis. Second is the year-round analysis. And
15 third, as Mary just pointed out, an inclusion of the
16 impact on sandbars as it relates to bird habitat.

17 Did I catch that?

18 MARY BOMBERGER BROWN: Yes, that's
19 exactly it.

20 STEPHANIE WHITE: Okay. So let's
21 open it up for discussion on those three things.

22 DAVID TURNER: Particularly, Kim, do
23 you have comments?

24 STEPHANIE WHITE: Kim, David has
25 asked if you've got some comments.

1 KIM NGUYEN: I do.

2 STEPHANIE WHITE: Okay. Go ahead.

3 KIM NGUYEN: I just didn't know if
4 you were coming to the phone yet.

5 To follow up on David and Jean's comments
6 on the year-round flooding study, the goal of this
7 study was the ice jam flooding on the Loup River.
8 I'm wondering if that -- it sounds to me like maybe
9 Jean is proposing an additional study to study
10 flooding year-round, by the year-round operation,
11 not necessarily ice jam? Am I getting that correct?

12 JEAN ANGELL: No. DNR is not
13 suggesting a study of year-round flooding. DNR is
14 suggesting that there be a look at year-round
15 operation to see if the operation somehow
16 contributes to the ice jam flooding. There may be
17 flooding the rest of the year. We don't know any
18 flooding, though, that's as disastrous as that, as
19 ice jam flooding.

20 It was mentioned in the CRREL report, the
21 Corps' report that there may have been some changes
22 to the river itself, the morphology of the river
23 itself, because of the operation of the Project.
24 And so we would want to look at year-round
25 operation, but in the hopes of predicting or

1 preventing or truly understanding whether the
2 operation has anything to do with ice jam flooding.

3 STEPHANIE WHITE: Okay. There was a
4 comment over here. Go ahead, George.

5 GEORGE WALDOW: I would suggest,
6 Jean, that the concern regarding year-round
7 operations is already embedded in this statement. I
8 don't know how we would want to change it. I think
9 we can get to it in the objectives or the activities
10 rather than change the goal.

11 And the other concern with respect to
12 changes in the bed or banks of the river, I believe
13 that that is being covered in the sedimentation
14 study that -- we're going to have some comment on
15 that if it's not. But I think that was our intent,
16 to cover that -- we'll call it topographic changes
17 in the rivers are covered regardless of whether the
18 change affects habitat for birds or potential for
19 flooding on the bypass reach.

20 STEPHANIE WHITE: So George, this
21 piece right here, impact on sandbars as it relates
22 to bird habitat, is -- go ahead, Pat.

23 PAT ENGELBERT: This is Pat Engelbert
24 with HDR.

25 In doing these studies, there is a lot of

1 cross referencing that is going on, in particular,
2 this is a good illustration of that. Under our
3 sedimentation analysis, which we will cover probably
4 right after lunchtime, I would guess, we will
5 demonstrate how we're going to look at
6 geomorphological changes, or the effects of the
7 geomorphology on the system due to varying flow
8 conditions in both the bypass reach as well as on
9 the Platte River.

10 So the results of that analysis would get
11 pulled into this particular ice study to see whether
12 or not there have been changes in -- in the
13 geomorphology or the sediment transport component.
14 So we would use the results of that as part of our
15 assessment on this ice jam component.

16 Relative to the quantitative portion,
17 Jean, I think in our goal, which is no longer up on
18 the screen, would it be sufficient to state that the
19 goal of the study on the Loup River is to
20 quantitatively determine, if possible, based on the
21 data that will have to be gathered and reviewed, and
22 if not, qualitatively done to determine if the
23 operations on the Loup River -- or the Loup Power
24 Canal has an effect? Is that -- is that a more
25 agreeable phrase?

1 If you see in our objectives, we're going
2 to review that additional data, solicit input from
3 the Corps of Engineers to see if there is data
4 sufficient to perform a quantitative analysis, and
5 if not, we would continue with our qualitative
6 analysis.

7 STEPHANIE WHITE: So just to help, I
8 moved to Slide 15, for those on the phone. And I
9 think Pat was talking about this last bullet here,
10 which does include some of your verbiage, Coordinate
11 with the Corps of Engineers, or other, regarding the
12 suitability of the available data for performing a
13 quantitative or qualitative analysis.

14 Ron has a comment, then we'll go to you.

15 RON ZIOLA: Mine is back on the goal,
16 and it's pretty minor. But in front of operations,
17 we were talking ice jams, obviously, in the winter,
18 but the total operations. So maybe it would be
19 annual or continual operation of the Loup Canal, you
20 know, you throw a word -- again, this is
21 wordsmithing, it's kind of a small thing.

22 But you know, if we want to take the whole
23 year's operation versus how it might impact --
24 continual -- continual or maybe annual or something
25 on that order.

1 STEPHANIE WHITE: Okay. You're up
2 next.

3 RICHARD HOLLAND: This is Rick
4 Holland. I just wanted to enforce the need for some
5 kind of quantitative evaluation of the frequency of
6 flooding and the extent of that flooding through the
7 reaches. I'm assuming some of that will be done as
8 part of the analysis.

9 But the beneficial aspects of ice jam
10 flooding, as Mary brought up and we at fisheries
11 will support, it's necessary to know if the
12 operation or the presence of the diversion has
13 impacted the extent of flooding along the river, how
14 it's changed over time. So we have an interest in
15 quantifying that, if we can, if the data is
16 available. I don't know if the data is available or
17 not prediversion, but we would -- we would support a
18 quantitative analysis, if we can get it.

19 STEPHANIE WHITE: Other comments?
20 George?

21 GEORGE WALDOW: John, could you -- or
22 Rick, I'm sorry, could you amplify on what you mean
23 by -- are we talking only ice jam flood events? I'm
24 not clear on --

25 RICHARD HOLLAND: Well, I'm just --

1 I'm just basing it on the objective that we're
2 looking at ice jams and how the structures will
3 affect that. If we want to open up a whole other
4 project looking at flooding, I -- I don't know. I
5 think that will come from the same analysis in a
6 sense, or a very similar analysis. So right now
7 we're very interested in the ice jam and seeing how
8 that's affecting the river.

9 PAT ENGELBERT: And, Rick, in
10 particular, the Project's effects on potential ice
11 jam flooding; is that correct?

12 RICHARD HOLLAND: Right. The
13 presence of the Project and how that may change the
14 frequency and maybe the magnitude and extent of
15 flooding in that area.

16 PAT ENGELBERT: I don't know if
17 there's any gage data or flooding data pre-Project.
18 I think the majority of the gages were put in in the
19 late '30s, early '40s along the system. So
20 quantifying preproject return frequencies, you know,
21 something of that nature, would -- I don't know the
22 way to do that.

23 STEPHANIE WHITE: Jean, it looks like
24 you've got a comment.

25 JEAN ANGELL: Yeah. I want to make

1 real clear, I'm here representing the Department of
2 Natural Resources. I'm a birder, and I love cheap
3 electricity. I represent the Department of Natural
4 Resources, and I respect who all of you are
5 representing.

6 The Department of Natural Resources is the
7 agency that manages floodplains and things of that
8 source, and we are very concerned about flooding.
9 The last major flood nearly overtopped the levee
10 into Columbus. It was estimated it was within an
11 hour of overtopping the -- I think it's Whitetail
12 development just east of 81, south of Columbus. It
13 was really, really dangerous. And as much as I like
14 birds, I don't think I could stand there and tell
15 the residents of Columbus, It's really too bad.

16 But I think that we could do a study and
17 find out what could we do to be the most
18 advantageous to all the interests here. DNR
19 certainly understands that Loup's operation cannot
20 be totally controlled. They understand that at
21 certain times, they can't take that water when
22 there's the frazil ice. We understand that. But is
23 there something that can be done so that that river
24 can better carry the ice, they can better move that
25 water, things like that.

1 I believe there will probably always be
2 flooding, and we're not against that. It's just can
3 we mitigate that, can we predict, can we warn,
4 things like that. So there may be flooding, that's
5 okay.

6 STEPHANIE WHITE: George?

7 GEORGE WALDOW: I was going to
8 comment to the -- address this comment about the
9 flooding a little further. And I'm not ignoring
10 your comments, Jean, I just want to go back to that
11 flood issue.

12 The way the Project -- again, to refresh
13 people who aren't familiar with it, the way the
14 Project operates is it diverts approximately
15 1,600 cubic feet per second, on average, down the
16 canal system. The maximum that it can ever divert
17 is 3,500 cubic feet per second. That coincides with
18 their water right, and it's very, very close to the
19 capacity of the canal's system.

20 And our analysis of the flood issues on
21 the Loup River is that the -- the Project, because
22 it can only take a small amount -- relatively small
23 amount of floodwater, has a relatively minor effect
24 on reducing flood peaks. And in fact, approximately
25 a third of the water in the Loup River does go on

1 down the bypass reach.

2 And when large flows occur, 10,000 or
3 30,000 cubic feet per second, even if Loup was still
4 taking out their 2,000 or 2,500, whatever they were
5 able to take that day, it's a minor reduction in the
6 total flow that would go through the bypass reach.

7 And for that reason, a lot of the river
8 forming events still happen in the bypass reach.
9 The Project has relatively little impact on those
10 large flow events. And the same would be true for
11 the large breakup events that cause major jams, such
12 as the 1993 event in Columbus. I don't have the
13 numbers at my fingertips, but the flow on that day
14 was in the many thousands of CFS's, if I recall --

15 RON ZIOLA: I believe it was around
16 40- to 50,000, to my recollection.

17 GEORGE WALDOW: Ron is saying around
18 40 or 50,000, to his recollection.

19 So when you consider that the Project
20 could only take no more -- ever more than 3,500
21 CFS's of that, the event that it created at that
22 major ice jam in Columbus, it -- it could be -- and
23 I think that's what studies would like to uncover,
24 were there precedent conditions in that winter that
25 created a situation for that ice jam to be worse

1 than it would have been in any case.

2 And that's the -- that's the real puzzle
3 here. What we're -- what we're looking at under
4 this Project is to look at the incremental effect
5 that the Project has or could have compared to the
6 effect that would be there anyway. Because ice jams
7 have always occurred in these rivers, and they
8 always will occur. And that's just a fact of
9 nature.

10 The puzzle of this study is to get at how
11 much change can be attributed to the Project or its
12 operation. And I think that's the question, can we
13 really do a quantitative analysis, given the
14 information that's there. And we, in our
15 development of this study approach, can review --
16 granted, it was a fairly cursory review of the
17 additional information that's available since the
18 1994 Corps studies, indicated to us that there may
19 be a problem even coming up with a quantitative
20 study. And that's -- that's why we didn't change
21 the word quantitative in the goal.

22 At this, point I -- I think I agree with
23 Pat, that we could say qualitative or quantitative
24 in the goal, with the understanding that if there's
25 not sufficient information for quantitative, we will

1 default automatically to qualitative because that's
2 all we can do.

3 JEAN ANGELL: My response to that,
4 George, is perhaps if it was said that we wish to
5 have a quantitative study and a qualitative as well,
6 if there's enough data available to do that, we
7 would be agreeable to that and we would certainly
8 like that decision to be made by somebody like
9 CRREL, or at least a peer of theirs.

10 I don't think anybody -- I don't know if
11 there's anybody in the state that could say, Can we
12 for sure do a quantitative study, but we need to
13 know that. And if not, what data do we need to
14 gather to, at some point, do a quantitative study.

15 GEORGE WALDOW: That's exactly where
16 we're headed, Jean. And I want to -- I thought I
17 heard you say it backwards. I think what you meant
18 is that we would do a qualitative -- quantitative
19 study, if possible; if not, a qualitative study --

20 JEAN ANGELL: Right.

21 GEORGE WALDOW: -- for the record.
22 And that, essentially, is what we're proposing in
23 this study plan. We are going to take the data,
24 assemble it, do the plots that we intended to do
25 initially. And then our intent is to present that

1 information to the Corps of Engineers or to CRREL
2 and have them make an independent determination of
3 what can be done with that information.

4 And if it's not suitable for quantitative
5 study, how could that data be modified in the
6 future? And that's what Mr. Dunnigan was --
7 summarized our meeting with. He wants to know if
8 the information that's currently there is not
9 adequate to do a quantitative analysis, what does
10 DNR need to do to collect sufficient information
11 over time so that some day, this quantitative
12 analysis can be done.

13 STEPHANIE WHITE: I wonder if our
14 discussion over the semantics of this goal, I wonder
15 if we might have made the goal too specific. And if
16 I took the words, To qualitatively, out of the goal
17 and leave that as a discussion for an objective,
18 what if we said, The goal of the study of ice jam
19 flooding on the Loup River is to determine if the
20 operation of the Loup Power Canal has a material
21 effect on the formation of ice jams or a material
22 effect on the severity of flooding caused by ice
23 jams in the Loup River bypass reach.

24 I didn't hear any dissension or any
25 disagreement with that as the primary goal. So I

1 have a suggestion to take out cards. Let's do that.
2 Let's take a quick vote.

3 If we take out, To qualitatively -- and
4 again, that's not eliminating it from the whole
5 study plan, that's taking it out of the goal and
6 putting it into an objective. If we take it out of
7 the goal, I think we may be able to reach consensus.

8 To determine if the operation has a
9 material effect on the formation of ice jams or a
10 material effect on the severity of flooding caused
11 by ice jams in the Loup River bypass reach.

12 Let's see a show of cards. I have a
13 yellow from Jean, from Mary, and a green from
14 everyone else. Mary, we haven't heard from you for
15 awhile. Let's do that.

16 MARY BOMBERGER BROWN: My question is
17 just, is this change -- are we eliminating the
18 concern about habitat formation and maintenance, is
19 my question?

20 STEPHANIE WHITE: And I believe we
21 talked about that in sedimentation, but I'll let you
22 answer that question, George or Pat.

23 GEORGE WALDOW: This is George
24 Waldow.

25 I'm not sure how to answer that, Mary,

1 because the goal -- when we conceived the goal, we
2 tried to write it broadly and not to exclude
3 anything. And I -- even with the discussion we've
4 had this morning, I think we did a pretty good job
5 of that because we haven't excluded -- especially
6 with the deletion of the word qualitatively, I don't
7 think we've excluded any of these issues.

8 And I'm -- since Pat didn't grab the
9 microphone, I'm not sure that we -- I'm not sure
10 that we can do anything beyond what we're already
11 doing in the -- looking at the aggradation and
12 degradation question in the bypass reach, which is
13 being done under the sedimentation study.

14 Using the methodology that we have, we
15 think that we can put a pretty good level of comfort
16 to whether that reach is in equilibrium or aggrading
17 or degrading. With respect to the formation of
18 individual sandbars or their positioning and so on,
19 I don't think the science is there to do that.

20 So the -- I don't mean to leave this thing
21 hanging, but I'm not sure that -- we're certainly
22 not doing it under the ice study. We will do what
23 we can with the ice study. We will look at the
24 occurrence of events. We have flow information
25 relative to those particular events. We have the

1 additional reports that DNR has collected, which
2 talks about ice thickness and whether there was ice
3 in the -- in the overbank areas, for example. So
4 there's that kind of -- it's better than anecdotal
5 data, but it's still fairly subjective, if you will.

6 STEPHANIE WHITE: Matt, it looks like
7 you have a comment.

8 MATT PILLARD: Yeah. This is Mat
9 Pillard with HDR. Mary, later today under the flow
10 depletion study, there is an element relative to
11 terns and plovers in the Loup River bypass reach
12 relative to flow depletions.

13 So it doesn't directly answer how ice is
14 formed and how ice helps maintain habitat, but it
15 does look at, from a flow depletion standpoint, you
16 know, tern and plover comparisons above and below
17 the Diversion Weir. And if there is a significant
18 difference there, what are the habitat differences.
19 So that's -- that will be discussed under the flow
20 depletion study, if that helps you at all.

21 MARY BOMBERGER BROWN: No, that's
22 fine.

23 STEPHANIE WHITE: Looks like -- Rick?

24 RICHARD HOLLAND: Do you think the
25 data is available to tell -- given the fact that at

1 the flood levels you're talking about and the
2 diversions are a small percentage of that, do you
3 think the data is there to tell or correlate the
4 extent of flooding or ice thickness with the
5 diversion levels? I mean, that kind of data is
6 available.

7 So you're going to try to correlate in
8 some way, when they're diverting X amount of water,
9 there's changes in some quantitative characteristics
10 of a flood event, is that what I understand? Is
11 that where we're going with this? That's what I'm
12 talking about quantifying.

13 I don't expect a cause and effect for
14 sandbar formation or scouring, things like that, but
15 are we going to be able to quantify characteristics
16 of a flood event with -- and then correlate those
17 with the diversion of the operation of the hydro?

18 PAT ENGELBERT: Rick, we intend to
19 review the data to see if there is anything that
20 would -- that would allow us to do that. On a
21 cursory review, the information tends to be spotty,
22 maybe once a week, maybe once a month, and it's not
23 consistently reporting things like thickness, open
24 water.

25 But we will do our best to attempt to look

1 at how the diversion has changed in that time -- in
2 that particular time frame relative to what was
3 observed to see if we can do an analysis like that.

4 Is that -- does that make sense?

5 RICHARD HOLLAND: Yeah. I understand
6 what you're saying. I'm just trying to get a feel
7 for -- we can talk about quantifying this all we
8 want. If there's no observational data or no
9 measurement data characterizing the presence of ice,
10 the extent of the ice coverage throughout that
11 reach, I'm not sure how you're going to be able to
12 quantify this, as much as I'd like to see it
13 quantified.

14 GEORGE WALDOW: And we're -- that's
15 our quandary also. We've looked at the data. We
16 haven't totally digested it and done all the
17 comparisons. We've done a few sample plots to see
18 how flow and ice observations might correlate.

19 But that's -- that's essentially the study
20 we're proposing, is we're going to take all the
21 information, the Corps study kind of is our, you
22 know, base that we're starting from, and then DNR
23 initiated this statewide data gathering program,
24 and -- and they want to know, you know, what -- in
25 general, what value does that have now after

1 15 years, or so.

2 And in this particular location, we want
3 to use it and see if it can be used to identify a
4 link, a correlation, a -- even a suspicion that the
5 Project has an impact. And we're trying to go into
6 this being objective.

7 There's no evidence that we've seen that
8 there is any relationship. There's a very -- as
9 Mary said, there's a very serious event that
10 occurred back in the '90s that caused these studies
11 to be done by the Corps, and then there was some
12 additional studies that were cost share between the
13 state and the Corps.

14 But those studies looked at ice jam
15 formation in general, and the Loup bypass reach was
16 not studied in any additional degree, I don't think,
17 than the Platte River or other areas. And so there
18 were a bunch of observation locations that were
19 identified, and DNR organized these people to go out
20 and gather this data. But no, they don't have --
21 they -- we can't look and say that there was an ice
22 thickness of 6 inches on a particular date.

23 And so that's why we don't think that
24 there's a lot there to be used in a quantitative
25 analysis, but we're not ruling it out. And we're

1 going to organize the information, present it to a
2 third party, probably CRREL, we think, we've got a
3 contact there. We haven't started the process of
4 how that will actually happen, but that's our
5 intention, is to go there with this organized
6 information and get a view from them on what can be
7 done.

8 But until that happens, we also don't
9 think that it's appropriate for the -- for the
10 Project to become the scapegoat for everyone to
11 point at for ice damage downstream because that --
12 that evidence doesn't seem to exist. It's
13 speculation at this point.

14 STEPHANIE WHITE: Rick, any more
15 comments or questions? Jean, go ahead.

16 JEAN ANGELL: Going back to would DNR
17 go along with taking out qualitative or
18 quantitative, whatever, in the goal, that's fine.
19 Because really what the goal is is to determine if
20 there's a correlation. How that's done I think
21 needs to be addressed in the objectives and
22 activities. And you know, as long as that's done by
23 people in the know with as much information as
24 possible, DNR is fine with that.

25 I want to make sure it's not

1 mischaracterized that DNR is basing this all on
2 speculation of one flood in the '93s -- in 1993. If
3 you read the Section 22 report that I passed out --
4 and it is also on our website -- there are a lot
5 of -- there's a lot of flooding in that reach.
6 There may have been a lot of flooding prior to the
7 1930s, but it wasn't just somebody on the street
8 speculating, though I will tell you a lot of farmers
9 to this day call us and ask, What is Loup doing, I'm
10 getting flooding. Who knows if there's any
11 correlation, but there are certainly people who
12 believe there is.

13 But it was the Corps, in their report,
14 that said the operation may be contributing to ice
15 jam flooding and brought in, like, changes in the
16 river and formation of ice.

17 So that's what we want to look at again,
18 those people who are qualified and see is there a
19 connection or not.

20 STEPHANIE WHITE: Okay. Jean, I
21 heard you say that if we take out, To qualitatively,
22 that your yellow would turn to a green on this goal.
23 Mary, do you feel the same way.

24 MARY BOMBERGER BROWN: Yep.

25 STEPHANIE WHITE: Okay. So we will

1 take out the words, To qualitatively. Is there
2 somebody on the phone?

3 KIM NGUYEN: Yeah, this is Kim.

4 STEPHANIE WHITE: Go ahead, Kim.

5 KIM NGUYEN: I'd like to also add one
6 thing. It might be a little hard. If you take out
7 what you suggested and then maybe add -- this is
8 back to Ron's point initially -- To determine if
9 the -- maybe add annual or continual operation of
10 the Loup Power Canal, just to be more specific that
11 it's going to look at the normal operation of the
12 Project through the entire year? That might help.

13 STEPHANIE WHITE: Continued, if we
14 said continued operation?

15 KIM NGUYEN: Yeah, annual or
16 continued, whatever.

17 STEPHANIE WHITE: So, The goal of the
18 study of Ice Jam Flooding on the Loup River is to
19 determine if the continual operation of the Loup
20 Power Canal, does that do it for you, Kim?

21 KIM NGUYEN: It would be -- actually,
22 continued, maybe, instead of continual.

23 STEPHANIE WHITE: Okay. Continued
24 operation.

25 KIM NGUYEN: Yep.

1 JEAN ANGELL: And possibly
2 year-round, you know, not are they going to stop or
3 are they going to continue, but rather this
4 year-round operation.

5 STEPHANIE WHITE: Could we use one or
6 the other? So could we replace continued with
7 year-round.

8 JEAN ANGELL: Yes.

9 STEPHANIE WHITE: So -- go ahead,
10 George.

11 GEORGE WALDOW: I would suggest
12 neither of those quite addresses what I think we
13 want to do with the wording of the rest of it. Why
14 don't we say, maybe, The existing operation, or, The
15 current operation? Because we're -- we can only
16 look at what's -- what's happened to date. In the
17 future, conditions could change, operations could
18 change. To say continued or continual I don't think
19 is really what we mean.

20 STEPHANIE WHITE: So George's
21 suggestion is to put current in front of operation.
22 The goal is to determine if the current operation of
23 the Loup Power Canal has an effect.

24 Kim, does that meet your objective? And
25 just a second, I'll let you talk, Jean.

1 KIM NGUYEN: Let me think about that
2 for a second. You can go ahead to Jean, if you
3 want.

4 STEPHANIE WHITE: Okay. Jean, go
5 ahead.

6 JEAN ANGELL: I guess my concern is
7 what current means. And I don't mean to play around
8 with that, George. It's are we going to look at
9 this year's operation or the operation from the very
10 beginning? And I -- I think it's important we look
11 at the operation from the very beginning through
12 today.

13 GEORGE WALDOW: Could we say
14 established operation? I understand your concern.
15 We're not trying to --

16 JEAN ANGELL: How about just
17 operation?

18 GEORGE WALDOW: -- we're not trying
19 to say last year's -- I frankly would prefer it to
20 just say the operation because it's all-inclusive
21 like this was intended to be. If it says operation,
22 it means day-to-day operation, it means seasonal
23 operation, it means annual operation, it means
24 everything, all of those.

25 STEPHANIE WHITE: David?

1 DAVID TURNER: I think a lot of
2 this -- and maybe I'm missing something, but I think
3 it's semantics. I kind of agree with you, George,
4 it's the operation of the Project, and we're looking
5 into the future. How do we change that operation to
6 potentially alleviate these concerns if something is
7 identified?

8 I think we get to your concerns when we
9 start looking at the objectives and the tasks within
10 that objective. So personally, I think
11 manipulating -- or spending more time manipulating
12 this is probably not going to be as fruitful as
13 talking about the tasks at hand and getting at the
14 issue.

15 So I personally would be okay leaving it
16 in or inserting it. It gets to the existing
17 operation, and it's inclusive of that. And that's
18 how we're going to look at it anyway when we make
19 our decisions.

20 STEPHANIE WHITE: Kim, would you like
21 to speak?

22 KIM NGUYEN: I'm okay with that.

23 STEPHANIE WHITE: Okay. So David, I
24 heard that there could be no change to the goal
25 except to eliminate qualitatively. Jean, how do you

1 feel?

2 JEAN ANGELL: That's fine.

3 STEPHANIE WHITE: Okay. So I'm going
4 to cross it out, and then we'll take a break after
5 this.

6 The goal of the study of Ice Jam Flooding
7 on the Loup River is to determine if the operation
8 of the Loup Power Canal has a material effect on the
9 formation of ice jams or a material effect on the
10 severity of flooding caused by ice jams in the
11 Loup River bypass reach.

12 Quick show of cards.

13 Okay. We have unanimous consensus. It's
14 all been green. Let's take a quick ten-minute
15 break. We'll come back and start talking about the
16 objectives of Study Plan No. 12.

17 RANDY THORESON: I was a green on
18 that.

19 STEPHANIE WHITE: And for those of
20 you on the phone, if you would just call out your
21 votes, that would help me a lot.

22 *(Short break taken - 10:30 a.m.)*

23 *(Meeting resumed - 10:54 a.m.)*

24 STEPHANIE WHITE: I've made a couple
25 of changes in the room that we'll talk about, and

1 then we'll take a quick roll call on the phone to
2 make sure we have everybody.

3 I put up two flip charts that relate to
4 the studies we're talking about. You saw me work
5 off of the goal for Study 12. I also put the
6 objectives up next to it. We'll work off of both
7 those two slides and ultimately customize them to
8 reflect whatever consensus we've reached in the
9 room.

10 I've also added a microphone to the table,
11 and I have replaced the batteries. So let's try --
12 the one I'm worried most about is the one right in
13 front of you, Rick. If it doesn't work, I'll give
14 you a different one.

15 So let's pick up where we left off. We
16 just finished -- we concluded the discussion on the
17 goal for Ice Jam Flooding on the Loup River. I'd
18 like to move into a discussion of the objectives.
19 And we'll take objectives and activities all in one,
20 but we'll move through the objective first and then
21 we'll hit its associated activities, which is a
22 little bit different than how we operated on the
23 21st.

24 Objective 1, to characterize the available
25 information (ice observation reports, associated

1 atmospheric temperature data, and associated gage
2 flow data) and its relevance to performing a
3 quantitative or qualitative analysis.

4 Before we start the discussion, I'm going
5 to take a quick roll call on the phone. Who do we
6 have on the conference call?

7 KIM NGUYEN: This is Kim.

8 STEPHANIE WHITE: Randy, are you
9 back?

10 RANDY THORESON: This is Randy with
11 National Park Service. I'll be getting off shortly,
12 but I'll listen in for a few more minutes.

13 STEPHANIE WHITE: Great. Just the
14 two of you? Okay. So Kim and Randy have joined us
15 again after the break.

16 I'd like to take a quick pulse check on
17 the objective as it reads. So if you'd pull your
18 cards out, let's take a show of cards for the
19 objective as it reads. And then when I'm ready,
20 Randy and Kim, I'll call for your colors.

21 All right. Show of cards. Okay. On the
22 phone?

23 KIM NGUYEN: Green for me.

24 STEPHANIE WHITE: Okay. Randy?

25 RANDY THORESON: Yeah, it's green.

1 STEPHANIE WHITE: All right. So I
2 have a yellow from Jean and one from Frank.

3 FRANK ALBRECHT: Yeah, just a
4 question.

5 STEPHANIE WHITE: Okay. So let's
6 start with you, and we'll test out the microphone.
7 Go for it, Frank.

8 FRANK ALBRECHT: Just based on the
9 discussion we had before the break and then after
10 looking at the verbiage in that objective, Matt kind
11 of alluded to it, and also Mary, you know, the part
12 of the sedimentation, what -- you know, that
13 component of the formula and that may play into
14 this, that we don't know.

15 Does -- my only question is does that need
16 to be -- when it has ice observation, atmospheric
17 temperature, gage flow, do we tie it, do we
18 reference the sedimentation part of it to see if
19 that is a factor? Do we just need to mention it, or
20 is that looking ahead at the next objective? I
21 don't think it's mentioned in the next one either,
22 so that's a question for you or the group.

23 STEPHANIE WHITE: Okay. Pat and
24 George, would you like to answer that?

25 PAT ENGELBERT: We will be looking at

1 the available sedimentation information as part of
2 the sedimentation study that we would cross
3 reference, then, back into this study. Does that
4 answer your question, Frank?

5 FRANK ALBRECHT: Yeah.

6 PAT ENGELBERT: As we mentioned,
7 there's a lot of cross referencing that's associated
8 with these studies, flow depletions and things like
9 that.

10 FRANK ALBRECHT: Okay.

11 JEAN ANGELL: I guess my concern was
12 just that it wouldn't be using only this data, but
13 all the data to answer the goal, which is to see
14 does the operation have an effect. And I think from
15 the discussion earlier, you know that our concern is
16 not only the -- the operation in the wintertime and
17 ice jam flooding, but the continuing operation.

18 And I think if we don't include things
19 like the morphology of the river, then we don't come
20 to that because we don't know, has the river changed
21 so it carries ice and water and things like that
22 differently, and does the ice form differently
23 because of that.

24 I don't know how this works as far as if
25 there's one study, is it used in another study. I

1 don't do studies, and I don't know how this process
2 works. But that's what my concern is, is not to --
3 to say, Well, we're looking at sedimentation
4 somewhere else for different reasons, so we're not
5 going to look at sedimentation or degradation or
6 that in this one. You'd look at it for a different
7 reason. And so I would not want this in -- in
8 parentheses to be the only available information
9 that's looked at.

10 STEPHANIE WHITE: So I almost hear
11 that maybe another bullet under associated
12 activities would be to incorporate or include the
13 results and analysis from Study No. 1,
14 Sedimentation.

15 NEAL SUESS: Stephanie, if I can make
16 a suggestion?

17 STEPHANIE WHITE: Sure.

18 NEAL SUESS: And Jean, if we took out
19 the word, And, after the associated gage flow data,
20 and then just put a comma, et cetera, which
21 basically means other data that we collect during --
22 from the other studies and its relevance to
23 performing quantitative or qualitative analysis,
24 would that take care of the concern?

25 What I think I hear you saying is that you

1 don't want to just limit it to ice observation
2 reports, associated atmospheric temperature data and
3 associated gage flow data, that if there's something
4 else that comes up that says, Hey, that affects
5 something in the river which might affect ice flow
6 and ice jams, that you would want that included. If
7 we did that, would that help?

8 JEAN ANGELL: That would help. Yeah,
9 that would help that concern. I just don't want to
10 limit what we're looking at by having it here in
11 this.

12 The other thing -- and this was brought up
13 earlier -- and it's relevance to performing a
14 qualitative and a possible quantitative analysis.
15 So it's not an either-or kind of thing.

16 STEPHANIE WHITE: David, I'd like to
17 let you talk.

18 DAVID TURNER: Jean brings up a good
19 point, but I just want to caution basically Loup and
20 HDR, as you put together your reports and your
21 application -- and it's based on the experience I
22 had in another ILP proceeding where we talked about
23 similar types of things.

24 There were flow issues that were being
25 examined for salmon up in the Northwest. And we

1 were looking at sedimentation, we were looking at
2 ramping rates, we were looking at a whole bunch
3 of -- a whole suite of studies, they are all
4 interrelated to the issues that are at hand.

5 It came time to put together the reports.
6 There was a lot of -- of, Well, this information is
7 going to be coalesced at what point? So that is one
8 thing you need to be cognizant of. These studies do
9 have their specific objectives, they do have their
10 own specific outcomes, but at what point does it all
11 get pulled together.

12 And it occurs in two places. One, it can
13 be -- it probably should be pulled together in the
14 individual reports because we'd like to get it out
15 as soon as possible for people to start thinking
16 about what it all means and what it means to changes
17 in operations or other alternatives.

18 But if it doesn't occur there, it has to
19 occur in the draft license application or the final
20 license application. And the reason it might occur
21 later is because of the timing of some of these --
22 of these studies and pulling those things together.

23 So it's going to be a logistical challenge
24 for the District and HDR to pull this stuff
25 together. So I -- I don't want people to be

1 disappointed or upset by the fact they don't get
2 some piece of information at a certain specific time
3 because things may just have to -- to work out in
4 terms of the -- as they start pulling everything
5 together in the draft application.

6 But I do agree that where we can talk
7 about information sources from other studies being
8 pulled into it, I think that is an outcome, based on
9 my experience, that would be helpful, if you can do
10 it in a timely fashion and if the timing of those
11 studies work.

12 STEPHANIE WHITE: Okay. Other
13 comments? George or Pat, Lisa? Go ahead, George.

14 GEORGE WALDOW: I'll just thank David
15 for that observation. I think it's valid for sure,
16 and we will take a look at that when we summarize
17 our schedule. But unless the man next to me
18 objects, I think we're okay.

19 STEPHANIE WHITE: There are a couple
20 of things on the table that we've been discussing.

21 Go ahead, Neal, do you want to talk?

22 NEAL SUESS: Yeah. I guess maybe
23 just to narrow it a little bit, you know, what I
24 would suggest is we remove -- we would take ice
25 observation reports, associated atmospheric

1 temperature data, gage flow data, and the results of
2 Study 1, Sedimentation, and its relevance to
3 performing a quantitative or qualitative analysis.
4 And then make that change to satisfy -- or to take
5 care of Jean's concerns.

6 STEPHANIE WHITE: Jean, will that
7 work for you?

8 JEAN ANGELL: I didn't understand.
9 You want it taken out, or do you want to add to it?

10 NEAL SUESS: No. I would want to add
11 to it, basically say -- take out the word, And
12 associated, leave gage flow data in there, and then
13 add, And the results of Study 1, Sedimentation, and
14 then leave everything else as it is. Just add in,
15 And the results of Study 1, Sedimentation, because
16 that would take into account, you know, what's
17 happening with the sedimentation in the bypass reach
18 and go that way with it.

19 JEAN ANGELL: You are way over my
20 head.

21 STEPHANIE WHITE: It's really tiny.
22 I'll tell you what it says -- go ahead, Pat.

23 PAT ENGELBERT: All we were trying to
24 achieve in this objective was to review the data and
25 its relevance to performing either a qualitative or

1 a quantitative analysis. And I think, Neal, you had
2 an idea earlier that would get to the heart of
3 Jean's question, and just not limiting it to those
4 data sources, but look at, you know, gage data,
5 diversion data, et cetera, to assist with performing
6 that, making a determination whether we can do a
7 qualitative or quantitative analysis.

8 JEAN ANGELL: And I think what makes
9 it really difficult is I know nothing about ice jam
10 formation or how a change in a river comes about.
11 And so I don't want to limit the people who do the
12 study to we just giving them this.

13 I mean, they may come back and say, You
14 know what we really need is -- and so I would just
15 be happy doing -- to characterize the available
16 information and its relevance and do a study with
17 it.

18 STEPHANIE WHITE: So Jean has
19 suggested that we just take out the parenthetical
20 reference in its entirety, To characterize the
21 available information and its relevance to
22 performing a quantitative or a qualitative analysis.

23 We'll do a quick show of cards, and we'll
24 move off this to the objectives. I'll call for
25 cards on the objective minus the parenthetical

1 referenced, Objective No. 1. A quick show of cards.
2 I've got greens. Okay. Any objections on the
3 phone? Do you still have a yellow, David?

4 DAVID TURNER: Yeah.

5 STEPHANIE WHITE: Okay. Frank, was
6 yours yellow?

7 FRANK ALBRECHT: No.

8 STEPHANIE WHITE: Okay. On the
9 phone, any -- what colors are your cards, your
10 imaginary cards?

11 KIM NGUYEN: Whatever Dave says.

12 STEPHANIE WHITE: He had a yellow.
13 Go ahead, David.

14 DAVID TURNER: I guess I don't have
15 an objection to removing it as an objective goal, as
16 long as it's characterized and everybody's
17 comfortable with the types of data that should be
18 collected and reviewed for that analysis. I
19 appreciate that I'm not a geomorphologist by
20 training either, so I'm not sure what should or
21 shouldn't be included in that.

22 But I do want us to be exhaustive in
23 defining the types of things that we think are
24 relevant, even if it goes back and says -- and we
25 get some peer review from somebody else that

1 suggests another piece of information that we didn't
2 realize is valuable is available and should be
3 included into the analysis.

4 But it is -- it's important to -- for
5 everybody to feel comfortable in terms of what we
6 are expecting the District to look for, and to
7 analyze it to the best of our abilities at this
8 point.

9 NEAL SUESS: And David, I would just
10 go -- I would basically say, you know, I think that
11 we would cover that in the associated activities.
12 Because obviously, the last bullet there is
13 coordinate with the Corps regarding the suitability
14 of the available data and to know whether or not
15 there would be other data that would be needed to
16 take care of either the quantitative or qualitative
17 analysis at that point in time.

18 STEPHANIE WHITE: Okay. Any other
19 comments? Lisa?

20 LISA RICHARDSON: No. I'm just
21 checking the battery.

22 STEPHANIE WHITE: That's fine. We're
23 going to bench that microphone.

24 So with David's concern, I won't cross it
25 out so it's not used again, but I will eliminate it

1 from this objective. And are you comfortable,
2 David, that it's included in the peer review from
3 the Corps of Engineers that's noted in the fourth
4 bullet -- the fifth bullet?

5 DAVID TURNER: Yeah, I think so.

6 STEPHANIE WHITE: Okay. So does that
7 change your yellow to a green?

8 DAVID TURNER: Yeah.

9 STEPHANIE WHITE: All right. We're
10 going to take out this -- the parenthetical
11 reference on Objective No. 1. Let's talk about the
12 associated activities. And we'll vote on these as a
13 group. I'd like to have an open dialogue about the
14 appropriateness of these activities. George
15 reviewed these earlier. I'll give you a second to
16 look at them, and then let's have a discussion about
17 the activities as they relate to Objective No. 1,
18 which we've just changed.

19 RANDY THORESON: This is Randy from
20 National Park Service.

21 STEPHANIE WHITE: Go ahead, Randy.

22 RANDY THORESON: I'm colorless on
23 these objectives. It's kind of out of the purview
24 of the National Park Service, so I'm just listening
25 at this point.

1 STEPHANIE WHITE: Thank you. All
2 right. Let's talk about objectives -- I'm sorry,
3 let's talk about associated activities.

4 JEAN ANGELL: My only comment would
5 be that it does not appear that in associated
6 activities, there's any information being gathered
7 as far as the morphology of the river. This looks
8 more on formation of ice and particular to the time
9 of the ice formation. And I think something needs
10 to be added, but I don't know what to gather because
11 I don't know what they use. But whatever data is
12 needed by them to use as far as studying the
13 morphology of the river and its -- its impact on ice
14 jam flooding.

15 STEPHANIE WHITE: So Jean's is a
16 concern about morphology and its inclusion in the
17 associated activities. Pat, can you speak to that,
18 or George, when you're ready? I'll give you a
19 second.

20 Other comments or concerns from the group
21 about these activities?

22 JEFF RUNGE: They mentioned sediment
23 and how that study component within the
24 sedimentation section will help to address stream
25 morphology, but another good task that's identified

1 in Study 5, Flow Depletion and Flow Diversion
2 section, Task 6 looks at -- uses aerial photography
3 and develops land cover assessment for that reach.

4 And if you would compare that to similar
5 reaches, such as upstream of there, you would be
6 able to look at -- it's not a direct comparison in
7 geomorphology, but it will look at how these
8 cumulative changes may have occurred over time. And
9 you can't -- you don't necessarily look at those as
10 a stand alone, but if you incorporate that with the
11 information from the sediment section, I think that
12 really helps to address a lot of those questions.

13 Well, I guess I'll save my comments here
14 for Task 6. There is some verbiage in Task 6 that
15 I'd like to recommend, but that's probably at a
16 later time.

17 STEPHANIE WHITE: On a different
18 study, Task 6 you're talking about?

19 JEFF RUNGE: Yes.

20 STEPHANIE WHITE: Okay. So Jeff, you
21 have suggested that there's data in Study 5, is that
22 where you were?

23 JEFF RUNGE: Yeah, Study 5, Task 6
24 that will help -- in conjunction with the sediment
25 section, will help to address the changes in stream

1 morphology.

2 PAT ENGELBERT: Stephanie, we could
3 add an activity here, which we are covering back in
4 the sedimentation study, just to review existing
5 information relative to the geomorphology, as well
6 as any literature that attempts to make a link
7 between sedimentation and ice formation. That is
8 some of the information that is covered under
9 Study Plan No. 1, Objective 6. But we could include
10 that as activities here to ensure that we bridge the
11 gap or to cross reference that particular study or
12 the activities associated with that study.

13 STEPHANIE WHITE: Will you repeat
14 that, and I'll try to capture it up here? Just give
15 me the quick highlights.

16 PAT ENGELBERT: As far as the
17 activity goes, to research existing literature on
18 stream morphology in the reach and review literature
19 on a link between sediment and frazil ice transport
20 and incorporate the results of the sedimentation
21 study in making that analysis.

22 JEAN ANGELL: And the only real
23 question I have -- and it's going to show that
24 clearly I'm an attorney and not an engineer -- when
25 you say morphology, does that include the change in

1 the river because of, let's say, the encroaching
2 vegetation, or is it only the sedimentation you're
3 looking at in the shape of the riverbed?

4 PAT ENGELBERT: As you'll see in the
5 presentation that I'll be making, likely after
6 lunch, on sedimentation, the methodology we're
7 proposing is to look at a sediment transport
8 indicator. And there are relationships between this
9 particular indicator and the width and depth of a
10 channel. So we could probably make that -- Gary,
11 maybe you can weigh in on this to see as -- this
12 particular indicator is called effective
13 discharge -- to see how that indicator has changed
14 over time and what the relationship between width
15 and depth, how that has also changed over time for
16 that particular channel reach, which may assist in
17 some of the encroachment concerns folks have had.
18 Gary, did I oversell that?

19 GARY LEWIS: I've been involved on
20 this question on the Platte River over the years.
21 Morphology, as Pat explained, will provide you with
22 tools to assess the morphology or the shape, if
23 that's the right word, of the stream. Its bars, its
24 width, depth, all of the grading and everything else
25 all fall into that morphology. Vegetation affects

1 that.

2 So we are able, with the tools that we
3 plan to use, to see what the river should look like
4 if vegetation wasn't there so that we can assess the
5 effect of the vegetation. But there are no tools
6 available to actually incorporate vegetation
7 encroachment. There's been attempts to do that. I
8 don't consider them state-of-the-art. We're not
9 proposing them.

10 But we can definitely tell you that if the
11 river should be X feet wide with this many braids
12 and channels and certain geometry and it's not there
13 and there's vegetation present, the difference
14 between what we would determine it should be versus
15 what it is is the effect of the vegetation.

16 So we can look at the effects of it, but
17 we can't really look at the process, if that helps.

18 STEPHANIE WHITE: Okay. So we've
19 added an activity, which would be the sixth one
20 associated with Objective 1. And the activity is,
21 To research existing literature on stream morphology
22 in the reach and review literature on the link
23 between sediment and frazil ice transport, with the
24 incorporation of the results of Study 1,
25 Sedimentation.

1 Any other comments on associated
2 activities? Are we missing any? Is the intent
3 missing in the associated activities? And
4 specifically, Jean, have we met your concerns about
5 Objective 1 -- about the activities associated with
6 Objective 1?

7 JEAN ANGELL: Yeah, that's fine.

8 STEPHANIE WHITE: Okay. So if we
9 took a vote on the summation of associated
10 activities for Objective 1, they should be green.
11 Let's do that quickly.

12 Go ahead, Lisa.

13 LISA RICHARDSON: I just want to
14 clarify what you're carding right now. Is it the
15 five activities, plus the sixth one?

16 STEPHANIE WHITE: The five activities
17 plus the sixth one, is what's on the table. So what
18 you see on the screen as well as this right here, so
19 we're adding a sixth activity as spoken by Pat.
20 Let's take a quick show of cards.

21 Okay. We're going to move off of
22 Objective 1 and the associated activities of
23 Objective 1.

24 Let's talk about Objective 2. Go ahead,
25 George.

1 GEORGE WALDOW: You didn't get a card
2 from the telephone, did you?

3 STEPHANIE WHITE: Kim and Randy,
4 George has pointed out that I missed your votes.

5 KIM NGUYEN: Green.

6 RANDY THORESON: (Inaudible.)

7 STEPHANIE WHITE: Okay. Thanks. So
8 we've got unanimous greens from those present today
9 on Objective 1 and its associated activities.

10 Let's talk about Objective 2, To perform a
11 qualitative analysis to determine if a relationship
12 can be found between Project operations and the
13 occurrence or severity of ice jam flooding in the
14 Loup River bypass reach.

15 Let's take a preliminary show of cards on
16 Objective 2 for Ice Jam Flooding on the Loup River,
17 To perform a qualitative analysis to determine if a
18 relationship can be found between Project operations
19 and the occurrence or severity of ice jam flooding
20 in the Loup River bypass reach.

21 I see some greens. Let's take a quick
22 show of cards. Okay. I have a yellow from David.
23 Looks like you're still -- David, let's start with
24 you, and then Jean.

25 DAVID TURNER: I guess it just goes

1 back to our original discussion on qualitative
2 versus quantitative because I thought it was an
3 if-then type situation based on what you found
4 versus what you have. So to say qualitative here
5 might presume something.

6 RICHARD HOLLAND: We could easily
7 reword the objective to say, To analyze the
8 relationship -- to analyze -- let me see -- to
9 determine if a relationship can be found between
10 Project operations, et cetera. That gets at the
11 same kind of issues of allowing both quantitative
12 and qualitative relationships. Essentially, that's
13 what you're trying to do. You're putting all the
14 data together. You want to determine if you can
15 determine a relationship.

16 I think, you know, we could talk about
17 this forever, wordsmithing it, but essentially, it's
18 an active objective, to determine if a relationship
19 can be found between those -- the latter part of the
20 sentence.

21 STEPHANIE WHITE: So Rick's
22 suggestion is that we delete the first five words
23 and start with, To determine. Objective 2, we'd
24 start with, To determine if a relationship can be
25 found between Project operations and the occurrence

1 or severity of ice jam flooding in the Loup River
2 bypass reach.

3 Go ahead.

4 DAVID TURNER: Just to be more clear,
5 we could say using available data. I mean, then it
6 gets at we're not actually -- other than the
7 associated activities of gathering that data, we're
8 not going out and doing something else.

9 STEPHANIE WHITE: So using available
10 data, determine if a relationship can be found
11 between Project operations and the occurrence or
12 severity of ice jam flooding in the Loup River
13 bypass reach.

14 Jean, we haven't heard from you yet.

15 JEAN ANGELL: My concern in doing
16 that is I don't know what the current data is. I
17 don't know what somebody like CRREL would want. And
18 if we believe the current data is there and we give
19 it to them and they say, Well, we really need that,
20 do we say, Sorry, we don't have that? I don't know
21 where that goes, partly because I don't know how
22 they would respond with what we have.

23 So that's my concern there. You know, to
24 take out the qualitative, obviously I'm happy to do
25 that.

1 STEPHANIE WHITE: Lisa?

2 LISA RICHARDSON: Jean, I think that,
3 based on my recollection of Brian's comments from
4 when we met with you guys earlier, was that if there
5 isn't enough data, that's one of the things he wants
6 to know.

7 So I think that by saying to use the
8 available data to determine if there's a
9 relationship, you're getting to that question. And
10 we'll use all the data that we can find, and as --
11 as is evident on other portions of this Project, we
12 find new data all the time, it seems like. Not
13 everybody knows -- one person doesn't know about all
14 the data.

15 So we'll gather everything that we can,
16 present the results of that, and determine if the
17 data is sufficient to do an analysis. And if it's
18 not, then there's not really much we can do, other
19 than to help -- to have the Corps, perhaps, help
20 identify what data should be collected so that some
21 future analysis could be done.

22 JEAN ANGELL: Just as long as that's
23 in there that that would be a goal, either do the
24 study or tell us what we need to do to do the study,
25 maybe just add that. And I don't know where to add

1 that, but --

2 PAT ENGELBERT: I think that is
3 probably covered under the first objective where
4 we're characterizing the data to see if anything can
5 be done. Part of the result of that would be if it
6 doesn't exist, what would need to be gathered, maybe
7 for the next ten years or fifteen years or whatever,
8 by the DNR in order to perform that. I think that's
9 probably covered under Objective 1.

10 LISA RICHARDSON: So Pat, I guess
11 Objective 2 only occurs if Objective 1 is successful
12 in determining if there is enough data. Then you go
13 into determining the relationship.

14 PAT ENGELBERT: Whether
15 quantitatively or qualitatively.

16 LISA RICHARDSON: Right.

17 Does that help, Jean?

18 JEAN ANGELL: Yeah, that helps. What
19 I don't know -- and I get this from a presentation
20 earlier in the day -- is do we put in this what we
21 want done with it as far as prevention, mitigation
22 and that whole bit, or does it just end here and
23 then at another point, we go and we have the study
24 and this is what we'd like to use for prevention,
25 mitigation? And somebody in the process can

1 probably tell me that.

2 STEPHANIE WHITE: Would you like to
3 answer that, David?

4 DAVID TURNER: This will form the
5 basis for getting PM&E measures. The exact point
6 that we all start talking about that is really going
7 to be up to the District in terms of when they feel
8 comfortable.

9 The first formal opportunity to actually
10 impart recommendations for -- as a basis for those
11 studies will be at the preliminary licensing
12 proposal or draft license application stage, when
13 they put forth their proposal for the new license.
14 And that's about a year and a half, maybe two years
15 down the road.

16 The other thing that I -- I'm thinking
17 about here is that rather than being caught up on
18 the specifics of this, it seems to me that some of
19 this is going to depend on the analysis of that
20 available data. They're going to have to put
21 together that report, and that report should
22 include, as I understand, the proposal, the input
23 from the Corps.

24 The initial study report, which is going
25 to come out in about a year from August when we make

1 our study determination, we'll have a chance to look
2 at that data, get the feedback from whether the
3 Corps says that there should be some other piece of
4 information that's easily attainable in the time
5 frames that we're looking at, or easily or readily
6 available and we just didn't realize it was
7 available, and to incorporate that and update that
8 report before the actual license application comes
9 in.

10 So there may be an opportunity to maybe
11 get at some of the concerns you have, whether or not
12 we're being exhaustive enough in terms of the data
13 gathering. At least that's what I think I hear, is
14 whether or not we've collected everything we should
15 be able to collect to do this analysis.

16 STEPHANIE WHITE: Jean, go ahead, and
17 then we'll come back to you, George.

18 JEAN ANGELL: I guess, you know, if
19 it's known when they do the study that the real
20 objective is, is there a correlation, and if so,
21 what can be done about it, I mean, that's fine, even
22 if -- even if they don't, at this point, say, What
23 can be done for prevention, mitigation, whatever, if
24 they know that's what we're going to use it for if
25 they find a correlation.

1 I don't want to go down the road to where
2 we're looking at mitigation and find if you'd just
3 gone further with the study, we'd know how to do
4 that. I don't know how you make the leap from one
5 to the other, and I don't want to have too great a
6 chasma between this and the preventive measures.

7 STEPHANIE WHITE: George?

8 GEORGE WALDOW: My comment is that
9 before we talk about mitigation or prevention
10 measures, we need to first discover is there any
11 incremental impact. And that's -- that's what
12 this -- our goal was to define. We need to define
13 that there is an impact on Project operations that
14 translates into flood impacts in the bypass reach.

15 And until that nexus can be developed with
16 whatever data is available, there -- it's premature
17 to talk about mitigation or prevention, I think.
18 And those things can come even after the license is
19 filed in the form of conditions or articles in the
20 license for whatever needs to be done.

21 But we have to go step-wise, and I
22 understand you not wanting to get too big of a gulf
23 as we go sequentially through these steps, but I
24 don't see any other way to do it. We've spent a
25 good deal of time trying to play this back and forth

1 and see if this is a -- truly a legitimate path to
2 follow, and it's the best thing that we could come
3 up with.

4 So I -- we've incorporated the Corps of
5 Engineers' validation of the data and whatever -- if
6 there are shortcomings, they will be defined and
7 reported in our process. And then as David said,
8 there's still going to be an additional year after
9 our initial study report comes out. So I think
10 we've got all the bases covered to the extent we
11 can.

12 STEPHANIE WHITE: I think that
13 David's suggestion is still on the table, and that
14 is that the objective could read, Use available
15 information to determine if a relationship can be
16 found between Project operations, and so on. I
17 think the discussion we had about the -- is about
18 the extent of that available information and what is
19 appropriate.

20 Can this -- can this stand as is, as
21 modified? Use available information to determine if
22 a relationship can be found between Project
23 operations and the occurrence or severity of ice jam
24 flooding in the Loup River bypass reach.

25 Okay. I see a green from David. We'll

1 talk about the associated activities next. So it
2 may be that we'll be able to address a concern that
3 might be -- currently might be associated with the
4 objective, we might be able to address it in the
5 activities.

6 So if I take a quick show of cards --
7 let's do that quickly, a quick show of cards on the
8 objective as changed, which is to replace the first
9 five words with, Using available information to
10 determine if a relationship can be found.

11 Greens. On the phone? Kim, David has
12 shown a green.

13 KIM NGUYEN: Okay.

14 STEPHANIE WHITE: Okay. Jean, we'll
15 wait for you -- okay, green.

16 Let's move off of Objective 2. Let's talk
17 about the associated activities. And again, we'll
18 discuss these as a group, and we'll add or delete as
19 necessary, or change or tweak. Update July 1994
20 Corps report tables and graphs relative to the
21 bypass reach, as the first activity. The second is,
22 Plot flows in the Loup Power Canal and the
23 Loup River bypass reach from November to April of
24 each year.

25 Questions, comments, concerns about these

1 activities? So if we took a quick show of cards,
2 they'd all be green? Go ahead, Jean.

3 JEAN ANGELL: You're so surprised,
4 aren't you?

5 I don't know if they would need the flows
6 plotted for the entire year since they would want to
7 look at the operation year-round. I think it would
8 be better if there was plotting of flows year-round.

9 STEPHANIE WHITE: Okay. So Jean's
10 specific comment is about this bracket here,
11 November to April, and really you're suggesting that
12 it be year-round rather than limited to these
13 months.

14 PAT ENGELBERT: The intent of that
15 activity was to plot the flows that remained in the
16 river that were not diverted through the power canal
17 and compare those to the ice observation records to
18 perform the qualitative. So I'm not -- I'm not
19 quite sure what plotting year-round will help
20 relative to the ice jam flooding.

21 I think I understand your wanting to do
22 that and making sure that we look at the sediment
23 transport component of it. And maybe a better way
24 is to revise that activity to say, Plot flows,
25 et cetera, and compare to ice observation records,

1 and then have a separate activity, again, utilizing
2 the results of the sedimentation study to look at
3 whether or not the sediment transport indicators
4 have changed, and if so, have they had an effect on
5 ice jam flooding.

6 JEAN ANGELL: That's probably better.

7 STEPHANIE WHITE: Okay. So let's go
8 back to the second bullet. Plot flows and compare
9 them to --

10 PAT ENGELBERT: And compare to the
11 ice observation records.

12 STEPHANIE WHITE: And then the third
13 bullet?

14 PAT ENGELBERT: Incorporate the
15 results of the sedimentation study relative to the
16 sediment transport indicators to assess potential
17 effects, if any, on ice transport or -- yeah, I
18 think that's probably all right.

19 STEPHANIE WHITE: Okay. So the
20 activities are, Update July '94 report tables and
21 graphs relative to the bypass reach. The next
22 bullet would read -- would say, Plot flows in the
23 Loup Power Canal and Loup River bypass reach and
24 compare them to ice observation records. The third
25 and new bullet would read, Incorporate the results

1 of the sediment study relative to sediment transport
2 indicators to assess potential effects, if any, on
3 ice transport.

4 David, let me give you a microphone.

5 DAVE TUNINK: On the same line, do we
6 want to look at historic information on the
7 morphology of the river and how it might relate to
8 ice jams? Do we look -- historically look at the
9 morphology of the river and then how it looked
10 before an ice jam, after the ice jam, see if it had
11 an impact on the formation of an ice jam or ice?

12 STEPHANIE WHITE: Are you suggesting
13 that as a new activity?

14 DAVE TUNINK: Yes, I am. Because,
15 you know, we look -- I'm sure they've got aerial
16 photos of the river and how it looks over the years
17 and how the flows have changed. You know, Jean's
18 been talking about vegetation encroaching on
19 channels, so how has it changed over the years and
20 how it may have an impact on flow and ice formation.

21 STEPHANIE WHITE: So if you stated
22 that as an objective, how would you word it -- I'm
23 sorry, an activity, can you word it?

24 DAVE TUNINK: Evaluate historical
25 river morphology and changes over the years.

1 STEPHANIE WHITE: Okay. Evaluate
2 historical river morphology and changes over the
3 years.

4 Go ahead, Gary.

5 GARY LEWIS: They asked me to comment
6 here on that issue.

7 I think -- I know the objective in trying
8 to develop these study plans was to try to minimize
9 the amount of morphology, because that is going to
10 be a heavy hit on this whole project, and to try to
11 keep it in one place and then have it teach you
12 everything you need to know about all these other
13 nuances. So we can build it into these others, but
14 I think when we get to that study -- hopefully this
15 afternoon -- we'll find, I think, that it's going to
16 address most of this.

17 My only comment on that is data limitation
18 for what you just discussed. We can look upriver
19 and down river from the diversion, but you can't go
20 back in time and see a whole lot of data of before a
21 project and after a project.

22 Bear in mind that the morphology on any
23 day that you take an aerial photograph, that's the
24 collective product of a lot of days, weeks, months,
25 possibly years, leading up to that point. Don't

1 assume that the morphology and the condition of the
2 river you see on any given day is a function of what
3 happened that day, flow passage of that day, those
4 sorts of things.

5 So there's limited value in these
6 snapshots in time look-see at the river. If it's
7 two days after an ice jam flood, what you see may
8 not be the effect of that ice jam flood. That's all
9 I'm suggesting.

10 STEPHANIE WHITE: Go ahead, George.

11 GEORGE WALDOW: My comment to that --
12 and I have thought of it previously -- is that we've
13 reviewed the Corps' studies at length. And when
14 they were tasked with finding a -- a cause or a
15 rationale to explain the ice jam formation, they'd
16 never asked this question, as far as I could tell.
17 They went, instead, to the locations where the ice
18 jams happened -- can they not hear me?

19 STEPHANIE WHITE: Go ahead.

20 KIM NGUYEN: There seems to be
21 another conversation going on. Is somebody on their
22 cell phone or something?

23 STEPHANIE WHITE: We're hearing it
24 too. Randy, are you still there?

25 RANDY THORESON: Yes, I am, but I

1 don't know what that is.

2 STEPHANIE WHITE: Okay. We'll keep
3 going. Go ahead, George.

4 GEORGE WALDOW: Okay. The problem I
5 see with doing this is the -- the place where we
6 should be starting, if our task is to look for
7 incremental Project effects, is to take the studies
8 that the Corps has done, and they did their studies
9 and came up with a fairly basic predictive model
10 based on temperature degree, date, kind of a thing.
11 And that was the best they could do with the
12 information they had. And they -- they had -- they
13 went back to, like, 1962 in the occurrence of ice
14 jam events and did a historical analysis, and they
15 never asked this morphology question.

16 And it concerns me in this case because
17 we're looking at ice jams in the bypass reach, but
18 the ice jams don't really occur at the diversion
19 structure. They're a manifestation that happens
20 elsewhere. Either they start upstream and pass
21 through the Project area, or they occur downstream.
22 And I believe I recall that there have been some in
23 the Genoa area where Beaver Creek has its
24 confluence. And that's a common thing, that ice
25 jams occur at sharp bends and at the confluence of

1 two streams.

2 There is good aerial photography going
3 back to when the Project was built, approximately
4 every decade. So it could be looked at in terms
5 of -- given Gary's explanation about snapshots of
6 morphology that's developed over time. What I see
7 they could give you is vegetation encroachment,
8 possibly, over time.

9 But unless the morphology of the river can
10 be shown in the sedimentation analysis that's going
11 to be presented, there's no indication that we have
12 that the river had changed very dramatically.

13 Pat, comment on that if I'm wrong, but it
14 seems that it's in a fairly stable equilibrium
15 position, not that it doesn't change, you know, from
16 event to event, but overall it doesn't seem that
17 it's dramatically altered over time.

18 PAT ENGELBERT: The -- that would be
19 assessed in the sedimentation study, whether it's
20 aggrading, degrading through a host of different
21 factors. We will be looking at that in the
22 sedimentation study, which we'll probably be
23 covering shortly after lunch, I would guess.

24 STEPHANIE WHITE: Go ahead, Jeff.

25 JEFF RUNGE: I do think it's

1 important that we do link the objectives to the
2 channel morphology, stream morphology, and right now
3 that linkage isn't there. But I think to best move
4 on is wait until we start talking about the
5 associated activities for these other study plans
6 and then just have that placeholder in place so that
7 we can go back and provide that linkage under
8 Section 12 here.

9 STEPHANIE WHITE: Is it this one
10 right here?

11 PAT ENGELBERT: But we had it at that
12 second bullet, we did incorporate --

13 STEPHANIE WHITE: Incorporate the
14 results of the sedimentation study relative to
15 sediment transport indicators to assess potential
16 effects, if any, on ice transport.

17 JEFF RUNGE: Well, that's sediment
18 transport indicators, but that's not all-inclusive
19 of channel morphology and that's not inclusive of
20 all the study tasks or study objectives in the
21 sedimentation section.

22 And again, too, that also goes beyond that
23 by looking at the changes in land cover
24 classification and the flow bypass section as well.
25 And so as we get to those sections and get to those

1 tasks, I think it's good to reflect back on the ice
2 jam flooding section as well.

3 STEPHANIE WHITE: So Jeff, is it this
4 bullet that becomes our placeholder, which was
5 Dave's suggestion, Evaluate historical river
6 morphology and changes over the years? It doesn't
7 sound like it's quite right anymore.

8 LISA RICHARDSON: Stephanie, I don't
9 know, I think if we're going to have a bullet like
10 this, we've got to somehow tie it to ice, otherwise
11 it belongs in another study.

12 MATT PILLARD: As I've been thinking
13 about this one -- and to relate it back to ice --
14 would you look at potential changes in morphology
15 over time and try to plot those against observed ice
16 conditions to see if there's any significant
17 correlation between, you know, a year where you had
18 a certain amount of observed channel or bare
19 sandbars or whatever you observed, again, using that
20 methodology that we will present under the flow
21 depletion, relate any of that back to the observed
22 ice conditions and see if there's any relationship.
23 I mean, that's the connection that would have to
24 exist. The data that you're using would be somewhat
25 subject, I would think.

1 JEFF RUNGE: Definitely. And we've
2 got locations of where these actually have occurred
3 through the Corps of Engineers' report. And so it's
4 looking at those changes in stream morphology and
5 looking at the present conditions and drawing some
6 association to those -- geomorphic conditions to
7 those exact locations where these ice jams have been
8 known to occur historically.

9 STEPHANIE WHITE: So to capture
10 Matt's suggestion, I've added, To evaluate
11 historical river morphology and changes over the
12 years and plot against ice conditions. I might not
13 have that perfectly written.

14 So just to recap, our associated
15 activities under Objective 2 are, To update the '94
16 report tables and graphs; To plot flows and compare
17 them to ice observation records; To incorporate the
18 results of Study 1, which is sedimentation, relative
19 to sediment transport indicators to assess potential
20 effects, if any, on ice transport; and then, To
21 evaluate historical river morphology and changes
22 over the years and plot them against ice conditions.

23 Lisa, I'll bring you down the microphone.

24 LISA RICHARDSON: I'm going to add
25 back in again, I still think this last one -- now

1 we've added in ice, but I think we still need to
2 find a way -- it's got to be relative to the Project
3 too. And I'm not sure what we're going to be able
4 to tell from what that statement says how it all
5 relates to the Project.

6 I mean, I think you're maybe evaluating
7 how ice has changed over the years, but I don't
8 think you're making a linkage yet back to Project
9 effects, which is really the key point of these
10 studies, is the Project effects. Can we further
11 refine that somehow to get information related to
12 the Project effects?

13 STEPHANIE WHITE: Jeff, go ahead.

14 JEFF RUNGE: In order to do that,
15 we've got to get into the specific activities and
16 methods. And so we can get started on that if we
17 want to, but for now, I guess would this be a
18 sufficient placeholder, and then when we get into
19 the methods as we go into the other sections, we can
20 get back to this one objective here and refine it.

21 STEPHANIE WHITE: So I'm adding just
22 a little -- my own asterisks up here, which is to
23 relate it back to the Project. And Jeff has
24 suggested that it serve as a placeholder. Lisa, is
25 that sufficient?

1 LISA RICHARDSON: I think so, as long
2 as we get -- as long as we get it back to the
3 Project. We have to somehow relate it to the
4 Project. And I guess, Pat, I'd ask your thoughts,
5 if you think that's possible. And maybe we find
6 that it is.

7 PAT ENGELBERT: I would suggest that
8 once we get through the sedimentation component, we
9 revisit this to see if it answers the questions or
10 if we need a revision. But I think it's important
11 that we do relate it back to Project effects because
12 that's why we're doing studies to begin with.

13 STEPHANIE WHITE: Okay. So what I'd
14 like to do is call for a vote on the following, it
15 is the associated activities for Objective No. 2 on
16 Study 12, Ice Jam Flooding on the Loup River, as
17 follows: Update July '94 report tables and graphs
18 relative to the bypass reach; Plot flows and compare
19 them to ice observation records; Incorporate results
20 of Study 1, Sedimentation, relative to sediment
21 transport indicators to assess the potential
22 effects, if any, on ice transport; and then this
23 final bullet, which we'll come back to at the end of
24 today, if needed, which is, Evaluate historical
25 river morphology and changes over the years to be

1 plotted against ice jam conditions, and the ultimate
2 objective or task for us as a group is to relate
3 this back to Project effects.

4 Can I get a show of cards on those
5 activities as stated?

6 JEAN ANGELL: Can I hold the vote
7 until I hear about the sedimentation study? I guess
8 that's only my concern. That's my only concern, I
9 don't know what their going to talk about in the
10 sedimentation study. I would hope that it --

11 STEPHANIE WHITE: So let's move off
12 of this, let's go have lunch. We'll bring this back
13 after we talk about sedimentation. Specifically,
14 we'll bring back the associated activities for
15 Objective No. 2.

16 All right. Any objections? Let's go --
17 Ron, is lunch here?

18 RON ZIOLA: Most of it's here. It
19 should be here by noon, if it isn't already out
20 here. There's three different kinds of sandwiches.
21 There's a roast beef, a turkey, and a club. There
22 should be some other sides to go with it.

23 What I need right now is of the people
24 here, who is not going to be here tomorrow?

25 STEPHANIE WHITE: Is anyone here

1 today not planning to attend tomorrow?

2 RON ZIOLA: Because we have another
3 lunch that's a little more person specific, so --
4 we'll have everybody here but three?

5 STEPHANIE WHITE: Three, Jerry, Jean
6 and Robert.

7 RON ZIOLA: Okay.

8 STEPHANIE WHITE: Okay. The good
9 news is we're way ahead of schedule. We've talked
10 about study plans before lunch. We'll have ample
11 time after we come back to talk about sedimentation.

12 Let's take a break. When you come back,
13 we're going to talk about sedimentation -- or I'm
14 sorry, we're going to come back and talk about flow
15 depletion and flow diversion.

16 *(Lunch break - 11:53 a.m.)*

17

18 *(Meeting resumed - 12:58 p.m.)*

19 STEPHANIE WHITE: We've tried some
20 different things today. I think it's a little more
21 effective than it was at our meeting on the 21st,
22 but this is a good time to stop and take a pulse
23 point of you all.

24 Are there things we could do a little bit
25 differently? Are the microphones working? I think

1 we have -- it would be best if everybody had their
2 own, but that is way beyond my sound mixing
3 abilities.

4 Okay. It looks like we're all back.
5 We're missing John Shadle. Otherwise, I think we're
6 all back at the table. Let's get started -- I'm not
7 miked. I am miked.

8 Okay. As we discussed over lunch a little
9 bit the order of study plans that we might discuss
10 today. And since sedimentation came up so often in
11 our discussion of Study 12, Ice Jam Flooding on the
12 Loup River, and because you won't be with us
13 tomorrow, Jean, we thought we might do sedimentation
14 first. So if there's no objection, we're going to
15 move through these slides, Study 5, just so we can
16 get to sedimentation.

17 This is the goal of the sedimentation
18 study.

19 PAT ENGELBERT: Slide 24.

20 STEPHANIE WHITE: We're on Slide 24.
21 I don't believe we have anybody on the phone yet.
22 In fact, Kim will be the only one joining us, and it
23 sounds like she'll be late this afternoon, so thanks
24 for the reminder.

25 This is the goal of Study Plan One,

1 Sedimentation, as it was adjusted by this group on
2 the 21st of April: To determine the effect, if any,
3 that Project operations have on stream morphology
4 and sediment transport in the Loup River bypass
5 reach and in the lower Platte River. In addition,
6 compare the availability of sandbar nesting habitat
7 for interior least terns and piping plovers to their
8 respective populations and to compare the general
9 habitat characteristics of the pallid sturgeon in
10 multiple locations.

11 This is the goal as we agreed to it last
12 time, so we'll not discuss the goal, rather, we'll
13 move straight into the objectives. And this one,
14 because of its importance to all study plans, we
15 took a departure a little bit in our presentation
16 material so that Pat could walk us through some of
17 the more detailed methodology in sedimentation.

18 So Pat, I'll give you the slide mover and
19 you can take that microphone and walk us through
20 your methodology.

21 PAT ENGELBERT: As Stephanie
22 mentioned, we're going to do a little bit different
23 process for this particular study, provide a little
24 more background as to exactly how we plan on
25 attacking the goal or meeting the goal. And in

1 doing so, we wanted to provide a little bit of
2 background.

3 But the first thing I need everybody to do
4 is put your yellow and red cards in your pockets.
5 We'll only be using the green cards for this part of
6 the presentation.

7 As Stephanie mentioned, the proposed
8 methodology that we are going to use for the -- I
9 just got red-carded, by the way -- the proposed
10 methodology that we are proposing is to assess the
11 Project effects on morphology. And in order to do
12 that, we've chosen to utilize a regime-based
13 analytical method that has been used in the basin on
14 the Platte River in previous studies -- I didn't
15 hang up on anybody, I hope. Sorry about that.
16 Stephanie, can you put red cones up around that
17 phone?

18 It's a regime-based analytical method that
19 has been used on the river. It will allow for a
20 quantitative analysis to be performed. We will be
21 able to look at both current and alternate flow
22 conditions. And ultimately, what this will allow us
23 to do is to assess how flow and sediment regimes
24 affect the morphology.

25 The first objective that we will be

1 looking at is, To characterize sediment transport in
2 the Loup River bypass reach and in the lower
3 Platte River through effective discharge
4 calculations. Now, I will go through exactly what
5 the definition of effective discharge is here in
6 just a moment.

7 But the activities that are associated
8 with meeting this objective are, Update the sediment
9 budget, utilizing existing data sources. There's
10 some literature out there on the sediment budget.
11 We will generate collective sediment discharge
12 curves at all the existing USGS locations in the
13 basin, and I will also cover exactly what that
14 collective sediment discharge curve is. And as a
15 result of this analysis, we will determine two
16 sediment transport indicators, one being the
17 effective discharge, and one being the total
18 sediment transport.

19 Okay. So with that in mind, let's move on
20 to the definition. The definition of effective
21 discharge is, That discharge which transports the
22 largest fraction of total sediment load. For
23 example, over the course of a year, what is that
24 discharge that's going to convey the most sediment
25 for that given year, not for a single event, but

1 over the course of the year, what is that discharge
2 or that range of discharges that is going to convey
3 the most -- the total -- the largest fraction of the
4 total sediment load. Because it is that discharge
5 that results in the average channel morphology in
6 that particular reach of the river.

7 So it's the most important channel shaping
8 flow. Over the course of the year, what is that
9 flow or that relative range of flows that conveys
10 the most total sediment which results in the average
11 morphology of that reach of the river.

12 There are existing relationships between
13 effective discharge and width and depth parameters
14 of a channel. So it is also a parameter that is
15 tied to stream channel characteristics.

16 The definition of total sediment
17 transport, That total amount of sediment that is
18 being transported by a range of flows, whatever the
19 time period you're looking at, be it a year, be it a
20 season, be it a month, be it a week, be it subdaily,
21 what is that total sediment that's being transported
22 by a particular flow or a range of flows.

23 What we will utilize that total sediment
24 transport for is to look at the annual sediment
25 discharge compared to total sediment yield from the

1 watershed. So if the stream is receiving a certain
2 amount of sediment, what does the -- what type of
3 assessments can we make based on the total sediment
4 being transported. Is it flow limited, or is it
5 supply limited, that particular reach.

6 Okay. This is the procedure that -- that
7 we are proposing to use to analyze the sedimentation
8 component of this particular study. The first part
9 of this is to develop a flow frequency curve, not
10 flow frequency as in return frequency, but how often
11 did that particular flow or that particular range of
12 flows occur over a given time period.

13 The next piece is to develop a sediment
14 discharge rating curve. So based on USGS stream
15 channel surveys, what is the -- what -- based on
16 empirical relationships, what is the amount of
17 sediment that is conveyed for a range of flows.

18 And then lastly, what is developed from
19 the flow frequency curve and -- a combination of the
20 flow frequency curve and the sediment discharge
21 curve is this collective sediment discharge curve.
22 And I'll be walking through an example here in a
23 second that hopefully will help clarify this
24 analytical method.

25 Okay. One of the positives or one of --

1 why we feel this is the most appropriate procedure
2 to utilize in analyzing sediment is that it's based
3 on real data. It's based on gage data, it's based
4 on survey information, it's based on the literature
5 where sediment samples have been obtained in order
6 to get 50, and other things like. So it's all based
7 on ground-truthed information.

8 As I stated, the first part of the
9 procedure is to develop a flow frequency curve.
10 What we will do is for a given period of record --
11 and the example I'm going to use is over the course
12 of a year, be it a water year, calendar year -- we
13 will take the daily mean discharge from that
14 particular gage.

15 Let's say the gage at Louisville, we would
16 take the mean daily discharge for, let's say, water
17 year 2006, and we would break those flows, those
18 mean daily flows, into, say, 20 or 25 ranges and we
19 would lump those flows into those ranges and then
20 count the number of times that that flow occurred.

21 For example, let's say that at Louisville
22 between, say, a thousand CFS and 2,000 CFS we've
23 chosen for our range. Looking at that mean daily
24 discharge record, how many times did that range of
25 flows occur, 20 times, 30 times, 40 times,

1 et cetera. And we'd look at 2,000 to 3,000, 3,000
2 to 4,000 to come up with this flow frequency curve.

3 What that does is it allows us to create a
4 histogram of the number of times that that
5 particular occurred. For example, for a given year,
6 for a given one-year period of record, let's say for
7 a discharge between maybe 500 CFS and 1,500 CFS,
8 that particular range of discharges occurred
9 approximately a little over 8 percent of the time.
10 Between 1,500 and 2,500, that range of discharges
11 occurred roughly 18 percent of the time, or, say,
12 60 days. 20 percent of a year is roughly about
13 60 days, and so forth.

14 So you can see that some of the more
15 moderate discharges are occurring more often than
16 the higher, more flood frequency type of discharges.
17 So that's the first piece, how many times did that
18 particular range of discharges occur within the
19 period being analyzed.

20 The next step is to develop our sediment
21 discharge rating curve, okay? And that is the
22 relationship between flow and the amount of sediment
23 that that particular flow transports.

24 The method that we've chosen to derive our
25 sediment discharge rating curve is Yang's Unit

1 Stream Power Method. Now, that's a method that was
2 based on data collected right in the Loup basin.
3 It's been applied in both the Loup and the
4 Platte Rivers to derive the sediment discharge
5 rating curve.

6 And the empirical relationship is a
7 function of stream slope, depth, velocity, shear
8 strength, grain size, so there's a host of physical
9 channel characteristics that are incorporated into
10 developing this sediment discharge rating curve.

11 What the curve looks like, it's a plot of
12 the total sediment discharge versus flow. For
13 example, a flow of around 9,000 CFS will convey
14 approximately 5,000 tons of sediment per day.

15 Now, the D50 that we've selected to
16 incorporate into this -- into Yang's Method is the
17 total sediment load D50. Because with this being a
18 sandbed system, it's heavily bed load driven. We
19 didn't use just the suspended sediment D50, but the
20 -- or we're proposing to use the total sediment load
21 D50, not just the suspended sediment load. And for
22 this example, that's what we used.

23 GEORGE WALDOW: Maybe you can define
24 what D50 is.

25 PAT ENGELBERT: For those here who

1 are unfamiliar with the terminology -- any of the
2 terminology I use, please raise your hand so I can
3 answer the question.

4 But D50 is that median grain size from a
5 particular sample. If you were to plot your total
6 weight of your sample versus each respective -- see,
7 now I'm getting in way too much detail -- but it's
8 the median, the middle grain size within a sediment
9 sample.

10 Again, getting back to this particular
11 curve, for a range of discharges, there's a
12 relationship between the discharge and the amount of
13 sediment that it can transport.

14 Okay. The next part of the process is to
15 develop the collective sediment discharge curve.
16 And that is created by multiplying your flow
17 frequency curve by your sediment discharge rating
18 curve.

19 Okay. So for example, on your flow
20 frequency curve, you had a discharge in the range of
21 around 3,000 CFS, let's say, that occurred 60 days
22 for that period that you're analyzing, and 3,000 CFS
23 can convey, let's say, 5,000 tons per day. So you'd
24 have 5,000 tons per day, times the 60 days, that
25 gets you the total sediment that was transported by

1 that flow for that particular year.

2 And you plot those on a curve, which is
3 called a collective sediment discharge curve. The
4 peak of that curve is the effective discharge, okay?
5 The peak of that curve is the effective discharge.
6 And I'll show you a plot here in a second. The area
7 under that particular curve is the total sediment
8 that is transported for that period of record.

9 And getting back to the -- to the
10 effective discharge, again, from that calculation,
11 we can look at particular channel characteristics,
12 width and depth, and also, again, develop or derive
13 the total sediment being transported for that period
14 of record.

15 Instead of determining the area under the
16 curve to get your total sediment transported, we
17 modified it slightly to become more accurate by just
18 taking the mean daily discharge times our sediment
19 discharge rating curve to come up with the total
20 sediment that's transported on that day.

21 So here's an example of the collective
22 sediment discharge curve. On the Y axis, we have
23 the total sediment discharge, and on the X axis, we
24 have the flow.

25 So again, for a range of flows around

1 30,000 (sic) CFS, how many times that that occurred
2 within a given year, we multiply that by the
3 sediment discharge rating curve to get the total
4 sediment being transported. So for this particular
5 example, when there were flows in the range of about
6 3,000 CFS, they conveyed roughly 70,000 tons of
7 sediment.

8 What's interesting to note is although
9 these larger flows for that particular event will
10 convey a higher amount, again, for that particular
11 event, it's over the entire course of the year or
12 the period of record that you're looking at to
13 determine which one of those more moderate
14 discharges actually conveyed more sediment over the
15 course of that period.

16 Here's a plot of all three curves on top
17 of each other. And I know it's difficult to see on
18 the screen -- and for those of you that are on the
19 phone, we're on Slide 36. It's a little easier to
20 see in the handout.

21 But again, the first thing that we develop
22 is the flow frequency curve. And those bars on here
23 are in gray. So that's the plot of the discharge
24 and the number of days that it occurred.

25 The next curve that is created is the

1 sediment discharge rating curve. And then the
2 combination of the two, you get the collective
3 sediment discharge curve, and that's the brown color
4 on the screen. I think it's a slightly different
5 color in the handout.

6 So what we are proposing to do is to
7 develop these collective sediment discharge curves
8 for within the reach at each of the USGS gage
9 locations. We'll develop them for each time that
10 the rating curve was updated, because the GS updates
11 those curves because there was a change in the
12 channel cross section or a change in the rating
13 curve. So that is, again, hard data, survey data,
14 that we will utilize in order to develop the
15 sediment discharge rating curve.

16 One thing to point out here, for example,
17 that although, say, a discharge of around 2,000 CFS
18 occurred the most frequent, it was a discharge in
19 the range of about 6,000 CFS that resulted in
20 conveying the most amount of sediment for that
21 particular year. And the assertion here is that,
22 you know, those -- those aren't creating the largest
23 sandbars, but over time, over the course of that
24 year, that these flows result in the average channel
25 morphology that will exist over time, okay?

1 So just as a recap, now that we've gone
2 through the methodology, just review the objective
3 and the activities that we're proposing to do to
4 analyze these sediment transport indicators.

5 Again, the objective was, To characterize
6 sediment transport in the Loup River bypass reach
7 and in the lower Platte River through effective
8 discharge calculations.

9 And we'll do that by updating the sediment
10 budget, looking at existing sources, Corps reports,
11 GS reports, Bureau of Reclamation reports. We'll
12 generate the collective sediment discharge curves at
13 all the gaging stations, the Loup at Genoa, the Loup
14 at Columbus, the Platte at Duncan, the Platte at
15 North Bend, and then we'll determine those sediment
16 transport indicators, that being the effective
17 discharge, that discharge that conveys the most
18 amount of sediment over that period of record or
19 that period that is being analyzed, as well as the
20 total sediment transport, and look at how those
21 indicators can change for differing flow conditions.

22 Okay. Before we move on to that second
23 objective, I'm sure there's a question. I'm sure
24 there's more than one question. So would anybody
25 like clarification on how the graphs were created,

1 clarification on the methodology, or just any
2 question in general?

3 STEPHANIE WHITE: Our strategy was to
4 run through that piece that you just saw and then
5 come back and talk about these activities. If it
6 would be more helpful to you to let Pat walk through
7 all objectives and all activities for the total
8 study plan, we can do that and then come back and
9 tackle each of these sets of activities.

10 PAT ENGELBERT: And that may be
11 helpful in that we will show how we're going to use
12 these indicators throughout our analysis, as Matt
13 Pillard will show, we're going to plot those trends
14 and indicators versus bird nest counts and things
15 like that.

16 Would that be helpful, to run through the
17 whole sediment study plan, or would you like to ask
18 some questions now?

19 STEPHANIE WHITE: Jeff, would you
20 like to ask a question?

21 PAT ENGELBERT: Since you don't have
22 red and yellow cards, I only see green.

23 JEFF RUNGE: I'd prefer to go through
24 the whole presentation first.

25 PAT ENGELBERT: Okay. The next -- is

1 everyone in agreement with that? Is it okay to move
2 on or to continue on, and then we can backtrack as
3 necessary?

4 The second objective was, To characterize
5 stream morphology in the Loup River bypass reach and
6 in the lower Platte River by reviewing existing
7 literature that discusses whether or not the stream
8 is in regime, whether it's aggrading or degrading,
9 and look at cross sectional changes over time.

10 And how we propose to do that is to
11 utilize existing literature that discusses this, as
12 well as to compare our effective discharge and total
13 sediment transport calculations over time to see if
14 there's dramatic changes, to see if they provide
15 anecdotal support to the literature that exists.

16 Okay. The next objective -- Matt, do you
17 want me just to cover these and you can come up and
18 answer questions as it arises?

19 The next objective is, To determine if a
20 relationship can be detected between those two
21 sediment transport parameters and interior least
22 tern and piping plover nest counts. So we would --
23 we would plot and evaluate the nest count data
24 versus those indicators to see if we can realize any
25 trends associated with those. And we would plot

1 regression analysis and just do an overall
2 examination of those trends to see if we can glean
3 any relationship from that.

4 The next objective is, To evaluate whether
5 sandbar availability is limiting tern and plover
6 numbers on the lower Platte River. And the
7 activities that we're proposing there are, To
8 accumulate nest counts on the Missouri River below
9 Gavins Point, from Gavins Point to Ponca; review the
10 best available Missouri River sandbar formation
11 data; qualitatively determine whether sandbar
12 habitat is limiting interior tern and plovers on the
13 Missouri River; and compare results between the
14 Missouri River and the lower Platte River.

15 The next objective is, Determine if
16 sediment transport is a limiting factor for pallid
17 sturgeon in the lower Platte River below the
18 Elkhorn River. And the associated activities are,
19 To determine if the Project is affecting the
20 sediment transport. And then if the Project is
21 affecting the sediment transport, determine the
22 extent that it is limiting, using our effective
23 discharge calculation as well as the aggradation,
24 degradation analysis, and then compare those to
25 other rivers used by the pallid sturgeon.

1 And then the last objective -- I think
2 this is the last one, Jean -- is, To investigate the
3 relationship between sedimentation and ice jam
4 flooding. So we just came full circle.

5 JEAN ANGELL: What a man.

6 PAT ENGELBERT: And again, we'll
7 research the potential link between those sediment
8 transport indicators and the locations of ice jam
9 flooding, et cetera. So it's a little bit to where
10 that cross relationship comes into play.

11 And I think that's it. So with that,
12 Matt, you can either stay seated or -- we will field
13 any and all questions relative to any objectives,
14 any associated activities, and any of the
15 methodologies that we have proposed for this
16 particular study.

17 STEPHANIE WHITE: I'd also like to
18 note -- to one of your earlier points, Jeff -- that
19 the first objective that we just presented that we
20 did not agree on as a group is Objective No. 5. And
21 there was an asterisk up on the screen; there's also
22 an asterisk here.

23 That's an indication -- there are a couple
24 of points in our presentation here where you'll see
25 that asterisk, and that indicates that we have not

1 yet, as a group, reached consensus on that
2 objective. So I wanted to point that out now, and
3 we'll continue to address it as it comes up.

4 I'm going to move back to Objective 1, and
5 we'll start our discussion in chronological order.
6 If you have a question about the total presentation,
7 this is a good time for it. Otherwise, I prefer
8 that they stay specific on the objective and the
9 associated tasks.

10 So here's Objective 1, and this is one
11 that we did reach consensus on as a group, To
12 characterize sediment transport in the Loup River
13 bypass reach and in the lower Platte River through
14 effective discharge calculations.

15 What I'd like to do is focus our
16 discussion on the associated activities. And we'll
17 talk about these just like we did for ice jam
18 flooding on the Loup River. They are threefold, as
19 it stands: To update sediment budget utilizing
20 existing data sources; two, to generate collective
21 sediment discharge curves at gage stations; and
22 three, determine sediment transport indicators,
23 which include, as Pat talked about, effective
24 discharge and total sediment transport.

25 Are there any questions or comments or

1 observations? Jeff?

2 JEFF RUNGE: Yes. When developing a
3 sediment budget, is the intent of the sediment
4 budget just to develop a baseline of sediment loads
5 for each of these different study areas, study
6 points, or is this to help develop an alternative
7 analysis? I guess will you expect these changes in
8 sediment budget to change based on action
9 alternatives?

10 PAT ENGELBERT: The sediment budget
11 update would be to look at what is the anticipated
12 sediment yield to that particular reach. And as we
13 look through our calculations as to what that
14 particular reach can convey, if the amount of
15 sediment getting to the reach is greater than the
16 amount that the reach can convey, that would lend a
17 little bit of credence that it would be an
18 aggrading -- potentially aggrading reach.

19 Conversely, if it's getting less than what
20 it would convey, that would lend some credence that
21 possibly it's a degrading reach, help with the
22 anecdotal evidence of what type of system are we
23 looking at over time, and if we did a potential
24 operational -- a flow change, would that change
25 result in a change in our sediment transport to

1 change it from an aggrading reach to a degrading
2 reach, which would be a -- an impact. It would help
3 us to assess those impacts.

4 RICHARD HOLLAND: Are you going to be
5 doing cross sectional area analysis just at the
6 gaging stations?

7 PAT ENGELBERT: The question was are
8 we going to be doing the cross sectional analysis at
9 the gaging stations. And the answer is, we will
10 utilize the GS's survey information. Those are
11 primarily in the vicinity of the gages, not
12 necessarily right at the bridges, but they also take
13 them sometimes just upstream or just downstream of
14 the bridges. And then any other studies that have
15 been performed where there is existing cross
16 sectional information, we would compare those as
17 well.

18 JEFF RUNGE: Existing as in current,
19 or what's your reference for existing?

20 PAT ENGELBERT: Current and -- well,
21 if they took a set of cross sections, say, in 1986,
22 compare those to '88, compare it to -- because the
23 GS does these every year. They take roughly one set
24 of cross sections per month in the March through
25 December time frame and then compare how those

1 change over time, which is reflected in the rating
2 curve updates.

3 RICHARD HOLLAND: So would you use
4 information -- for example, there was a study done
5 by Musserter for the Game and Parks Commission down
6 by the Highway 6 bridge. They did a series of
7 transects over a 12-mile stretch. Would that be
8 information that would be used to compare to the
9 stuff at the -- the gaging data? I guess I'm not
10 sure -- they did cross sectional analysis of the --
11 for some sediment --

12 PAT ENGELBERT: Yeah.

13 RICHARD HOLLAND: -- transport time.

14 PAT ENGELBERT: I guess first, we
15 would probably utilize the information taken
16 annually at consistent locations. I don't know if
17 anyone has gone back since that -- the Musserter
18 study, which I believe was done around 2000 or 2001.
19 I don't know that anyone has gone back and got
20 another set of cross sections, where the GS takes
21 them at consistent locations annually, which will
22 provide a good relative data set.

23 DAVID TURNER: When I was looking at
24 Task 1, you say you're going to take one cross
25 section upstream of the Diversion Weir. So you

1 aren't going to be -- it says one cross section will
2 be surveyed at a point upstream of the
3 Diversion Weir. So you are planning to at least
4 take one cross section --

5 PAT ENGELBERT: We would take that
6 particular cross section upstream of the
7 Diversion Weir so that we could generate a sediment
8 discharge rating curve for the location just
9 upstream of the diversion. So we could generate
10 those same set of curves for the Loup River upstream
11 before the flow gets diverted to compare the current
12 effective discharge and the current total sediment
13 being transported there to what's in -- what's, for
14 example, in the Loup at Genoa. That's why we're
15 proposing to take that particular cross section.

16 DAVID TURNER: And then correlate
17 those other datas to the data you're looking at?

18 PAT ENGELBERT: Yeah, just to see how
19 that effective discharge changes downstream as we go
20 through the bypass reach.

21 JEFF RUNGE: One suggestion in regard
22 to that transect is to have that transect as close
23 to Cedar Creek -- or Cedar River as you can
24 downstream of there, knowing that you've got a
25 diversion and that diversion backs water up. I'm

1 not sure what effect that would have on your cross
2 sections, but I would -- and I'm not sure how far up
3 that water backs up. But I know it probably gets
4 pretty close to Cedar Creek.

5 And so there's a fine line between going
6 upstream to Cedar Creek where you lose flow and
7 sediment versus downstream where you may be affected
8 by the diversion. I don't know the solution, but I
9 guess maybe to get as close to Cedar Creek as you
10 can.

11 The other thing about USGS gage sites is
12 this may be -- this may work well as far as when you
13 evaluate the effects based on effective discharge,
14 you've got width, you've got a lot of those
15 variables, but these USGS gage sites are selected
16 because of their ridged bed, because of their
17 relatively narrow channels. And this extends beyond
18 the sediment. I'm not sure how representative these
19 USGS gage sites are of these cross sections outside
20 of the gage sites.

21 The other problem, too -- and this -- the
22 other problem, too, and this is in reference to the
23 Ginting-Zelt publication that you've cited, USGS
24 publication. There's a great diagram there as to
25 how they do their stream measurements. And they

1 don't look at the entire cross section, they only
2 look at the wetted channel area.

3 And so when looking at aggradation and
4 degradation or quasi equilibrium over time, because
5 they only look at the subaqueous areas, that if
6 there is a sediment deficit, that they may -- the
7 river channel may compensate for that by doing the
8 subaerial -- by removing sediment from the subaerial
9 or the above river sandbars to compensate for that
10 sediment loss, and that is not being accounted for
11 through USGS gage site measurements.

12 And really, there's no way to address that
13 historically, unless you go to the cross sections.
14 But I think that if we can set up a -- set up cross
15 sections and measure these over time throughout
16 these two years, outside of these areas adjacent to
17 these bridge segments, I think that would give us a
18 better understanding of what effects that we may
19 have over time.

20 The other thing, too, is when doing
21 alternatives analysis when looking at the effective
22 discharge, you've got differences temporally, not
23 just within season, which it seems like you're
24 breaking it down within season, but also you've got
25 different periods of climate. You've got drought

1 conditions, you've got wet conditions. And
2 especially during drought conditions, you've got --
3 you've got more water going through the bypass
4 area -- or not through the bypass area, more water
5 going through the diversion.

6 And so temporally, seasonally, you may
7 have -- have a net balance when you do an overall
8 calculation over the -- over the entire hydrograph,
9 and you may have -- you may have a balance by doing
10 that calculation. But within periods like drought
11 periods or wet periods, you may have differences in
12 that sediment balance. And I think it's important
13 to understand those differences by running --
14 running a historic period of record through your
15 effective discharge calculations to really find out
16 if there is seasonal changes.

17 And lastly, too, you're using daily
18 averages, but knowing that at most, 3,500 or some
19 lesser amount of that is being diverted into the
20 diversion. And so you've got -- you've got a
21 certain amount of sediment associated with that
22 water that's being removed, but that water is not
23 being put back in at that rate at which it's being
24 removed, it's hydrocycling on its way out.

25 And so that -- so within a -- within a day

1 period, you may have differences in transport as
2 opposed to having a steady release coming out of the
3 system. And I think it's also important to
4 understand those differences as well.

5 PAT ENGELBERT: And those are all
6 good points, Jeff.

7 To the last comment, the flexibility of
8 this method would allow for even subdaily analysis.

9 JEFF RUNGE: Okay.

10 PAT ENGELBERT: Although, clearly the
11 longer period you look at, the smoother things are
12 going to be. But we're not -- are there
13 limitations? Yes. Cross section information is at
14 bridge locations, but it is -- it is good data, data
15 that can be used monitoring those changes, and we
16 feel it will still allow us to make an assessment as
17 we look at both current operations and any proposed
18 alternatives that we have.

19 I guess I'd, Gary, like your thoughts on
20 the location of the sections and --

21 GARY LEWIS: I can comment on this.
22 This has been an issue for years. I've been
23 involved -- oh, since Henders, Prayban (ph), I was
24 involved in these same issues way back then, in the
25 '70s, when I was on the faculty at Lincoln.

1 There's always been a challenge to using
2 data at bridges, which is normally where gaging
3 stations are. And that challenge is -- you know, it
4 has some pros and cons to it being relevant.

5 My basic understanding or feeling about
6 that is if the flow is lower than that flow which
7 would contact the abutments, I've got good data.
8 It's not affected by the bridge. And they usually
9 gage these streams on those days they can't get out
10 there and wade them. If the flow is higher than
11 that, if it's up against the abutments, it's being
12 contracted, it's expanding downstream, it's being
13 affected by the bridge, and the channel that you're
14 surveying might be affected.

15 Now, I said earlier that the morphology at
16 any location is not a function of today's event,
17 it's a function of a long-term thing. So you can
18 argue that at these bridges, the long-term effect of
19 those bridges is that they have altered morphology,
20 and I'll yield on that. That is a concern.

21 I believe -- I know in the -- generally in
22 the Platte River, there's a lot of other data,
23 Bureau and other people who have taken transects
24 away from bridges. And I haven't done the inventory
25 on the lower Platte, this particular study area.

1 There has to be other data besides just the USGS
2 gaging stations. I'm sure the study plan has that
3 built in. Pat and George are more aware of that
4 than I am.

5 But we'll collect it all, and I think the
6 comparison of that data at locations apart from
7 bridges or gaging stations compared to those gaging
8 stations should give you a good idea if you have a
9 bogus point or not. That's probably where I would
10 go with it.

11 JEFF RUNGE: Yeah. And I don't think
12 it's as big of an issue when evaluating effective
13 discharge and making those comparisons, whether
14 aggrading or degrading. I think that it has a
15 bigger effect when talking about hydrocycling and
16 flow bypass and when you're looking at things --
17 when you're having habitat measures, not sediment --
18 sediment trending measures. And so for this -- for
19 this study plan, I'm not sure if that's as big of an
20 issue as those study plans that incorporate
21 hydrocycling and flow bypass.

22 But I do think that that issue still
23 stands here in regards to the subaerial and the
24 erosion of the -- the bars that are above most of
25 the measurements taken by USGS, that these bars are

1 formed by the highest peaks. Then the trends that
2 are being evaluated when looking at channel -- the
3 channel trends doesn't look at the elevation of
4 these bars -- the cumulative elevation of the bars
5 and the thalweg.

6 PAT ENGELBERT: Again, Jeff, this
7 particular methodology isn't set out to predict the
8 height or the size of any sandbars. It's purely to
9 look at, over time, over a period of time, how --
10 what is the sediment being transported and by what
11 discharge is the majority of that sediment being
12 transported and how does that fluctuate or how does
13 that particular indicator change over time.

14 Because you may -- and we've seen it on
15 the lower Platte, last summer, a very large -- about
16 a ten-year event came through and built up some
17 pretty high sandbars. Three months later, after
18 these more moderate discharges came through, it
19 knocked down quite a bit and, in effect, went back
20 to its more average channel morphology where you get
21 buildup of water over that large bar and dissecting
22 it, thus the braided nature of that system.

23 So what this procedure of methodology
24 allows for is as there's a change in flow, how do
25 those indicators change, and is there a relationship

1 between those indicators changing and how the
2 Project operates. And that's the heart of the
3 question.

4 JEFF RUNGE: And so when you
5 mentioned that these higher bars were knocked down
6 through subsequent flows that came through the
7 system, I guess knowing how there -- I guess I
8 shouldn't say there's a sediment deficit, but there
9 is clear water coming in from the Tailrace. Is
10 that -- are those bars that's being knocked down
11 immediately downstream of the Tailrace being reduced
12 at a different rate from those further downstream?
13 And you're not going to get that from the bridge
14 segment measurements.

15 PAT ENGELBERT: The instance I was
16 referring to was down at Louisville and another
17 particular study down in that reach.

18 JEFF RUNGE: And you're not going to
19 get that from the bridge segment measurements
20 because the closest bridge segment stream gage that
21 you have is at North Bend. There's no evaluation of
22 cross sections immediately at the Tailrace and
23 downstream -- immediately downstream of that.

24 PAT ENGELBERT: That is correct.

25 STEPHANIE WHITE: Jerry?

1 JERRY KENNY: Question, how far
2 downstream are we going to chase this in the lower
3 Platte?

4 PAT ENGELBERT: I believe the study
5 plan calls for looking at this all the way down to
6 Louisville.

7 JERRY KENNY: Okay. Then following
8 up -- and I might be repeating some comments of --
9 at the risk of sort of reiterating, but maybe
10 restating in a different way some issues that Jeff
11 was touching on, using the flow frequency, the
12 effective discharge flow frequency curve approach,
13 by compositing that, you lose the sequence of flows.

14 And so a fundamental assumption, then, is
15 that sequence of flows is not particularly
16 important. So if you can address that some way in
17 the study approach, study methodology, to validate
18 that that's -- that the sequence of flows isn't
19 important in this case, or any particular changes in
20 sequences of flows as a result of changes in
21 operation wouldn't have an -- you can conceivably
22 have an operational change that left the flow
23 duration curve looking identical, but the sequence
24 of flows that compose that flow duration curve could
25 be very different to how highs follow lows, and that

1 might change how sediment moves around.

2 STEPHANIE WHITE: We have a couple of
3 people that would like to speak as well. Go ahead,
4 George.

5 GEORGE WALDOW: My comment to that,
6 Jerry, is that the Project isn't able to store water
7 from one day to the next. Its capacity is limited
8 in hours. And so the hydrocycling is a subdaily
9 kind of a phenomenon. So literally taking the mean
10 daily flow from the gage, it's still the same flow
11 whether you subdivide it into two full periods for
12 peaking cycling or whether you keep it the same. So
13 the day-to-day sequence of the flow record would be
14 unchanged. It's only the subdaily -- subhourly
15 changes that we're talking about.

16 STEPHANIE WHITE: Your comments,
17 Jeff?

18 JEFF RUNGE: But that sequencing is
19 important not because of the differences in -- in
20 changes to the flow regime, but differences in the
21 sediment alternatives that would provide different
22 amounts of sediment through the system, or transport
23 different amounts of sediment through the system.
24 So your alternatives would be different seasonally
25 based on your sediment alternatives, even though the

1 flow may still be similar.

2 If there's certain aspects such as
3 sediment augmentation, flow bypass, just differences
4 in operations that would change sediment transport,
5 your flow frequency curves would be similar because
6 you aren't changing the storage, but you're changing
7 the amount of sediment that would be transported
8 through the system.

9 GARY LEWIS: I'm sure I understand
10 the point being made, so it's probably best not to
11 react to it.

12 But I think just repeating what George
13 said, there's no storage of water in the system
14 except on a daily basis, temporary surcharging and
15 releases from the facilities. So you're not going
16 to change the flow duration curve significantly,
17 especially if it's based on daily flows. If it's
18 based on daily flows, there wouldn't be any changes
19 to that.

20 So you're suggesting, though, that the
21 sediment would be altered in some way, the sediment
22 supply or the ability of those flows to transport
23 the sediment? I don't understand.

24 JEFF RUNGE: Yeah, that would be
25 correct. And there would be changes in flows due to

1 the subdaily operations, not daily changes in flows,
2 but if there are different alternatives being
3 proposed that would look at differences in
4 hydrocycling.

5 But then there's also potential effects
6 due to sediment, that there may not be 1.2 to
7 2.2 tons of sediment being removed. There may be
8 alternatives that would allow for more or less
9 sediment that would be removed -- well, there's not
10 going to be more sediment removed from
11 the diversion, based on the existing limitations in
12 capacity.

13 But there could be alternatives that would
14 allow for less sediment being removed, and you would
15 have less of a sediment at the Tailrace -- sediment
16 deficit at the Tailrace. And if those alternatives
17 are being proposed, then accounting for this
18 seasonality in your hydrograph, I think, would be
19 important.

20 GARY LEWIS: I'll respond to that by
21 agreeing that the method that we're proposing can
22 assess seasonality. I don't believe that we have
23 the ability to calculate transport of sediment on a
24 day when the daily flow is a quarter and then a half
25 and then three-quarters and then full, versus a day

1 when it's at the average of those values and to know
2 the difference in the amount of transport that's
3 going to occur.

4 Now, you can take your equations and apply
5 them and it might give you a little difference in
6 the amount of transport on a day that you hydrocycle
7 versus a day that you would have just passed a
8 uniform flow. I wouldn't believe the results, and I
9 certainly wouldn't propose anybody manage the
10 Project on the basis of those. We just don't have
11 that precision, so we can't get down to that detail.

12 I might comment that the effect that Jerry
13 points out on the fact that the sequence of flows is
14 not incorporated in the effective discharge. I've
15 done enough work with effective discharge to know
16 that that goes away for longer periods, so I'm --
17 I've always been a little hesitant about applying
18 effective discharge to a month, to try to determine
19 effective discharge for a month, for July, for
20 example, what are the average July effective
21 discharges.

22 I think we can look at seasons and make
23 some sense out of it, but as you get longer, my
24 experience with effective discharge is you look at
25 the entire period of record, and we absolutely plan

1 to do that. In that, I would be very confident that
2 the effect of the sequence of those days is lost in
3 that calculation. If you change the sequence
4 dramatically, you get about the same result.

5 So the longer the period, the less the
6 concern that Jerry raises, so we'll just have to
7 watch that, Jerry, keep the sequence -- the periods
8 of sequences that we're looking at. And if we do
9 get down to smaller periods, I think we should look
10 at the pre-nesting period. As I said, the
11 morphology today is a result of a period of time of
12 flows. So let's look at a period of time up to
13 nesting, comparing that with some of the data we're
14 going to be comparing these results to, both total
15 sediment and the effective discharge. But that
16 can't be one month. I'd like to see it longer.

17 And if the effective discharge is the kind
18 of flow you saw up on the chart, if that flow
19 doesn't occur in that period of time, it's not
20 shaping the channel. So there's a lot that needs to
21 be looked at here with sequence, Jerry. I would
22 give you that that is important for shorter
23 durations; I think it goes away for longer
24 durations.

25 STEPHANIE WHITE: We've got some

1 folks on the other side of the table that want in on
2 this discussion. Bob, we'll start with you, and
3 then David.

4 ROBERT HARMS: This is a complex sort
5 of a discussion, and I would like to kind of take us
6 back to the four points that Runge brought up having
7 to do with how representative some of the data
8 collection might be, and take it one step further
9 from that, to -- well, we recognize there may be a
10 challenge with that, but what are the solutions to
11 get at some of his comments, mainly the discussion
12 between you, Pat and Jeff.

13 Like let's take the first one, which was
14 the locations of the gages at the bridge segments,
15 and talk about a solution for that.

16 JEFF RUNGE: Thanks, Bob. And I
17 think, too, that the closest measure that they have
18 to the Tailrace is North Bend. And I guess how many
19 miles away is North Bend from the Tailrace?

20 PAT ENGELBERT: Roughly about
21 31 miles.

22 JEFF RUNGE: Thirty?

23 PAT ENGELBERT: Thirty-one miles.

24 JEFF RUNGE: And so a solution would
25 be to have transects that -- that -- I guess not

1 mimicking the methods of USGS by looking at the
2 subaqueous elevations, but elevations throughout the
3 entire -- I hate to use this word, but the active
4 channel and to have those measurements, those
5 cross sectional measurements, closer to the
6 Tailrace, and so you can look at those seasonal
7 effects to bar erosion. As you mentioned, Pat, high
8 bars were built, these bars were eroded within a
9 season. Do these rates of erosion change as you get
10 further away from the Tailrace?

11 PAT ENGELBERT: I guess I'm not quite
12 sure on the subaqueous and subaerial measurements in
13 that the GS, over time, monthly, takes cross
14 sectional readings, and they adjust their flow
15 records, which covers a range of very deep flows to
16 very low flows.

17 And, again, we would be using the cross
18 sectional information, the survey information that
19 they have published to look at what that sediment
20 discharge rating curve is, not -- not just the ones
21 where they are, you know, below the channel, but
22 also the ones that are above, the whole host of that
23 particular record. And maybe one of the potential
24 limitations is on those much lower flows, that would
25 be a consideration. I don't know a way around that.

1 Two, relative to the locations and only
2 taking cross sectional information over the next
3 two years, we're going to be comparing the results
4 of this study to the nesting data that has been
5 gathered since 1980. I don't know if taking cross
6 sections over the next two years helps us to compare
7 how those particular indicators have changed or how
8 they are compared to nesting data back in the '80s
9 and '90s.

10 And I guess, again, to Gary's point,
11 relative to the locations, you know, that -- that
12 there are -- the data is there, and when it is below
13 the abutments, it's still a good approximation of
14 what that channel width and depth relationship is.

15 GEORGE WALDOW: I'd like to add to
16 that. My thinking is that the value of using the
17 USGS gaging stations is that it's kind of
18 incontrovertible, unbiased, corrected, adjusted
19 information, that's their business to prepare that.
20 And if we start taking cross sections below the
21 Tailrace return but we don't have accurate flow data
22 there, now we're -- the flow there would be
23 totalizing the gage on the discharge canal itself,
24 the -- using the Genoa or the newly activated
25 Columbus gage and the Duncan gage on the Platte.

1 Now, you're -- you have potentially at
2 least three gages that you're trying to add the
3 flows from, and each gage has its own inaccuracies.
4 And you end up using -- now you have a mixture of
5 data. You've got the flow and the rating curves at
6 the USGS gaging stations, then you have a transect
7 or more than one transect where you don't have
8 accurate flow data and you're trying to combine all
9 this. And it just -- it brings into question the
10 reality of the credibility of the result.

11 And the other thing that comes to mind
12 is -- and this goes to the question about the
13 subaqueous cross section that Jeff mentions -- I'll
14 go back to the fact that when the river is high, the
15 relative component of flow coming from the Project
16 gets smaller and smaller relatively, and so its
17 ability to influence sediment transport -- if the
18 flow is 30,000 at the North Bend gage, the Project
19 flow is something less than 3,000, so it's a -- it's
20 almost an insignificant amount when the river starts
21 to get above its normal channel.

22 STEPHANIE WHITE: I'd like to jump in
23 and do maybe two things. One is to -- I'd like to
24 capture your four points, Jeff, so we make sure that
25 we're hitting them, and I can use it to guide our

1 discussion. And the second one is I'd like to hear
2 from David. So if you'd like to go first, and then,
3 Jeff, we'll come back to you and I'll take note of
4 your four points so that we can make sure that we
5 check them off as a group.

6 DAVID TURNER: As I said earlier I'm
7 not a geomorphologist, so I'm kind of relating
8 something Nick provided to me.

9 He was also thinking along the same lines.
10 Because of the issues we're looking at in the bypass
11 reach and the reaches that are affected by this
12 Project, he was thinking we needed to include a
13 reach for analysis in the Platte downstream and
14 proximal to the Tailrace too. And I'm assuming he
15 was meaning some sort of cross sectional analysis,
16 because you guys are already looking at -- at or
17 proposing to look at a cross section up above.

18 But he wanted to look at a reach for
19 analysis downstream of the Platte proximal to the
20 Tailrace Canal confluence, and then in the Loup,
21 upstream and proximal to the Diversion Weir.

22 And if you're correlating that -- and I
23 assume, based on your earlier explanation, if you're
24 correlating that input to the diversion, why
25 wouldn't you just do the same sort of correlations

1 down below on the Tailrace, to try to make that
2 comparison? Even though you're using the USGS
3 gages, why doesn't that work?

4 PAT ENGELBERT: We could do a section
5 downstream of the Tailrace confluence, but it would
6 only be -- that particular cross section and the
7 sediment discharge rating curve created from it
8 would only be applicable to the current GS rating
9 curve information that we have. We wouldn't be able
10 to compare it, say, from '95 to 2000 or '88 to '95,
11 some of those different areas that we're proposing
12 to track the trends of the bird nesting numbers to,
13 but we could do that, David. We could have that one
14 section. I'm just stating that that would only be
15 applicable to the current rating curve information
16 that we have on the GS data as we're looking at
17 effective discharge changes over time.

18 So yes, we could. It would be a
19 relatively straightforward process to do.

20 JEFF RUNGE: First of all, I guess I
21 can't see how there's a good level of uncertainty in
22 measuring transects at the Tailrace due to the
23 uncertainty of flow measurements because I do
24 believe that there isn't a significant difference in
25 flow from the North Bend gage to that of the

1 Tailrace. There's no major tributaries, no major
2 diversions that are within that segment, that reach,
3 and so I don't believe that there's -- that the -- I
4 believe that you can apply those flows from
5 North Bend to that flow by the Tailrace.

6 There may be some attenuation associated
7 with -- with the hydrocycling, but outside of that,
8 there really is no major influences that would
9 affect hydrology.

10 The other thing, too, is --

11 PAT ENGELBERT: What's your point
12 there?

13 JEFF RUNGE: Well, George said that
14 you couldn't -- couldn't put a transect at the end
15 of the Tailrace because of the uncertainty of flow
16 when combining the Tailrace -- the uncertainty of
17 the gages associated with the Tailrace, associated
18 with the bypass, and associated with the Platte at
19 Duncan. And you can bypass all three of those
20 stream flow measurements and the uncertainties by
21 just using the stream flow at North Bend.

22 GEORGE WALDOW: I didn't -- I don't
23 think I said that you couldn't do it, I just said I
24 didn't think it was a good idea.

25 JEFF RUNGE: It wasn't a very

1 appropriate location.

2 GEORGE WALDOW: Right.

3 JEFF RUNGE: Okay.

4 GEORGE WALDOW: But I know for a
5 fact, because we looked at this -- it's been a
6 while -- but there's -- there are some small
7 tributaries, Lost Creek is one, I think Shell Creek
8 is another one on the north side of the river, and
9 there also are inflows on the south side, but the
10 names of those tributaries I can't answer.

11 But again, keep in mind that we're talking
12 here about the hydrocycling flow varies around an
13 average of 1,600 CFS a day, and so you're down to
14 nothing and then you're up to 2,500 or 3,000. So
15 it's a relatively small variation.

16 And it could very well be that the summary
17 of those small tributaries, by the time they get to
18 North Bend, would be in the same order of magnitude
19 as the fluctuation on a subdaily basis. So I'm not
20 sure that I can agree that we can just say we'll use
21 the North Bend flows.

22 JEFF RUNGE: Well, that's something
23 we can follow up and --

24 PAT ENGELBERT: Jeff, so you're
25 suggesting that the hydrology at the North Bend gage

1 would be representative of the flows you would see
2 at the Tailrace Canal? That's what you're
3 suggesting?

4 JEFF RUNGE: It should be similar.
5 The other issue is using the gage at Columbus. Now,
6 Columbus was discontinued for some time. I guess
7 when was the gage at Columbus discontinued?

8 PAT ENGELBERT: 1978.

9 JEFF RUNGE: And when was it started
10 up again?

11 PAT ENGELBERT: Last year.

12 JEFF RUNGE: Last year. And so I
13 guess is the rating curves associated with the 1978
14 before data, is that applicable versus current, and
15 is there enough information right now to have a
16 rating curve at Columbus?

17 And again, too, I talked about having
18 transects at the bridge site near Columbus versus
19 having an understanding of a cross section somewhere
20 outside of that bridge segment.

21 PAT ENGELBERT: We would utilize the
22 Columbus -- the Loup River at Columbus data, again,
23 to make the comparison to the current rating for the
24 information that we have at the other gages. So
25 just, again, for that particular time frame.

1 JEFF RUNGE: Okay.

2 PAT ENGELBERT: We would not be able
3 to look at it over time because, again, we only have
4 it from last year and this year.

5 JEFF RUNGE: Well, I guess I would
6 still propose cross sections at the Tailrace and at
7 certain selected areas outside of bridge segments,
8 simply because it -- not just from a sediment
9 perspective, but also from a hydrocycling
10 perspective as well.

11 We haven't addressed that section yet,
12 so -- so I guess right now, the appropriateness of
13 that and demonstrating that hasn't been founded yet.
14 But when we get to that section, I guess we can
15 bring that back into our discussion.

16 But I guess -- for now, I guess we can --
17 I don't know, I guess based on my preference here,
18 we can just skip a lot of the discussions about
19 transects and transect locations until we get to the
20 hydrocycling section.

21 PAT ENGELBERT: And again, just
22 relative to looking at how the sediment transport
23 indicators change over time, we can't go back in
24 time and take sections of any of the locations that
25 have already been established. And that's one of

1 the keys that we're going to try to look at.

2 And also, I guess it's our contention
3 that, yes, although it is a limitation, it's still a
4 good representative piece of cross sectional
5 information.

6 STEPHANIE WHITE: I hardly know what
7 to do now.

8 PAT ENGELBERT: What was the second
9 point that Bob kicked back over to you and put you
10 on the hot seat?

11 ROBERT HARMS: It had to do with the
12 height of the gages and (inaudible - not using
13 microphone.)

14 JEFF RUNGE: Yeah. The four issues
15 right now is looking at drought and wet cycles --
16 and I know that -- what Gary said, that there's a
17 lot of variability when it comes to effective
18 discharge, but if there's some ability, to parse
19 that out.

20 Also, to compare a study flow return since
21 you're using daily averages versus that of a
22 variable flow that's more reflective of a
23 hydrocycling regime.

24 The other issue is although we can take
25 this information, recognize that the channel trends

1 from USGS, since they are only measuring subaqueous,
2 may not necessarily indicate some type of sediment
3 balance because of the erosion with the subaerial
4 bars that would compensate for sediment imbalance.
5 And that is not being documented and not being
6 measured by USGS.

7 And the last part -- oh, is the -- just
8 the location of the transects by the bridge
9 segments, which may not be a big deal when it comes
10 to sediment and effective discharge, but would
11 habitat-wise when looking at things like
12 hydrocycling and flow bypass.

13 STEPHANIE WHITE: Your third point
14 about USGS, what was -- can you help me sum that?

15 JEFF RUNGE: That these trends may
16 not necessarily indicate a sediment balance or
17 imbalance because of the methods and how they
18 collect that information. They collect that
19 information to derive stream flow and to develop
20 rating curves, not necessarily to look at -- in
21 other words, I guess they don't look at changes in
22 bar elevation over time.

23 And I know that for the study, you can't
24 go back in time, you can't look at these elevations
25 at the bars, but you can look at the seasonal

1 changes and the longitudinal changes within a
2 season, you can do that currently within this --
3 within the two-year study.

4 STEPHANIE WHITE: So I've tried to
5 paraphrase your four points. Drought -- the
6 inclusion of drought and wet cycles; the -- to
7 compare study flow return, a paraphrase out of your
8 speech; and the USGS trends may not apply because of
9 methods, I think that might have been what you said;
10 and then lastly, the location of the transects.

11 It sounds like we may have covered the
12 first one?

13 PAT ENGELBERT: The last one.

14 STEPHANIE WHITE: Lisa has suggested
15 that we take a break and we might -- Jeff, we might
16 pull you and Bob up so we can make sure that we
17 understand the four things that you've set forward.

18 All right. We're going to take a
19 ten-minute break. Let's get back together at
20 25 minutes after the hour.

21 *(Short break taken - 2:10 p.m.)*

22

23 *(Meeting resumed - 2:29 p.m.)*

24 RON ZIOLA: Take your seats, please.

25 STEPHANIE WHITE: Okay. Here's what

1 we're going to do. I had a chance to chat with Bob
2 and Jeff a little bit during break, and I'm going to
3 reiterate the points as I now understand them. We
4 had the chance to flesh them out a little bit more.
5 I'd like to give Pat and George and Gary, if you'd
6 like to, a chance to respond to those a little bit.
7 And then Jeff, if you'd like to follow up, you can.

8 And then I think we're going to move on
9 from this objective, and we'll jump into the next
10 one. We will come back and discuss these activities
11 either after we've had a chance to sleep on them
12 tonight or in a smaller group. But I just want to
13 bring some conclusion to our discussion today, which
14 is to reiterate these four points, in no specific
15 order.

16 But it is the inclusion of the evaluation
17 of effective discharge using drought and wet cycles,
18 that's point No. 1. Point No. 2 is to compare
19 steady flow return versus daily averages because the
20 daily averages are not reflective of hydrocycling.
21 And Jeff, you can jump in if anything is off. Point
22 No. 3 is that USGS trends may not apply because they
23 don't measure outside the wetted channel, and it may
24 be difficult to identify trends in the sandbars.
25 Point 4 is the location of the transects and that

1 they ought to be included downstream of the
2 Tailrace. I didn't write that down; is that
3 correct?

4 JEFF RUNGE: Yes.

5 STEPHANIE WHITE: Okay. So Pat and
6 George and Gary, if you want to take a moment to
7 respond to those four points, that would be great.

8 PAT ENGELBERT: Relative to the first
9 point, the evaluation of effective discharge and the
10 total sediment transport, the other indicator that
11 we're posing to look at, and how that is impacted
12 through a drought or wet cycle, that is something
13 that certainly could be done relatively quickly in
14 that we intended to look at annual and seasonal, but
15 we could also look at decades, four to six years,
16 eight years, et cetera. So that is certainly
17 something that could be done in a relatively short
18 manner. The data set would already be generated.

19 So yes, we can evaluate the effective
20 discharge and the total sediment transport indicator
21 for both drought and wet cycles.

22 On the pair -- the releases versus the
23 daily averages, in looking at how this -- the
24 methodology works, again, you're looking at the
25 total sediment transported over a period of time.

1 And I don't know -- in addressing the comment that
2 Jerry Kenny had brought up, you know, the timing of
3 it all, I don't know that it addresses that. But I
4 think, Gary, I would allow you to maybe take a stab
5 at that particular one.

6 STEPHANIE WHITE: And I'm going to
7 give you a fresh microphone, Gary. Try this one.

8 GARY LEWIS: Yeah, I gave a little
9 more thought to that during the break, and I think
10 what you can do -- you know, we are aware that the
11 river flow rating curves are fairly flat, a small
12 change in the height of stage for a large change in
13 discharge. In other words, the curves are fairly
14 flat.

15 I haven't looked at the sediment rating
16 curve, but if that's similarly moderately flat, then
17 if you're running a day when you might have
18 2,600 CFS being diverted and you're going to split
19 that into four parts during that day, then yes, we
20 could look at the sediment rating curve over those
21 ranges of blocks of time, maybe, if it increments up
22 to 800 during the off peak hours and then it kicks
23 up to 3,200 or even 4,000 during the peak hours. We
24 can look at that rating curve and see what influence
25 that might have.

1 As I said before, I wouldn't calculate a
2 quarter of a day at 800 and a quarter of the day at
3 3,000 and two other quarters of the day and compare
4 that with the daily average through that day. It
5 would be a hard number to believe. But we could at
6 least look at what the rating curve says, does it
7 say there's a huge difference in the amount of
8 sediment that would be transported.

9 You've got to keep in mind, these sediment
10 transport equations are capacity equations. They
11 are equations that tell you how much sediment could
12 be moved if it's available, it isn't how much is
13 actually there. So we have to look at the supply
14 side of the sediment budget that Patrick -- Pat
15 talked about a while ago. So that will factor into
16 that assessment.

17 But yeah, I think there's some things we
18 could do, Jeff, to make some sense out of that day
19 of noncycling and a day of cycling, are there some
20 conclusions we can make in terms of sediment
21 transport.

22 NEAL SUESS: Jeff, what I'm trying to
23 understand is in -- the point there, it says, Not
24 reflective of hydrocycling. What's the difference
25 between steady flow return and a daily average if

1 you don't have hydrocycling? It's the same thing,
2 isn't it?

3 JEFF RUNGE: There may not be a
4 direct linear relationship when it comes to
5 sediment -- the potential to transport sediment and
6 stream flow. And so a -- if you peak at 4,000 and
7 your trough is at a thousand and the average is at
8 1,500, the amount of sediment that's transported
9 with this hydrocycling regime may be different from
10 a steady release of 1,500. And that's the point of
11 looking at these cumulative effects of these daily
12 fluctuations.

13 Currently, right now, they're just looking
14 at daily averages, and I guess I'm not -- well, if
15 we're going to be looking at -- at different
16 alternatives -- different action alternatives and
17 how that would affect sediment transport, we have no
18 ability to do that by looking at daily averages.
19 And it may be insignificant too. There may not a
20 big difference in sediment transport capacity, but I
21 guess what I'm asking is that we look at it to see
22 if there is a significant difference.

23 NEAL SUESS: I guess what I'm asking
24 is what is the difference between steady flow return
25 and daily average? I don't understand the

1 difference. Somebody's got to explain it to me.

2 JEFF RUNGE: Well, the daily average,
3 when they -- when you do your modeling on an hourly
4 increment, we know that the -- the changes, you've
5 got a peak and a trough throughout that day.

6 By providing a daily average, they assume
7 that that average is a steady flow release, that
8 that flow is maintained throughout that entire
9 24 hours. But it's not, it's an average. It's an
10 average of the peaks and the troughs.

11 NEAL SUESS: Well, I guess that's
12 what I'm saying. I mean, under a steady flow or a
13 daily -- if you have a daily average -- because
14 you -- you specifically put up there, Not reflective
15 of hydrocycling. What's the difference between
16 steady flow and a daily average? Are you saying you
17 have peaks and valleys during the day if you don't
18 have hydrocycling?

19 GEORGE WALDOW: You do.

20 NEAL SUESS: Yeah, but I mean, it's
21 minor.

22 GEORGE WALDOW: Yeah.

23 NEAL SUESS: So why try to do
24 something there? I mean, if you don't have
25 hydrocycling and you have a steady flow, I mean,

1 yeah, you might have a -- a minor, minor difference
2 from the morning from the afternoon, why even try to
3 measure something like that?

4 GEORGE WALDOW: Neal, it's because it
5 is a natural river and you do get variations. As
6 there's a precipitation event upstream, the flow
7 tends to rise over a period of hours in the day.
8 It's not maybe as up-down as the natural -- or
9 the hydrocycling --

10 NEAL SUESS: I mean, yeah, I see
11 that. But I mean, trying to measure something like
12 that is just -- I mean, that just doesn't seem to
13 make even any sense because, I mean, you're chasing
14 it all over the place. So a daily average there in
15 steady flow, in my mind, is going to give you the
16 same number.

17 GEORGE WALDOW: In essence, it will,
18 and that's why the GS publishes it in terms of a
19 daily flow, even though they measure it every
20 15 minutes or less during the day and accumulate it.

21 But it's also possible and sometimes
22 desirable to go into the record and -- when you get
23 into very detailed specific evaluations, it's often
24 worth it to go in and actually get the subhourly
25 numbers, which is what we intend to do on the

1 Tailrace gage, for example. Because we want to --
2 we want to actually define how the cycling works.
3 It doesn't go from -- from a hundred up to 4,000 in
4 15 minutes, it goes that way over an hour or so.

5 NEAL SUESS: Okay. I'm going to go
6 back to it. I understand it all with the
7 hydrocycling. This specific thing says, Not
8 reflective of hydrocycling. So let's put
9 hydrocycling out of the picture here. You know, now
10 all you're talking about is the flow into and out of
11 the river on any given basis, I mean, not reflective
12 of hydrocycling.

13 So now -- so what you're talking about is
14 for these specific rain events, basically, we're
15 going to try to determine the sedimentation up and
16 down from those specific rain events. Again, take
17 hydrocycling out of the picture because that's what
18 that particular point says, and that's what you're
19 getting at, Jeff. And that's the difference between
20 the steady flow return and the daily average.

21 JEFF RUNGE: USGS does have that
22 incremental changes in flow, and so if there is a
23 rain event, that will be documented at their stream
24 gages.

25 NEAL SUESS: Yeah. And that's what

1 I'm trying -- I'm trying to make sure that I
2 understand that's what you're trying to measure
3 here.

4 JEFF RUNGE: Yes.

5 NEAL SUESS: Okay.

6 JEFF RUNGE: Yes. The changes in
7 stream flow at a subdaily increment, that is being
8 documented, that is being recorded by USGS. And so
9 we're comparing changes in hydrocycling -- in the
10 hydrocycling regime on top of this base flow, which
11 is subdaily, which is on an hourly basis or half
12 hour or, as Gary mentioned, on a quarterly type
13 basis.

14 GEORGE WALDOW: If I may, I'm not
15 sure we can resolve this one until we discuss the
16 hydrocycling approach because we are -- the
17 hydrocycling approach looks at those variations
18 superimposed with the hydrocycling at each of the
19 gages, and so it will -- it will become clear, I
20 think, when we get to that. Unfortunately, we have
21 to do one study ahead of the other, we can't do them
22 all at the same time.

23 STEPHANIE WHITE: Rick, do you have a
24 point?

25 RICHARD HOLLAND: I may be very

1 simple-minded, but it seems to me a lot of this
2 discussion -- and Jeff, I may be misinterpreting
3 exactly what you're saying -- but I think we're
4 arguing around the same point time and again.

5 If you're trying to determine total
6 sediment transport and you're using an average, a
7 daily average that's relatively low compared to your
8 peak in hydrocycling, will you have a different
9 total sediment transport through those calculations?
10 I think you were saying you may, but it may not be
11 significant or not. I'm just saying that if your
12 effective discharge, that which -- scratch that.

13 If your peak hydrocycling flow picks up a
14 certain amount of sediment and it's a very high
15 amount of sediment compared to the average, then in
16 fact, you may be underestimating the total sediment
17 flow if you just use the daily average, whatever
18 it's based on. I think that was Jeff's point.

19 I think we got confused, maybe -- that's
20 what I interpreted your point being -- we may be
21 confused when we're starting to talk about the
22 background changes in the river flow versus just
23 taking a straight daily average. There will be
24 changes during the day. They may not be very big.
25 But I don't think that's what the issue was.

1 I think at least part of the issue was
2 simply quantifying the difference in sediment
3 capacity being moved by those peaks versus the
4 valleys, and that you might have a different number
5 during the hydrocycling regime versus just using the
6 average for your calculations.

7 I don't think it's a big deal. You can
8 calculate that quite easily, I just think Jeff
9 wants, I want, to see what the difference is, is
10 all. Because to me that's -- for a simple-minded
11 biologist, that's kind of the nuts and bolts of what
12 the operating -- the operation is in terms of moving
13 sediment, so --

14 NEAL SUESS: And maybe where I'm
15 getting hung up on is just the fact that you have,
16 Not reflective of hydrocycling. So I've been trying
17 to take hydrocycling out of the picture here and not
18 worry about it. Because it says, Compare steady
19 flow return versus daily average, and the steady
20 flow return is not reflective of hydrocycling.

21 So I guess where I was going with all of
22 this is, is there really that much of a difference
23 between steady flow return without hydrocycling and
24 the daily averages? And Jeff, what you're saying is
25 that there is?

1 JEFF RUNGE: Let's change the word.
2 Instead of, Compare steady flow, let's say, Compare
3 subdaily flow versus daily average, and eliminate
4 the, Not reflective of hydrocycling.

5 GARY LEWIS: We experts have
6 conferred over here, and we don't see that as --
7 that's a calculation that can be made with these
8 methods. And I'm like you, it would be interesting
9 to see it. I'm not so sure how much I would draw
10 from it, but let's see what it says and go from
11 there.

12 If you look at -- if you do that and then
13 you run effective discharge with those, let's say,
14 quarter of a day increments, run effective
15 discharge -- and again, my experience would say
16 effective discharge might not be any different.

17 So effective discharge defines the
18 morphology of the river. And you know, I don't want
19 to jump to conclusions, but my read on this would be
20 it would be interesting to do it. Let's do it on a
21 quarter of a day break if that's representative of
22 the hydrocycling period, or less -- smaller
23 increments, if that's needed.

24 Let's see what the difference is, but not
25 just on a day-to-day basis, let's run that through

1 the effective discharge and see if it really
2 reshapes the river. Because that's where -- you
3 can't know unless you look at the effective
4 discharge.

5 NEAL SUESS: And so in that, you
6 would actually have the ebb and flow of what comes
7 out of the Tailrace through the hydrocycling that's
8 there, and so that's where that subdaily comes in
9 there. And I just want to make sure that I
10 understand that. Because I -- that's what I was
11 getting hung up on, the steady flow return versus
12 the daily average. And you had the, Not reflective
13 of hydrocycling, and it seemed to me that was the
14 same thing.

15 So now when you put it like that, I do
16 understand that because, yeah, there will be times
17 that where we're flowing a lot more into the river
18 and a lot less, and that does make some -- and I can
19 understand that. As long as we can calculate that,
20 I understand where we're at. So I appreciate you
21 making that change.

22 STEPHANIE WHITE: Okay. What I'd
23 like to do is move off of this, not because we have
24 reached consensus --

25 LISA RICHARDSON: There's two more

1 points.

2 STEPHANIE WHITE: Have we discussed
3 everything?

4 PAT ENGELBERT: I believe we've hit
5 the location of the transects pretty well, we've
6 talked about that, maybe adding a location. Our
7 feeling is that it's sufficient because it's a good
8 measure over time; your feeling is maybe it's not.
9 I think we will agree to disagree on that particular
10 point.

11 Relative to the USGS trends, again, I feel
12 the calculations that they've done -- they typically
13 do a specific gage analysis where they look at how
14 has the stage changed for a particular discharge
15 over time -- gives a really good idea whether or not
16 that's aggrading or degrading because it encompasses
17 a whole range of flows.

18 And so, again, it's my opinion, and it's
19 done on river basins all across the country,
20 utilizing the GS data to make that determination.
21 And I think in this particular instance, it's more
22 than appropriate to utilize that information.

23 STEPHANIE WHITE: Okay. So we've hit
24 all four points. I told you you'd have a chance to
25 speak again if you want to.

1 JEFF RUNGE: Yeah. The only comment
2 I have is on No. 3. And I agree -- I agree with the
3 methods. I think it's -- I'm not against moving
4 ahead with No. 3, it's -- it's just that if we're
5 quantifying sandbars and the height and
6 sustainability of sandbars, that three may not be a
7 reliable indicator. But let's -- let's do the work
8 and see what the results are.

9 But I guess what I'm trying to add is a
10 word of caution there that we may not get that in
11 the information, or it may give us a false positive,
12 it may give us some indication of no net change in
13 channel predation, but there may be a reduction in
14 sandbars. There could be that potential.

15 And I've talked to individuals from USGS
16 that have identified this as a potential concern,
17 and so what we'll have to do is in our comments on
18 the study plan, is to identify resources and
19 citations and better explain that rationale by
20 paper, and I think it would be more effective in
21 doing so that way.

22 STEPHANIE WHITE: Matt, and then
23 Gary, I'll come back to you.

24 MATT PILLARD: I assume the
25 importance of looking at the changes to sandbars is

1 its relationship to how it affects terns and
2 plovers, as well as potentially pallid sturgeon, and
3 that would be the objective of looking at how it
4 effects sandbars, correct?

5 JEFF RUNGE: Yeah.

6 MATT PILLARD: We do have an
7 objective later on that will attempt to show that
8 relationship between the effective discharge --
9 well, the sediment transport indicators to nesting
10 populations to see if there is any correlation
11 between the two.

12 I don't know if that's going to answer
13 your question, but that was an objective that we
14 have that we'll address here later on today as part
15 of the sedimentation study that will look at is
16 there a relationship between, you know, those
17 sediment transport parameters, i.e., effectively the
18 morphology of the river, compared to are bird
19 numbers responding accordingly to different
20 effective discharges or sediment transport
21 indicators in various years.

22 So I don't know if that's going to help
23 with identifying sandbar habitat or height and size
24 of sandbars, but we'll address that here later on
25 this afternoon.

1 STEPHANIE WHITE: Gary, and then I'll
2 come back to you.

3 GARY LEWIS: Yeah, Jeff, I think
4 that's relevant to my point. My understanding of
5 any use of this stream flow measurement data --
6 that's what we're collecting from the USGS -- which
7 was also -- that's a very good point, they don't go
8 over the top of bars and record the elevation of
9 them.

10 But we're not using that data, in my
11 understanding, in any way to characterize bars. So
12 that may be your misunderstanding. That's not being
13 used in any way to characterize stability of bars,
14 long-term trends up or down. That data is used as
15 an objective too, which we hopefully can move to
16 here, to look at aggradation and degradation.

17 And that parameter or that measure is
18 always based on the thalweg, which they are
19 measuring. So they do measure the low point of the
20 stream. And we'll look at that to trend up and
21 down, and that's kind of where we were with
22 aggradation, is it rising, and degradation, is it
23 degrading.

24 But it's unfortunate -- and I think we've
25 had a lot of discussion here, and I think I'm

1 understanding it, finally, and it sounds like you're
2 assuming that those sections are going to be used in
3 some way to inventory or characterize sandbar
4 heights or density or makeup of sandbars, and I
5 don't understand that to be part of our working
6 plan.

7 JEFF RUNGE: Okay. I'm willing to
8 move on to the next topic.

9 STEPHANIE WHITE: Okay. Let's do it.

10 Objective 2, Sedimentation, this objective
11 was agreed upon by this group: To characterize
12 stream morphology in the Loup River bypass reach and
13 in the lower Platte River by reviewing existing
14 literature on channel aggradation/degradation and
15 cross sectional changes over time.

16 What's new is a discussion on the
17 activities. And there are two for this objective:
18 Utilize existing literature to characterize stream
19 morphology; and two, To compare effective
20 discharges, cross sectional changes and associated
21 stream characteristics.

22 If you would like to expand on those, you
23 may. Otherwise, let's have a -- let's have a
24 discussion on these two activities.

25 Gary?

1 GARY LEWIS: Just a quick comment on
2 the -- characterizing it through cross sectional
3 changes. My interpretation of that, from reading
4 the study plan, is by those cross sectional
5 changes -- by changes over time, I'm talking about
6 the raising and lowering of the thalweg. I think
7 that's what we'd looked at to look at
8 aggradation/degradation.

9 JEFF RUNGE: Yeah. The two
10 additional comments would be to evaluate cross
11 sections outside of the bridge. Knowing how there's
12 only one by Columbus, I would like to expand that to
13 see what seasonal trends are occurring for areas
14 outside of the bridge. And the other one is having
15 some assessment based on the drought and wet cycles
16 again.

17 STEPHANIE WHITE: I caught, Evaluate
18 cross sections outside of the bridge to includes
19 changes, and then the inclusion of drought and wet
20 cycles.

21 Go ahead, Robert. We'll pass the
22 microphone.

23 ROBERT MOHLER: Yeah. I'm with the
24 Lower Loup Natural Resources District. And I'm real
25 interested in morphology and what the -- the changes

1 in thalweg, aggradation and degradation and channel
2 width and depth all that. What that means to me is
3 how all those things affect the flood flow capacity
4 of the channel.

5 What I would like to see included in
6 this -- these activities is some calculation of the
7 frequency flood elevations as reflected by the
8 changes in channel shape and depth. And how that's
9 important is the city of Columbus has their
10 Loup River levee, and at this stage in time, they're
11 recertifying their levee to see if it's as effective
12 as it was when it was built. And if the river is
13 changing or is likely to change, as we've discussed
14 earlier, it could have some effect on the flood
15 heights relative to that levee.

16 And so I'd just like to see that -- that
17 stage discharge calculations be made relative to the
18 changes in widths and depths and all that that we've
19 discussed beforehand.

20 STEPHANIE WHITE: What I caught was
21 the calculation of frequency flood elevations
22 reflected in changes in channel shape and depth.

23 Okay. Other comments? Jeff?

24 JEFF RUNGE: I think this is a great
25 opportunity now to reflect on the discussion that we

1 had about ice jams. And this is one component here
2 where this is interrelated to the potential of
3 Project operations affecting ice jams, if there is a
4 case. I mean, that's what the study is for.

5 And so I'm not sure how we can use this
6 objective. I guess once we're done with this
7 objective, when we're done with the discussion as
8 far as sedimentation is concerned, maybe we can take
9 this objective and reorganize it so that we can
10 address the ice flow objective.

11 ROBERT MOHLER: That's No. 6.

12 JEFF RUNGE: Oh. Well --

13 STEPHANIE WHITE: Objective 6 -- so
14 there's a side conversation over here about 6.
15 Objective 6 is, To investigate the relationship
16 between sedimentation and ice jam flooding.

17 JEFF RUNGE: I guess I'm not sure if
18 six includes -- maybe it does. Maybe it does
19 include aggradation/degradational trends. I guess
20 does Task 6 include this component here?

21 PAT ENGELBERT: The second bullet
22 under 12.2 on the left-hand side, is that the task
23 you're looking at relative to ice, or is there a
24 variation of that?

25 STEPHANIE WHITE: It includes,

1 Incorporate results of sedimentation study relative
2 to sediment transport indicators to assess potential
3 effects, if any, on ice transport.

4 JEFF RUNGE: Well, that depends on if
5 you're going to be -- and I know that everything is
6 integrated -- if you're going to be applying the
7 effective discharge and the -- and the sediment
8 budget numbers, or if you're looking at individual
9 cross sections and seeing -- and applying --
10 effective discharge and the sediment budget and
11 using the combination of those two will get you some
12 generalized trend, but it doesn't actually tell you
13 what that means in regards to effects to the actual
14 channel itself.

15 And so you may have -- you may identify
16 that as aggradational or degradational or a
17 combination of the two across different flow
18 regimes, but it doesn't tell you how this
19 aggradation or degradation affects channel
20 morphology.

21 And that's what I was getting at with
22 these cross sections. By having these cross
23 sections at some of these sites, to have some
24 interpretation as to -- to have a direct -- these
25 cross sections are a direct measure of the sediment

1 budget supply, as opposed to the indirect measure,
2 which is effective discharge and sediment budget.

3 Effective discharge and sediment budget
4 will show you aggradational or degradational trends,
5 and that's an indirect measure. But an actual cross
6 section will give you a direct measure of what those
7 trends mean.

8 PAT ENGELBERT: Relative to the cross
9 section being a direct measure of aggradation and
10 degradation, that is a cross section taken at one
11 point in time that was developed due to the events
12 of the previous weeks, months, and decades. So it
13 just gives you a representative sample of that one
14 point in time, whereas the effective discharge
15 information that we're using is a series of surveyed
16 information taken, you know, once a month for -- for
17 years at a time.

18 So I'm not quite sure how taking one cross
19 section tells us anything more than our effective
20 discharge calculation, with the thought being that
21 the effective discharge is, again, that discharge
22 that results in the average channel morphology,
23 which would allow us to look at making a
24 determination of flow or supply limited for that
25 particular reach over time, how has changes in flow

1 conditions changed that particular parameter.

2 Because ultimately, what we're trying to
3 get as is does the Project affect it over time. And
4 this is a methodology or an approach that allows us
5 to look at differing flow scenarios to see how those
6 parameters or those indicators would change, and
7 does that change in indicators shift it into a
8 different regime.

9 So I'm not -- I guess I'm not seeing how
10 taking those cross sections provides -- one snapshot
11 in time provides us better information.

12 GEORGE WALDOW: I have to support
13 that. The way you stated your point was that the
14 concern is the change in the river and its effects
15 on flooding or morphology or habitat, whichever.
16 But again, what Pat said is that our focus here is
17 looking at the incremental effect of the Project --
18 Project operations on that change. And simply
19 measuring a cross section does not separate the
20 total effect from the incremental effect.

21 And that's why we -- we believe that the
22 effective discharge method, using, you know, some
23 type of scenario comparisons, whether it's steady
24 flow versus daily variable flows, whatever, will
25 define that differential which could be attributed

1 to the Project and its operation. And that's where
2 I think we need to go for the purposes of
3 relicensing.

4 JEFF RUNGE: I understand your point.
5 And I guess I wasn't clear here. I was more --
6 focused more on the seasonal aspect with these cross
7 sections and not necessarily the long-term
8 indicators of change.

9 And the reason why I mention that is if
10 there are different alternatives, different bypass
11 alternatives being proposed, would that result in
12 different seasonal changes. But then reflecting
13 back, that may not be of particular importance to
14 ice flows, but it may be when it comes to species
15 habitats.

16 And so when it comes to transects and
17 looking at these localized seasonal changes
18 associated with different action alternatives,
19 that's more applicable to habitats and not
20 necessarily towards ice flows.

21 GEORGE WALDOW: I have to maintain
22 again that the -- the way that the effective
23 discharge method works is it allows us to do exactly
24 what you're saying. We can take a nesting season or
25 a spawning season or an ice season and analyze it

1 through time for all the different periods of record
2 and look at what -- what may or may not happen.

3 But taking cross sections doesn't let you
4 do that. Even if you take cross sections for
5 five years, it won't let you do that over time. It
6 will measure exactly what happened during those
7 seasons of those years, but without any rationale to
8 tie it together.

9 JEFF RUNGE: So with that, I guess I
10 understand that. But I guess would a more
11 appropriate alternative method be more of like a
12 sediment transport model versus just cross sectional
13 measurements so that you can have that alternative
14 testing, like a one-dimensional sediment transport
15 model, or something of that nature?

16 GARY LEWIS: The one-dimensional
17 models are one dimensional. They'll give you
18 aggradation/degradation, little else. We -- the
19 work plan does not have that included in it, and
20 that's intentional.

21 We've certainly evaluated various tools
22 available to us, and our -- I guess our position on
23 that would be the success of that type of model on
24 the Platte River, and it's been zilch. It doesn't
25 work well.

1 The Platte is a braided river. And if we
2 look at literature on those sediment transport
3 models -- there's an ASE task committee report in
4 1998, I have the report, I can get it to you, very
5 negative about applying any kind of transport model,
6 which is aggradation/degradation, to a braided
7 stream, and you can see why. There's a lot more
8 than one channel out there.

9 They just don't work well, and so we're
10 not at all inclined to think that that's a method
11 that should be even attempted on especially the
12 lower Platte and the bypass reach where it's more a
13 longstanding equilibrium that's been understood, I
14 think, by most agencies that have looked into it.
15 People are surprised, but it just hasn't changed
16 that much.

17 So you really wouldn't have any data to
18 validate a sediment transport model because you have
19 to have change in your -- in your subject in order
20 to know if your model is working.

21 JEFF RUNGE: There's no ability --
22 since there is no alterations of existing
23 conditions, of present conditions, you really have
24 no ability to calibrate and validate your model.

25 GARY LEWIS: Better stated than I

1 did.

2 JEFF RUNGE: I guess I do understand
3 those limitations, and I do recognize that. That's
4 something that we've had issues with.

5 But one thing I would like to ask of Jerry
6 here, being a part of the Platte program, is how are
7 we addressing this in the Central Platte? Are we
8 developing models and tools that would look at
9 aggradational/degradational changes outside of
10 effective discharge?

11 JERRY KENNY: In the Central Platte,
12 we're still working on the approach to do that. We
13 are -- we have a -- an R&P on the street right now
14 requesting input approaches on the modeling for a
15 segment of the Platte River, basically from the
16 J-2 return to the Kearney canal diversion point, and
17 see what -- see what recommendations we get from
18 contractors.

19 But the overall modeling strategy is
20 subject to hot debate and being worked out.
21 Hopefully we'll get some sort of solution of that in
22 the next, you know, few months to a year, but that's
23 where we're at on the Central Platte.

24 STEPHANIE WHITE: Jeff, did I hear
25 you and Gary reach agreement that a sediment

1 transport model is not appropriate in terms of an
2 activity for this objective?

3 JEFF RUNGE: I don't know. I'll have
4 to discuss that with others. But I do understand
5 the limitations in applying the sediment transport
6 models towards something like this. I guess one
7 suggestion here is -- maybe just to get past this
8 is, because I would like to see -- well, first of
9 all, back up.

10 We have seen the limitations with USGS
11 transects and their measurements. And so if we can
12 get a few measurements within this bypass reach that
13 looks at the bars and the thalweg and to have these
14 measurements and not really make a comparative
15 analysis through an alternatives analysis, but more
16 just provide a baseline so that when we come back
17 and resurvey this area 30 years from now, 10 years
18 from now, we've got some baseline to work off. I
19 guess what's your thoughts as far as the application
20 of doing something like that?

21 PAT ENGELBERT: I guess my first
22 question, back to the sediment transport model, is
23 what was your stated purpose for using -- what do
24 you want the sediment transport model to do? If you
25 were to apply it in this instance, what would the

1 goal or what would the purpose of that sediment
2 transport model be?

3 And I think what Dr. Lewis was alluding to
4 was how bars form and change and move around,
5 et cetera. And the proposal that Dr. Kenny was
6 talking about was trying to maintain a balance
7 through different methods. So I didn't want folks
8 to get confused as to the application of those
9 sediment transport models.

10 But back to why would you want to use
11 them, and would they allow us to look at the
12 differing flow scenarios in an attempt to reach our
13 goal or objective to characterize the stream
14 morphology in these two stretches? Because
15 ultimately, that's what we're going back to.

16 JEFF RUNGE: Yeah. I guess, again,
17 the effective discharge work is a bigger -- well,
18 and maybe I'm wrong too. I heard that maybe you can
19 apply this towards different alternatives. But it
20 seemed to me as if effective discharge is more of a
21 bigger picture type view of whether channels are
22 aggrading, degrading or in some type of quasi
23 equilibrium.

24 And I guess my emphasis in finding an
25 alternative to that -- or not an alternative, but a

1 supplement -- would be to -- what does that mean as
2 far as direct impacts to channel morphology. And
3 knowing how there's real difficult -- how there is
4 an extreme difficulty in correlating the two, that's
5 what I was trying to get at.

6 And I don't think that -- we may be
7 limited in how we can answer that. But this
8 alternative that I'm proposing would provide a
9 baseline for future cross sectional measurements
10 over time.

11 STEPHANIE WHITE: Jerry, go ahead.

12 JERRY KENNY: I'd like to elaborate a
13 little bit further on Central Platte efforts.

14 I didn't want to leave the impression that
15 we weren't going to be doing modeling. We will be,
16 but we also have a longer window, and, you know,
17 greater direction to do that and resources to apply
18 to that. So the -- just to draw another distinction
19 between this effort and what we will be undertaking.

20 GEORGE WALDOW: I'd like to get back
21 to the comment by the NRD. I think we completely
22 left him in the dark down there.

23 That was a very good point. I would just
24 say if that's -- if his item that we wrote up there
25 is going to be included as an activity or something,

1 it needs to be -- what I think Lisa was saying this
2 morning -- as related to the Project.

3 There may definitely be some changes in
4 the river, the Loup, that are creating a higher
5 flood hazard than naturally occurring or other
6 factors, but if there's going to be any assessment
7 of flooding effects of the Project, it should be as
8 related to the Project.

9 I have the distinction of having been the
10 expert defending the City of Columbus and the
11 Corps of Engineers in a lawsuit over that levee a
12 number of years ago. And we didn't look at effects
13 of changes that might be occurring, but the levee is
14 subject to a serious problem and it definitely needs
15 the care, I think, to be looked into.

16 But I don't know that there's --
17 unless there's some evidence that the Project has
18 created any kind of problem down there, I'm not sure
19 the Project should have to do the research to
20 understand effects of -- whatever cumulative effects
21 of what might be happening to flood stages in that
22 reach.

23 It's just we need to keep this focused on
24 the incremental effects of the Project. And again,
25 I think the message is if there is no evidence or

1 reason to believe that the Project has created a
2 problem, then I don't believe the study plan is
3 obligated to include a very useful, probably,
4 research project into that. Just a comment.

5 STEPHANIE WHITE: Did you have a
6 comment? Go ahead, Bob.

7 ROBERT HARMS: Yes. Bob Harms,
8 Fish and Wildlife.

9 I want to get back to some of the
10 discussion that Jeff had in regards to the
11 alternative that we're talking about here. Where do
12 we -- I didn't hear sort of a solution of where will
13 go from here. I heard maybe some -- maybe some
14 potential options that Jerry has been working on
15 that could be applied here, but maybe the time frame
16 isn't quite right. What's the next step to try to
17 address the things here?

18 STEPHANIE WHITE: Go ahead, Gary.

19 GARY LEWIS: I meant to say and
20 didn't, Jeff, you're right, the effective discharge
21 method can be used. And maybe you just haven't had
22 the exposure to it. It is able to do that. We're
23 able to use that method. We can calibrate it to
24 some regime-type equations. USGS did that in the
25 '80s.

1 And through that, you're able to say,
2 Well, if the effective discharge is this instead of
3 this with this operation, here's the effect it will
4 have on your morphology. And it isn't bars and
5 dunes level, nobody has that technology, but it
6 definitely is, morphologically, the larger scale
7 things, width, depth, bed level, those things come
8 out of it.

9 So that tool is there, and I think that's
10 why people jump to sediment transport modeling, they
11 feel that's the only tool. I would just highly urge
12 any of you interested in the state-of-the-art and
13 the understanding of an international panel of
14 experts on the use of sediment transport models --
15 including John F. Kennedy, who happened to be a
16 senior geomorphologist, and his comments on
17 models -- and think about the Platte River and why
18 we should not be attempting to use that tool on this
19 river for anything other than sort of observational
20 value. Just a comment.

21 STEPHANIE WHITE: Bob?

22 ROBERT HARMS: I have one other
23 question. Did we adequately address the other
24 comment having to do with drought and wet cycles
25 that you'd brought up?

1 GEORGE WALDOW: I don't know if we
2 adequately addressed it, but I'll take another cut
3 at it, if you'd like.

4 I'll take you back to the slides that Pat
5 showed us earlier in the sedimentation session. And
6 the very first one he showed was a flow frequency
7 curve, Slide No. 31, and that curve can be put
8 together for any period that you choose.

9 If we wanted to choose the driest three
10 months of record, we can take those three months and
11 we can break it down into a number of different
12 flows and see what it was. And if we wanted to look
13 at -- say we wanted to look at a high flow spring,
14 we could do that. We could look at any time
15 duration. The longer, the better. But obviously if
16 it's -- you can take a drought year versus a wet
17 year.

18 And then you go ahead and you -- your
19 sediment discharge curve doesn't change. That is
20 what it is, based on the material coming down the
21 river and the shape and parameters that were listed.
22 And the collective sediment discharge curve is then
23 put together based on those two curves.

24 The only -- the only variable in this
25 case, we'd change the flow portion of the curve to

1 fit the period we're interested in. And when you
2 perform this exercise, you will get an effective
3 discharge for that period and the conditions that
4 existed at that time.

5 And that's -- that's why we -- again, why
6 we chose this method, because it allows us to adapt
7 it to whatever situation is of particular interest.
8 And it -- it would allow, for example, to look at
9 the bypass reach in the interest of the gentleman's
10 flood concerns in the levee reach down by Columbus.

11 We could take that and look at the bypass
12 reach, assuming that the Project never was built and
13 look at how much flow is coming down that river, how
14 much sediment is coming down that river according to
15 the sediment budget and do an analysis, see is that
16 channel morphology changing in a way that
17 exacerbates the flood problem.

18 That -- that's the beauty of this thing,
19 is you can take it and you can adapt it to future
20 scenarios.

21 ROBERT HARMS: Does that address
22 that, Jeff Runge?

23 JEFF RUNGE: Yeah, it does, for the
24 most part, except for drought and wet cycles and
25 identifying if these aggradational or degradational

1 trends are specific to these periods. And I would
2 just like to see an evaluation looking at these
3 different cycles and seeing if there's an issue
4 there.

5 STEPHANIE WHITE: Go ahead, Jerry.
6 I'll take this last point, and I'm going to wrap
7 this up.

8 JERRY KENNY: In an earlier comment
9 by Dr. Lewis about the effective discharge is --
10 better results the longer the time period used in
11 the analysis. In contrast too, we can take shorter
12 periods and slice it up and compare them.

13 There's a balance point there, and just
14 some -- in the application of it, just some
15 validation, verification that we haven't sliced
16 things too thin to exceed the capability of the
17 methodology.

18 And sort of also bearing in mind that
19 these calculations are capacity, that's another
20 point I think it needs to continually be emphasized.
21 It's a capacity calculation. It doesn't factor in
22 the supply, it doesn't factor in the continuity.

23 So just because a location downstream
24 might have the capacity, that doesn't necessarily
25 mean it has the supply or the continuity of supply

1 that something could -- that sediment could have
2 gotten to that point.

3 So just, you know, the caution to always
4 drive home the point of what the -- what the methods
5 are really telling us.

6 STEPHANIE WHITE: Bob, to your point
7 I'm not sure we've agreed or come to any
8 conclusions. But I might treat this one a little
9 bit like we did Objective 1, and I'd like to tell
10 you what I've heard from the group, and then I think
11 we -- we will move into Objective No. 3.

12 It sounds like you have one more thing to
13 say.

14 JEFF RUNGE: Yeah, just one more
15 quick question. I guess I'd like to hear your
16 response about how reasonable it is to add these
17 transects that would serve as a baseline for future
18 trends -- channel trends.

19 PAT ENGELBERT: I guess from my own
20 personal opinion, it lends -- goes back to why we're
21 doing this study, and that's to look at the Project
22 effects as part of the relicensing effort. It's
23 more of a long-term data collection type effort.
24 I'm not quite sure why we would be on the hook for
25 that.

1 JEFF RUNGE: I guess with that, I'd
2 like to yield to FERC, do these study plans include
3 baseline efforts for future relicensing periods, or
4 is this more directed towards an alternatives
5 analysis?

6 DAVID TURNER: I would agree with Pat
7 in the sense that these -- the studies should be
8 geared towards asking the question, What's the
9 Project effect. And if there is an effect, how do
10 we address that, or if -- even if there isn't an
11 effect, is there some association enough that we can
12 change things to improve conditions.

13 I don't think these studies should be
14 geared towards something of just gathering data for
15 data's sake. But if your -- if the answers were
16 inconclusive, then it is something we could build
17 into a license requirement for an adaptive
18 management to change those if the data was to
19 suggest -- if there was some reason to believe that
20 you couldn't -- there was a connection, but it took
21 some additional time to monitor that, then that can
22 be a condition of the license, to monitor something
23 over time. But just to gather data for data's sake,
24 that's not what we want.

25 JEFF RUNGE: Okay. So that would be

1 a component of the license article and not
2 necessarily a component of this study plan?

3 DAVID TURNER: Exactly, in the sense
4 that if it will make the connection, like I said
5 first. And maybe we dismiss it, there is no
6 connection to the Project, there's nothing the
7 Project can do, then there's probably no reason to
8 continue to monitor in the bypass reach. But if
9 there was some conclusion to that alternative that
10 we could reach but we're wanting to continue to
11 monitor something, then we might make a condition to
12 monitor a cross section, or whatever else associated
13 with that. Does that make sense?

14 JEFF RUNGE: Yes, it does. Thank
15 you.

16 STEPHANIE WHITE: Okay. So here's
17 what I have collected during this discussion. A
18 question from Jeff that would include the inclusion
19 of the evaluation of cross sections outside of the
20 bridge to count for seasonal changes, or accounting
21 for seasonal changes.

22 There was some discussion about a sediment
23 transport model. There was also a request to
24 include drought and wet cycles, much like there was
25 on Objective 1. One from you, Robert, the

1 calculation of frequency flood evaluations reflected
2 in changes in channel shape and depth as related to
3 the Project. And then this last conversation we've
4 had about transects that would serve as a baseline
5 for future trends.

6 I will not call for a show of cards on
7 this. I don't believe that we, as a group, have
8 reached consensus. I would like to give the study
9 team a chance to go back and determine the inclusion
10 or noninclusion of these into our study plan, but I
11 would like to move to Objective 3, if that's fair.

12 It's almost 3:30. I would really like to
13 get to Objective 6 before Angell leaves us today.
14 And Objective 6 is the one that deals with ice jam
15 flooding, so I'm going to move to Objective 3.

16 To determine if a relationship can be
17 detected between sediment transport parameters and
18 interior least tern and piping plover nest counts.
19 The activities -- yes, do you have a question?

20 MARY BOMBERGER BROWN: Go on to the
21 activities, and then I do have something I'd like to
22 say.

23 STEPHANIE WHITE: Okay. The three
24 associated activities that are currently in this
25 study include: To plot and evaluate nest count data

1 against sediment transport indicators; to perform a
2 regression analysis on that platted data; and to
3 examine the trends.

4 Mary, go ahead.

5 MARY BOMBERGER BROWN: Okay. The
6 recovery plans for both of these species include two
7 components. We're asked to maintain nest counts
8 over a set period of years before these species can
9 be delisted, and there's also a productivity
10 component, number of fledglings per adult pair.
11 There's a number we need to maintain for both
12 species as a three-year running average.

13 So in addition to evaluate nest count
14 data, that's essentially a point in time issue. I
15 would like to include a productivity component,
16 which would reflect whether Project activities over
17 the course of a nesting season, over the course of a
18 breeding season -- Project activities extend over
19 that length of time as opposed to the nest count
20 data, which is more one point in time.

21 So I'd like to see the associated
22 activities in these objectives to be more in
23 parallel with what the recovery plans of both of
24 these species actually is.

25 STEPHANIE WHITE: So I have parallel

1 with recovery plan as related to --

2 MARY BOMBERGER BROWN: Productivity.
3 We're asked to have both -- maintain nest counts in
4 certain reaches of rivers and across the ranges of
5 these species, and also we're asked to maintain
6 productivity, number of fledglings per adult pair.
7 So I would like to see this reflect what is
8 requested that we do in the recovery plans for both
9 species.

10 STEPHANIE WHITE: Okay.

11 MATT PILLARD: I just have one
12 question. What's the extent of the data that we
13 currently have for the productivity? I know we have
14 nest count data back to '87. How far back does that
15 productivity data go? It's just a question.

16 I'll ask that again. How far back does
17 the productivity data go? As we looked at the data
18 that currently existed, we knew we had a pretty good
19 data set for nest counts. I was just curious how
20 far back the data goes for productivity.

21 MARY BOMBERGER BROWN: The
22 productivity data is going to be much more patchy.
23 That date is not in my head at the moment, I would
24 need to go back and look. So nest counts is -- we
25 would have a longer stretch of data, but we could --

1 we would have to look and think more about
2 productivity data. But we could get -- we could get
3 estimates and assessments of what the productivity
4 data would be. Is that a fair answer?

5 MATT PILLARD: Sure.

6 STEPHANIE WHITE: Lisa?

7 LISA RICHARDSON: Well, I guess I'll
8 just say that -- and I think this is kind of what
9 Matt was saying -- we can make a comparison in plots
10 and regression analysis on any data that you give
11 us. If you prefer the productivity data, we can use
12 that associated with the sediment transport
13 indicators and see how that compare.

14 MARY BOMBERGER BROWN: Okay. If you
15 guys are good with that, we will get you what we can
16 of the productivity data. So if you guys are good
17 with including both components, that would be
18 useful, I think. It would at least be instructive.

19 LISA RICHARDSON: I think that's
20 fine. It's just a matter of running another set of
21 equations.

22 MARY BOMBERGER BROWN: If you guys
23 are good, then I'm good too.

24 STEPHANIE WHITE: Bob?

25 ROBERT HARMS: And just to sort of

1 follow up with that -- for the record, Bob Harms,
2 Fish and Wildlife Service -- we're in support of
3 getting that productivity data that she suggested as
4 well.

5 STEPHANIE WHITE: Any other comments,
6 questions?

7 JEFF RUNGE: Yeah, just two words of
8 caution here in regards to this analysis.

9 The lower Platte River, there is
10 consistent methods, there is annual surveys that are
11 conducted throughout the lower Platte. That was not
12 done for the Loup River, and so you don't have that
13 consistent method across the years. And that -- I'm
14 not sure how that would affect the results of your
15 analysis, but absence during certain years may not
16 necessarily mean that there were no nests, just that
17 there were no surveys conducted.

18 The other component of this, since this is
19 under the sedimentation section and how we mentioned
20 that there may be some seasonal aspect associated
21 with sediment gradation -- or with channel gradation
22 and sediment supply and some seasonal aspect -- or
23 not seasonal, excuse me, drought or wet conditions,
24 different hydrologic regimes and how that may affect
25 the ability to build bars, that this is a course or

1 method that would look across these drought and wet
2 periods, but they may not necessarily be able to
3 tease out the cumulative effects of a drought -- of
4 a sediment associated with a drought period or a
5 sediment associated with a wet period.

6 STEPHANIE WHITE: Any other comments?
7 Go ahead, Matt.

8 MATT PILLARD: Just for a little more
9 clarification, we would look at different segments
10 of time as we do this analysis, prenesting and
11 nesting. We'd be open to looking at other periods
12 if we had an idea of what periods you would be
13 interested in.

14 JEFF RUNGE: Yeah, it's not the
15 prenesting or nesting period, it's more tying use to
16 habitat availability, knowing how that availability
17 may change across years. It may change across
18 drought periods or wet periods, and so it's --
19 although you see presence in a particular reach,
20 let's say downstream of the Tailrace, consistently
21 over a number of years, it doesn't mean that --
22 there may be periods of sediment imbalance within
23 that period of record that may have a localized
24 effect that wouldn't be evident through this
25 analysis.

1 STEPHANIE WHITE: Lisa?

2 LISA RICHARDSON: Jeff, I -- I kind
3 of lost a little bit of my thought there, but I
4 think part of what you're getting at is we just need
5 to -- when we do the analysis and we look at the
6 data, we need to think about what might be the other
7 factors affecting -- you know, oh, these five years
8 there was a low number of nest counts, and if we
9 look back at it, oh, that also happened to be a
10 drought year.

11 So what is the correlation, and look at
12 what are the other factors of the available data as
13 far as what might be a factor in what you're seeing,
14 and are there other ways to slice and dice it and
15 look at it. Is that kind of what you're saying?

16 JEFF RUNGE: Yeah. Like I said,
17 something like that would be applicable to the lower
18 Platte because we do have those annual surveys, but
19 trying to draw any annual association, across year
20 association with the Loup River, we just don't have
21 that annual survey conducted.

22 LISA RICHARDSON: Right. And I guess
23 that's just a limitation of the data that's
24 available. We'll do the best we can, and maybe in
25 some cases we'll really only have a qualitative

1 evaluation without any serious meat to it because we
2 just don't have the data.

3 ROBERT HARMS: Well, this may be in
4 the document, but this area that we're going to be
5 looking at is the lower Platte and the Loup bypass
6 area?

7 MATT PILLARD: Yeah. The reaches
8 that we would look at would be from the -- I don't
9 know if I have the terminology right -- but from the
10 confluence of the -- we're looking from the
11 Loup River confluence to North Bend, so that
12 includes the piece of the Platte River, North Bend
13 to Leshara, Leshara to Ashland, Ashland to
14 Louisville. Those are the segments that we've
15 identified, knowing that on the Loup River itself,
16 we have some nest data. But if there's some other
17 data we can gather, we can look at the same segments
18 that we're looking at for this sediment -- effective
19 discharge calculations, look at the same gage
20 counts.

21 STEPHANIE WHITE: Other comments?
22 Have we addressed -- it sounds like we did reach
23 consensus with Mary's first point, which was that
24 with some additional data from your folks, we would
25 include an analysis that paralleled with the

1 recovery plan as it related to productivity, which
2 means number of fledglings per adult pair.

3 It's really the second one that we've been
4 debating, which is the inclusion of drought and wet
5 cycles. Have we reached a point in this discussion
6 where we agree that if the data is available, it
7 will be included?

8 ROBERT HARMS: So we lack data from
9 the Loup bypass reach, that's what I understand, and
10 we need multiple years of data to do this?

11 MATT PILLARD: Yeah. The more years
12 of data, the better the analysis would be. I mean,
13 you can do it on a couple years, but the validity of
14 the results would be -- would be based on the amount
15 of data that you have.

16 And based on what we've collected from
17 Game and Parks, we know there's only so much data on
18 the Loup River itself. And the data that's
19 available is -- that I have is nest counts and then
20 just adult census. And we were focusing on the nest
21 counts as a more accurate measure of what's going on
22 on the river from a nesting perspective.

23 But if there is -- if there is fledge
24 success information that we can garner from that,
25 we'll sure use that. We'll have to work with Mary

1 and see what's available.

2 DAVID TURNER: Just a point of
3 clarification, is it that there is no data available
4 because it wasn't surveyed, or is it there's no --
5 is there no data available on the Loup or the Loup
6 bypass in particular because it hasn't been
7 surveyed, or there is no data present because there
8 hasn't been nests found during the years of the
9 surveys?

10 MATT PILLARD: Mary, if I'm wrong,
11 correct me. But I'm only aware of four years of
12 survey that's been completed on the Loup. So
13 there's four years of data. There is -- there is
14 some data for those four years. From what I
15 understand, there's adult census for both terns and
16 plovers, and only nest counts are available for
17 piping plovers. That's the data that we have for
18 those four years of record.

19 LISA RICHARDSON: David, if I could
20 add into that, I think it's a little bit of both,
21 that there isn't a lot of data because there aren't
22 a lot of nests. So it's not a focus area for the
23 Game and Parks and the partnership to look there
24 because they don't find a lot there. If I'm wrong,
25 please correct me. But you do those counts, it's

1 not just four years, it's four census years, it's
2 every five years.

3 RICHARD HOLLAND: It's not that
4 simple. It's simply a matter of the partnership
5 developed over time, how much money we had to
6 develop for the partnership. The partnership drew
7 up in the lower Platte section of the river because
8 we were working with certain sand pit owners and
9 things like that, so it's developing over time.

10 It's not that the data wasn't -- the birds
11 might have been there, we don't know. We're just
12 getting there. So it's the matter of evolution of
13 the program and consistent funding.

14 JEFF RUNGE: Also, to add onto your
15 question there, Lisa, we survey the Central Platte
16 every year, but there's a program -- Platte River
17 Program in place and there is a lot of federal
18 projects tied to -- that are covered by this Platte
19 River Program.

20 We don't have federal projects. We don't
21 have an emphasis to -- to really focus on a
22 programmatic type agreement or programmatic
23 evaluation for the Loup River as we did for the
24 Central Platte. And of course, a lot of these
25 programmatic agreements is what drives funding for

1 these surveys.

2 And I guess it may be a combination of
3 nests -- because of the nests, but it also may be
4 a -- because there's no federal projects that we
5 review and are regulated within that Loup system,
6 that doesn't necessitate the need for us to go in on
7 an annual basis to do these surveys.

8 STEPHANIE WHITE: Any other points?
9 George?

10 GEORGE WALDOW: I want to go to the
11 question about Bullet Point 2, the inclusion of
12 drought and wet cycles. And as I said, we believe
13 we can deal with that with respect to the sediment
14 issue. But I'm curious if -- what is the interest
15 in looking at that, and how would it relate to the
16 Project? Either Bob or Jeff? It's more of a
17 curiosity, it's not that it can't be done. I'm just
18 trying to understand what the nexus would be.

19 JEFF RUNGE: Both the group nesting
20 results across all years and wet cycles, we may show
21 through our sediment transport evaluation that there
22 are times when sediment transport is limiting, or
23 there may be deficits during certain time periods or
24 certain drought periods or wet periods, and there
25 may be a surplus other periods.

1 But when you lump all the nest information
2 across all years all together in one big old pot and
3 evaluate that, you don't tease out those differences
4 in species response across those different periods.

5 STEPHANIE WHITE: Okay. So again, I
6 believe that this first point we took care of with
7 an agreement to include additional data that Mary
8 and her group would put forth.

9 It's this inclusion of drought and wet
10 cycles I'm not sure we've yet reached consensus on.
11 Are we changing anything in our study plan to
12 address that, or have we said what's in our study
13 plan addresses that? Matt?

14 MATT PILLARD: In our study plan, we
15 can include different periods to perform the
16 analysis on. Again, we just need to know, you know,
17 as the -- we can look at those different periods,
18 and as we look at the overall trends, we'll
19 definitely incorporate -- as we review trends of
20 that analysis, we can compare those trends relative
21 to known or accepted drought or wet years as we
22 evaluate the trends of the analysis. That's what
23 I've heard us talk about, and we can sure do it that
24 way.

25 STEPHANIE WHITE: Would that meet

1 your needs?

2 JEFF RUNGE: Yeah. And before you
3 undertake that type of evaluation, let's first do
4 the sediment evaluation to see if there are trends
5 during those different cycles. And then if there
6 are, then we'll break it down by evaluating the
7 species response.

8 STEPHANIE WHITE: Okay. What I would
9 like to do -- I think we have reached consensus on
10 the activities as shown on the slide and here with
11 these two additional bullets.

12 I'd like to take a real quick pulse of
13 cards, and this will be one that we can all agree on
14 for the group.

15 We'll move to four. I will skip five. We
16 might save that for tomorrow because that's an
17 objective we did not reach consensus on as a group,
18 so that we can hit the one that deals with ice jam
19 flooding before Jean leaves.

20 Okay. Quick show of cards on the
21 associated activities as they relate to Objective 3,
22 with the inclusion of these two additional bullets.

23 I see greens, greens. Okay. Great.
24 We've got some consensus on this objective.

25 All right. Objective 4, To evaluate

1 whether sandbar availability is limiting interior
2 least tern and piping plover numbers on the lower
3 Platte River. The objective we agreed to on the
4 21st. It would include the four points as noted
5 below that Pat covered a little bit earlier:
6 Accumulate nest counts on the Missouri River below
7 Gavins Point Dam to Ponca; review best available
8 Missouri River sandbar formation data; qualitatively
9 determine whether sandbar habitat is limiting
10 interior least tern and piping plovers on the
11 Missouri River; and compare results between the
12 Missouri River and the lower Platte River.

13 Discussions on these activities? Bob?

14 ROBERT HARMS: Bob Harms, Fish and
15 Wildlife.

16 Could I -- is this you, Matt, or -- could
17 you describe how the proposed comparison between the
18 Missouri River and Platte River would be put
19 together?

20 STEPHANIE WHITE: The question is for
21 Matt to describe how -- it's really Bullet 1.
22 You've asked for a description on Bullet 1, Bob?

23 MATT PILLARD: I think Bob's asking
24 overall, maybe, what's the study here.

25 ROBERT HARMS: Yeah, it's overall --

1 MATT PILLARD: Let me kind of give
2 you a little more data here on the activities, and
3 then we can revisit.

4 The intent here is -- we know on the
5 Missouri River, there have been years of -- of more
6 productive sandbar production on the Missouri River.
7 And we also have -- we've had conversation with the
8 Corps of Engineers and other folks who monitor those
9 birds to see what has been the response following
10 those years.

11 The reason we want to do that is so that
12 we can get kind of a qualitative assessment to
13 identify the fact that, you know, in years where we
14 had -- in years following better production of
15 sandbars, we've shown a response in bird numbers.
16 And if that response is positive, one could draw a
17 conclusion that we had more habitat and the birds
18 responded accordingly.

19 We want to look at the factors that have
20 occurred in the Missouri River, and that will help
21 us determine that, yes, if habitat is abundant or
22 present in greater quantities on the Missouri, we
23 had a response of bird numbers appropriately. One
24 maybe could draw the conclusion that habitat is a
25 limiting factor on the Missouri River, if we're

1 seeing a response of that nature.

2 We then could look at what's happening in
3 the lower Platte. Objective 3 starts to get to that
4 in looking at responses of, you know, is there a
5 relationship between whatever indicator you want to
6 use from a sediment discharge -- sediment --
7 effective discharge parameters relative to bird
8 numbers.

9 Depending on what's the response we
10 receive there, the intent is to compare what we see
11 in the Missouri relative to habitat and responses.
12 We can use the effective discharge correlation, as
13 well as we know from working with Mary and others on
14 the lower Platte River that there have been years
15 that there may have been higher production of -- of
16 sandbars or habitat. Did we see a similar increase
17 in bird production, whether it be nest counts or
18 flood ratios following those years.

19 The intent is to try to draw some
20 comparisons to see, you know, can we determine if
21 sediment -- or not sediment, if sandbars is limiting
22 the bird production on the lower Platte, like we're
23 kind of seeing is happening on the Missouri River.
24 That's -- that's, in a nutshell, the intent of the
25 study.

1 ROBERT HARMS: Okay. Maybe, I guess,
2 a few questions about that -- or several here, so
3 stop me if I rattle them off.

4 Really, on the Missouri River, the last --
5 there's really very little in terms of natural
6 creation of nesting habitat on the Missouri River
7 between Gavins and Ponca, other than, you know, what
8 flows are released from the dam by the Corps.

9 The last big event where there was a
10 tremendous amount of tern and plover habitat was the
11 winter of 1997. During that -- at that time, there
12 was a huge amount of habitat that was created, some
13 real suitable nesting habitat, and the birds
14 responded very well to that. They were widely
15 distributed up and down the river, starting from --
16 oh, probably below Yankton Bridge down to Ponca. So
17 birds were scattered up and down the river, well
18 distributed. Fledge ratios were really good, there
19 was a lot of birds out there.

20 But since then, we have seen a loss of
21 birds in that area. There's been a decline. And
22 what's going on is all those bars are still out
23 there, but now they're islands of willows and
24 cottonwoods and no longer provide suitable habitat
25 for terns and plovers.

1 So what's gone on -- and this, in large
2 part, is due to the Fish and Wildlife Service's
3 Section 7 consultation with the Corps of Engineers,
4 who masterminded this, a reasonable -- a component
5 of the reasonable proven alternative was that the
6 Corps was to create an urgent sandbar habitat. So
7 right now, we've gone from well-distributed bars
8 from '97, '98, whenever, down to basically four or
9 five urgent sandbar habitat islands that provide
10 suitable nesting sites.

11 What happens is this. All these birds go
12 to these nesting sites, these islands, and you get a
13 tremendous number of birds out there, lots of terns
14 and plovers and lots of nests. And that may seem
15 like maybe a good sort of bird factory, but what we
16 end up with is a lot of interspecific aggression
17 amongst those birds.

18 The Missouri River system -- as I know you
19 know this, Matt -- is quite a bit different from the
20 Platte. You know, it's a -- the Platte is shallow;
21 the Missouri River is a deeper, you know, threaded
22 system there.

23 My point here is, given all the -- and I
24 have several points -- given all of those items, I
25 would be very cautious with the idea of comparing

1 what happens on the Missouri River below Gavins
2 Point to Ponca with what happens below the -- that
3 stretch there in the lower Platte that you're
4 talking about. There's a lot of sort of artificial
5 sorts of actions that are going on that may not be
6 the best to compare with.

7 MATT PILLARD: Thanks, Bob. And
8 those are all great points. And those are actually
9 some of the points that we were -- it's the response
10 that we wish to compare, not necessarily the habitat
11 between two systems or the river systems themselves,
12 but simply to show that it seems to me that as we
13 had a lot of natural habitat following '97, the
14 birds responded accordingly in a positive fashion.
15 Since then, the bars have -- the habitat has
16 degraded, and my guess is maybe now we're now seeing
17 a reduction in reproduction rates because of the
18 things you just mentioned.

19 And you know, is that a function of the
20 habitat being limiting or other things? And I think
21 all we're trying to show on the Missouri, that maybe
22 you can draw a correlation between habitat and bird
23 response. And we'd like to try to show the same
24 relationship, not that it's going to be the same as
25 the Missouri, but you know, can you draw a

1 relationship whether -- to determine if habitat is
2 limiting on the lower Platte by looking at when
3 habitat is there, when bars may be there, and is
4 there a response that could be -- from birds that
5 could be compared to see, you know, as habitat goes
6 up or down, do bird populations go up or down. I
7 use that bird populations loosely there.

8 So that's the intent. I understand the
9 caution of comparing directly between the two
10 systems because we know they're obviously not the
11 same, it's the response we're looking at there.

12 STEPHANIE WHITE: Jeff?

13 JEFF RUNGE: Yeah. I have a question
14 here in regards to addressing this objective. Is
15 this to evaluate species response in the next two
16 years within the study period, or is this to look at
17 past trends and use?

18 MATT PILLARD: It would be past
19 trends, looking at the historical data.

20 JEFF RUNGE: I guess how would you be
21 able to quantify sandbar habitat on an annual basis?

22 MATT PILLARD: You're right, we don't
23 have that data. And that -- that's not the intent,
24 unless there's -- we only know that habitat data was
25 collected some last year, and that's really the only

1 habitat data that maybe exists. And so, you know,
2 on the Missouri River, it's generally accepted -- as
3 Bob had mentioned -- that there were large -- you
4 know, in '97, there were -- after that year, that
5 year generated quite a bit of habitat on the
6 Missouri River.

7 There may be some correlations we can draw
8 when we look at our effective discharge analysis to
9 see are there years or a series of years where there
10 was a response between effective discharge and bird
11 populations. We won't know that until we do that
12 regression analysis.

13 But we could also maybe qualitatively do
14 that assessment, are there years on the Platte River
15 following large flood events where the folks that
16 were on the river said, Yeah, gee, after this year
17 we saw a lot more bars, and consequently, maybe it
18 could be generalized that there was more habitat.
19 We don't have acres or numbers, it would have to be
20 qualitative.

21 JEFF RUNGE: Well, that just gets
22 back to what I identified at the last meeting, is
23 that's very difficult to do unless you have an
24 understanding of habitat availability throughout --
25 or use of birds throughout the entire population,

1 that you can have the same quantity of available
2 habitat of -- across two different years, but you
3 may have different use based on available habitats
4 in other reaches, if the Missouri and Mississippi
5 was flooded last year and that affected nesting
6 on -- on those bars downstream.

7 And if there's no habitat available, there
8 would be a higher selection towards habitats that
9 are available, like in the Platte River system. And
10 as Mary mentioned in the last meeting, that the
11 Prairie Coteau has flooded, now there's less habitat
12 available in the Prairie Coteau region. And those
13 birds are going to have to find a different
14 location.

15 And so in some years, given those
16 conditions you may have the same available habitat
17 in the Platte River system, it's just whether -- to
18 address that question whether it's limiting or not,
19 that's going to be very difficult to do unless you
20 have an understanding of the entire population.

21 MATT PILLARD: Are there any
22 suggestions?

23 JEFF RUNGE: Unless you want to have
24 a population monitoring aspect associated with these
25 next two years, I think it's going to be really

1 difficult to draw this association.

2 And I guess one further point -- and this
3 is getting -- well, I guess to get back to what Mary
4 said, too, is when we identify limiting, it's not
5 just the current number of birds, but the number of
6 birds needed to recover the species. And so that
7 population is -- needed to recover the species would
8 be larger than what the existing use is on the lower
9 Platte River.

10 ROBERT HARMS: Do you think that
11 maybe it's the use of the word limiting in the
12 question, maybe -- or the objective needs to be
13 modified in such a way to -- in some way to show --

14 JEFF RUNGE: Well, if we want to
15 correlate sandbars to sediment supply or these types
16 of trends from other sediment analysis, I think we
17 can do that. I just think it's going to be
18 difficult to tie species response to the sediment
19 analysis because of the variability throughout the
20 population.

21 MATT PILLARD: So I think what I'm
22 hearing is the study, as it's listed, could be
23 performed, but the results might not be overly
24 useful or productive, knowing the other variables
25 that might be involved?

1 JEFF RUNGE: Correct.

2 LISA RICHARDSON: So I guess that --

3 ROBERT HARMS: So that said, though,
4 I think we need to help you to work out what the
5 objective is. Maybe that's the answer. Maybe that
6 needs to be further hashed out.

7 STEPHANIE WHITE: We can do two
8 things. We can do it right now, or we can do it
9 right now.

10 ROBERT HARMS: Let's do it.

11 STEPHANIE WHITE: Lisa?

12 LISA RICHARDSON: Okay. I guess one
13 question -- or I'm -- I just want to clarify what
14 I've heard there. I think you're saying that the
15 activities that we have don't necessarily provide us
16 with good information for the objective that we
17 have, is that right, that there's maybe not any
18 point in doing those activities?

19 ROBERT HARMS: Could you say that
20 again?

21 STEPHANIE WHITE: If I could
22 paraphrase, there is no -- what -- the end of what
23 Lisa's point was, there's really no point in doing
24 the four activities that we've set forth because we
25 can't draw appropriate conclusions from those.

1 ROBERT HARMS: That's correct.

2 Trying to compare the Platte with the Missouri, that
3 would be a challenging thing to do. But there's
4 some other comparisons that can be made or, maybe
5 the objective can be modified in some way, shape or
6 form.

7 LISA RICHARDSON: So that's my next
8 question. If these activities aren't appropriate,
9 then what activities would get us to the information
10 that we need for this objective? And if we can't
11 find any activities, then maybe we do need to
12 revisit the objective.

13 But knowing we've got limited data -- and
14 I guess one of the things that we focused on with
15 our study plans was the ability to use the data
16 that's already available because we're concerned
17 about doing any monitoring over a one- or two-year
18 period and all of the bias that may be built into
19 that data that's related to the flooding of the
20 Prairie Coteau region or a drought year, or
21 whatever, that if you're only looking at one or
22 two years, your data at the end of that time may be
23 really invalid because of other external factors.

24 So we'd like to focus on what data do we
25 have over a long period so that we can tease out

1 those -- okay, what are the issues that happened in
2 this year? Oh, it's the numbers are low, but it was
3 because there was all kinds of hail storms that
4 year, so we have another external factor, so look at
5 a different year that we have data for. I guess
6 that's where we were starting at.

7 STEPHANIE WHITE: David?

8 DAVID TURNER: Since we're really
9 trying to evaluate the effects of the Project on the
10 lower Platte -- and I don't know the data in and out
11 like you guys do, so bear with me and tell me if I'm
12 foolish here. But is there data immediately above
13 the confluence where the Project does not have an
14 effect on the North Platte, and incrementally
15 downstream so that within those years that we do
16 have data, can you compare the availability of
17 sandbar habitat against that effective discharge and
18 then look at it from that perspective within those
19 years that you have data, just in that limited
20 reach.

21 In other words, is there nesting
22 occurring, you know, proximately to the upstream end
23 of where the Project is having an effect and
24 immediately downstream of the Tailrace, or some
25 distance that makes sense, and I don't know what

1 that distance is in terms of availability of sandbar
2 habitat.

3 MARY BOMBERGER BROWN: Yes, there
4 is -- yes, there is that sort of data, but there
5 is -- it's of varying quality throughout the years.
6 So yes, we do have that we can think about that,
7 yes.

8 ROBERT HARMS: You know, those are --
9 those are good questions. When I think of the
10 upstream -- I have two questions -- the upstream
11 component, well, you know, the Loup River is a --
12 the Tailrace provides water and above that, we don't
13 have as much water. So above -- especially I notice
14 above the Columbus bridge, it gets very vegetated
15 and there's very little in terms of nesting habitat
16 and very few terns and plovers that use that area,
17 so it's not a very good comparison for there to
18 elsewhere. It's different, there's a little lack of
19 flow.

20 And as far as downstream, I wonder how
21 good the comparison might be there as well
22 because -- the reason why is because as you move
23 further down from the Tailrace, the sandbars should
24 get larger, if some sort of erosion is going on
25 because of sediment hungry water, so that might not

1 be a very good comparison either. It's a different
2 situation. Those are just some sort of thoughts off
3 the cuff.

4 STEPHANIE WHITE: Lisa has a point,
5 and then Jeff, it's yours.

6 LISA RICHARDSON: Well, I think,
7 David, I'm not a hundred percent sure I heard
8 everything that you said. But one of the things you
9 talked about was above the diversion and below, and
10 we do have that analysis in Study 5, looking at the
11 bird numbers above the diversion and below the
12 diversion on the Loup, just to try to say, Okay, we
13 definitely know the Project takes that water away,
14 what is that effect.

15 DAVID TURNER: Well, I guess when I
16 said diversion, I was thinking within the confluence
17 of the Loup and the Platte at the Tailrace because
18 that is part of the bypass reach that is affected by
19 operation because you're taking water out of the
20 Loup and the availability of habitat within that
21 bypass reach.

22 So when I was talking about above the
23 confluence of the Loup and Platte, if you look at
24 the availability of sandbar habitat there following
25 those high flow events and what's below, are you

1 getting more production in those places where you've
2 got scouring and development occurring and potential
3 bird numbers coming in, relative to downstream of
4 the Tailrace where the Project had an influence on
5 that.

6 And I agree, there is compounding factors
7 here, and I'm not sure how to separate out all those
8 factors. It may not be -- it may not be a
9 reasonable objective to do this. It may be just an
10 assumption we have to consider in terms of available
11 habitat relative to the effective discharge
12 calculations.

13 So just make the assumption that if you
14 put more flow in it and remove -- if there -- if
15 some of these flows are resulting -- or changes in
16 flows resulted in changes of aggradation versus
17 degradation, make the assumption there is going to
18 be habitat and it will be utilized. It may be a
19 false assumption, but it may be the best we can do
20 with the available data.

21 STEPHANIE WHITE: Jeff has a point,
22 and then, Mary, we'll come back to you.

23 JEFF RUNGE: If we want to correlate
24 species use to conditions -- habitat conditions on
25 the Platte River, I believe that previous objective

1 does the job. Because right now the ability to do
2 this under the current objective is limiting because
3 of the annual variability. But since this
4 Objective No. 3, you're aggregating years, you're
5 eliminating that yearly availability in coming up
6 with a -- with a coarser level analysis looking
7 across multiple years.

8 If you really want to get into specific
9 measures of habitat availability, I think something
10 could -- something like that could be done, but
11 there is limitations to that because we've only got
12 two years, and that is not representative of
13 different flow regimes. Those flow regimes are
14 representative of those two years, and we can do --
15 similar with what the program is doing right now, I
16 believe they're developing a hydrology model that
17 looks at things such as sandbar height, wetted width
18 and those measures that can be applied as an indice
19 for available habitat.

20 But once again, this can only be applied
21 for those two years. I don't think that we can go
22 back in time and extrapolate historic use. But that
23 would be a great way of looking at different
24 alternatives and how changes in flow regime,
25 especially throughout the bypass reach, would affect

1 the -- affect the quality or suitability of habitat.

2 STEPHANIE WHITE: Just study for
3 those two years, you mean?

4 JEFF RUNGE: Yes.

5 STEPHANIE WHITE: Mary?

6 MARY BOMBERGER BROWN: It's going to
7 be tough to do anything tremendously rigorous with
8 the dates that we have on the presence of birds.
9 Nesting implies, suggests that there is appropriate
10 habitat. But if we have such years where there are
11 no birds nesting there, since we don't actually have
12 a physical snapshot of what the sandbars look
13 like -- how do I say this -- there are few enough
14 animals that if they are not using the habitat, if
15 they're not nesting there, lack of nesting does
16 not -- it's going to be -- lack of nesting does not
17 necessarily imply lack of habitat. It certainly
18 suggests it, suggests it very strongly, but it's
19 going to be -- it's going to be somewhat -- the data
20 is going to be somewhat limiting and challenging to
21 think about.

22 STEPHANIE WHITE: Do I hear the group
23 moving towards the elimination of this objective?

24 LISA RICHARDSON: That's what I was
25 hearing.

1 ROBERT HARMS: I think so, for us.

2 STEPHANIE WHITE: Okay. So just for
3 the record so we can document it, let's have a show
4 of cards on -- now we're voting to eliminate
5 Objective No. 4 from Study 1, Sedimentation. Red,
6 yellow or green, let's see a show of cards.

7 All right. We're going to eliminate
8 Objective 4.

9 Now let's move into Objective 6. This
10 objective with relation to Study Plan No. 1,
11 Sedimentation, states that -- it's objective is, To
12 investigate the relationship between sedimentation
13 and ice jam flooding. The associated activity is to
14 research a potential link between sediment and
15 frazil ice transport.

16 LISA RICHARDSON: I guess can I
17 start? This is back to ice. Jean, do you have any
18 questions, thoughts, comments since we've gone
19 through all this sedimentation stuff as we get into
20 this?

21 JEAN ANGELL: Yeah, I do.

22 LISA RICHARDSON: Okay. Would you
23 start?

24 JEAN ANGELL: First off, as far as
25 the associated activities, I think it needs to be

1 researched -- research has to be expanded from just
2 the transport of frazil ice to the transport of all
3 ice in the water because the frazil ice enough is
4 not going to be enough to do a whole lot of ice jam
5 flooding damage. It's does the sedimentation change
6 cause an effect in the ability of the -- of the
7 river to transport ice, water, all that, during
8 those events. So I think it needs to be expanded
9 from frazil ice to transport of ice and water.

10 Okay. The other thing is I think rather
11 than research a potential link between sediment and
12 ice and water transport, rather, research a
13 potential link between any sediment changes or
14 sedimentation changes, changes in the course -- and
15 to link it back to Loup, any changes that are the
16 result of Loup's operation.

17 STEPHANIE WHITE: Okay. Okay. I
18 heard two things. One is that it be expanded to
19 include not just sediment and frazil ice transport,
20 but the transport of all ice and water.

21 JEAN ANGELL: Correct.

22 STEPHANIE WHITE: And that the link
23 to be researched is that between sediment changes as
24 a result of Project operation.

25 Discussion on that? Pat?

1 PAT ENGELBERT: The reason we wrote
2 it up as the link between sediment and frazil ice,
3 on our preliminary review of the literature, that's
4 the only link that we could find was there may be a
5 potential link between low density sediment
6 transport and the transport of frazil ice. We
7 haven't been able to locate anything relative to the
8 sheet ice, which is the other type alluded to in the
9 Corps report, Jean. So that's why we limited it to
10 the frazil. We don't know of any that exists for
11 the relationship between sheet ice and sediment
12 transport.

13 JEAN ANGELL: I guess what I was
14 getting at was, I was hoping within the
15 sedimentation study what would happen is we could
16 see whether sedimentation changes -- that is,
17 changes in the morphology of the river -- affect the
18 transport of ice and water during flooding events.

19 And the Corps, in their report -- if I can
20 find what it is exactly they said -- they didn't
21 appear to ask or to wonder were there any
22 sedimentation changes because of the operation.
23 Rather, they said those sedimentation changes may
24 have an effect on ice jam flooding.

25 And so I -- it appears they -- they

1 already believe that there were sedimentation
2 changes, but we want to know that for sure. Are
3 there -- first off, are there sedimentation changes
4 because of the operation of the Loup, and if there
5 are, does that cause any change in the ability of
6 the river to carry water and ice. And I would think
7 it's within this study that we'd find that out, and
8 maybe I'm misunderstanding the study.

9 PAT ENGELBERT: We are proposing to
10 look at how those transport indicators change over
11 time and then look at the trends analysis that the
12 literature has relative to its overall morphology.

13 But I'm not -- I'm not sure -- I guess I
14 go back to the point where the comment from the
15 Corps says that the operations may have affected
16 morphology, which may increase -- which may affect
17 flooding. I don't -- I guess I don't read that
18 to -- to state that the Corps believes that there is
19 a relationship, they just say there may be a
20 relationship. So that's my comment on that.

21 JEAN ANGELL: I think what the report
22 said was changes in the sediment regime of the river
23 resulting from the canal operations may also have
24 impacted ice formation and in transport processes.
25 And that's what we'd like to know, did those changes

1 really affect the ability to transport ice and
2 water, and again, that's what we want.

3 I don't know whether it needs to be within
4 this study or our study, whatever you think it's the
5 most appropriate. And it sounds like this probably
6 is a good fit within No. 5.

7 GEORGE WALDOW: Jean, I think we're
8 both dancing around what we think the Corps means, I
9 guess. And I read that to -- it's like a two-part
10 question. It's like if there are changes due to the
11 Project in the river sediment morphology, then the
12 next question is, do they impact the ability of that
13 channel reach to pass ice or to create flooding.

14 So I think we're not that far apart here,
15 but the questions need to just be asked in that
16 order. And if there's -- if it's determined that
17 the Project has not changed the sediment or the
18 morphology in the channel, then I don't think you
19 need to answer the second question. And that's --
20 that's the way I would think we would proceed --

21 PAT ENGELBERT: Does that second
22 bullet under 12.2 capture that, Stephanie?

23 STEPHANIE WHITE: Second bullet,
24 Incorporate results of sedimentation study relative
25 to sediment transport indicators to assess potential

1 effects, if any, on ice transport.

2 JEAN ANGELL: I'm not sure, and I
3 guess it's because I'm not an engineer. If you tell
4 me that the study says, does sedimentation transport
5 change the morphology of the river such that it
6 would impact the ability to carry ice and water, if
7 that's what that study means, I'm okay with it. But
8 I don't know the terminology well enough to know is
9 that what you're first getting to.

10 Does the operation make a sedimentation
11 change, does it make a change in the morphology, and
12 then if it does, then you jump over to, and does
13 that change affect the ability of the river to carry
14 the water and ice.

15 PAT ENGELBERT: And the first part is
16 clear, does the -- have the sediment transport
17 indicators changed with time and has that resulted
18 in a change of morphology, that being the effective
19 discharge and how that has affected the width and
20 depth characteristics that we had talked about
21 earlier. And then the next piece, how does that
22 have an effect on ice transport would have to be --
23 that question would have to be answered.

24 JEAN ANGELL: Okay.

25 JEFF RUNGE: So what we're talking

1 about with the link between sediment and ice -- or
2 sediment and ice jam flooding, those aspects of
3 sediment -- we're not evaluating the direct effects
4 of sediment, but more -- I guess is it more the
5 indirect effects to channel morphology, and these
6 effects to channel morphology affects changes in --
7 potential changes in ice jam flooding?

8 GEORGE WALDOW: (Nods head.)

9 JEFF RUNGE: Okay. And so those
10 indices of morphology, then, would be the width and
11 the depth, okay.

12 So when we make a comparison, we're
13 looking at changes in sediment supply and sediment
14 transport throughout that bypass reach, we should be
15 able to look at differences in width and depth, and
16 that could be applied towards ice jam flooding.

17 PAT ENGELBERT: What we're stating is
18 that we can look at how that effective discharge has
19 changed over time and the relative effects that
20 that has on the width and depth relationship, which
21 is tied directly to the effective discharge.

22 Then the second question would be if that
23 has affected it, has that also affected the capacity
24 for that section conveyed.

25 LISA RICHARDSON: If I could add in,

1 it looks to me like the objective and the
2 activities, I think we all kind of understand what
3 we want to do, but I don't think the objective and
4 activities reflect that. To investigate the
5 relationship between sedimentation and ice jam
6 flooding, that doesn't specifically talk about the
7 Project, so --

8 PAT ENGELBERT: But if it's covered
9 under the ice objective that we're going to
10 incorporate the results from the sedimentation back
11 to, it would be covered there.

12 STEPHANIE WHITE: So are you saying
13 that instead of six -- Objective 6 under
14 sedimentation, we cover it in the ice jam study?

15 PAT ENGELBERT: Yeah. We could scrap
16 that one now that it's covered in ice.

17 LISA RICHARDSON: Yeah. That's where
18 I was going, Pat, that we don't need this objective,
19 or if we -- this objective doesn't work the way it
20 is. And I think what the DNR is interested in is
21 covered under that additional objective in the ice
22 study.

23 JEAN ANGELL: The only thing -- the
24 only concern I have -- and it's simply because I
25 don't understand exactly what this means -- when you

1 say, Incorporate the results of the sedimentation
2 study relative to sediment transport, especially the
3 sediment transport part.

4 If what this means is incorporate the
5 results of the sedimentation study relative to any
6 changes in the river, in that -- the morphology of
7 the river --

8 GARY LEWIS: I had the same thought
9 when Patrick wrote it up. I think it would be
10 better if we did change the -- I can't quite read it
11 from here -- but it should be morphology of the
12 river, not sediment transport indicators. I think
13 that's not a good term. I think morphology of the
14 river would be far better.

15 STEPHANIE WHITE: So can it read like
16 this: Incorporate results of the sediment study
17 relative to any changes in the morphology of the
18 river to assess potential effects, if any, on ice
19 transport?

20 JEAN ANGELL: Ice and water
21 transport.

22 STEPHANIE WHITE: Can we include
23 water?

24 GARY LEWIS: Well, water is going to
25 get down the river regardless, so -- so yes, you can

1 include it. It will -- it doesn't hurt it to put it
2 in.

3 JEAN ANGELL: Well, what I mean is
4 during an ice event, you know, ability to carry
5 everything during a flood event.

6 GARY LEWIS: And I'm sure not an
7 expert on how you know if a channel shape is
8 different, whether it's going to transport ice
9 better our not. I hope we can find somebody that
10 knows that.

11 But the second half of the question is not
12 going to be an easy thing to resolve. And if
13 somebody's got the technology out there to know if
14 morphology from A to B, whether that does or does
15 not affect the ability of that stream to transport
16 ice. I think it's more related to is debris
17 collecting on bars, catching the ice, is it
18 collecting the frazil ice on bridge piers and debris
19 and so forth.

20 Those things are all -- this is a very
21 complex process not easily addressed, especially to
22 how it relates to this Project's incremental
23 effects.

24 JEAN ANGELL: Gary, I'd just love it
25 if you'd add that to the study, and I hope that's

1 been taken down. Anything we can do to find out,
2 does this operation affect ice jam flooding, and if
3 it does what -- you know, what is that.

4 STEPHANIE WHITE: All right. So I
5 think the motion on the table is to strike
6 Objective 6 from the Study 1, Sedimentation, with
7 the understanding that it is incorporated in
8 Study 12, Objective 2. And the activity is, To
9 incorporate results of the sedimentation study
10 relative to any changes in the morphology of the
11 river to assess potential effects, if any, on ice
12 and water transport.

13 GEORGE WALDOW: Stephanie, instead of
14 saying any changes in morphology of the river, I
15 would suggest saying river morphology changes.

16 STEPHANIE WHITE: Okay.

17 GEORGE WALDOW: It's clearer and it
18 doesn't include any possible extraneous minor
19 changes.

20 STEPHANIE WHITE: Okay. Incorporate
21 results of sedimentation study relative to river
22 morphology changes to assess potential effects, if
23 any, on ice and water transport.

24 So just so we have it for the record,
25 let's see a show of cards to eliminate Objective 6

1 from Study No. 1, Sedimentation, with the
2 understanding that it is replaced with this new
3 activity in Study 12, Objective 2.

4 Show of cards.

5 Okay. We have reached consensus.

6 Nebraska Game and Parks said they'd vote whatever
7 you did, Bob, so we have a full house of greens
8 today.

9 We will strike Objective 6. Now
10 sedimentation, instead of six objectives, has four.
11 We will discuss the last one tomorrow morning.
12 We've lost a part of our crowd.

13 PAT ENGELBERT: Which one?

14 STEPHANIE WHITE: That's, To
15 determine if sediment transport is a limiting factor
16 for pallid sturgeon habitat in the lower Platte
17 River below the Elkhorn River. It is an objective
18 we did not reach consensus on last time.

19 Lisa, if you can think of an activity that
20 would be useful to utilize this last half hour?

21 DAVID TURNER: I guess I had one
22 quick question or comment.

23 STEPHANIE WHITE: Yes.

24 DAVID TURNER: I think all these are
25 very productive discussions, and defining objectives

1 is critical to make sure we're getting to the right
2 questions to ask. But a significant element of this
3 is the methods by which we're going to achieve those
4 objectives, and I don't know if we're still -- if
5 we've asked that question here or not.

6 I mean, I don't know exactly what you're
7 going to do to analyze this question to get to those
8 results. How are you going to -- what are you going
9 to do to analyze and answer that question? I mean,
10 we've got the objective defined, but I don't know if
11 we have the methods defined yet.

12 So it kind of applies to all of the -- all
13 of the studies. We need to make sure we're coming
14 to agreement on all the methods at hand here. Just
15 kind of a tickler there to make sure we're not just
16 focusing on objectives, but how we're going to
17 answer those objectives.

18 STEPHANIE WHITE: I think we have not
19 reached consensus on two in particular, which would
20 be for sedimentation, and they're denoted here on
21 these two flip charts and would warrant further
22 discussion.

23 One thing we might use our time today is
24 maybe to revisit this third additional bullet on the
25 ice jam study, which we left kind of inconclusive,

1 which is, To evaluate historical river morphology
2 and changes over the years and plot those against
3 ice conditions. And Lisa's point was to be sure
4 that we relate it back to Project effects. Does
5 that change now?

6 Go ahead, Jeff.

7 JEFF RUNGE: Yeah. That objective
8 right there relates to what I referenced as Task 6
9 of the flow depletion, flow diversion section. If
10 you go to Task 6 and eliminate the first paragraph
11 and just focus on the second paragraph, I think that
12 may get it -- that may answer those questions.

13 STEPHANIE WHITE: What objective does
14 it refer to?

15 JEFF RUNGE: Well, actually, I'm
16 going off the study plan, not the revised
17 objectives.

18 STEPHANIE WHITE: Yeah. Okay. So
19 can you reference that again, where are you?

20 JEFF RUNGE: I'm in the study plan,
21 flow depletion, flow diversion, that's Section 5,
22 and I'm looking at Task 6, second paragraph. And
23 I'll see how that corresponds to your Power Point
24 presentation and what objective that is.

25 STEPHANIE WHITE: So your point,

1 Jeff, is that this -- this is taken care of?

2 JEFF RUNGE: It may be. That's why I
3 wanted to open up the discussion with the group, and
4 especially with Jean here only today, to make sure
5 that that objective was addressed.

6 QUINN DAMGAARD: It's Slide 21,
7 Stephanie.

8 JEFF RUNGE: And they don't get into
9 specific methods here for No. 4. But if we separate
10 the -- if we separate the species use and get into
11 the specific methods -- here, let me pull up the
12 actual study plan -- they talk about using aerial
13 photography and classifying aerial photography and
14 developing channel measures, which can change. But
15 right now, it says, Channel width, unvegetated
16 sandbars, vegetated sandbars, isolated and
17 nonisolated, and presence and/or type of vegetation.

18 STEPHANIE WHITE: Are you
19 suggesting --

20 JEFF RUNGE: I think this
21 classification is very similar to what you have up
22 there.

23 STEPHANIE WHITE: As is, or with some
24 modification?

25 JEFF RUNGE: I don't know. I'd like

1 to open it up to the group.

2 STEPHANIE WHITE: Okay.

3 JEFF RUNGE: One thing is that you've
4 got to look at these direct impacts to the channel.
5 And so looking at these changes in land cover type
6 is not -- does not show direct ties to Project
7 operations.

8 I think in particular, if you go to the
9 Corps and pull out information such as hard
10 points -- permits for hard points and jetties, those
11 could have substantial direct effects that are
12 completely independent of Loup's operation -- well,
13 unless those hard points are within the District
14 boundaries, I guess that -- that could be a direct
15 link to operations.

16 But -- but I think that would be very
17 helpful in separating -- you may not be able to show
18 changes in land cover over time and directly link
19 that to Project operations, but you can directly
20 link those changes to things such as hard points and
21 jetties. And by doing that, you would -- you would
22 be able to pinpoint what some of these causes are
23 when it comes to vegetation and channel narrowing
24 over time.

25 STEPHANIE WHITE: I think everybody

1 is soaking it in. Any responses or questions?

2 LISA RICHARDSON: I think, Jeff --
3 and I don't have a microphone -- is what you're
4 saying to incorporate review of the aerial photos as
5 part of your determination of the morphological
6 changes, and then use that as you're comparing it
7 against effects of ice? Is that --

8 JEFF RUNGE: Yeah. There's --
9 remember, when getting back to the previous
10 objective, we're trying to link sedimentation and
11 those indices -- or the response of -- channel
12 response from sedimentation to Project operations.

13 Well, there are lots of operations that --
14 or lots of effects going on within the channel that
15 are independent of Loup Power District's sediment
16 supply. And if we can tease out those effects by
17 identifying those areas of hard points, we can -- we
18 can say that these are independent of -- these areas
19 where these hard points and jetties -- this channel
20 narrowing that may have occurred over time is
21 completely independent of Loup operations. I think
22 that is definitely something that we can conclude.

23 Again, we're trying to draw the
24 relationship between Loup operations and channel
25 morphology, and there are several factors, such as

1 these hard points and jetties, that affect channel
2 morphology.

3 And so if there is bypass reach evaluation
4 by looking at the land cover, I think you also need
5 to look at a lot of these other effects to the
6 channel. There's a lot of silence here. I guess
7 I'll take a step back.

8 Is there any value in conducting this work
9 over several years and evaluating these indices,
10 such as channel width and unvegetated sandbars,
11 vegetated sandbars, presence and/or type of
12 vegetation? Is there any value in doing this work
13 and trying to tie this to Loup operations?

14 JEAN ANGELL: I would certainly think
15 so, Jeff. I mean, if the operation is affecting
16 that river, whether it's because of encroaching
17 vegetation, the shape of the river, whatever, and
18 those changes affect the ability of the river to
19 carry ice and water during a flooding event, yeah, I
20 think they should be studied. But I don't think we
21 know whether -- whether they impact ice jam
22 flooding.

23 First off, I think we have to look, does
24 the Loup operation change the vegetation, does it
25 change the morphology of the river, just any way,

1 does the Loup's operation change that river, and
2 then do those changes change the ability of the
3 river to carry the water.

4 JEFF RUNGE: And so the question
5 would be would these methods help to identify the
6 change, or is this an appropriate use.

7 GEORGE WALDOW: Steph, I'm confused.
8 Are we talking about ice transport, or are we
9 talking about tern and plover nesting in the bypass
10 reach?

11 JEFF RUNGE: I'm trying to relate
12 this back to ice jam flooding because -- since Jean
13 is just here today and she mentioned things such as
14 channel width and vegetation encroachment, if this
15 would be a means to address her concerns, or address
16 her information needs.

17 STEPHANIE WHITE: And I think that
18 it's parallel, less about the objective and more
19 about the methods.

20 PAT ENGELBERT: And our method to
21 address the change in river morphology is the
22 effective discharge method that we've laid out, and
23 that's how we will look as to whether or not the
24 Project has affected the morphology on the bypass
25 reach.

1 NEAL SUESS: Yeah. And I guess I
2 want to make clear -- and David, this kind of
3 addresses one of your concerns -- in our study plan,
4 it's pretty clear what our proposed methodology is.
5 And that's -- I mean, to the extent we're going
6 through this, yeah, we're talking about the
7 objectives and we may be changing the objectives,
8 but the methodology that we have in here is stated
9 pretty bluntly, I guess.

10 And so if there are concerns about that
11 methodology, you know, I would expect some of that
12 to -- you know, what -- we've heard a little bit of
13 that today, but our plans have always had the
14 methodology that we're planning on using in them.

15 And I -- and that's -- when we get to the
16 final revised study plans that we file, we will take
17 into account some of the comments we've received
18 here, but again, we will have a proposed methodology
19 in those study plans similar to what we have that
20 we -- that we provided to FERC on the 27th of May.

21 DAVID TURNER: I guess my point on
22 that question earlier was, I understand your
23 methodology in looking at the effective discharge as
24 a means to it, but if that's the only sort of data,
25 is there any discussion we need to have around how

1 you manipulate that data to answer these specific
2 questions or is there something else that needs to
3 be done, or does that data give you all that you
4 need to answer all these questions? I'm just not
5 real clear on those individual aspects.

6 JEAN ANGELL: If we go back to
7 Study 12.0 as proposed by Loup, there certainly is a
8 huge disagreement on the proposed methodology. As
9 we understand it from our meeting, basically what
10 would be done is -- is there would be just an
11 observation of flooding events since 1994 -- 1993,
12 1994 and the operation of Loup.

13 We disagree with that. We think it should
14 include all information we have on ice events, and
15 besides that, have some modeling done, have a look
16 at did the river change, all those things. Exactly
17 what the methodology would be, I don't know. And I
18 think we need to go to somebody like CRREL and ask
19 them, What methodology do we use to find out is
20 there -- is there some correlation between the
21 operation of the Loup Project and ice jam flooding.

22 But we don't think what was proposed will
23 get us anywhere near to answering that question.

24 STEPHANIE WHITE: But we did change
25 them today --

1 JEAN ANGELL: Right.

2 STEPHANIE WHITE: -- so do you feel
3 differently after our discussion this morning?

4 JEAN ANGELL: Oh, sure. But people
5 are jumping back to the study, and I want to make it
6 clear, the study --

7 NEAL SUESS: I want to make it clear,
8 Jean, obviously to the extent that we've made
9 changes today, when we file our revised study plan,
10 we will take into account those changes in what we
11 say with regard to our methodology. I mean, we have
12 to. If we've agreed to them, yeah, we're going to
13 file a revised study plan that's going to have
14 revised methodology in it at that point in time.

15 But, again, you know, I guess getting to
16 David's point, he kind of made it sound like we
17 haven't agreed to any methodologies. Well, I think
18 for a lot of these, we have our methodology in
19 there. To the extent that we've agreed to what
20 we're going to do in those particular objectives,
21 that methodology is very clear as to what we're
22 going to do.

23 Now, I'll admit, there are some of the new
24 items that we talked about today that we're going to
25 have to develop a methodology or develop what we

1 think is the appropriate methodology to follow
2 through with those particular studies. But those
3 will be listed in our study plan when we revise them
4 at the end of July.

5 GEORGE WALDOW: As I mentioned this
6 morning when I first discussed the ice study, it was
7 our best effort that we could prepare at the time
8 because we hadn't had a chance to coordinate to the
9 extent we have now. So that's why it was -- it was
10 not gone through in any detail at the April meeting,
11 we had to wait until this meeting to address it as a
12 whole.

13 STEPHANIE WHITE: I think there's one
14 option still on the table that relates to Jeff's
15 point, and it's about this last piece, this loop
16 that we didn't closed earlier this morning.

17 And I think if I can restate, maybe, your
18 point, Jeff, just like we did for this -- just how
19 we stated that we would incorporate the results of
20 the sedimentation study, I wonder if we might
21 incorporate the results of Study 5, To evaluate
22 historical river morphology and changes over the
23 years and plot those against ice conditions, can we
24 use data and analysis that we've done in Study 5 to
25 help answer the questions posed in -- I'm seeing a

1 head shake already.

2 GEORGE WALDOW: Could you please read
3 that again?

4 LISA RICHARDSON: Yes.

5 STEPHANIE WHITE: I guess I think
6 that we need to take a break and discuss -- I don't
7 mean a break right now -- we'll talk about whether
8 evaluation of those aerial photos, what we think we
9 might be able to get from that that would provide
10 additional benefit compared to what we're getting
11 from our effective discharge calculations and our
12 other methods of evaluating channel morphology and
13 see if that's relevant to the ice jam study. And I
14 think we need to kind of chew on that and think
15 about it.

16 JEFF RUNGE: Yeah, or if there's a
17 survey method that could be applied that would help
18 to address that study objective. Right now, I'm
19 just trying to streamline things since this method
20 is already in place in a different section, but it
21 may require a completely different method.

22 STEPHANIE WHITE: Okay. So the only
23 piece of Study 12 that's not wrapped up, Jean, is
24 that piece right there. And to read it for you,
25 George, it states, Evaluate historical river

1 morphology and changes over the years of
2 operation -- I believe that's what we meant this
3 morning -- plot those against ice conditions, and
4 Lisa added the point that it must be related to
5 Project effects.

6 That's the one piece of Study 12, that's
7 the one activity that's still on the table
8 specifically regarding or relating to Objective 2.

9 GEORGE WALDOW: But my problem with
10 that is we are already including the first part of
11 that statement, but to evaluate it or to plot it
12 against ice conditions is -- the problem is there's
13 no data on ice conditions to plot against. That's
14 not in anybody's data.

15 QUINN DAMGAARD: I think it's
16 essentially what you have there as 12.2, right next
17 door there, Steph, really, what we really just
18 agreed upon, it's just a different method.

19 STEPHANIE WHITE: The first or the
20 second?

21 QUINN DAMGAARD: The one that starts
22 with, Incorporate results.

23 STEPHANIE WHITE: So Quinn has
24 suggested that this historical evaluation of river
25 morphology and changes over the years is the same --

1 the outcomes would be the same as this, which is, To
2 incorporate results of the sedimentation study
3 relative to river morphology changes to assess
4 potential effects, if any, on ice and water
5 transport.

6 GEORGE WALDOW: I vote to throw the
7 last one out because the data is simply not good
8 enough.

9 QUINN DAMGAARD: I think Jeff is
10 suggesting an alternative method, which would only
11 supplement what is listed there under what you just
12 read in 12.2.

13 PAT ENGELBERT: What does the
14 alternative method get us? We're already assessing
15 the morphological changes over time, effective
16 discharge methodology. What does what you're
17 suggesting get us?

18 JEFF RUNGE: I guess what I'm
19 suggesting is that it may not necessarily tie -- if
20 there is channel narrowing that's going on, it may
21 not necessarily tie that narrowing and vegetation
22 encroachment to Loup operations if that channel
23 narrowing is due to hard points or jetties that's
24 being protruded into the river, or levees. That way
25 we can demonstrate that those actions are

1 independent of Loup operations.

2 GEORGE WALDOW: I see, Jeff, where
3 you are now because there are jetties that were
4 built to train the river immediately downstream of
5 the diversion structure. And I don't know how far
6 they go down, but maybe Ron or Neal can comment on
7 that.

8 NEAL SUESS: I think they go to the
9 end --

10 RON ZIOLA: The ones on the south
11 side got taken out in the '60s. The ones that were
12 put in were put on the north side when the '94
13 summer event occurred.

14 NEAL SUESS: There may be some
15 jetties as far south as the end of the settling
16 basin.

17 RON ZIOLA: Yeah, yeah, but on the
18 north side.

19 NEAL SUESS: Yeah, on the north side
20 of the river, but on the south side of our -- of the
21 sand pile, basically.

22 GEORGE WALDOW: So that is something
23 that could be looked at, aerial photos and knowing
24 where they are --

25 NEAL SUESS: But other than that, I

1 don't believe there's anything south -- or
2 downstream of that.

3 RON ZIOLA: There may be. You know,
4 other people may have put them in to protect the
5 river bridge from cutting in behind it, you know,
6 keep it inside the main support heads on either side
7 of the river. There could be some there. You know,
8 there's some old bridge abutments that have been
9 left behind, at Monroe where they took the
10 perpendicular bridge out and put in the cross
11 channels or straight bridge.

12 There's different structures probably out
13 there. Just like we talked about upstream of the
14 Highway 81 bridge, there's an old abutment there. I
15 don't know if it's from the original bridge or
16 whether they put it in --

17 NEAL SUESS: Yeah, I believe that is
18 from the original bridge, Ron.

19 RON ZIOLA: Right. And that was
20 never taken out.

21 STEPHANIE WHITE: So George, now that
22 it all makes sense, how would you reword this?

23 GEORGE WALDOW: I would -- I would
24 throw that one out because we only have the first
25 half of it. You can't manufacture data for

1 historical ice events.

2 STEPHANIE WHITE: Have you just
3 uncovered another issue we need to address either in
4 this study or another study?

5 GEORGE WALDOW: I don't think so.

6 STEPHANIE WHITE: Okay. So the
7 motion on the table is if we throw this activity
8 out. Again, it's on Objective 2, Ice Jam Flooding
9 in the Loup River, and it's the evaluation of the
10 historical river morphology and changes over the
11 years, which would be plotted against ice conditions
12 relative to Project effects.

13 The suggestion is that it be eliminated
14 because of lack of data on the ice conditions.

15 LISA RICHARDSON: I don't think it
16 was ever actually in, Stephanie, but --

17 STEPHANIE WHITE: It was never in or
18 out.

19 LISA RICHARDSON: Eliminated from
20 consideration.

21 STEPHANIE WHITE: That's probably
22 more correct, eliminated from consideration.

23 This will be our last activity for today.
24 Let's have a show of cards to take that out of
25 consideration as an activity under Objective 2 in

1 Study 12, Ice Jam Flooding.

2 All right. I see a red from Jean, and I
3 will assume green -- certainly saw green from the
4 District, green from Jerry Kenny. And I see a red
5 from the Service.

6 Okay. Let's conclude our discussion for
7 today. If you'd like to offer some round-up
8 comments, you may. Otherwise I think it's been a
9 long day for everybody.

10 LISA RICHARDSON: Thanks for
11 participating.

12 NEAL SUESS: Yeah, I guess I'd like
13 to take this opportunity to thank everybody for
14 showing up today. We got a lot accomplished today.
15 We've got a lot to accomplish tomorrow. We're back
16 here at 8:30 tomorrow; is that correct?

17 STEPHANIE WHITE: Yes.

18 NEAL SUESS: So we will reconvene
19 back here at 8:30 tomorrow and be prepared to go
20 through basically the other studies we've got, a
21 bunch -- a bunch of studies that we have.

22 So thanks, everybody.

23 STEPHANIE WHITE: All right. The
24 meeting is adjourned.

25 *(Meeting Adjourned - 4:53 p.m.)*

