

# Susitna-Watana Hydroelectric Project Document

## ARLIS Uniform Cover Page

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<b>Notes:</b>  Contents: Part A. Transcripts -- Part B. Agenda and presentations.  In the electronic version, this cover page and the cover letter precede Part A only.		

All reports in the Susitna-Watana Hydroelectric Project Document series include an ARLIS-produced cover page and an ARLIS-assigned number for uniformity and citability. All reports are posted online at <http://www.arlis.org/resources/susitna-watana/>





November 14, 2014

Ms. Kimberly D. Bose  
Secretary  
Federal Energy Regulatory Commission  
888 First Street, N.E.  
Washington, D.C. 20426

**Re: Susitna-Watana Hydroelectric Project, Project No. 14241-000**

**Filing of Initial Study Plan Meetings Transcripts and Additional Information in  
Response to October 2014 Initial Study Plan Meetings**

Dear Secretary Bose:

By letter dated January 28, 2014, the Federal Energy Regulatory Commission (Commission or FERC) modified the procedural schedule for the preparation and review of the Initial Study Report (ISR) for the proposed Susitna-Watana Hydroelectric Project, FERC Project No. 14241 (Project).<sup>1</sup> As required by the Commission's January 28 letter, the Alaska Energy Authority (AEA) filed the ISR with the Commission on June 3, 2014 and conducted ISR meetings on October 15, 16, 17, 21, 22, and 23, 2014. Attached as Attachments A-1 through F-2 are the written transcripts (along with the agenda and PowerPoint presentations) for these ISR meetings.

During the October ISR meetings, AEA and licensing participants identified certain technical memoranda and other information that AEA would file with the Commission by November 15, 2014. In accordance, AEA is filing and distributing the following technical memoranda and other information:

- Attachment G: *Glacier and Runoff Changes (Study 7.7) and Fluvial Geomorphology (Study 6.5) - Assessment of the Potential for Changes in Sediment Delivery to Watana Reservoir Due to Glacial Surges Technical Memorandum*. This technical memorandum documents AEA's analysis of the potential changes to sediment delivery from the upper Susitna watershed into the Project's reservoir from glacial surges.
- Attachment H: *Riparian Instream Flow (Study 8.6) and Fluvial Geomorphology (Study 6.6) - Dam Effects on Downstream Channel and Floodplain Geomorphology and Riparian Plant Communities and Ecosystems – Literature Review Technical Memorandum*. This literature review technical

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<sup>1</sup> Letter from Jeff Wright, FERC Office of Energy Projects, to Wayne Dyok, Alaska Energy Authority, Project No. 14241-000 (issued Jan. 28, 2014).

memorandum synthesizes historic physical and biologic data for the Susitna River floodplain vegetation (including 1980s studies), studies of hydro project impacts on downstream floodplain plant communities, and studies of un-impacted floodplain plant community successional processes.

- Attachment I: *Susitna River Fish Distribution and Abundance Implementation Plan, Appendix 3. Protocol for Site-Specific Gear Type Selection, Version 5.* In accordance with the fish distribution and abundance studies, as described in Revised Study Plan (RSP) Sections 9.5 and 9.6 and in the Fish Distribution and Abundance Implementation Plan, this appendix establishes the protocol for site-specific gear type selection for fish surveys. Throughout study plan implementation, AEA has updated this appendix as needed to provide consistent direction to all field teams. Version 1 of Appendix 3 was originally filed with the Fish Distribution and Abundance Implementation Plan in March 2013. That version was updated twice (Versions 2 and 3) during the 2013 field season to accommodate protocol changes that related to FERC's April 1, 2013 Study Plan Determination, field permits, and lessons learned during study implementation. Version 4 was the protocol used for the 2014 field season and was updated with respect to the prioritization of gear use and based on 2013 data collected. This version herein, Version 5, will be followed during the 2015 field season.
- Attachment J: *Fish Distribution and Abundance in the Upper and Middle/Lower Susitna River (Studies 9.5 and 9.6): Draft Chinook and Coho Salmon Identification Protocol.* This document established a Chinook and coho salmon identification protocol to support accurate and consistent field identification across field teams. It will allow for additional quality control and assurance of field identification calls and for estimation and reporting of any field identification error that may occur in future sampling efforts.
- Attachment K: *Characterization and Mapping of Aquatic Habitats (9.9), Errata to Initial Study Report Part A - Appendix A, Remote Line Mapping, 2012.* This errata provides a corrected version of map book for Remote Line Mapping, 2012. The version filed with the ISR (June 3, 2014) used a data query to build the maps in geomorphic reaches MR-1 to UR-5 that mistakenly did not include side slough habitat, so that no side sloughs were depicted on the Appendix A maps 1 through 21. This version was corrected by including side slough habitat in the data query for geomorphic reaches MR-1 to UR-5. This version now includes side sloughs.
- Attachment L: *Characterization and Mapping of Aquatic Habitats Study 9.9, Revised Map Book for 2012 Remote Line Mapping.* This map book represents an update to the version published on June 3, 2014 with the Study 9.9 Initial Study Report and the errata provided concurrently with this filing (see Attachment K). The maps presented include all macrohabitat and mesohabitat line identifications available in the 2012 Remote Line Mapping ArcGIS

shapefile. This map book should be considered a full replacement for previous versions and represents the final product for the 2012 remote line habitat mapping effort.

- Attachment M: *Study of Fish Passage Barriers in the Middle and Upper Susitna River and Susitna Tributaries (Study 9.12), Fish Passage Criteria Technical Memorandum*. This technical memorandum presents a proposed final list of fish species that will be included in the fish barrier analysis as well as depth, leaping and velocity passage criteria for selected fish species. AEA previously consulted with the federal agencies and other licensing participants regarding the information within the technical memorandum during a March 19, 2014 Fisheries Technical Meeting.

In addition to the technical memoranda and other information identified above, AEA is filing a short errata (Attachment N) to the *Mercury Assessment and Potential for Bioaccumulation Study (Study 5.7), Evaluation of Continued Mercury Monitoring Beyond 2014 Technical Memorandum*. This technical memorandum, which was originally filed on September 30, 2014, evaluates the need for continued monitoring of mercury data beyond 2014 and whether the existing data collection efforts are sufficient to satisfy objectives for characterizing baseline mercury conditions in the Susitna River and tributaries (RSP Section 5.7.1). Since the filing of this TM and based upon the ongoing QA/QC of the data reported in that TM, AEA discovered errors in the TM. The attached TM corrects those errors. Additionally, the errata corrects corresponding errors in the Mercury Assessment and Potential for Bioaccumulation presentation presented during the October 16, 2014 ISR meeting.

Finally, AEA notes that data collected during the Study Plan implementation, to the extent they have been verified through AEA's quality assurance and quality control (QAQC) procedures and are publicly available, can be accessed at [http://gis.suhydro.org/isr\\_mtg](http://gis.suhydro.org/isr_mtg). On November 14, 2014, AEA posted the following data to this website:

- *Baseline Water Quality Data (Study 5.5)*, 2013 QAQC water quality data and DVRs per the Quality Assurance Project Plan.
- *Breeding Survey Study of Landbirds and Shorebirds (Study 10.16)*, cumulative 2013-2014 data.
- *Characterization and Mapping of Aquatic Habitats (Study 9.9)*, ArcGIS shapefile "ISR\_9\_9\_AQHAB\_RemoteLineMapping\_2012.shp" used to generate the maps in Attachment L.

AEA appreciates the opportunity to provide this additional information to the Commission and licensing participants, which it believes will be helpful in determining the appropriate development of the 2015 study plan as set forth in the ISR. If you have questions concerning this submission please contact me at wdyok@aidea.org or (907) 771-3955.

Sincerely,

A handwritten signature in cursive script that reads "Wayne M. Dyok". The signature is written in dark ink and is positioned above the printed name.

Wayne Dyok  
Project Manager  
Alaska Energy Authority

Attachments

cc: Distribution List (w/o Attachments)

**Susitna-Watana Hydroelectric Project  
(FERC No. 14241)**

**Initial Study Report Meetings**

**October 21, 2014**

**Part A – Transcripts**

**Alaska Energy Authority - Board Room  
813 West Northern Lights Blvd.  
Anchorage, Alaska 99503**

Filed November 15, 2014



## SUSITNA-WATANA HYDRO

### Agenda and Schedule

#### Initial Study Report (ISR) Meetings

Wildlife and Botanical (Studies 10.5 - 10.20; 11.5, 11.7 - 11.9)

Alaska Energy Authority - Board Room

813 West Northern Lights Boulevard

Anchorage, Alaska

October 21, 2014

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### **ATTENDEES**

Julie Anderson, Alaska Energy Authority  
Nate Anderson, Alaska Energy Authority  
Earl Becker, Alaska Department of Fish & Game  
Martin Bozeman, Alaska Energy Authority  
Phil Brna, U.S. Fish and Wildlife Service  
Michael Bruen, MWH Global  
Sarah Bullock, Bureau of Land Management  
Mark Burch, Alaska Department of Fish & Game  
Olivia Cohn, Solstice Alaska  
Justin Crowther, Alaska Energy Authority  
Jennifer Curtis, EPA  
Wayne Dyok, Alaska Energy Authority  
Alynda Foreman, Louis Berger Group  
Andrew Fraiser, Alaska Energy Authority  
Graham Frye, University of Alaska Fairbanks  
Sandie Hayes, Alaska Energy Authority  
Bob Henszey, Fish & Wildlife Service  
Janet Kidd, ABR  
Kirby Gilbert, MWH  
Kim Jones, Alaska Department of Fish & Game  
Jan Konigsberg, Alaska Hydro Project

Brian Lawhead, ABR  
Becky Long, Susitna River Coalition  
Matt Love, Van Ness Feldman  
Todd Mabee, ABR  
Lauren McClure, Stillwater Sciences  
Betsy McGregor, Alaska Energy Authority  
Rick Merizon, Alaska Department of Fish & Game  
Sterling Miller, Dunrovin Research  
Alan Mitchnick, FERC  
Laura Noland, Environ International  
Tim Obritschkewitsch, ABR  
Sarah O'Neal, Unidentified  
Doug Ott, Alaska Energy Authority  
Dirk Pedersen, Stillwater Sciences  
Alex Prichard, ABR  
Laura Prugh, University of Alaska Fairbanks  
Casey Pozzanghera, University of Alaska Fairbanks  
Tyler Rychener, Louis Berger (for FERC)  
Terry Schick, ABR  
Nate Schwab, ABR  
Chuck Sensiba, Van Ness Feldman  
John Shook, ABR  
Miranda Studstill, Accu-Type Depositions  
Emily Teraoka, Stillwater Sciences  
Cassie Thomas, National Park Service  
Rachel Thompson, Alaska Energy Authority  
Fred Winchell, Louis Berger Group  
Ellen Wolf, Susitna River Coalition  
Whitney Wolff, Talkeetna Community Council

## **INTRODUCTIONS:**

MR. GILBERT: Okay. Let's get started so we can try to stay



on time on the agenda.

Hi. I'm Kirby Gilbert with MWH, and I'm working for AEA. I'll be moderating these meetings, facilitating this week.

This is the second in a series of meetings on the Susitna-Watana Hydro project, the initial study report. We've got three meetings this week. There were three meetings last week. Maybe a lot of you were involved or participated in it. They were at the Millennium Hotel, and those were focused on the aquatic studies.

This week is the terrestrial phase, terrestrial resources, wildlife and botanical. And then we've got some of the physical sciences, cultural, subsistence, paleontology tomorrow, and then on Thursday, the remainder of the social sciences and recreation studies.

Just real quick, it's not too full in here, which is great. And please sign in as you come in. If you haven't signed in, please do so.

We -- if there is any need to evacuate the room for any reason, we are all to go up the stairs and out the door on the main lobby, and right up into the north parking lot.

Also there are restrooms on this floor, and if you've been here before, you have to be a little careful because they've been remodeled

and switched, so just make sure you look at the sign on the door. But they're right outside and around the hall.

So we'll start with some introductions. We'll kind of go around the room, and then we'll go on the phone.

And just to note, and I'll make this note a couple of times. We do have a court recorder, Miranda, transcribing. And because of that, and it makes it all the more important, that everybody state their name before they make a comment, and so on.

So we'll go around the room, and everybody, if they could at least introduce their selves. And if you're a contractor, be sure to say who you're working for, represent, and so on, so we can get everybody's role all figured out here.

So we'll go around this way. I'm Kirby Gilbert, MWH.

MS. HAYES: Sandy Hayes, AEA.

MR. FRAISER: Andrew Fraiser, AEA.

MS. NOLAND: Laura Noland, Environ.

MR. GILBERT: And Environ, working --

MS. NOLAND: Representing the Fish & Wildlife Service.

MR. GILBERT: Fish & Wildlife Service. Okay. Thanks.

MR. BRNA: Phil Brna, Fish & Wildlife Service.

MR. MILLER: I'm Sterling Miller from Dunrovin Research.  
I'm here representing the Wild Salmon Center and Trout Unlimited.

MS. ANDERSON: Julie Anderson, Alaska Energy Authority.

MS. THOMPSON: Rachel Thompson, Alaska Energy  
Authority.

MR. BOZEMAN: Martin Bozeman, AEA.

MR. ANDERSON: Nate Anderson, AEA.

MR. OTT: Doug Ott, Alaska Energy Authority.

MR. MERIZON: Rick Merizon, Alaska Department of Fish &  
Game.

MS. JONES: Kim Jones, Alaska Department and Fish &  
Game.

MS. BULLOCK: Sarah Bullock, Bureau of Land  
Management.

MR. CROWTHER: Justin Crowther, Alaska Energy  
Authority.

MS. COHN: Olivia Cohn, Solstice.

THE COURT REPORTER: Miranda Studstill, Accu-Type.

MR. DYOK: Good morning. Wayne Dyok, Alaska Energy Authority.

MR. SENSIBA: Chuck Sensiba, with Van Ness Feldman, on behalf of AEA.

MS. MCGREGOR: Betsy McGregor, Alaska Energy Authority.

MR. SCHICK: Terry Schick with ABR.

MR. LAWHEAD: And Brian Lawhead with ABR.

MR. BURCH: Mark Burch with Fish & Game.

MR. GILBERT: So we'll turn to the phone now. But can you -- those on the phone, can you hear okay so far?

MS. LONG: Yeah, we can hear okay. Hi, Kirby. I might as well start.

This is Becky Long, Susitna River Coalition.

MS. THOMAS: Cassie Thomas, National Park Service. And thanks for the much better audio than last week.

MR. WINCHELL: Fred Winchell, Louis Berger, contractor with FERC.

MS. MCCLURE: Lauren McClure, Stillwater Sciences,

contractor to FERC.

MS. MCGREGOR: Did you get that? Wait.

MR. GILBERT: Can you repeat?

MR. PEDERSEN: Dirk Pedersen, Stillwater Sciences,  
contractor to FERC.

MR. GILBERT: Okay. I've got Dirk Pedersen, Stillwater  
Sciences. Who was the woman before with Stillwater?

MS. MCCLURE: Oh, this is Lauren McClure.

MR. KONIGSBERG: Jan Konigsberg, Alaska Hydro Project.  
Good morning, Kirby.

MR. GILBERT: Hi, Jan.

MR. MABEE: Todd Mabee, ABR.

MR. OBRITSCHKEWITSCH: Tim Obritschkewitsch, ABR.

MR. SHOOK: John Shook, ABR.

MR. MITCHNICK: Alan Mitchnick, FERC.

MR. GILBERT: Hi, Alan.

MR. MITCHNICK: Good morning.

MS. FOREMAN: Alynda Foreman, contractor to FERC.

MR. GILBERT: Okay. We're going to do that roll call again

after we start up again at lunch. So that's very helpful.

I will try to just remind everybody, there's more room at the table, but if you're going to speak or comment today, it might help if you stand up. But we just want to make sure it's clear, and I'll be checking with Miranda throughout the day a little bit to make sure that we're -- everybody knows who's talking, because it is hard on the phone. I was on the phone last week and it was really challenging to try to listen and follow what was going on.

And also, those on the phone, please don't put us on hold. Just -- if you have another call, just hang up and dial back in, because we'll get music or something if you put us on hold. Everybody will.

Okay. Well, today we've got the wildlife and botanical studies. There are 16 wildlife, four botanical studies, so we have quite a bit to cover, but we have all day to do it.

So it's broken up. We've got -- the agenda's been out. The agenda and the presentations through today have been out for two weeks on the web site.

We're going to try to go through each presentation in no more than about a ten-minute period, because we're trying to make sure we

have time to discuss, not just present it.

The expectation is that people have read the ISR, spent quite a bit of time, and hopefully have looked at these presentations. The presentations are intended to be an aid, an overview of the subject matter at hand for each of the studies.

So I'll go through a few introductory slides, and then Wayne will have a few remarks, and then we'll go through each of the studies one by one.

Let's see if I can get this to work here. There we go. Okay.

So these meetings today, these are the initial studies as required by FERC under the ILP regulations. It's a -- it's really a check-in point halfway through the two-year study process, and it is a chance, because this is right out of a regulation, for the licensee and participants to discuss with AEA and its contractors, to share these results and any proposals, modifications, questions everybody has on all the studies as we go ahead. It's a check-in point.

The initial study report was filed June 3rd, and previous to that, on February 3rd, a part of that was filed. So it's been out there quite a while, and it's been on the AEA web site for quite a while. It

is a tremendous amount of work. There's over 8,000 pages for all 58 studies. And today, as I said, we'll be talking about 20 of them, so quite a few today.

And normally the ILP does not offer this much time, but we've got quite a bit of time here. So hopefully that's helped everybody, to be able to digest this information in the area they're interested in.

And then as the year went along, AEA continued to work on several studies, especially studies with timely data questions, and so on. And there were some technical memorandums that were filed and posted on the web site in September, and now those were all in the aquatic field. There were 16 of them, I believe.

MS. MCGREGOR: Twenty-two.

MR. GILBERT: Oh, 22. Okay. So -- but with that, FERC had come in and looked at that and heard from a lot of the parties, and FERC has now extended the schedule a little bit on this review cycle, and there will be a second set of meetings in January for those studies that had technical memorandums filed. And those are being scheduled now in the next week or two for early January.

MR. MILLER: So those aren't terrestrial mammals?



MR. GILBERT: Pardon me?

MR. MILLER: The second meeting will not include terrestrial mammals?

MR. GILBERT: Not at this time. Be sure to state your name.

MR. MILLER: Sterling Miller. Sorry.

MR. GILBERT: That's okay. Just to make it easy for her.  
Thanks.

MS. LONG: Kirby, this is Becky Long.

I just want to kind of correct what you said about the technical memorandums. I've counted them. There's 40 technical memorandums, the supplementals that came out in September. And also, a lot of it deals with geomorphology, which I don't know if I (indiscernible - interference with speaker-phone). [8:39:13]

MR. GILBERT: Yeah. So aquatic, water, anything to do with the riverine environment. So yeah, I'm summarizing it incorrectly to say aquatic.

MS. MCGREGOR: So just --

MS. LONG: It was an impressive data dump of about 1,800 pages.

MS. MCGREGOR: This is Betsy McGregor with AEA.

I just want to clarify that there are 22 technical memos. There may have been appendices. They may have been broken into pieces due to size, to make it easier to download, but there were 22 technical memos, plus one on the Chulitna Corridor.

MR. GILBERT: Okay. So this slide here is just talking about what's next, and that's what we're going to try to talk a lot about today, what's next.

But this is the current schedule for the next -- next item after these second -- another set of small meetings in January, and other small meetings that AEA's working on scheduling now. AEA will file the summary of all the meetings with FERC and put it up on the web site.

And then one month later, February 21st, is the chance for all the licensing partners -- participants -- to file their formal comments and study requests about all the review that's gone on and reactions to the meetings, AEA's notes.

And then another month goes by, and in March, it's a chance to -- for AEA and others to file back comments.

And finally, FERC gets to make a study-plan determination, just like they did with the original study plan, revised study-plan determination, to make any adjustments to the studies or methods and modifications, and so on, for the following year, for 2015 work studies.

And then we're still on the same schedule for filing an updated study report, which is a culmination of the studies, and that's February 1st, 2016.

So that's the current schedule as it is that FERC's come down with.

Okay. As I mentioned today, we're halfway through here. We're in the botanical and wildlife studies.

And then tomorrow, as I mentioned, we have the physical sciences, subsistence, cultural, and paleontology.

Thursday, social sciences, quite a few studies there, too, and the recreation, and esthetic studies.

And then AEA will be announcing shortly the other meetings that are planned for aquatic.

And again, we want to try to make these meetings as useful to

everybody, so it is about a chance to discuss, which means conversation, and it's a chance for everybody to participate and ask questions, that hopefully you read the ISR.

There is some work that Brian and his team will talk about that went on in March, ADF&G 3/20/14. We're going to talk a little bit about that.

There are no technical memos, so I don't think that's helpful to anybody. But hopefully people really have read the ISRs. But we do have the contractors here to go over the highlights and what the plans and variances are, the plans for completing the study.

And then the idea being, this is a chance, if licensing participants think there are going to be modifications or new studies, to make those -- to get those comments ready to file with FERC so FERC can consider them in their study-plan determination.

Most of you are -- you should be familiar with the ISR. It's a little different structure than a normal ISR. It's in three parts.

The Part A is the part that was filed in February. That is the bulk of what happened in 2013, without the plans for completing the study.

Part B of each ISR, each of the 58 studies, is -- was any supplemental information that enhanced the Part A, or corrected errata from the February filing, so that was a nice chance to bring that up to par.

And then -- and then Part C is the one that's really important here. That summarizes the plans to complete the study, and I think that's a lot of what's going to happen today.

There were variances described in the first study season, and then there could be modifications -- continued variances or modifications that AEA and the contractors are proposing for completing the studies in the next season. And that's what we are discussing today.

The last -- we'll go through a little bit about the approach in here, and then you can see more about the -- what we have on the wall here, the criteria for making a study request. These are right out of the regulations, and they're also on the PowerPoint slides.

As I mentioned, each of the study team is going to be -- Brian and a lot of his team are going to go through each of the studies in the order on the agenda. We're going to try to stick to the agenda

and -- try to stick to the agenda and the time, and the leads are going to try to focus on the thing -- the variances.

We've had to summarize a little bit of the results, the highlights of the results, and discuss importantly the proposed modifications that they'd like to carry through for the next study season.

And there also are some decision points that were explicit in the ISR and in the previous study plans about where data's come together, and a decision needs to be made on which way to go with the study. There's a few of those here and there.

And then really, it's about everybody participating and asking questions or giving us any proposed modifications for AEA and its contractors, to consider and get your input. So that's really what we want to do today.

Okay. The last slide -- last few slides, as I mentioned, are the same as what we have up on the wall, and those are right out of the regs, in terms of what -- what the criteria FERC has in terms of requesting a modification to a study, any changes, by the request -- well, we do -- we do refer back to the study-plan

determination, because that is the starting point, and then the study proceeded. So anything that wasn't in sync when that study-plan determination and the methods were approved is considered a variance, so that's the way -- often we will be referring back and we have access to the study plan and other materials, if we need to pull it up today.

And then this gives the details on the content of the study request, if the licensing participant wishes to file or make any proposals. So these are the criteria we're all supposed to follow, okay?

So if there's not any questions, I'll turn it over to Wayne.

MS. THOMAS: Kirby, this is Cassie Thomas.

And I am just wondering if AEA plans to update its schedule tab on the project web site, which still doesn't reflect a change in the ISR review and comment schedule.

I think it would be very useful if that were to be updated so that everyone would know when the various deadlines are.

MR. GILBERT: Yeah. Yes. Good request. That's -- that seems very reasonable. We'll get at that.

Okay. Unless there's any other questions, before we start right in, Wayne has a few things he can share with us maybe, to help us all today.

MR. DYOK: Thanks, Kirby.

And good morning, everyone, and welcome.

We still have five chairs. I know Kirby had mentioned that. So we'll let you sit in the back row there, but if you're going to be talking, we would like to ask you at that point to come to the table, just so everyone on the phone can hear better and the court reporter can, you know, accurately get your remarks.

I want to take a big-picture perspective here for a second and look at: What are we trying to accomplish with these studies? There's really two purposes.

First of all, the Federal Energy Regulatory Commission needs this information for their environmental analysis, and the agencies will need it for their permitting or their conditioning recommendations for the -- for the license. So it's important that we do this -- collect this baseline information for the environmental analysis.



Secondly, we need to use this baseline data to assess project effects and to develop protection, mitigation, and enhancement measures. So let's keep that in mind as we go through.

And some of you are new faces that I haven't seen before. So just as a reminder, a couple of years ago, in 2012, we had a major collaborative effort to develop what we considered to be the right studies, and these are pretty robust, you know, study plans that were developed.

We also collected some information in 2012. Last year, 2013, was our first year of conducting studies per the FERC study-plan, you know, determination. And as Kirby mentioned, we filed that initial study report on June 3rd, and that's really the subject of today's meeting.

But it includes not only work that was collected in 2013. It includes work that was collected in 2012, and to the extent appropriate, even information that was collected in the 1980s.

This year, we had an opportunity to collect additional information. And primarily, that was because we didn't have full access in 2013, but we do have that access now. So we went in there

and we filled in data gaps.

And to the extent that that's relevant, hopefully that will -- information will come up and be touched upon here today, as appropriate.

We are going to be getting out, you know, the schedule.

And, Cassie, thank you very much for your comment. Once we get done with these initial study report meetings, we'll lay out a schedule for, you know, future meetings and just what the new big-picture schedule is.

So over the next three days, I want to encourage all of us to -- you know, to work together. Let's try to understand the data, what it means, and in particular, how we're going to be using this information in decision-making. We work together. I think we can identify appropriate, you know, study-plan modifications.

So with that, I'll just turn it back to Kirby and we'll get right into the heart of the matter here.

MR. GILBERT: Okay. Good. That was a great overview.

Any other questions? Anybody on the phone? You guys could hear that? Okay.

So we'll turn it over to Brian Lawhead from ABR, and he'll go through these various bird studies.

MR. LAWHEAD: Okay. Thank you, Kirby.

And if at any time -- I'll echo Kirby's remarks. I did try to listen some last week, and it was pretty bad. So if you can't hear on the phone, particularly questions of someone in the back of the room, please let us know and we'll correct that.

All right. I'm Brian Lawhead with ABR. I'm the wildlife program lead. And we're going to start off with three bird studies.

These are fairly involved, a lot of data collected, and so we want to make sure we give adequate time to them at the beginning of the session today. We're going to start with waterbird migration, breeding, and habitat use, and that'll be presented primarily by Tim Obritschkewitsch.

The next will be surveys of eagles and other raptors with John Shook, and then we'll end this session before the break with landbird and shorebird migration, breeding, and habitat use.

I should mention that there's a migration element to all three of these studies, and it's made for a little bit of complexity in how the

data were presented. Waterbird migration, breeding, and habitat-use study included, as will -- we'll get into a little bit more detail on it -- but it included a radar and visual migration component that wasn't restricted solely to water birds. It included all species of birds.

And then there was also a migration survey component for the raptor study that also included all species of birds. So I just wanted to give you a little bit of context there.

And with that, I will turn it over to Tim. Tim is a research biologist with ABR who's been responsible for the aerial survey component of this study.

If we -- if we drill into the radar and visual migration studies and there are questions that we can't answer, I'll have to get in touch with the study lead for that task, who is in Oregon and had an unavoidable conflict today. But, if necessary, we can get them on the -- on the line later and deal with any issues that people have or questions that we aren't able to address.

So with that, I will turn it over to Tim. And I'm going to -- Tim is in Fairbanks. Several of our presenters are in Fairbanks today, and so I'm going to run the slides, so bear with me.

Tim, you just prompt me when you want me to go on. I'll just move to the next slide here.

**WATERBIRD MIGRATION, BREEDING, AND HABITAT  
USE (STUDY 10.15)**

MR. OBRITSCHKEWITSCH: Okay. Thanks, Brian. How am I -- how am I coming through here? Am I clear?

MR. LAWHEAD: Yeah, you sound good.

MR. OBRITSCHKEWITSCH: Okay. Good. This is Study 10.15, the Waterbird Migration, Breeding, and Habitat Use study.

For the purposes of this study, waterbirds broadly includes swans, geese, ducks, loons, grebes, cranes, gulls, and terns.

The study has several broad objectives. The objectives included documenting the distribution, abundance, habitat use, and seasonal timing of waterbirds migrating through, and breeding within, the project area.

They also included reviewing available information on food habits of piscivorous waterbirds in the study area, in support of the mercury bioaccumulation study. That's Study 5.7, which was discussed at an earlier meeting.

To meet these objectives, the waterbird study had the following components.

Next slide.

MR. LAWHEAD: Go ahead. There'll be a little bit of a delay when I advance it.

MR. OBRITSCHKEWITSCH: Oh, okay.

During spring and fall migrations in 2013, aerial surveys were flown throughout the study area at regular intervals, and ground-based radar and visual surveys were conducted from a site -- from a site northwest of the proposed dam site.

During the breeding season, two breeding-population surveys were performed. For Harlequin Ducks, two surveys were conducted during pre-nesting and two during brood-rearing. These surveys were conducted along rivers extending up to ten miles outside the three-mile-buffer study area.

Brood surveys were conducted in water bodies within a one-mile buffer around the locations and alignments of project infrastructure, including access roads and transmission corridors.

A literature review on food habits and diet was conducted to

identify appropriate species in the study area for mercury sampling.

Finally, in the field, nests and broods of piscivorous birds were recorded in connection with the mercury study, although very few nests were discovered. I'll touch on that a little bit later.

There were five variances to the methods outlined in our study plan.

Fewer surveys were flown during migration than were originally projected. Mostly this happened because the number of surveys was dictated by ice conditions and breeding chronology, so this -- the variation in the number of surveys -- was expected.

But also, as indicated on this slide, surveys generally took more than a day to complete, and this spread the surveys out a little, and also contributed to the lower number of surveys.

We replaced the term "breeding-pair survey" with "breeding-population survey," which is a better reflection of the data that we collected and presented, because it includes flocked birds as well as the pairs.

Let's see. We restricted our Harlequin Duck surveys to ten river miles beyond the study area buffer. Many tributaries contain

suitable habitat well beyond that distance, but it would have been logistically unfeasible to continue the survey beyond ten miles.

The choice of ten river miles for the cutoff was based on the linear home range for Harlequin Ducks during pre-nesting and brood rearing.

Originally, the study plan called for ground-based visual surveys conducted by a single observer, then a modification recommended by the U.S. Fish & Wildlife Service called for the use of four observers, and this modification was accepted by FERC.

But, after further consultation and clarification, the Fish & Wildlife Service dropped its recommendation of four observers, and this study met its objectives using a single observer.

Finally, we did not acquire tissue samples in 2013. This objective was based on the expectation that nests of piscivorous birds might be found opportunistically, but the aerial surveys were designed to detect breeding pairs and broods, not specifically nests, which would require careful inspection of shorelines and islands.

As a result, only one nest was discovered in 2013. It was a Common Loon nest. But we did locate a number of broods of



piscivorous birds, and the water bodies that they occupied can be targeted for future nest searches in conjunction with Study 5.7.

Next slide, please.

The 2013 study area is shown in purple and includes the three-mile project area buffer for aerial lake-to-lake waterbird surveys. It includes a rectangular block that you can see east of the Watana Reservoir for breeding population -- breeding-population surveys that were conducted using transect methods and the ground survey area for radar and visual surveys, which is indicated by the circle near the proposed dam site.

This slide is somewhat inaccurate, in that we dissolved the doughnut hole between the Chulitna and Gold Creek corridors, and we did actually survey the water bodies in that area.

This particular figure includes the Denali East Corridor, shaded in red, which was added in 2014 and was not part of the 2013 survey. This figure does not show the river segment survey for Harlequin Ducks, but you'll see the Harlequin Duck rivers in an upcoming slide.

The study site for ground-based radar and visual surveys was

located on the bench about a half-mile northwest of the proposed Watana Dam site.

Next slide, please.

Diurnal and nocturnal flight information were collected using radar -- using radar during spring and fall migration. Data from ground surveys were not limited to water bodies, as Brian mentioned, or to waterbirds, as Brian mentioned earlier.

The range covered by the radar was 1.5 kilometers for small-bodied birds, such as passerines and shorebirds, and 6 kilometers for large-bodied birds.

Diurnal visual observations were conducted using binoculars and spotting scopes between sunrise and sunset, and nocturnal audio-visual surveys were conducted using either binoculars or night-vision goggles, depending on light conditions during the first two to three hours of nocturnal radar sampling.

The combination of aerial surveys and ground-based visual and radar surveys provided a pretty broad range of complementary baseline information during spring and fall migrations.

Next slide. The aerial surveys documented abundance, species

composition and water bodies used by waterbirds throughout the spring and fall, essentially acting as a series of snapshots every five to six days. Whereas the ground-based surveys described the movements of birds within the area, including passage rates and flight directions, altitudes and behaviors.

In spring, aerial and ground surveys were conducted from the third week of April through late May or early June, and in fall they occurred from mid-August through mid-October.

The ground-based surveys provided a broad base of information.

Next slide.

For example, visual surveys documented relative abundance and peak occurrence of species groups moving past the study site, which in some cases correlated well with peaks in numbers seen during aerial surveys.

Detailed movement information described in the previous slide is well beyond the scope of this presentation, but some highlights: during spring, visual observers recorded over 8,000 birds, representing 89 different species. And during fall, about 6,500 or so

birds were observed, representing 51 different species.

Nocturnal radar surveys documented primarily westerly movements during spring and easterly movements during fall.

As with the ground-based data, the information we gathered during aerial surveys is too extensive to address in detail for this session.

Next slide.

This figure is an example of the type of information we got from migration surveys. If you can't see it very well, I'm not sure how it's showing up there, but all of these figures are pulled from the ISR.

This is a subset of waterbird observations during the spring of 2013, showing the maximum number of waterbirds observed in each water body. Essentially this -- this suggests where some of the local hot spots were, at least one point during the spring.

In 2013, you can see that many of the hot spots were along rivers, especially early in the season, and in particular the Susitna River, but several other rivers were also used.

As soon as open water became available on water bodies, birds

moved from rivers to lakes and ponds. 2013 was a late year, and this transition happened in late May that year.

Similar data were collected during the pre-nesting, brood rearing, and fall migration periods, which can be analyzed by species and dates to develop a comprehensive picture of waterbirds in the area throughout the season.

Use of rivers and streams by Harlequin Ducks are also displayed geographically.

Next slide.

Harlequin Ducks -- Harlequin Duck surveys identified habitats and specific river segments used by pre-nesting Harlequin Ducks. Harlequins were found on many of the rivers we surveyed that appeared to have appropriate habitat, particularly on some rivers south of the reservoir area that you can see on the east side, also on the Susitna River, and on some of the slower-moving streams of the central Denali Corridor there.

Similar surveys were conducted for Harlequin Ducks during the brood-rearing period. I've only scratched the surface of the data we presented in the ISR for aerial surveys, but overall, 32 waterbird

species were recorded during spring and fall migration surveys, and brood surveys covered 499 water bodies, and identified at least 227 individual broods from 24 different species.

A small set of modifications were proposed for the 2014 aerial surveys.

Next slide.

The Denali East Option was added in 2014. That was the area shaded in red on the study area slide, around the alternative access road and transmission corridor.

2014 surveys were conducted with the same variances as in 2013. The components related to mercury analysis have been consolidated under Study 5.7, and one of the proposed modifications, the third one on this list, "conduct second year of ground-based visual and radar migration surveys" will not be conducted. We'll touch on this a little bit more in the decision-point slide in a couple of minutes.

There was a new modification to the study since the ISR.

Next slide.

The Chulitna Corridor was not surveyed in 2014.

A second year of aerial surveys was conducted in 2014.

Next slide.

Very briefly, surveys again occurred from late April through mid-October. Methods were the same as they were in 2013, so the corresponding table for 2014 would be identical to the one that you see here, except for the actual dates and numbers of surveys, which are, again, dependent on timing of break-up and nest initiation each year.

The most obvious difference so far between 2013 and 2014 was that break-up occurred much earlier this year and birds occupied water bodies and initiated nests earlier.

Fall migration surveys were completed just a few days ago, and data for 2014 are still being proofed and analyzed.

Next slide.

MR. LAWHEAD: I can talk about this one. This is -- most of the slides say decision point since the ISR. This is actually a decision point that was in the revised study plan and the -- and it pertains to the radar/visual migration surveys.

There is a lot of text here, but in short, the radar/visual

migration monitoring task was conceived as a single-year effort in 2013 to try and get a handle on the -- you know, the species composition, the timing, the flight altitudes, flight directions, passage rates, movement rates. It's a pretty intensive study. There was over 100 days in the field, basically around-the-clock monitoring.

And the purpose of that was to get a good description of the nature of the migration in the area, and then to compare that with other data from similar studies elsewhere in Alaska, which is all summarized in -- both in the ISR, and then there's also an Appendix T in Part B of this study that sort of assembled the migration study elements from the raptor and waterbird studies and compares those with other comparable data from elsewhere in Alaska.

So based on this, AEA has proposed to not conduct a second year of monitoring. And this was discussed in technical work group meetings on March 6th, and again somewhat on April 9th, I believe.

Do you want to take over again, Tim?

MR. OBRITSCHKEWITSCH: Yeah. Steps to complete the study, finally.



The study plan required two seasons of aerial survey, and the second season was completed in 2014; the last fall migration survey was flown a few days ago. Data analyses will be completed this winter, and results from both seasons will be synthesized and included in the USR.

And that's all I have. Last slide.

MR. GILBERT: Okay. That was a lot of material. Thanks, Tim and Brian.

So now is the part where we try to do this in all the studies, is go around and see what comments people have.

And in particular, of course, what we're trying to do, and FERC and everybody, is to find what agencies and licensing participants have in terms of modifications. If they agree with the modifications or have other modifications to the studies, now is a great time to start talking about them.

So we try to go through this, and we've kind of just structured it so Fish & Wildlife Service, federal agencies, BLM, do you guys have comments, modifications in mind on this study?

State your name.

MS. NOLAND: This is Laura Noland with Environ,  
representing the Fish & Wildlife Service.

And my comment doesn't relate to a modification. It relates to how you're going to fulfill the commitment that AEA made to conduct fur and feather sampling, which I know has been moved to 5.7, but we still feel that you need to collect the data in the field to adequately determine what the baseline of mercury is in that system.

MS. MCGREGOR: So just to clarify, that comment -- we want to make sure that comment's made on Study 5.7.

MS. NOLAND: We made that comment on 5.7.

MS. MCGREGOR: And that's where -- that's where we'll address it is on the mercury study, on 5.7. It's not actually -- in the ISR, we changed it from components of these various studies because these were just the data collection component of it, and we put it -- we consolidated everything into Study 5.7, which is the mercury assessment.

MS. NOLAND: I think we understand that, but we see that there's a component of data collection to -- responding to this study that needs to be done.

MS. MCGREGOR: Right. And that's been moved to Study 5.7. So I just want to clarify that we'll address that comment in Study 5.7 and not in these individual studies. Because it's to meet the objectives of that study and not each one of these various bird studies.

MS. NOLAND: So are you saying you're not going to respond to that question today at this meeting?

MS. MCGREGOR: Well, I can give the same response we provided in the meeting last week when we covered Study 5.7. We are waiting to see what the pathways analysis tells us as to whether or not we have a need to collect data on the piscivorous birds. Based on what we've already collected in the fish samples, we have a little bit -- sampling with piscivorous mammals is difficult because of the availability, just the abundance. They're pretty low numbers. We have a few samples there.

And we're going to wait to see what the pathways analysis tells us before we determine whether or not we need to sample. We did have extensive consultation in March regarding how we would sample the birds and adding blood component instead of just the

feathers.

If we move forward with sampling birds, we will follow the methods that we outlined in March. We also identified the target species that would be sampled based on their -- the abundance of distribution in the study area.

MR. BRNA: This is Phil Brna with Fish & Wildlife Service.

Fish & Wildlife Service will be providing written comments on the ISR. We've had some concerns, especially about the mercury stuff. I will provide written comments.

We also have internal review of all these bird studies, and well -- to be honest, neither Ellen nor I have looked at any of our internal reviews because we focused on the fish and the water stuff, so we'll be reviewing those and providing formal comments.

And we are going to -- we are going to -- well, we are going to probably recommend that FERC require -- continue to require sampling. Whether we do the blood stuff or the feather stuff, that's still up in the air, but we have -- I guess Ellen and Wayne had a conversation with FERC last week, so we're going to follow up on that.

And we might want to suggest some kind of additional discussion here so we can try to work this out.

Is that your understanding, Wayne?

MR. DYOK: Well, I think clearly in this particular case, there's, you know, different perspectives, and I think further discussion is probably, you know, valuable. I'm not sure, since we don't have the pathways analysis yet. Maybe that's something that will be a precursor to decisions.

So what we'll do, as Betsy said, we'll get that pathway analysis done, and then if you have a schedule for when that's going to be done, Betsy.

MS. MCGREGOR: No.

MR. BRNA: So is that going to be a technical memorandum, an additional one?

MS. MCGREGOR: Maybe. I mean, somehow I'll have to memorialize that information and provide it to people for review.

MS. STEELE: Marie Steele from the Department of Natural Resources.

So at the end of the day, will you be able to identify the

baseline mercury levels so that you can measure the changes, if there are, in fact, any changes in mercury post-project?

MS. MCGREGOR: Yes. So they sampled the water column, the pore water, the sediment, the fish, and they collected a few piscivorous mammal samples.

They did not move on to the bird sampling yet because we were waiting for the pathways analysis to be complete to determine whether or not it was necessary.

MS. STEELE: To follow on then, you will be able to -- for all these different species of animals, whether they're fish or bird or beavers or whatever, you will have a baseline of the current mercury concentrations?

MS. MCGREGOR: We'll have baseline data for what we actually collected, what we -- what samples we actually collected, and then they're using a pathways analysis to look at how it's going to accumulate in the system.

MR. BRNA: Yeah, there won't be any baseline data for birds because no birds were sampled.

MR. GILBERT: Can you guys hear on the phone? I just want

to make sure.

UNIDENTIFIED MALE: Not very well.

MR. GILBERT: Okay. So you guys be sure to try to speak up in the back, and you might just stand up even, because they are part of the meeting, and so we want to make sure.

So Marie Steele from DNR is asking about which species they would have baseline mercury level data for by the time we're done.

MR. BRNA: So this is Phil Brna, Fish & Wildlife Service.

And I said there will be no baseline data for birds if no birds were sampled.

MS. STEELE: And this is Marie Steele from DNR.

And I'm just trying to close the loop. So you have your pathways analysis that may or may not identify the birds. It's not necessary to sample birds. But I want to make sure that the validation is going to be there to, in fact, support the pathway analysis. It says birds don't need to be sampled.

MS. MCGREGOR: Yes. And that will be in Study 5.7, not this study. So just want to clarify where people should direct those comments and where we will address those comments.

MR. GILBERT: Okay. So what other kind of comments?

Anything from BLM or --

MS. BULLOCK: Yeah. Just a question --

MR. GILBERT: State your name again, just --

MS. BULLOCK: Sarah Bullock, Bureau of Land  
Management.

MR. GILBERT: Thanks, Sarah.

MS. BULLOCK: I didn't see --

MS. MCGREGOR: You need to speak up.

MR. GILBERT: Can we ask people to sit at the table here,  
Sarah, you and Phil and Laura, since you guys have comments?  
Otherwise, it's so difficult for the people on the phone. So please  
come to the table.

MS. MCGREGOR: Thank you.

MS. BULLOCK: The Chulitna Corridor, I didn't see it  
explicitly stated why it was dropped from the study again.

MR. GILBERT: She's asking about the Chulitna Corridor.  
Maybe you or Betsy --

MS. MCGREGOR: You can talk to it.



MR. DYOK: I couldn't hear you, Sarah.

MS. BULLOCK: The Chulitna Corridor, why was it dropped from the study?

MR. DYOK: Why was it dropped from the study? In the letter that we filed with the Federal Energy Regulatory Commission, we had a couple of primary reasons.

The first and foremost was the effect on the two anadromous streams -- Indian River and Portage Creek -- where most of the salmon spawning in the middle river takes place in those two streams. And then from an engineering perspective, it's more prone to snow slides.

MS. BULLOCK: Okay. So basically the Chulitna Corridor is kind of at the bottom of the three possibilities?

MR. DYOK: Right, right. And there's also a lot more private lands around the Chulitna Corridor, as well. So those are probably the three primary factors, with the biggest one being the potential effect on the anadromous salmon.

MS. BULLOCK: Okay. Thank you.

MR. GILBERT: Okay. How about other comments on the

bird species? Anything statewide? Okay.

Does anybody on the phone have some comments about the waterbirds study?

MS. WOLFF: I have a quick question. This is Whitney with the Talkeetna Council. Can you just specify when you did that last flight? You said a few days ago.

MR. LAWHEAD: October 19th.

MS. WOLFF: October 19th. Okay. Thank you.

MR. OBRITSCHKEWITSCH: Yeah. This is Tim.

That actually was the 17th and the 18th, so the 18th was the last day on that last survey.

MR. LAWHEAD: Yeah, okay. So the slide we prepared for the talk was done before the surveys actually ended.

MR. OBRITSCHKEWITSCH: That's right. It was scheduled for the 17th through the 19th, and that's what we put on the slide. But because there was so much -- there was so much ice now in the study area that the survey took fewer days than we scheduled.

MS. WOLFF: That's actually what I was asking: Was this when you initially scheduled it? It seems late.

MR. OBRITSCHKEWITSCH: It seems late?

MS. WOLFF: Well, I was wondering if this is the day you scheduled it in the original revised study plan.

MR. OBRITSCHKEWITSCH: We --

MR. LAWHEAD: I can speak to that, I think.

We didn't really -- I don't think we identified specific dates. We kind of said until mid-October. It's sort of a balancing act as to where to cut these migration surveys off because the water bodies freeze progressively, you know, down from higher elevations, and the number of birds you detect continues to drop. They tend to accumulate on the last few large lakes that are open. So there's some judgment involved in that.

But yeah, there was still -- I think there was still a bit of open water in the large lakes, particularly Stephan Lake, Murder Lake, and I think maybe Deadman Lake.

Is that right, Tim?

MR. OBRITSCHKEWITSCH: Yeah, Deadman Lake, Big Lake, there was still some on Clarence Lake. Some of the other deeper water bodies still had some open water, and there was

still -- there were still some birds out there by mid-October, the numbers have dropped off quite a bit, but there's still a few birds around.

So yeah, where to cut off the surveys is sort of a balancing act on that one. But we had originally planned it to be through mid-October, and that's -- and that's what we did.

MS. WOLFF: Okay. Thank you.

MR. GILBERT: Okay. Any other questions, proposed ideas for waterbirds?

MR. LAWHEAD: Hearing none, we'll move on to the next study, 10.14, Surveys of Eagles and Other Raptors. And John Shook will be leading this presentation from Fairbanks.

So again, John, I'll switch the slides for you.

## **SURVEYS OF EAGLES AND OTHER RAPTORS**

### **(STUDY 10.14)**

MR. SHOOK: All right. Thanks, Brian.

Thank you for your attendance.

The raptor studies have six major objectives, which include to locate and determine the status and productivity of nesting raptors;

estimate the project effects on productivity; estimate the effects on habitats by delineating raptor habitats; to conduct fall and winter raptor concentration studies; assess the collision potential of proposed power lines to raptors; and finally, to produce information -- to provide information on fish-eating (or piscivorous) raptors for the mercury study.

Next slide.

To meet these objectives, the following components were implemented. You can see here are the five major study components, which we will discuss in the following slides.

You can see that three major field efforts are in bold. Note the picture on the right of raptor migration data collection during our very pleasant spring of 2013.

Of these study components, we have three variances.

Next slide.

Variances for the raptor study were limited to study area modifications, land-access delays for migration surveys, and salvage permit delays for the mercury sampling of fish-eating raptors.

Next slide.

Next we'll look at some summary results from the 2013 ISR. Occupancy and productivity surveys have been performed from 2012 to 2014 and entail most of the field work and results of the raptor studies.

Additionally, these data likely produce the most important information. Of note first, to guide you through this table, first is the -- the first column on the left, total nests, represents the number of nest structures built by that species. And this is different than nesting -- the number of nesting raptors. This is very relevant to the eagle permitting process.

Two, raptors are territorial. Even though they don't breed in a given year, they may occupy more than one nest structure. And raptors, especially Golden Eagles, build and occupy multiple nests within a territory.

And finally, raptors often leave ambiguous occupancy evidence, which was especially true in 2013. The numbers in parentheses indicate additional possible territories that had an unknown occupancy status. You can see the Golden Eagles are nest-building machines. They often occupy many nests, even if not

breeding in that given year.

In 2013, many eagles were still occupying their territories but did not breed, probably due to the very late spring and low availability of prey, for example, snowshoe hares early in the season. Both of these environmental factors likely contributed to lower-than-average nest success in 2013.

By contrast, 2014, there were only five unknown occupancy territories, with 21 incubating pairs.

You contrast that with what you see in the table -- first line of the table.

Next slide.

The next map displays status and distribution of all eagle nests, and the map speaks volumes. There are quite a few Golden Eagle nests, which are the yellow icons, and the occupied structures are the stars.

The red icons are the Bald Eagle nests. Again, stars are the occupied Bald Eagle nests.

Next slide.

The next map displays the remaining other raptor nests. Of the

other raptors, Common Ravens in gray and Peregrine Falcons in dark green are the most common, with a few Gyrfalcon and Goshawk nests.

It is noteworthy that researchers did not locate any nesting Peregrines during the 1980s Susitna studies; thus, we may be seeing a population recovery or range expansion as we've seen elsewhere in Alaska.

Next slide.

After the occupancy surveys, the second largest effort was the raptor migration studies. Migration surveys were conducted for one month each season to assess the collision potential for all raptors. Thus we did not separate migrants from non-migrants.

Bald and Golden eagles are the most common nesting raptors; therefore, many of these individuals may not likely be migrant.

The red dots are the migration observation points, while the adjacent rosette diagrams show the direction of travel and the total number of raptors for each season. If you look at the inset example, each block equals one bird. Thus, four raptors flew due south, two of which were Golden Eagles, one unknown eagle, and one other raptor.



Overall, there were relatively low numbers of migrants. And as you can see, our observers were quite excited to record each raptor observation. Brian can point out several of the empty rosette diagrams where no raptors were recorded.

Typically in the northern Alaska Range in spring, we would expect westerly movement; therefore, the bars would be stacked up on the left, whereas in the fall, we would expect easterly movements. While some locations do show higher use, a clear, non-random pattern of bird movements was not evident. The late spring of 2013 probably made this a below-average year for raptor migration.

The remaining four slides -- I'm sorry. The remaining four studies are represented in the final results slide.

MR. GILBERT: Hey, John, I just want to remind you to try to keep it prompt, because we learned last week and previously that we want to make sure we have plenty of time for discussion, even to the point where we could go back if people ask about results. So I just want to you keep it moving, because I want to try to make sure you focus on the variances and plans for completing the study in a short time. We're trying to keep them to ten minutes, so I just want to

make sure.

MR. SHOOK: You bet. This is the last results slide.

We conducted high-intensity sightability surveys, woodland raptor surveys, foraging and roosting surveys, and finally we delineated cliff nesting habitats.

Next slide.

Next we look at proposed modifications. The three proposed modifications in the ISR include the addition of the Denali East Corridor, which was surveyed in 2014. The mercury analysis objectives were moved to Study 5.7, as discussed earlier. The woodland raptor survey has increased survey intensity within random blocks.

Next slide.

And additionally, there are two more new proposed modifications since the ISR. One, the Chulitna Corridor was eliminated. And two, further study of fall and winter forage and communal roosting raptors may no longer be warranted because two years of surveys were completed and no major concentrations were located.

Now, briefly, let's look at what was completed in 2014. In 2014, only the occupancy and productivity surveys were performed. Surveys were modified in response to corridor changes. We provided raptor nest-avoidance information to reduce disturbance, and we provided the project with another year of data for permitting.

Looking ahead, here are the remaining steps to complete the study. To complete the raptor study, the team will conduct nest occupancy and productivity surveys, sightability assessment of these surveys. We'll continue delineating Bald and Golden eagle nesting habitats. And finally, we will conduct spring and fall migration surveys along potential power line routes.

This concludes the presentation on raptors, and I'll turn it over to Mr. Gilbert.

MR. GILBERT: Okay. Good. Thanks. That's right on track.

So that's a snapshot of the raptors and -- eagles and raptor study.

So again, start with federal agencies' comments, modifications, docs. Did you guys like the study?

MR. BRNA: I didn't say that.

MR. GILBERT: Do you have comments or are you anticipating comments?

MR. BRNA: Yes, we're anticipating comments.

MR. GILBERT: But you don't have any --

MS. MCGREGOR: So are we going to discuss any comments at the meeting?

MR. BRNA: We're not going to discuss any comments at the meeting.

And we previously mentioned last week that we're not prepared to talk about the 2014 stuff at all at this point because that's outside the FERC schedule. And we will have comments later, probably. We're hoping to have comments later this year.

MS. MCGREGOR: So how about the material that's in the ISRs, the 2013 information and the proposed modifications?

MR. BRNA: Well, we're not prepared to discuss them today because we haven't -- like I said, for -- we were focused on the other stuff. We had internal reviews done and we haven't completed those yet. So when we do, we will provide formal written comments.

MR. GILBERT: Okay. Well, it's nice to have them today,

you can discuss them, if that helps you guys at all.

MR. DYOK: Do you have any questions for us then to elaborate on anything that we've presented here, Phil?

MR. BRNA: No, I don't have any questions.

Do you have anything, Laura?

MS. NOLAND: Nope.

MR. GILBERT: Okay. How about others? Nate, anybody on the phone, proposed ideas for these studies or comments?

MS. FOREMAN: This is Alynda Foreman, representing FERC.

I had a question about whether or not you anticipate continuing or the need for collection of incidental data from other project studies. Regarding the muskrat push-ups, I noted that you were -- that the bird folks kind of took data for the muskrat survey that was done incidentally.

And I wondered if you had plans to continue collecting the incidental data, or I guess I should ask this during the aquatic furbearers. I wanted to catch the bird people before we went into the furry ones.

MR. LAWHEAD: Yeah. I mean, incidental observations are recorded when they're made. We haven't -- we haven't tried to assemble those from the waterbird surveys from the -- for 2014 yet, but that's something we can look at during the analytical stage, data reduction stage.

And we do plan to conduct a muskrat survey next spring.

MS. FOREMAN: Okay. Thank you.

MR. GILBERT: Okay. Other comments, questions?

MS. WOLFF: I have a quick question. This is Whitney with the Talkeetna Community Council.

Do we get -- I haven't read the 2014 data, but do we get elevations on those nests that you cited on that?

MR. SHOOK: Yes. Yeah, we have elevations for all nests.

MS. WOLFF: Great. Thanks.

MR. KONIGSBERG: Hi, this is Jan Konigsberg. I have just a general question.

I understand -- and I didn't really study the ISR on the raptors, but I was -- I want to make sure I understood what you said, that in 2013, it was anomalous weather conditions that you think decreased

migrant -- migration over the study area, raptors?

MR. SHOOK: Yes, it potentially did. Because we had very cold and snowy conditions, which are not conducive for many migrants, but especially raptors that often rely on thermals to soar during migration.

And also raptors need to eat many of the other migrants -- the other bird migrants -- and also mammals that might not be available under that snow pack, as they emerge later. So a combination of events in the spring likely decreased what we saw for raptor numbers.

MR. LAWHEAD: Delayed it. Delayed it until after the surveys ended, you mean?

MR. SHOOK: Well, yes. Yes. Possibly delayed it, yes.

MR. KONIGSBERG: So that was my next question. But there was no -- the study didn't continue past the date to see if there was a delayed migration or if they just didn't show up at all?

THE COURT REPORTER: Can you have them state their name for me, please?

MR. SHOOK: Yeah. The raptor study did not continue, but

the radar and visual migration study did, and they did collect -- continue to collect raptor migration-specific data after the raptor migration survey was completed. We do have some of that information from the radar site.

MR. GILBERT: Just to make sure, Jan, state your name again, because the court recorder is just having a little difficulty.

That's Jan Konigsberg.

Keep going. Don't want to interrupt you.

MR. KONIGSBERG: Well, that answered my question.

Thank you.

MR. GILBERT: Okay.

MS. LONG: Hi, this is Becky Long from SRC.

I just -- could you clarify again? I'm sorry; I didn't quite get it. Did -- so you have not made a conclusion that the migration was delayed or didn't show up? You just don't know? Thank you.

MR. SHOOK: Yes. It's hard to make a definite conclusion, especially from only one year of studies. So we don't have the spring migration data -- we have nothing to compare it to for this part of the state. We are not aware of any migration studies that have occurred



in the Alaska Range.

The migration was certainly -- there's a lot less numbers than in other migration studies, other studies in the northern Alaska Range and other places in Alaska. So it's hard to -- it's hard to tease out the differences in the spring in 2013.

MR. LAWHEAD: I'll make the observation that the -- the delay -- the late break-up in 2013 was also something that we looked at with regard to waterbirds. And the effect seems to be there that it telescoped the arrival of birds so they were all -- they appeared to have arrived and initiated nests closer together than they ordinarily would have, particularly with regard to the dabbling ducks, which tend to be a little earlier, and the diving ducks, which tend to be a little bit later.

So the conclusion was that it didn't -- didn't affect the species composition or numbers necessarily, but that it did change the timing of movements.

And again, the raptor migration surveys were conducted on a month-long period ending in mid-May, but the radar/visual migration surveys near the dam site continued until the beginning of June.

MR. GILBERT: Okay. Anything else on raptors, eagles?

Okay.

Well, I think we'll go ahead then and cover the last bird study, and then take a break, as our agenda has us on a schedule that looks pretty good.

So, Terry, are you going to cover the land and shorebirds?

Justin is getting that ready. The study is 10.16.

And it goes through, to summarize it, efficiently, and especially modifications. But people think about it, and if you think you have questions, this is a good chance. There's a lot of effort that went into these meetings, so anything anybody has to ask or suggest about these studies would be great.

**LANDBIRD AND SHOREBIRD MIGRATION, BREEDING,  
AND HABITAT USE (STUDY 10.16)**

MR. SCHICK: Okay. This is Terry Schick with ABR, and I'm going to talk about landbird and shorebird migration, breeding, and habitat use.

I should probably say right up front, this is primarily a breeding and habitat-use study. These were point-count studies,

surveys of riverine corridors, and some lacustrine water body surveys. The migration component for landbirds and shorebirds was done under Study 10.14, which Tim talked about earlier today, primarily the radar and visual observations at the proposed dam site.

MR. GILBERT: Okay. Click the mouse on the presentation and then it will go.

MR. SCHICK: Okay. So objectives, there are a number of objectives here. These are all in the ISR, so I'm just going to hit the high points here.

The overarching objective of this study was to determine distribution, abundance, and habitat use of breeding landbirds and shorebirds in those areas that would be affected by this proposed project. So in each of the proposed transmission line/road corridors, and reservoir area, and in the region for the proposed dam site and associated infrastructure.

Habitat association information obviously would be collected to help with this analysis of project effects, and we were going to look at the changes in distribution and abundance and habitat use by comparing to historical data.

Components, again, all of these are in the ISR. The biggest component of this study were the point-count surveys at randomly determined locations throughout the study area, early morning point counts for landbirds and shorebirds. We also did focused riverine transect surveys along stream and river courses, and in lacustrine habitats to try and determine abundance and distribution of those species, which are typically under sampled traditional point-count surveys.

We also did a nesting swallow colony survey in the reservoir inundation zone in 2013. Migration surveys, as I mentioned, were part of Study 10.15, the Waterbird Migration, Breeding, and Habitat Use Study.

Comparisons with historical data will be done after the final year of study. And the mercury assessment component of this study is now in Study 5.7, which we discussed previously.

There were a number of variances for this study. Again, all of this is in the ISR, so I'm going to hit the high points here.

We used a different method to determine the location of point-count plots within the study area. Frankly, I think the

alternative method is better than our originally proposed method.

What we're doing now basically mirrors what is being done in the Alaska Landbird Monitoring Survey, or ALMS, as most people know it.

There are a number of other variances. The bigger ones here are down at the bottom in bold. We used a helicopter survey platform for the nesting swallow survey instead of a boat. This greatly increased survey efficiency and spatial coverage, so that was definitely a positive thing for this study.

It also allowed us to expand the survey area, so we surveyed for nesting swallows both within the reservoir and reservoir dam and camp area, and then in a two-mile buffer surrounding each of those areas.

This is a map of the point-count locations and the riverine transect surveys in 2013. You will see that a big portion of the reservoir area and the Gold Creek Corridor were not sampled because we didn't have access to CIRWG lands in 2013. We do now, and we did sample there in 2014.

Then up in the northwestern corner of the Denali Corridor,

there is also a block that was unsampled in 2013 because we didn't have vegetation data from 1987, which was used as the strata to allocate plots in a random stratified allocation procedure. We do have data for that area now, from the mapping that's being conducted for this project in Study 11.5, which we'll talk about this afternoon. And we sampled in both the northwestern Denali Corridor and on CIRWG lands in 2014.

So briefly, what did we find? This is a multi-species study, so, you know, putting tables up here, it wouldn't even fit on this slide. There were a lot of species recorded, so I'm just going to hit the very high points here.

In the point-count surveys, we had 53 landbirds reported. Eight of the very most common species were Fox Sparrow, White-crowned Sparrow, Common Redpoll, Yellow-rumped Warbler, Varied Thrush, Savannah Sparrow, Ruby-crowned Kinglet, and American Tree Sparrow.

So you can see that I am repeating the word "sparrow" a number of times here. Four of the eight species that were the most abundant were sparrows. So the landbird community is definitely

dominated numerically by sparrow species in this area.

We did preliminary density estimates using distance analysis for the 2013 data and were able to calculate densities for 38 of those 53 landbirds, 72 percent, which is pretty good for a single year of data. We collected over 1,300 point counts in 2013.

Shorebirds, this is a different story. They are much more uncommon than landbirds, and that's just typical of that species group.

Only 11 species of shorebirds were recorded. By far, the most common species on the point-count surveys were Wilson's Snipe. Spotted Sandpipers were also very common, but primarily on riverine point-count plots. American Golden-Plovers and Lesser Yellowlegs were also quite common.

Because of their uncommonness and the lower numbers of observations for shorebirds, we had insufficient data in 2013 to calculate densities for any of those shorebird species.

Riverine survey results and lacustrine survey results. On the riverine surveys for landbirds we saw species typical of vegetated riparian habitats, Blackpoll Warbler, Wilson's Warbler, Fox Sparrow,

and especially Northern Waterthrush.

A single species of shorebird, Spotted Sandpiper, perhaps not surprisingly, accounted for 98 percent of the observations of shorebirds in riverine areas. This is “the” habitat for Spotted Sandpipers.

Lacustrine surveys for landbirds. Common species were American Robin, Rusty Blackbird, Bohemian Waxwing, and Savannah Sparrow. Rusty Blackbird and Bohemian Waxwing, of course, are common species in bog habitats.

For shorebirds, Red-necked Phalarope accounted for 25 percent of the shorebird observations. Red-necked Phalaropes, of course, use lacustrine water bodies directly, so that's to be expected. Wilson's Snipe, Lesser Yellowlegs, and Least Sandpiper were also common on the margins of lacustrine water bodies.

This is just a depiction of the location of the swallow colonies located in 2013. Most of those were along the Susitna River proper, but some were on drainages, clear-water drainages running into the Susitna River.

In 2013, 26 colonies were located within the study area.



Almost all of those were Bank Swallow colonies, but two of them were of mixed species, Bank Swallows and Violet-green Swallows.

Many colonies were located on existing, steep, permanent cliffs, as in the photo above. Others were located on freshly exposed bluffs right along the Susitna River after the break-up in 2013. So every year there's probably some movement of swallow colonies in different areas.

Colonies ranged in size from one to 354 burrows, with an average of 37 burrows per colony.

So summary of results since the ISR: In May and June in 2014, we again did point-count surveys, riverine and lacustrine-focused surveys. As I mentioned, in 2014, that included surveys in those areas that were unsurveyed in 2013. Surveys were not conducted in the Chulitna Corridor. And all of this -- these data will be reported in the USR.

Proposed modifications to Study 10.16: These four really are variances. I'm not going to go into these. These are described in the ISR.

We have some additional modifications that are also listed in

the ISR. The Denali East Option corridor has been added to the study area.

In 2013, we did point-count plots along the riverine transect surveys. We dropped those in 2014 because stream noise was a fairly significant problem in 2013 in recording all landbird species on the point-count plots on the riverine transect surveys.

For those riverine transect surveys going forward, the metric of bird abundance is going to be linear densities, birds per kilometer of stream length. And for lacustrine surveys, the new abundance metric will simply be the total number of birds recorded per water body. And the mercury assessment work is now under Study 5.7, as we've discussed a number of times.

This is the study area going forward for 2015, which includes shaded in red the Denali East Option Corridor, and also includes the Chulitna Corridor, which we expect will continue to be unsampled in 2015.

We have one additional new modification that is not in the ISR. For the riverine transect surveys in 2014, we incorporated line-transect sampling techniques to allow us to do distance analysis for

the riverine survey data, as well. And if this works out as planned, we should be able to have corrected densities, corrected for detectability, for the riverine transect data as well as the point-count data.

This applies only to those birds using shoreline habitats, that is shorelines and littoral habitats. Landbirds were also recorded in vegetative riparian habitats but getting distances and angles to each landbird on a transect survey is pretty impossible. This is why they invented point-count surveys to begin with.

And then the Chulitna Corridor has been dropped, as we discussed.

Current status: In 2013 and 2014, field surveys were completed as planned in the ISR. Some surveys were not done in 2013 in some areas, but those were resurveyed or surveyed for the first time in 2014. They will be surveyed again in 2015, and giving us two years of data for all areas in the study area.

In 2013, we did 1,365 point counts. In 2014, we did 1,209. Those are big numbers for point-count surveys, if you guys are familiar at all with point-count survey studies. We had a goal of

doing 800. We exceeded that in both years.

Riverine and lacustrine surveys were repeated as planned in 2014. Swallow colony surveys will be completed in 2015.

Steps to complete the study in 2015: We will again do point-count surveys, riverine transect, and lacustrine surveys. We'll do a final estimation of breeding population densities using distance analysis. Habitat-use analyses will be conducted to provide the information for the evaluation of wildlife habitat-use study. We'll talk about that later today.

The second year of swallow colony surveys will be completed in 2015.

And that's all I have.

MR. GILBERT: Okay. That was a good summary. Sounds like [9:56:25] successfully.

What do we have on this study? Does it make sense? Any comments? Any questions?

MR. BRNA: I have one question. This is Phil Brna at the Fish & Wildlife Service.

So the variances, I think it was slide 14, for the variances not

discussed in the ISR. How are we going to find out about those, other than this presentation? Is there a tech memo or we're going to talk about those in January?

MR. SCHICK: Well, yeah.

MS. MCGREGOR: One second. I just want to clarify, we're not discussing these topics in January. The January meetings are for the 14 studies that we put out tech memos for. So if there is additional information --

MR. BRNA: Yeah, we're not prepared to talk about 2014 studies today.

MS. MCGREGOR: Right. So at least if we can talk about --

MR. BRNA: So we are on the assumption that all 2014 studies were going to be talked about in January.

MS. MCGREGOR: Just for the 14 studies that --

MR. BRNA: Oh, okay.

MS. MCGREGOR: In FERC's letter, it's for the 14 studies to cover the tech memos that were provided. So it would be great if we could talk about at least the results that are in the 2013 today.

MR. BRNA: Well, we didn't review any 2014 studies.

MS. MCGREGOR: So today we would talk about the 2013 information.

MR. BRNA: Yeah. And we're not prepared to talk about that here.

MS. MCGREGOR: Okay.

MS. LONG: Hi, this is Becky Long.

It would seem to me that if any -- if the applicant put that in the additional information about 2014 data that wasn't in the ISR in variances, then they should also -- these studies need to be talked about in the January ISR meeting.

MS. MCGREGOR: And we're open to that, if we can hear the specific topics that people would like to discuss. So far we're not getting any discussion on what was presented in the ISRs. So it's kind of difficult to know what additional information we may need to provide for 2014, when we are not really having any discussion on the 2013 material that's been available since February and June.

MR. KONIGSBERG: Jan Konigsberg.

I think it's getting a little confusing. My assumption was that the 2014 -- any studies in 2014 that were conducted after the first

2013 study are second-year studies and would be part of the USR, right?

MS. MCGREGOR: They will have to be fully reported in the USR, you are correct, Jan.

MR. KONIGSBERG: So just to make this a little clearer, that the tech memos for 2014 do include 2014 studies?

MS. MCGREGOR: Yes. So there were 22 tech memos that were issued that covered 14 studies. Those were all the riverine and aquatic-related resources.

The January meetings, the whole reason why FERC put out an extension was because of those tech memos, the material in those tech memos, and that's what we're limiting the January meetings to cover.

If there are specific studies that people have concerns about, then we can talk about that. But this is the ISR meeting for these terrestrial studies. This is where we're supposed to be talking about the material that was presented and provided in February and June.

MR. KONIGSBERG: Okay. I just wanted to make sure that at least, in my mind, it's clarified.

MS. LONG: Hi, this is Becky Long again.

But also last week, AEA stated that there was going to be more material coming out by -- on deadline of November 15, and it would seem that it would be necessary to discuss that at the January meetings. I mean, we can do specific discussions. I get it. We don't have to go through, like, a whole presentation. But it seems like some of that material will need to be covered.

MS. MCGREGOR: We're going to need feedback during this meeting of the specific studies and the specific information that you guys are looking for.

At the end of the last set of meetings, AEA covered the approach for the January meetings, that we would have specific targeted meetings in December about specific topics only. And they're just technical meetings. They're not TWG meetings. We won't be providing material two weeks in advance. It's just not feasible, given the holidays and the time frame between these October meetings and the January meetings.

But FERC was very clear in their letter that the January meetings are to cover the material presented in the tech memos. So



we're -- AEA is in the same position -- we're happy to go over and provide additional information, but we're not obligated to until the USR. So it really has to be a directed effort and we need to understand what specifically people are looking for.

MR. GILBERT: Yeah. Hopefully the slide presentations are an aid, because there are some things that they continue to do that they are talking about, but those need to be reported in the USR. Does that make sense?

MS. MCGREGOR: And these slides were posted 15 days ago, and they do provide an overview of the information that was gathered in 2014. So that should help people understand what was conducted in 2014.

MS. LONG: Hi. And thank you for that, Betsy. This is Becky Long again.

I really totally forgot about you're talking about the technical meetings in December. I'm sorry. I did forget about those.

MS. MCGREGOR: And that's okay. And we're -- as we said when we wrapped up the last set of meetings, AEA is working with our contractors. We are identifying what we think are specific areas

that we thought would be beneficial for us to follow up on in December. We're going to work with the agencies and look at that information. They're going to help prioritize.

But we really have a very narrow window of opportunity between the holidays and January 7th meetings. So it's kind of limited, what we can discuss.

MR. MILLER: Sterling Miller.

Would you clarify about the December technical meetings? And are those going to be to discuss recommendations that are made for study design changes that are made at this meeting?

MS. MCGREGOR: No.

MR. MILLER: So when will recommendations for study design changes that are made at this meeting be considered?

MS. MCGREGOR: Well, we would discuss them now, today. That's the point of today's meeting.

And then we are obligated to file that -- the meeting summary in January, and then you can provide formal comments at the end of February, and then we'll respond to those comments at the end of March.

I don't know if you can pull up the schedule, the FERC schedule, Justin.

MR. GILBERT: Yeah. That was in -- in the introductory slides. So today is a chance to talk about the modifications AEA has proposed in the ISR, and that's the thing. And if you guys have any other comments about those or there are other modifications you would like. So that's today.

And then AEA will file the notes to the meetings in January, and then it was outlined in those introductory slides that they -- and then you can file comments about a month later, February 21<sup>st</sup>, formal comments.

MR. BRNA: Comment on the --

MR. GILBERT: Modifications, progress to date, any rationale, any other modifications? But that's what these criteria are all about, for that filing. They were predominantly structured in a way that FERC expects it to be, and then -- and then AEA can respond to those comments about a month later, and FERC will make a determination based on all the record that's brought together at that time.

MR. BRNA: So this is for information in the ISR. But if there's information not in the ISR, like the 2014 stuff, then we're going to talk about that in 2016 at the USR meeting; is that correct?

MS. MCGREGOR: No.

MR. GILBERT: No. FERC extended it here. FERC extended it to allow this -- the 2014 work to be captured. That was the intent, I believe, of the --

MS. MCGREGOR: That's correct.

MR. GILBERT: I don't know if they want to comment.

MS. MCGREGOR: Yes. We're anticipating that you will -- there has been an extension of time beyond the normal ILP process that is sufficient to provide comments on what was gathered in 2014, whether it was presented in a tech memo or it's provided in these presentations.

MR. BRNA: Oh, in the presentations.

MS. MCGREGOR: Uh-huh.

MR. BRNA: These?

MS. MCGREGOR: Yep.

MR. DYOK: 2014 or 2013?

MS. MCGREGOR: 2013 and 2014. This is getting the 2014 information on the record.

And FERC was also clear in their letter, 2014 is a study year. It's a year of study plan implementation.

MR. WINCHELL: This is Fred Winchell, Louis Berger, representing FERC.

And maybe I can weigh in on my understanding of FERC's intent, is that the January meetings are to review the additional tech memos to best inform the study modifications that we made for that year or for the following year studies. And so I believe that FERC's intent is to consider the information that's in those tech memos, some of which are proposed study modifications, so that the last -- the 2015 studies can be designed based on the best information available. That is my understanding of FERC's intent in that letter.

MR. BRNA: So how about for information that's not presented in the tech memo but is presented in these presentations?

MR. DYOK: Can I suggest --

MR. BRNA: Can that be discussed in January?

MR. DYOK: Can I suggest that we take a break here and then

reconvene in 15 minutes here?

MR. GILBERT: Yeah. Because then maybe they can talk about it a little more. So I think we get the idea here, the presentation being the only place you've got new information on this day.

MS. LONG: But just -- but just to kind of wrap up, AEA is -- you know, basically what we're saying is that there's just not going to be another meeting.

It's not like you can't comment on the 2014 data that won't be covered at the January meeting. We can comment on that, and then FERC will make a decision. But it's just that there's not going to be, you know, a special additional meeting.

MS. MCGREGOR: That's correct, Becky.

MR. GILBERT: And you can ask questions about it today. That's the idea.

So we'll take a break now and come back and try to keep on schedule. Because we do have six more studies before lunch. So if everybody can try to get back here by 20 after, we'll try to start right at 20 after.

(Off record.)

MR. GILBERT: Okay. Hello, everybody on the phone, we've got everybody back in here. We're going to start up again.

We're going to go through about six studies on mammals, big game. But first let's -- just to kind of wrap up from the previous discussion, Sara Fisher-Goad has some AEA remarks about some plans moving ahead, that may even help bridge this gap with everybody, and then we'll continue.

MS. FISHER-GOAD: Thanks, Kirby. It's Sara Fisher-Goad, executive director of AEA.

I was actually at the water resources studies for most of the time at the Millennium last week, and I really appreciated the dialogue and the discussion that occurred between the contractors, the federal resource agencies, the state resource agencies, and AEA's team.

I guess I'm a little confused. There doesn't seem to be the same level of interaction and discussion about the 2013 information today, and so I guess, you know, one, I'd offer, please come to the table. There's plenty of room here. Please engage in the discussions.

I -- I guess I'd like to just encourage, you know, where there are questions with respect to the studies, the AEA team and the contractors are prepared to discuss, and we want to make sure that these meetings are productive.

I think the additional meetings that were offered through last week were the results of, you know, some very good discussions between the biologists and the research professionals, so I encourage that same type of discussion here. We want to make sure that these meetings are productive and that the data and information is useful for decision-making. So please participate.

That's all. Thanks, Kirby.

MR. GILBERT: Thanks.

MR. BRNA: Can I make a comment? And I will just -- Phil Brna, Fish & Wildlife Service.

So I will apologize on all the water resources stuff and all the fish stuff. AEA provided money for the Services to have contractors, and that's why we were so well-represented there, and that's why we had so many things to talk about.

On the wildlife stuff -- and we're just focused on birds -- the



Fish & Wildlife Service had a biologist reviewing all that stuff, and we've got draft reports from her. She took another job, so we had nobody here. We had nobody -- no person that has even looked at the wildlife study. So it's hard to comment on it.

Ellen was supposed to be here today. I wasn't supposed to be here. She had some endangered species emergency, so here I am, so that's the -- that's the reason.

MR. GILBERT: Okay. Well, thanks for coming, so that helps.

Okay. Let's go into the big game, because I know Sterling mentioned at the break he has a lot of comments, a lot of discussions. So I think we've talked about that. We'll try to keep these presentations really short, and you can always go back and look at the slides, because the slides have been posted for awhile.

So, Kim, you're first on moose? Caribou.

**CARIBOU DISTRIBUTION, ABUNDANCE, MOVEMENTS,  
PRODUCTIVITY, AND SURVIVAL (STUDY 10.6)**

MS. JONES: Hi, everybody. This is Kim Jones from the Alaska Department of Fish and Game.

And I am the principal investigator on the caribou, moose, and sheep studies. So I'm going to go through this pretty fast. If you have any questions, I can always go back to it, but most of this is in the ISR. And also, these presentations have been available online for a while, so I'm not going to read the slides to you.

So here are the study objectives as listed in ISR, and the study components also listed in the ISR.

And one variance that we talked about in the ISR is just simply a naming convention. Initially when the study plan was written, we were optimistic that we would be able to go out and say, hey, this is a Delta caribou and put a collar on it and call it a Delta, and this was a Nelchina and put a collar on it and call it a Nelchina.

But after we put all our collars out on our Delta and Nelchina animals, they kind of did their own thing and went to where they were going to go, and we realized we weren't really that good at identifying species -- or sorry, collars based on where they were captured.

And part of that we've also learned is that there's a lot of variation and movements in individual animals in a year, and they're

taking on what we call different wintering strategies. And so animals that migrate east in the winter we're calling part of the Eastern Migratory Group. And again, that's just a wintering strategy describing their method for that year.

And those that winter more in the study area, we're calling the Western Group. And again, this is just a naming convention, so we don't think it will affect our ability to meet objectives.

But I also just want to clarify that some individuals were in the Western Group in one winter, and then in the next winter they were in the Eastern Migratory Group. So this doesn't describe an animal, but more describes their wintering strategy for that year.

Another variance is this is -- this is more of a clarification. One of our objectives in the study plan was to document productivity and survival of caribou in the project area. And our original study plan wasn't really clear on how we were going to do that, so we just added in a little bit of clarification there. And we have been conducting these parturition surveys for caribou in 2013, and we also completed them in 2014.

Also here's a table of all the collars that were deployed. All

collars were initially deployed by October 2012, and we've had additional capturing events since then to redeploy collars from animals that have died or dropped their collars.

And the number of collars out in the study area is also supplemented by management captures that involve putting collars on five- and ten-month-old calves every fall. And we actually just completed putting 20 more collars out on Nelchina calves.

These figures are also from the ISR, and this is just to give you a quick overview of the kind of data that we're collecting. And this is from our telemetry flights that we're conducting monthly to biweekly to twice a week, depending on the time of the year, which is all in the ISR, and showing what parts of the study area the caribou are using during these different times of the year.

And then this is using our satellite data, and so the satellite data is great because it follows the animals all the time and we don't have to go out and track them. And it shows that a large proportion of the herd migrates out toward Canada in the spring, where they will winter, and then -- sorry, the fall, they migrate in the fall, where they will winter. And then in the spring they come back to the calving

area. And then during the summer, they'll kind of hang out around the study area, and then in the fall they'll -- most of them will migrate east again, with the Western Group staying in the study area.

So, variances to be carried forward is the naming convention I mentioned and the caribou parturition flights.

And also ADF&G already proposed and AEA supported removing the GPS collars from the animals that the satellite collars have been out for two years and their battery life is kind of at the end, and so the -- we removed a lot of those collars and replaced them with VHF collars last week, and we'll remove the rest of them in April and replace them -- and put a whole new batch of satellite collars out.

And we will also continue telemetry, radio-tracking flights into 2015.

And this image here is just to show you some of the variation in data that we're getting. These are the June 2013 movements in red, and the June 2014 movements in blue.

And so basically in 2013 that was a really late spring migration to the calving grounds, which is pretty unprecedented for the

Nelchina herd, and it was really interesting to document. Because typically by the middle of May, most of the cows with calves and the herd are on the calving grounds, shown in this big kind of clumped area down here.

But in 2013, they were having their calves as far east as the Copper River, and they didn't even -- some of them didn't even make it to the calving grounds before having their calves, which is a really interesting year. So we have a lot of variation in movements, which is pretty typical for a caribou.

So in order to complete the study, we're going to continue telemetry through 2015, we're going to remove, refurbish, and redeploy the GPS collars that I mentioned, and then we'll do the analysis and have all of that information in the updated study report.

So if anybody has any questions on caribou?

MR. GILBERT: Yeah. So now's the chance to have a discussion. And again, we'll try to start with federal, state -- go ahead, Sterling.

MR. MILLER: That movement slide that you showed, I didn't see any movements north into the other side of the Alaska Range for

the Delta herd.

MS. JONES: That's because we do not have any satellite collars on the Delta herd.

MR. MILLER: Oh, I thought you said these were VHS collars (sic) -- or VHF collars.

MS. JONES: This map in particular is from satellite collars.

MR. MILLER: Oh, all right.

MS. JONES: Yeah. So we don't have any satellite collars on what you would call conventional Delta animals. All -- but we do have -- there's a lot of VHF collars on those, and we do monitor them very closely, documenting when they come south of the Alaska Range, how long they stay south of the Alaska Range, whether or not they're having calves down there, and how much they're mixing with the Nelchina herd, and then when they go back north, if they do.

And some don't. Some come down and join the Nelchina and migrate east with them, and we've seen a lot of different strategies out of those animals.

MR. MILLER: So as you are aware, the Delta herd is a much smaller, more precarious herd than the Nelchina herd and is being

managed much more cautiously. So when are we going to get the information on the Delta herd animals and their movements?

MS. JONES: Well, the information will not be mapped until the updated study report. We didn't really feel that it was relevant to go into a lot of data analysis and enter our conclusions until we had all the data in front of us.

But I can tell you the majority of what we call the conventional Deltas that were collared north of the Alaska Range with VHF collars, that they're coming down just before calving, and almost all of them are staying north of the Denali Highway, and they actually hang out right in this kind of area, up along these glaciers, like right up on the glaciers. I went and flew recently and took a look at them.

And then typically they'll stay down there. And then right before our conventional Nelchina count July 4th, they typically move north.

But this year, being caribou, they decided to take a different strategy, and they're still there. But they haven't really been -- they haven't been mixing as much with the Nelchina. They've mostly



been staying, like I said, north of the Denali Highway there.

But there are the occasional Deltas that come down and they just mix right in with the Nelchinas and don't ever go back north.

And we do have one conventionally collared Nelchina VHF, that she actually goes back and hangs with the Delta for the rest of the year.

But that's pretty much the timing and extent of the mixing that we've seen.

MR. MILLER: Thank you very much. I forgot to identify myself, but maybe I'll give -- I will just mention that I am Sterling Miller. I'm here to provide some comments on terrestrial species for the Wild Salmon Center and Trout Unlimited. They mostly have expertise in fisheries, so they've hired me. I'm a consultant to provide comments on the terrestrial species.

I also had a 21-year career with the Alaska Fish & Game department, and I participated in all five of the studies conducted by the Alaska Fish & Game department in the early 1980s and was the principal investigator of one of those studies. And I'm an affiliate professor of wildlife at UAF and University of Montana, and I'm up here from Montana.

So that's who Sterling Miller is. And so the -- the -- I just wanted to clarify that the more information being presented so far, except what you've just done orally on the Delta Caribou herd movements, except for that one you mentioned that had a collar, or a GPS collar I think, that did move north of the Alaska Range; is that right?

MS. JONES: Oh, VHF, yeah.

MR. MILLER: Oh, VHF collar?

MS. JONES: That's correct.

MR. MILLER: And so we don't have the information on which to evaluate the movements of the Delta herd at this time to evaluate, so that's just an observation.

The other question I have is I'm sure you're familiar with the earlier studies in this area done by Ken Pitcher.

And Ken didn't even really recognize that the Delta caribou herd was part of this mix of animals, because you only find that out by putting some collars on north of the Alaska Range and then following them south. If you put out your collar south of the Alaska Range, you won't -- you won't catch that, because Delta herds will be

going north where you're not listening for them.

MS. JONES: Right. And they're mostly down there during calving and you don't want to collar animals --

MR. MILLER: Right. So that's probably why Pitcher missed it, because the collars were not put out there.

But my general comment has to do with the complexity of the herd structure in this area. And I'm just wondering if you would agree with the statement that the herd and group complexity in this particular area, around the Watana Dam structure, is extremely complex. Because not only are there Delta animals, as we now know, and Nelchina animals; there's a resident group of caribou from, you know, the Chulitna that's over there, and they're mostly residents, plus the Cantwell groups.

Are those considered herds now, or are those -- and particularly, if that northern Denali access route is chosen for access, it will go through the range of those two sub-groups, and they would both be impacted.

So I guess my more general question is, do you think you've adequately sorted out the complexity of herd and group structure that

will be impacted by the proposed project by just classifying these caribou into two different groups?

MS. JONES: Yeah, that's a good question, Sterling.

And so first I want to clarify is, again, the Eastern Migratory and Western Group is just a naming convention we're using to describe wintering strategies, and we're not naming these animals. We're not breaking down the herd conventions, anything like that. It's just a way to describe two different wintering strategies.

But the question is -- that Sterling has, is that Pitcher, in the '80s, found a lot of what he called subherds, Nelchina caribou, and within the project -- surrounding area. And so I guess we went into this with an open mind thinking, okay, there's a lot of little subherds in here that use these areas year-round, and we knew that in the winter that in the study area, there were some animals that stuck around. And so we would assume from the '80s studies that they were subherds.

But what I've actually found is that instead of an animal staying in the -- in what I would call a subherd and not intermixing, that animals just take different strategies every year. And there has

been a lot of movement.

For instance, in April 2012, when we put out the initial collars, we put out a bunch of bull collars right out of Cantwell, and the plan was in April of 2014 to go and take those bull collars off out of Cantwell.

Well, in April of 2014, they were all in Canada. So -- and basically what we're learning is I don't -- I don't want to speak too much about the data because we haven't gone into the in-depth data analysis that we will for the updated study report, but what we have found is that we're not really seeing what I would classify as subherds at this moment. We're just seeing different animals taking different strategies.

But it is true that -- that it is complex and that different animals use different parts of the study area each year, and that during the -- so that basically what we're seeing is very large component of the Nelchina herd is only using the study area primarily between calving and fall migration.

But there is a component of the herd that we're still trying to quantify that uses the project area year-round, and we'll get at that a

lot more when we do all of our spatial analysis for that study for it.

But I do believe the important question is here that we are collecting the right data to meet that objective and to get at that answer.

MR. MILLER: Well, I'm glad to hear that, because it's not stated in the objectives that you're going to try to get these sub-group or subherd things. So it was unclear to me that you were looking for that. And so I'm very glad to hear that you are.

MS. JONES: Yeah, uh-huh. And again, we were just trying to keep an open mind in the beginning because we weren't clear whether there were subherds or not.

MR. MILLER: All right. If I may continue?

MR. GILBERT: Yeah, sure. And especially things, you know, because we -- if we run out of time, anything to do with the plans for completing the study and the modifications. So go ahead.

MR. MILLER: Okay. Did I -- you know, initially the initial study plan called for two years of study. But I heard you say in your presentation that you're going to continue for a third year of study monitoring that; is that correct?

MS. JONES: That's correct. Actually we put the collars out in 2012, and we're going to continue monitoring through May 2015.

So yeah, we'll have more than the two years of study that's typically allotted to these FERC-type processes.

And one of the main reasons is, is we have the collars out there, and it just makes sense to keep monitoring the animals while the collars are on them, so we've just asked for an extension to continue that monitoring.

MR. MILLER: Oh, I'm glad to hear that, because I do think it's very important that it's given the variability that you mentioned in movements and the atypical nature of the spring 2013 movement, that shows a variability that happens. And it requires multiple years of data collection on caribou to correctly characterize their use of any one area. And I would question actually whether or not three years is adequate.

But certainly two years is not. And so I'm really glad to hear that you're going to do at least a third year.

And one of the recommendations that we would make would be to try and continue that, to capture the complexity and the

difference between year-to-year variations and movement patterns, because it's really going to be necessary in order to evaluate the impacts of the project on caribou. So that's an observation more than anything.

The -- and one of the -- another thing is that do you think there's going to be a difference in impact to the project on caribou depending on which access route is used?

MR. LAWHEAD: We're not talking about impacts yet. That's going to be done in the license application.

MR. GILBERT: Yeah. These studies are baseline focused, to make sure we understand and have the right information in the bigger study area, to be able to make -- for AEA to be able to make a proposal, for one, into the impact analysis. So that's down the road.

MS. MCGREGOR: The impacts of each potential road corridor will be evaluated in the draft license application.

MS. JONES: But again, I think the important point here is that we are collecting sufficient data to -- to make those assessments when it comes time to do it with the satellite data and the VHF telemetry.



MR. MILLER: One of the -- may I continue? One of the things is a recommendation more than a comment -- is I think it's going to be very important, and you're probably already planning this in your final study report, to document where each VHF and each GPS collar was deployed and on what sex and age that that was deployed, because absent information on -- on that, where these collars were deployed relative to the impact area, is extremely difficult to determine, you know, whether or not the right animals were collared.

So I assume that you're planning on doing that for at least your final. Because there's no way of determining whether or not, you know, the animals were collared at the right time or in the right location based on the information that is represented to date.

MS. JONES: Yeah. And I think two points there. One, it's really exciting that we collared so many bull caribou for this project, because it's pretty rare actually to put out collars on bulls and get all this movement data that we're getting off of them. And we're certainly seeing differences between the bull and the cow movements, and it'll definitely be something that'll come out in

the -- in the updated study report.

But another thing is, I've seen so much mixing of the animals, alternations -- altering strategies and things like that, that I feel pretty good that we have a good sample of the population collared.

But again, we'll know more when we get into the fine-depth spatial analysis, but we're certainly keeping all the data on body condition and age and sex and all of that, yeah.

MR. MILLER: Okay. I just have one more question, with your indulgence. And that is -- this is Sterling Miller still.

As you are aware, back in the '60s, Ron Skoog did an analysis of caribou herd structure in this area. And at that time, this impoundment area was -- proposed impoundment area -- was the center of the calving grounds for the Nelchina caribou herd, right? That's right where they calved.

And what happens, would you agree, that what happens with caribou is that they use large landscapes and they use sort of traditional portions of that for a period of years, like decades, and then they shift. And they use a different section of the environment for calving and wintering, and so forth.

And so my point generally being is you think that you will be -  
- you know, the S&I report for 2011 by the Unit 13 area biologist mentioned that the Nelchina caribou herd is increasingly using that area around the Watana impoundment, and I wonder that if this might be representing a shift in movements from the traditional calving areas in the foothills of the Talkeetna range, to more impact to perhaps north to the area where they used to calve, that Skoog recognized in the '80s -- or I mean, in the '50s and '60s.

And I'm wondering if somehow your studies are going to capture the fact that the impoundment may well constrain the ability of caribou to reoccupy these areas of historically important calving areas, of even the Nelchina River.

MR. SENSIBA: Well, this is Chuck Sensiba.

That's more of an impacts question than a baseline question.

MR. MILLER: What I'm asking is if the data she's collecting will be sufficient to document whether or not the herd is shifting its range to -- to occupy more of this historically occupied calving areas north of the impoundment.

MR. SENSIBA: That's a different question than what I

originally heard, so I think that's fine.

MS. JONES: Yeah. So the data that we're collecting, we're going to capture as much annual variation as we can and look to see if there are any trends.

Certainly caribou do, but we'll also be able to compare our data to what was done in the '80s and what was done in the '50s.

And so on a really broad scale, we have -- we do have a lot of data over the variation in these caribou movements. And you know, one thing I've even noticed is a slight shifting in the '80s, they used the Lake Louise area a lot in the winter, and they haven't been doing that for a while, and then this last year they used that area again. So there's certainly, when it comes time to talk about the impacts and things, we will certainly dig through the historical data, which is part of the objectives, and look at what areas they have used in the past and what areas they might use again in the future.

MR. MILLER: Thank you.

MR. GILBERT: Okay. Good.

MS. MCGREGOR: Appreciate the comments.

MR. GILBERT: Yeah, very nice. But others might have

some comments before we move on to moose.

MS. LONG: Yes, I do.

MR. GILBERT: Go ahead.

MS. LONG: Okay. This is Becky Long. Can you hear me okay?

MR. GILBERT: Yes. Certainly.

MS. LONG: Okay. This is a little bit long, but not real long.

These are comments that I'm speaking on behalf of River Coalition members in Game Management Units 13 and 14. I myself am a resident of 14B. These are people who have hunted the caribou of either herd for ten to over 30 years. The words that they have spoken to me are what the study industry now calls local ecological knowledge.

The Nelchina herd is a Native subsistence food source for Copper Basin residents, and we need to bring some of the talks right down to the boots on the ground. The current movement of the herd has changed in response to two things: The warm late fall season and the Tier 1 hunting pressure are the hypotheses of people in the area and also agency people.

Usually the herds come down from the high country. They did not do that this year. The hunting pressure is overwhelming with the use of ATV vehicles that penetrate further into the remote areas. The gravel pit at the Susitna River Bridge on the Denali Highway with mass motor homes, campers, and ATVs.

According to local hunters, the Nelchina caribou herd has hunting pressure like never before. The seminal area around and adjacent to both the Denali East and Denali West Corridors has been characterized as a war zone. Hunters say that the caribou herds are fractured.

During the previous Tier 2 hunting days, hunters would see bands of caribou -- bands of caribou, but now they often see just single caribou, and they look panicked. And I'm bringing all this up -- I know that we're not supposed to deal with impacts right now. That's in the draft impact assessment of the license, and I get it. But we have to make sure that there is sufficient data collected to be able to recommend to that.

And I just have one more thing. 10.6.4 of the RFP is the data analysis goal and the project impact evaluation. This is a major goal.

The evaluation of population and density estimates, delineation of seasonal ranges and movement corridors will include post-project habitat loss and detrimental impacts to these herds.

There must be a steady focus on cumulative negative impacts from all the development actions on these caribou. Specific developments, there are two of them. One of them is the MMG mineral exploration drilling project on both state and tentatively approved state lands east of the Susitna River, and this is within the 10.6 study area.

Now, it is outside the project area, what is considered, but it's in the 10.6 study area. This is the third year of exploration. 2014 exploratory work at T29 North are by these sections 13, 14, 20, 21, 23, and 24, and T30 North, R60, Section 29.

This is a northern part of the traditional Nelchina herd calving area. The Talkeetna Mountains calving grounds are considered the most important single geographic area to the herd. MMG helicopter flights flew in that area, and also south of the Susitna Bridge on the Denali Highway towards the headwaters in the Susitna Glacier. Perhaps some of these helicopter flights were AEA glacier study

people. The helicopter noises throughout the day, with the usual high-noise level that permeates the air space, this has to affect the caribou.

Number two, the JBER Fox 3 impacts of the military operation areas overflights. The recently finalized environmental impact statement lays out the future plans for the Fox 3 and the Paxson MOAs with increased use of the area at lower altitudes and perhaps pollution from [10:49:50] (indiscernible).

Both projects, coupled with the low building dam construction, intertie building, et cetera, that will accompany the Susitna Dam means that the cumulative effect on the Nelchina herd is an issue that must be looked at this level. Thank you.

MS. MCGREGOR: Thanks for the comments, Becky. Just to clarify, we are looking at the use of caribou as a subsistence food source in the subsistence study.

They did do -- complete a set of -- I don't know how many communities. At least 20 communities have been surveyed over the last couple of years. They'll talk about that tomorrow. And that did include the Copper River communities.



We will evaluate harvest. It is one of the wildlife studies that we've been deferring. We completed one set of harvest evaluation in 2012, and we're just waiting until the last year of study so we can get all the additional data that's been gathered on harvest since 2012.

Both harvest, subsistence, and -- well, harvest and subsistence -- will be incorporated into the impact assessment and the license application, and we will also address any foreseeable projects in the cumulative effects analysis.

MR. LAWHEAD: Becky, this is Brian Lawhead. Will you have -- that information that you just read, will that be in your comments, so that we can get access to that?

MS. LONG: Yes. I am actually going to file them with FERC pretty soon, yeah. The traditional -- or local -- whatever it is now. It used to be TTK, now it's local, blah, blah.

MR. LAWHEAD: Local knowledge. It's good.

MR. GILBERT: Okay. Good.

MS. MCGREGOR: And I just want to say, Becky, we really appreciate how prepared you are. You provided us with comments in writing citing specific sections last week, and it's clear that you did

the same this time. It's very helpful for us. Thank you, Becky.

MR. GILBERT: So are there any other comments on caribou before we move on to moose?

MR. MILLER: Just one question, and that -- this pertains to both moose and caribou. And you show your home-range plots, you know, and you characterize the use as high, medium, and low.

And I'm just wondering if ultimately you're going to put some numbers on what those categories mean -- high, medium, and low in terms of density or animal days use or something like that, for both moose and caribou. Because at the moment, there's no -- there's no quantitative numbers associated with those characterizations.

MS. JONES: Yeah. And I believe it's in the ISR, and it is not on -- oh, and it's also on the figure, if you want to bring it up. Those are 50, 75, and 95 percent utilization contours.

MR. MILLER: So is it reflective of density, the time?

MS. JONES: It's 90 percent of the locations that we have are within the --

MR. MILLER: Are in the high?

MR. LAWHEAD: 95.

MS. JONES: 95, sorry. Yes. And it's right there in the --

MR. SCHICK: In the small print.

MR. MILLER: Oh, thank you. I guess I missed that.

MS. JONES: Sorry. No, it's in the key.

MR. GILBERT: Yeah. It's hard to read on the screen.

MR. BURCH: That would be the light green color, that's how that works?

MS. JONES: Yeah, yeah, 95 is the light green. And then 75, and then the darkest would be 50 percent.

MR. GILBERT: Well, I think we should keep moving, because I want to make sure we get to moose and a few others we've got this morning here before lunch, because those might have some -- they have a lot of different things to discuss, I think.

Kim, if you can just go through --

**MOOSE DISTRIBUTION, ABUNDANCE, MOVEMENTS,  
PRODUCTIVITY, AND SURVIVAL (STUDY 10.5)**

MS. JONES: Even faster. Okay. All right.

Moose. Objectives are in the ISR. So are the components.

The variance, we've discussed this at length. We weren't able

to access CIRWG lands. The workaround on this was discussed in the ISR.

Here's the summary of the collars that we put out. We did complete deployment of moose collars in March 2013, and then here are the same contours that we talked, the 50 percent, 75, and 95 percent utilization distribution contours.

And then we've also been conducting twinning and calf survival studies on moose by looking at them daily during the calving -- or the twinning period, calving period.

And we also conducted a browse survey in March 2013, and we've been conducting late-winter surveys to survey the area surrounding the proposed inundation area to see how many moose are using that area during the deepest snow part of the year.

We also, in November, conducted a geospatial population estimator survey, to estimate the number of moose using the greater project area, as shown here.

And our proposed modifications, we proposed to forego monthly radio tracking flights of VHF-collared moose in December, January, February, and April. We weren't seeing a lot of movement

during that time, and didn't feel that we needed to do telemetry flights. But we will be still getting satellite data from those times, where we get several locations a day.

We are going to conduct another browse survey that's going to be more focused on the inundation zone and proposed transportation corridors, and that'll be completed in March 2015, and we will have access to CIRWG lands. And we'll complete another late-winter inundation survey in March 2015, as well.

And just like with caribou, we are going to continue telemetry through May 2015. And to complete the study, we're going to continue telemetry. The satellite collars on the moose are set to fall off on November 1, and I'll be going out and retrieving them in the snow here pretty soon. And we'll continue our count-area surveys and then the moose browse survey that I mentioned.

MR. GILBERT: Okay. That was really concise. So on moose, anything?

MS. BULLOCK: Sarah Bullock, BLM.

I assume on the corridors for the focus, you'll be dropping the Chulitna and adding the east Denali Corridor.

MS. JONES: We will be using the current corridor maps, that's correct.

MR. GILBERT: Including reporting any information on the previous work, too?

MS. BULLOCK: Right.

MR. MILLER: And the study area for these species is much larger than those corridors, so information should apply.

MS. JONES: The information would apply thus far, yeah.

MR. GILBERT: Mr. Sterling.

MR. MILLER: I would like to congratulate Kim for the succinctness of her comments. Typically what's done is you use up all the time so you don't have time for questions.

MS. JONES: No. I'll take questions.

MR. MILLER: Good for you.

MS. JONES: I like input.

MR. LAWHEAD: We encourage succinctness.

MR. MILLER: This is Sterling Miller again.

I'm concerned about the lack of collecting location data on VHF collars during December through April. And the reason is, is

that typically the analysis -- now, I understand you're going to continue to use the GPS collars, but the analysis of utilization data based on -- is based on the number of point locations in an impact zone compared to, you know, the number of point locations outside an impact zone. That's kind of the way it's used.

But if you don't -- and the time that moose are most likely to occur at lower elevations in the area of where the Watana Dam will be impacting moose to the largest degree, is in these -- is in winter, but exactly during the time that you're not going to be collecting data on the VHF collars.

So your data collection on the VHF collars will be skewed away from the time when moose are going to be in the area that would be most impacted by the impoundment, so I'm a little bit worried about how you're going to deal with that during the data analysis phase.

MS. JONES: So I guess the moose movements that we're seeing are around the time of rut, October, November, and then in December, January, and February they're starting to move down to lower elevations.

And then in March, they are typically in the highest snow time of the year; we will get a location on them, where the animal was at that time. So we'll know where it was in November and where it was in March, and we don't usually -- movements that we do see occurring that time are moving down to lower elevations, and then we'll see them start moving again in May for green-up.

And so we'll still be spatially covering where the moose are in the interim, but in getting locations on them during those key times.

So I don't really see that as preventing us from meeting our study objectives or skewing our analysis.

MR. MILLER: Okay. I think you'll get information on movement, which is -- I agree, you know, with what you just said. However, what you won't get is the percentage of the locations of your VHF-collared moose, which are in the lowest elevations and closest to the impoundment.

So if you're going to do a chi-square analysis or something like that, as was -- you know, Warren Ballard did back in the '80s, of the percent of the point locations that are occurring in the area that will be most impacted by the proposed impoundment, I don't see how you



can use the VHF collars.

MS. JONES: So we would be using a number of moose using the area and not the number of relocations. And so I guess I still don't -- I don't --

MR. MILLER: That's a much less robust number, because if you just use the number of moose rather than the percentage of time that moose are spending in the certain area, proportion of the time, that's much more typical in a robust way --

MS. JONES: If you're asking about a proportion of time, we're getting that information through the satellite data, where we're collecting four locations in a day.

MR. MILLER: So you're not -- that was my question. You're not going to use the VHF collars to detect -- document the amount of time that moose are utilizing various impact zones. You're just using the VHF collars to detect movement data?

MS. JONES: No. I believe we will be using the VHF collars.

And I guess if you would, like, submit some formal comments about it, on how you think it will impact the analysis, I'll be happy to look at it when it comes time to review --

MR. MILLER: We have formal comments prepared, and that's one. But I was told here to ask questions about --

MS. JONES: Absolutely.

MR. MILLER: And that is a concern, that I think that your data on utilization on the VHF collars is going to be skewed against utilization, the time which moose are most utilizing the impoundment area. That's my concern. And we will submit those comments.

MS. JONES: And we're also doing the additional surveys in March, to look at utilization of the proposed impoundment area.

MR. MILLER: And you will certainly get that with your GPS collars.

MS. JONES: Right, right.

MR. MILLER: And there's no question that that's true. But I'm concerned about the skew in the VHF collars.

The other thing that I'm concerned about, and I didn't see this in the -- in the, you know, initial study report, is in your field sampling -- if you'd go back to slide 8, you can see the Cook Inlet Regional Corporation land is -- tends to be in the area closest to the

impoundment in the river.

And so your -- you randomly selected plots, high, medium, and low plots to do browse utilization surveys, but the bias associated with not being able to measure browse utilization in the area that is on the Cook Inlet land, because you weren't able to document there, I'm concerned about how that bias will be addressed.

Because another way you could address it is there's a lot of BLM land along Watana Creek there, and you could sort of oversample. But just because you can't get to the Cook Inlet Region lands to sample a plot that's high density for -- you know, as you pre-classify it as a high density strata, doesn't mean that you can just go and select some other plot and that that's equivalent. You have to somehow acknowledge and recognize that you're not -- you weren't able to sample those plots on Cook Inlet land.

MS. JONES: And I agree. And that's why I address this at length in the ISR, that -- I mean, I can see your concern, and that's why in the ISR I talked a lot about how many plots were randomly chosen potentially on CIRWG lands and the method that we used, how it is all based on finding a landing zone. And I went to a lot of

detail about this in the ISR.

And also we are going to do -- the initial browse survey was to get to look at moose utilization of the habitat across the greater project area, but the upcoming browse survey will be more focused on the inundation zone, proposed inundation zone, the proposed transportation corridors, and therefore -- and we do have access to CIRWG lands for those surveys, so we will be getting at that data.

MR. MILLER: So you're going to oversample in the upcoming years, those areas that you were not able to get access to originally, is that right?

MS. JONES: No, we are not going to oversample. We are still going to use randomized sampling because it would bias us if we --

MR. MILLER: See, that's my whole point.

MS. JONES: -- do not use random sampling.

MR. MILLER: The fact that you weren't able to get those was a bias against them, and those are the areas that are likely to be more, you know, important, in terms of your browse utilization survey.

So unless you do some kind of weighting procedure to select

good cells that are the ones that you were not able to sample the first time around, you will have a bias against the high utilization cells.

And so my -- I did read the ISR. I did read your explanation of how -- of how those would be -- you know, the inability to get it. And I wasn't convinced that it was adequately addressed, the fact that you weren't able to get access to all the cells, particularly on the Cook Inlet lands, on the initial survey. So I didn't think it -- I don't recall your saying that you were going to be doing more sampling for browse next year.

MS. JONES: Yes.

MR. MILLER: Did it say in -- if it did, then I missed that.

MS. JONES: Yeah. And they're separate surveys, and that's why I'm not going to base my sampling of the first year surveys on the second.

The first year, like I said, was an overview of the entire project area or the greater -- the whole moose study area, this whole area. But this next survey will focus more on the proposed inundation zone and the proposed transportation corridors.

MR. MILLER: So you're saying your analysis on browse

utilization will not be biased because you aren't going to use the first year's data in the browse utilization report?

MS. JONES: No, that's not what I'm saying. I'm saying that there'll be reported -- the results from the two studies will be reported separately.

MR. MILLER: Right. So the -- the results that are going to be most interesting are those that are not biased against the Cook Inlet Regional Corporation lands?

MS. JONES: We will get a lot different information from the more intense sampling, yes.

MR. LAWHEAD: How many points were you talking about that you had to show?

MS. JONES: Not very many. I can't remember. It was in the ISR.

Do you remember how many points were randomly selected?

MS. MCGREGOR: Pull up the ISR, and that screen, they're all loaded.

MR. LAWHEAD: I can look it up.

MS. JONES: I think it's actually a table in the ISR. It would

be part -- if it's dated, it's --

UNIDENTIFIED MALE: Part A probably?

MR. LAWHEAD: Section 9, page 9.

MS. JONES: I don't know if it's in the table or --

MR. LAWHEAD: On CIRWG lands, 4 upstream out of 167.

And then the low stratum, downstream is 5 of 168, in the high-density count.

MS. MCGREGOR: Can you repeat that, so the court recorder --

MR. LAWHEAD: Okay. It's Table 4.3-1 in the ISR, Part A. There were 167 -- so there's two study area subdivisions: upstream high-density stratum had 167 cells, of which four were on CIRWG lands. The low-density stratum had 156 cells, of which none were on CIRWG lands. And in the downstream portion of the study area, 168 cells were in the high-density stratum --

MS. JONES: I'm just wondering why it's not showing up there.

MR. LAWHEAD: And then in the low-density stratum, downstream, 147 cells were identified, of which none were on

CIRWG lands. So it looks like 9 out of 640.

MR. MILLER: On CIRWG lands?

MR. GILBERT: That didn't get sampled, yeah.

MS. JONES: And again, we overselected. We selected twice as many cells as we thought we would need, knowing that cells would be passed up based on not having a landing zone, not having any vegetation, or not having any browse species. So we're not definitively saying we would have sampled all nine of those, or even a small portion of them, based on the methods. But it's hard to know exactly how many we actually skipped over, but it's a smaller number than shown there, because they would have been --

MR. MILLER: Well, I say I'm just concerned that the analysis take into account the fact that you weren't able to sample according to your sampling design, though, cells on Cook Inlet lands in the first year. That's my point.

Your objective 2 is to assess the relative importance of a habitat in the inundation zone, proposed access/transmission corridors, in the riparian area below the project. How are you going to assess the habitat in your current design with these -- in these



second two categories, the proposed access/transmission corridors and the riparian area below the project? You don't have any radio-collared animals in those areas. Maybe in the access/transmission corridors you do. I can't tell because I don't know where you put out collars.

But certainly downstream, the riparian area below, you don't have anything to assess the importance of the habitat. So you -- is that just going to be done with the browse surveys?

MS. JONES: So that's actually a good point that you bring up. The riparian instream flow study is going to be doing a spatially explicit model in that area, and so they're looking at all the vegetation that's currently in the area and mapping it, including areas where willow can be found, which is in a preferred moose browse, and so they will be entering that into a model, and in the model they'll enter changes -- potential changes and flow regime, ice -- ice processes, changes in sediment, things like -- things that might affect how the seeds and the plants are carried down, all these different things.

And they're doing this in a lot of detail. And they will actually map changes in that habitat that will occur with the modifications

that will likely happen with flow.

And so we do have some movement data in that area that we will incorporate in, after we get the model from them to understand the changes. But a lot of downstream impacts that are going to happen are more subtle and they're going to take place over a longer period of time. And that's why I was -- the fine-scale modeling that they're doing with the riparian instream flow study is going to be much more valuable than anything that we can do with current moose movements.

So I agree that my study alone is not going to meet that objective, but in combination with the riparian instream flow, and there's also a riparian vegetation study, and I believe that it'll be covered sufficiently.

MR. MILLER: I think that's a reasonable answer. It would have been clarified if you had referenced the fact that this was going to be done somewhere else, you know, and that would have helped.

MS. JONES: No, I agree.

MR. MILLER: And that is going to be based not on movements, but rather on inferences from browse availability. So

that's correct, right?

MS. JONES: Yeah. And I agree, that we do mention working with other studies, but it could be clarified more in the future.

MR. MILLER: This may have a similar answer, but your objective 6 is to identify areas for habitat improvement by, quote, "crushing, prescribed burning, or other habitat enhancements" could occur, but I don't see any indication in your design that you're going to be doing any of those kinds of identifications of habitat for mitigation.

MS. JONES: Yeah. And I actually do have a plan for that analysis that is more complex, and it's something that's been proposed to me more recently, something I'm looking into. But it's called -- and I just totally blanked -- resource selection function.

MR. MILLER: Oh, yeah.

MS. JONES: Yeah. And so --

MR. MILLER: Mark Boyce's technique.

MS. JONES: Right. And so basically with all the data that we're collecting -- so for each individual, say, moose cow that's out there, we know her body condition, we captured her, we know

whether or not she's having -- whether she was pregnant at capture, and whether or not she's having twins, and the twin survival -- the survival rate of her calves, and we have all this data collected on this animal. And we also have all of her movement data. And we also have the browse data and really good habitat maps, some of it coming from inside the study.

So basically we can take all of that and we can look at moose that are foraging in a particular area, if they are more fit than moose that are foraging in other areas, and that'll help us identify areas of importance for the moose that may need to be protected or areas of poor habitat that maybe could potentially be enhanced for the moose. And so that is my plan for the analysis and the data.

MR. MILLER: As a general point, I would say if you're going to have objectives, you know, you ought to address those objectives in your initial study report and say how those objectives are going to be met.

And so I'm delighted to hear that you have plans on how to accomplish that, but you can understand the readers' confusion when you read objectives and no connection to studies that will

design -- that will provide that information.

MS. JONES: We did have a series of meetings on those proposed study plans whenever they were written, and so your feedback would have been great at that time.

MR. MILLER: All right. Well, I'm a hired gun, so -- the other comment is that in the -- in the Becker-Steigers report early on -- they actually estimated browse, biomass availability. Are you going to make any effort to do that actual --

MS. JONES: That's what we'll be doing with the browse surveys.

MR. MILLER: So you're actually going to estimate browse availability. Good.

MS. JONES: Yeah. And consumption.

MR. MILLER: Right. Right. Good.

The -- the -- I made the comment about maps showing where collars were deployed, both GPS and VHS on caribou, and I'd just make that same comment --

MS. JONES: Okay. And --

MR. MILLER: -- on moose.

MS. JONES: And I'm not sure how it was when you were around, but we're very protective of exact locations of caribou and moose, so we can't give you -- we can't give out the exact collar locations.

And people own land in the area, and stakeholders wouldn't want that anyway. But I can give a general idea, maybe a really large star on the map or something --

MR. MILLER: That's right. Something --

MS. JONES: -- generally where they were put out.

MR. MILLER: -- like that for both -- yeah.

MS. JONES: I can't give out --

MR. MILLER: Fair enough. My wife used to be chief biometrician for wildlife conservation, as you know, and therefore we had that same problem with harvest data that exists, and I can appreciate that, particularly with carnivores. I think less so for moose, but -- and caribou.

MS. JONES: But yeah. I actually just made the point to Mark, like last week, that, yeah, we really need to clarify on here where the collars were put out, because some of these areas where

we're seeing moose not using the area, yeah, here in these mountains is because there aren't moose, but other areas it's because we didn't have a good representation of collars because we were focusing on the proposed transportation corridors and inundation zone.

MR. MILLER: I noticed in your report, you used terms like inundation zone in the ISR. However, you know, the map that you presented showing the inundation zone was much larger than the actual area that would be flooded. So my suggestion is that you look for more precise terms of, you know, inundation zone or inundation impact area or something like that.

MS. JONES: Are you referring to the late-winter survey area?

MR. MILLER: I think that's the map that I saw.

MS. MCGREGOR: So just to clarify, that is the inundation zone. That's at an elevation of 2,050 feet.

MR. LAWHEAD: The blue.

MS. JONES: But the orange around it, to clarify, does encompass greater than the proposed inundation zone, yeah.

MR. MILLER: Right. And that is also called --

MS. JONES: The study area.

MR. MILLER: -- the inundation zone; is that right? She's asking if the buffer -- the buffer of the future reservoir.

MR. LAWHEAD: We tried to standardize terminology to state a buffer size around the inundation zone.

MR. MILLER: Okay. Well, it wasn't clear to me, so I just suggest you be a little more clear on that.

MS. JONES: Sorry.

MR. MILLER: So how are you going to estimate population size, which is one of your objectives, and determine what area to which that population size will apply? I understand that -- I read about your surveys and so forth, but I didn't actually see a technique for estimating, you know, your regular survey, inventory surveys, and so forth, whatever you're doing. But I didn't see a mention to a Gasaway technique or something like that, but --

MS. JONES: The geospatial population estimation survey in November is a modified Gasaway. It's been updated slightly, and this is the population estimate and the density that was derived from that survey.

MR. MILLER: Was that in the report, ISR?



MS. JONES: The -- it was just -- the method was discussed, but these results are since the ISR. The data compilation was since the ISR.

MR. MILLER: So in this whole area, you have 3,600 moose with the -- with the variation indicated --

MS. JONES: Uh-huh.

MR. MILLER: -- is that right? In that whole area surrounded by the blue?

MS. JONES: Purple, yeah.

MR. MILLER: Or the purple?

MS. JONES: Yeah.

MR. MILLER: And so is that going to be somehow reduced to -- spatially to something that is reflective of impact zones, you know, further away from the impacts, this is how many moose there are, and close to the impact -- to the impoundment area, this is how many moose there are? Is there going to be some way of coming up with a number of moose which will be more directly affected by the impact?

MS. JONES: You know, we can certainly do that using the

density.

MR. MILLER: All right. So you will do that?

MS. JONES: Yeah.

MR. MILLER: All right. Well, thank you very much.

MS. JONES: Yeah, yeah.

MR. LAWHEAD: Plus she did specific surveys of the inundation zone.

MS. JONES: Right. Which is the area from the '80s that was highlighted as the most concern, was the inundation zone. That's why we're doing those March surveys. And AEA has allowed us to do an additional March inundation survey because we counted the exact same number of moose in two different years, and we'll want a third year to get more variation.

MR. MILLER: I just noticed that, as I did with caribou, that Ballard and Whitman spent a great deal of effort in their studies in the early '80s identifying moose subherds and describing their patterns of movement, and so forth.

And I didn't see -- and you know, he -- and he also described the kinds of impacts and their magnitude that would occur for each

of the subherds, you know, some of the herds like the Watana subherd and so forth will be very greatly impacted by many things, doing inundation on the browse, and so forth, and there are different ones would be impacted in other ways less [11:20:18] (indiscernible). Are you going to do something like that?

MS. JONES: I'll certainly see if any particular strategies like that show up in my spatial analysis. And if they do, I will certainly highlight them and discuss impacts separately when it comes time.

MR. MILLER: For subherds?

MS. JONES: If I do believe there are subherds, yeah.

MR. MILLER: So you don't believe that Ballard was correct in identifying those subherds?

MS. JONES: Well, I'm just saying if my data doesn't show specific subherds, I'm not going to comment on them. His study area was also much larger than mine, and so I was focusing all of my -- I'm focusing all of my efforts on animals that are in close.

So I believe I have his map with me, and I believe that only covers what he called two different subherds, but I'll certainly look at it.

MR. MILLER: All right. Thank you.

MR. LAWHEAD: And that was based on VHF telemetry?

MR. MILLER: Yes.

MR. LAWHEAD: It's a benefit of GPS collars.

MS. JONES: Right. Now we have -- right.

MR. MILLER: There's no question that the GPS is a huge step forward from what was available in the '80s, and I congratulate the Energy Authority for springing for the GPS collars because that's a significant advance in your ability to collect resolution on habitat utilization.

I just wanted to emphasize that I decided as a time-saving mechanism to only emphasize concern and not say good things.

MR. GILBERT: Well, you can say good things, especially when you concur.

MR. LAWHEAD: Kim can use some good comments.

MR. GILBERT: Yeah. That's great. That was great dialogue there.

MS. JONES: Yeah, thank you.

MR. GILBERT: Very good.

And I do want to kind of keep moving, but if somebody's got a burning question on the phone, please go ahead.

MR. WOOD: This is Mike Wood. Can you hear me?

MR. GILBERT: Sure, Mike.

MR. WOOD: Yeah. Hello. I've been listening to the caribou use, and I would just like to interject that regarding the lower riparian studies, I -- an emphasis on other people collecting that data perhaps.

Again, I'd like to flag, for FERC, the winter -- amount of winter effort and the effects of what the proposed dam could have below the dam site, especially with ice creation, jamming, and spring jamming, which creates -- just scours these islands creating the willow browse that the moose use throughout the entire winter in 2012, when they were -- when R2 was doing their initial studies out here on the river, in March, I helped put a trail in.

I could count from my house, which is right across from the Whiskers Slough focus area down to the confluence, 47 moose on the river utilizing the overflow and the browse to eat from. Within a week, all those moose had disappeared because of the traffic and the study efforts, and they weren't to be seen again.

In 2013/14, I witnessed the same thing. There was quite a few moose until the -- until the helicopters and snow machines started flying around.

I guess my -- my point is, I haven't actually seen people down here studying the number of moose on the ground between October, November, December, February, March, and in April, and I -- it's important, because I think we're assuming the effects of the dam will be minimal down below -- downriver.

Again, that's an assumption if there's no ice jamming, there's no browse being created by scouring the islands. And if there are higher flows, it might be difficult for moose to actually hang out on the river itself with higher water levels.

So I think that in my mind, a very important thing to see, especially the impacts of the studies on the local animals here. And I also just want to interject, as far as the caribou go, I've seen a massive change in their habits in the last couple of years, and then descending way low, incurring down into the line and whatnot in greater numbers of caribou.

There's over -- I just think the efforts on moose should be

greater in the impacts of what could happen to their habitat with higher water, no ice jamming, and how many moose are actually descending from the higher elevations to this river corridor between Portage and the confluence of the Chulitna, Talkeetna, and Susitna River.

Thank you.

MR. GILBERT: Okay. Thanks.

MS. LONG: This is Becky Long again. I have one more thing I forgot to add with the caribou.

But when she was talking about the anomalous spring in 2013, because the calving and the migration route were changed and all the patterns change, because of the late break-up and blah, blah, blah, and then the rivers were open, there was significant calf mortality, drowning, from being not on their usual calving areas and having to cross rivers. So I think that should be in the public record. It's pretty important.

MR. WOOD: And this is Mike again, Mike Wood. I'd just like to add that during spring break-up when there is shelf ice and the river is flowing prior to the flood -- the spring flush coming through,

we'll have herds of 12 to 15 to 20 moose going up and down the side of the river right in front of our house, wading actually across because they find that shelf ice and the [11:26:06] combination (indiscernible - interference with speaker-phone) for going across. So they actually herd up and travel up and down the sides of the river until they can actually cross that river. Thank you.

MS. JONES: I just wanted to clarify really quickly that the drowning we saw in the calves were in the Copper River, not the Susitna River.

MS. LONG: No, no. It wasn't in the Susitna River. But it's just --

MS. JONES: Okay. I just wanted to note that.

MS. LONG: No. And I'm sorry I didn't specify. And I can't remember the exact article. It was in the newspaper over there. It's just noting that there was some impact on the population because of the anomalous weather conditions.

MS. JONES: Right. And they did really well this year, calf survival and production were really high and the calves were some of the biggest we've weighed in a long time -- that we weighed last



week. So the herd is -- thankfully seemed to bounce back from that. But it is good to know.

MR. MILLER: Just one more brief comment from Sterling Miller.

I didn't see any winter severity index or anything like that in the ISR. And you know Ballard, when he did his studies, he developed a winter severity index so you could characterize how typical or atypical of conditions that the animals were in. And this pertains both to moose and caribou.

So I would think in the final report, it's going to be necessary for the years of your study to find some ways of characterizing whether the years you studied were anomalous or typical. And like winter severity index is one of those ways.

MS. JONES: Okay.

MR. GILBERT: Okay. Thanks. I think we should move right into Dall sheep, which is a tag team with you two guys.

MS. JONES: I might let Brian do it.

MS. WOLFF: This is Whitney. Could I ask one quick question, just about the continuation of the moose browse survey?

MR. GILBERT: Okay.

MS. WOLFF: Is that going to go on -- I know the [11:28:02] [telemetry] data from the -- the actual animals, it's going to go just through May of 2015. What's the timeline of the continuation of the moose browse study?

MS. JONES: It will be conducted at some point in March 2015.

MS. WOLFF: Is there something more specific or -- can you give me a broader timeline than sometime?

MS. MCGREGOR: March 2015.

MS. JONES: Sometime in the month of March 2015.

MS. WOLFF: Okay. And what's the duration and --

MS. JONES: It's typically about a five-day survey, but it all depends on weather. We have to have good weather for the helicopters to be able to fly and pilot availability, and all the other logistics that we work around.

MS. WOLFF: Okay. And then do we know the random plots for that -- I know you and Sterling had that long discussion on which ones you'd be, you know, using, and is there somewhere we can view

what you -- the determined plots?

MS. JONES: No. Sorry, that's not available at this time.

MS. WOLFF: Okay. All right. Thanks.

MR. GILBERT: Okay.

MS. MCGREGOR: I'd just like to ask that we really rapidly move through these presentations and allow a good time for the discussion, because we really appreciate the comments.

MR. GILBERT: Yeah. The comments are the highlight. You did great on these. That was quick on moose.

MS. JONES: A little faster?

MS. MCGREGOR: (Indiscernible.)[11:29:38]

MR. GILBERT: Try to match that. That was about three minutes.

## **DALL'S SHEEP DISTRIBUTION AND ABUNDANCE**

### **(STUDY 10.7)**

MR. LAWHEAD: Okay. Dall's sheep. Pretty straightforward study looking at estimated population size in the study area, delineating summer range at the same time of those surveys, those aerial surveys, and then the second component is to

look at mineral licks in the area. And a third component was to relate the currently collected data to historically collected data.

Again, there's three primary components, aerial surveys in current years, mineral lick surveys in current years, and then comparison with historical data.

There are two mineral licks that were studied in the '80s and have been revisited in 2013 and also 2014. One is on Jay Creek. It would be located above where -- above the maximum pool level of the inundation zone, but fairly nearby.

So in each of 2013 and 2014, we paid two visits in late May and mid-June and conducted observations at the lick and then -- at the licks -- and then also deployed a time-lapse camera to record sheep at the lick between the two visits.

This shows the subdivision of the area, in terms of -- in terms of subpopulations of sheep in the area. This is the Chulitna Mountains area, the Watana Creek hills area, and the West Kosina hills area. And the two licks are located here.

Oh, oh. Here we go. So Fish & Game was able to conduct aerial surveys of those three areas in July 2013, observing 512 sheep.

And most relevant to this project in the -- in the lick areas in the reservation -- reservoir inundation zone is that about 41 of those were in the Watana Creek hills. Not many sheep were seen at the licks. About a maximum of seven at Jay Creek and three at Watana Creek, although that was a fairly brief visit at Watana Creek.

The sheep population in this area declined pretty sharply about 15 years ago, and they've remained low since then.

This page just shows locations of the sheep that were observed on the surveys in July of 2013. And this is a photo of the Jay Creek lick site and kind of just a simple little line graph of the number of sheep seen in that period between the late May and the solstice.

Again, we repeated the general lick visits in 2014. Nine sheep were seen around the Watana Creek lick; they weren't all at the lick. But no sheep were seen at Jay Creek. And not many sheep were present on the time-lapse photos this year at Jay Creek. Maximum at one time was only three.

No modifications are anticipated.

The main problem this year was that the weather in 2014 was unusually cool, and so the snow persisted at high elevations and

didn't allow sheep surveys to be conducted as planned. So that survey's been kicked into next year, the second year of the sheep aerial surveys. But no further work on mineral licks is contemplated.

And again, the only field component remaining is the second-year aerial surveys, and then preparation of the report.

MR. GILBERT: Okay. That was pretty good, both of you.

How about Dall's sheep? Sterling?

MR. MILLER: I have almost no comments, you'll be delighted to hear, because I thought this -- this project built well on the earlier studies and expanded them in very appropriate ways. So I'm violating my principle of making only negative comments.

But I do have a suggestion, that I think if you go back to your slide 2 or 3 which showed the populations of sheep, and you'll notice that your population in the West Kosina hills and the population, you know, the Watana population, around opposite sides of the proposed impoundment, and I'm wondering why you don't -- haven't proposed some studies to determine how isolated those populations currently are from each other. Because it's clear that the impoundment will isolate those populations even more severely than they are currently

by the Susitna River.

And my suggestion is that this be done with genetic studies. As you know, you can -- you can document amount of interchange between populations of animals by analyzing, you know, the roots of hair for genetic composition. It's a fairly standard technique, and I don't even think you'd have to capture the sheep to do it. You could probably pick up hair tufts and analyze them genetically.

Because I think if the impoundment is built and there is any interchange between those two populations, that interchange will be eliminated.

MR. LAWHEAD: Okay. Thanks for the comment.

MR. MILLER: Do you think there's movement between them?

MR. LAWHEAD: I'm not aware of any data to suggest that.

MR. MILLER: Neither am I.

MR. LAWHEAD: There was one -- one of our raptor crews saw a sheep down on a cliff down by the Susitna, down near the dam site. That's a population of one that's not shown.

But clearly, you know, there are occasionally movements

outside of well-defined areas of habitat.

MR. MILLER: Are there any licks in the West Kosina hills?

MR. LAWHEAD: Not that I'm aware of, but we haven't searched for that.

MR. MILLER: I'm not either. So it's not unreasonable to suspect that perhaps the sheep in the West Kosina hills might be attracted to north of the river.

MR. LAWHEAD: It's possible. All the movement that we saw at the Jay Creek lick was to the north, movement of animals coming and going, even in the same day. It was interesting. There's some pretty dangerous habitat from the standpoint of large mammalian predators.

MR. MILLER: But problems of population isolation and small populations of ungulates is a serious problem and things that contribute to that isolation are matters of concern, you would agree, Brian?

MR. LAWHEAD: Uh-huh, sure.

MR. GILBERT: How about on the phone? Any other technical agencies, otherwise? State? Other questions?



MS. MCGREGOR: As we move forward through the presentations, so we can make sure that we have adequate time for discussion, let's just assume that everybody has read the ISR and skip over the objectives and study components and just move on to the summary results and proposed modifications.

MR. GILBERT: Just go to results and modifications? And we can go back --

MS. MCGREGOR: Well, variances, too.

MR. GILBERT: Yeah, variances --

MS. MCGREGOR: And only discuss significant variances. They are all fully explained in the ISR.

MR. GILBERT: Okay. So we're going to do wolverine next?

MR. LAWHEAD: Sure.

MR. GILBERT: Mark Burch will do the wolverine study.

MR. LAWHEAD: Are you on the phone, Alex?

MR. PRICHARD: Yes, I am.

MR. LAWHEAD: Okay.

Alex is on the phone, too, Mark.

## **WOLVERINE DISTRIBUTION, ABUNDANCE, AND**

## **HABITAT OCCUPANCY (STUDY 10.9)**

MR. BURCH: I'll try and build on Kim's success and go a little quicker through here.

There are the objectives. There's the components.

The plan spelled out in the study plan, as the component suggests, is to complete a SUPE survey as well as occupancy modeling, to do the SUPE hopefully at least one time, and occupancy modeling surveys annually, or twice in this case with a two-year study.

We conducted the occupancy flights in 2013, and those are indicated by the dark pink, if you want to call it that, survey areas. Wolverine were detected in 23 of those 25 sample units.

Sorry about that.

There are no modifications to the FERC-approved study plan. We were not able to complete the occupancy modeling or the SUPE in 2014. They both require pretty specific snow conditions and weather conditions following the snow event. And so it's necessary for us to conduct that work in 2015.

Once again, if the conditions don't develop for the SUPE, then

we hope to at least be able to do the occupancy modeling.

UNIDENTIFIED FEMALE: (Indiscernible - interference with speaker-phone.) [11:39:50]

MR. LAWHEAD: Could you please mute your phone if you're moving furniture?

MR. BURCH: So once again, that's the plan for 2015 is to do the SUPE, and if that doesn't work out, at least the occupancy survey work.

MR. GILBERT: Very fast. Please, Sterling.

MR. MILLER: Sterling Miller once again.

I want to start off by acknowledging that there's probably no more difficult creature to work on than wolverine, and so everything I say is in that context, that I acknowledge that.

And -- however, you have two objectives, objectives 3 and objective 4, which are to describe habitat use in both cases in late winter, and -- but the only thing I could see in your objectives -- I'm trying to look for a match between objectives and study plan. The only thing I see is some population estimation objectives and some occupancy modeling objective. I don't see any objective for

determining habitat use. Are you considering habitat use to be synonymous with occupancy?

MR. BURCH: I wouldn't say so, but we do expect -- assuming we're able to complete SUPE, we would -- you may be familiar with that process where -- for the sake of everybody else, I'll explain it really quickly -- that you use the sampling grid that was up there, and then once you cross the track you follow it to where the track first appears, which would be -- presumably be -- the end of the snow event, and then follow it the other way until you either find it going into a hole or until you find the animal.

And so we have a pretty good idea of the habitats that that animal crossed, at least during that time. And so we get some indication of habitat use that way.

MR. MILLER: So somehow you're going to plot that GPS track of that track that you're following from the airplane, superimpose that on some kind of habitat map and evaluate habitat use in that way?

MR. BURCH: Right. That would be my understanding of the indication that we would have for --

MR. MILLER: So I don't see any -- any analysis like that either in the study plan or anywhere else. So you know, that's a perfectly reasonable way of doing it, but I don't see it described.

And that is an appropriate way to describe habitat use in late winter, but you need to say that that's what you're doing. And if you're not going to do it, don't say that you're going to describe habitat use and -- if you're just going to do occupancy and abundance, because that's all I really saw.

MS. MCGREGOR: And, again, I just would like to clarify for you that there is another study, I'm not sure if you're familiar with, that is a complete vegetation mapping study for the purposes of wildlife habitat.

MR. MILLER: I am aware of that. And you mentioned it before.

MS. MCGREGOR: Okay.

MR. MILLER: And I'm --

MR. LAWHEAD: But that's only within two miles of the corridors. That's not the entire wolverine study area, so that would have to be a different land-cover map and use.

MS. MCGREGOR: Right. To the level of data that we have. I think we initially started off with a AVC Level III, we have AVC Level III data at least in that study area, and so it's really the Level IV that's part of the vegetation --

MR. SCHICK: We're mapping to Level IV, but we'll aggregate -- this is Terry Schick from ABR. We'll map to Level IV, aggregate to broader scale wildlife habitats within that two-mile buffer.

For wolverine, you're going to want to expand that. We'll have to crosswalk those data with a more coarse-scale habitat map. There are a number of maps available that you could do that with now. It's all do-able.

MR. MILLER: It's do-able. And I'm just -- I'm commenting on the disconnect between the stated objectives and the stated techniques for the project. And if there's not a disconnect because some other project is going to do that, then that disconnect doesn't exist. But otherwise, it does.

The other thing that I was going to wonder, I didn't see any indication of a -- I said you have a trend index as one of your

objectives, but I saw no indication of the scale for that trend index.

Is that going to be on a scale that's appropriate to the project or a subunit, game management subunit or game management unit scale?

I don't know what scale this trend indicator is going to be.

MR. BURCH: The idea would be to use the occupancy surveys over time as that index. So they would need to be completed in a similar fashion to how they're being completed in this study for that particular area, and then you'd have to decide to what extent could you extrapolate.

MR. MILLER: So the occupancy surveys are going to be the trend indicator?

MR. BURCH: Right.

MR. MILLER: And is that -- at what scale is that -- do you think that those are going to be significant? I'm working into my second part of my question, was whether there were going to be any power analyses conducted, either for the population estimation value or for the trend index, and whether we're going to have an indication of power, which for the purpose of others I will mention is your ability to detect a change with a certain level of probability. That's

called a power analysis.

MR. BURCH: Our focus at this point is on the study area, so I hate to speculate beyond that, what that occupancy modeling could be used for.

As far as the analysis, I know that Alex is on the phone. Unfortunately, we've lost the principal investigator for this particular project from Fish & Game, and so we're at a point now where we're in the process of doing some hiring and consulting with others to answer that particular question.

There's -- there was some debate during the development of some of the reports on what level of change we could detect, and I guess I'll leave it at that rather than get too far out on my biometrics --

MR. MILLER: Limb?

MR. BURCH: -- limb. And I'll say that's something we're working on.

MR. MILLER: Good. I mean, you've got an expert in Region 2 with Howard Golden. And I don't know why he can't be your -- I didn't realize you had a vacancy, but Howard is certainly an expert.



MR. BURCH: Right.

MR. MILLER: My last point is that most of the studies, I think, all except this one, had an objective of incorporating previous studies into your final report, but the wolverine study did not state that objective. The earlier studies which Whitman and Ballard, 1984, they put out 22 radio collars on wolverine, and certainly integrating those results into your final study report should be an objective for the wolverine studies.

And that concludes my comments. Thank you very much.

MS. MCGREGOR: Thanks, Sterling.

MR. GILBERT: Thanks, Sterling.

How about other comments on the wolverine study for Mark and others?

MS. WOLFF: Whitney, I had a hard time hearing Betsy's response on, like, habitat-use studies she referenced. I couldn't hear her at all.

MR. GILBERT: She was talking about the other mapping studies.

MS. MCGREGOR: I was just trying to clarify -- I think it's

kind of difficult that an observation I've been making, we have new people contributing and providing comments on these studies, and some of the information is being gathered in other studies, and it's just not really clear to people.

So I was just trying to clarify that we do have habitat maps in various -- you know, various levels of refinement, and then there is the wildlife habitat mapping study which will go down to the AVC Level IV.

But as Brian pointed out, that only covers about a two-mile buffer around the project area, as defined by the reservoir inundation zone and the corridors.

MR. GILBERT: And we'll talk more about mapping in the afternoon.

MS. MCGREGOR: Yeah.

MS. WOLFF: Thanks for repeating that. I don't know why it is, but Betsy's really hard to hear.

MS. MCGREGOR: I'm surprised.

MR. GILBERT: Yeah. Okay. So, Rick Merizon has joined us to talk about the ptarmigan study.

**POPULATION ECOLOGY OF WILLOW PTARMIGAN IN  
GAME MANAGEMENT UNIT 13 (STUDY 10.17)**

MR. MERIZON: Yeah. Just for those on the phone, again, this is Rick Merizon. I'm with Fish & Game, and I'll be reporting on the ptarmigan project.

Zip right through the objectives here and get right to the variances. We have several I wanted to report on.

The one that you've been hearing about all morning, and I'm sure we'll continue to hear about in the afternoon, is the -- the spring and summer of 2013. It's certainly affected our project, and primarily affected our ability to access several of our proposed capture locations. We were not able to get to the site we call Upper Fog Lakes or Jay Creek.

And as a result, we were also not able to put out as many radio collars because of late access to these capture locations and subsequent difficulties in moving around each capture location when we were there. And then we also added the Denali Highway capture location just to the east of the proposed -- one of the proposed access corridors.

Another variance was relative to our capture methods. We were trying to identify the most effective capture methods to boost our capture rate. And the net gun and noose carpets were in the -- outlined in the RSP, the study plan. The one method that we incorporated after the fact was the use of mist nets, and we did find that this was a very effective technique, particularly for the late summer captures.

And finally, the aerial transect flights, we were not able to complete the March 2013 flight but did complete -- we moved it to the winter of 2013/2014 and did complete two flights, one in January of 2014 and one in March of 2014. And let me just double-check to make sure --

Moving to the results, as far as our number of radio collars that we did deploy, again, as I stated earlier, in 2013, we did not -- we were unable to access as many locations as we wanted to, and when we were there, we had difficulty moving around on foot to capture birds. And so subsequently, we were not able to put out as many radio collars in our May and August efforts of 2013.

But we did improve that considerably this spring and late

summer, and we were also able to access several other locations that we had originally proposed.

Our aerial transect surveys were interesting. We did not get the flushing rates that we were anticipating in both our January 2014 or our March 2014 flights. And as a result, we -- at the April 2014 meeting, AEA agreed to cancel that effort as we were just unable to get the flushing rates that we needed to have the detection probabilities that we needed to make an inference.

Proposed modifications -- let me just double-check here in my notes. We -- as I said, in 2013, we were only able to access Busch Creek and the Denali Highway areas, but in 2014, we were able to access the Denali Highway, Busch Creek, Butte Creek, and Deadman Lake and Upper Fog Lakes, and we plan to revisit those in 2015.

For proposed modifications, we hope to continue our capturing and collaring efforts in May and August of 2015. We also hope to capture and re-collar previously collared birds, again, in May and August of 2015, and that will allow us to reach our collaring objectives within each year.

How we propose to complete that, again, we are hoping to

reallocate the funds that were originally allocated for the aerial transect surveys to our radio telemetry surveys, which will certainly increase our ability to make inferences relative to bird movement and habitat use.

Again, we hope to capture and collar additional birds in May and August of 2015, and again, recapture and re-collar currently collared birds also during that time period.

If you have any questions?

MR. GILBERT: Very good. So a variety of activity and shifts in your time.

How about on this study, you guys? Agencies have --

MS. BULLOCK: This is Sarah Bullock with BLM.

I just want to make sure I understand it. So the ones that you've gotten -- I didn't see a whole lot in the Chulitna corridor. But the Gold Creek area, and then there's been I think the Denali and then the -- I guess Deadman Lakes was the only ones that are kind of close to the corridors.

And I was just kind of curious. Are you using -- when you found the habitat type, you're going to use that in the habitat study

that will be done in 2015, to kind of extrapolate where they're going to most likely occur in their population and whatnot?

MR. MERIZON: We -- there's very little historical information relative to Willow Ptarmigan in this particular area. So the capture locations are fairly insignificant in terms of the specific location.

Really we are just trying to find areas that we could access relative to proposed study areas and corridors that we could then evaluate the overall extent of movement and habitat use, because really there was no historical information there.

So we weren't certain where the -- whether those birds were going to have very limited movements relative to a capture location or very extensive movements, and what we're finding through just a very basic results for aerial telemetry observation points is that it's sort of a mix of the two.

So I'm not sure if that's addressing your question or not.

MS. BULLOCK: Let me think about it.

MR. SCHICK: Well, this is Terry Schick with ABR.

We will be doing a wildlife habitat evaluation.

MS. BULLOCK: Right. I was just kind of wondering if this was going to be, again, to try to look at the -- you know, you said some habitat values, and is that going to be kind of put on that -- those different corridors to try to tell --

MR. SCHICK: Yes. For birds, we'll talk about this this afternoon. But we're going to evaluate categorical rankings for habitat value for all bird species that have been recorded in that area. So Willow Ptarmigan will fall into that group. So yes, there eventually should be a map that can be produced that'll display high, low, medium value habitat for Willow Ptarmigan.

MS. BULLOCK: Yeah. I just want to make sure I kind of understood that that would be in that --

MR. SCHICK: Again, that's going to be within that two-mile buffer mapping area. It's based upon the detailed map being prepared in Study 11.5.

MR. GILBERT: Are you guys able to hear on the phone okay?

MS. LONG: Yeah. It sounds good.

MR. GILBERT: Okay. Good questions.



How about any other questions for Rick and his study of ptarmigan?

Okay. We have one more study and then we get to take a lunch break.

MR. LAWHEAD: Yeah. We need to push through this. Are Casey and/or Laura on the phone, I hope?

MS. PRUGH: Yes, both of us are here.

MR. LAWHEAD: Okay. And you have a commitment at 1:00, right, Laura? So we should push through this.

MS. PRUGH: Yeah.

MR. LAWHEAD: And then I'll call Nate, who's up after lunch, and tell him it might be a little bit delayed, because he's in the field. I hope I can get ahold of him.

## **TERRESTRIAL FURBEARER ABUNDANCE AND HABITAT USE (STUDY 10.10)**

MR. LAWHEAD: Okay. So just a brief introduction, this Study 10.10, Terrestrial Furbearer Abundance and Habitat Use, is being done by the Institute of Arctic Biology at the University of Alaska Fairbanks. Laura is a professor there and Casey is a grad

student. And with that, I will let you take it away.

I don't know if you've been listening so far very much.

MS. PRUGH: Yeah.

MR. LAWHEAD: But we need to clip through the -- clip through the slides at a brisk pace.

MR. GILBERT: Yeah. Focus mostly on the significant variances and plans to complete the study, any modifications, and so on, that's of importance.

MS. PRUGH: Okay. Sure. And I'm going to go through the first half and Casey will take up the last half.

Okay. So our objective is to estimate population size of the smaller furbearers and their prey and look at habitat use.

And, Brian, are you advancing the slides?

MR. LAWHEAD: I am. And there'll be a little bit of a delay, so tell me before you want me to turn it.

MS. PRUGH: Okay. Sure. Go ahead.

Okay. So the study consists mainly of collecting scat and hair samples for fecal genotyping to develop population estimates for each species.

We also conduct aerial track surveys each winter, and we'll do some occupancy modeling.

Okay. Okay. You can advance.

So the lack of access has been probably the main issue causing variances with our study, especially for marten. So we did not have access to lands that we had originally planned to work in, and so we expanded our area into -- into some other areas to make up for that.

We also had some issues with the lynx hair snags not working out as well as we had hoped. And we slightly modified the prey sampling to get better spatial coverage for snowshoe hares and voles. Okay.

So in 2013, we -- Casey and his assistant collected 131 scats and 29 hair samples.

All right.

And in the prey surveys, there were 15 areas where hare pellets were counted and where voles were surveyed. Densities were highly variable, but overall densities were fairly low for both hares and voles.

Okay.

And we conducted three aerial track surveys in the winter of 2013, and this figure shows just a summary of the number -- total number of tracks seen for lynx, marten, and fox, as you move east to west along the Susitna. And there were no coyote tracks in winter of 2013.

All right.

MR. POZZANGHERA: Okay. This is Casey. I'll take over here.

This past winter, 2014, we continued on with our scat and hair collections. We had almost double the hair sample collections and an additional hundred -- hundred or more scat samples. Part of this is probably due to the fact that there was less snow, easier to see samples.

Okay. Go ahead.

The summer prey surveys were conducted in July this summer. We continued to have pretty variable hare densities, but we saw a huge increase in vole captures, as you can see between the '13 -- from the 2013 summer season. And we had 87 captures this year.

Go ahead.

The aerial track surveys that Laura was able to conduct this year were fairly limited, due to the strange and varied snow conditions. Pretty much the two that were able to be done followed along the same procedures as 2013 surveys, and she was able to detect some coyote tracks this year, which as she mentioned we were unable to detect in 2013. Also probably a product of the lower snow conditions, predators were able to move around a little easier.

And as far as the genetic analysis goes for the 2014 samples, well, we've completed all 2013 genetic analyses for the scat samples and we are working our way through the 2014 samples. As soon as those are done, we'll be able to continue with some preliminary population estimates for the coyote and foxes, and the occupancy modeling using the 2014 track data is under way right now.

Original proposed modifications in the ISR, the major variances were those that we touched on briefly at the beginning, consisting of the modifications of the prey surveys and the lynx surveys. Those were continued during 2014; however, we did drop the use of the motion-sensing cameras. We didn't find they were an

efficient use of sampling time, and we had low detection probability using those cameras.

We did plan on including the marten surveys as we had originally laid out during the 2014 season; however, we were still restricted in the areas that we could sample during our 2014 season. We still hadn't acquired access to CIRWG lands, so we -- we sampled an area of suitable -- what we decided was suitable -- habitat and a representative habitat based on cover type. And that was north of the reservoir area and still a similar size to what we had originally laid out.

We were able to access a little bit deeper near the study area, especially down in the Deadman Creek corridor toward the proposed dam site, thanks to a change in our base camp locations, and we are planning on using all the data we've collected in the last two winters in the areas that we've had accessible to us, and extrapolating across the entire study area based on using habitat characteristics.

The newest modifications since the last edition of the ISR was that the Chulitna Corridor was dropped from the study area. We've also -- we were able to increase our hair -- our lynx hair samples

dramatically this year by implementing a backtracking protocol, which basically consisted of two field technicians, myself and another tech, periodically and opportunistically backtracking fresh lynx tracks through dense cover and collecting hair samples off of natural rub locations.

We were also collecting incidental wolverine and wolf sign, whether that be just track -- noting track locations -- or collecting scat and hair.

In order to complete the study, we basically are done with the field work, so this 2014 winter and 2014 summer field seasons were our last. We have worked our way through the majority of our scat samples and have completed the extraction phase.

We still need to amplify and produce individual fingerprinting in order to get the population density estimates. And our occupancy modeling is under way right now, and we're hoping to complete that here in the next few months.

MS. PRUGH: All right. So I think that's pretty much it.  
Ready for questions.

MR. LAWHEAD: Thank you, you guys.

MR. GILBERT: Yeah, great. That's a great summary.

Interesting study.

What do we have for comments, modifications.

You guys on the phone have anything?

MR. LAWHEAD: There's an advantage to going at  
lunchtime, I guess.

MR. GILBERT: Yeah. It's right before lunch, I guess.

Well, it sounds like you made good progress adjusting to the  
season, so that study sounds good.

MR. LAWHEAD: All right.

MR. GILBERT: Well, we're going to break. Thank you very  
much for your time there. We'll break and, you know, I think we  
should just do a full hour, so maybe we'll just start --

MS. MCGREGOR: I think we should come back at 1:00.

MR. GILBERT: Okay.

MS. MCGREGOR: I don't know how many more  
comments --

MR. MILLER: I have a great deal on large carnivores.

MS. MCGREGOR: Yeah. So let's come back at 1:00.



MR. GILBERT: So let's get back at 1:00. So let's break right now and we'll try to start up right at 1:00, if we can.

(Off record.)

MR. GILBERT: Okay. Let's start up again. We have a lot to cover, and there may be a lot of comments and discussion, so quite a few studies left and all the riparian [1:02:03](indiscernible).

So real quick, can we go on the phone to see who's on the phone still?

MR. SCHWAB: Yeah, this is Nate Schwab with ABR.

MS. CURTIS: Jennifer Curtis with EPA.

MR. PRICHARD: Alex Prichard from ABR.

MR. MABEE: Todd Mabee, ABR.

MR. BECKER: Hello.

MR. GILBERT: Hi. Could you introduce yourself?

MR. BECKER: Sure. My name is Earl Becker, Alaska Department of Fish & Game.

MR. GILBERT: Okay.

MS. MCCLURE: Lauren McClure, Stillwater Sciences, FERC consultant.

MR. RYCHENER: Tyler Rychener, Louis Berger, FERC consultant.

MS. FOREMAN: Alynda Foreman, FERC consultant.

MS. LONG: Becky Long, Susitna River Coalition.

MR. GILBERT: Okay. Well, that helps us a lot here. And if people can just continue to keep identifying yourselves for our record.

MS. MCGREGOR: Since we have Earl Becker on the phone, can we start with large carnivores and then move on to -- is that a problem?

MR. LAWHEAD: I don't know. Nate, what's your schedule like? Nate's in the field and -- can we at least do bats first?

MS. MCGREGOR: Okay. We can do bats and then go to large carnivores.

MR. LAWHEAD: Okay. So we're going to switch the order. We'll go do bats and then large carnivores, then aquatic furbearers, wood frogs, and the other three.

MR. GILBERT: Okay.

MR. LAWHEAD: So we're basically just moving large

carnivores up two slots.

MR. GILBERT: Okay.

MR. LAWHEAD: I don't think that'll be a problem, because everybody that we need is on the phone already.

Okay. So, Nate, take it away. And just let me know when you want me to turn the slides and I'll try to anticipate.

MR. SCHWAB: All right. I'll try and say okay when I'm ready.

MR. LAWHEAD: Okay. Speak up.

**BAT DISTRIBUTION AND HABITAT USE (STUDY 10.13)**

MR. SCHWAB: Good afternoon, everybody. Can you hear me okay?

MR. LAWHEAD: Yeah. You're a little faint, but just speak --

MR. GILBERT: Get as close as you can to your microphone.

MR. LAWHEAD: Telephone.

MR. GILBERT: Telephone.

MR. SCHWAB: How's that?

MR. LAWHEAD: Better. So just clip through the first few slides and then get to the variances.

MR. SCHWAB: Okay. Perfect. So I'm Nate Schwab with ABR, and I'm going to present the result of the ISR for the bats.

So the objectives for the bats was to pretty much figure out if bats were present on site, which habitats their activity was associated with, and to look for any potential roosting sites within the project area.

MR. BECKER: I'm just going to get ahold of Mark Burch, and I always say the wrong number.

MR. LAWHEAD: Earl, you're not muted.

MR. BECKER: I'm sorry.

MR. SCHWAB: So to accomplish these objectives, we use acoustic surveys which consisted of Anabat monitoring devices, which we deployed throughout the study area. We used 20 of these stations that you can see on the screen, pretty widespread throughout the project. And these stations record the echolocation activity of bats.

We deployed these stations in mid-May and retrieved them in mid-October of 2013.

And also to accomplish our objectives, we did two sessions of

roost surveys. We did one roost survey session in the summer and one in the fall. And during these sessions, we looked for artificial roost structure sites and natural roost sites.

So two of the variances that we had for the bat study, we were unable to sample on CIRWG lands in 2013, either acoustically or the roost surveys. And we actually expanded the effort in 2013 above and beyond what was in the RSP to expand our roost surveys outside of the project area that was defined in the RSP.

So from the acoustic results, you can see all the red dots on the map were sites where we recorded bats or detected bats, and the yellow dots are sites where we did not. So we detected bats at 17 of the 20 sites, all throughout the project area, and we also broke up these -- the project area within four broad habitat types, including stream, pond, cliff, and upland sites. You can see that the majority of the sites and activity occurred at stream sites and pond sites.

So we also assessed the natural roosting structures for bats, and the main source of these natural roosts were the cliff systems above the Susitna River. So we mapped 102 cliff sections above the river and identified them as not suitable, poor suitability, moderate

suitability, and high suitability.

Next slide.

So in addition to the natural roost structures, we also looked for artificial structures, which in this case were primarily cabins. We searched 11 different sites that consisted of 26 different structures within and just outside of the project area, and we were unable to find any bats or evidence of roosting bats at any of these sites.

Okay.

More results from the acoustic data. So as I mentioned, we deployed them in May and picked them up in October. And you can see there's a pretty definitive peak activity in July and also in late September, in the late fall there.

And these two distinct peaks in activities were part of the decision-point process for -- which I'll get into in just a minute. But the peak in July represents the maternity colony period, whereas the peak in the late fall represents the pre-hibernation or migration period. Those two peaks are important.

Okay.

So based on our findings in 2013, we recommended

continuing acoustic monitoring, which included deploying four detectors at the CIRWG sites, which we were unable to monitor in 2013, and to also deploy at six sites that we had already monitored in 2013.

So in addition to the continued acoustic monitoring, we also conducted two different capturing sessions and radio telemetry sessions for bats. One session was in the summer and the other was in the fall. You can see the tiny radio transmitters that we used for the bats.

So as I mentioned, part of the decision point was based on finding these seasonal peaks in activity, both during the maternity colony season when adults are raising pups and during their pre-hibernation migration period. So we continued doing the surveys.

Based on that decision point, we continued doing acoustic monitoring, as I mentioned, at the four new sites on CIRWG lands and at six sites that we had previously monitored in 2013.

In addition, we did the radio telemetry effort, where the July session we had pretty poor weather, did not cooperate very much.

We were able to capture and track one little brown myotis. We tracked that bat to essentially three cliff sections along the Susitna and we got roosting information for that bat over a 10-day period.

We also conducted a second period of capture and telemetry in the fall, when obviously the weather was colder and quite a bit of precipitation, which is not conducive to capturing bats, and we were unable to capture any bats in the fall period.

Okay.

So we collected acoustic monitoring data in 2013 and '14 to look at the habitats associated with bats. And we also conducted our roost site searches at artificial structures, which were the cabins, and natural structures which included mainly the cliffs above the Susitna. So we did an initial evaluation in 2013.

And then can you go back one, Brian?

And then in 2014, as I mentioned, we used the telemetry to track the bats to their specific roost sites.

Okay.

So right now we've collected all of our field data for 2013 and 2014. All that's left is to analyze the 2014 acoustic data, with no



modifications from the ISR, and complete the data analysis of the roosting information we collected from the telemetry effort, with no modifications from the ISR, and then finally to synthesize all this information for the USR.

MR. LAWHEAD: Okay. Thanks, Nate.

MR. GILBERT: Okay. That's a good presentation. So thanks, Nate.

And that study is largely the data collection study.

MR. LAWHEAD: Yes.

MR. SCHWAB: Yes.

MR. GILBERT: So comments, anything, Phil, on bats?

MR. BRNA: It's not a migratory bird, so we're not looking at it.

MR. GILBERT: Okay. Sarah?

MS. BULLOCK: Sarah Bullock, Bureau of Land Management.

So you've only -- other than Anabat acoustical surveys, you've only really tagged or radio -- or captured one little myotis and tracked it, or did you capture any other ones to look for roost sites?

MR. SCHWAB: No. We only captured the single bat, and that was 24 days of effort, 24 nights of effort.

MR. LAWHEAD: So this is kind of, you know, unprecedented research. People usually, when they do this kind of work, they go to roost -- known roosts, and we didn't actually know. We're kind of working backwards, detecting the bats and trying to find the roosts, and it's pretty tricky, particularly in natural -- there's not good records of use of natural habitats for roosts like this, in Alaska anyway. It's true elsewhere, but yeah.

You know, the significant thing we might do is that we are going to establish that they do roost in those cliffs, which is what we suspected. It was a little surprising to not find them in any of the structures we looked at.

MS. BULLOCK: Yeah. That was going to be my next question, if you had found any in the structures, no [1:14:09] (indiscernible), no evidence whatsoever, no feces or anything?

MR. LAWHEAD: No. Just --

MR. SCHWAB: No, nothing.

MR. LAWHEAD: Nope. And we also had some

communication with some cabin owners, and they said they had never seen any out there in the time that they had been using it. Some of those were above the tree line.

MS. LONG: This is Becky Long. I wanted to ask, were there bat studies in the '80s that helped you?

MR. LAWHEAD: No. There was one sight record of a bat from the mammal studies in the 1980s.

MS. LONG: You guys really were starting from scratch.

MR. LAWHEAD: Pretty much.

MR. GILBERT: Any other comments for the bats?

MR. LAWHEAD: Okay. Thanks, Nate.

MR. SCHWAB: Thank you, Brian.

MR. GILBERT: Okay. We've going to switch up the order on the agenda here a little bit and do the large carnivores.

### **DISTRIBUTION, ABUNDANCE, AND HABITAT USE BY LARGE CARNIVORES (STUDY 10.8)**

MR. LAWHEAD: All right. So this is a cooperative effort between the Alaska Department of Fish & Game and ABR. And I'm going to tag team with Alex, and I guess Earl is listening.

MR. BURCH: Yeah. Obviously we heard Earl on the phone. I wasn't able to get through to him, so for the sake of the meeting, you might want to say something about what's going on here.

MR. BECKER: This is Earl. If you -- I never did get that link. It was too long. I don't know if you can e-mail me that link and I'll look and see what you're putting up. Right now I'm just on the phone.

MR. LAWHEAD: Go to the web site and look under the meetings link.

MR. BECKER: What site is that?

MR. GILBERT: [Susitna-watanahydro.org](http://Susitna-watanahydro.org).

MR. LAWHEAD: So while Earl's doing that, I'll --

MS. MCGREGOR: Earl, I'll e-mail you the link.

MR. BECKER: That would be great.

MR. BURCH: So I guess what I was going to say is the point of this is to briefly present the ISR and then take questions, and we anticipate questions on this, so we don't necessarily have to defend or go into a lot of detail with descriptions. But we wanted you on the phone so you'd be able to hear the questions and the comments, Earl.

MR. LAWHEAD: Yeah. It's not a debate.

Okay. So the objectives are identified in the ISP and repeated in the ISR.

Estimate population of brown bears, black bears, and wolves using existing data, and do kind of a look at bear use of salmon spawning habitats downstream to try and get an idea of the minimum number of animals that might be affected if the salmon would be affected, and look at existing data from Fish & Game on the occurrence and use of the area by wolves.

Black bear and brown bear work consisted of two components.

One is spatial modeling of population density using existing population survey data that the Department of Fish & Game did in past years, and to do current snagging of hair samples in salmon spawning sites downstream and look at DNA to identify individuals and stable isotopes to get an idea of the diet of the bears using that area.

And again, look at existing available data from Fish & Game on wolves.

There were a couple of variances. The main one was the lack

of access to CIRWG lands in the downstream area and railroad corporation lands, plus some private lands which could potentially have been used as hair snare sites, so the results weren't as comprehensive as we wanted.

Those limitations should be -- have been addressed now through the CIRWG access agreement, and we'll take a look at that in 2015 to get access to all of the sites that we wanted to look at.

And then there's a small adjustment in the area in which the bear data were collected, the historical bear data were collected, to focus on Unit 13E.

This describes the data site used for the spatial modeling, density modeling that Earl worked on in conjunction with Dave -- I can't remember his name.

MR. BECKER: Miller.

MR. LAWHEAD: Right, Dave Miller from the University of Rhode Island, formerly of St. Andrews, and they looked at line transect data from 1,200 -- over 1,200 transects flown in 2000, 2001, and 2003. Developed some new methods to develop -- or to come up with a density surface model, and then generated population

estimates based on those data, 1,262 black bears during the early 2000s, and 841 brown bears during that same time period.

And it's also reflected in these spatially explicit maps. The darker the shading, the higher the density. This is for black bears, you see a tendency for lower elevations and drainages. And then this is brown bears, much higher use of higher elevations.

And then the idea is that these data can be used in the license application to examine the relative values of the different corridors and reservoir inundation zone, et cetera, for the impact assessment.

Okay, Alex.

MR. PRICHARD: Okay. So this is the downstream section. We deployed 52 single-catch cable snares that you can see in the picture down below. The idea is that the bears walk through and it breaks away and you get a hair sample.

Over the summer, we collected 77 different hair samples from those 52 snares. 34 snares had samples collected. This is results since the ISR.

We hadn't had the lab results done at the time of the ISR, but we have since conducted -- had DNA analysis and stable isotope

analysis conducted. We ended up with -- DNA was successfully conducted on 37 samples from 33 different tripped snares, and we've identified 16 black bears and 11 brown -- 11 different brown bears using the area where we had our snares. And stable isotope analysis was successfully conducted on 79 hair samples, and the stable isotope analysis showed the brown bears had higher carbon 13 and nitrogen 15 signatures than black bears, and that's indicative of higher use of meat and salmon in their diet.

And this is just the results showing the different hair samples and the stable isotope signature. Generally, if you go up into the upper right, that's indicative of more salmon, and the lower left is more plant material, so the black bears were using predominantly plant material and there's higher variability in the brown bears. There's moose, and other meat is in between.

So no modifications to the study plan are needed to complete the study and meet the study plan objectives.

And for 2015, we'll continue with the second year of bear hair sampling in the spawning salmon areas, expanding it to areas that we weren't able to access in 2013. We'll seek additional Fish & Game



data on wolves in the study area, and we'll synthesize historical and current data on bear and wolf populations and habitat use. Okay.

MR. GILBERT: Okay. Good. So how about this study? Anything else, federal agencies, questions about the carnivores?

Yes, Sterling.

MR. MILLER: Once again, I'm Sterling Miller. I'm here representing Wild Salmon Center and Alaska -- and the Trout Unlimited. They've hired me to look at some terrestrial species reports.

And Kirby asked me to frame my comments in the form of questions, and I would like to be able to do that, but I'm not able to do that for this one.

And I'll say that it's because I believe the bear studies cannot be salvaged to do anything and provide any information of value to evaluating the project impact. So I'm going to make my comments to justify that point of view and to explain why I think that.

I have been -- Earl and I are friends, or have been, and I would like to preserve that. We've worked in the past together collaboratively and have even published papers together.

But I believe that this study is an example of what happens when you have a biometrician conduct a study by himself without the collaboration of a bear expert or a biologist to provide some semblance of biological reality to the study.

I believe the study is flawed conceptually, and as well, even though Earl will chuckle at this, mathematically. And so I'm telling you what my conclusions are up front, and then I'll explain why I have reached those conclusions.

First of all, I did -- I was a principal investigator of the bear studies back in the 1980s. And I worked with Earl on those studies. My wife actually hired Earl Becker. She was the chief biometrician of those studies.

And Earl and I worked together collaboratively quite well, with the combination of a biologist and a biometrician, on some of those early studies. But I think since then, it's been unfortunate that a biologist hasn't been involved apparently in the direct, you know, implementation of these studies.

Can you put up this figure, please, Brian, this -- the large carnivore study area from the ISR?

I believe one of the key things is that the large carnivore study area is an area of some 26,000 square kilometers, 26,500 square kilometers. So those numbers that you saw, 841 brown bears and, what was it, 1,200-something black bears pertain to this whole large carnivore study area of some 26,000 square kilometers, right?

And you can see that the vast bulk of that study area is not in the vicinity where any impacts from the Su Hydro studies or Su Hydro dam impacts will occur. It goes all the way down to the -- keeping the northern part of 16A and 16B.

And so from a managerial standpoint, trying to come up with a population estimate or a density estimate that integrates the results all the way from the foothills of the Alaska Range, where bears subsist on an economy of moose calves, roots and berries and vegetation, down to the high-density populations that occur in the Lower Susitna area, where the bear economies are dependent on salmon -- and of course, bear economies that are dependent on salmon support much higher densities than bears in these interior economies, where they eat roots, berries and moose calves. This is documented in a wildlife monograph I wrote back in 1997, and also in the studies by Grant

Hilderbrand who used to be regional supervisor with -- and it makes common sense. We all know that where bears eat salmon, it supports a lot higher density.

So what exactly the utility is of coming up with a population estimate across that integrates all these areas from low-density bear populations where bears occur somewhere in the density of 20 to 30 bears per thousand square kilometers, down to the lower part of that area in 16, where, although there haven't been studies done there, because the five species of Pacific salmon occur there, bear densities are certainly higher than a hundred bears per thousand square kilometers, and probably much higher than that. So you know, the number is of no real utility to anything.

The other thing that -- point that I want to make is that -- this is an experimental technique. And if you read closely, one of the things that has to be done in terms of the study plans that they have to be consistent with generally accepted scientific practices. That's in the design.

And there has been -- there has been two papers published on this technique, and both of them are wrong. The first paper was

published in 2009 by Becker and Quang, and it showed the first analysis of these data of population estimate of bears in this large carnivore study area, which was called the Talkeetna study area in the Becker and Quang 2009 paper, and their estimate at that time was 541 bears, brown bears. I'm talking brown bears now.

So in this current analysis, using exactly the same data, but some additional analytical techniques, the current analysis in the ISR comes up with an estimate of 841 bears in exactly the same area. And the data, the new analytical techniques have not been published. They have not been subject to peer review.

Now, for other species, they have been. You know, there are Golden Eagle and so forth that have been non-mobile species that have utilized similar techniques to this. But these techniques have not been published as they're currently implemented in the -- or supposed to be implemented, have not been exposed to peer review, and as evident by this 46 percent increase in the population estimate that occurred with no new data, just difference in the mathematical techniques utilized, resulted in a 46 percent increase in the population and density estimate. So that is one demonstration of

how this is not a generally accepted scientific technique.

The other thing is that I've reviewed the survey and inventory reports on brown bears and black bears which are published every two and three years by area biologists, and none of those reports make any utilization of this Becker and Quang technique.

Now, the one report in Unit 9 by Riley actually mentioned some results that were conducted in Unit 9, but it just mentions the results. It doesn't -- it doesn't utilize them in any way. And as I'll develop later, those results are abnormally low and probably inaccurate because of their severe underestimation bias. And you can tell -- and what's more, those were done before the new analytical techniques which are being proposed for this study were implemented, so those studies that were done in Unit 9 out in the Alaska Peninsula are utilizing the old analytical techniques, which are purported -- reported in the Becker and Quang 2009 paper.

And if you were to reanalyze them with this new approach, which is based on something called point independence, that estimate would increase by a significant amount. Whether it would be 46 percent or not, I don't know. But and -- but it would increase

significantly with point independence incorporated and their analytical techniques.

The other thing is that the other study was done on the Togiak National Wildlife Refuge in Unit 18, and that study was done by federal biologists and was adequately reported in a European journal.

And I have been in touch with the people who did that study. It was using the original analytical techniques that were reported in the Becker and Quang 2009 paper. It's not even mentioned as an application of a technique in this report. But it -- I've talked to the people involved in that study, and they agree that that's an underestimate and a serious underestimate because of this new analytical technique involving point independence.

So you know, we can contrast this -- these results a little bit. Earl and his colleagues estimate 841 bears in this 26,000 square kilometer area. If you want to compare that with the results that I produced for a study in the 1980s which was focused on estimating the abundance of bear in the actual vicinity of the proposed Watana impoundment, I -- I came up with, let's see -- let me see -- 35 bears.

And so the difference between 35 bears -- brown bears in the

area of the proposed impoundment and 841 bears in this huge area, just it illustrates the fact that this study area is completely inappropriate for estimating the abundance of bears with relation to the hydro project.

And the same thing is true of the black bears. I estimated -- the slides show that there was an estimate of some 1,200 black bears in this huge large carnivore study area. I think my earlier studies in the vicinity of the Watana impoundment came up with an estimate of 47 bears.

So somehow there's a disconnect here, and what is being proposed in the final -- or in the initial study report is that somehow they are going to take -- the original studies were done by randomly selecting 35-kilometer long transects below 5,000 feet elevation and flying those transects using something called a double-blind technique, where the observations of the pilot and the biologist are assumed to be independent.

And the -- those techniques are highly sensitive as a study by a woman named Benson from the University of Alaska Fairbanks showed. Those studies are highly dependent on the assumption that



the observations between the pilot and the observer are independent. She did some simulation studies, and if there was any degree of lack of independence between the pilot and observer, that means if the fact that one of them sees it makes it more likely that the other one will see it, that will result in an underestimate of bear abundance. There is no way that it can go the other way. There is no way that you can generate an overestimation bias by lack of independence. It's always an underestimate bias.

The -- I was going to say both the black bear and brown bear population estimates are in an area way too large to be of management since, plus, you know, there is very likely an underestimate bias. Part of the reason I think there is an underestimation bias is because when, even after using the 841 bears that they came up with more recently, even after you do that and integrate across the whole area, you have, you know, somewhere in the northern or the -- you know, the northern and eastern part of the study area where bears are living on interior bear economy, in those areas density is somewhere between 20 and 30, and the other half of the study area, where the bears are depending on a salmon economy,

there's somewhere in excess of 100 bears per thousand square kilometers. So if you integrate those two things, you've got to come up with a much higher density figure than was presented in this report.

And in fact, this report doesn't even provide the density estimation figure. I had to calculate it myself.

So the way that the Becker -- the ISR proposes to make a division and extrapolate from their data, which were collected in 2000 and 2002, as it said, to the study area, is they're going to subdivide these 35-kilometer-long transects into 1-kilometer transects and describe the geographic characteristics -- I mean, the physical characteristics of each of these 1-kilometer-long segments of the 35-kilometer and then use that to extrapolate to get an estimate of abundance for a much smaller area.

And this is where I think the real serious problem occurs with this technique -- I'll make it one of many serious problems -- is that the underlying assumption here is that the components of habitat or the physical aspects of habitat that you see looking out the window of an airplane are pertinent to bear abundance and bear density. And

in fact, they're not.

And if a bear biologist had been involved in this study, you could have determined it would have been -- I'll give you an example. You can look at a salmon stream out in the Alaska Peninsula as winding through some tundra with some dwarf willow and alder along it, and you can look at a salmon stream up in the center of Unit 13 or north in the Alaska Range that doesn't have salmon on it, but they look exactly the same. But the -- it's wrong to say that just because they look the same, they have the same density. They don't. Because the density of bears is dependent on what they're eating and how much of that -- and how it's distributed.

And you can't tell what they're eating looking out the window of an airplane. Plus the fact that bears spend a lot of time commuting between different patches of places where there is food, and so the fact that you see a bear in some particular place, looking out the window of your airplane, doesn't mean that the characteristics of that place where you see that bear or that bear group is pertinent at all to extrapolating to come up with a number of bears in areas of similar habitat. It just doesn't -- it's just wrong. It doesn't work that way for

bears.

I have some comments on the DNA -- or on the nitrogen isotope studies, but basically I'm not going to make those comments because I think those are minor compared to what I'm saying now. And I think it's good to get some feedback on what I said.

The -- the estimates of density that have come up are also completely -- using this technique, are completely -- are low with respect to other estimates of density that have been attained using other techniques for areas of similar habitat. They're just -- they're just low.

The first estimate that was -- that was derived in this large carnivore study area of 541 bears based in the Becker and Quang 2009, the confidence intervals around that estimate don't even incorporate the current estimate of 841 bears.

So it just goes to show, you can do all kinds of math and fancy math. It makes no sense whatsoever. And the proof of that is the fact that you had a 46 percent increase between the original estimate of the number of brown bears in this area and the current estimate.

So with that, I'm sure I've given Earl plenty to talk about and

respond to, but that's the -- I have more comments in addition.

And I hope that our friendship, Earl, will survive this.

MR. LAWHEAD: Before --

MR. BECKER: (Indiscernible - interference with  
speaker-phone.) [1:41:18]

MR. LAWHEAD: Wait, Earl -- whoa, Earl -- Earl, wait a  
second.

MR. BECKER: [1:41:20] (Indiscernible - interference with  
speaker-phone) I don't agree with much of what he said.

MR. LAWHEAD: Earl, wait a minute. Can I make a remark,  
please?

MR. BECKER: Sure.

MR. LAWHEAD: This is where -- I know this hurts, but we  
don't want to get into a big debate here. If you can kind of focus  
your response on some of the main points that Sterling brought up.

And the ones I heard were potential differences of study areas,  
differences in density throughout different parts of the study area we  
identified, and then also the habitat classification, which to my way  
of understanding was more about evaluating sightability than it was

about evaluating actual habitat use by bears.

So take it away, Earl.

MR. BECKER: I think the disconnect, Sterling, is you don't understand the math.

So anyway, basically the purpose -- the original study was done to estimate bears -- basically we wanted 13E. The Park Service wanted part of it, so the study area was made bigger to deal with their part, and we could generate sub-estimates from that. So that's what the original data was collected for.

Now, the Becker-Quang paper, there is a population estimate, and then what we -- what we found out was the -- there is an assumption that under Becker-Quang that you have independence of observations between the pilot and the back-seat observer. In a Super Cub, they sit directly behind one another.

And they found out -- there is a very important paper, I sent that to you, Sterling -- Borchers 2006, and [1:43:07] (Indiscernible) has done a lot of work since then. And they said, well, gee, you know, these double -- double survey -- mark-recapture distance-sampling surveys, where we assume total independence, there is

some real problems with that. It's generally not true. It's not true on whaling boats, it's not true on small planes.

So these big -- these big ocean-going ships that they use for whale -- to get whale estimates, they have the same problem. They all suffer from the same problem. If an animal -- whale, bear, whatever -- is easy to see from one observer and they're both looking at the same time, that animal is most likely easy to see by the second observer. It's not a random shuffle. There is a dependence there.

So that's why you talk about the estimates of change. Yeah, we recognized there was a problem and so we immediately stopped analyzing data that way and went and worked on a fix for it. And so we came up with a new method.

Well, the method -- the point independence, basically what that says is -- here's what you're doing with the data. You have distance sampling data with covariates that model probability of detecting the animal, assuming that there's some distance out there where the animal's perfectly detected.

Sterling and I would both agree that that's not a very realistic assumption for brown bears, or black bears for that matter. And so

we collected double-count data, pilot/observer independent, and it was collected as independently as can be, to try to then estimate how many we were missing, to make an adjustment. And so that's called mark-recapture distance sampling. You have a mark-recapture component, you have a distance-sampling component, and you basically have two models you're putting together. And so most mark-recapture estimates assume independence between the two observers. They always do. And that's what we used.

And Sterling's right, that can be a problem. And Borchers's 2006 paper pointed that out.

And so we -- we went to correct for that, and it took a while, because we actually had to create a new detection function in order to solve that problem, in order to get one that was consistent with a mark-recapture point independence assumption.

And what that says is there's one distance where detections are the highest is where you're going to make the adjustment. So think of it this way. We used distance-sampling modeling with covariates to get the general shape of the detection curve, and the mark-recapture data, assuming that that peaks at 100 percent or a



probability of 1, just moves the whole curve down to the appropriate level.

And it's not quite as simple as that, because when we use a mark-recapture model, that thing shifts up and down for each observation. For instance, the percent cover is in my mark-recapture model, and let's say my apex is a hundred meters, that -- so how much that detection curve shifts up and down is a function of was that bear seen in zero percent cover or 40 percent cover? And so the whole thing will shift up and down.

And so the point independence, it's been pointed out, we've seen the same issues with seal surveys, marine mammal surveys, that NMFS has spent millions of dollars on.

And in 2006 there is a mathematical solution to that. It's all been peer-reviewed. It's in lots of papers published. I'm currently reviewing a paper on bear estimation using the same technique, and there's two papers by Stapleton that have already been published on polar bears. So using the same -- same general technique.

They use a different detection function than we do, which may or may not be problematic. So -- but -- so the methodology, in terms

of generating a population estimate, you can -- it works fine.

It's been peer-reviewed. I have a paper on this that's under review right now. So that's the -- the spatial modeling. There's been lots of papers on that. That's been peer-reviewed. So you know, it's all peer-reviewed.

So there definitely was a dependence issue that raised the previous population estimates, and that was -- that was the independence of observer issue. Basically if you're looking -- you know, you're in the same aircraft and if the pilot sees an easy-to-see bear, is that a coin flip where it can be hard or easy to see, or is it most likely an easy-to-see bear for the back-seat observer?

Well, most likely. Not always, but most likely it's going to be an easy-to-see bear for the back-seat observer. Well, that's a dependence issue.

And so point independence says, well, basically the only error is that -- how can I put this another way? And so you're just -- the amount of adjustment you're making at the very apex is not very much. Basically what happens, if you try to take a mark-recapture model and modify the probabilities and use the mark-recapture

model over all the differences, rather than just the peak of the detection curve, you get distortions due to dependency issues. And that's what caused the underestimate.

So it's all peer-reviewed, and the population estimates are about as good as you can get. And so that's not a problem. It's peer-reviewed. You know, Sterling doesn't understand the math. I'm sorry. It's very complicated mathematics, I will grant you.

So really the only other issue I heard was about, well, you know, the study area is so big and you need to focus it right here where the dam was.

Well, the reality was, that's one way to go about -- and that's the more traditional way to go about generating an estimate of what's going on. But the -- the impact of this project for terrestrial wildlife is not just the dam. There -- there are questions about which -- which of these road access -- you know, at the time we did the analysis, which you know, eastern road access and northern road access, maybe some other road access, so these are going to have the bigger impact on the terrestrial wildlife, and any other footprints that they come up with, secondary development issues or whatever, how are

you going to make inferences about that?

So one of the things that the people at St. Andrews were working on when I was at St. Andrews solving this particular problem -- the State of Alaska sent me to St. Andrews, which is the place where all the top distance-sampling people in the world work at -- I was there for the summer -- is that they were -- they were doing a lot of spatial modeling.

And I looked at that and said, you know, that has real implications for us in some applications. So you know, for Fish & Game, an estimate on the number of black bears and the number of brown bears in 13E, look at a harvest rate, that might be sufficient statistics in terms of regulating harvest. May or may not, but it very well could be. So certainly it's a first cut.

Then we have other issues, like we put this project right here or this or that, where it's not a sufficient statistic. Just generating an average black bear density or average brown bear density applied to the footprint of the roads and impoundment dam would not be right. I agree with Sterling on that. And so --

MR. MILLER: I said the opposite.

MR. BECKER: So what we do is we did spatial modeling. And the spatial modeling looks at covariates so it can be generated from a GIS level. It has nothing to do with what I see out of an airplane. The GIS segments of where the transect segment was and where the bear observations were then are correlated to the GIS layer, what we pull out of that -- that band we're looking out -- let's see here, 450 meters for black bears, so 22 meters to 450 meters, and we're on that one segment transect band. We characterize the slope, aspect, vegetation cover, and for some GIS layer, and I can't remember -- LANDFIRE was the one that we used, the most common one available. It may not be the best, but it was the one that we used.

And so now, what this -- this GIS layer does, it has an XY -- there's an XY coordinate system variable in the spatial model, and so what that does -- so there's a north, south, east, west gradient.

So for instance, in black bears, the northeast corner of that study area is total black bear habitat in the spring. And so by putting this east--north -- there's an east--west -- so by putting this gradient in there, if you have densities changing basically as you go east to west

and north to south, that variable adjusts for that, and then what it picks up is whatever -- whatever comes out of the spatial modeling.

And for black bears, it was -- it made perfect biological sense. It was an interaction between southern aspect and slope and lower elevations. These are the first areas that green up. They're -- and so that made perfect sense for modeling spring distributions of black bears.

But the spatial model for brown bears didn't -- it wasn't particularly great. It wasn't bad, but it wasn't -- it wasn't near as nice as it was for black bears, because black bears are more keyed in on these certain aspects and brown bears are -- and at this time of year, probably running around looking for carrion. So in some of them, some of them are just trying to stay away from bigger bears with the young, but they're -- nevertheless, it made sense to use a spatial model.

And what we didn't do because the -- they hadn't come up with a -- you know, where the access was. The only thing that seems to be fairly well nailed down is where the dam is, where the access roads were and stuff, what the footprint was going to be, so we -- we

can certainly generate an estimate of the impact of this project based on these density values, because we estimate for every square kilometer. We estimate the number of bears in each square kilometer out there, and that's a huge study area. So we can generate way more realistic estimates of the number of spring bears, whether it be black or brown, impacted by this project once the exact footprint of the project gets fixed, and then there's some agreement on how big should the buffer zone be, should it just be the level of the impoundment, should it be 500 meters, three miles, ten miles from the impoundment, from the road, all that type of thing. And that's where I would want to talk to a bear biologist.

But the mathematics of getting it all set up are the mathematics of getting it all set up. So the bear biologist that doesn't understand heavy math isn't going to be of much use.

So I don't know. Is there -- Brian, are there other subjects you wanted me to address?

MR. LAWHEAD: No. I think we've about killed them.

MR. MILLER: I was going to ask one question. In that lower part of that distribution there, is Earl contending then that the bottom

part of where it's all gray there, in the south -- southern part of that, has a lower density of bears than that blue partway up in the upper right? Is that your contention, Earl?

MR. BECKER: Hold on. My screen went blank. I've got to turn it back on so I can look at the map.

MR. MILLER: I estimated a bear abundance in that upper right portion, and it was lower than in the Su hydro project, not higher. And certainly there are no salmon up there. And so there's bound to be a lower density in the upper right --

MR. BECKER: Hold on here, Sterling.

MR. MILLER: -- than in the lower --

MR. BECKER: Hold on. Stop. Let me answer the question, all right? Just stop.

So your question is in the spring, so repeat -- now I have the math in front of me. Just repeat your question. Not your commentary, just your question.

MR. LAWHEAD: Before you do, let me make an observation. These surveys are conducted in May, after bears have emerged from hibernation and before leaves have emerged on the



vegetation, which is the only time you can really see them. So it does reflect --

MR. BECKER: It's the same time Sterling does his mark-- recaptures. It's the only time aerial work --

MR. LAWHEAD: Right. It's just context for --

MS. MCGREGOR: And it's before salmon are present.

MR. LAWHEAD: -- for the other listeners.

MR. MILLER: But there are no salmon in the upper right there, in the headwaters of the Susitna River.

MR. GILBERT: He just wants you to restate the question.

MR. BECKER: I understand that. And so you're just saying there are some hot spots up there?

MR. MILLER: There's some blue spots.

MR. BECKER: And so how did that come to be?

MR. MILLER: Yeah.

MR. BECKER: Is that your contention?

MR. MILLER: Yeah.

MS. MCGREGOR: What's blue?

UNIDENTIFIED MALE: He wants to know what the blue

spots represent.

MR. BECKER: Oh, okay. Well, the gray spots are areas in the spring that are considered too high to be brown bear/black bear habitat, based on the data we collected. We surveyed elevations way higher than this, and based on when we weren't seeing any more black bears, we had one at like 4,600 feet maybe -- I might be getting my study areas confused. But you know, it varied by species, as the brown bears go higher than black bears. But it varied by species as to how high was too high to be non-habitat for that species, for that spring period that we did the survey in.

It doesn't mean if the snow melts and you get vegetation up there, they won't go up there higher in the year. But for the time we're making inferences about, which was this ten-day/two-week window that Brian is talking about, as mentioned, that's what we're making inferences about.

MR. LAWHEAD: So you called it gray. To us on the screen here, it looks bluish. But basically it's elevation -- it's out of range due to elevation.

MR. BECKER: It's out of range because it's too high to be

habitat.

MR. MILLER: This is the area where probably the highest density of brown bears occur.

MR. LAWHEAD: He's looking --

MR. MILLER: Salmon, salmon there, in the whole area.

MS. MCGREGOR: Not in --

MR. BECKER: Well, Sterling, you might think that, but that's not what our -- we collected data. You've never worked there, so you just have an opinion, but we've collected data. That's not where we saw the bears.

MR. MILLER: Well, see, that's the problem. The difference between us is you conflate detectability with bear abundance. And down in this area, it's all forested, so you can't see bears down in that area. And so that's why --

MR. BECKER: You use a multiple covariate to adjust for that. That's adjusted for. Yes, they're harder to see bears. That's adjusted for. You don't understand the mathematics. That's adjusted for.

You know, I would agree, if humans weren't involved, that

you would have higher densities, but you know, we see those kind of higher densities down on the end of the Alaska Peninsula where there aren't humans. I doubt very much we have that kind of high density on the Kenai, despite the fact that the salmon would easily support that for bears, because of all the human inroads in the bear habitat, DLPs, and the like.

And so -- now, one thing that we did do in these particular models is we did use distance to salmon river and salmon spawning stream as described by the Fish & Game -- Alaska Department of Fish & Game -- sport fish anadromous waters catalog, and that was not an important covariate. I thought it would be. I went through a lot of effort to have people digitize that in because I thought for sure that would be an important covariate, but it was not.

And I understand that there are certain locations that Sterling's work has pointed out, like Prairie Creek that are very important for interior bears, because basically the fact that you have salmon along some of these big rivers doesn't mean a bear can get the salmon. It's usually at the spawning grounds and other locations like that that they can get the salmon. And Prairie Creek did show up as a

spawning ground.

MR. LAWHEAD: Okay. Thanks, Earl.

MR. BECKER: Uh-huh.

MR. GILBERT: We're going to kind of keep moving on.

MR. LAWHEAD: Yeah. We're -- I understand it's clearly a complex issue. There are -- there are strong feelings on both sides of it. This is giving us a good idea of what Sterling's concerns are and a preview of what his comments will be, and now you have an opportunity, Earl, to begin to prepare.

MR. MILLER: I'd like to make just one more point and it's unrelated to things that have been said beforehand.

But one of the things about the complexity of this report that Earl said is exactly right. I spent -- more than half the time I spent preparing comments on these terrestrial mammal reports I spent on the bear report, because it was almost impossible to understand. I had to consult with four different biometricians to be sure that my comments, you know, made sense to them, because I was uncertain about the math because the math is incredibly complex.

But you can use complex math to cover up a whole range of

biological errors, and I think that's what's going on here. And if you -- my point is, is that for the final report it needs to be in a form and in a language that's intelligible to the people who are trying to make sense out of it. And I bet you that there's nobody in this room, including me, that fully understood what this report was about.

MR. GILBERT: Yeah. We need to stick to kind of just the facts of the matter, not so much -- as much as possible, and if they're hard to interpret, which they probably are, that does pose a challenge. But we have to go with the facts of the study and the peer review.

But we need to keep moving, because we have five more to do and we don't want to shorten the riparian -- I mean, the botanical studies this afternoon.

MR. LAWHEAD: But before we go on, are there other comments?

MS. MCGREGOR: Are there other comments?

MR. GILBERT: Any other comments by other people? And we also covered wolf in this study, too, right?

MS. MCGREGOR: Well, and I think Sterling had other comments to other aspects of this study, didn't you?

MR. MILLER: Well, I think in the interest of time, I covered my most important ones. But I do have comments on the wolf studies.

MS. MCGREGOR: Okay.

MR. GILBERT: Okay. Yeah. And it's not that -- it's hard to gear it right, but we do want to hear what your idea is on modifications. I mean, that's part of the purpose here, is you have a proposed modification list.

MR. MILLER: Well, my proposed modification is that you conduct studies that will estimate bear abundance in the area where it's pertinent to the dam impact.

MR. GILBERT: We've got that part I think, yeah.

MR. MILLER: The up --

MR. LAWHEAD: Could you indicate what you consider that to be?

MR. MILLER: Well, I did that in my studies in the 1980s. It was a 1300-square kilometer area that we estimated bear population in right around the Watana Dam curve. That's where we came up with our estimate of the number of bears that would be impacted by

the project.

I mentioned what that was, and I think it was 35 -- 35.7 brown bears, as opposed to 841 in this current study. So to estimate the bear abundance in the area that it's pertinent to the actual impacts, that's one study.

MR. BECKER: I guess you didn't hear me, Sterling, because I said we could estimate any subarea we want. And so if somebody gave me that boundary, we would generate a population estimate and variance for that --

MR. MILLER: And what I'm saying --

MR. BECKER: -- in a much more detailed model that accounted for things like changes in vegetation where we saw the bear, to account for differences in capture probability, which the general mark-recapture estimate does not.

MR. MILLER: And what my point is, that I think that that estimate would be wrong.

MR. BECKER: Well, that's fine, but that's just your opinion because you don't understand the math.

MR. LAWHEAD: Okay. We're getting his -- we're getting



his comments, his concerns, and clarification here.

Anything else?

MS. MCGREGOR: Any comments for the wolves?

MR. GILBERT: Yeah. Why don't we just go to wolves.

MR. MILLER: Do you want me to just, without any  
production, just --

MR. LAWHEAD: Well, if you have --

MR. GILBERT: Well, anything that you have based on this --

MR. BECKER: Excuse me. Are we done with bears?

MS. MCGREGOR: Yes. Thanks, Earl.

MR. GILBERT: For now, unless there's other comments,  
Earl.

MR. MILLER: Thanks, Earl.

MR. BECKER: If we're done with bears, I want to go. I've  
got other stuff to do. So let's do all the bear stuff so I can go, please.

MR. MILLER: I will make one other comment, because Earl  
and I have a long history of friendship and collaboration.

I offered Earl the opportunity to review my draft comments a  
couple of months ago, and he declined that because he was too busy

at other things. But that was -- that opportunity --

MR. LAWHEAD: That opportunity is coming up.

MR. GILBERT: As Wayne says, we want to be tough on the issues, easy on the people. That's been our moniker going all the way back.

MR. MILLER: Fair enough.

MR. GILBERT: So just let that help you.

MR. MILLER: Do you want me to go talk about wolves?

MR. GILBERT: Please, yes. Please.

MR. MILLER: The -- on both --

MR. BECKER: Okay. Goodbye.

MR. MILLER: I have one more comment about bears, just generally, and that is that none of the -- at best, if everything works perfectly in this study, would have -- do nothing but generate a population estimate. All of the other components, in terms of impact assessment and the use of the bears by the impoundment area, would not be addressed. All those habitat components would not -- at the very best, all that can be done is estimate a population estimate. That's all they're really doing, even if it worked. My proposal is that

it doesn't work.

But to try to estimate habitat use, you need to put out some radio collars like we did in the '80s. And with GPS collars, you could do that and it would be a terrific advance on the studies that we were able to conduct in the 1980s because of the -- as I mentioned for the moose and the caribou, the higher resolution you could get on habitat use by using GPS collars.

So that's my other recommendation, in terms of what you can do is to define your study area better and use some technology that will allow you to evaluate habitat use.

MR. BECKER: And I'd just point out that (indiscernible) data is often used that way, and they don't use radio collars.

MR. MILLER: There are other ways of doing it, you're right.

MR. BECKER: There are other ways of doing it. And this would -- this would be similar. We have lots of bear observations tied to different physical characteristics. And so whether you see it with your eyeball or whether you get a point from a GPS radio collar, it's the same data.

Granted, you could sample at night and other kinds of periods

that you're less likely to sample from an aircraft. But other than that, once you sort of have the data and the data set, the analysis is sort of the same.

MR. MILLER: The occupancy data would --

MR. BECKER: The mathematics is exactly the same.

MR. MILLER: Occupancy data works very poorly when you have very small numbers of observations. You need lots of observations in order to.....

And that's why it works with the wolverine, because you have lots of observations because you're following the track of the animals. But with bear, you see it once and that's your one observation.

So try to determine occupancy models based on the very small number of observations, it had very low power.

MR. BECKER: 365 data points, Sterling, that's not a small data set.

MR. MILLER: And how many of those were in the upland areas in the Watana Dam area?

MR. BECKER: Well, I mean, you know, that -- you know,

you'll only be more precise if you went and radio-collared them, but I don't think you're going to get that much of a different story, to tell you the truth.

But we propose this because, quite frankly, there is a way to get in the spatial modeling for Fish & Game, get that worked out, and have the power authority pay for it and they provided good estimates for the decision-making process. There is no interest in Region 4 to do any radio-collar work. There wasn't any interest by anybody to do the type of work you talked about. Everybody had other jobs and more important priorities. So I offered this up.

MR. LAWHEAD: Okay.

MR. GILBERT: Okay. Let's move on. I think the points are made. I think we captured it.

MS. MCGREGOR: Okay. So can we kind of have comments about wolves?

MR. GILBERT: Yeah, wolves.

MR. MILLER: All right. One of the things that I think is happening here is that the Alaska Fish & Game Department has lost interest and concern over what happens to large carnivores over

much of the state.

Unit 13, where this occurs, is an intensive-management area for wolves where the objective is to reduce wolves dramatically to increase moose and caribou populations.

Also it's implicitly a bear reduction program. The management objectives for Unit 13 are to reduce the bear population by 70 percent. Now, it's not designated as a bear population or bear intensive-management area, but if you look at the management objectives, it clearly is.

I did a paper a couple of years ago in which I documented the trends and bear harvest regulations around the state under intensive management. I have a copy of that paper here. But it's clear that over much of the state, the bear -- the Fish & Game is trying to reduce both wolf and bear populations. Not everywhere, not on Kodiak, not on the Alaska Peninsula, but most other places.

So that, I think, shows the disinterest really in trying to figure out what's happening in wolf and bear populations. The reason Earl mentioned that nobody stepped up to say that, yeah, we can do better studies than this on bears in Unit 13, because nobody really cares if a

project impacts. But I think FERC should care.

MS. MCGREGOR: I think we need to separate Fish & Game's management objectives from the purpose of these studies.

MR. MILLER: Right.

MS. MCGREGOR: These studies are to collect baseline data specifically for this impact assessment. And we did go through almost a year-long process for study planning. So it's not just tied to what Fish & Game is doing in their management objectives for certain areas. So I just want to --

MR. MILLER: Right. My point is, why did nobody submit a study plan that was comprehensive along the lines of caribou and moose? And they're even doing more for wolverine than they're doing for bears and wolves. What they're doing for bears and wolves are technique development in this technique that Earl talked about, and also on wolves they're just doing -- continuing to do their routine monitoring. They're not doing anything special for wolves, as I've been able to determine, for the wolf studies. They're just continually doing the routine monitoring of wolves.

And so one of the comments I have on wolves is that the scale

at which projects are being conducted is not mentioned. So I don't know what scale these population estimates will be derived at. Will they -- will they become number of wolves in Unit 13, Unit 13E where the impoundment is or the impoundment impact area? We just don't know.

They said there's an objective of estimating wolf abundance, but there's no indication of what geographic area those estimates will pertain to.

And clearly my comments about the huge size of this large carnivore study area, which is -- you know, there's not even any indication that they're planning on estimating wolves in most of that, because it's not even in Unit 13. A lot of it is in Unit 16, and they can't estimate wolf abundance in 16 because of the trees. That's the same why it's difficult to estimate bear abundance, because you can't see them because it's forested. So the scale is an issue that needs to be impacted for wolves.

The earlier studies done by Ballard on wolves estimated -- identified nine wolf packs in the immediate area of the impoundment area. There is no indication. And of those nine wolf



packs, he estimated the number of wolves would vary from year to year in each of those, and there's no indication that any kind of data like those are going to be collected. So we won't know the impact of the dam on wolf packs.

Now, part of the reason for that is because when you put out radio collars on wolves in Unit 13, they're killed almost immediately by wolf hunters. And in fact, Howard Golden was doing the study trying to estimate wolf population identity in Unit 13A and B, and he had to cancel that study because almost immediately all his collared wolves were shot and the collars showed up on his desk.

So given inherent management, it's understandable why you can't do a radio-collar study on wolves, because those collars have no persistence. But if you're trying -- one of the objectives for wolves, objective 3 is to describe the seasonal distribution of and habitat use by wolves in the study area using existing data from ADF&G.

Now, what is the existing data? I have no idea what existing data means to determine habitat use. The closest I can think of to existing data are the studies by Ballard back in the '80s, and those are clearly no longer pertinent because of the intensive management that

has been going on for wolves in Unit 13 for many years.

So I just don't know how this objective 3 on seasonal distribution and habitat use is going to be accomplished. The largest pack that Ballard studied at the time was something he called the Watana pack, and that's exactly what -- in the area that would be most impacted by the proposed project.

So I think that -- I think that the -- the wolf studies are basically just a continuation of routine collection of data that Fish & Game needs for its management objectives, but has nothing to do really, as near as I can determine, with trying to provide information that's pertinent to this licensing application.

Thank you. I appreciate your patience.

MR. GILBERT: How about anybody else? Any other comments on large carnivores on the phone or otherwise?

MR. LAWHEAD: Okay.

MR. GILBERT: Well, let's keep going then.

MR. LAWHEAD: Thanks. Next is Aquatic Furbearers, Study 10.11, and Alex Prichard is going to take care of this one.

Alex, are you there?

MR. PRICHARD: Yes, I'm here.

MR. LAWHEAD: Okay. Go ahead.

**AQUATIC FURBEARER ABUNDANCE AND HABITAT USE  
(STUDY 10.11)**

MR. PRICHARD: Okay. I'll go through this quick.

So it's study of aquatic furbearers: river otters, beaver, mink, and muskrats.

The objectives were to delineate the distribution of beavers and get an estimate of population size; describe relative abundance of river otters, mink, and muskrats; look at some of the habitat associations of aquatic furbearers; and review available information on food habits and diet of piscivorous furbearers, and collect hair samples from river otters and mink for baseline tissue levels of mercury.

So different components, we do beaver and muskrat surveys -- aerial surveys of beaver colonies in the fall and spring, aerial surveys of muskrat pushups in the spring, track surveys for river otter and mink during the winter, and then literature review of food habits of river otter and mink, and hair samples.

Okay. Study variances, we increased the size of the beaver survey area slightly, to include the riparian mapping area along the Susitna River.

And then the -- our planned survey of muskrat pushups for 2013 wasn't conducted because of the late spring and logistical difficulties, so instead of doing a dedicated survey, we had researchers who were out there for waterbird studies and eagle and raptor studies record muskrat pushups that they saw.

And then we weren't able to get any river otter or mink track surveys done that first winter, again, due to logistical problems and trying to hit a weather window for track surveys, which is difficult with -- we were restricted to certain snow conditions in that survey, although we did -- did collect incidental observations of river otters, river otter tracks, and other aquatic furbearer information from all the other surveys that were going on out there.

So the results: we conducted an early October beaver survey in 2013, located 186 beaver colonies, beaver lodges, and 37 percent of those were determined to be active based on a cache of -- a food cache.

We compiled 60 incidental observations of river otters and river otter tracks, and 14 observations of muskrats and muskrat pushups by other studies. And we reviewed the scientific literature. Okay.

So this is the surveyed area for the beavers in 2013: the -- called the corridors, the inundation zone, and the Susitna River from the dam site down to Talkeetna, the associated riparian area.

The red dots, which are hard to see, are active colonies, and the yellow dots are inactive lodges.

Go on to the next one.

And these are incidental observations of river otters, muskrats, and mink. You can see we had pretty good sample of incidental observations widely spread out throughout the project area, as expected, clustered around streams for river otters.

Okay. Next one.

So we -- since the ISR, we did conduct two track surveys for river otter and mink last spring, in March and April.

We conducted a survey in May to assess overwinter survival of the 53 active beaver lodges that were located the fall before. At

least 39 percent of them were determined to be -- to survive the winter. That's kind of a hard survey to do, and I think probably the actual percentage is higher than that.

And we deployed eight hair snares for river otters in two locations last spring to try to get hair samples from river otters, but we were only able to get a single sample of four hairs for river otters. Okay.

Okay. So proposed modifications, a change in the corridors is one. And then we -- as I said before, we expanded the beaver survey area slightly and then the objectives and methods related to the mercury analysis were consolidated under Study 5.7, that other people have talked about.

And the Chulitna Corridor has been dropped from the study area.

Okay. So steps to complete the study, we conducted a second aerial survey just this -- this fall, in September and October. And then we'll go back up in the spring and see how many of the active colonies survived this winter.

We'll do additional aerial surveys for river otter and mink

tracks this winter, of course, pending the occurrence of suitable snow. An aerial survey of muskrat pushups will be done next spring, and then we'll do data analysis for the USR.

MR. LAWHEAD: This is pretty much just repeating the same thing here.

MR. PRICHARD: Okay. Yeah.

MR. LAWHEAD: Okay. Thanks, Alex.

MR. GILBERT: So do we have interested parties on this one? Any proposed comments and modifications, thoughts?

MR. LAWHEAD: I should mention that that hair-snag attempt for otter hair didn't actually produce those hair samples in a direct way. The guy who was checking the snares found a spot where the otter had rolled in the snow near the snag, and he picked up the hair, so that's what the basis was for the analysis.

The other -- the other thing that -- it's been discussed under the mercury study, but the original intention was to try and obtain pelts from trapper-harvested animals, and none were turned in for sealing in that area for the first year.

And then last winter, they managed to get one otter and two

mink from farther down, downstream, near Chulitna. And so those were analyzed in addition to those four hairs that we got. We actually did get mercury content on the four hairs, 0.27 milligrams worth of hair.

All right. Moving on, we'll go to wood frogs, and that's Todd Mabee. Hold on a second here. Todd, are you still there?

MR. MABEE: I am. Can you hear me okay?

MR. LAWHEAD: Yeah.

MR. GILBERT: Sure.

MR. LAWHEAD: That's great. Okay. Take it away, Todd.

## **WOOD FROG OCCUPANCY AND HABITAT USE**

### **(STUDY 10.18)**

MR. MABEE: Okay. Yeah. We'll talk a little bit about wood frogs today.

And the objectives are to review the existing data on habitat use and distribution, estimate the occupancy rate for breeding wood frogs, that was one of the main focus of the studies, use all this information on habitat occupancy and habitat use to estimate the habitat loss and alteration expected to occur from the development of



the project. That will occur later.

And then lastly, to sample frogs opportunistically for the presence of the amphibian chytrid fungus.

Study components consisted of the auditory field surveys, where we would conduct a five-minute survey at water bodies and wetlands, the occupancy modeling and habitat associations, acoustic monitoring, which was done using detectors to record frog calls throughout the time of day, and then the chytrid fungus bioassay.

The Study 10.18 variances -- variances were minor and centered around how we selected our sampling locations. They were adjusted for a few different reasons, the first being that the habitat mapping and fish presence data were not available at that point in time.

Second being that access to the sites on the CIRWG lands was not permitted, so we were unable to survey the Gold Creek Corridor.

And then lastly, the diurnal timing of field surveys was adjusted slightly because of logistic challenges.

Okay. So for 2013 results, starting with auditory surveys, we sampled 90 wetlands and water bodies that were selected at random

between May 30 and June 8. And frogs were widely distributed from lower elevation to high-elevation habitats, from forested wetlands to tundra.

They were detected at 31 percent of shallow-water habitats, defined as less than 1.5 meters deep, and over twice as common, 70.8 percent, at deep-water habitats, over 1.5 meters deep.

And the naive or the uncorrected estimate of frog occupancy was 52 percent.

This figure shows just a brief overview of the results, with the yellow locations being where frogs were detected, and you can see frogs are detected right throughout all the areas that we sampled for them. And the red was the areas where frogs were not detected.

Okay. Continuing with the results, based on the information from the acoustic detectors, which, again, were set up to record the calling patterns of frogs during the day, the calling peaked at about 1:00 in the morning, and then declined sharply by 5:00 a.m., and then increased throughout the remainder of the day. So peak calling for frogs was at 1:00 in the morning.

Next we estimated the detectability, and it was 60.6 percent if

we visited a water body or wetland one time, increasing to 84.5 percent for two visits, and 93.9 percent for three visits. And I would just say that most of the time we did two visits to the water bodies.

So the occupancy in 2013, adjusted for that detectability, was 36.8 percent of the shallow-water habitat and 81.8 percent for the deep-water habitat, with an overall occupancy of about 63.4 percent.

Now looking at the modifications to our study, the first one is adding the Denali East Corridor option to the study area.

The second was to drop the opportunistic sampling of the amphibian chytrid fungus. And that was done because in 2013 we were only able to obtain seven frogs, and that tiny sample size was unlikely to provide any useful results.

And the new modifications to the study since the ISR, as I originally said, the Chulitna Corridor was dropped from the study area.

And the steps to complete the study for 2014 are to conduct the auditory field surveys, focusing on the areas that were not sampled in 2013, including the CIRWG lands, the Denali East

Corridor option, and the high-elevation areas that were not accessible in 2013, generally above 2,500 feet.

Also to deploy acoustic monitors again.

And I'm happy to say that we were able to do all these things mentioned on this slide in 2014.

Now just a quick look at the preliminary results from our 2014 data. We sampled 104 randomly selected wetlands and water bodies from May 20 to May 29, and frogs were detected at only 8.6 percent of the shallow water locations and 34.7 of the deep water locations. So, a similar pattern as in 2013, but at much reduced levels.

The naive or uncorrected estimate of frog occupancy was 20.2 percent overall.

And we also conducted acoustic monitoring in 2014. Unfortunately, we had some problems with the batteries which limited the amount of data that we collected, but the overall patterns of calling activity that we found were similar to those observed in 2013.

MR. LAWHEAD: Thanks, Todd.

MR. GILBERT: Okay. So the field collection is done on that,

then?

MR. LAWHEAD: Yes.

MR. GILBERT: Okay. Any comments, modifications?

Anybody on the phone?

MS. MCGREGOR: Can you [2:31:20] (indiscernible)?

MS. BULLOCK: This is Sarah Bullock with the Bureau of Land Management.

It's just kind of a question, but I was just kind of curious, no modifications or anything like that, but do you have any -- like, any hypothesis of why you had lesser -- a lot less detected in 2014 for the auditory surveys compared to 2013?

Do you think, well, like, the mild spring may have done -- may have affected it -- your survey period as compared to 2013 or --

MR. MABEE: I don't think it was the timing. I think we were out there at the right time. I mean, when we got there frogs were calling, and when we left frogs were calling.

I think it was perhaps the habitat, especially in the Denali East Corridor in the higher elevations, that we were unable to sample in 2013. A lot of that habitat, you know, you've got old beaver dams

and blown-out beaver dams, and it just didn't seem perhaps as suitable for frogs, and it certainly wasn't the type of habitat where we had seen -- where we detected frogs in 2013 or in 2014.

So my guess is perhaps it's a different habitat, less suitable.

MS. BULLOCK: Okay.

MR. GILBERT: That was a good question.

MS. MCGREGOR: So in the interest of time, the next three studies have not been initiated, the next three studies on the agenda, that is: 10.12, 10.20, 10.19. They haven't been initiated. They are going to be deferred.

So if you guys could just really touch on the proposed modifications to those studies, I think we can stay on track. I'm not -- and open up for comments on any one of them.

MR. GILBERT: So there was no work in 2014?

MS. MCGREGOR: No work was conducted in 2014. There wasn't any work conducted in 2013. We've been deferred to 2015. There is no additional information, just the ISR, except for --

MR. GILBERT: Modification.

MS. MCGREGOR: -- the proposed modification, which is

dropping the Chulitna Corridor. So if you guys -- there's just no need to go into the objectives or components in all those aspects of these studies.

MR. LAWHEAD: Correct.

MR. GILBERT: That's good, because they all fall in one category.

MR. LAWHEAD: Okay. So we'll clip through these.

#### **SMALL MAMMAL SPECIES COMPOSITION AND HABITAT USE (STUDY 10.12)**

MR. LAWHEAD: So basically this study, the small mammal study, is a desktop-only study using the information -- a combination of the information that was collected -- pretty detailed information was collected -- in the 1980s by the University of Alaska Museum, and to relate that information from the 1980s studies to the current habitat mapping that's being prepared for the project, and also to try and bring in additional information from small mammal studies -- other small mammal studies that have been done since then -- there aren't many -- and to incorporate some of the work that -- on prey population abundance monitoring -- that the University of

Alaska was doing as part of their terrestrial furbearer component, or terrestrial furbearer study.

This information will -- as I mentioned, will be fed into -- the results of -- and recorded in 10.19, the wildlife habitat mapping and evaluation.

Okay. It's been deferred. It's not been initiated. The plan is to do it next year.

We don't see any need for modifications except that the area evaluated will differ on the basis of the corridor changes. And this one is restricted to the corridors themselves. There's no additional buffer area around them. So the Denali East Corridors being -- Denali Corridors -- East Corridor is being added and the Chulitna Corridor is being dropped.

And this pretty much repeats what I've already said.

MR. GILBERT: So this was always intended to be a one-year study?

MR. LAWHEAD: Yes.

MS. MCGREGOR: It's a desktop study.

MR. LAWHEAD: Correct.



MR. GILBERT: Okay. So not a lot of change.

Any comments, thoughts?

And this'll all be reported in the USR then? That's the final place. Okay.

MR. LAWHEAD: Okay. Alex, do you want to take this next one?

MR. GILBERT: Wildlife harvest analysis.

#### **WILDLIFE HARVEST ANALYSIS (STUDY 10.20)**

MR. PRICHARD: Okay. This is an analysis of existing harvest data.

So the objective there, to summarize the past and current harvest effort, harvest locations, access mode and routes for large and small game from the data that's available.

Compare current harvest locations with data on seasonal distribution, abundance, and movements of harvested species, again, where that's available from these studies or other information.

And then provide harvest data or interpretation of harvest data for use and analyses for the recreation and subsistence resource studies.

Okay. And so the components are compilation and analysis of the existing data, which is Fish & Game harvest data base records, Fish & Game game management reports, trapper questionnaires, the small game outlook and harvest surveys, review of ADF&G and Fish & Wildlife Service subsistence surveys and harvest reports, and interviews with regional biologists, so trying to get all the available data on harvest in the area, and then compare that -- those data -- with harvest patterns -- or compare those data on harvest patterns with the current distribution of game mammals and birds and development plans.

So it was deferred until 2015. So -- and it can be completed in one year, so by deferring it will actually look at all the previous data that's available.

MR. LAWHEAD: Yeah. And I should mention here that we did an initial analysis of this data in 2012 as a tech memo, which looked at most of the historical data that were available, and that gives you a good idea of what the final product is going to look like.

So this analysis is a matter of adding additional data that's accumulated since then into that same analysis.

MR. GILBERT: Sure. Go ahead.

MR. MILLER: This is Sterling Miller again. I haven't reviewed this study, but this makes an off-the-cuff recommendation for a study modification.

You heard Earl say that -- Earl Becker say -- with regard to the bear studies, the black bear, the brown bear studies, that the reason some of those areas were lighter than other areas were because there were fewer bears there.

And I strongly believe that that's not true, and you can -- even though harvest data are an imperfect reflection of bear abundance, if you were to look at every bear that's killed, black bear or brown bear, is assigned to a bear harvest management unit, so you know exactly where the bears are taken. So my suggestion is that you look at the harvest data and develop a harvest density map equivalent to what we saw for proposed bear density.

And it's my guess that the areas where Earl's study was showing very low black bear and brown bear density, will, in fact, come out very high in terms of harvest density. And that shows at least an indication, although not proof, because access and other

things reflect harvest density, but very strong indication of whether or not Earl's assertion that density is lower in those areas is correct or not. So that's a suggestion, that you look at bear harvest density in the large carnivore study area.

MR. GILBERT: Sure. Mark?

MR. BURCH: Yeah, that's an interesting perspective. Again, our concern would be the season of the harvest versus the season that the surveys were done in. I don't know what your perspective is on that.

MR. MILLER: Well, all those areas have spring seasons, so you can look at harvest density in the spring season, if that was a concern.

But, in fact, bears don't move all that much except to salmon streams, and so you do get long-range movements to salmon streams.

But other than that, most of the movements within a bear's home range are, you know, small compared to the huge size of that large carnivore study area. So you should be able to get something by lumping spring and fall seasons.

In fact, I did that in my -- 1993, I published a Fish & Game

technical report called “Bear Management in Alaska, a Statewide Management Overview,” in which I looked at harvest density in various areas. Because I was trying to be interested in whether or not the 20A harvest density, where they claimed the bear population had gone down, was higher than in the 13E study area, where I was studying, and they were harvesting bears at a much lower density in 20A than they were in 13E.

MR. LAWHEAD: Okay. Alex?

MR. PRICHARD: Do you want me to respond to that or --

MR. LAWHEAD: No. Comment noted.

MR. GILBERT: Is there anybody else, anybody on the phone?

MS. MCCLURE: Hi, this is Lauren McClure, contractor for FERC.

Alex, I had a question for you. I just wanted to confirm that I understood the slide correctly.

Will the results of the harvest analysis also include bird species?

MR. PRICHARD: I don't think we have those data, other than

there's a small-game outlook.

MR. LAWHEAD: For upland game birds.

MR. PRICHARD: And [2:42:23] questionnaires. I think it's a very coarse level.

MR. LAWHEAD: Yeah. It includes upland game -- upland game birds, but not waterfowl.

MS. MCCLURE: And that was probably figured out during the development of the study plan, to not include waterfowl?

MS. MCGREGOR: It just has to do with the reporting.

MR. LAWHEAD: Yeah. There's no good way to get at it. It's not part of a reporting network.

MS. MCCLURE: Thank you.

MR. GILBERT: Okay. Well, we have one more to do, and then we're going to take a break and try to keep on track here. We're not far.

So this is another study that was deferred, right? Habitat?

MR. SCHICK: Yes.

MR. GILBERT: Terry, you're going to do this one, correct? Okay.

## **EVALUATION OF WILDLIFE HABITAT USE (STUDY 10.19)**

MR. SCHICK: Yeah. So this is evaluation of wildlife habitat use. This is all a desktop study, depends heavily on the wildlife habitat mapping, which we'll talk about after the break.

How can I advance this slide?

Objectives. We will prepare categorical rankings, high, medium, low values for all of the mapped habitats for bird and mammal species in the project area.

Next. This is to be based as much as possible on project-specific data, overlaying those observations on the mapped habitat types. When that's not possible, we'll use scientific literature on habitat use to supplement that project-specific information.

Next.

Variances. It's all been deferred. The study can't be completed until the mapping is done for Studies 11.5 and 11.6, downstream of the proposed dam, and when wildlife study survey data are also available.

Next.

No work has been initiated on this.

Modifications. Okay. The four-mile study area buffer has now been reduced to a two-mile buffer. We'll discuss that after the break, under Study 11.5.

But this mirrors the study area for Study 11.5, so because it went to two there, it's going to be two here.

We have the new Denali East Option Corridor. We will not select bird species for analysis, as described in the RSP. We will rank habitat values for all bird species that have been recorded in the project area.

Next.

The study area is very hard to see, but it goes all the way to project river mile 29.5, the southern end of the riparian vegetation study area, and then the full two-mile buffer study area around the project area components in the upstream area, and includes the new Denali East Option Corridor.

Next.

Chulitna Corridor has been dropped.

The steps to complete the study, they're all described in the RSP. Select mammal species of concern and evaluate all bird



species. Project-specific literature, or specific survey data -- excuse me -- project-specific survey data will be the main focus, scientific literature will be used when the survey data are not adequate.

Next.

MR. GILBERT: Okay. So not much change in that study other than the --

MS. MCGREGOR: Study area.

MR. SCHICK: Yeah. Really, the study area changed, but that's -- it's going to follow exactly the changes in the habitat mapping study area. The only real changes we've cited will be skipping the selection of bird species, which is often fraught with problems, given how many birds there are and how many different opinions about which ones should be selected. We'll just do them all.

And people can select those species of interest, in terms of assessing habitat use and loss, when the license application is prepared.

MR. GILBERT: Any comments? Federal, state, others?

MR. LAWHEAD: Anyone on the phone? All right.

MR. GILBERT: Good. Thank you.

MR. LAWHEAD: It's break time, right?

MR. GILBERT: Yeah. We're going to take a break, and we'll try to start back right at the top of the hour, 3:00 again, so we can get through all of Terry's four studies.

So we're putting you guys on mute, so everybody try to be back at the top of the hour, 3:00.

(Off record.)

MR. GILBERT: So let's get started again, to make sure we can go all through these and make sure there's time for any questions or comments. That's the most important thing.

Okay. So we're going to go through studies ABR -- the botanical studies, first one wildlife --

MS. MCGREGOR: Can we wait one second? Is Fish & Wildlife Service gone? Did Phil leave?

MR. MILLER: Phil Brna left.

MR. GILBERT: Okay. So we are a lot smaller group here, but we're going to get through the botanical studies.

MR. SCHICK: Okay. Are we ready?

MR. GILBERT: Uh-huh.

**VEGETATION AND WILDLIFE HABITAT MAPPING  
STUDY IN THE UPPER AND MIDDLE SUSITNA BASIN  
(STUDY 11.5)**

MR. SCHICK: Okay. This is Study 11.5, Vegetation and Wildlife Habitat Mapping in the Upper and Middle Susitna Basin. We referred to this study several times today.

The objectives basically are classify, delineate, map existing vegetation and wildlife habitats in those areas that could experience direct impacts and indirect impacts on (on does not make sense, s/b from) the proposed project.

The ultimate goal for the wildlife habitat mapping is this map will be used in assessing, via Study 10.19, which we just talked about before the break, to assess overall habitat loss and alteration impacts for bird and mammal species.

UNIDENTIFIED FEMALE: (Indiscernible - interference with speaker-phone). [3:03:28]

MR. SCHICK: Components --

MR. GILBERT: Somebody needs to mute their phone unless you have a comment, because we think you have a comment.

MR. SCHICK: Components are pretty straight forward.

We're developing mapping materials from previous historical data from the 1980s, field surveys to ground truth the aerial imagery we're using, and what we're calling ITU (Integrated Terrain Unit) mapping efforts, a multi-variate mapping of different landscape variables, including vegetation.

This study is being conducted in close coordination with 11.7, which is the wetland mapping study in the same study area, which Wendy Davis will talk about here in a moment.

Variances, there were none for field studies or the mapping effort for this study, from what was described in the RSP.

Summary of results, in the ISR in 2013, a total of 916 plots were surveyed. 619 of those were full plots. 297 are what we call rapid map verification plots, where we collect a subset of data used to validate previous image signatures that were already sampled with full plots.

The ITU mapping effort is ongoing, expected to be completed in 2015. And we're recording a set of different landscape variables for this study and the wetland mapping study. Here's the full set.

Alaska Vegetation Classification Level IV vegetation types; physiographic types; surface forms; disturbance type, when applicable; and then these two specific to the wetland mapping study, NWI wetland class; and hydrogeomorphic (HGM) wetland class.

Here's the survey area for 2013. As we discussed a number of times for other studies, the Gold Creek Corridor and portions of the reservoir were not sampled in 2013 because we didn't have access to CIRWG lands. We have that access now, and we'll sample those areas in 2015.

There's no indication that we need to sample these areas in two years. All we're doing really is tagging photo signatures, image signatures, with ground-truth data to help support the wildlife habitat mapping and the vegetation mapping efforts.

This map, you really can't see the map polygons at all. This was in the ISR. This is an example of rather detailed alpine -- subalpine mapping, and it's an example of how those data are aggregated from the original mapping over here on the left to more broad-scale wildlife habitat types on the right. And you'll see much more of that in the USR.

Summary of results since the ISR, there's been no additional field surveys. There were no field work done for this project at all in 2014. The second year of surveys is postponed to 2015. The ITU mapping, however, has continued.

Proposed modifications, originally there was a four-mile study area buffer for this study. We reduced that to two miles, for a number of reasons. This -- the two-mile study area buffer matches the study area for 11.7 for wetlands mapping, and also for Study 10.16, landbird and shorebird surveys, largely point-count surveys.

The two-mile study area buffer is still pretty darned big. That's two miles on either side of the edge of the project corridor, which is a buffer itself. And we ran this by wildlife researchers working on the project, and the conclusion was that two miles was adequate to assess local-scale project effects on wildlife habitats from both direct and indirect impacts.

And we have also added the Denali East Option Corridor, and a two-mile buffer around that.

This is a depiction of the new study area with the Denali East Option Corridor here in red and going forward we will be mapping

that corridor also. While we have not been mapping, as of early in 2014, in the Chulitna Corridor, we do still have data for the Chulitna Corridor, however, both ground data and mapping data.

The Chulitna Corridor has been dropped.

Current status, the first year of field surveys --actually we started this in 2012, so we have some data for 2012. We also have data for 2013 for field surveys.

In 2014, we have the two modifications described above, and we implemented the ITU mapping work and it's ongoing. And we'll continue that mapping in 2014/2015.

So in the next study year, we will do the final field survey work to support the ITU mapping effort. We'll finalize the ITU mapping in the first part of 2015. A preliminary set of wildlife habitat types was developed for the ISR. We'll finalize those with input from the wildlife researchers working on the project, and in coordination with the study team for the riparian vegetation study, which is being conducted downstream of the proposed dam site.

And that's all I have.

MR. GILBERT: Okay. Good. We don't have Fish & Wildlife

Service, but anybody else? Questions?

MS. WOLFF: I have a quick question. This is Whitney with Talkeetna Council.

Does the 2012 data -- did you use the two- or the four-mile buffer?

MR. SCHICK: 2012 I think was done with the four-mile buffer.

MS. WOLFF: Okay.

MR. SCHICK: Yeah. That was the original buffer.  
Actually --

MS. WOLFF: Okay. But you started -- go ahead.

MR. SCHICK: Actually, I think 2013 data were collected with the four-mile buffer also. So you will see some points that may be outside of the actual mapping area. That's okay. That still provides us data that are linking ground variables to the image signatures. It's not like it's data that's not going to be useful.

MS. WOLFF: Okay. Good. That's what I was hoping you'd say.

MS. MCGREGOR: Another question, comment back here.



MR. GILBERT: Oh, yeah, sure.

MR. MILLER: Sterling Miller again. I'd just like to put down a marker once again for what we discussed earlier about extending the vegetation studies and habitat studies more broadly so that those -- some ability to analyze habitat use by animals with GPS and other kinds of collars is possible beyond a wider area.

Now, you did say that would be a lower level of varied classification, or higher level, I guess, a less precise, less detailed. But some level of analysis at a wider geographic scope, where it's pertinent to the analysis of habitat utilization by some of these radio-collared animals.

MR. SCHICK: Yeah, absolutely. We will be able to do that by cross-walking the fine-scale habitat mapping that's done within the two-mile buffer to a more coarse-scale map outside of that area. Probably Ducks Unlimited mapping is maybe one of the most suitable for that area, which Kim has used in her plot allocation process for the moose GSPE surveys. So that's definitely a possibility.

MR. GILBERT: Okay. Anybody else on the phone or

otherwise?

MS. BULLOCK: Sarah Bullock, BLM.

I assume the reason why you're deferring the field surveys to 2015 was because of issues earlier in the year with the CIRI -- or the -- or let's just ask, why were they deferred to 2015 and not done in 2014?

MS. MCGREGOR: Do you want me to answer?

MR. SCHICK: Yeah, why don't you respond to that?

MS. MCGREGOR: Okay. So holistically across the entire environmental program, we had limited funds. We didn't get all of the funding that we needed to carry out the 2014 work, which is why we ended up with a deferment and splitting the ISR into what we provided in February versus what we provided in June.

So we prioritized study and data collection efforts across the entire program to determine how best to allocate those funds and still stay as close to on schedule as we could with filing the license application. So some of these studies had less data collection. Basically anything that wasn't biological and seasonally tied or we had to collect two years of data or collect data from the winter

through the fall, something along those lines, became a lower priority.

The other issue is that, particularly for the first two botanical studies up there, 11.5 and 11.7, they're really large study areas. So while the data collection component didn't occur in 2014, these guys did continue the mapping of and the interpretation of the aerial images, which is incredibly time consuming.

MS. BULLOCK: Okay. Thank you.

MR. GILBERT: Another question?

MR. SCHICK: Anything else?

MR. GILBERT: So now I guess we get Wendy. She's been quiet the whole time. Three studies.

MR. LAWHEAD: Just scroll.

MS. DAVIS: Just scroll? Okay.

MR. LAWHEAD: Change your slides.

## **WETLAND MAPPING STUDY IN THE UPPER AND MIDDLE SUSITNA BASIN (STUDY 11.7)**

MS. DAVIS: Okay. So this is the wetland mapping study, and it's going to look really similar to the study we just heard about.

Basically there are two main objectives, and the main one obviously is to classify and delineate a map of the wetlands within our study area boundaries.

And then the second objective is essentially to do a functional assessment of the mapped wetland types. So once we get the map finished, we need a functional assessment on the classification efforts that we've completed.

So the components of this project are obviously field surveys and wetlands mapping.

Then we've got a multi-variate wetland mapping process that's ongoing, and it's a concurrent effort that goes along with the wildlife habitat mapping, multi-variate mapping that refers to basically what Terry called ITU mapping. So it's just referring to all the different attributes that we use when we map polygons.

And then the functional assessment, which yeah, we covered a sample -- initial sample functional assessment in the ISR. And yeah, like I said, this is being run concurrently with the wildlife habitat mapping.

We have no variances on this study.

And this is the same map as Terry showed. So all of the wildlife habitat field plots are also wetland field plots. And his response to that previous question, also we'll be using all of the plots that we sample, even though they're maybe outside of the two-mile boundary, to apply to those signatures that we encounter inside the study area. And this is missing plots obviously, on CIRWG lands.

All right. So our results, you know, obviously we're still mapping. And these are the same plots that Terry mentioned, so you've got a total of 916 plots. 619 of those are full plots, and 297 are the verification plots.

The full plots are the -- include a lot of extra information, but it has the full Army Corps wetland delineation form included, and then a number of variables for the functional assessment, as well. So yeah. So mapping is ongoing, to be completed in 2015, and we -- like I said, we've got some example maps and some attributes recorded on each polygon in the ISR.

The first three attributes listed there, the NWI code, the HGM classes, and the Alaska vegetation classification, are the ones that are the real key ones that we aggregate to try and classify wetland types,

but we do use physiography, surface form, and disturbance type to help, you know, inform the decisions.

And here's our -- one of our examples. We performed a little spot functional assessment on this wetland, and this is just an example of what the wetland mapping would be like. The attributes on here are really teeny tiny, but that's the NWI classification system. And these are slope wetlands that are forming in the trough formations on the south face of the -- yeah, the south face of the Susitna Basin.

And all right. So we haven't done any more field surveys. We're just mapping, so we don't really have any results since the ISR.

We don't really plan any modifications except for that, as mentioned before, there's the addition of the Denali Corridor East option, and we've got that added to our study area and have started mapping.

And this is the same map that Terry put up for the wildlife habitat area, though it shows in red there the new Denali Corridor option. And the little bit -- the little bit that's cut out that the riparian people are mapping up here along the river. And then our map will

just join in with their map in the end.

And so current status, you know, we completed field surveys in 2013, and we also had a few points collected in 2012. The modification in 2014 to add the new part of the study area, and we were just continuing mapping. And I guess that's the main story, mapping, mapping, mapping.

Yeah. So the steps to completion. We have still another field campaign planned for 2015, and we will be selecting points on CIRWG lands where we just don't have any plot density at all. And additionally we would collect points outside those areas if we might have found we don't have enough information to map the photo signatures that we've got, so I guess the ideal situation would be finish the mapping and then go out and kind of ground-truth with the 2013 so that we can keep on schedule. Yeah.

And then our -- all of our attributes will get aggregated into a project-wide classification, which includes hopefully a manageable number of wetland types, and we feed those in to the wetland functional assessment.

We have a task still ahead of us to revise some of the model

variables used in the Magee wetland functional assessment to make them more relevant to the study area.

And we also have the task, once these other studies that we've identified that we're sharing data with, once we get information from them, we have the task of kind of ameliorating our functional assessment to have sort of regionally specific values for the functions. So we're going to be looking for abundance of -- and fish habitat studies, all of the wildlife studies, and to use information from the recreation and subsistence studies, and those last two are going to be used to inform the two functions that aren't part of the Magee method right now, which are consumptive uses and subsistence.

Yeah. And then all this is kind of an iterative process, but we also have close to a final set of wetland types now, but all this will be run through the model and we will be kind of refining our classification and finally the final set of wetlands that go into the final functional assessment will be called wetland functional classes, and that's still ahead of us.

And that's -- that's it.



MR. GILBERT: Okay. Good. So not many modifications.

I know we have kind of a small group, but any thoughts, questions? Sound reasonable?

How about on the phone? Do you guys have any questions for Wendy?

That's good. Okay. Let's keep going.

MR. SCHICK: This is you.

MS. DAVIS: Oh, it's me. Okay. Rare plants.

### **RARE PLANTS (STUDY 11.8)**

MS. DAVIS: Oh, it's me. Okay. Rare plants. Okay. Right.

So study objectives for rare plants. First of all, we were tasked with identifying habitats in the project area. And this is just the project area, the buffer corridors that we were provided with. So identify habitats that are likely to have rare vascular plant species.

And perform field studies, search those habitats within a project area, map the locations, and estimate population sizes if we do find any rare plants.

So the components. Initially we kind of -- desktop portion of this, where we selected focal species and habitats, and to do that, we

used the Alaska Natural Heritage Program database and scanned for possible rare plants in kind of a broad region surrounding the project area, so that we could try to be as inclusive as possible.

And when we were doing the field work, they focused on that list of species that were -- that fell within the S1, S2, and S3 rankings at Alaska National Heritage Program rankings. So if you're not familiar, Heritage Program has this ranking system that goes from S1 to S5.

And S1 to S3 are essentially all the plants that are deemed rare, and after you pass a 3, it's really not rare anymore. And using S1 through S3 is still a very inclusive list.

Yeah. So then we have surveys. And this one is another study with no variances from the RSP.

These are -- so this is the smaller contracted study area corridors. And the blue transects are planned but not yet surveyed, and the yellow transects were surveyed in 2013. So they got a pretty good coverage with the transects set up like this. They had relatively long transects that they would walk on during the day, and were able to cover a large number of habitats and scan for as many species as

possible.

So I've mentioned, field surveys were conducted. They did 16 transects and they were pretty well distributed around the study area.

And they found two rare plant species, *Vicia americana*, which is an S2, and *Eriophorum viridicarinatum* was an S2S3.

The *Vicia* was found right in the helo-pad right at Gold Creek camp, right within the first five minutes of Tako Raynolds entering the field study site. And *Eriophorum* was found in a natural bog type area.

There were other rare taxa found. I think I believe they're on the riparian study, and so those are taxa that are going to be targeted the next time they go out to complete this field survey.

So they completed the ISR and nothing more since then. There's no plans to modify the study plan. And as with all of these botanical studies, they've added the Denali Corridor East option, and so we'll identify some transects within that corridor for the follow-up field survey.

And this is -- so this is the map that's the smaller study area, but showing the fully added piece in shaded red. We've already got

some coverage in general areas along there, but they'll be focusing on that, to add new areas in this [3:29:02].

All right. So they completed their field surveys. There's no variances. They were pleased to cover a wide range of habitats and found two rare species, and would be targeting the CIRWG lands and the new areas for field studies in 2015.

All right. So to complete this study, they have to go back -- well, probably won't have to go back, but if there are any new habitats that are in the new Denali East Corridor area, they have to go back and maybe try and discover if there are any new target species to look for.

And same thing, repeat the field survey, find rare plants and estimate population size. And they're still, like I said, no variances to show it's described in the RSP.

MR. GILBERT: Good. No variances, no mods. Any thoughts, comments?

MS. BULLOCK: Sarah Bullock with Bureau of Land Management.

I'm not quite sure if my question really fits in the purview of

rare plant studies, but I know that BLM has a list of sensitive species, and I wasn't for sure -- I don't think those are quite equal, but do those -- does the rare -- because I know that on the Heritage site, it has a whole list of how they're ranked with both Fish & Wildlife Service, their internal rankings, and BLM sensitive species, and I was just kind of curious if BLM sensitive species kind of aligned with --

MS. DAVIS: Yeah. The Heritage Program tracks all the different classifications. And yeah, I don't think there was anything that was on the sensitive -- the BLM list that didn't fall within our broad category of potential rare focal species.

MR. SCHICK: I think that almost has to be true.

MS. DAVIS: Yeah.

MR. SCHICK: We have included the S3 species, which is an in between class -- they call it vulnerable. It's not really rare yet, so we threw the net a bit broader to get S3, S2, and S1. So I'm guessing that all of the BLM sensitive are in there.

MS. BULLOCK: That was kind of my guess, too, but I just wanted to put that comment out there and just, you know, check on

it, I guess.

MR. LAWHEAD: There's 13 species in the BLM sensitive list.

MR. GILBERT: How many?

MR. LAWHEAD: Thirteen.

MR. SCHICK: And we had a list of 39 target, S1, S2, S3 species, I think, within a big broad search area. It was actually --

MR. GILBERT: Sounds like --

MR. SCHICK: Well, sub-watershed survey area that we used.

MR. GILBERT: If they cull that out in the reporting to make sure they're clear.

MS. BULLOCK: It would be good if you did -- I mean, because you say you used the Heritage Program program's list, but it would be also good, if one of those two rare species were also BLM sensitive species, to point that out, as well. Because a lot of your studies here coming up are what you plan to do in 2015, look to be in a lot of BLM lands that would be --

MR. LAWHEAD: Oh, I found another page. Oh, there's a lot.

MS. BULLOCK: Well, that's just in the whole state, so those -

- there's a very small subsection that qualify for this particular area.

MR. GILBERT: Okay.

MR. SCHICK: One more, right?

MR. GILBERT: Sure. Invasive.

### **INVASIVE PLANTS (STUDY 11.9)**

MR. SCHICK: Okay. So this is invasive plants, similar to rare plants in terms of a study effort, but it's a totally different group of plants.

The objectives here are to locate, really, sources of invasives that could be transmitted into the project area during the construction phase or the operations phase. So the idea is to look for current populations of invasive species, map their locations, and estimate population sizes, and also assess ecological threat for the invasive species located.

So the components were field surveys for invasive species. And as you'll see, the sites surveyed were disturbed areas in 2013. They really weren't even in the project area. They were surrounding it. And then conduct an ecological risk assessment for each of those invasives to assess possibility of spreading into the project area.

There were no variances for the field surveys and risk assessments for invasives in 2013.

Field surveys in 2013. 107 sites were surveyed in late August. These were possible source areas, disturbed areas along the Denali and Parks Highway, pullouts, and regularly used or ORV trails leading into the project area.

28 of those 107 sites were revisits to locations where invasives had been recorded previously by the first set of surveys by the Alaska Natural Heritage Program.

Invasive species were found at 98 of the 107 sites sampled. And across all of those 107 sites, 31 invasive species were recorded.

So this is a list of the 15 species with the highest invasiveness ranking, so the invasiveness ranking is there on the right. *Melilotus alba*, sweet -- or white sweetclover, has the highest invasive rank in the set of species that we located. I think it may be the highest in the set of invasive species known in the state actually. But that species was only recorded at seven sites.

Conversely, another species of concern, because of its capability to spread, is *Hordeum jubatum*. Many of you have



probably seen this species. It has an invasiveness rank of 63, it was found at 50 sites, approaching half of the sites.

You've probably seen all of these species before along highway right-of-ways in Alaska.

So the preliminary ecological risk assessment findings in 2013, given the current data collected in the Parks Highway and Denali Highway corridors, are that the risk for invasives being transported in to the project area is relatively low. And that's primarily because of the bottom bullet here. This concerns these two species in particular. But many of the other species were found at very low cover values also. Cover values for the two species were less than 1 percent at each site, or trace values, or low 1 to 5 percent cover.

Of the two species that are probably of most concern, out of the 31 species found (*Hordeum jubatum* and *Melilotus alba*), *Hordeum jubatum* is able to colonize a lot of different habitats from wet sites to very well-drained, gravelly substrates, and silty soils. It's easy to get around. And it also gets stuck in clothing very easily, so it's very transmittable.

*Melilotus alba* is considered highly problematic. It forms

dense stands on river bars and disturbed areas, and there's some indication that it may have negative effects on colonizing native Alaskan species, as well.

Summary of results since the ISR. No additional work has been done since 2013 in the preparation for the ISR.

Modifications. None really are needed for this study. The study area has changed, again, because of the addition of the Denali East Option Corridor, so we'll have to add some additional sampling in 2015 along the Denali Highway to cover the area where the Denali East Option Corridor merges with the Denali Highway. And that's basically it.

And that's a map indicating here's our 2013 study area, along the Parks Highway and Denali Highway Corridor, so we just need to extend this out a short ways here in 2015.

Current status. 2013 field surveys were completed as described in the RSP. There were no variances. Like most of the other botanical studies, no field surveys were conducted in 2014. The final surveys will be conducted in 2015.

And the preliminary ecological risk assessment was conducted

as described.

So steps to complete the study. As I mentioned, we'll go out again in 2015 and sample disturbed areas in and near the project area. On the target list right now are additional sampling of the Denali Highway, as I just mentioned for the Denali East Option Corridor, and also look at three of the primary lodges that are being heavily used during the research phase of this project (Stephan Lake and High Lake lodges and Gold Creek camp) to assess invasiveness presence and population sizes in those areas. And at the recommendation of the U.S. Fish & Wildlife Service, to look along the Alaska Railroad corridor right-of-way, pending adequate permits to do so, where the railroad would come into close contact with the Gold Creek Corridor.

Again, we'll review existing data in the Alaska exotic plants information clearinghouse database, which is maintained by the Natural Heritage Program, and aerial imagery to identify any additional sites -- any additional disturbed sites to help guide those survey efforts in 2015. And we'll conduct a final risk assessment for those species found in 2013 and '15.

And that's it.

MR. GILBERT: Wow. Okay.

MS. LONG: Hi, this is Becky Long. I have some comments.

MR. GILBERT: Sure, Becky. Go ahead.

MS. LONG: Just basic ones.

First of all, I think you guys did a good job on this study. And I'm also glad to know that the current risk assessment overall is very low, that there's no crisis of invasion of those invasives.

I think everybody will all agree that early recognition of invasive plant species can preclude [3:42:13 herbicide use, and that's my interest in this study, is to make sure that invasives don't happen, so that there's an excuse for herbicide use.

On Part A, page 6, I'm just a little bit confused about the statement. It says, you know, that -- well, all three -- alternative corridors originate at Parks Highway or Denali Highway, but now the Chulitna is not one of them.

But I just was confused, because they don't really touch the Parks Highway. I mean, Gold Creek is approximately eight miles away from the Parks Highway, Chulitna is approximately 5.5 miles.

So I was a little confused by that statement.

But are you saying that invasives along the Parks Highway could affect those routes, even though they're not directly connected?

And then I'll just finish up, that when we had the informational meetings, AEA this spring in May and June, I think BLM was present and they really were interested in the possibility of invasives being spread by just the actions of the licensing studies, and hoping that there is best management practices that are going on.

And that's it.

MR. SCHICK: Okay. Those are good sets of questions.

With respect to the Parks Highway, Denali Highway Corridors, and the railroad, we are not entirely sure how construction materials would be transported to the project area. It kind of depends on which corridor is finally selected.

So we're trying to cover the bases, and that's -- I think was the genesis of the recommendation, to try to do some sampling along the railroad corridor because the railroad corridor could be, in fact, used during the construction phase.

I could see how you may be a little bit confused about that

sentence in the ISR, because the Gold Creek corridor doesn't actually connect with the Parks Highway. It connects with the railroad corridor.

And then in with respect to best management practices, there will be, I believe, a -- what are we calling it, Janet, an invasives management plan that will be prepared probably as part of the license application?

MS. KIDD: Yeah. This is Janet.

I think the comment was made about best management practices going on actually right now, with respect to current studies that are going on, and it's a good question.

And I don't know if there's really been a concerted effort to make sure people are wiping off all their shoes before they come off the planes that are entering into the study area.

We do know that at the field camps, like -- like at Stephan Lake Lodge, because there's just a lot of historical use there, there were some invasive things, dandelions and things of that nature that we did find in 2012. High Lake lodge, I'm not sure. But just, you know, this is something -- another concern that has, to our

knowledge, not been brought up before.

And probably we should be making more of a concerted effort to make sure that we're not actually, you know, introducing invasive plants as part of the study for this project.

MR. SCHICK: Yeah. It's a good point. I think a lot of invasives are actually transmitted by movement of large machinery and that kind of thing during construction, but it is a good point, and it's something that we can consider as the study moves forward.

MS. KIDD: Another follow-up comment I wanted to make with respect to the fact that there's no direct access from the Denali Highway into the project area.

And what we did try to do, though, was look at trails that do come off the Denali Highway into the project area, and so that was what we were looking at right now, at this stage, is are there potential corridors to transmit invasive plants from strictly ORV traffic?

And that was one of the things that we thought was encouraging is that we really -- even when we walked kind of well into these trails, we really didn't see a lot of invasive plants really right -- they pretty much were right, you know, confined to the road

itself, or maybe the gravel bed next to the road.

But as soon as you started to get into the sort of native soil, the silts, even associated with the trails, you know, we just did not see a lot of movement of invasive plants into those ORV trails.

MR. GILBERT: Okay. Sterling.

MR. MILLER: Yes. I just have a brief comment, and that is, I now live in Montana, and it's a place where a few years ago --

MR. SCHICK: Did you wipe your shoes before you got off the plane?

MR. MILLER: That's right. Where a few years ago, the people dismissed the dangers of exotic plants, and much to our current dismay invasive plants are now quite common.

And so I like the idea of your -- I mean, it affects wildlife habitat and all kinds of things. So you know, paying attention to this is well worthwhile.

And I like your idea of studying current penetrations, like, along the railroad corridor or others like that, and doing some transects off -- if you're surveying, you know, exotics in the immediate vicinity of these penetrations, you know, going off the site



a bit, you know, with right-angle transects, might be worthwhile to see how -- you know, see how -- because right along the actual corridors, you have disturbed habitat for the plants, which many exotics find congenial because they're pioneers, whereas maybe a little off, they're not.

But if you find some exotic plants that are off in non-disturbed habitats, that have spread there from the disturbed habitats along the penetrations, that's quite a cause for concern.

So I know you know all this, but I just thought I would mention it.

And at the very end, when all these other -- I just have a few comments which I think pertain to all species. It'll only take me about two or three minutes.

MR. GILBERT: Okay. Sure. Which we may be at.

MS. BULLOCK: I have a question. Sarah Bullock, Bureau of Land Management.

Could you turn back to the figure with the study area on it there?

MR. SCHICK: That one?

MS. BULLOCK: Yeah. I was just kind of thinking about, have you or either -- since this is just an invasive plant study, is this including aquatic invasives, as well? Have you looked at any, like, lakes that are -- you know, that planes with floats could possibly get in, or have you identified any, you know, Super Cub landing strips within those corridors?

Which I don't -- I mean, could you find them? I don't know. But that could also be another potential area for exposure to invasive plants.

MR. SCHICK: Yeah. No. It's a very good question. The answer is no. We have -- this study is limited to terrestrial invasive plants.

MS. BULLOCK: I know it's just the road corridor, but I'm, like, there's a lot of guiding out there.

MR. SCHICK: Yeah. But aquatic invasives are an issue. They're a growing concern in Alaska. But this study is not designed to address that.

MR. GILBERT: You do have the lodges you mentioned that aren't on the map.

MS. MCGREGOR: Yeah. Stephan Lake isn't on that map, within the study area. It's on the map. It's just not within the study area.

MR. GILBERT: Right.

MR. SCHICK: Well, the study area is a very loosely defined thing for the study in particular, because really its disturbed spots where we decide to sample. So you know, if we find disturbed spots along the existing corridors, we may go and sample those.

But the likelihood of finding disturbed sites there is remote. They're basically along the railroad corridor or the road corridor.

MR. GILBERT: Those are the main places.

MR. SCHICK: And then you've got them at various lodges where people have been flying in for years.

MS. BULLOCK: I recognize the difficulty of my request.

MR. SCHICK: Well, that's -- that's a different study really. If you're going to study aquatic invasives, you'd want to start at Lake Hood, the float plane base in Anchorage, presumably.

MS. KIDD: And I guess I will say that, it isn't obviously the target of the wetlands and vegetation mapping studies, but we are

asking our field crews to make observations, that if they do find any invasive plants, especially with the lakes or waterways that are included in some of our survey plots, and if we did find something there, then we would probably make more of an effort to study that area.

You know, particularly, if we knew there was a lot of human access, you know, recreational activity, because it's a huge study area. It would be challenging for us to know which lakes are potentially to be used by floatplanes, and it's a big concern. It would be pretty hard to narrow the scope I think for that.

But we are asking, you know, all of our folks, and then people that are doing the riparian study downstream, where there actually is quite a bit of boat traffic, I'm asking them to make note of species that they know would probably be not -- you know, not native.

And an important distinction to make here, too, is invasive versus non-native. And we do have non-native species around, but they're not all considered invasive. Some of them have been here for a long time, maybe because of historical mining activity or other things, but important distinctions are made there where invasives

really do have an ecological impact potentially on the native plant populations as opposed to only being non-native.

MR. GILBERT: Okay. Anything else on invasives?

And then we'll go to your comments, and then Betsy has a few remarks, and then we'll probably close it up.

MR. MILLER: This is Sterling Miller. I want to thank everybody for the opportunity to make these comments. I found many of them interesting and illuminating and pertinent.

When I designed my comments, I had a bunch of comments that were specific to specific studies, and then I had some comments which were sort of general to all studies. And to avoid repeating those general comments in each specific study, I appreciate the opportunity. I just have four things to comment on that pertain to all studies.

One of the things is that it's clear that in all of the -- that the decision was made by the Energy Authority not to list the authors of the work in the studies, and I wanted to put down a request that you actually list the names of the people who did the studies and did the analyses and prepared the reports. The credentials and credibility of

the individuals doing that work is pertinent to evaluating how credible the studies are.

I'm not saying that any of the studies are not credible, but just that I think listing the people involved is a good idea, just to establish the credibility of the reports themselves.

The other -- another comment is that -- and I've touched on this -- been touched a little bit -- I think it's unfortunate that we don't know the access route. All the terrestrial mammal species that I commented on, game animals and the wolverine and so forth, are very affected by access corridors, and of all the access routes that have been proposed, the ones that are most -- the one that would be most serious is the Denali, the one up Deadman Creek and to the Denali Highway. And that one is still under consideration.

And that -- you know, that would have serious impacts on moose, caribou, Dall sheep, wolves, and bears, very serious impact, much more so than any of the other corridors.

So I think trying to design impact assessment studies, absent knowledge of where the access would be, is a flaw. And it's unfortunate that that's the case. And I'm not sure why we don't know

what the access route is, but really, the studies for the species of interest should have prior knowledge of what that access is going to be. [3:55:12]

And so that the -- because the impacts are going to depend on that access, that just to say we collected data and once we know the access, we'll be able to interpret that data correspondingly, is not really correct. I think you have to know the access in order to evaluate and design your studies appropriately.

The third comment is that -- is that one of the things that commonly happens and almost always with impact assessment studies is that you design a bunch of studies to evaluate how the current habitat is being used by various species, and then you make guesses about how those impacts, once they occur, will affect those species. And that is what impact assessment is all about.

However, what is really, really needed and has been done way too -- way too rarely, is to design post-project studies to evaluate the accuracy of the guesses that were made in the pre-project studies. And really, on a project of this magnitude, I think it would be appropriate to -- to assure the concerned public that work will be

done after the project is constructed. If it is constructed, that will help us make better guesses about how the impacts will occur in the future.

So I just want to -- I don't know how that would fit into the design, but I think it's unfortunate that that is not a component of any of the studies I saw.

Now, when we did this work in the '80s, of the stuff I had done, we tried to design techniques in most cases so that those impact studies would be done, even though that wasn't -- wasn't really an objective and we didn't have any money for it, but we tried to design the studies so that they could be -- you could generate -- if you found money and time, generate evaluations of how valid or invalid your predictions were.

My last and final comment is that I don't think that the studies that I evaluated, which are the ungulates and the large carnivores and the wolverine, really paid very much attention to the studies that were done in the '80s. You know, there was some listing of it.

But really, what those studies did in the '80s were, you know, they listed a bunch of impacts and that they suspected to be the case.



And at some level -- and you know, I can't be very specific about this unfortunately, but at some level I think it would have been better to have seen more indications than we currently have, that the current studies were built on those earlier studies, and designed to refine the kind of estimates -- what we see instead are an objective in many of these studies saying the historical studies will be taken into account at some point for the final examination. That's what we see.

But in fact, the current study should have been designed based on what these historical studies were and their -- and their findings, and that would have, I think, made a stronger set of studies.

And once again, thank you very much for the opportunity to make these comments.

MS. MCGREGOR: Well, we appreciate the input. I can address a few of those -- the second point that you made about the access route.

There is a reason that we have several alternatives to consider. That's part of going through the NEPA process, and also for our 404 permit, trying to figure out which would be the least environmentally damaging alternative.

So the studies are designed to study all of those corridors so that we can do a complete alternatives analysis. So that's why one hasn't been decided on. The location of the corridor itself is a big enough project compared to -- I mean, actually constructing a dam and putting it on the river. It is a significant issue. We recognize it's a significant issue, and that's why we have a complete set of studies, so we can do the comprehensive alternative analysis.

With respect to the studies being designed based on current information and the need for post-project studies, the studies were designed so that we could collect baseline data to be able to conduct project impact assessments as well as development of protection mitigation and enhancement measures.

As part of FERC's license and the settlement agreement, there will be mitigation for project effects, and their monitoring will be part of assessing the project impacts moving forward. So that is a component of this process. It's just not part of the phase that we're at.

MR. MILLER: And the difference between monitoring mitigation and monitoring impacts, and that's -- and so I -- there's a distinction there.

MS. MCGREGOR: Understood. And with respect to the current studies including the 1980s information, they did. We actually used the impacts -- the impacts that were identified for each resource area, we went from the 1980s, we went through that. All of our contractors have reviewed the 1980s information, whether or not that's been completely used in the comprehensive analysis, that's been put out in a document is -- you know, that hasn't occurred yet for some resource areas, some more so than others.

But that was the basis of designing a study. So that was the first step was for people to look at the historical information as well as the existing information, and then build upon that moving forward, again, with the whole premise of what kind of baseline data do we need to collect to be able to do a project impact assessment and then develop [4:01:23][appropriate studies] moving down the road.

So, and I recognize that you're new to the -- to our process that we've had underway through the last three years.

I just want to add a few wrap-up comments. I appreciate very much the people that were prepared for this meeting. It allowed us to

have a useful conversation, I think, for both our contractors here conducting the studies for AEA as well as other licensing participants. It's what this process is supposed to be like, especially at this stage, so we appreciate that feedback and those comments.

We are going to go through the comments we received. We'll try to determine whether or not there's a need to provide additional information in this process. AEA's not obligated to provide any additional information before the USR, but we are also trying to have an open process and make data available, QA/QC'd data publicly available as it becomes available to us. So we'll look through the comments we've received today from various participants and see when certain information will be available, and then we'll provide that.

That's all I have.

MR. GILBERT: Anybody on the phone have any follow-on questions, thoughts?

MR. KONIGSBERG: Well, yeah, Kirby.

MR. GILBERT: Jan?

MR. KONIGSBERG: Can you hear me?

MR. GILBERT: Yeah, sure.

MR. KONIGSBERG: Jan Konigsberg.

MR. GILBERT: Sure.

MR. KONIGSBERG: Yeah, Jan Konigsberg. I have -- I guess I will just express my disappointment in not hearing from FERC contractors with respect to the review they had done so -- of the ISR. A number of [4:03:20][letter was] filed, as most of you know, a letter requesting that sort of participation prior to these meetings, and I was hoping that we would get the benefit of that review that has been conducted, in terms of FERC's study plan by their contractors, at least through FERC's permit [4:03:46](indiscernible) not just the contractors.

And I think it would have, you know, helped in terms of discussion thus far, and at least getting some sense of where the differences or agreements lie with respect to the data gathering and information synthesis, and I'm only -- I'm expressing it from a standpoint as the lead federal agency on this, and with respect to its -- its ultimate responsibility with the public trust resources that are involved in this project, and we, the public, that have been involved.

And a number of us, who don't have the expertise to understand all the -- to delve into these studies to the extent it's required, would have benefited from the work that's already been done, in the same way that AEA's contractors have brought their work to us, as well as from the agency and their contractor.

It's just a statement. I don't necessarily require a response, unless FERC would like to respond at this point about that particular lack of participation. But again, you know, it is discouraging from that, in terms of that aspect of the proceedings so far, at least for me.

MR. GILBERT: Okay. Good observation.

Anybody else on the phone?

MS. WOLFF: Yeah, Kirby, this is Whitney.

There may not be anybody who I can ask this, but I had a battery issue during the habitat mapping, and I'm wondering if there's anybody there to answer a quick question, if you can direct me to where I should send it.

MR. GILBERT: Well, if it's -- go ahead and ask it.

MR. SCHICK: Go ahead.

MS. WOLFF: Okay. It's just for 10.19, the habitat use study.

And I went through all three Parts, A, B, and C, and I see in the Part C has added Denali East, but it's not clear to me if you pulled the Chulitna Corridor out. And if you did, I don't understand where the north and the west boundary above Gold Creek is on that study area.

MR. SCHICK: The Chulitna Corridor --

MS. WOLFF: If somebody can --

MR. SCHICK: This is Terry Schick with ABR.

MS. WOLFF: Okay.

MR. SCHICK: In the ISR, the study area maps that you see represent what would have been done in 2013 had we done anything with that study in 2013.

MS. WOLFF: Yeah, right. I understand that. And I read Part C, where you had the differences. And I see you added Denali East, but it doesn't say that you pulled Chulitna.

MR. SCHICK: Yeah.

MS. MCGREGOR: It should be in the slide.

MR. SCHICK: Assuming that the Chulitna Corridor is definitely removed, that would be removed from the 10.19 Evaluation of Wildlife Habitat Use study.

MS. WOLFF: Okay. So then where does that -- so that just puts the northwest boundary two miles off for now, not four, north of the Susitna; is that correct?

MR. SCHICK: Yes. Yeah. This study, 10.19, mirrors exactly the study area boundaries in the wildlife habitat and vegetation mapping study.

MS. WOLFF: Right. 11.5 and 11.6. I've got all that. I just -- it's an open-ended boundary there, even on your original map. It doesn't really show where that northwest corner is. And now that you've changed it quite a bit, I just want to make sure I understand it.

MR. SCHICK: Yes. The Chulitna Corridor, assuming it is officially dropped, will be removed from that study area.

MS. WOLFF: Okay. And then the last quick question I have on that is that in the study objectives, it talked about species of concern, and but later lists that it's going to include all the data from 10.5 to 10.18. So I just want to make sure that species of concern takes in all of the studies we've discussed today and isn't -- it isn't a finer subset of species.

MR. SCHICK: Yes. For 10.19, one of the modifications is



that we will assess habitat values for all bird species that have been recorded in the area, so that's going to, by definition, include all of the bird species of conservation concern.

And then for mammals, there will be a selection of species, and one of the big selection criteria will be species of management and conservation concern. So those --

MS. WOLFF: Okay. And do we know what those species are yet?

MR. SCHICK: We don't. We haven't done that selection of species yet.

MS. WOLFF: Okay. I'd just like to hope that we see some -- some moose habitat covered in that. You know, the moose study primarily just up there at the project site really is limited to that upper river area, and it would be nice to see the effect of the moose habitat down in the middle lower river.

MR. LAWHEAD: Yeah. Moose will definitely be one of the species.

MR. SCHICK: Yeah. We can guarantee that moose will be in there.

MS. WOLFF: Good.

MR. SCHICK: Management species -- mammal management species will most certainly be selected. That's like criterion number one for selection of mammal species for analysis.

MS. WOLFF: Okay. And then maybe we'll see that list at some point? Do you know when that might be?

MR. SCHICK: We don't know when that might be, actually. The study's been deferred to 2015, so it would be conducted after wildlife survey studies are completed and after the habitat mapping in 11.5 and 11.6 has been completed. So the answer is we don't know when that species list would be available for review at this time.

MS. WOLFF: Okay.

MS. MCGREGOR: We will --

MS. WOLFF: Okay. I really appreciate you taking my questions after, and I apologize for jumping in at the very end here. Thank you.

MR. GILBERT: That's okay.

MS. MCGREGOR: No. That's fine, Whitney.

And just to let you know, I mean, right now things will be up in the air, but -- with FERC study plan determination or fiscal cycle - - but when we sort out what we are going to do in 2015, we will start the technical work group meetings up again, and those will be providing updates for each of the studies.

MR. GILBERT: Yes.

MS. WOLFF: All right. Thanks so much.

MR. WINCHELL: Yeah, this is Fred Winchell, FERC contractor. And I need to respond to the previous comment, that we are listening in on this primarily to understand where the concerns are and what types of study modification requests we may have to deal with in the determination. So we don't want to take up time in these calls and meetings. We want the stakeholders to have their chance to say their state -- state their positions, so we can be ready for what is going to come in in your formal comments on this proceeding.

And so we have held back a little bit on stating our position, but we are listening and chiming in when we think it's helpful. That's all I have to say.

MS. MCGREGOR: Thank you.

MR. GILBERT: Thanks.

UNIDENTIFIED MALE: Who was that?

MR. GILBERT: It was a contractor to FERC.

MS. MCGREGOR: Fred Winchell.

MR. GILBERT: Yeah. I thought I said Fred. Okay.

Anything else?

MR. WINCHELL: Sorry I'm a little grumpy, but I'm recovering from jet lag from coming back from Anchorage.

MR. GILBERT: Oh, okay. Because you were here last week.

MS. MCGREGOR: And it's 8:00. Are you on the East Coast?

MR. GILBERT: Yeah. You're, like, Boston, aren't you?

MR. WINCHELL: Yeah.

MR. GILBERT: Yeah. Okay.

MR. WINCHELL: It's a long way.

MR. GILBERT: Okay. Good.

Well, if there's nothing left, we'll close this one out.

MS. MCGREGOR: We can adjourn. That's a lot of material we covered today.

MR. GILBERT: Yeah. Thanks. Thank you, everybody, for participation and appreciate. A lot of good information.

And we'll start tomorrow on the physical sciences for anybody interested.

UNIDENTIFIED FEMALE: And it starts at 8:30, correct? Nothing has changed?

MR. GILBERT: Yeah.

MS. MCGREGOR: 8:30.

MR. GILBERT: The agenda, we're going to try to stick to it, and that's the way we're going to go, yeah.

UNIDENTIFIED FEMALE: Thank you, guys.

MR. GILBERT: Thanks, everybody on the line. Bye bye.

4:12:58

(Off record.)

SESSION RECESSED