

Meeting Summary
Susitna-Watana Hydroelectric Project Licensing
Aquatic and Terrestrial Resources Study Planning Meetings
January 24, 2012
AEA Project Offices, First Floor Conference Room
411 W 4th Avenue, Anchorage, AK

**PAD and 2012 ILP Activities Overview Meeting, January 24, 2012,
8:30 a.m. - Noon**

Attendees:

Organization	Name
AEA	Betsy McGregor
AEA	Wayne Dyok
AEA	Bryan Carey
USFWS	Mike Buntjer
USFWS	Betsy McCracken
USFWS	Jennifer Spegen
USFWS	Bill Rice
NMFS	Susan Walker (by phone)
NMFS	Eric Rothwell
NMFS	Tom Meyer (by phone)
BLM	Ben Kennedy
BLM	Tim Sundlov
BLM	Mike Sondergaard
BLM	John Jangala (by phone)
NPS	Cassie Thomas (by phone)
ADF&G	Joe Klein
ADF&G	Mark Burch
ADF&G	Joe Giefer
ADF&G	Ron Benkert
ADF&G	Jack Erickson
ADNR	Courtney Smith
FERC	David Turner (by phone)
FERC	Ken Wilcox (by phone)
The Nature Conservancy	Corrine Smith
Natural Heritage Institute	Jan Konigsburg
Alaska Conservation Alliance	Kate McKeoun
Knik Tribe	Theo Garcia
MWH	Kirby Gilbert
Long View Associates	Steve Padula
Long View Associates	Randall Filbert

Organization	Name
Cardno-ENTRIX	Craig Addley
Cardno-ENTRIX	Woody Trihey (by phone)
Northern Ecological Services	John Morsell (by phone)
R2 Resource Consultants	Dudley Reiser
ABR/GW Scientific	Dave Brailey
URS	Stephen Trimble
URS	Paul Dworian
HDR	James Brady
HDR	Michael Barclay
HDR	Laurie Cummings
HDR	Tracie Krauthoefer
HDR	Mark Dalton
Tetra Tech	Rob Plotnikoff
Tetra Tech	Christy Miller
DOWL HKM	Lana Davis
DOWL HKM	Hillary Lindh (by phone)
Northern Land Use	Richard Stern
E-Terra	Lars Gleitsmann
ARRI	Jeff Davis
Northwest Hydraulic Consultants	Dave Andres (by phone)
Crowther	Scott Crowther
Van Ness Feldman	Matt Love (by phone)
Chugach Electric Association	Ron Vecern
Nuvista Light & Power	Chuck Casper

Presentations

- Kirby Gilbert (MWH): Overview of PAD and List of Chapter 5 Study Plan Activities
- Kirby Gilbert (MWH): Overview of PAD Project Description and 2012 Engineering Activities
- Steve Padula (LVA): 2012 Formal Study Planning Process

PAD Project Description and 2012 Engineering Activities

Referring to the graph shown in Slide 12 of AEA's Susitna-Watana Project description presentation, Eric Rothwell (NMFS) noted that daily load following was presented only in terms of energy production (megawatts [MW]) and not flow. Eric asked for an estimate of the flow range corresponding to the range of energy production shown in the graph. Bryan Carey (AEA) stated that the minimum and maximum energy production values of 175 MW and 375 MW corresponded to flows of about 3,000 cfs and 10,000 cfs, respectively.

Eric stated that the impacts on aquatic resources due to daily and seasonal load following could be significant and expressed concern regarding AEA's proposed daily Project operations. Wayne Dyok (AEA) stated that AEA's final proposed daily and seasonal load following operations would be predicated to some extent on the nature and extent of resource impacts, including projected impacts on water temperature, ice dynamics, and fish habitat, among others, and that energy production would not be the sole driving force behind the Proposed Action. Mike Buntjer (USFWS) and Eric Rothwell (NMFS) requested that all graphs depicting potential Project operations show not only megawatts but flow (cfs) on their vertical axes. AEA agreed to provide both units on all future plots.

Eric Rothwell (NMFS) noted that AEA had identified potential alternatives that involved a larger dam than that proposed in the PAD and asked whether consideration had been given to alternatives involving a smaller dam. Bryan Carey (AEA) stated that AEA was currently making plans based on a dam with a nominal height of 700 feet but that the dam could be as low as 650 feet. Wayne Dyok (AEA) stated that the height of the proposed dam would be confirmed in 2012, adding that the Project would need to be integrated into the overall railbelt utility system and that railbelt system demand and potential environmental impacts would both be factored into the cost-benefit ratio that would ultimately dictate Project size. Bryan Carey added that developing a hydroelectric Project in a remote and severe environment such as the upper Susitna River would involve large fixed costs and that as a result too small a Project would not be cost effective.

Betsy McCracken (USFWS) noted that the effects of Project operation on river stage would vary with distance below the dam and asked how such attenuation would be addressed. Bryan Carey (AEA) stated that AEA was developing a hydraulic routing model that would be used to estimate flow-stage relationships along the river corridor.

Betsy McCracken (USFWS) noted that full build-out for the proposed Project would include four turbines and asked if natural resource studies would be based on the capacity of the Project with all four turbines in operation. Bryan Carey (AEA) stated that the Proposed Action involved building the Project with three generating units and a single empty penstock. Bryan stated that if AEA decided to install a fourth turbine in the future, such a modification would necessitate the filing of a license amendment for the proposed increase in Project capacity. At that time, said Bryan, environmental studies needed to assess operational changes would be undertaken.

Tom Meyer (NMFS) asked if the current timeline for the Project was based on the assumption that the proposed dam would be a roller-compacted concrete (RCC) structure. Bryan Carey (AEA) replied that a RCC dam would take less time to complete than a concrete rockfill dam and that the current schedule was based on construction of an RCC facility. Tom Meyer recommended that AEA make a final decision soon regarding construction methods, so that an accurate schedule, including potentially longer duration studies, could be established. Wayne Dyok (AEA) stated that the current plan was for 2013 and 2014 to be the main study seasons (with dam construction beginning in 2017), but studies would continue as needed, depending

on the results of the 2013-2014 studies and any unanticipated issues discovered during that time. Wayne added that a variety of monitoring programs would be established that would continue over the long term. Mike Buntjer (USFWS) asked how much longer a concrete rockfill dam would take to complete than a RCC dam. Bryan Carey replied that a concrete rockfill structure would take about two additional years to complete.

Mike Sondergaard (BLM) asked if a RCC dam would differ from a concrete rockfill structure in strength or other attributes. Bryan Carey (AEA) replied that the structures would be functionally equivalent; the primary difference would be duration of construction.

Jan Konigsburg (NHI) asked if the estimated cost of the Project included costs associated with transmission. Wayne Dyok (AEA) replied that estimates for the Project include the cost of establishing a transmission system from the powerhouse to the existing intertie, but did not include costs associated with any upgrades to the intertie. Wayne stated that AEA would coordinate with the railbelt utilities to apportion costs for upgrades to the intertie.

Betsy McCracken (USFWS) asked if there would be a railroad spur to the Project site. Bryan Carey (AEA) stated that there would not be a spur to the Project site. Materials would be shipped via the existing railroad to a siding constructed for the Project's use and then shipped by truck to the Project site.

2012 Formal Study Planning Process

Eric Rothwell (NMFS) asked if there was still time for stakeholders to comment on 2012 study plans. Kirby Gilbert (MWH) replied that 2012 study plans were still being developed and that agencies could comment on them through February 7, 2012. Kirby added that draft study plans would be posted on AEA's website during or immediately following the study planning meetings.

Betsy McCracken (USFWS) asked which of the 2012 aquatic and water resources studies would have lower river components. Kirby Gilbert (MWH) replied that many of the 2012 aquatic and water resources studies would have a lower river component and that AEA and its consultants would review the objectives of the studies during the upcoming meeting sessions.

Jenny Spegen (USFWS) asked if the impacts of proposed transmission lines would be addressed as part of a transportation resources study. Kirby Gilbert (MWH) replied that the impacts of the transmission lines would be assessed over a range of natural resources study areas, including, but not necessarily limited to, botanical, wildlife, cultural, and aquatic resources. Kirby Gilbert stated that the results of resource analyses would be used to refine the routes of transmission lines and access roads. Kirby explained that access roads and transmission lines would be co-located but that routes would diverge based on environmental conditions. Specifically, transmission line routes would be located at low elevations to avoid impacts to the lines from excess ice. However, low-elevation routes would be avoided for access roads in an attempt to minimize impacts to wetlands.

Tom Meyer (NMFS) asked what alternatives to the Proposed Action would be evaluated as part of FERC's National Environmental Policy Act (NEPA) analysis. David Turner (FERC) replied that FERC would evaluate a No Action alternative, the Proposed Alternative, and potentially a third alternative involving measures recommended by FERC staff.

Jan Konigsburg (NHI) asked how much information was needed by FERC in an ILP study request submitted by a stakeholder, specifically how much detail would be needed regarding proposed study methods. David Turner (FERC) replied that stakeholder study requests need not include detailed descriptions of study methods. What is needed is a clear description of objectives and the type and extent of information desired, i.e., sufficient detail to allow the applicant to develop a satisfactory study plan.

Tom Meyer (NMFS) stated that in other ILPs resource agencies had initiated dispute resolution because FERC had failed to clearly articulate the bases of its study determinations. David Turner (FERC) stated that FERC's ILP effectiveness study had shown that at times determinations based on project nexus and other criteria had not been adequately defined. However, FERC was now making a concerted effort to explain how all study criteria are factored into its study determinations. David added that he was aware of no instances in which necessary studies had been overlooked or omitted as part of an ILP process.

Steve Padula (LVA) explained that AEA was currently developing outlines of 2013-2014 studies and that AEA was willing to convert these into study requests that could be adopted by stakeholders and filed with FERC. In this way, stakeholders could avoid spending time writing requests for studies that AEA is planning to conduct and could instead focus their efforts on additional studies, if any, not identified by AEA. Stakeholders agreed that AEA's provision of study requests, as described by Steve, would be helpful and confirmed their acceptance of the proposed approach. Jan Konigsburg (NHI) noted that resource agencies have statutory authorities that make it possible that their study requests will identify needs beyond those addressed by AEA's study plans.

Joe Klein (ADF&G) expressed concern with the potential level of detail that would be included in study requests, i.e., to be filed by April 27, 2012. Steve Padula (LVA) acknowledged that implementation details would need to be worked out collaboratively following the filing of the study requests. Steve stated that the requests are meant to make sure that all information needs are being addressed, adding that AEA would work with stakeholders to finalize study implementation details during 2012. The process would culminate in the filing of the Revised Study Plan (RSP) with FERC in October 2012.

Jenny Spegen (USFWS) asked how the results of the 2012 studies would be factored into the 2013-2014 study planning. Steve Padula (LVA) replied that the completion dates of the 2012 studies would be staggered, that is, studies would be completed as soon as possible so that results could be used to refine the scopes of the 2013-2014 studies. Betsy McGregor (AEA) stated that the 2012 study plans included descriptions of the links between 2012 study efforts/results and 2013-2014 studies.

Jan Konigsburg (NHI) asked how study costs factor into FERC's determination of whether a study is warranted. David Turner (FERC) replied that FERC does not have specific criteria for evaluating the cost-benefit ratio of a proposed study. Rather, FERC evaluates whether the requested level of precision is commensurate with the stated information needs and makes a determination as to whether the cost is reasonable relative to the information that will be obtained. Steve Padula (LVA) stated that the FERC process also allows for the applicant to propose a less costly approach to a requested study, provided that the alternative approach would generate the information requested by the stakeholder.

Jan Konigsburg (NHI) asked if AEA had made progress on providing funding support to the federal agencies. Wayne Dyok (AEA) stated that AEA was still attempting to identify a means of providing support to some of the federal agencies involved in the licensing process, perhaps through the ADNR's Alaska Office of Project Management & Permitting (OPMP). Sue Walker (NMFS) said that NMFS had submitted a detailed letter to AEA in December 2011 that explained how AEA could provide support to NMFS. Sue said that as of January 24, NMFS had received no response from AEA regarding the letter.

Steve Padula (LVA) reviewed calendars showing proposed meeting dates and process milestones for February through May 2012. Betsy McCracken (USFWS) asked that the calendars be posted on AEA's website, and AEA stated that they would be posted following the meetings.

Cassie Thomas (NPS) stated that the National Park Service's primary areas of concern are recreation and aesthetic resources. Cassie noted that effects on these resources would be identified as the result of studies conducted in other resource areas, for example, instream flow analyses would shed light on potential Project impacts on recreational boating. Cassie stressed that it would be critical for stakeholders to be updated regularly on the comprehensive licensing program, i.e., the activities of all workgroups and subgroups, so that each stakeholder could be kept apprised of relevant issues and understand the links between resource areas. Cassie stated that stakeholders would require such updates in order to allocate their time effectively to the various licensing meetings and other activities. Steve Padula (LVA) stated that meeting summaries would contain details of workgroup/subgroup discussions, as well as lists of decisions and action items. Betsy McGregor (AEA) stated that meeting agendas would contain items to be addressed in meetings, as well as the time slots allocated to those issues. Betsy stated that between the agendas and the meeting summaries, stakeholder would have the information they need to make choices regarding how to direct their efforts. Sue Walker (NMFS) stated that AEA should appoint a dedicated note taker for all meetings and that meeting summaries should identify the individuals (and their affiliations) asking questions and making comments and clearly describe AEA's responses to the questions/comments. AEA agreed that meeting summaries would be structured in the manner requested.

John Jangala (BLM) noted that the data gap analysis report for cultural resources was not available on AEA's website. Steve Padula (AEA) explained that AEA could not post many cultural resources documents to the public website because they contain privileged

information. AEA agreed to send John Jangala (BLM) a copy of the cultural resources data gap analysis report.

Action Items

- AEA agreed to produce all future Project operations graphs so that they include both generation (MW) and flow (cfs).
- AEA agreed to post on its licensing website calendars showing proposed meeting dates and process milestones for February through May 2012, as well as all PowerPoint presentations given at the study planning meetings.
- AEA, with stakeholders' consent, agreed to provide draft 2013-2014 study requests that could be adopted by stakeholders and filed with FERC on April 27, 2012.
- AEA agreed to appoint a dedicated note taker for all licensing meetings and agreed that meeting summaries would identify the individuals (and their affiliations) asking questions and making comments and clearly describe AEA's responses to those questions/comments.
- AEA agreed to send John Jangala (BLM) a copy of the cultural resources data gap analysis report.

**Instream Flow 2012 Study Planning Meeting, January 24, 2012,
 1 – 4 p.m.**

Attendees:

Organization	Name
AEA	Betsy McGregor
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ABR/GW Scientific	Dave Brailey
URS	Stephen Trimble
URS	Paul Dworian

Organization	Name
HDR	James Brady
HDR	Michael Barclay
HDR	Laurie Cummings
HDR	Tracie Krauthoefer
HDR	Mark Dalton
Tetra Tech	Rob Plotnikoff
Tetra Tech	Christy Miller
DOWL HKM	Lana Davis
DOWL HKM	Hillary Lindh (by phone)
Northern Land Use	Richard Stern
E-Terra	Lars Gleitsmann
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Presentations

- Craig Addley (Cardno-ENTRIX): 2012 Instream Flow Study

2012 Instream Flow Study

Joe Klein (ADF&G) stated that activities in 2012 would be critical to formulating a sound instream flow study that would address all pertinent resource issues. Joe stated that the 2012 study plan should make clear how the 2012 work will be incorporated into the larger multi-year instream flow study. Joe stated that it would be critical to properly delineate study reaches and identify the appropriate placement of representative transects. Joe stated that ADF&G would require a map showing the locations of all existing instream flow study transects. Betsy McGregor (AEA) stated that ADNR was currently developing a baseline map for the Project that would show transect locations from the 1980s studies. Corrine Smith (TNC) asked for clarification regarding ADNR's digitizing of 1980s data. Betsy McGregor replied that ADNR has assisted AEA in producing GIS products and has recently been tasked with producing a transect map. Betsy stated that historic data used in current analyses and data collected during 2012 and beyond, as applicable, would be incorporated into a geospatially-referenced relational database.

Referring to the proposed schedule in the 2012 Instream Flow Study Plan, Michael Barclay (HDR) suggested that November 2012 might be too late for a final technical memorandum, given that the schedule called for a final 2013-2014 Instream Flow Study Plan by the end of September. Betsy McGregor (AEA) acknowledged that the schedule was not ideal but stated

that the November deadline for the memo was selected to allow enough time to assimilate information gathered during the fall site visit and that interim materials would be prepared to inform the 2013-2014 study plan.

Steve Padula (LVA) stated that much of the results of the 2012 studies would be available to inform the scopes of the 2013-2014 study plans, but emphasized that implementation details would be refined by the workgroup into the beginning of 2013. Craig Addley (Cardno-ENTRIX) stated that any uncertainties would be addressed in the 2013-2014 study plans by identifying contingencies, i.e., explanations of how AEA would proceed depending on what is learned prior to the onset of the 2013 fieldwork. David Turner (FERC) stated that FERC's determination would function mainly to resolve potential disagreements, and conditional statements in the RSP would be acceptable, provided that there is a clear and defensible rationale for how to resolve any issues so that data quality and reliability are not compromised.

Joe Klein (ADF&G) stated that an important issue would be the proposed reservoir's impacts on fish access to tributaries flowing into the reservoir, including seasonal changes in tributary access resulting from variation in water surface elevation. Craig Addley (Cardno-ENTRIX) replied that the issue of tributary access in the reservoir reach would be addressed as part of the 2013-2014 studies.

Joe Klein (ADF&G) stated that researchers currently have a much better understanding of ice formation and breakup than they did in the 1980s and asked if AEA planned to employ new techniques to model ice dynamics. Wayne Dyok (AEA) stated that AEA intended to use state-of-the-art techniques to evaluate the effect of the proposed Project on ice dynamics downstream of the Project, adding that the faculty at the University of Alberta, which has expertise in this area, had employed the CRISSP model on the Peace River to assess the effects of hydropower projects on ice dynamics.

Joe Klein (ADF&G) stated that another important flow-related aspect of the river that required thorough analysis was the distribution and magnitude of groundwater upwelling. Betsy McGregor (AEA) stated that AEA could use thermal imaging to identify locations of groundwater upwelling. Joe Klein noted that the US Geological Survey (USGS) had floated portions of the Susitna River to map groundwater upwelling locations. Joe suggested that the USGS results could be used to ground-truth thermal imaging results. Craig Addley (Cardno-Entrix) stated that AEA could conduct a pilot study to assess the effectiveness of thermal imaging relative to the USGS data and if the results were favorable, apply the thermal imaging technique more widely.

Jenny Spegen (USFWS) noted that much of the 2012 Instream Flow Study Plan involved review, synthesis, and evaluation of 1980s data and asked what field data would be collected in 2012. Craig Addley (Cardno-ENTRIX) stated that preliminary study site selection would be initiated where appropriate data exist, and field visits would be conducted in September and October to refine potential study sites and assess modeling approaches. Craig stated that instream flow efforts would be coordinated with fieldwork conducted as part of the 2012

Middle River Habitat Utilization Study to select spawning sites for modeling where possible so that transect measurements could be collected over a range of flows starting in spring of 2013.

Eric Rothwell (NMFS) and Bill Rice (USFWS) stressed that all the aquatic and water resource evaluations were interrelated and that understanding the proposed Project's effects on fish and other aquatic biota would involve integrating the results of multiple efforts, including ice dynamics and geomorphology studies and modeling. Wayne Dyok (AEA) replied that AEA was aware of the interrelated nature of the analysis techniques and planned for its contractors to coordinate with each other and with the technical workgroups to ensure that Project effects are adequately assessed. Craig Addley (Cardno-ENTRIX) stated that the instream flow study would be the central element of the impact assessment for aquatic resources, with all other study and modeling elements providing input to the instream flow assessment. Craig acknowledged that ideally most of the fish studies would be conducted first to provide the input needed for modeling; however, the ILP schedule is such that efforts must be conducted in parallel. Craig stated that although the integration of studies and modeling would be challenging, it could be done.

Michael Barclay (HDR) asked what instream flow study methods were likely to be used. Craig Addley (Cardno-ENTRIX) stated that it was likely that a mix of methods would be applied, depending on the habitat being analyzed. For example, one-dimensional modeling would likely be most appropriate for the mainstem, whereas two-dimensional modeling or expert habitat mapping over a range of flows might be the best approach in smaller and potentially more complex habitats, such as sloughs or side channels. Joe Klein (ADF&G) noted that it would be critical to decide soon not only what methods would be used in which habitats but also to identify measurement locations and intensities, as well as the flows at which data collection would occur.

Joe Klein (ADF&G) noted that habitat suitability criteria (HSC) for certain resident fish species represented a data gap that would need to be filled before instream flow modeling could be conducted. Craig Addley (Cardno-ENTRIX) agreed, noting that upstream of Devils Canyon instream flow modeling would be focused primarily on select resident fish species. Craig stated that data would be needed to confirm which mesohabitats these fish species use and what their microhabitat preferences are within those habitats. Joe Klein added that HSC information for some of the resident species had been developed for use in Canada and that these HSC curves might be suitable for the Susitna River, pending their verification against some level of site-specific data. Joe Klein stated that ADF&G had documented the longitudinal distribution of nonnative northern pike in the Susitna River, but HSC curves would need to be developed/agreed upon to model pike habitat use.

Jan Konigsburg (NHI) stated that Project effects on anadromous fish species other than salmon, eulachon in particular, would need to be properly assessed. Betsy McCracken (USFWS) added that Pacific lamprey and humpback whitefish habitat use is not well understood, particularly that of lamprey ammocoetes. Betsy McGregor (AEA) stated that

eulachon would be assessed not only as part of the instream flow analysis but also as part of the beluga whale prey availability and access evaluation.

Tim Sundlov (BLM) asked if AEA had or planned to develop aerial imagery of the upper Susitna River. Betsy McGregor (AEA) replied that AEA had partnered with Matanuska-Susitna Borough to gather LiDAR data and associated imagery of the Susitna River in 2011. The imagery and data is being processed and would be made available to stakeholders when completed, which is expected to be May 2012.

Dudley Reiser (R2) stated that for the next set of aquatic/water resource workgroup meetings it would be advantageous to have the technical contractors—the entities who would conduct the 2012 studies and refine the 2013-2014 study plans—hired. Betsy McGregor (AEA) agreed, stating that AEA hoped to hire the contractors by mid February 2012. Betsy McGregor (AEA) stated that AEA expected that an Instream Flow Subgroup would be formed and would meet frequently—at times as often as biweekly—in 2012 to develop the scope of the 2013-2014 analyses.

Woody Trihey (Cardno-ENTRIX) asked if he should prepare a summary of the 1980s instream flow studies and findings for the February/March workgroup meetings, and Betsy McGregor (AEA) agreed that he should.

Action Items

- AEA agreed to provide stakeholders with a map showing the locations of all instream flow study transects once they have been defined.
- AEA stated that it hoped to hire the technical contractors—the entities who would conduct the 2012 studies and develop the 2013-2014 study plans—by mid February 2012, so that they could participate more actively in the February/March resource workgroup meetings.
- Woody Trihey (Cardno-ENTRIX) agreed to prepare a summary of instream flow study results from the 1980s for use at the March workgroup meetings.