



SUSITNA-WATANA HYDRO

Meeting Notes Geomorphology, Ice Processes, and Water Quality Technical Workgroup meeting 09/25/2013

LOCATION: Alaska Energy Authority – Board Room
813 West Northern Lights Blvd.
Anchorage, AK 99503

TIME: 8:30 a.m. – 12:30 p.m. – (AKDT)

SUBJECT: 2013 Quarter 3 Update

Goal: To provide an update of the 2013 studies including work performed in the last several months and upcoming efforts this summer.

ATTENDEES: Steve Padula McMillen, Eric Rothwell NMFS, Betsy McGregor AEA, Joe Klein ADF&G, Stormy Haught ADF&G, Laura Noland Environ, Paul Dworjan URS, MaryLouise Keefe R2, Dudley Reiser R2, Bill Fullerton Tetra Tech, Mike Harvey Tetra Tech, Kathryn Peltier McMillen, Matt Love VNF, Wayne Dyok AEA, Rob Plotnikoff Tetra Tech, Harry Gibbons Tetra Tech, Martin Bozeman AEA, Ronald Daanan DGGS, Melissa Hill ADNR, Phil Brna USFWS, Bryan Carey AEA, Dara Glass CIRI, William Ashton DEC, Phil Hilgert R2, Matt LaCroix EPA, Ken Hogan FERC, Alaina Smith Tetra Tech

ON PHONE: Steve Ertman HDR, Greg Aubel USGS, Michael Bruen MWH, Chris Holmquist-Johnson USGS, John Haapala MWH, Jan Konigsberg AK Hydro, Henry Brooks DNR, Becky Long CSDA, Colin Kikuchi USGS, Leanne Hansen USGS, Jeff Davis ARRI, Felix Kastanovich Environ, Bob Henszey USFWS, Jake Soll Natural Resources Defense Council, Charlie Wisdom Environ, Lyle Zevenbergen Tetra Tech, Bob Henszey USFWS, Leanne Hansen USGS

This was the third 2013 quarterly geomorphology, ice processes, and water quality resources Technical Work Group (TWG) meeting. The quarterly TWG meetings are intended to provide status on study plan progress, communication and discussion regarding any study plan variances that may be required given actual field conditions, and planned next steps.

The following meeting notes are to capture any significant discussion/information in addition to the materials provided on the Project website (<http://www.susitna-watanahydro.org/>). The meeting agenda and materials are available under the “previous meetings” tab (link provided under the meetings tab) on the Project website.

RSP 7.7 Glacier and Runoff Changes Presentation – Ronald Daanan

Gabriel Wolken, the study’s lead, was in the field the day of this meeting so Ronald Daanan of DGGS provided an update on the recent data collection efforts and planned activity for Q3 2013.

- Data provided in the presentation is preliminary and is in the process of being QC’d.
- By using WaSiM as the model, temperature can be included to consider ice influence.
- The estimated glacier runoff contribution of 34% (slide 5) does not include ice melt.

RSP 5.5 Water Quality Presentation – Rob Plotnikoff

- Slide 2 provides a condensed summary of the QAPP in regards to the second and third quarter of 2013.
- Of the 16,351 lab samples, validation/verification of parameters that met laboratory performance standards indicates that several did not meet these criteria. As a consequence a set of split samples was collected and sent to two laboratories for “split sample” analysis according to the QAPP.
- Preliminary data suggests fairly low dissolved nutrient concentrations, very high total phosphorus concentrations, and high iron, aluminum, and barium concentrations. This matches historical data. A split lab analysis will determine the presence of interference elements and if nutrients are bound with naturally occurring metals. It is possible that the preservatives used for the samples influenced binding or that binding with naturally occurring elements is the ambient condition for sites in this drainage.
- The graph on slide 8 indicates 12 sites not having continuous temperature data collected. However, instruments were installed at several of the remaining sites in 2012, but data have not been recovered due to restricted land access.
- There is close communication with all teams collecting water quality data to calibrate the instruments and collect samples using proper protocol. This practice was reinforced with a Field Audit of all crews while collecting field data and samples for submission to the laboratory.
- Without being able to access Devils Canyon to install temperature probes, the water quality model will consider temperature directly upstream and downstream of the canyon. The model will be calibrated based on the these known temperature point locations and will account for other, non-measured effects in order to accurately predict the influence of Devils Canyon.
- The riverine water quality model will be using the same boundary conditions as the geomorphology model.
- By establishing the magnitude of the nutrient reservoir, the study will help to better understand the potential for nutrient mobilization and bioavailability potentially influenced by Project operations.
- The grid cells on slide 17 are an example of what will be used within riverine boundaries initially adopted by the geomorphology model, and in turn influenced by the open water flow routing model.
- During Q4 of 2013 field crews will be installing solar radiation and wind deflectors for heated precipitation buckets to measure precipitation over the winter season at the Indian Creek site and the Oshetna Creek site. The Watana Dam site currently has restricted access so a precipitation gage will be installed when permits are in place for travel to this site.
- Fish tissue samples have been collected for most key species. Some targeted species, such as Dolly Varden and humpback whitefish, are not prevalent enough to catch in large numbers.
- Due to not having a permit to collect eagle feathers, no feathers/nests present/located from other obligatory piscivorous birds, and no access to portions of the study area, study plan modifications may be necessary for 2014 feather collection for mercury analysis. Also, the small populations of furbearers in the study area made it difficult to collect sufficient samples in the winter of 2012/13 so trapping may be utilized this coming winter.
- Some of the variances to date in this study are summarized in slide 19.

RSP 7.6 Ice Processes Presentation – Steve Ertman

- Slide 3 explains the modeling modifications necessary to expand its capabilities for ice.
- The cross sections mentioned in slide 4 will be interpolated in early 2014.
- The River1D model may be used to better understand the variable ice cover characteristics under higher discharge (post-Project) in the Middle River.

- Steve Ertman will determine if the model can model lateral effects of tributaries.
- The ice model will provide stage and ice thickness characteristics to the riparian model to evaluate ice impacts on riparian vegetation.
- In addition to the next steps indicated in slide 9, River2D model efforts will continue in Q4 2013.
- A white paper for the ice study will be made available on the Project website. Once it is posted, a notice will be provided via the list serve.
- There were no variances to the approved study plan in Q3 2013.

RSP 4.5 Geology and Soils Presentation – Mike Bruen

- Slide 2 provides a summary of the activities related to the Geology and Soils Study, including the variances to the study plan.
- In 2013/14 drilling will be conducted in the dam site area as well as away from the dam site, such as corridors and the Watana Creek area, to achieve a general understanding of the area's slope stability.
- Melissa Hill requested that hydrogeology of the region be investigated as part of the drilling effort to achieve a greater understanding in the area. Mike Bruen indicated the site investigations include instrumentation to gather data on the hydrogeologic conditions.
- Permafrost areas are being delineated based on a review of LiDAR imagery and will be indicated in the update to the terrain unit maps.
- Once the data are collected and reviewed, GIS data sets as well as the report for this study will be provided as part of the ISR.

RSP 16.6 Site-Specific Seismic Hazard Study Presentation – Mike Bruen

- Slide 4 provides a summary of the activities related to the Site-Specific Seismic Hazard Study, including the variances to the study plan.
- The seismic hazard study area includes approximately 100 km radius from the proposed dam site. This study includes the identification of Potential seismic sources, which are faults that could contribute to the seismic hazard and to assess the potential for surface rupture.
- The study has identified 22 lineament groups and three lineament areas. Those on public lands have been reviewed and, upon gaining access permission, the remaining will be reviewed in 2014.
- A project microseismic network has been established to record seismic events in the project area.
- Seismic activity under glaciers is being taken into account.
- Colin Kikuchi requested that updates to geology and soils and seismic hazards studies be presented at future quarterly TWG meetings.

RSP 16.5 Probable Maximum Flood – John Haapala

- Slide 3 provides a summary of the activities related to the Probably Maximum Flood Study, including the variances to the study plan.
- Because floods in the Susitna River can be caused by snowmelt or rain, three historic floods have been chosen for each source.
- Because Gold Creek gage provides the largest available data set, these data will be used to calibrate the model along with other upstream USGS gaging stations.

RSP 6.5/6.6 Geomorphology Presentation – Bill Fullerton

Bill Fullerton presented a status update for the geomorphology resources studies. An overview of the presentation is available on slides 2-3.

- Slide 5 provides a comparison of 1980s and current sediment transport data.
- The change of preferred discharge for aerial photo acquisition at Sunshine (slide 7) from 36,600 in the RSP to the actual 40,000 was because of specific IFS recommendation.
- Because large woody debris seems mobile in the main channel, it may not have as much influence to the general geomorphology as it would in the lateral habitats where wood is less mobile.
- When collecting subsurface sediment samples, the technique does not allow for the stratification to remain intact.
- There are access issues associated with Birch Creek. This creek may be substituted for in 2014.
- In slide 27, the 2D coarse mesh (green shading) is not fully illustrated, but will be applied to the parts of the channel and floodplain within the Focus Area where the fine mesh grid is not applied (blue shading).
- LiDAR data will provide input regarding the islands' elevations.
- The Mat-Su Borough LiDAR absolute accuracy does not appear to be within the desired range, details of features show up quite well a agree with field observations.
- All complex sites, with the exception of Whiskers Slough, seem to be upstream of a constriction.
- Slide 31 shows an example of a threshold channel. This is the secondary channel in the lower portion of the image. This channel seems to have various breaks, all of which pass flow but some of which do not pass sediment. Mike Harvey is further developing his understanding of the physical processes that form and maintain these reoccurring feature.
- Initial comparisons of historic and current photos seem to show the most apparent difference being an increase of vegetation with time. With field observations and RIFS core samples it may be possible to achieve an understanding of the rate of vegetation change and possible drivers of this change.
- As depicted in slide 33, islands seem to act as functional flood plains with three different categories.
- Mike Harvey explained that it can become difficult to differentiate sediment deposition and geomorphological changes due to flood or ice jamming.
- Slide 34 illustrates the dynamics of commonly occurring side channels and side sloughs located across an island. There seems to be no old growth vegetation in these areas. Coordination with riparian and groundwater studies may help understand these areas better.
- Within the Focus Areas, fluvial surfaces will be identified to consider locally derived sediment sources for the sediment transport model.
- In evaluating the 1D model in Q1 2014, the downstream extent of Project effects will be reexamined.
- Variances to this study are presented in slide 38.

Additional Discussion

- Jan Konigsberg voiced that he did not appreciate the footer on the presentations indicating “clean, reliable energy” as it has not been determined how this Project will supply clean energy.

Action Item

Responsibility

Steve Ertman will determine if the model can be used to evaluate lateral effects of tributaries.	AEA
Include Seismic Study updates in all quarterly TWG meetings.	AEA