

Susitna-Watana Hydroelectric Project Potential Information Gathering Activities for 2012 and Rational

Attached is a list of information gathering studies that AEA is considering to initiate in early 2012 in order to develop a better baseline of information to carry out further studies in 2013 and 2014. The following 2012 studies or information gathering tasks identified to date include:

1. Determine the utilization of mainstem and side channel habitats by adult salmon RM 95 to RM 225.

The most affected aquatic habitats occur between RM 95 and RM 225. During the 1980 studies, adult salmon were thought to use mainstem and side channel habitats primarily as migration routes to spawning habitats in tributaries and sloughs. However, the lack of documented mainstem spawning between RM 95 and RM 150 and passage above RM 150 may have been attributable to sampling technology available at the time. It would be prudent to reassess utilization of mainstem and side channel habitats by adult salmon with modern technologies because of the significance that documentation of mainstem or side channel spawning would have on study design and impact assessment.

2. Determine bedload and suspended sediment loads by size fraction at Tsusena Creek,, Gold Creek and Sunshine Gage stations.

Anticipated project effects on sediment transport within the upper and middle Susitna River segments are substantial but not well understood, quantitatively. Sediment transport data is difficult to obtain and transport rates vary significantly month to month in glacial systems. Because of the importance of sediment entrapment to reservoir longevity and downstream channel morphology, it would be prudent to collect data and forecast the change in sediment transport rates early in the study period.

3. Determine the applicability of the temperature data collected during the 1980s studies and the use of SNTMP and DYRESM temperature models.

Extensive stream temperature data was collected during the 1980s studies for the input values and calibration of the SNTMP and DYRESM temperature models. In 2012, continuous temperature data will be collected at 25% to 30% of the 1980s mainstem monitoring sites and compared to the 1980s values to determine the applicability of the data collected in the 1980s to the current proposed Project and identify the extent and need for additional stream temperature monitoring. The temperature models will also be evaluated to determine their applicability to study the effects of the current proposed Project on stream and reservoir temperature.

4. Determine 2012 Susitna River anadromous fish run size and composition at Curry.

Anadromous fish run size and composition was well apportioned to Susitna River segments and tributary watersheds during the 1980 studies. Curry or a similar location would be used to begin the determination of the run size and composition passing up the Middle River. Enumeration

and tagging at both Sunshine and Curry would likely continue into 2013 and 2014 to apportion the Sunshine runs to the Middle River habitats.

5. Circulate a description of the input, output, and time-step capabilities of all candidate models being considered for analysis of flow, temperature, sediment or water quality parameters among those responsible for impact assessment and mitigation planning.

Achieving compatibility of model results across various disciplines and studies will expedite impact assessment and mitigation planning and possibly avoid duplication of effort.

6. Locate the aerial photography used for the Middle River Habitat Assessment and replicate that assessment using geo-mapping technology. Obtain comparable aerial photography of the Middle Reach as it appears in 2012.

The response of middle river channel types to stream flow and their persistence through time is the central focus of the geomorphic assessment. Establishing baseline conditions in geomapping format during 2012 will allow the geomorphic study team to focus their attention on predicting the response of channel types with project conditions. This forecast will become a major input to aquatic and terrestrial habitat assessments.

7. Determine distribution of raptor and eagle nests within the Project area and study locations.

This information is necessary to assess potential Project-related impacts, habitat use, and to avoid and monitoring disturbance from study activities. Replication of aerial stick-nest surveys and comparison to historical information may assist in evaluation of changes in abundance and habitat use.

8. Determine historic and current big game harvest and population levels; develop harvest and population monitoring. Evaluate whether available harvest and population data are collected at a scale appropriate for detecting and predicting potential Project-related changes in total harvest and harvest locations due to changes in human access.

Potential changes in abundance and availability of subsistence wildlife resources may require additional site-specific monitoring and data collection at a level appropriate for detecting and predicting potential changes. Disturbance to human-use and harvest related to study activities should also be considered and evaluated.

9. Vegetation (wildlife habitat), and wetland mapping: update and refine scale, determine appropriate areal extent, develop wetland functional assessment data and methods, riparian wildlife habitat models, develop areas for moose browse inventories, develop areas for ground-based botanical, wetland, invasive plant data collection.

Spatial data for vegetation and wetlands are necessary for evaluation and development of mitigation for potential Project-related impacts to wildlife habitats and wetlands. Compilation of historic mapping and development of preliminary mapping including models incorporation fire periodicity and succession in floodplain communities will be used to refine ground-based data collection.

10. Refine and update wildlife habitat use and movement data; establish appropriate GPS/satellite telemetry samples for moose, bear, Dall's sheep, caribou, beavers, wolves, wolverines, eagles, owls (other wildlife of conservation concern); establish remote monitoring including disturbance monitoring for sensitive habitats such as mineral licks, natal wolf dens, eagle nest sites.

Habitat use varies by season and among years related to population levels, snow fall amounts and other factors. Compilation and evaluation of existing data should be used to refine/augment additional deployments and develop remote techniques to develop mitigation for disturbance, evaluate and predict changes related to Project and other field study activities.