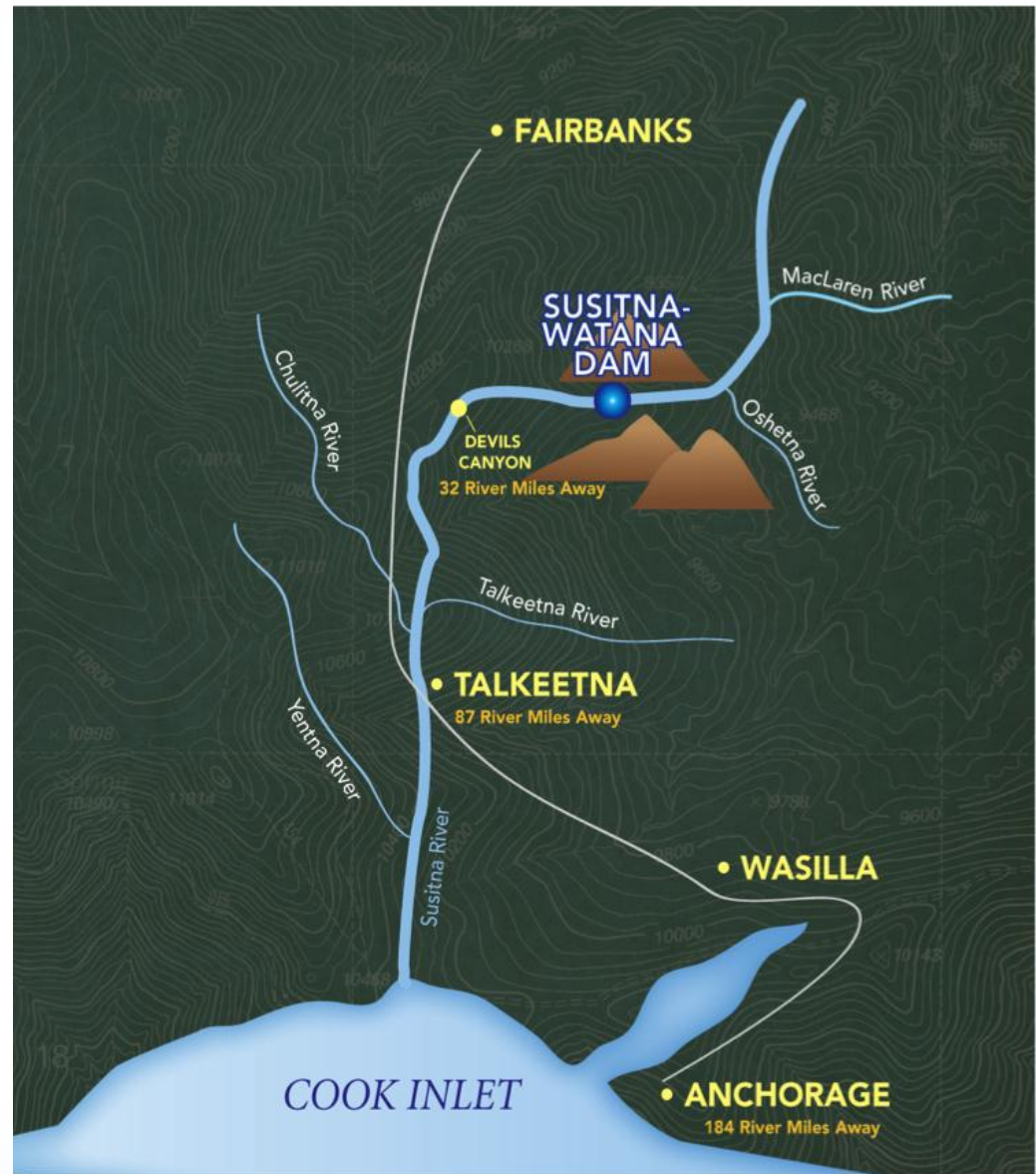


Baseline Water Quality Monitoring

Susitna-Watana Dam Baseline Water Quality Monitoring Study

- Build an understanding of the water quality characteristics that exist and potential future conditions



Baseline Water Quality Monitoring

Overview

- Goals and Objectives
- Issues
- Resolutions
- Additional Work
- 2012 Field Studies Update



Baseline Water Quality Monitoring

Goals

- Characterize the temperature and water quality of the Susitna river
- Predict potential impacts resulting from dam.
- Identify thermal refugia
- Characterize climatic conditions within the River influence area



Methods

- Draw upon historical water quality data while collecting additional data to fill in data gaps
- Attempt to collect Continuous Temperature and MET data while with state-of-art instrumentation
- Characterize physical, chemical, and bacterial conditions within the Project area
- Measure metals concentration and interactions within water, sediment and fish
- Test effectiveness of Thermal Imaging for Middle River (describe thermal refugia for fish populations)

Baseline Water Quality Monitoring

Comment:

Desire for year-round data collection by using multi-parameter probes

RSP Response:

- a. Use transect locations
- b. Deploy continuous temperature probes
- c. Deploy continuous dissolved oxygen probes

Challenges:

- Ice formation
- Access during winter
- Storm events
- River Flow Fluctuations



Baseline Water Quality Monitoring

Comment:

Study Plan need to define how AEA will collect defensible and reliable data.

RSP Response: Develop QAPP/SAP

- **RSP will include in Appendix**
 - Combined “Sampling and Analysis Plan/Quality Assurance Project Plan”
 - Following State Guidance for QAPP preparation
- **Calibration of Instruments will Validate Field Data**
 - Pre-deployment calibration
 - Independent field measurements during downloads
 - Post-calibration during downloads and recovery of instruments



Baseline Water Quality Monitoring

Response to Monitoring Schedule

Comment

Year-round Monitoring should be conducted

	Monitoring Months (Proposed)											
	June	July	August	September	October	November	December	January	February	March	April	May
Field Parameters	■				■	■	■	■	■	■	■	■
General Chemistry	■				■	■	■	■	■	■	■	■
Metals	■				■	■	■	■	■	■	■	■

Challenges

1. Unstable Ice Conditions
2. Field access to sites
3. Access to surface water

Alternatives

1. Visit a sub-set of stations
2. Sites accessible by road or hiking
3. Sampling through thin ice

- Proposed Monitoring Schedule
- Requested Additional Monitoring

Baseline Water Quality Monitoring

Additional Work in Response to Agencies' Comments on PSP

Influence of Groundwater on Transfer of Metals

Approach

- Intense Sample Areas
 - a. Identify specific "Focus Areas"
 - b. Samples across each transect (100 to 500 meters depending upon location morphology)
 - c. Sampled periodically
 - d. Continuous sampling for field parameters
 - e. Piezometers on each transect
 - f. Seepage meters as part of Instream Flow Study



Baseline Water Quality Monitoring

2012 Field Studies Update

Accomplishments

MET Stations

1. Watana Dam Site
 2. near Cantwell
 3. at Indian River
- (Telemetry Systems)

Temperature Monitoring

1. Bank Installations
2. In-channel (string of 3)
3. Data downloads
(July 2012 & August 2012)
4. Winterized for year-round monitoring



2012 Field Studies Update

Baseline Water Quality Monitoring

39 Site Installations



Bank Installation



Bank Installation

Thermistor String
(surface-, mid-, bottom)