



## Alaska State Parks Special Park Use Permit Application

*Please note that a non-refundable application fee may be required for Special Park Use Permits. Make check payable to the State of Alaska. Call park office listed for facility for more information.*

Applicant: Bob Armstrong

Organization: Nushagak Cooperative Inc.

Address: PO Box 350 Phone Number: 907-843-1496

Fax Number: 907-842-2799

Email barmstrong@nushagak.coop

Park Facility Name or Location of Activity (attach map if necessary) Wood Tikchick at the Nuyakuk Falls

Is this for reserved and exclusive use of this park facility? No

From: 6-1-2018 to 6-1-2021  
Date and Time am/pm Date and Time am/pm

Description of Activity (attach additional information if necessary) Studies for a Hydroelectric Project

Number of People: 12 Adults 0 Children

Other Comments: FERC requires a flow meter to be installed at the site and stay in place for the life of the project.

Applicant's Signature

Date



*Solutions for the Future*  
Nushagak Electric & Telephone Cooperative, Inc.  
557 Kenny Wren Road • P.O. Box 350 • Dillingham, AK 99576  
Ph: 907-842-5251 • Fx: 907-842-2799 • www.nushtel.com

### **Nuyakuk River and Surveying Assessments**

The Cooperative has reviewed the 2002 Wood-Tikchick State Park Management Plan (ADNR 2002) and paid special attention to the global goals and objectives associated with Park management. Upon review, the Cooperative is confident their proposed Geotechnical and Surveying assessments associated with the proposed Project support Goals 1, 3 & 4 (and specific associated objectives).

*Goal 1 – “Protect the fish and wildlife resources of the park, including management of natural habitats and support systems.”*

- Objectives 1-1, 1-2 and 1-4

*Goal 3 – “Provide for the outdoor recreation needs of visitors to the park, appropriate to the park’s values and regional setting.”*

- Objective 3-3

*Goal 4 – “Protect, document, interpret and manage areas of significant scientific or educational value, visual quality, cultural or historic value and areas of special significance.”*

- Objective 4-1

### **Logistical Considerations**

Access to the study site (see map below) from Dillingham would be accomplished via either helicopter or float plane. Once on site, individuals will utilize the lodging facilities at the Royal Coachman Lodge. Final discussions are currently taking place with the lodge to confirm availability of requisite accommodations throughout the entire study period. The Royal Coachman Lodge is located approximately 4 miles upstream of the Project site. Daily access to the site would be accomplished via boat. Air access (float plane/helicopter) may be needed occasionally for access purposes depending on the type of scientific equipment needed at the Project site. Once on site, hiking along the banks of the Nuyakuk River will be standard as will the use of boats for in-water data collection and ferrying from one side of the river to the other. All study efforts would take place in Management Unit (MU) 3 (ADNR 2002).

Specific to this study, all surveying data collection would take place in MU 3 on the upper Nuyakuk River between the Royal Coachman Lodge location and the Park boundary approximately 11 river miles to the east (see map below). Upon completion of the studies, no equipment will remain in the park permanently.

## **Intent and Methods**

### **Land Surveying**

A 3-man survey crew will develop a topographic map of the river banks from approximately ½ mile upstream to ½ mile downstream of the proposed project site. A local site specific vertical and horizontal datum will be developed with local benchmarks established in the field. A total station will be used to establish specific elevations across the project site along both river banks. The topographic mapping will tie to the waterline which occurs during the topographic mapping work effort. The data collected in the field will then be processed in the office and used to create a site specific topographic map with an approximate 1-foot contour interval. The new maps will be used to develop the preliminary layout for the hydropower facility.

### **Bathymetry**

Concurrent with the topographic mapping, a bathymetric survey of the river extending approximately ½ mile upstream to ½ mile downstream from the project site will be completed. The survey will utilize a power boat fitted with sonar mapping equipment. The local control datum established for the topographic mapping will be used as control for the new bathymetric mapping. The boat will be used to cover the river section in a logical mapping sequence to provide accurate representation of the river channel bottom up to the river water level which occurs during the mapping work effort. In addition, a total of 20 river cross-sections will be collected at approximately 500 feet upstream and downstream from the project site. These will be used to build a hydraulic model of the river to determine the hydraulic profiles through a range of river flows. The existing falls will be used as the upstream control section. The most downstream cross-section will be used for the downstream control section. The data collected in the field will be process in the office to create a bathymetric map of the river through the project reach. The bathymetric map will be tied to the topographic map to provide a well-coordinated complete project map.

### **Schedule**

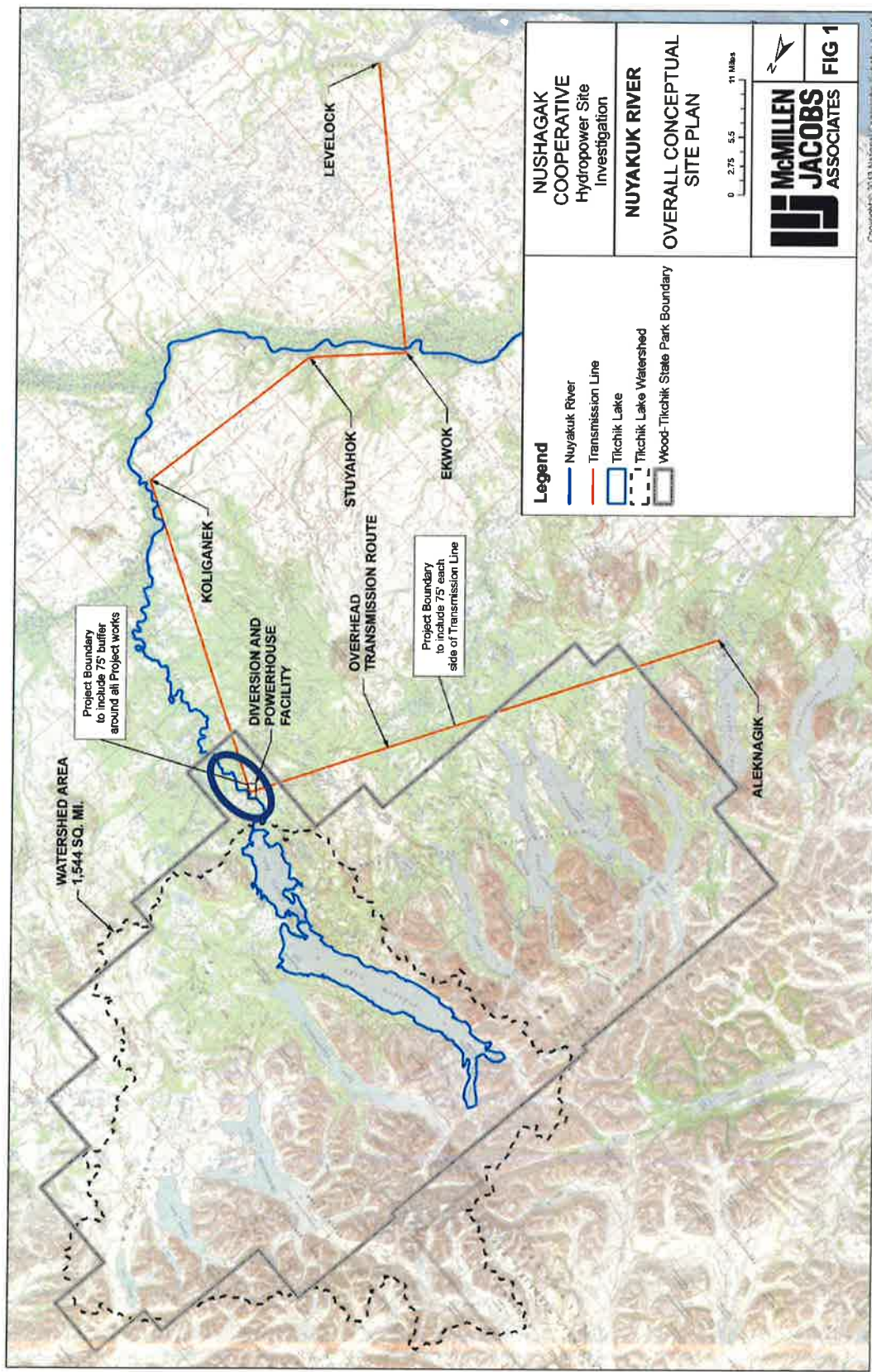
Land Surveying. A 2-week period in August.

Bathymetry. A 2-week period in August.

### **Equipment**

Land Surveying. A three-man survey crew will utilize standard survey equipment to complete the field mapping. A total GPS survey station will be used to set local control benchmarks, then execute the field mapping. A helicopter will be used to access the project site to complete the field survey. The benchmarks will consist of a rebar driven into the ground, then marked with yellow stake. No additional permanent material will be left on site following completion of the field investigations.

Bathymetry. The bathymetry work will require a power boat. A three-man crew which includes a two-man survey team and a boat operator will be used to conduct the bathymetric mapping. A sonar mapping unit will be mounted on the boat to complete the underwater mapping work. Access to the project site will be by boat. At the completion of the work effort, each cross-section location will be identified with a small stake located on each river bank. No additional permanent material will be left on site following completion of the field investigations.



## **References**

ADNR (Alaska Department of Natural Resources, Division of Parks & Outdoor Recreation).  
2002. Wood-Tikchick State Park Management Plan.  
<http://dnr.alaska.gov/Assets/uploads/DNRPublic/parks/plans/woodt/wtplan4mb.pdf>



### **Nuyakuk River Fish Habitat Studies**

The Cooperative has reviewed the 2002 Wood-Tikchick State Park Management Plan (ADNR 2002) and paid special attention to the global goals and objectives associated with Park management. Upon review, the Cooperative is confident their proposed Fish Habitat study efforts associated with the proposed Project support Goals 1 & 4 (and specific associated objectives).

*Goal 1 – “Protect the fish and wildlife resources of the park, including management of natural habitats and support systems.”*

- Objectives 1-1, 1-2 and 1-4

*Goal 4 – “Protect, document, interpret and manage areas of significant scientific or educational value, visual quality, cultural or historic value and areas of special significance.”*

- Objective 4-1

### **Logistical Considerations**

Access to the study site (see map below) from Dillingham would be accomplished via either helicopter or float plane. Once on site, individuals will utilize the lodging facilities at the Royal Coachman Lodge. Final discussions are currently taking place with the lodge to confirm availability of requisite accommodations throughout the entire study period. The Royal Coachman Lodge is located approximately 4 miles upstream of the Project site. Daily access to the site would be accomplished via boat. Air access (float plane/helicopter) may be needed occasionally for access purposes depending on the type of scientific equipment needed at the Project site. Once on site, hiking along the banks of the Nuyakuk River will be standard as will the use of boats for in-water data collection and ferrying from one side of the river to the other. All study efforts would take place in Management Unit (MU) 3 (ADNR 2002).

Specific to this study, all fish habitat data collection would take place in MU 3 on the upper Nuyakuk River between the Royal Coachman Lodge location and the Park boundary approximately 11 river miles to the east (see map below). Upon completion of the studies, no equipment will remain in the park permanently.

### **Intent and Methods**

During the 2018 study effort, preliminary fish habitat surveys will be conducted to gain an understanding of the following in proximity to the proposed Project: 1) habitat types; 2) channel morphology (e.g. width, depth, gradient, etc.; and 3) potential barriers to upstream migration. An understanding of habitat conditions and channel morphology provides initial baseline data for any future assessment of relationships between fish habitat and streamflow.

Assessment of these baseline habitat data will be useful in establishing criteria to insure any flow diversions from a potential hydropower development would have limited to no effect fish habitat and connectivity (consistent with Goal 1, Objectives 1-1, 1-2, and 1-4). Also, a detailed assessment of habitat conditions in proximity to Nuyakuk Falls would provide data useful for establishing an area of scientific value should other water diversion or consumptive uses be proposed (consistent with Goal 1, Objective 1-1 and Goal 4, Objective 4-1).

Two or three biologists will both walk the shorelines and utilize the boat to visually assess and document baseline habitat conditions in the Project area. Along with stream segment descriptions, baseline visual observations related to substrate, marginal cover and large woody debris will be collected. Specific to the falls, elevational and velocity data may be collected to begin to frame passage scenarios for fish species present in the system.

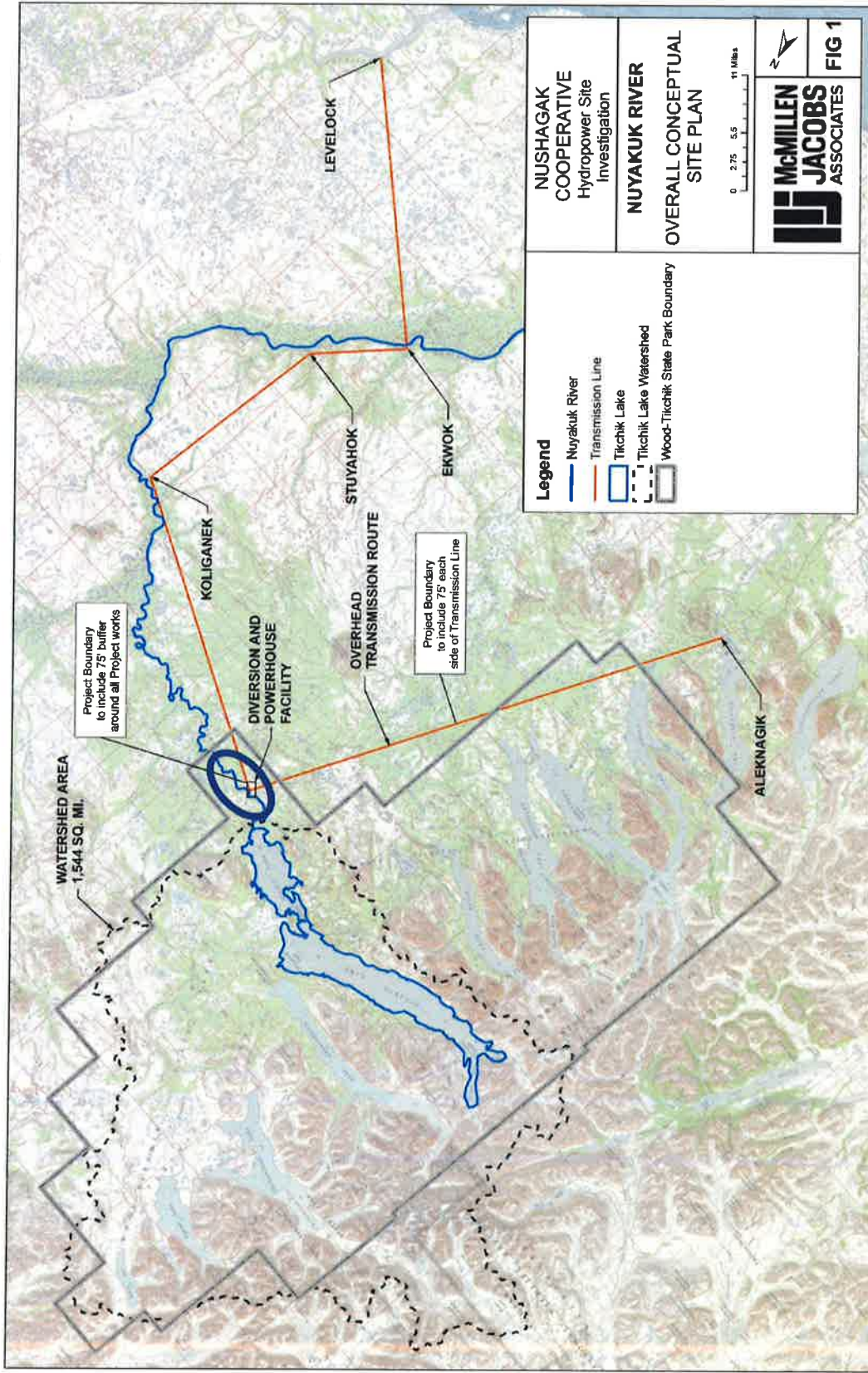
### **Schedule**

In 2018, there will be a single trip to conduct habitat assessment during seasonal low flow conditions, typically in late September/early October. The duration of data collection is expected to last for 2-4 days.

### **Equipment**

Habitat surveys will be conducted by a combination of boat surveys and wading using hand held equipment such as rang finders, depth sounders, and stadia rods to measure channel features. No monitoring or marking equipment will be left on site following the habitat assessment surveys.





### **References**

ADNR (Alaska Department of Natural Resources, Division of Parks & Outdoor Recreation).  
2002. Wood-Tikchick State Park Management Plan.  
<http://dnr.alaska.gov/Assets/uploads/DNRPublic/parks/plans/woodt/wtplan4mb.pdf>