

**Grant Lake Project
(FERC No. 13211 and 13212)**

**Recreational and
Visual Resources**
Draft Study Plan

**Prepared for:
Kenai Hydro, LLC
3977 Lake Street
Homer, AK 99603**

Prepared by:



**HDR Alaska, Inc.
2525 C Street, Suite 305
Anchorage, AK 99503**

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List of Acronyms

ADF&G	Alaska Department of Fish and Game
AEIDC	Arctic Environmental Information and Data Center (University of Alaska)
AHRS	Alaska Heritage Resources Survey
APA	Alaska Power Authority
AWC	Anadromous Waters Catalog
BLM	Bureau of Land Management
°C	Degrees Celsius
cfs	cubic feet per second
cm	centimeter
CPUE	catch per unit effort
°F	Degrees Fahrenheit
DNR	Alaska Department of Natural Resources
EPA	Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
FL	Fork Length
fps	feet per second
ft	feet
G&A	general and administrative
GPS	global positioning system
GWh	gigawatt hours
HEP	Hydroelectric Evaluation Program
HEWG	Human Environment Work Group
IFIM	instream flow incremental methodology
in	inch
KHI	Kenai Hydro Inc.
KHL	Kenai Hydro, LLC
KPB	Kenai Peninsula Borough
kWh	kilowatt hours
LLC	Limited liability company
mg/L	milligrams per liter

mi	mile
MIF	minimum instream flow
mm	millimeter
MSL	Mean sea level
MW	Megawatt
MWh	Megawatt hours
NWI	National Wetlands Inventory
O&M	Operations & maintenance
RM	river miles
RVDs	Recreation visitor days
TL	total length
USACE	U.S. Army Corps of Engineers
USFS	USDA. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
YOY	Young of the year

Recreation and Visual Resources Draft Study Plan

Grant Lake Hydroelectric Project

(FERC No. 13211/13212)

1 Introduction

Kenai Hydro, LLC (KHL) received preliminary permits from the Federal Energy Regulatory Commission (FERC) for the study of proposed hydroelectric projects at Grant Lake/Grant Creek (FERC No. 13212) and Falls Creek (FERC No. 13211) in October 2008. The preliminary permits expire on September 30, 2011. On August 6, 2009, KHL filed a Pre-Application Document (PAD), along with a Notice of Intent to file an application for an original license for a combined Grant Lake/Falls Creek Project (FERC No. 13211/13212 [“Project” or “Grant Lake Project”]) under Part I of the Federal Power Act. On September 15, 2009, FERC approved the use of the Traditional Licensing Process for development of the License Application and supporting materials. KHL is planning to file a License Application for the Project in September 2011.

The Project will be located near the community of Moose Pass, Alaska in the Kenai Peninsula Borough, approximately 25 miles north of Seward, Alaska, and just east of the Seward Highway (State Route 9) (Figure 1).

This Recreation and Visual Resources study plan is designed to address information needs identified in the PAD, during the Traditional Licensing Process public comment process, and through early scoping conducted by FERC. A study report will be produced in early 2011. The study report will present existing information relative to the scope and context of potential effects of the Project. This information will be used to analyze Project impacts and propose protection, mitigation, and enhancement measures in the draft and final License Applications for the Project.

Proposed Project Description

The PAD identified a preliminary Project facilities proposal, which includes a diversion dam at the outlet to Grant Lake, and a powerhouse along Grant Creek. The PAD Project proposal also included diverting water from Falls Creek into Grant Lake to provide additional flows and power generation at the Grant Creek powerhouse. The Falls Creek diversion has been removed from the Project proposal and associated impacts will not be studied. Portions of the Falls Creek preliminary permit area will continue to be studied for access and transmission routes associated with the Grant Lake Project.

The proposed Project will use approximately 48,000 acre-feet of storage in Grant Lake during operations between pool elevations of approximately 675 and 709 feet mean sea level (MSL). Storage will be obtained by raising the natural level of Grant Lake using a low diversion at the outlet and drawing down Grant Lake below its natural water level. The proposed lake level will range from approximately 9 feet above up to 25 feet below the natural lake elevation. A multi-level intake will be constructed near the diversion structure. An approximate 2800-foot-long, 10-foot diameter horseshoe tunnel will convey water from the intake to directly above the powerhouse at about elevation 650 MSL. At the outlet of the tunnel a 650-foot-long section of penstock will convey water to the powerhouse located at about elevation 518 MSL. The tailrace

will be located in order to minimize impacts to fish habitat by returning flows to Grant Creek upstream of the most productive fish habitat. An access road will be constructed in the area between Falls Creek and Grant Creek. Two potential transmission line options will be investigated; an overhead line and an underground option. The transmission line corridor for each option would generally follow the access road grade.

2 Goals and Objectives

The goal of the study effort described in this plan is to provide baseline information, which, together with existing information, will inform an assessment of potential Project impacts on recreation and visual resources in the study report. Where applicable, information may be used to guide the final design of Project facilities.

The objectives of this study are to provide supporting information on the potential resource impacts of the proposed Project that were identified during development of the PAD, public comment, and FERC scoping for the License Application, as follows:

- Impacts of Project construction and operation on distribution of local and tourist recreational use, access, and experience on Grant Lake, Grant Creek, and Vagt Lake.
- Impacts of Project construction and operation on the distribution and abundance of fish and wildlife for anglers and hunters.
- Impacts of Project construction and operation (including roads and facilities) on visual quality in the area.
- Impacts of Project roads and transmission line corridors (if not buried in road grade) on aesthetic and visual resources (including impacts on Scenic Byway viewpoints and views from existing recreational trails and use areas).
- Impacts of Project construction and operation on local and regional recreation resources.
- Impacts of Project facilities and operation (including road access, safety, and use) on local residential land use on Grant Creek and along the road corridor.
- Impact of Project construction and operation on quality of life characteristics of the area (i.e., noise, changed access to remote area, light pollution).

3 Existing Information and Need for Information

3.1 Existing Information

The study area is comprised of predominantly State and Federal lands open to public use. Recreation access and visual resources have been documented for the area by a number of investigations performed in the Project vicinity under the auspices of the Alaska Department of Natural Resources (ADNR), the Kenai Peninsula Borough (KPB), and the USDA Forest Service (USFS) (ADNR 2009, ADNR 2001, KPB 2005, USFS 2007a, USFS 2007b, USFS 2002, USFS No Date).

The Project is located on the Kenai Peninsula, which is known for its recreational and scenic opportunities. In the study area, however, there is no developed trailhead and minimal signage. Access to the study area includes the Grant Lake Mine Road, Grant Lake Portage Trail, Falls Creek Road, Vagt Lake Trail, and Crown Point Mine Road and Trail. Based primarily on 2009 field work in the area, it appears the Grant Lake Mine Road and the Grant Lake Portage Trail receive very light summer use and light winter use, with evidence of camping and several canoes stored at Grant Lake. Users appear to boat across Lower Trail Lake to the informal trailhead. Once the lakes freeze, some snowmachine and cross-country ski use occurs. Falls Creek is accessible directly off the Seward highway (USFS 2007b, USFS No Date, ADNR 2001) and connects to the well-maintained Ptarmigan Lake Trail farther south, creating a loop trail.

The route of the Iditarod National Historic Trail (INHT) traverses this area. The USFS completed an environmental assessment for a route to reconnect the Iditarod Trail from Seward to Anchorage, and the route—identified by a State public easement held by the USFS—is established, but not yet constructed. There is at this time no established use pattern for this trail. The construction of the INHT will create overland access that is expected to cross the existing informal trails and formalize some of them as spurs to Grant Lake, likely increasing their use.

Although there is limited access and no known game fish in Grant Lake, low levels of hunting, fishing, and hiking occur in the area. Some recreational users travel across the Alaska Railroad trestle bridge by foot or ATV and then continue over the ridge into the Grant Lake basin. The trestle is owned by ARRC, and use by the public technically is not legal. There are an abandoned mine and a cabin at the northwest “corner” of the lake. The cabin, owned by the USFS, is located where the Grant Lake Trail and the Grant Lake Mine Road meet. The cabin is not managed for recreational use but is sometimes used by visitors (USFS No Date).

Much of the Grant Lake shoreline is within USFS boundaries and is considered in the Chugach Forest Plan (USFS 2002). The USFS has designated two management “prescriptions” for the Grant Lake area: “Fish, Wildlife, and Recreation” prescription and “Semi-Primitive Motorized” prescription. The very east end of the lake is “Backcountry Prescription.” There is an area that is designated “Mining Claim with Approved Plan of Operations” on Falls Creek Road. The USFS describes the Scenic Integrity Values of most of the Grant Lake area as “Moderate.” The Scenic Integrity Values of the east side of the lake in the Backcountry Prescription is designated “High.” The mining claim is designed “Low.” USFS lands in the study area are open to all motorized use in winter. In summer, the study area is open to motorized use on designated routes only. The backcountry section on the east end of the lake is closed to Off Highway Vehicles (OHVs). In the Kenai Winter Access EIS (USFS 2007a) the Ptarmigan/Grant unit, which the Project falls within, is described as receiving very little winter use from any user group (USFS 2007a). A limited number of requests were received during the scoping process for the Kenai Winter Access EIS to make this unit either motorized or non-motorized. Due to the limited number of requests, there appeared to be little existing conflicts in use type. The Ptarmigan/Grant unit allows exploratory helicopter skiing by permitted commercial guides (USFS 2007a). The area north and east of the Trail Lakes has the potential to support a hut-to-hut trail or trailhead system using existing or new trails and connecting with Grant Lake, Moose Creek (upstream to Grandview), the Johnson Pass Trail, and/or the Summit Lakes area (ADNR 2001). These areas have specific value for the hut-to-hut concept, and the area supports modest-scale recreation and tourism development (ADNR 2001).

The ADNR describes the Project vicinity as having scenic value (ADNR 2001). There is a scenic waterfall at the outlet of Grant Lake, and the mountain walls have more than 3,500 feet of relief on the east shore of the lake. Grant Lake and Grant Creek, where the project is proposed, are not visible from the Seward Highway or any other easily accessed area, except from the air.

3.2 Need for Additional Information

Studies will collect information on current recreational use and visual resources to address site specific potential Project impacts. Studies will:

- Assess the effects of fluctuating Grant Lake water levels on recreational travel, fishing, hunting, and boating around the shoreline in summer and in winter by examining access points and trails, and by questioning stakeholders.
- Assess the effects of altered or reduced flows on Grant Creek on fishing or other recreational use of the creek by examining access points and questioning stakeholders.
- Evaluate the potential for increased recreational use of the area, such as hunting, fishing, and backcountry activities (hiking, skiing, boating, and snowmachining), due to increased access.
- Evaluate current visual value and potential changes by selecting specific assessment points at which to take photographs and create renderings.

4 Methods

4.1 Study Area

Figure 1 shows the Moose Pass and Grant Lake area. The study area includes recreational and visual resources potentially affected by the Project. In general, these resources are on lands between the Seward Highway and the far eastern end of Grant Lake. The study area includes not only the entire shoreline of the lake that might be affected by fluctuating water levels but the areas within the watershed from which the shoreline is readily visible. The study area extends south to just south of Falls Creek.

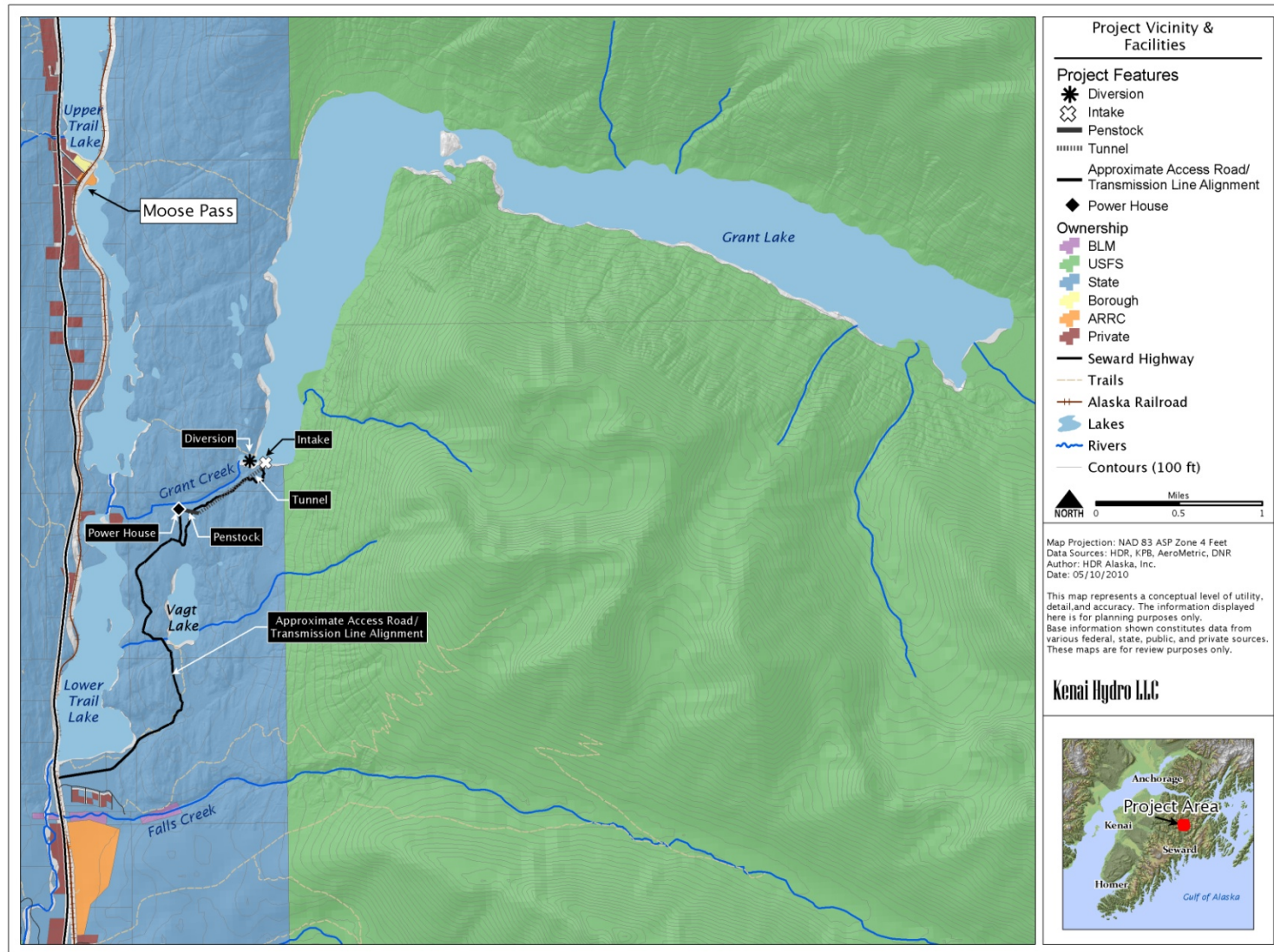


Figure 1. Project vicinity and proposed facilities.

4.2 Field Study Design

The Recreation and Visual Resources Study is comprised of two components that will include a combination of office and field based efforts: Study Component #1 – Recreation Use Study; and Study Component #2 – Visual Resources Study. A review of existing information will be conducted for both study components as an initial study task. The field work for the study components will include the following activities:

- Conduct a site visit by foot and boat to survey and document existing trails, access points, and other recreational use areas to determine potential effects of fluctuating lake level or creek flow.
- Consult with land management agencies and stakeholders regarding recreation and visual resources.
- Visit pre-selected sites for visual assessment by walking on existing trails, viewing known scenic features, and taking photographs and recording locations with GPS at potential sites for renderings.

4.2.1 Study Component #1 – Recreation Use Study

The purpose of the recreation study is to assess recreation use within the study area in order to evaluate potential Project impacts to recreational resources. Work includes the identification of data sources, a literature review, a preliminary assessment of levels and type of recreational use, and identification of potential agency personnel and others with whom to consult by phone or in person.

The study will include a review of management plans, studies, and data that have been developed by resource agencies or government bodies, including the USFS, State, and KPB. The literature review will provide an understanding of other existing and proposed activities within the region as well as an understanding of the expectations of users and the public as described in the Chugach Forest Plan (USFS 2002).

The study team will develop consistent questions and materials for use in consultation with agencies and the public. Staff will work with USFS and DNR personnel familiar with the Project vicinity to determine key stakeholders that may be affected by the Project. Stakeholders may include local residents, local business owners, summer and winter recreational users, and travelers by boat and small aircraft. A Human Environment Work Group will be formed to provide updates to and gather feedback from key agency and public stakeholders. Input will be requested primarily at the time of FERC scoping for this Project, with follow-up after data collection is completed, and in targeted meetings or telephone conversations.

Existing regional plans and studies and the stakeholder interviews are meant to provide information about users of recreation resources, duration of use, and activities. Both winter and summer use will be analyzed.

Foot and boat surveys will provide direct information on the condition of trails and boat access points, and may provide information about current use. Trail and boat access points in the Project vicinity that may be affected by water level fluctuation will be photographed to illustrate potential change.

An accurate recreation features map for the study area will be prepared prior to the field visit using existing GIS layers, existing aerial photography, and available satellite imagery coupled with field data. The map will be used to locate known recreation areas and access points. The map will include information on private land ownership parcels within the study area. Trail location information is available for the Project vicinity from the USFS and the KPB. IKONOS satellite imagery is available for part of the Project vicinity, as well as several aerial photography sets from different years.

Results of stakeholder interviews and meetings and field investigations of study area recreation use will be used in conjunction with existing information on the study area to evaluate potential effects of the Project.

The study report will include a recreation resources map which will display land ownership with indication of state and federal recreational management intent, existing trails and routes (including water travel corridor), proposed Iditarod National Historic Trail and any associated land rights for the trail, formal or informal camp sites and boat access points, and similar information regarding recreation features and patterns. The report will summarize management intent of agencies, information gathered from community and recreation users, describe use patterns indicated on the map, briefly assess potential recreational impacts, and outline potential methods of mitigation, as necessary.

4.2.2 Study Component #2 – Visual Resources Study

Key viewpoints for evaluation will be determined by the recreation site visit, by examining available GIS scenic, elevation, contour, and other pertinent layers, and through input from land management agencies and stakeholders. This will be coordinated with the interviews discussed as part of the recreation analysis. Photos taken from these key viewpoints will serve for the existing and simulated scenery conditions for the assessment of changes that may be posed by the Project.

HDR staff will provide visual simulation of the view from up to four viewpoints, showing Project facilities and operations. Examples of key viewpoints could include a view of the access road area from Falls Creek Trail or proposed Iditarod Trail; a view of the dam and lake shoreline; a view of proposed facilities from the Seward Highway or Alaska Railroad; or a view of the powerhouse from the crossing of Grant Creek from the designated right-of-way for the proposed Iditarod National Historic Trail. Fieldwork will verify key viewpoints. Simulations will be based on Project photos taken from the site visit. Three-dimensional simulation (using 3-D models of project facilities) is not proposed at this time, because project design is not sufficiently developed.

For the affected shoreline of Grant Lake that lies within USFS boundaries, HDR will review existing scenery management information in the Chugach Forest Plan (USFS 2002). The scenery management analysis completed as part of that plan will be reviewed. Specifically, HDR will review criteria with respect to “landscape units,” “scenic integrity,” “concern levels,” “scenic attractiveness,” and “landscape visibility” (USFS 1995). An understanding of the scenic criteria will help determine the degree to which proposed Project components and operations (fluctuating lake levels) may affect those designations or conflict with USFS visual management objectives. The USFS documentation will be applied generally to state lands, to the extent applicable.

Evaluation of change to the existing character will include an examination of proposed Project components and operations with respect to the ability of the landscape to accept change. This evaluation is based on the “seen areas” and “distance zones” as determined by computer analysis, the “scenic integrity,” and the magnitude of change to existing “scenic attractiveness.” Within this will be an analysis of vegetation, soils, colors, texture, and other landscape attributes, an analysis of these components to accept change, a description of the potential effect of the change, and a description of the effect to stakeholders. This information will be weighed against the objectives that were delineated within the USFS, State, and KPB land management plans (USFS 2002, ADNR 2001, and KPB 2005), to the extent such objective exist.

Analysis will include an evaluation of potential protection, minimization, and mitigation options. Work will include the evaluation of seen areas from the specified viewpoints, analysis of the location of facilities and infrastructure, and the evaluation of design options to minimize visual impacts.

The study report will include a map of the visual environment, an aerial or satellite image or map simulating lake level fluctuation, and a visual resources assessment document. The map will show visual resource management objectives in different areas, any views identified as particularly valuable, and the key viewpoints. The report will present the information and analysis described above and will present before-and-after photographic images from the selected viewpoints, showing visual simulation of the project components in the landscape.

5 Agency Resource Management Goals

Information collected by the proposed studies will be used to describe the existing environment, assess potential impacts, and provide essential information that will help to avoid or mitigate Project impacts on recreation, and visual resources, consistent with relevant existing resource management goals. Management plans relevant to recreation and visual resources may include:

- ADNR. 2001. Kenai Area Plan.
- ADNR. 2009. Alaska’s Outdoor Legacy Statewide Comprehensive Outdoor Recreation Plan (SCORP) 2009-2014.
- KPB. 2005. Kenai Peninsula Borough Comprehensive Plan. KPB Planning Department.
- USDA Forest Service. 2002. Revised Land And Resource Management Plan for the Chugach National Forest.

6 Project Nexus

The proposed Project may have a number of potential impacts on recreation and visual resources within the Grant Creek and Grant Lake area. The studies described above are intended to provide sufficient information regarding the nature of the existing recreation and visual resources that these potential impacts can be adequately assessed. A discussion of the data will be presented in the study report, and will be used to inform the development of protection, mitigation, and enhancement measures to be proposed in the draft and final License Applications.

7 Consistency with Generally Accepted Practices

Assessment of recreation potential in terms of the USFS ROS will be based on and generally follow USFS standards (e.g. Clark & Stankey 1979). Scenic Integrity Value assessment and scenery analysis will be based on and generally follow the Chugach Forest Plan (USFS 2002) goals and objectives and the Forest Service Landscape Aesthetics Handbook (USFS 1995), with potential also to draw on other standard visual assessment methods, such as those of the Federal Highway Administration or Bureau of Land Management, and guidance from the DNR.

8 Schedule for Conducting the Study

A general outline of the schedule for the visual and recreation studies follows:

- May 2010 – Conduct literature review, develop questions for agency and public stakeholders. Compile stakeholder list for interviews/meetings.
- June 2010 – Plan site visit for selection of visual resource site points. Meet with the Human Environment Working Group (stakeholders) for recreation and visual resources in conjunction with FERC scoping meetings to collect information and concerns. Create field map. Prepare field logistics, including gear and maps.
- July 2010 – Finalize field site visit plans for both recreation and visual resources studies.
- July – August 2010 – Visit study area for recreation and visual point survey.
- September 2010 – Perform quality control checks on data, including recreation and visual GPS data, photos, and other information.
- October 2010 – Prepare all reports, maps, and technical memoranda. Submit to senior reviewer for quality control. Complete quality review of all products.
- November 2010 – Prepare final versions of reports, visual renderings, and maps.

9 Provisions for Technical Review

Adequate time will be given for technical review of all recreation and visual resource study components in accordance with the Project schedule. Opportunities for public input will be scheduled in conjunction with the FERC scoping meeting. A conference call update will be scheduled in September following the data collection season.

9.1 Quality Control

All field work will be performed to highest accuracy standards by qualified team members. Senior staff will conduct pre-field-work reviews of all study plan components prior to conducting field work.

All field data and interviews will be reviewed daily if possible or otherwise within a week of completion. Photography, GPS data, and interview entries will be reviewed by a qualified team member. Draft reports, maps, and calculations will be reviewed by a senior qualified staff member.

Final reports will be reviewed by a senior qualified staff member.

A landscape architect will review the Project with visual simulation experts and project engineers to ensure depiction of project components is as accurate as possible.

10 References

- Alaska Department of Natural Resources (ADNR). 2009. Alaska's Outdoor Legacy Statewide Comprehensive Outdoor Recreation Plan (SCORP) 2009-2014. ADNR Division of Park and Outdoor Recreation. Juneau. 237 pp.
- ADNR. 2001. Kenai Area Plan. ADNR, Division of Mining, Land, and Water, Resource Development and Assessment Section, Juneau, AK. 505 pp.
- ADNR. 1998. Kenai River Comprehensive Management Plan. ADNR, Division of Land, Division of Parks & Outdoor Recreation, in conjunction with Alaska Department of Fish & Game (ADF&G), Habitat and Restoration Division, and Kenai Peninsula Borough. 130 pp.
- Kenai Peninsula Borough (KPB). 2005. Kenai Peninsula Borough Comprehensive Plan. KPB Planning Department. Soldotna, AK. 348 pp.
- Clark, R. N. and G. H. Stankey. 1979. The Recreation Opportunity Spectrum: A Framework for Planning, Management, and Research. Pacific Northwest Forest and Range Experiment Station, General Technical Report PNW-98. USDA Forest Service, Seattle, WA and Missoula, MT. 39 pp.
- USDA Forest Service (USFS). 2007a. Kenai Winter Access EIS. R10-MB-595. USDA Forest Service, Anchorage, AK. 243 pp.
- USDA Forest Service (USFS). 2007b. Trail River Landscape Assessment. USDA Forest Service, Seward, AK. 148 pp.
- USDA Forest Service (USFS). 2002. Final Environmental Impact Statement and the Revised Land and Resource Management Plan for the Chugach National Forest. Anchorage.
- USDA Forest Service (USFS). 1995. Landscape aesthetics: a handbook for scenery management. Agricultural Handbook No. 701. USDA Forest Service, Washington, DC.
- USDA Forest Service (USFS). No Date. Draft Grant Lake Scenic Resource Analysis, Grant Lake Wildlife Habitat Improvement Project. Chugach National Forest, Seward, AK.