

Susitna-Watana Hydroelectric Project (FERC No. 14241)

Aesthetic Resources

Prepared for

Alaska Energy Authority



SUSITNA-WATANA HYDRO

Clean, reliable energy for the next 100 years.

Prepared by

URS Corporation

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LIST OF ACRONYMS AND SCIENTIFIC LABELS

Abbreviation	Definition
ADNR	Alaska Department of Natural Resources
AEA	Alaska Energy Authority
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
DSM	Digital Surface Model
FERC	Federal Energy Regulatory Commission
FLPMA	Federal Land Policy and Management Act
GPS	Global Positioning System
IFSAR DSM	Interferometric Synthetic Aperture Radar Digital Surface Model
ILP	Integrated Licensing Process
KOP	Key Observation Point
LCP	Landscape Character Point
m	meter
NEPA	National Environmental Policy Act
NHT	National Historic Trail
NPS	National Park Service
OA	Observation Area
OC	Observation Corridor
OP	Observation Point
PAD	Pre-Application Document
Project	Susitna-Watana Hydroelectric Project
RM	River Mile(s) referencing those of the 1980s APA Project.
ROS	Recreation Opportunity Spectrum
RSP	Revised Study Plan
SCORP	Statewide Comprehensive Recreation Plan
SLRU	Sensitivity Level Rating Units
SPreAD	System for the Prediction of Acoustic Detectability
SQRU	Scenic Quality Rating Unit
TBD	To be Determined
U.S.C.	United States Code
USGS	United States Geological Survey
VRI	Visual Resource Inventory
VRM	Visual Resource Management

SUMMARY

The 2012 Aesthetic Resources Study involved research, inventory, and compilation of descriptions of visual and auditory resources in the Project area.

Study Purpose

The purposes of the 2012 Aesthetic Resources Study Program were to define the study area, review existing data, identify potential Key Observation Points (KOPs) and measurement stations, initiate preliminary sensitivity analysis, and develop an understanding of potential effect mechanisms regarding aesthetic resources—including noise/soundscape and lighting—that may result from the proposed Project. Insight gained from this effort was used to finalize development of the Revised Study Plan (RSP) for 2013–2014.

The study included the following tasks:

- Identification of an aesthetic resources study area;
- Review of pertinent planning documents and assessment of management framework;
- Review and field-verification of baseline aesthetics resource data;
- Identification of potential Analysis Locations, or KOPs;
- Evaluation of existing soundscapes and refinement of soundscape analysis plan;
- Initiation of interdisciplinary coordination; and,
- Completion of a preliminary Project-level Sensitivity Analysis.

2012 Accomplishments

- Baseline aesthetic resources data review that included: (1) Review of existing Visual Resource Inventory data (VRI), including scenic quality, visual sensitivity, and distance zones; and (2) Review of data collected as part of the 1985 Aesthetics Resource Study (APA 1985).
- Field review of existing aesthetic resource data, including an evaluation of landscape character, ranking of aesthetic value and visual absorption capability, and identification of notable landscape features.
- A preliminary list of analysis locations was developed prior to implementing field work. The purpose of this list was to develop target locations to guide field reconnaissance during the 2012 study year.
- Developed a preliminary viewshed analysis of the Susitna River to determine the extent visual impacts from the proposed project.
- Interdisciplinary coordination was initiated with resource area study leads to assist in the identification of aesthetic resources.
- A preliminary sensitivity level analysis was implemented by evaluating the BLM's five indicators of public concern (Type of Users, Amount of Use, Public Interest, Adjacent Land Use, and Special Areas).
- The 2012 reconnaissance work for sound modeling focused on developing a baseline understanding of the existing soundscape through observation of perceived and identifiable sources of noise contributing to the ambient sound environment, and the conditions during which they occur.

1. INTRODUCTION

This report provides the results of the 2012 Aesthetics Resources Study, based on the work outlined in the 2012 Recreation and Aesthetic Resources Study plan (AEA 2012).

The Alaska Energy Authority (AEA) is preparing a License Application that will be submitted to the Federal Energy Regulatory Commission (FERC) for the Susitna-Watana Hydroelectric Project (Project) using the Integrated Licensing Process (ILP). The Project is located on the Susitna River, an approximately 300-mile-long river in Southcentral Alaska. The Project's dam site would be located at river mile (RM) 184.

This study provided information to inform the 2013–2014 licensing study program, Exhibit E of the License Application, and FERC's National Environmental Policy Act (NEPA) analysis for the Project license.

2. STUDY OBJECTIVES

The objectives of the 2012 Aesthetic Resources Study Program were to define the study area, review existing data, identify potential key observation points (KOPs) and measurement stations, initiate preliminary sensitivity analysis, and develop an understanding of potential effects to aesthetic resources—including noise/soundscape and lighting—that may result from the proposed Project. Insight gained from this effort was used to finalize development of the Revised Study Plan (RSP) for 2013–2014.

The study included the following tasks:

- Establishment of the aesthetic resources study area;
- Review of pertinent planning documents and assessment of management framework;
- Review and field-verification of baseline aesthetic resources data;
- Identification of potential analysis locations, including soundscape monitoring locations and KOPs;
- Evaluation of existing soundscapes and refinement of soundscape analysis plan;
- Initiation of interdisciplinary coordination with other resource study leads;
- Completion of a preliminary Project-level visual sensitivity analysis; and
- Development of questions to include in survey instruments to better understand visual sensitivity within the Project area.

3. STUDY AREA

The aesthetic resources study area was determined through a combination of viewshed modeling, Project area reconnaissance, agency feedback, and input from other resource studies. Viewshed models were completed for the existing river corridor upstream of the proposed Project and the proposed reservoir. The viewshed of the existing river was calculated using points established at 1/4-mile intervals using the Susitna River miles from the 1980s. The area sampled extended from 5 miles below the proposed dam site, to 5 miles upstream of the potential reservoir.

The viewshed of the proposed reservoir was calculated at an elevation of 2,200 feet, using contour data from the Interferometric Synthetic Aperture Radar Digital Surface Model (IFSAR DSM). Viewpoints were exported from the 2,200 feet elevation polygon at a 1-square-mile grid. Points above 2,200 feet elevation were removed and arbitrary points were added in grid cells that were missed. A total of 65 points were used.

4. METHODS

4.1. Deviations from Study Plan

Work completed during 2012 included a literature review to support preliminary development of survey and executive interview questions included in the Recreation Resources, River Recreation Flow and Access, and Subsistence Resources studies. This work was not included in the original study plan but was necessary to develop questions for the draft survey instruments to support the project level sensitivity level analysis.

Likewise, no soundscape data were collected as part of the 2012 reconnaissance effort. Work completed in 2012 focused on identifying suitable locations to use to collect soundscape data during the 2013-2014 study seasons.

4.2. Aesthetic Resources Data Review

The baseline study for aesthetic resources included (1) review of existing Visual Resource Inventory data (VRI), including scenic quality, visual sensitivity, and distance zones; and (2) review of data collected as part of the 1985 Aesthetics Resource Study (APA 1985).

4.2.1. Baseline Aesthetic Resources Data Review

As part of the East Alaska Regional Management Plan development process, the Bureau of Land Management (BLM) completed a VRI of BLM-administered lands within the Project area (BLM 2006). The VRI data consist of three components: scenic quality, visual sensitivity, and visual distance zone data. The BLM defines scenic quality as the visual appeal of a tract of land, while visual sensitivity is defined as a measure of public concern for scenic quality (BLM 1986). Distance zones represent the distance from which the landscape is most commonly viewed, and were established by buffering common travel routes and viewer locations at distances of 3 miles, 5 miles, and 15 miles (BLM 1986).

This information can be used to understand existing visual (aesthetic) resources at a planning level, and can be refined where necessary to better convey Project-level information. As part of the 2012 work, each component was assessed to determine its applicability to the proposed Project.

4.2.2. Field Review of Existing Aesthetic Resources Data

As part of the Aesthetic Resources Study completed for the 1985 Susitna Hydroelectric Project Application for License for Major Project (APA 1985), an evaluation of existing aesthetic resources was completed. The evaluation included a description of landscape character, ranking of aesthetic value and visual absorption capability, and identification of notable landscape

features. Landscape Character Types and absorption capability ratings were field-verified. The nexus between each landscape character type and the proposed project was re-assessed to help inform the identification of analysis locations and indicators to be used in the impact analysis. Additional information pertaining to views (i.e., change in access to views), cultural modification, lighting, and soundscapes was also collected.

4.3. Preliminary Analysis Locations

A preliminary list of analysis locations was developed prior to implementing fieldwork. The purpose of this list was to develop target locations to guide field reconnaissance during the 2012 study year. This list was developed by overlaying the viewshed maps on United States Geological Survey (USGS) topographic maps indicating locations of towns, travel routes (including trails), recreation destinations, and other important landmarks.

At each analysis location, existing landforms and vegetation were described and Global Positioning System (GPS) coordinates recorded. Photographs were obtained using camera specifications suitable for producing simulations of the proposed Project. Additional information necessary to describe access, existing lighting, noise, and movement was also recorded.

Using data collected from the field review of existing aesthetic resources and the evaluation of reconnaissance-level KOPs, recommendations for analysis locations for the 2013–2014 Study were developed. Analysis locations were distributed across identified landscape character areas, and included potentially sensitive land management areas (i.e., Denali State Park).

Initiate Interdisciplinary Coordination

Interdisciplinary coordination was initiated with the following resource area study leads to assist in the identification of aesthetic resources:

- Recreation
- Socioeconomics
- Subsistence
- Vegetation
- Hydrology
- Ice Processes
- Geomorphology
- Water Quality
- Air Quality

Coordination was a two-step process: (1) review of 2012 and 2013–2014 Study Plans for each resource listed above, and (2) direct consultation with several resource leads. Study Plans were reviewed to determine areas where a direct nexus existed with aesthetic resources.

4.4. Preliminary Project-Level Sensitivity Analysis

A preliminary sensitivity level analysis was implemented by evaluating the BLM's five indicators of public concern (Type of Users, Amount of Use, Public Interest, Adjacent Land Use, and Special Areas). This analysis was cursory, and intended only to provide a basic

understanding of the amount of readily available data to support this analysis. Each criterion was evaluated and ranked using a general classification defined in Table 4.4-1.

The 2012 reconnaissance work for sound modeling focused on developing a baseline understanding of the existing soundscape through observation of perceived and identifiable sources of noise contributing to the ambient sound environment, and the conditions during which they occur.

5. RESULTS

5.1. 2012 Aesthetic Resources Study Area

The 2012 aesthetic resources study area for 2012 was defined in the course of the analysis and it extended from the Denali Highway, south to the Glenn Highway, and from the Richardson Highway, east to George Parks Highway (Figure 5.1-1). This area includes the following broadly defined viewer areas:

- The Susitna River basin corridor, downstream of Devils Canyon to Talkeetna;
- The Susitna River basin at Devils Canyon, and upriver to the proposed dam site;
- The Susitna River, upstream of the proposed dam site to the upriver extent of the inundation zone; and
- Upland areas adjacent to the Susitna River, with emphasis on those areas within the anticipated viewshed of the inundation zone, proposed access roads, and proposed transmission corridors.
- Common air transportation routes used for recreational air tours

Preliminary viewshed models were prepared to demonstrate where the following areas are within view (Figure 5.1-3) (i.e., “seen area”): (1) the segment of the Susitna River located 5 miles below the proposed dam site to 5 miles above the upper terminus of the 2,200 foot elevation reservoir study area (Figure 5.1-2), and (2) the 2,200 foot elevation reservoir study area. The proposed reservoir elevation for the Project has been reduced since this model was prepared; consequently, this model will be refined during the 2013–2014 analysis to be consistent with current project specifications.

As anticipated, the geographical extent of the existing river corridor viewshed is more limited than that which would result from the proposed reservoir. Views of the reservoir would be accessible from areas as far north as the Denali Highway and in upland areas located south of the existing river, adjacent to Fog and Stephan lakes.

Both pre- and post-Project viewshed models were completed using the following specifications:

- Elevation data: 2010 Alaska IFSAR DSM, 5-meter (m) data resampled to 10 m using ArcGIS 10 default resample method (nearest neighbor).
- Viewer height of 1.6764 m, Radius of 48,280 m (30 miles) (curvature accounted for).

The post-Project viewshed was truncated to a radius of 30 miles based on the assumption that Project features (notably, the reservoir) would not be detectable beyond this distance.

Additional viewshed models will be generated for the proposed access route and transmission corridors using final routing for Project alternatives. Because final design data were not known for the proposed access routes and transmission corridors, no viewshed was completed for these features.

5.2. Regulatory and Plan Review

The following federal, tribal, state, and local regulatory and planning documents were reviewed for relevant visual resource management standards, and scenic quality information relating to sensitive viewsheds, open space, or areas identified for visual aesthetics:

Federal Regulations and Plans

- National Environmental Policy Act (NEPA)(42 U.S.C. 4371)
- Federal Land Policy and Management Act (FLPMA)
- Bureau of Land Management – Land Use Planning Handbook
- Bureau of Land Management – Visual Resource Management (VRM) System
- Federal Energy Regulatory Commission (18 CFR 4.41)

State Plans

- George Parks Highway Scenic Byway Master Interpretive Plan Draft. April 30, 2012.
- Alaska Recreational Trails Plan. October 2000.
- Alaska’s Outdoor Legacy. Statewide Comprehensive Recreation Plan (SCORP) 2009–2014. September 2009.
- Recreation and Tourism in South-Central Alaska: Patterns and Prospects. 2002.
- Cultural Resource Management Plan for the Denali Highway Lands, Central Alaska Draft. September 2005.
- Denali State Park Management Plan. 2006.
- Division of Parks & Outdoor Recreation. Ten-Year Strategic Plan 2007–2012. November 2006.
- George Parks Highway Scenic Byway Corridor Partnership Plan. November 2008.

Local Plans

- Chase Comprehensive Plan. 1993.
- Matanuska-Susitna Borough Tourism Infrastructure Needs Study. June 2008.
- Matanuska-Susitna Borough, Alaska Economic Development Strategic Plan. April 22, 2010.
- George Parks Highways Visual Resource Inventory. 1981.
- Denali National Park and Preserve Final South Denali Implementation Plan and Environmental Impact Statement. April 2006.
- Susitna Area Plan. June 1985.
- Susitna Matanuska Area Plan Public Review Draft. February 2010.
- Susitna Basin Recreation Rivers Management Plan. August 1991.
- Talkeetna Comprehensive Plan. Adopted January 1998.
- Feasibility Study for the South Denali Visitor Center. March 21, 2011.

5.3. Baseline Aesthetic Resource Data Review

5.3.1. Visual Resource Inventory Data

To date, no spatial data or data forms have been located from the VRI completed for the East Alaska planning area (BLM 2006). Information known about the VRI data is summarized in Table 5.3-1.

5.3.2. Field Review of 1985 Aesthetic Resources Study Data

The 1985 Susitna Hydroelectric Project Application for License for Major Project (APA 1985) included a detailed assessment of the aesthetic resources in the vicinity of the proposed Project. This assessment included a description of landscape character types, notable natural features, viewers and views, aesthetic value ratings, visual absorption capability, and composite ratings. Each of these is described in more detail below.

As part of this 2012 reconnaissance, the results of this work were field-verified. The nexus between the proposed Project and each landscape character area was evaluated. This information will be used to inform the identification of indicators used in the analysis and the selection of KOPs.

5.3.2.1. *Landscape Character Types*

A total of 13 landscape character types were identified during the 1985 Study (Figure 5.3-1). These locations, listed below, proved suitable physiographic boundaries for use in the current study.

- Mid Susitna River Valley
- Susitna River Near Devil Creek (Devils Canyon)
- Susitna River
- Vee (River) Canyon
- Susitna Upland Wet Tundra Basin
- Portage Lowlands
- Chulitna Moist Tundra Uplands
- Chulitna Mountains
- Wet Upland Tundra
- Talkeetna Uplands
- Talkeetna Mountains
- Susitna Upland Terrace
- Susitna Upland

These areas will further provide quantitative bases by which to evaluate both the nexus of the project with each landscape character area, and the geographic extent of potential project-related effects relative to the overall size of each landscape character area. Information on the landscape character areas visited during the reconnaissance effort is provided in Section 5.5.

5.3.2.2. *Notable Natural Features*

Notable natural features that may serve as destinations for visitors and residents seeking recreation opportunities were identified in the 1985 Preliminary Application Document (PAD) (APA 1985). Descriptions of each notable natural feature described below are quoted directly from text provided in the 1985 PAD (APA 1985).

Devils Canyon (Figure 5.3-2): Devils Canyon surrounds an 11-mile stretch of the Susitna River. It begins just downstream of the mouth of Devil Creek and ends approximately 1.5 miles upstream of Portage Creek.

- **Waterfalls on Devil Creek:** Two large waterfalls pass through narrow gorges on Devil Creek, just upstream of its confluence with the Susitna River. Vertical rock walls and colorful vegetation punctuate the settings. This location was not visited as part of the 2012 reconnaissance.
- **Stephan Lake** (Figure 5.3-3): Stephan Lake is a large water body located at the base of the Talkeetna Mountains. There is a fishing/hunting lodge and several cabins along its shore collectively known as Stephan Lake Lodge. Wetlands and gentle hills covered with mixed woods and tundra comprise the lake's natural shoreline. Stephan Lake is used as a starting place for kayaking and rafting on the Talkeetna River.
- **Tsusena Creek Falls:** A rocky canyon covered with mixed woods and tundra, and a series of rapids and cataracts provide the backdrop for Tsusena Creek Falls. The falls are located on Tsusena Creek, approximately 3 miles above its confluence with the Susitna River. This location was not visited as part of the 2012 reconnaissance.
- **Tsusena Butte Lake:** Located at the edge of the Chulitna Mountains, Tsusena Butte Lake was created by a glacial moraine. The Tsusena Creek valley includes a large variety of tundra landscapes and colorful rock formations. This location was not visited as part of the 2012 reconnaissance.
- **Deadman Creek Falls** (Figure 5.3-4): Similar to other tributary falls that flow into the Susitna River, Deadman Creek Falls occurs in a steep, small-scale rocky canyon.
- **Fog Lakes** (Figure 5.3-5): The Fog Lakes are a series of large, linear lakes on the south side of the Susitna River. They occur in a gently rolling to flat landscape covered with wetlands, mixed forest, and open tundra vegetation.
- **Big Lake and Deadman Lake:** Big Lake and Deadman Lake are picturesquely set between three large, tundra-covered buttes. Many outstanding views from the lakes into the middle Susitna River basin exist. Two long lakes, surrounded by glaciated mountains, are located in a narrow valley known as Caribou Pass. Wetlands and tundra cover the valley floor where the middle fork of the Chulitna River has its headwaters. This location was not visited as part of the 2012 reconnaissance.
- **Vee Canyon:** Vee Canyon is a narrow, vertical, rocky canyon that encloses the Susitna River for over a mile. Located upstream of the confluence with Jay Creek, the canyon includes a double hairpin bend, a deeply cut channel, and a stretch of whitewater rapids. The canyon's steep ridges, varied coloration, and rock formations make it a visually interesting feature. This location was not visited as part of the 2012 reconnaissance.

5.3.2.3. *Nexus between the Proposed Project and Aesthetic Resources*

Preliminary insight on the potential nexus between the proposed Project and the aesthetic resources of each landscape character or notable natural feature were assessed during the 2012 reconnaissance. The purpose of this assessment was to guide the placement of analysis location targeted for the 2013/2014 study years. A project nexus was identified at locations where aesthetic resources had the potential to be altered by the proposed project, or where new access to aesthetic resources (i.e., noteworthy natural features) could be provided by proposed project features (i.e., road and transmission corridor, reservoir). The potential nexus of the project with several noteworthy natural features and landscape character areas were evaluated during the 2012 reconnaissance. This assessment was based on a preliminary understanding of project features and siting, and results are subject to refinement as project design progresses. It is not possible to make assumptions of project-related effects – beneficial or adverse – until the final analysis is completed. Site-specific factors, such as topography and vegetation could reduce or eliminate views of the project. Likewise, the degree to which the project components are detectable on the landscape will depend on other analysis factors such as the distance of the viewer, angle of observation, duration of view, and landscape absorption. Conversely, the degree to which project features improve accessibility to views or areas identified as noteworthy natural features will depend on final corridor selection and routing. For this reason, the identification of potential project nexus should be regarded as preliminary, and used only to guide the focus of the 2013-2014 study. The initial analysis of potential Project nexus with aesthetic resources is provided in Table 5.3-2.

5.4. Preliminary Visual Sensitivity Analysis

5.4.1. Assessment of Coarse-Level Visual Sensitivity

The planning-level sensitivity-level analysis data collected during the 2003 VRI for the East Alaska Planning Area (BLM 2006) will be refined where possible to better convey Project-level features. To prepare for this analysis, information on potential viewers' areas was collected. For the purpose of the 2012 reconnaissance, generalizations were made regarding sensitivity-level indicators in ranking as high, medium, or low. Where possible, these assumptions will be refined using available statistics, such as recreational use counts, to guide our understanding of the level of use in each viewer area.

Within the aesthetic resources study area, a total of five broad areas of shared visual sensitivity were identified through the 2012 reconnaissance. Views are primarily accessed through recreational opportunities, tourism, and subsistence. The 1985 Susitna Hydroelectric Project Application for License for Major Project identifies primary viewers as hunters, anglers, guides, flyers, boaters, packrafters, motorists, and hikers (APA 1985). Viewer areas are described as follows and preliminary visual sensitivity information is provided in Table 5.4-1:

- The Susitna River basin corridor, downstream of Devils Canyon to Talkeetna;
- The Susitna River basin, downstream of Talkeetna to the mouth of the river;
- The Susitna River basin at Devils Canyon, and upriver to the proposed dam site;
- The Susitna River, upstream of the proposed dam site to the upriver extent of the inundation zone;

- Upland areas located north of the Susitna River; and
- Upland areas located south of the Susitna River.

5.5. Preliminary Analysis Locations

5.5.1. Preliminary Analysis Locations – 2012 Reconnaissance

As part of the 2012 field reconnaissance, preliminary KOPs were established in four locations within the Susitna River basin, located upriver of the proposed dam site, and three locations situated in adjacent upland areas (Figure 5.5-1). One linear KOP was implemented along the Talkeetna River, downstream from Devils Canyon.

At each KOP, information on landscape character, existing sources of light and glare, potential views and viewer groups, and access to views was recorded. Observations on existing sources of light and glare, and soundscape were recorded. Baseline photography was collected at each KOP using photographic standards suitable for developing simulations.

Because specific information about the locations of proposed access roads and transmission line corridors was not known at the time of the reconnaissance, no preliminary KOPs were established to evaluate areas where access roads and transmission lines may be sited.

All photographs were collected as a series of photos in order to stitch together as a panoramic. Information collected at each preliminary KOP is described below.

KOP #1: Stephan Lake Uplands

KOP #1 is located southwest of Stephan Lake, in areas used for dispersed hunting. This KOP is representative of views experienced while engaged in dispersed recreation. The view from this location is described as a broad panoramic (Figure 5.5-2). No existing sources of artificial light are visible. Glare is limited to that created by the smooth, glossy and reflective surface of isolated wetland ponds. Landscape character elements are described in Table 5.5-1.

KOP #2: Susitna Upland Terrace west of the Fog Lakes

KOP #2 is located to the west of the Fog Lakes, along an existing 2-track trail (Figure 5.5-4, Figure 5.5-5). This KOP represents views of the Project area experienced by individuals engaged in dispersed recreation and subsistence centered on existing travel ways. The landscape is large in scale; however, the landscape appears enclosed by the Talkeetna Mountains to the northeast. Landscape character elements are described in Table 5.5-2.

KOP #3: Susitna Upland Terrace at the Proposed Dam Site

KOP #3 located in the Susitna Upland Terrace, on river left above the proposed dam site. The view is directed east, looking up the Susitna River valley (Figure 5.5-6). The purpose of KOP #3 was to evaluate the change in landscape character elements (i.e., waterform) as a result of operation of the proposed Project. Landscape character elements are described in Table 5.5-3.

KOP #4: Susitna River, upriver of Proposed Dam Site

KOP #4 is situated approximately 1 mile upriver of the proposed dam site. The purpose of this KOP is to evaluate visible changes in landform following filling of the proposed Project, and the creation of new views as a result of the proposed water surface elevation of the reservoir. Figure 5.5-7 illustrates views downstream from KOP #4. Landscape character elements are described in Table 5.5-4.

The river valley at this location is characterized by steep canyon walls and prominent rock outcroppings. It is anticipated that, following inundation of this reach, the surrounding landforms would be characterized by broad, shallow rolling hills, similar to those observed in upland areas. Figure 5.5-8 illustrates the view downriver at the location of KOP #4 at an elevation of 2,050 feet. At this elevation, the valley would appear broader and views would be expanded to include background distance zones.

KOP #5: Susitna River, view upriver from Susitna Upland Terrace

KOP #5 is located in the Susitna Upland Terrace, on river right above the proposed dam site. The view is directed east, looking up the Susitna River valley (Figure 5.5-9). The purpose of KOP #5 was to evaluate the change in landscape character elements (i.e., waterform) as a result of operation of the proposed Project. Landscape character elements are described in Table 5.5-5.

KOP #6: Susitna River, view upriver from Susitna Upland Terrace

KOP #6 is located approximately 4 miles upriver of the proposed dam site. The purpose of this KOP is to evaluate visible changes in landform following construction and operation of the proposed Project, and the creation of new views as a result of the new base elevation of the reservoir. Photographs were obtained for views facing upstream and downstream. Figure 5.5-10 illustrates views facing upriver from KOP #6. Landscape character elements are described in Table 5.5-6.

The river valley at this location is characterized as broad. It is anticipated that following inundation of this reach the surrounding background mountains would appear more prominent and provide greater enclosure to the landscape, despite the expansive scale. Figure 5.5-11 illustrates the view upriver at the location of KOP #6 at an elevation of 2,050 feet.

KOP #7: Susitna River at Proposed Dam Site (indicated on map as a star)

KOP #7 is located below the proposed dam site (Figure 5.5-12). The purpose of KOP #7 was to evaluate changes in scenic quality components at the location of the proposed dam site that may result from construction and operation of the proposed Project. Landscape character elements are described in Table 5.5-7.

5.6. Preliminary Analysis Locations

5.6.1. Visual Resources

Based on the 2012 reconnaissance, general analysis locations were identified for consideration in the 2013–2014 study (see Section 12.6.4 of the Revised Study Plan). Analysis locations were

selected to represent common and/or sensitive views within the aesthetic resources study area, and areas used to measure anticipated change in scenic quality, and/or new opportunities for views, based on potential configuration of access roads/transmission corridors. These areas will be used to evaluate baseline aesthetic values (including visual resources and soundscape), and will be carried forward through the effects analysis. Analysis locations will differ by landscape analysis factors (i.e., distance from the Project, predominant angle of observation, dominant use), and may be applicable to one or more seasons.

KOPs will be categorized as follows:

- *Observation Points (OPs)*: Observation Points represent specific locations or stationary viewpoints. Views experienced from OPs may be directional (i.e., a focal view) or not (i.e., a 360-degree panoramic).
- *Observation Areas (OAs)*: Observation Areas represent large geographic areas where views could be experienced from a variety of locations. Views are typically transient and experienced by viewers moving through the area (i.e., dispersed recreation; subsistence). The likelihood of viewers standing in the same spot during repeated visits is low. The degree of variability of views experienced from OAs will depend on a variety of landscape characteristics.
- *Observation Corridors (OCs)*: Observation Corridors, also called “linear KOPs”, represent linear viewing experiences, in which scenic attributes are experienced as a continuum. They may be focal (i.e., leading toward a noteworthy natural feature), and/or transient (i.e., passing through a landscape).
- *Landscape Character Points (LCPs)*: Landscape Character Points will be established to provide standardized locations in which to evaluate changes in scenic quality. These locations are not tied to a particular viewer experience; however, they will provide information regarding the change in the visual resource of the area (beneficial or adverse) that may result from the proposed Project.

Recommended analysis locations are described in Table 5.5-8. Each location is targeted to address potential impacts (beneficial or adverse) to aesthetic resources. Locations used to assess new access to views/viewer experience that may result from access roads and/or transmission corridors will be selected through review of topographic maps and viewshed modeling.

5.6.2. Soundscape

The 2012 reconnaissance work for sound modeling focused on developing a baseline understanding of the existing soundscape through observation of perceived and identifiable sources of noise contributing to the ambient sound environment and the conditions during which they occur. Observations were limited due to limited field time and interference resulting from the primary modes of transportation (e.g., helicopter and jet boat) used during the site visit.

Based on coordination with the Recreation and Aesthetic Resource Study Leads, it was determined that preliminary reconnaissance could focus on areas assessed during the 1985 Susitna Hydroelectric Project Application for License for Major Project (APA 1985). These areas include the Mid-Susitna River valley, Susitna Upland Terrace, Susitna River near Devils Canyon, and areas around Talkeetna including uplands and mountains.

Coordination with the Aesthetics and Recreation Program Study Leads was initiated to identify locations where both unattended long-term and attended short-term daytime and nighttime sound measurements will occur. Preliminary information on the VRI indicated that this analysis was completed in parallel with the Recreation Opportunity Spectrum (ROS). Because the ROS system specifies goals pertaining to the soundscape, it could serve as a suitable framework by which to conduct the soundscape analysis and future modeling using the System for the Prediction of Acoustic Detectability (SPreAD).

5.7. Interdisciplinary Coordination

Interdisciplinary coordination was initiated with other Project Study Leads focused on recreation, cultural resources, subsistence, socioeconomics and transportation, geomorphology, ice processes, water quality, and riparian vegetation. Coordination was focused on identifying how other resources may facilitate identification of common, sensitive, or valued aesthetic resources (i.e., KOPs), and/or areas to improve our understanding of where potential changes to biophysical processes could affect scenery attributes within the primary study area.

6. DISCUSSION AND CONCLUSION

The 2012 data review and field reconnaissance provided the necessary information to adequately plan for the 2013–2014 study, both in terms of the technical aspects of the study and the logistical aspects of field implementation. A key result of the 2012 work was the establishment of interdisciplinary coordination to identify key resource implications for aesthetic resources. This activity, along with consideration of potential Project facilities locations and operational characteristics of the proposed Project, was instrumental in identifying preliminary analysis locations to address potential effects. It is expected that ongoing interdisciplinary coordination completed in 2013–2014 will further refine these areas, and inform the placement of soundscape measurements.

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7.1. Map References

URS Alaska, 2012. AES_KEY_OBS_PTS - Key observation points

URS Alaska, 2012. AES_StudyArea: Aesthetics study area bound by Denali, Richardson, Glenn and Parks Highways.

URS Alaska, 2012. AES_VS_Current.tif modeled from 2010 IFSAR Digital Terrain Model with view points 1 mile spacing along the Susitna River 5 miles above to 5 miles below project

URS Alaska, 2012. AES_VS_2200ft.tif modeled from 2010 IFSAR Digital Terrain Model with 1 mile sample points in project area at 2200 ft elevation

8. TABLES

Table 4.4-1. Sensitivity level rating criteria (BLM 1986)

Sensitivity Level Indicator	Sensitivity Level Rating Guidance		
	High	Medium	Low
Type of Users. Maintenance of visual quality is:	Major concern for most users	Moderate concern for most users	Low concern for most users
Amount of Use. Maintenance of visual quality becomes more important as the level of use increases:	High level of use	Moderate level of use	Low level of use
Public Interest. Maintenance of visual quality is a:	Major public issue	Moderate public issue	Minor public issue
Adjacent Land Uses. Maintenance of visual quality to sustain adjacent land use objectives is:	Very important	Moderately important	Slightly important
Special Areas. Maintenance of visual quality to sustain Special Area management objectives is:	Very important	Moderately important	Slightly important

Table 5.3-1. Information on the Visual Resource Inventory completed for the BLM East Alaska Planning Area

Data Type	Data
VRI Analyst	Tom Dilts
Year Completed	2003
Metadata	No metadata developed
Methodology	SQRU boundaries were first delineated using National Park Service, Alaska Support Office's Ecoregion coverage. Ecoregions for the state of Alaska were originally generated using data on climate, terrain, soils, and vegetation. Ecoregions within Glennallen District were selected and were further subdivided based upon factors listed above with emphasis on terrain. In some instances, Ecoregions were merged, especially if they were small and located near the periphery of the district.
# of Scenic Quality Rating Units (SQRUs)	22 SQRUs (15 contain BLM-administered lands)
Travel Routes	Alaska Railroad, Park Highway, Denali Highway, Valdez Creek Road, Delta River, Gulkana River, Richardson Highway, Coal Mine Road, Tok-Cutoff Highway, Nabesna Road, Mentasta Spur Road, Glenn Highway, Lake Louise Road, Klutina Lake Road, Old Edgerton Highway, New Edgerton Highway, McCarthy Road, Old Copper River Railroad, Copper River Highway, Mineral Creek Road
Scenic Quality Rating Units	Malaspine Foreland, Bering Foreland, Copper River Delta, Eastern Prince William Sound, Chugach Mountains, St. Elias Mountains, Wrangell Mountains, Kluane Mountains, Chitina River Valley, Copper Basin, Tetlin Lowlands, Mentasta Mountains, Gakona River, Tangle Lakes, Clearwater, Alaska Range Mountains, Monahan Flats, Northern Foothills, Chulitna Mountains, Talkeetna Mountains, Nelchina Uplands, Cook Inlet Lowlands

Table 5.3-2. Potential nexus between the proposed project and aesthetic resources of the Study Area (under development).

Landscape Character Type (Notable Natural Feature)	Nexus between the Proposed Project and Aesthetic Resources of the Landscape Character Type
Mid Susitna River Valley	Change in the structure and composition of riparian vegetation communities may result from changes in the existing hydrologic (flood) regime. Such changes could result in more homogenous, even-aged, mature riparian vegetation communities that would alter the existing mosaic of form, line, color and texture of vegetation.
	Changes in river flow and geomorphology (including sediment transport and ice processes) could alter the appearance of the river corridor (flow, sandbars, islands)
	Transmission and access routes being considered for the proposed project could be visible in upland portions of the Mid Susitna River Valley. Although final route alternatives have not been selected, construction and operation of these project components could introduce bold lines that contrast the existing landscape. New sources of glare could result from Transmission lines.
	Access routes and transmission corridors could result in creation of new views of both the Susitna River Basin, and the surrounding areas.
Susitna River Near Devil Creek (Devils Canyon)	Aesthetic qualities of views from the base of or within Devils Canyon, a notable natural feature, could be affected by construction and operation of the proposed project if Chulitna and/or Gold reek Corridor transmission or road facilities are visible from this area.
	Change in flow regime could improve accessibility to this river reach, thereby creating new viewing opportunities.
	Transmission and access routes being considered for the proposed project could be visible from locations within the Canyon. Transmission lines could introduce new sources of glare not currently present under existing conditions.
Susitna River / Vee (River) Canyon	Vee Canyon, and identified notable natural feature, would be impacted by the proposed project due to its location within the inundation zone.
	The proposed dam structure and associated transmission lines and access routes could impact aesthetic quality within the Susitna River through introduction of cultural modifications.
	Change in landform, waterforms (river, waterfalls) and vegetation, and levels of existing cultural modification are expected to result from operation of the proposed project due to inundation of the existing river canyon.
	The proposed reservoir would be visible from locations >10-25 miles away. Due to the high value of water as a scenic attribute, views of this water feature could improve scenic quality scores from certain locations.
	Change in access to views is expected to result from operation of the proposed project. Access roads and transmission corridors would provide opportunities for views to reach currently remote areas of the Susitna River/Vee Canyon. Within the inundation zone, viewers would be situated at a higher elevation than under existing conditions, and could potentially experience views from a less mobile vantage point (depending on the type of aquatic recreation engaged) due to loss of flowing river.
	Transmission and access routes being considered for the proposed project could be visible from locations within the Susitna River landscape character type. Transmission lines could introduce new sources of glare not currently present under existing conditions.

Landscape Character Type (Notable Natural Feature)	Nexus between the Proposed Project and Aesthetic Resources of the Landscape Character Type
	Should levels of dust increase during periods of drawdown, visibility within the Susitna River / Vee Canyon and adjacent areas may be affected.
Wet Upland Tundra	<p>Big / Deadman Lakes, identified notable natural features, could be affected by construction and operation of the proposed project, particularly if transmission line and access roads were sited within the Deadman Creek basin.</p> <p>The Wetland Upland Tundra landscape character could be affected by construction and operation of access roads and transmission corridors. Siting of these structures within this landscape character area would introduce strong contrast and new sources of glare to the area.</p> <p>The Susitna River (Susitna Upland Wet Tundra Basin) could serve as an access point to the reservoir.</p> <p>Portions of this landscape character types will also be situated within the viewshed of the inundation zone. New sources of light and glare associated with the dam structure could be visible from this area.</p>
Susitna Upland Wet Tundra Basin	Deadman Creek (Wetland Upland Tundra) could serve as an access point to the reservoir. Portions of this landscape character types will also be situated within the viewshed of the inundation zone.
Portage Lowlands; Chulitna Moist Tundra Uplands	<p>Change in access to views of the Portage lowlands could result from access roads and/or transmission corridors. Transmission lines could introduce new sources of glare not currently present under existing conditions.</p> <p>The existing landscape character type could be affected by construction and operation of access roads and/or transmission corridors.</p>
Talkeetna Uplands	<p>Change in access to views of the Talkeetna Uplands could result from access roads and/or transmission corridors</p> <p>The existing viewshed of this landscape character type could be affected by construction and operation of access roads and/or transmission corridors.</p> <p>Cumulative impacts to scenic attributes of the Talkeetna Uplands landscape character type could result from the addition of access roads and transmission corridors to existing areas of cultural modification (gravel mine, existing transmission, railroad). Transmission lines could introduce new sources of glare not currently present under existing conditions.</p>
Talkeetna Mountains / Susitna Upland Terrace	<p>The aesthetic qualities of the Fog and Stephan Lakes, identified notable natural features, could be affected by construction and operation of the proposed project, including access roads and transmission corridor.</p> <p>Portions of the Talkeetna Mountain and Susitna Upland Terrace would be located within the viewshed of the proposed reservoir. Views of this water feature may improve scenic quality of views within this area.</p> <p>The proposed dam, access roads and transmission corridor may be located within the viewshed of the Talkeetna Mountains and Susitna Upland Terrace and could detract from the scenic quality of this area due to introduction of contrasting features, and new sources of light and glare.</p>
Susitna Upland	Portions of the Susitna Upland would be located within the viewshed of the proposed reservoir. Views of this water feature may improve scenic quality of views within this area.

Landscape Character Type (Notable Natural Feature)	Nexus between the Proposed Project and Aesthetic Resources of the Landscape Character Type
Chulitna Mountains	Caribou Pass, a notable natural feature, could be affected by construction and operation of access routes and transmission corridors, particularly if sited north of the Susitna River.
	Viewsheds of high elevation areas of the Chulitna Mountains could be impacted by construction and operation of the proposed project, including access routes and transmission corridors.

Table 5.4-3. Preliminary sensitivity level analysis of the Project area

	SLRU 1	SLRU 2	SLRU 3	SLRU 4	SLRU 5	SLRU 6
Type of User	<ul style="list-style-type: none"> ▪ Aquatic recreator ▪ Subsistence ▪ Tourist ▪ Tour boat operator ▪ Resident / cabin owner ▪ Mine worker ▪ Train operator 	<ul style="list-style-type: none"> ▪ Local ▪ Subsistence ▪ Recreation ▪ Transportation 	Aquatic Recreator	<ul style="list-style-type: none"> ▪ Aquatic recreator ▪ Subsistence ▪ Cabin owner 	<ul style="list-style-type: none"> ▪ Hunting ▪ Subsistence fishing ▪ Lodging 	<ul style="list-style-type: none"> ▪ Hunting ▪ Subsistence ▪ Fishing ▪ Lodging ▪ Cabin owner
Amount of Use	Variable – Highest use among tourists accessing area via jetboat	TBD	LOW	LOW	HIGH	LOW
Public Interest	High – socioeconomic value of tour boats; tie to Talkeetna	TBD	High – notable natural feature recognized beyond the region	TBD	TBD	TBD
Adjacent Land Uses	Denali State Park	<ul style="list-style-type: none"> ▪ Susitna Flats Game Refuge ▪ Iditarod NHT* ▪ Denali State Park 	N/A	N/A	N/A	N/A
Special Areas	N/A	<ul style="list-style-type: none"> ▪ Susitna Flats Game Refuge ▪ Iditarod NHT 	N/A	N/A	N/A	N/A

*NHT = National Historic Trail

Table 5.5-1. Landscape character elements of the Susitna Upland Terrace (KOP #1)

Landscape Character Element	Description
Landforms	Foreground views are characterized by the broad, gentle slopes of the foothills of the Talkeetna Mountains and Susitna Upland Terrace. Adjacent mountains are rugged, with areas of exposed rock that appear rough against the surrounding tundra. Middle ground views extend across the Susitna Upland Terrace to the upper ridgelines of the Susitna River basin. Predominant lines appear horizontal, to shallow and diagonal. Background views are characterized by the steep and rugged Talkeetna and Chulitna Mountains, and include focal landscape features, such as Denali National Park to the northwest (Figure 5.5-3), and the expansiveness of Susitna River basin to the north-northwest.
Waterforms	Water forms are limited to isolated wetland ponds. These water forms appear discrete due to contrast of the smooth and glossy texture of the water against the surrounding vegetation.
Vegetation	Vegetation is characteristic of tundra. Spruce trees are apparent as darker green stippling across upland terraces.
Cultural Modification	No cultural modification visible.
Views	Broad panoramic, containing distinct landscape elements in foreground, middle ground, and background. Mt. McKinley is considered focal to this view.
Artificial Light	No sources of artificial light are present in this area.
Glare	Sources of glare are limited to the natural reflectivity of wetland ponds.
Soundscape	Assumed to be natural; however, soundscape was not assessed due to presence of the helicopter and inability to power down. It is possible that motorized recreation is audible during winter months; however, this use is expected to be infrequent.

Table 5.5-2. Landscape character elements of the Susitna Upland Terrace (KOP #2)

Landscape Character Element	Description
Landforms	Foreground–middle ground views are characterized by flat to gently sloped terrace. Background views are characterized as bold and rugged.
Waterforms	Numerous small lakes and wetlands appear oval to irregular/amorphous, flat, smooth and glossy. Grey-blue color and reflective glare contrasts surrounding color and texture.
Vegetation	Upland tundra; dark green, conical; dense. Patchiness created in areas where no conifers exist.
Cultural Modification	Isolated cabins; appear cubic, small in scale; congruent with existing landscape character.
Views	Large scale, but enclosed.
Artificial Light	No artificial light observed.
Glare	Sources of glare are limited to the natural reflectivity of ponds.
Soundscape	Assumed to be natural; however, soundscape was not assessed due to presence of the helicopter and inability to power down. It is possible that motorized recreation is audible during winter months; however, this use is expected to be infrequent.

Table 5.5-3. Landscape character elements of the Susitna Upland Terrace at the proposed dam site (KOP #3)

Landscape Character Element	Description
Landforms	Foreground view is characterized by the broad, flat to gently rolling landforms of the Susitna Upland Terrace. The upper elevations of the steep canyon walls of the Susitna River and Deadman Creek drainages are apparent. Background views are characterized by the rugged and angular Talkeetna Mountains.
Waterforms	No water forms are currently visible from this location.
Vegetation	Vegetation appears dark green, cylindrical, and uniform, with distinct patches created from areas where spruce are not visible. Patches appear brighter green due to the more vibrant color of the tundra vegetation compared to the spruce.
Cultural Modification	No cultural modification is visible from this location.
Views	Views appear focal and directional. The eye is drawn upriver, following the path of the river.
Artificial Light	No sources of artificial light are present in this area.
Glare	No sources of glare are present in this area.
Soundscape	Assumed to be natural and dominated by the sound of wind, and movement of the river. However, soundscape was not assessed due to presence of the helicopter and inability to power down. It is possible that motorized recreation is audible during winter months; however, this use is expected to be infrequent.

Table 5.5-4. Landscape character elements of the Susitna River basin approximately 1 mile upriver from the proposed dam site (KOP #4)

Landscape Character Element	Description
Landforms	The river valley is characterized by a steep V-shaped canyon. The topography of the basin creates prominent, converging diagonal lines. Bold and rugged rock outcroppings are common; appear coarse in texture against the surrounding vegetation.
Waterforms	Flowing; broad and flat, interrupted only by scattered oval to round rocks; curvilinear, glossy to matte; beige tones.
Vegetation	Dense; contiguous; varying shades of green; soft.
Cultural Modification	No cultural modification is visible from this location.
Views	Views appear focal and directional. The eye is drawn downriver, following the path of the river.
Artificial Light	No sources of artificial light are present in this area.
Glare	No sources of glare are present in this area.
Soundscape	Assumed to be natural and dominated by the sound of wind, and movement of the river. However, soundscape was not assessed due to presence of the helicopter and inability to power down.

Table 5.5-5. Landscape character elements of the Susitna Upland Terrace at the proposed dam site (KOP #5)

Landscape Character Element	Description
Landforms	Landforms characterized by the expanse of the Susitna River basin, and the broad, flat and predominantly horizontal lines of the upland terraces. Surrounding mountains appear simple and moderate in scale.
Waterforms	The Susitna River appears focal and directional. The water appears luminescent, thereby creating a contrasting curvilinear line that meanders through the basin.
Vegetation	Vegetation appears as a contiguous expanse of spruce, characterized in areas as distinct dark green cylindrical forms against patches of open tundra.
Cultural Modification	No cultural modification is visible from this location.
Views	Views appear focal and directional. The eye is drawn upriver, following the path of the river.
Artificial Light	No sources of artificial light are present in this area.
Glare	No sources of glare are present in this area.
Soundscape	Assumed to be natural and dominated by the sound of wind, and movement of the river. However, soundscape was not assessed because the helicopter did not touch down at this location. It is possible that motorized recreation is audible during winter months; however, this use is expected to be infrequent.

Table 5.5-6. Landscape character elements of the Susitna River basin, facing upriver (KOP #6)

Landscape Character Element	Description
Landforms	Broad, flat/gently sloping river valley; river's edge characterized by moderately steep banks. Lines horizontal to gently undulating; mountains in background appear prominent and distinct; moderately rugged. Sandbar islands common due to shallow water depth. Sand appears smooth and fine textured, grading to coarse patches of cobble.
Waterforms	Flat, broad; shallow.
Vegetation	Contiguous; dense; dark green, with patches of more vibrant green where deciduous vegetation exists.
Cultural Modification	No cultural modification is visible from this location.
Views	Views appear focal and directional. The eye is drawn upriver, following the path of the river.
Artificial Light	No sources of artificial light are present in this area.
Glare	No sources of glare are present in this area.
Soundscape	Assumed to be natural and dominated by the sound of wind, and movement of the river. However, soundscape was not assessed because the helicopter did not power down.

Table 5.5-7. Landscape character elements of the river canyon, facing upriver (KOP #7)

Landscape Character Element	Description
Landforms	River canyon appears steep, dominated by diagonal lines; v-shaped canyon; rock outcroppings appear cubic, vertical and rough.
Waterforms	Flat; curvilinear, glossy to matte; beige tones.
Vegetation	Dense, cylindrical; vertical lines; contiguous; varying shades of green.
Cultural Modification	No cultural modification is visible from this location.
Views	Views appear focal and directional. The eye is drawn upriver, following the path of the river.
Artificial Light	No sources of artificial light are present in this area.
Glare	No sources of glare are present in this area. Reflectivity and glare in the water are minimized due to heavy silt loading.
Soundscape	Assumed to be natural and dominated by the sound of wind, and movement of the river. However, soundscape was not assessed because we were not able to exit the helicopter.

Table 5.5-8. Preliminary Recommendations for analysis locations

	Analysis Goal	Locations Being Considered	Outcome
Mid Susitna River Valley	Evaluate potential impacts of transmission and access routes to aesthetic resources of the Mid Susitna River Valley.	Include upland and river-based analysis locations, including: <ul style="list-style-type: none"> • Susitna River, view downriver from perspective of a boater • Susitna River, view upriver from perspective of a boater (jetboat) • View from rail line • Upland, from perspective of existing trails • Upland, from dispersed recreation and/or subsistence use areas • Aerial views, from common flight path used for flightseeing 	<ul style="list-style-type: none"> • Understand landscape absorption • Identify changes in scenic quality due to introduction of cultural modification • Where possible, inform engineering team to consider potential design options
	Evaluate new access to views of both the Susitna River basin and the surrounding areas that may be created from access routes and transmission corridors. Evaluate each proposed route to determine where new views to focal or large-scale panoramic views would be accessible. Use viewshed modeling to support the selection of analysis locations.	Select locations on and adjacent to proposed access routes and transmission line corridors.	<ul style="list-style-type: none"> • Identify areas where increased access to focal or panoramic views may increase exposure to certain viewsheds • Identify areas where access to noteworthy natural features may change • Use information to inform understanding of post-Project visual sensitivity

	Analysis Goal	Locations Being Considered	Outcome
	Evaluate the change in appearance of downstream river attributes as a result of the proposed Project.	<ul style="list-style-type: none"> View downriver, from perspective of a boater. Identify islands and/or riparian areas influenced by hydrologic regimes (i.e., multi-aged stands/varied vegetation communities) View from existing winter trail toward ice bridge (note that this analysis will be coordinated to the outcome of the Ice Processes Study) View from upland trail, and/or dispersed recreation/subsistence use area At transect locations for Ice Processes/Geomorphology/Riparian Vegetation studies 	<ul style="list-style-type: none"> Define anticipated changes to riparian vegetation and related perceivable potential indirect impacts to aesthetic resources (i.e., increased enclosure, potentially decreased heterogeneity/contrast across vegetation communities) Characterize existing scenic quality attributes of ice bridges, with a focus on those areas where ice bridge formation has been recorded across multiple years; evaluate anticipated change in these attributes (spatially and/or temporally) based on input from ice processes work Define anticipated change in landscape character of the valley
		View of river valley from upland area, i.e., locations with existing view of the Mid Susitna River Basin (i.e., Denali State Park, rail line; trails).	<ul style="list-style-type: none"> If determined to be detectable by the study, define anticipated changes to character of the river that may result from operation of the Project Demonstrate differences in ability to detect change as a function of distance from the Project
Devils Canyon	Evaluate the change in the appearance, if any, of river flow within Devils Canyon as a result of the proposed Project.	View downriver from perspective of a low flying aircraft.	<ul style="list-style-type: none"> Define anticipated change to aesthetic attributes based on possible change in flow regime
		View upriver from perspective of a jetboat operator (base of Devils Canyon).	<ul style="list-style-type: none"> Define anticipated change to aesthetic attributes based on change in flow regime
	Evaluate potential impacts of transmission and access routes to aesthetic resources of Devils Canyon.	View from river canyon, south toward corridor (visibility questionable).	<ul style="list-style-type: none"> Define impacts to scenic quality attributes of Devils Canyon that may result from access roads and transmission lines
	Evaluate new access to views of Devils Canyon due to access roads and transmission corridors.	If determined that views would be accessible, select locations on and adjacent to proposed access routes.	<ul style="list-style-type: none"> Describe scenic quality attributes of views accessed by roads and/or transmission corridors
Susitna River / Vee (River) Canyon	Evaluate change in mechanism of view(s) within the inundation zone.	View upriver/downriver from within Susitna River corridor (existing).	<ul style="list-style-type: none"> Disclose anticipated changes in viewer experience due to formation of the reservoir
	Evaluate change in landscape features (landform, vegetation, waterform, cultural modification).	View upriver / downriver from within Susitna River corridor (existing), with analysis location established at height of reservoir.	<ul style="list-style-type: none"> Identify change in scenic quality attributes of landform, vegetation, waterform, cultural modification

	Analysis Goal	Locations Being Considered	Outcome
	Evaluate change in views of the existing river corridor (waterform) following inundation and formation of the reservoir.	<ul style="list-style-type: none"> Views of the river from existing access trails, and upland areas used for dispersed recreation and/or subsistence 	<ul style="list-style-type: none"> Identify changes in scenic quality attributes and associated scores based on introduction of prominent water feature in viewshed
Susitna Upland Wet Tundra Basin	Evaluate change in views of the existing river corridor (waterform) following inundation and formation of the reservoir.	<ul style="list-style-type: none"> Views of the river from existing access trails, and upland areas used for dispersed recreation and/or subsistence 	<ul style="list-style-type: none"> Identify changes in scenic quality attributes and associated scores based on introduction of prominent water feature in viewshed
Portage Lowlands	Evaluate change in seasonal attributes of river downstream of the proposed dam site as a result of varied flow regimes.	Views from existing trail; views from mouth of creek.	<ul style="list-style-type: none"> Identify change in scenic quality attributes of landform, vegetation, waterform, cultural modification. Consider focus on flow-based aesthetic qualities
	Evaluate potential impacts to landscape character that may result from access roads and/or transmission lines	Views from proposed access roads and transmission lines.	<ul style="list-style-type: none"> Identify changes in scenic quality attributes that may result from introduction of roads and transmission corridors Use information gleaned from analysis to inform engineering design and design options
	Evaluate new access to views of Portage Lowlands and Portage Creek due to access roads and transmission corridors.	Select locations on and adjacent to proposed access routes and transmission line corridors.	<ul style="list-style-type: none"> Describe scenic quality attributes of views accessed by roads and/or transmission corridors
	Evaluate potential impacts to landscape character that may result from access roads and/or transmission lines.	Views from existing trails; dispersed recreation and/or subsistence use areas.	<ul style="list-style-type: none"> Identify changes in scenic quality attributes that may result from introduction of roads and transmission corridors Use information gleaned from analysis to inform engineering design options
Chulitna Moist Tundra Uplands	Evaluate new access to views of Portage Lowlands and Portage Creek, Devils Canyon (noteworthy natural feature), Devils Creek Falls (noteworthy natural feature), the dam structure and reservoir due to access roads and transmission corridors.	Views from proposed access roads and transmission corridors.	<ul style="list-style-type: none"> Describe scenic quality attributes of views accessed by roads and/or transmission corridors
	Evaluate potential impacts to landscape character that may result from access roads and/or transmission lines.	<ul style="list-style-type: none"> Views from existing trails; dispersed recreation and/or subsistence use areas Views from Tsusena Butte / Lake Views from Denali Highway, with emphasis on existing pull-outs/established vistas 	<ul style="list-style-type: none"> Identify changes in scenic quality attributes that may result from introduction of roads and transmission corridors Use information gleaned from analysis to inform engineering design options

	Analysis Goal	Locations Being Considered	Outcome
Wet Upland Tundra	Evaluate new access to views of Deadman Creek, the dam structure, and reservoir due to access roads and transmission corridors.	<ul style="list-style-type: none"> Views from proposed access roads and transmission corridors 	<ul style="list-style-type: none"> Describe scenic quality attributes of views accessed by roads and/or transmission corridors
	Evaluate potential impacts to landscape character that may result from access roads and/or transmission lines.	<ul style="list-style-type: none"> Views from the Susitna River Views from rail line Views from Sherman interpretive signs Views from existing trails; dispersed recreation and/or subsistence use areas 	<ul style="list-style-type: none"> Identify changes in scenic quality attributes that may result from introduction of roads and transmission corridors Use information gleaned from analysis to inform engineering design options
Talkeetna Uplands	Evaluate new access to views of Devils Canyon, the Mid-Susitna River valley due to access roads and transmission corridors, including cumulative effects due to existing transmission corridor.	<ul style="list-style-type: none"> Views from proposed access roads and transmission corridors 	<ul style="list-style-type: none"> Describe scenic quality attributes of views accessed by roads and/or transmission corridors
	Evaluate change in views of the existing river corridor (waterform) following inundation and formation of the reservoir.	Views of the river from existing access trails, and upland areas used for dispersed recreation and/or subsistence.	<ul style="list-style-type: none"> Identify changes in scenic quality attributes and associated scores based on introduction of prominent water feature in viewshed
Talkeetna Mountains	Evaluate potential impacts to landscape character that may result from the dam structure, access roads, and/or transmission lines.	<ul style="list-style-type: none"> Views from Fog Lakes Views from Stephan Lake Views from dispersed recreation and/or subsistence use areas 	<ul style="list-style-type: none"> Identify changes in scenic quality attributes that may result from introduction of roads and transmission corridors Use information gleaned from analysis to inform design options to enhance aesthetic attributes of the Project
Susitna Upland Terrace	Evaluate change in views of the existing river corridor (waterform) following inundation and formation of the reservoir.	Views of the river from existing access trails, and upland areas used for dispersed recreation and/or subsistence.	<ul style="list-style-type: none"> Identify changes in scenic quality attributes and associated scores based on introduction of prominent water feature in viewshed
	Evaluate new access to views of Devils Canyon, the dam structure, and the reservoir (including Watana Creek) due to access roads and transmission corridors, including any cumulative effects due to existing transmission corridor.	<p>Views from proposed access roads and transmission corridors.</p> <p>Consider views of portions of the river located directly downriver of the dam where ice formation may change as a result of Project operations.</p>	<ul style="list-style-type: none"> Describe scenic quality attributes of views accessed by roads and/or transmission corridors Demonstrate open water area below dam during winter

	Analysis Goal	Locations Being Considered	Outcome
	Evaluate change in <i>views of the existing river corridor (waterform) following inundation and formation of the reservoir.</i>	Views of the river from existing access trails, and upland areas used for dispersed recreation and/or subsistence.	Identify changes in scenic quality attributes and associated scores based on introduction of prominent water feature in viewshed (i.e., does this feature enhance or distract)
Susitna Upland	Evaluate impacts to landscape character when viewed from the air.	Views from common flightseeing routes.	<ul style="list-style-type: none"> Identify changes in scenic quality attributes that may result from introduction of the reservoir, dam facility, roads and transmission corridors
Air Tour Routes¹	Evaluate change in scenic attributes of the river as a result of changes in flow volume.	<ul style="list-style-type: none"> Montana Creek Recreation Site 	<ul style="list-style-type: none"> Understanding of how specific metrics of scenic quality related to river flow could change as a result of operation of the Project
Susitna River, downstream of Talkeetna	Evaluate potential changes to aesthetic attributes related to changes in ice processes and/or river flows; note that the extent to which these areas are evaluated will depend on the outcome of analysis of modeling completed relating to ice processes and river flows.	<ul style="list-style-type: none"> Montana Creek Recreation Site Winter Trail(s) at Delta Islands Iditarod National Historic Trail (NHT) Winter Trail from Yentna River 	<ul style="list-style-type: none"> Identify potential changes to aesthetic attributes related to changes in ice processes and/or river flows, if any

9. FIGURES

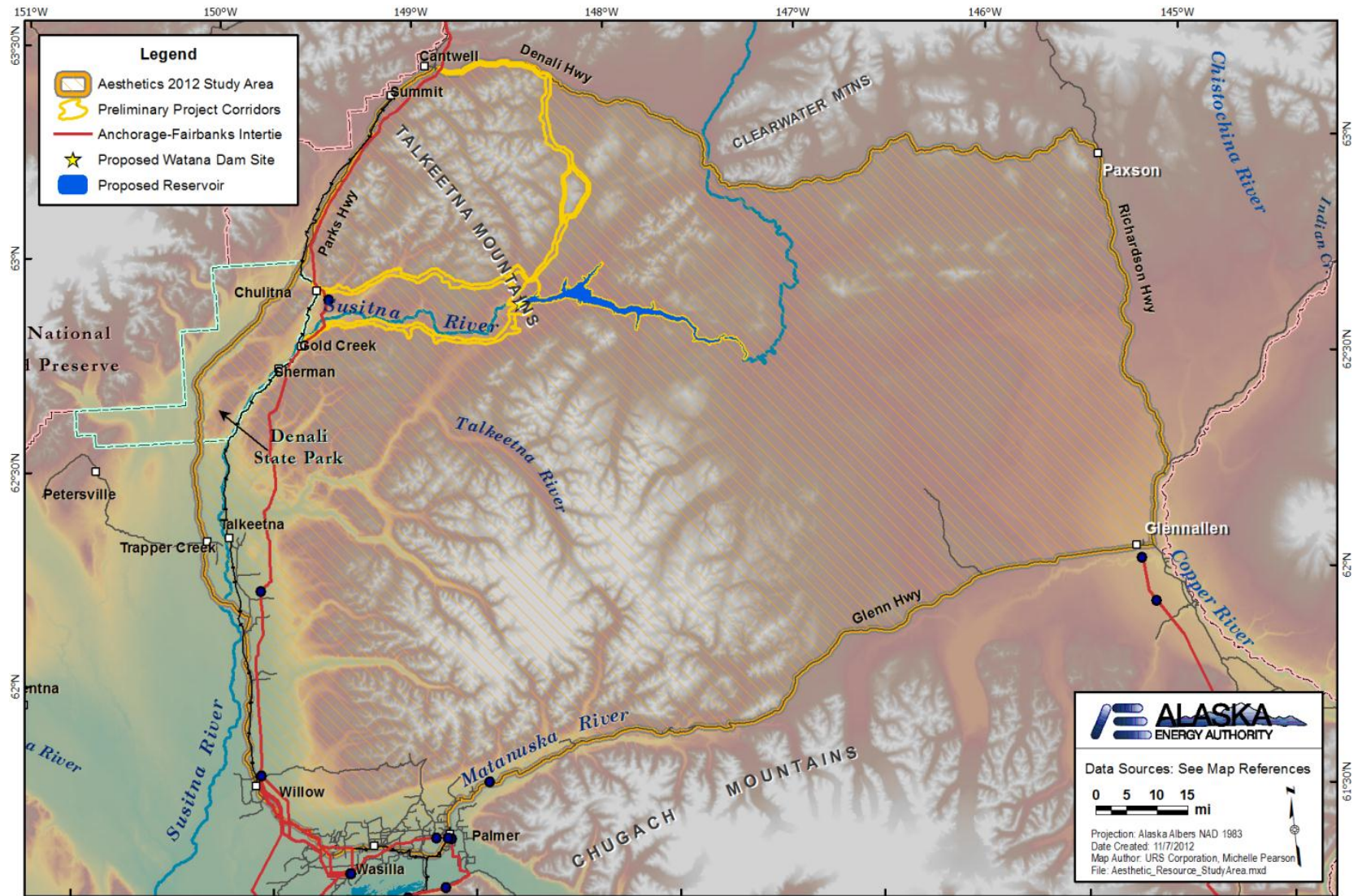


Figure 5.1-1. Aesthetic resources study area

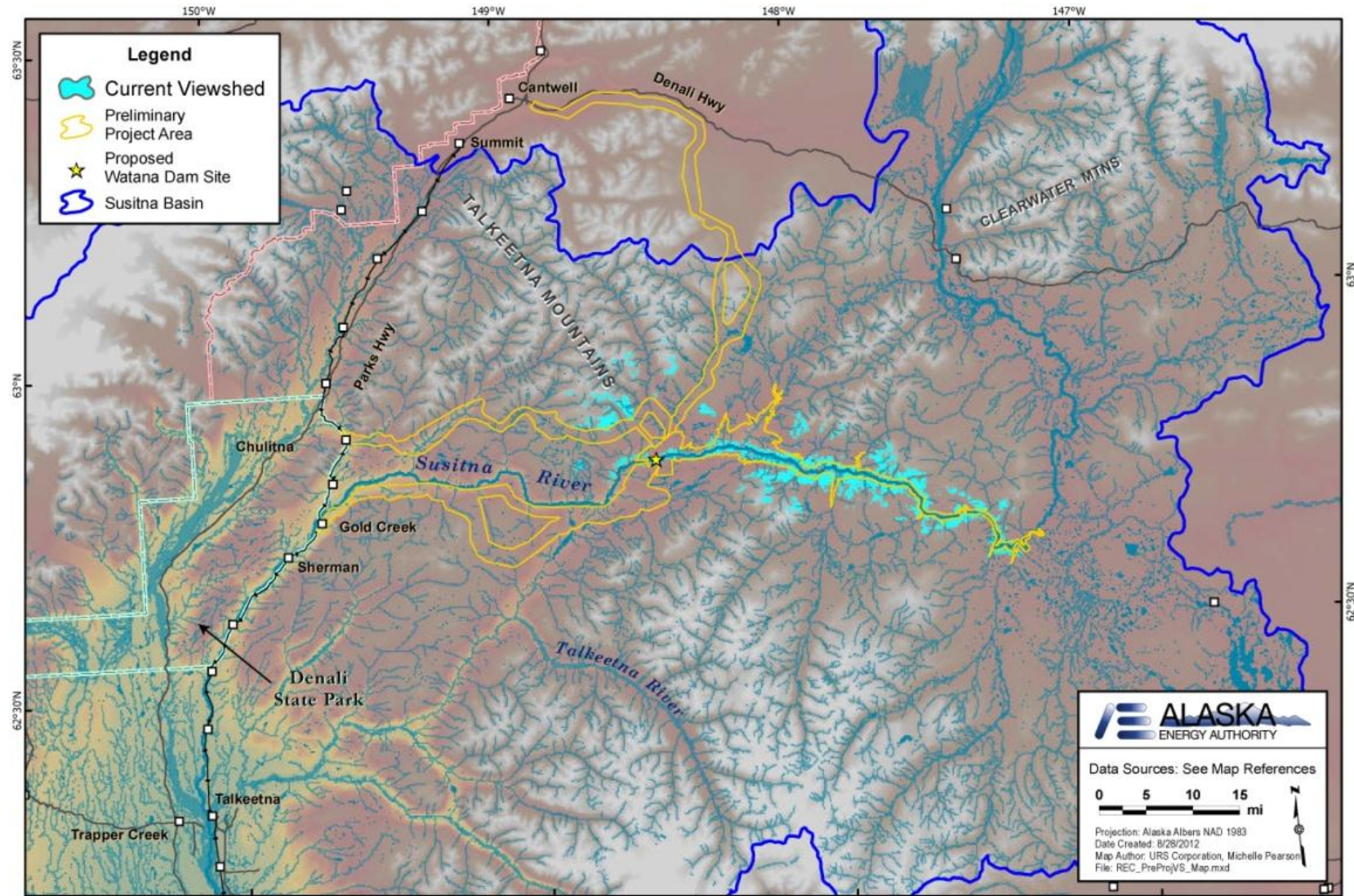


Figure 5.1-2. Viewshed of the Susitna River, from approximately 5 miles downriver of the proposed dam site, to 5 miles above the upper terminus of the inundation zone

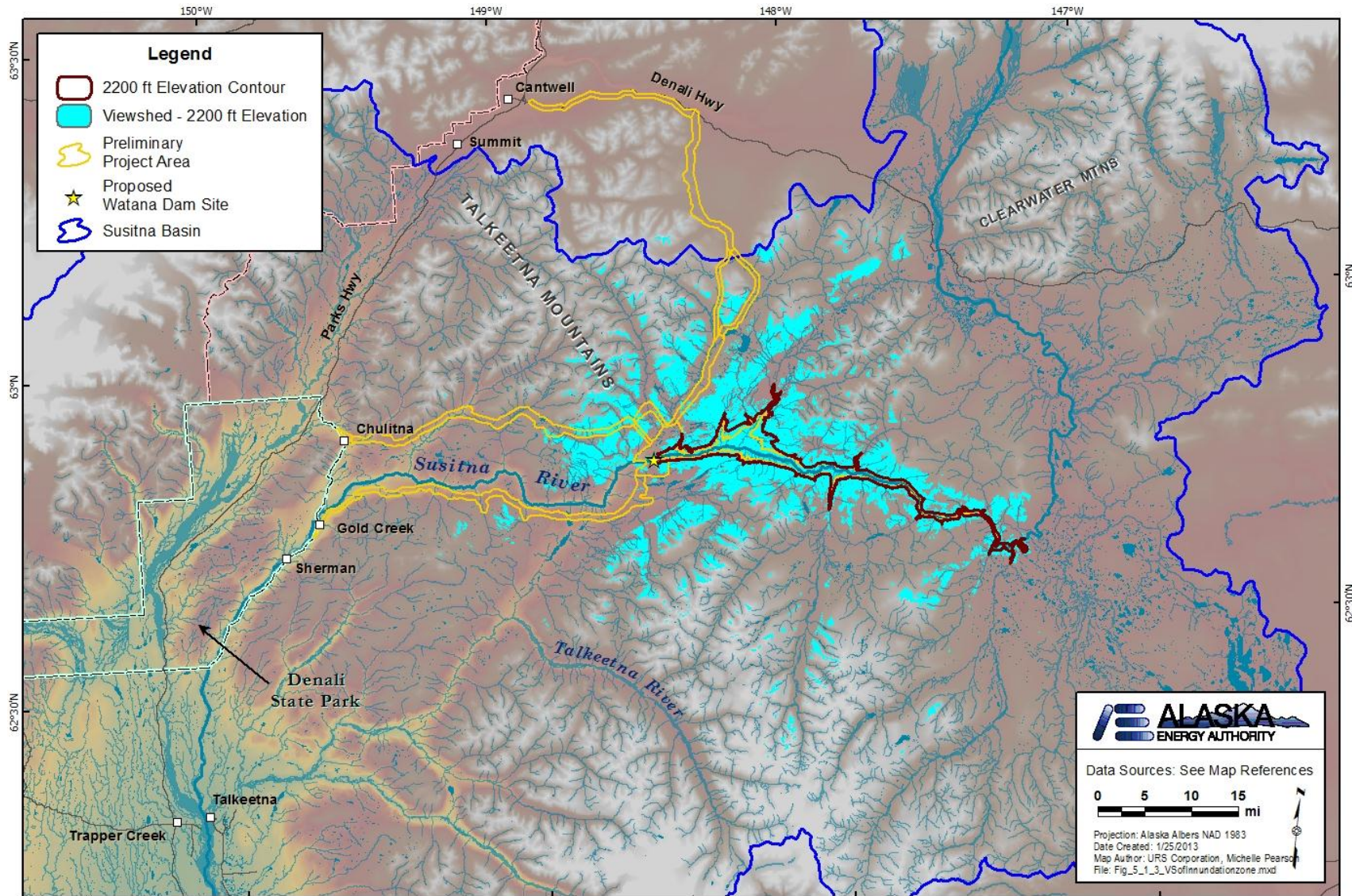


Figure 5.1-3. Viewshed from a 2200 ft. elevation

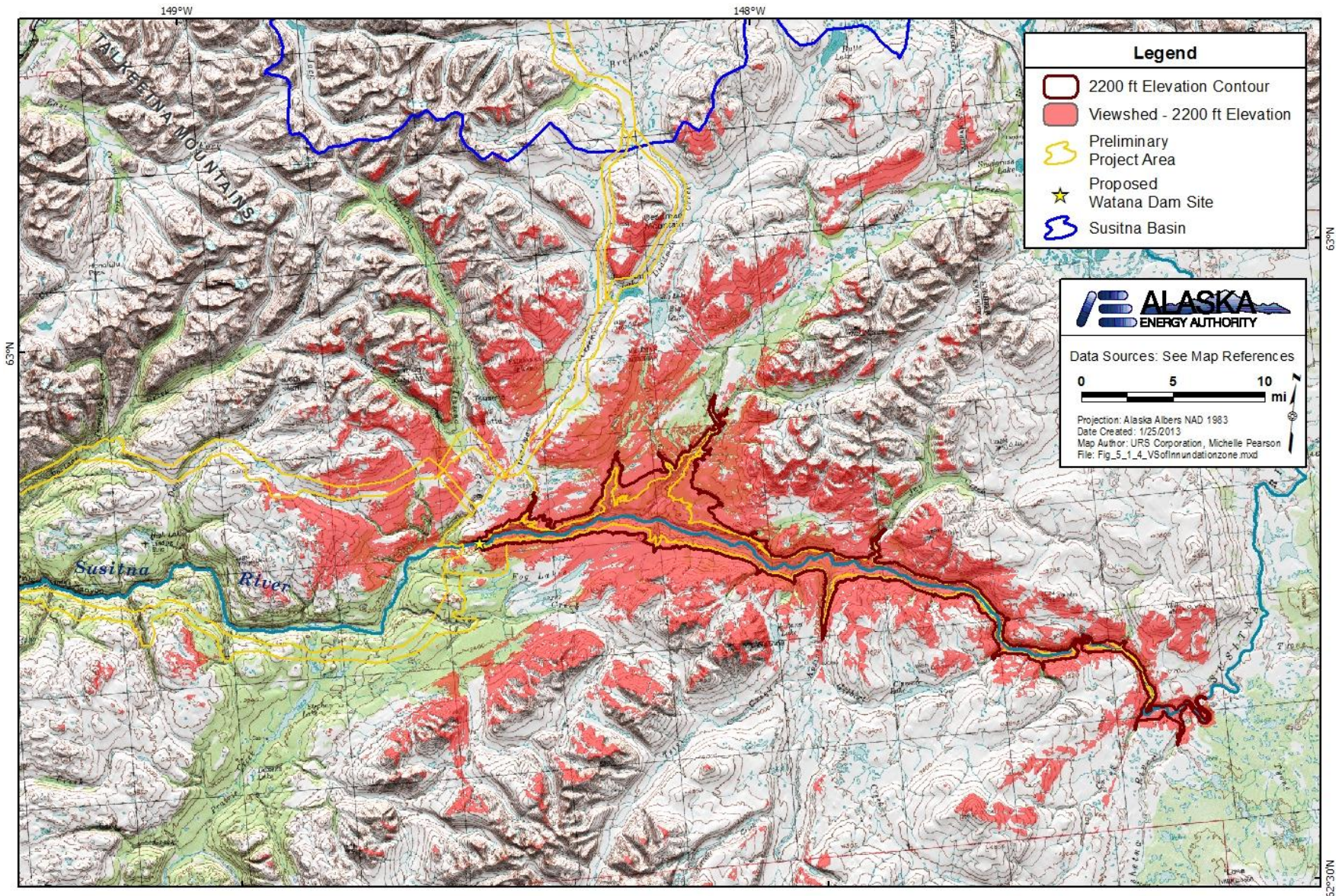


Figure 5.1-4. Viewshed of a 2200 ft. elevation reservoir study area, including place names and landscape features

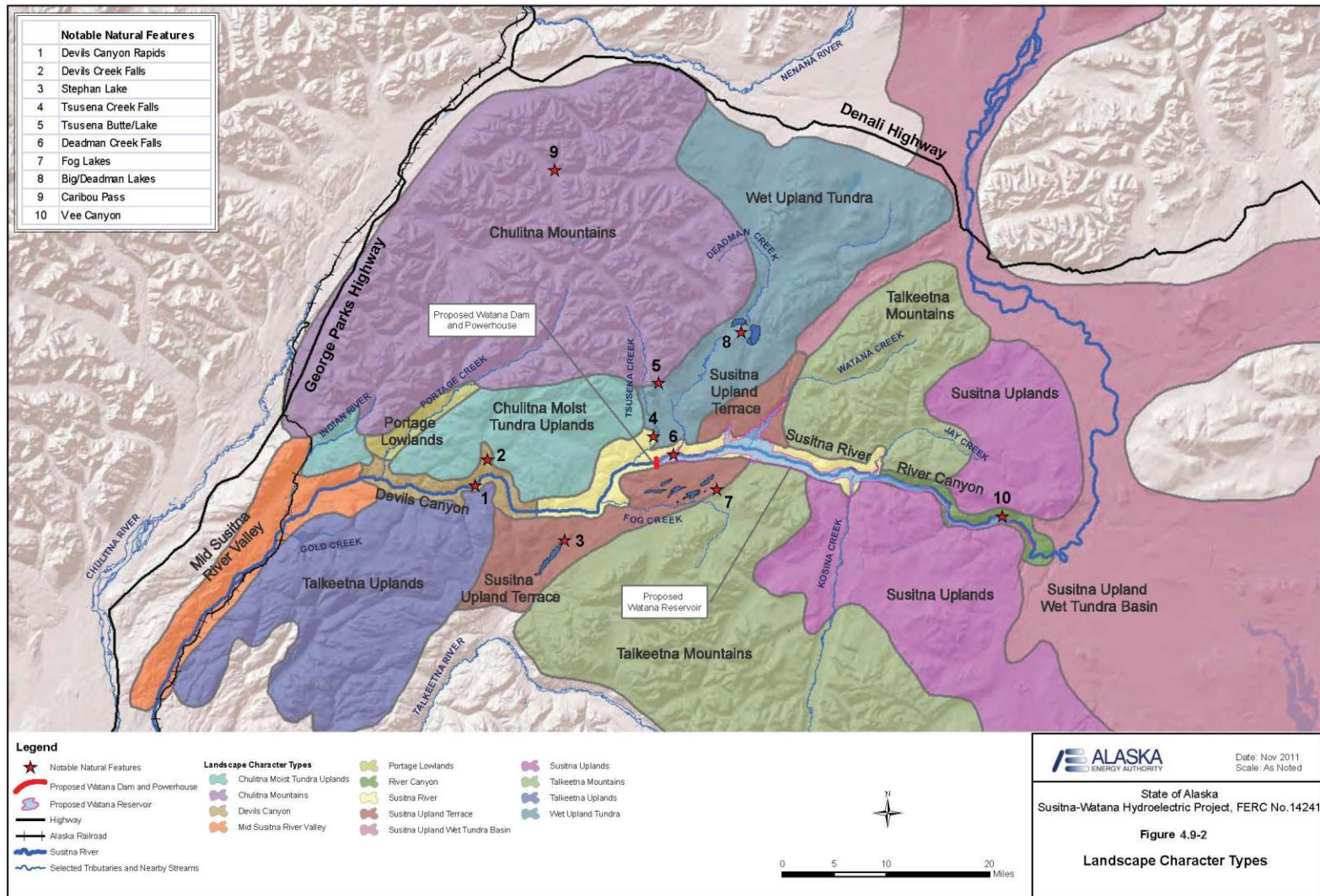


Figure 5.3-1. Landscape character types within the aesthetic resources study area (Source: AEA 2011)



Figure 5.3-2. Devils Canyon



Figure 5.3-3. Stephan Lake



Figure 5.3-4. Deadman Creek Falls



Figure 5.3-5. Fog Lakes

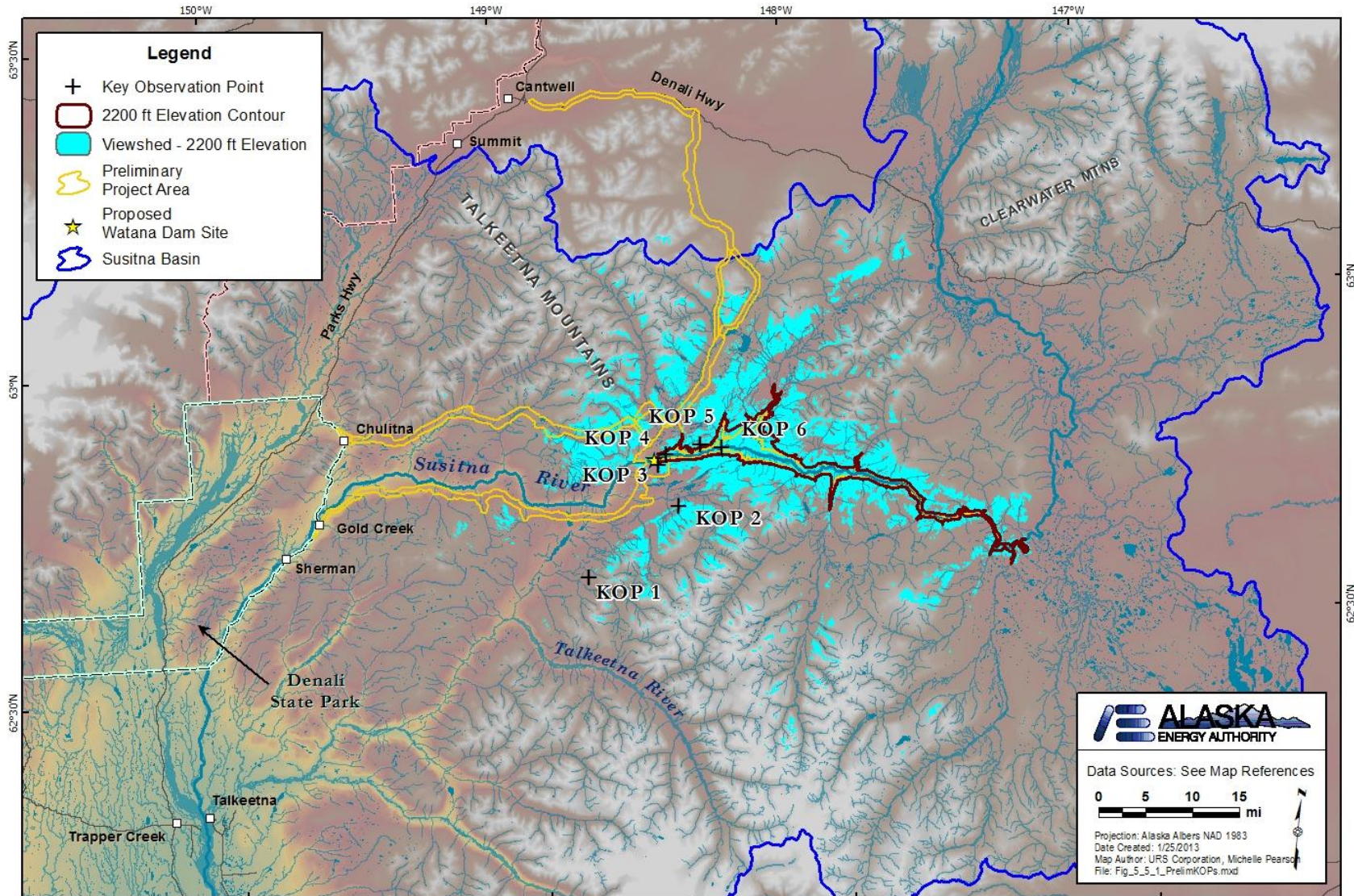


Figure 5.5-1. Preliminary KOPs established as part of the 2012 Aesthetics Study



Figure 5.5-2. View from KOP #1 toward the northeast



Figure 5.5-3. View from KOP #1 toward the northwest. Note white-capped peaks of the Talkeetna Mountains and Denali in background

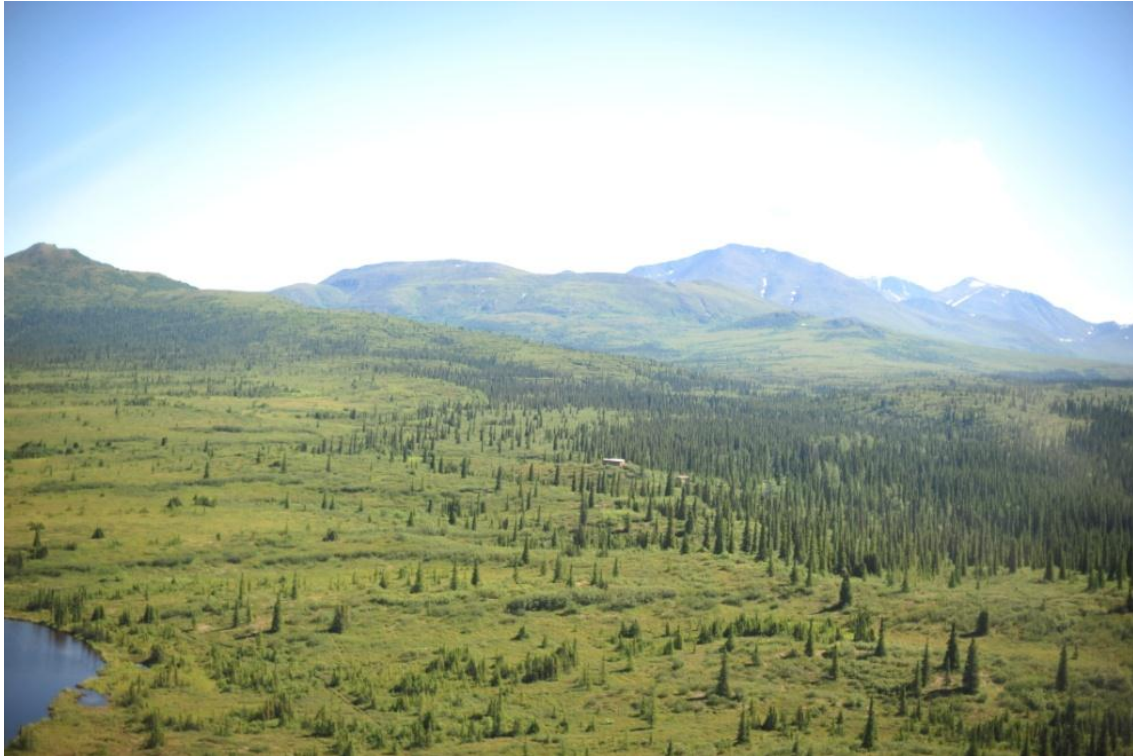


Figure 5.5-4. Existing 2-track trail located west of the Fog Lakes. Note trail in lower left of image, and cabin in center



Figure 5.5-5. Landscape character elements of the Susitna Upland Terrace: view from KOP #2 toward the proposed Project site



Figure 5.5-6. View upriver from the Susitna Upland Terrace at proposed dam site (KOP #3)



Figure 5.5-7. The Susitna River, looking downriver from KOP #4



Figure 5.5-8. View downriver at the location of KOP #4 at an elevation of 2,050 feet



Figure 5.5-9. View from KOP #5, looking east up the Susitna River valley from river right



Figure 5.5-10. The Susitna River valley, looking upriver from KOP #6



Figure 5.5-11. The Susitna River valley, looking upriver from KOP #6 at an elevation of 2,050 feet



Figure 5.5-12. View upriver from the proposed dam site (KOP #7)