

Attachment E-1. Responses to Draft License Application Comments

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Summary of stakeholder comments on the Grant Lake Hydroelectric Project (FERC No. 13212) Draft License Application (filed March 27, 2015; KHL 2015a) and draft Biological Evaluation (BE) and management/monitoring plans (filed May 15 and June 1, 2015; KHL 2015b-2015g), and Kenai Hydro, LLC's (KHL) responses.

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
General/Global					
1	DLA-01	6/4/15 email from Jan Odhner	N/A	<p>I am writing you this letter to comment on the Grant Lake Hydro Project. I am the current Moose Pass community club president and thirty six year resident. I was present at the first meeting when HEA shared with the community their idea of pursuing a hydro project at Grant Lake. All but one of the residents that attended the meeting were in opposition of the project except one who happened to be a contractor who had worked on a similar project" the Bradley Lake project. It is easy to see why he is in favor as I'm sure that he will bid on aspects of The job should it be given the go ahead. I am quite shocked at how far this has gone with HEA knowing that the residents are overwhelmingly against the project. They obviously could care less how the locals feel and are simply going through the motions of sharing it with the community because it is part of the process. Most of us feel that the little bit of power generated is not worth the permanent geographical disruption. There are many of us that cherish the fact that Grant lake is off the road system and those of us that provide lodging send clients up there to enjoy the untouched beauty. I can't explain the beauty when standing on top of Crown Point mountain looking down over Grant Lake and can only hope my grandchildren could see it as I have. The world is on the brink of discovering much better ways of generating clean energy. I think it is almost criminal that all of the grant money wasn't used to explore alternate forms of energy. The project that was presented to the community had the access road coming off mine road and not across Trail Lake narrows. That will forever change the face of lower trail lake. Four megawatts of electricity is not an even trade for all of the changes that come from this project. Unfortunately most residents in this area are reclusive and don't participate in the public process. An access road will mean motor boats on the lake .I have talked with fisheries people and they say a one year study is not adequate to get a clear picture of the effects. The mouth of Grant creek has always been a favorite trout fishing spot for the locals. No more if this project moves forward. On behalf of me and the majority of the locals...We are opposed of this project.</p>	<p>KHL respects all perspectives related to the development of the Grant Lake Project. As described in the FLA, our environmental study results, associated impact assessments and infrastructural design represent an efficient, environmentally conscious project that will provide renewable energy for years to come for Alaskans.</p>

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2	DLA-02	6/8/15 letter from KRSMA	N/A	<p>The Kenai River Special Management Area Advisory Board submits this letter as its support for the proposed Grant Lake Hydroelectric Project following presentations by Homer Electric Association. The Kenai River Special Management Area Advisory Board was created under the authority of A.S. 41.21.510 in 1985 to advise local, state and federal agencies and legislative bodies on matters affecting the Kenai River and its habitat. The Board is comprised of public members, Soldotna, Kenai and the Kenai Peninsula Borough and non-voting state and federal agency representatives. The Board is guided by the Kenai River Comprehensive Plan, date 1997, which mentions hydroelectric projects for the Kenai River watershed.</p> <p>The letter reflects consideration and discussion by the Board of the project and its regularly scheduled monthly meetings for April and May 2015; however, the Board has previously received regular briefings on the proposed project over the many years the project has been under consideration and study. On May 14, 2015, the Board unanimously passed a resolution supporting the project in concept based upon the most recent plan presented by Homer Electric Association.</p> <p>We understand the public comment process before the Federal Energy Regulatory Commission is just starting and the HRSMA Advisory Board reserves the right to make additional comments on the project as plans evolve, including the right to possibly withdraw our endorsement should major changes be made to the project which adversely affects the Kenai River watershed.</p>	KHL appreciates the support conveyed by KRSMA.
3	DLA-03	6/24/15 letter from ADNR	N/A	<p>The FERC Project boundary includes state owned land managed by DPOR under a Special Use Land Designation (11 AAC 96.014). The DNR managed land within the project area is within ADL 226527, a management agreement for additional lands that are to be included in the Kenai River Special Management Area (KRSMA), a legislatively designed area. Per ADL 226527 and the Kenai Area Plan (KAP), DPOR will manage the lands affected by this agreement consistent with the statutory objectives of the KRSMA (AS 41.21.500-514). Per AS 41.21.506, the Kenai River Comprehensive Management Plan (KRCMP) was developed and designated compatible and incompatible uses of KRSMA land. There are management and permitting guidelines within the KRCMP and KAP that need to be addressed in order</p>	KHL appreciates the comment and the specific documentation of necessary plan amendments that will be required for Project development to occur. Per recent communications, our plan continues to be to work collaboratively with ADNR to address necessary amendments once the FLA is filed with FERC and subsequently approved for Environmental Analysis.

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				<p>DNR to determine if the project can be authorized. These include, but are not limited to:</p> <ul style="list-style-type: none"> a. KRCMP 4.5.2.3, new instream structures “must not impede fish passage, result in an overall reduction in fish habitat, present a hazard to public safety or diminish recreational opportunities. b. KRCMP 4.5.3, development within the Kenai River watershed is to be managed to “avoid significant adverse impacts to the resources of the KRSMA, including but not limited to water, soils, fisheries, wildlife, visual quality, and recreation.” c. KRCMP 4.5.5.2, Impoundment Structures, “the construction of new dams or diversions on the Kenai River r its fish bearing tributaries, which block fish movements, or reduce essential stream flows for spawning, rearing, or migration, will be prohibited. This recommendation is to be included in the KAP.” In turn, the KAP states, “The construction of new dams or diversions on the Kenai River or fish-bearing tributaries that impede fish movements or reduce essential stream flows for spawning, rearing, or migration will be prohibited.” (See KAP, Page 3-107). d. KRCMP, Appendix C <ul style="list-style-type: none"> i. The permitting matrix in the KRCMP includes hydropower projects in its list of activities. Hydropower projects are classified as “not compatible” within contiguous wetlands which are considered “high value”. Hydropower projects are classified as conditionally compatible in “low value” wetlands, provided that “[h]ydroelectric facilities shall be permitted in waters which do not provide anadromous fish habitat, or on reaches upstream from such habitat, only where water quality and quantity, including normal distribution of streamflow, can be maintained and where no significant individual or cumulative impacts will occur.” ii. The General Guidelines apply to all allowable activities. How will this project adheres to all 18 guidelines? Specifically #5 through #7. e. KRCMP, Appendix D Permitting of Instream Structures. 	

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				<p>Given the current project description in the license application, it appears that four items will need to occur in order for DNR to authorize this project:</p> <ul style="list-style-type: none"> a. Amendment to the KAP b. Amendment to the KRCMP c. Change to the Special Management Area d. Amendment to ADL 226527 and the MOU on the management roles for KRSMA <p>Amending the above plans, removing lands from a Special Management Area, and amending existing authorizations can be a lengthy process that does not have a guarantee of approval.</p>	
4	DLA-04	6/24/15 letter from ADNR	N/A	This project requires a Permit to Appropriate Water. This is an important step to acquiring water rights.	KHL appreciates the comment and is aware of the need for a Permit to Appropriate Water. Per the FLA, that process began in 2009.
5	DLA-05	6/24/15 letter from ADNR	N/A	The applicant has applied for water rights for the project. These rights are in application status, LAS 27264, with a priority date of April 2009. The Water Use Act (AS 46.15) requires the applicant to provide a “possessory interest” for the land. This project is occurring on state land within a Special Use Area which requires easements and/or leases to use the land. A Permit of Appropriate Water cannot be issued until the applicant adequately addresses substantial concerns addressed elsewhere in these comments.	KHL appreciates the comment and associated context related to the issuance of a Permit to Appropriate Water.
6	DLA-06	6/24/15 letter from	N/A	I am opposed to licensing Kenai Hydro LLC (KHL) for the Grant Lake hydroelectric project. The project lies within lands designated by the State of Alaska to be conserved for wildlife habitat and used for dispersed recreation. ¹	KHL respects all perspectives related to the development of the Grant Lake Project. As described in the FLA, our

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1.The project is located in area 380G on the following map: <http://dnr.alaska.gov/mlw/planning/areaplans/kenai/pdfs/2b.pdf>

This land is also part of the Kenai River Special Management Area

11 AAC 55.160. Public Recreation Land. Land classified public recreation is land that is suitable for recreation uses, waysides, parks, campsites, scenic overlooks, hunting, fishing or boating access sites, trail corridors, or greenbelts along bodies of water or roadways.

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		Andrew Bacon		<p>These uses are outlined in the Kenai Area Plan and the specific statutes are noted below. Additionally, the projects interference with the proposed route of the Iditarod National Historic Trail (INHT) further increases the projects incompatibility with the designated land use.</p> <p>From an economic standpoint, this project is not viable. In the November 2014 public meeting held by KHL in Moose Pass, general manager Mike Salzetti fielded questions regarding the projected output as a percentage of HEA usage and the projects return on investment. He stated that the project will account for only 4% of HEA customers' power usage, and at the current cost estimate will see a ROI in 30 years. I would also like to point out that the cost estimate of this project has increased since 2008. No source of funding has been identified for this project. A major concern I have is in KHLs inability to follow through with completing this project should they be approved for construction. The small amount of power that this plant will generate relative to the extremely high cost of developing it does not seem enticing to investment. The project would also represent an irresponsible use of public money.</p> <p>Please do not approve the license for KHL to proceed with the Grant Lake Project. The benefits of the energy that will be generated do not warrant the cost this will have both monetarily and in the permanent impact to the area. Thank you for taking the time to read my comments.</p>	<p>environmental study results, associated impact assessments and infrastructural design represent an efficient, environmentally conscious project that will provide renewable energy for years to come for Alaskans.</p> <p>With specific respect to the proposed INHT and as documented in the FLA, KHL has taken significant steps to collaborate with appropriate stakeholders. KHL has proposed to develop an alternate route through the Project area that would increase the user experience. KHL is committed to ensuring that the INHT provides a high quality user experience and provides beneficial use characteristics once it is designed and built.</p>
7	DLA-07	6/25/15 letter from USFWS	N/A	<p>Although several of our suggestions in 2010 for biological monitoring were implemented during the 2013 field season, the biological studies, analyses, and assessments to date for all species represent a snapshot in time and are not sufficient to describe population status for fish species that could be affected by the project or differentiate potential impacts of the Project from natural background variation. We urge caution interpreting analyses and conclusions that are based predominantly on a single year of biological sampling. Also, studies were not designed (as recommended in 2010) to quantify potential project impacts and cumulative effects at the appropriate spatial and temporal</p>	<p>KHL appreciates the comment and perspective. As the USFWS is aware, KHL facilitated a structured and collaborative process for revising the 2010 study plans to ensure that a more quantitative and comprehensive study program/impact assessment was implemented related to the development of the Grant Lake</p>

11 AAC 55.230. Wildlife Habitat Land. Land classified wildlife habitat is land which is primarily valuable for: (1) fish and wildlife resource production, whether existing or through habitat manipulation, to supply sufficient numbers or a diversity of species to support commercial, recreational, or traditional uses on an optimum sustained yield basis; or (2) a unique or rare assemblage of a single or multiple species of regional, state, or national significance.

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				<p>scales identified by FERC: the Kenai River watershed over the time frame of 30 to 50 years. Studies to date and analyses of cumulative effects have failed to place the fisheries resources in Grant Creek in perspective to their contribution to overall stocks in the Kenai River watershed.</p>	<p>Project. The USFWS played an integral role in the study development process and was kept involved and informed during all phases of the biological studies (design, permit acquisition, study season, site visit, data analysis, reporting, impact analysis, instream flow discussions, etc.).</p> <p>KHL feels strongly that the comprehensive aquatic data collected during the licensing process, the associated impact analysis and existing historical data has facilitated the development of a Project infrastructure and operational regime that will result in no net impact to aquatic resources in the Project area. Additionally and as documented in the DLA and associated Management Plans, KHL has proposed a series of aquatic-based enhancement measures that per habitat analysis, will increase habitat value for the primary anadromous species that utilize Grant Creek beyond existing natural conditions.</p>
8	DLA-08	6/25/15 letter from USFWS	N/A	<p>Given the limited time-frame of information collected to date, the Service must exercise caution in terms of developing recommendations that include benefits for the adequate protection, mitigation and enhancement of fish and wildlife resources. National Environmental Policy Act (NEPA) Regulation 40 C.F.R. 1508.27(b) requires consideration of certain factors, one of which is Uncertain, Unique, or Unknown Risks. Specifically... <i>“When determining the intensity and significance of a proposed action’s effects on the human environment, federal agencies are required to consider the degree to which these effects are</i></p>	<p>KHL appreciates the comment and perspective. KHL feels strongly that the comprehensive aquatic data collected during the licensing process, the associated impact analysis and existing historical data has facilitated the development of a Project infrastructure and operational regime</p>

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				<i>highly uncertain or involve unique or unknown risks.</i> ” Because fisheries and aquatics work to date represents a snapshot in time and does not account for any natural variation or provide a defensible baseline of information, the Service cannot effectively evaluate the Project’s potential ecological effects to Grant Creek or the rest of the Kenai River watershed and reasonably evaluate potential direct, indirect, and cumulative effects on our trust resources. In 40 C.F.R. 1508.3, NEPA defines various effects that should be analysis in preparing an Environmental Assessment (EA). Ecological effects, are defined as... <i>those effects on natural resources and on the components, structures, and functioning of the affected ecosystems.</i> We believe this Project, as proposed, has the potential to adversely affect the functioning of the Grant Creek ecosystem and its natural resources.	that will result in no net impact to aquatic resources in the Project area. Additionally and as documented in the DLA and associated Management Plans, KHL has proposed a series of aquatic-based enhancement measures that per habitat analysis, will increase habitat value for the primary anadromous species that utilize Grant Creek beyond existing natural conditions.
9	DLA-09	6/25/15 letter from NPS	N/A	<p>Because we still have some concerns about both the adequacy of baseline data collection and the accuracy of KHI's preliminary assessment of project impacts, we are as-yet unable to formulate Section 10(a) recommendations that, if incorporated in a license, would enable the FERC to give equal consideration to the non-power uses of the project area. We note in our comments below where data gaps or potentially unsupported statements in the DLA will need to be remedied in the FLA before NPS, other stakeholders, and the public can develop recommendations to reduce or compensate for project impacts.</p> <p>NPS appreciates the opportunity to provide these comments on the DLA, and looks forward to working with KHI, other agencies, stakeholders, and the FERC to ensure that the FLA and associated NEPA documents accurately assess the proposed project's impacts on recreation and aesthetic resources, so that we may perform our duties under the Federal Power Act by developing related Section 10(a) recommendations.</p>	KHL appreciates the comment and looks forward to continued collaboration with the NPS.
10	DLA-10	6/25/15 letter from KRWF	N/A	In commenting, the KRWF wishes to register continued opposition to the Grant Lake and Creek hydroelectric project. The KRWF, other organizations, and many individuals have been strong public opponents of the four hydroelectric proposals of Homer Electric Association (HEA) aka Kenai Hydro LLC (KHL) since 2007. Review of the KHL Draft License Application (DLA) has produced many critical pages of error, obfuscation, deficiency, and basic exceptions. In Alaska, indifferently threatening the integrity and imposing risk to the traditionally inviolate Kenai River and its watershed is	KHL respects all perspectives and welcomes all comments related to the Management Plans. As communicated previously, KHL continues to be concerned with the inaccuracies being conveyed by the KRWF. Per our letter to FERC dated 6/1/15, “ <i>KHL is concerned by the</i>

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				<p>unforgiveable. This additionally displays ignorance of the river's enormous importance to the Kenai Peninsula quality of life and economy. A vital Kenai Peninsula economy fundamentally supports the applicant.</p> <p>The KRWF has decided not to provide enabling DLA review information to help this indifferent, incompetent applicant improve its defective application. Our following comments are reduced to the following overview: 1) Lack of Competency; 2) Lack of Public Need; 3) Lack of Due Process; 4) Lack of Public Trust; 5) The Ongoing Public Burden.</p>	<p><i>numerous inaccurate and misleading comments made by the KRWF and the CFWA in these letters and encourages FERC to review the comprehensive Project record to judge for itself the inaccuracies associated with these and other KRWF and CFWA statements made on the record during the licensing process.”.</i></p> <p>At this time, KHL would simply choose to reiterate this statement.</p>
11	DLA-11	6/25/15 letter from KRWF	N/A	<p><u>Lack of Competency.</u> FERC obviously expects applicants to be well qualified as well as capable, a reasonable expectation. In business and industry, few contracts are awarded without prior applicable experience. In rural Alaska, prior applicable experience is essential. Specialized experience is also essential. Unfortunately for the public, an effective screening process for qualifications does not exist, as evidenced by this applicant.</p> <p>Involved applicant staff is new to Alaska and have no known prior experience developing a remote hydroelectric project in a highly sensitive watershed. The applicant's consultants have no applicable Alaskan experience and no known prior hydroelectric development experience. Two construction contracts have been awarded. One exception to the lack of experience is the well-known consultant who specializes in providing FERC procedural advice, as an ex-FERC employee.</p> <p>Demonstrated inability to perform routine preliminary feasibility studies within the prescribed time is a measure of experience and competence. The superficial DLA submission speaks for itself. Unreliable future performance by this type of applicant is predictable, and would not be tolerated in business or industry.</p> <p>This is justification to deny licensing.</p>	<p>See comment #DLA-10</p> <p>In the interest of amplifying the global message of concern related to inaccurate statements, Homer Electric Association (KHL’s parent organization) has been providing energy to the Kenai Peninsula since 1950. HEA has had the State contract to operate the Bradley Lake hydroelectric plant, the largest in the state, for over 20 years. Our natural resource consultants have extensive Alaska experience and many of them actually reside in Alaska. KHL’s engineering lead is the current design and construction lead for the Allison Creek Project currently being constructed in Valdez. Finally, the consulting lead for both licensing and natural resources has never been employed by FERC or any direct contractors related to FERC.</p>

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12	DLA-12	6/25/15 letter from KRWF	N/A	<p><u>Lack of Public Need.</u> There is no public need for this project. Public need for the risk imposed in the taking of a highly sensitive watershed tributary must exist, or be denied.</p> <p>The applicant's justification for public need is based on scarcity of natural gas for generation, which is false. Abundant new sources of natural gas have been found and are being developed in Cook Inlet adjacent to the applicant's utility service area on the Kenai Peninsula. Natural gas is so abundant that a new LNG refining and export facility centrally located to the applicant is being developed. A local natural gas urea fertilizer production facility is being reactivated, also for export.</p> <p>Additionally, the applicant is constructing large new local generation capacity to take advantage of the abundant natural gas. Further, Alaska's Governor and its Legislature have committed to build a high-priority natural gas pipeline from northern Prudhoe Bay to the central Kenai Peninsula, within the applicant's service area. Unlimited local natural gas will become available.</p> <p>Additionally, the speculative, minor 2mW average generation of the Grant Lake and Creek hydroelectric project is not significant in scope relative to the large generating capacity of the adjacent power utility whose transmission line is required for transport. Dispatching of this project's small output to serve the applicant's distant utility customers is speculative dependent upon ongoing cooperation and regulatory permission. Obtaining energy from a remote source outside the applicant's utility service area is highly inconsistent with its well-known "island" utility development policy.</p> <p>The primary benefit of this project is obtaining a free power resource, largely funded by naïve state grants, for private gain. A vital public resource is proposed to be taken and sacrificed for private gain. Aside from whatever revenue is created, a highly-touted, romantic renewable energy public relations credit will be obtained. The taking of highly sensitive public land and water for private gain is simply not justified. A public need for this project does not exist.</p> <p>This is justification to deny licensing.</p>	<p>To be clear, KHL's motivation for developing the Grant Lake Project has never been associated with the "scarcity of natural gas". Rather and as stated in the letter to FERC on 6/1/15, a primary interest in development of this Project is related to assisting in the removal of Alaska's <u>dependence</u> on fossil fuels, "<i>the Grant Lake Project represents an environmentally responsible, long-term opportunity for the State of Alaska to expand its hydropower resources, further remove itself from dependence on fossil fuels for power generation and assist in meeting its renewable energy goal to produce 50% of Alaska's electrical energy from renewable resources by 2025 as adopted by the State of Alaska Legislature in 2025.</i></p> <p>KHL is a wholly-owned subsidiary of Alaska Electric and Energy Cooperative, Inc. which is a non-profit electric cooperative.</p>

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13	DLA-13	6/25/15 letter from KRWF	N/A	<p><u>Lack of Due Process.</u> TLP process has been erratic from the onset of the project and manipulated to the disadvantage of the public. This has included utilization of obvious public and resource agency time conflicts and a total disrespect for over seven (7) years of very strong public opposition. Conduct of the TLP process has displayed both lack of knowledge and avoidance of routine local and state government procedures. Ongoing disrespect for the public has cost the applicant a total loss of public credibility. One example of this is the inability to complete the DLA within the allotted time. After being denied an additional time extension, the applicant simply took an extension by moving required and overdue elements of environmental studies to the yet to be completed Management Plan.</p> <p>This is justification to deny licensing.</p>	<p>See comment #DLA-12</p> <p>Briefly and in the interest of amplifying the global message of concern related to inaccurate statements, per KHL’s letter to FERC on 6/1/15 and their subsequent denial of the KRWF’s request for additional time to comment on the DLA, the Traditional Licensing Process has been adhered to throughout the licensing process. With respect to the DLA completion and per the 6/1/15 letter to FERC, “<i>Earlier in the process, KHL did state that an approximate DLA submittal timeline of late 2014 was possible. The primary reason for this date being re-defined to March of 2015 was the additional collaboration that KHL committed to various stakeholders to reach additional clarity on certain aspects related to biological impacts (positive and negative) along with engineering infrastructure development.</i>”.</p>
14	DLA-14	6/25/15 letter from KRWF	N/A	<p><u>Lack of Public Trust.</u> The manner in which the applicant has conducted matters to date has cost it a total loss of public trust. If the process to obtain a license is not credible, the applicant cannot be trusted to properly develop critical elements of the project. This applicant is not trust worthy to develop or operate the project. This is the worst public process we have encountered in decades. Where is the public accountability?</p> <p>This is justification to deny licensing.</p>	<p>KHL respects all perspectives related to the Management Plans. As communicated previously, KHL continues to be concerned with the inaccuracies being conveyed by the KRWF. Per our letter to FERC dated 6/1/15, “<i>KHL is concerned by the numerous inaccurate and misleading comments made by the KRWF and the</i></p>

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					<p><i>CFWA in these letters and encourages FERC to review the comprehensive Project record to judge for itself the inaccuracies associated with these and other KRWF and CFWA statements made on the record during the licensing process.”.</i></p> <p>At this time, KHL would simply choose to reiterate this statement.</p>
15	DLA-15	6/25/15 letter from KRWF	N/A	<p><u>The Ongoing Public Burden.</u> Kenai Hydro, LLC (KHL) is a Delaware company incorporated in 2008, as a shell company owned by conglomerate EDF-EN of Paris, France and “enXco” a subsidiary French wind farm manager. A pyramid of shell companies was formed. A speculative business venture was advanced to obtain soft Alaska Energy Authority (AEA) Renewable Energy (RE) grants. HEA was invited to participate to satisfy the naïve AEA granting requirement for an electric utility to guarantee technical quality control. HEA did not own KHL at that time.</p> <p>It is instructive to note that the scheme was initiated using a progression of phony addresses in downtown Anchorage, Alaska, one of them a vacant lot.</p> <p>The shell company scheme was based on obtaining AEA renewable energy grants to explore four closely-clustered hydroelectric project locations in the headwaters of the Kenai River on the Kenai Peninsula. Soft AEA grants were obtained for hydroelectric projects at Crescent Lake, Grant Lake and Creek, Falls Creek, and Ptarmigan Lake and Creek. Public stakeholders strongly objected to these invasive, speculative business ventures, which would irreversibly industrialize the headwaters of the Kenai River and permanently compromise its ecological integrity. The scheme utilized FERC preliminary permit process documentation as federal endorsements of the projects, to obtain ongoing AEA grants. KHL continues to annually seek and depend upon these soft grants. This state energy agency denied FY16 grant funding to KHL, while requiring additional studies and listed KHL as inactive.</p>	This statement is false.

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				<p>The foregoing invasive mess became known to stakeholders as the Kenai Hydro War. Strong public opposition gradually caused the shell company pyramid to collapse, leaving only HEA solely involved as the default owner of KHL. HEA is a small rural electric utility with a legacy of illogical, imprudent policies. HEA had zero hydroelectric project development experience, let alone for a project that is highly sensitive. HEA management is relatively new to Alaska and totally indifferent to traditional Alaska values, illogically even at its own expense.</p> <p>The public has endured the great burden of waging the Kenai Hydro War for over seven (7) years. Thousands of hours, words and dollars have been committed to meet this ongoing threat. KRWF believes KHL/HEA will revisit other initial hydroelectric project proposals if the Grant Lake and Creek project is licensed. Impounding and diverting Falls Creek into Grant Lake is already being openly discussed.</p> <p>Please do not license this applicant.</p>	
16	DLA-16	6/25/16 letter from CWA	N/A	<p><u>The General public has been provided with a Lack of Adequate time to Comment on the DLA.</u> The manner in which the KHL has organized the DLA makes it difficult to provide adequate comments, particularly from conservation organizations or private citizens with limited financial and other resources in keeping up with the voluminous and complex documentation related to the licensing process. In the case of the DLA, we had much difficulty locating the main documentation for review and commenting purposes, because the multiple documentation included in both the CD forwarded by KHL and posted on the Commission online are not labeled so that it is clear what the contents of each document was, could not be opened without difficulty and were not placed in any kind of order making it possible for locating relevant documents for purposes of review and comment without significant difficulty.</p> <p>In fact, CWA, recently, requested an extension of the comment period on the DLA for the following reasons:</p> <ol style="list-style-type: none"> 1) KHL filed an incomplete DLA on March 27, 2015. A routine 90-day comment period was established with a June 29 deadline; 	<p>KHL respects all perspectives and welcomes all comments related to the DLA. That said and as communicated previously, KHL continues to be concerned with the inaccurate accusations being conveyed by the CFWA. Per our letter to FERC dated 6/1/15, “<i>KHL is concerned by the numerous inaccurate and misleading comments made by the KRWF and the CFWA in these letters and encourages FERC to review the comprehensive Project record to judge for itself the inaccuracies associated with these and other KRWF and CFWA statements made on the record during the licensing process.</i>”.</p>

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				<p>2) KHL filed four several and substantial additional DLA related monitoring plans, reports and biological evaluations on May 18, 2015.1 The 90-day comment deadline was not correspondingly adjusted to reflect this subsequent filing. Ninety days after the May 18 filing is August 16, 2015;</p> <p>3) KHL changed the previously announced and anticipated 2014 Fall-Winter filing date for the Application to March 27, 2015 which coincides with the crucial, seasonal April to June 2015 resource agency data collection and mobilization period in Alaska. Non-programmatic matters, therefore, cannot be given a priority during this time. This change imposes a substantial paperwork burden on the resource agencies and the general public and will, likely, lead to default pass-through or declined reviews;</p> <p>4) State of Alaska (SOA) resource agencies are now under additional stress, due to program contraction resulting from an unfunded operating budget. As of this Request's May 28 filing date, 30-day layoff notices are scheduled to be issued on June 1, for all state agencies not involved with essential life, health, and safety program responsibilities;</p> <p>5) SOA resource agencies like the Department of Natural Resources and the Alaska Department of Fish and Game, each having critically important oversight responsibilities in this matter, are not considered generally essential in a budget crisis and will be shut down. There is no expectation that the large DLA will be addressed, let alone comprehensively reviewed, under these circumstances;</p> <p>6) The general public depends upon resource agency expertise and authority to protect the highest public values. It is unreasonable to expect resource agencies to re- prioritize and set aside vital programs to respond to poorly timed filings by KHL. It is also recognized that additional feasibility studies will be required. It is important for these studies to be well defined by the agencies;</p> <p>7) One or more additional DLA documents from KHL is expected and additional time must be provided for review. Serial filings without comment period adjustments further assure that stressed resource agencies cannot diligently review the current 444-plus MB DLA in its complete context, let alone anything additional submitted.</p>	<p>Briefly and in an effort to amplify the global message stated above related to inaccurate statements, KHL and its lead licensing consultant developed a DLA consistent with templates used on other successful licensings/relicensings managed by the consultant in recent years. All internal sections of individual exhibits have been structured per FERC regulations related to the Traditional Licensing Process. Significant time was taken organizing all documentation appropriately and this is the only comment received regarding any sort of confusion or disorganization.</p> <p>In regard to the remainder of the itemized issues listed by CFWA, please see the letter filed with FERC dated 6/1/15 for additional factual clarifications related to claims.</p>

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				As a result of the issues with lack of adequate time to address the dysfunctional formatting of the DLA and related documents, most of our comments reference related reports and other documentation previously provided by KHL assuming that the DLA repeats similar information and data.	
17	DLA-17	6/25/15 letter from CWA	N/A	<p><u>The DLA process Excludes Stakeholder Participation.</u> As CWA has, repeatedly, pointed out, KHL’s constant disruption of the Study Process for the Project and process-related issues have substantially affected CWA and other stakeholder’s participation in the Grant Creek study process and in violation of the Federal Power Act and the Commission regulations. As part of the study phase for the Project, for example, KHL maintains that “[e]very facet of the study program has been discussed, collaborated on and revised based upon stakeholder input and per the Traditional Licensing Process (TLP).” To the extent, however, that KHL has discussed the Project, so far, with “stakeholders”, public participation in the study phase of the project has been largely non-existent. Regardless of numerous requests, for example, the licensee (Homer Electric Association) HEA, has consistently refused to hold public meetings to discuss the study plan in Seward and Homer.</p> <p>In fact, the one and only chance for meaningful input by the general public on the Project’s recently completed study phase, was a November 2014 public meeting sponsored by KHL and HEA in Moose Pass, Alaska near the Project location. Needless to say, KHL’s decision not to sufficiently engage the public in the process did not go over well with most of the participants at the meeting. This is due, in part, to the fact that Moose Pass and Seward which are outside of the HEA service area, will receive most of the potential environmental impacts and none of the energy benefits of the Project. Neither did it help that, regardless of the fact that the Moos pass participants were not informed that they could comment on the studies until after arriving at the meeting. In addition, KHL’s reference to extensive collaboration and discussions with “stakeholders” includes nothing more then federal and state agency representatives and not the public. In addition, KHL has provided no support that these stakeholders” participated in all of the over “ten formal meetings and Project-specific site visits, in addition to numerous calls with technical experts from our team and the stakeholders, have been held over the course of the current Permit term.”</p>	See comment #DLA-16.

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				<p>Finally, KHL has attempted to downplay the almost, non-existent, public process related to the Project, by observing that the opportunity for the public input on the licensing decision starts in earnest with the draft licensing application which will be issued in early 2015. This conclusion, however, leaves out the fact that the Commission, generally relies heavily on the results of the study plan when making licensing decisions. In this case, therefore, once the Commission receives the study reports drafted, coordinated and controlled almost entirely by Project proponents, any licensing decision, along with the irreversible impacts on salmon and water would, likely, be a foregone conclusion.</p> <p>KHL, itself acknowledges the significance of the study phase to the Commission decision making by stating:</p> <p>Very early on, a series of work groups were created associated with the various natural resource disciplines. These groups were utilized as the mechanism to develop appropriate study methods, discuss initial and final results, review associated resource reports and discuss potential impacts (positive and negative) and associated mitigation and enhancement measures that may be employed associated with Project construction and operations.</p>	
18	DLA-18	6/26/15 letter from ADF&G	N/A	Some tables are included that contain cell errors, such a text and numbers split between two cells incorrectly (Table A.4-1). Table B.4-2 should probably be presented I a landscape format so that data is readable.	KHL has modified the specified tables accordingly.
19	DLA-19	6/26/15 letter from ADF&G	N/A	KHL has chosen to declare some information as Critical Energy Infrastructure Information (CEII) and has not provided adequate information in the Exhibits. It is important that this information be made available to provide for a complete review of this project. Information is lacking on the intake structure, tailrace, and detention pond structure and operations.	KHL has added additional detail to specific infrastructural areas. Additionally, on 10/27/15 KHL filed a public version of the Grant Lake Project Supporting Design Report which contains extensive and specific information related to Project infrastructure, construction and operations of the Project.
20	DLA-20	6/26/15 letter from ADF&G	N/A	<u>Tailrace Design.</u> The tailrace is described as 4 to 13-foot deep, with rip-rap sidewalls at a 2 to 1 slope, and a screening device at the outflow. A description of protective measures to keep wildlife out of the tailrace is needed. Protective	KHL has added additional detail to the FLA related to keeping wildlife out of the tailrace.

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				measures (such as fencing the tailrace area) need to be developed and included in the DLA.	
21	DLA-21	6/26/15 letter from ADF&G	N/A	<u>Surge Chamber</u> More information is needed on the surge chamber. For example, what method will be used to secure access to the surge chamber? The DLA only describes the hole as coming to the surface. A description of protective measures that will be implemented is needed.	KHL has added the additional detail requested related to the surge chamber.
22	DLA-22	6/25/15 (filed 7/1/15) letter from Larry Werner	N/A	<p>I am writing this letter today to express my concerns regarding what I feel are significant unanswered environmental issues associated with this project.</p> <p>I also write this letter today because the applicant for the above permit, Kenai Hydro LLC, clearly states in their May 15, 2015 to you that the 90 day review period for making comments on this project ends on or before Jun 25, 2015. Which seems somewhat surprising and confusing as the applicant's own web site and other applicant information available to the public concerning this project clearly indicates Jun 29, 2015.</p> <p>The Kenai River is unique and known to sport fishermen the world over because trophy, world record size, King Salmon inhabit the river and spawn in its tributaries. Grant Creek, the site of this hydro project, is a spawning area for these special king salmon, and other species of salmon and trout as well. The waters of Grant Creek drain into the Kenai river.</p> <p>I am a life long Alaskan and have fished this particular river, Grant Creek for over 55 years. in the late 50's and early 60's spawning salmon and various trout were abundant, until the March 64 earthquake. During the following summer months a fish could not be caught. They were gone. They were just not there anymore. The ground shook for a few minutes, and several months later they were gone. The earthquake proved to me just how fragile these streams really are.</p> <p>Others took note. In a noble effort to protect the world famous Kenai River and its tributaries, a wide variety of Federal, State, Borough, and City government entities over the years have made numerous and extensive environmental studies of the Kenai River and its tributaries, with special attention to the anadromous streams such as Grant Creek.</p> <p>These environmental surveys and studies resulted in some of the most</p>	<p>KHL appreciates the thoughts and perspective conveyed in the comment. KHL feels strongly that the comprehensive aquatic data collected during the licensing process, the associated impact analysis and existing historical data has facilitated the development of a Project infrastructure and operational regime that will result in no net impact to aquatic resources in the Project area. Additionally and as documented in the FLA and associated Management Plans, KHL has proposed a series of aquatic-based enhancement measures that per habitat analysis, will increase habitat value for the primary anadromous species that utilize Grant Creek beyond existing natural conditions. We by no means take our responsibility to the natural resources of the area lightly and are committed to ensuring that the Grant Lake Project is constructed and operated in an environmentally sensitive manner.</p> <p>With specific respect to the public aspect portion of the comment, based on public sentiment and agency</p>

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				<p>comprehensive and strictly enforced environmental laws and regulations in America. So vast and constantly changing were these regulations that The Kenai River Center was established to act as a clearing house for facilitating the issuance of permits and information.</p> <p>To illustrate how just intense these environmental regulations are the Kenai River Center created a useful publication, A GUIDE TO OWNING AND MANAGING WATERFRONT PROPERTY ON THE KENAI PENINSULA. On page 49 of the publication they suggest the following:</p> <p>"If you are going to fish from your waterfront property, consider either standing in the river or on an elevated, light penetrating platform on the bank."</p> <p>It seems pretty clear to me that there are a lot of Federal, State, Borough, and Local government entities that are very serious about the environmental health of the Kenai river and its anadromous tributaries.</p> <p>Now comes the applicant, Kenai Hydro, LLC offering assurances to your organization and the public that they can build and operate this hydro project with little or no impact on the environment. These assurances based on an extensive and comprehensive two year study completed by their environmental consultants. Based on this two year study, Kenai Hydro offers that the project construction will be closely watched and that water temperature readings and water flow readings will be constantly monitored, and suggests that by doing so will ensure no damage to the environment, and might even enhance the river environment Maybe give a helping hand to mother nature, so to speak</p> <p>The various government entities that are tasked with environmental regulation and enforcement on the Kenai River have over 50 or 60 years of environmental studies and surveys which have resulted in the strict regulation and enforcement to protect the River that we live by today</p> <p>I think 50 or 60 years of studying and surveying the river are a lot better than two</p> <p>But Kenai Hydro appears extremely proud of their environmental efforts and the quality science behind this project. That fact is mentioned frequently to the press, public, and of course in their cover letter to you</p> <p>Are they proud enough to offer a guarantee to the public and other interested parties</p>	<p>interaction, KHL has decided that the FLA will propose that the Project be operated in such a fashion as to restrict public access via all Project developed routes.</p>

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				that there will be no harm to the environment or streams? A real guarantee, possibly post a bond or something Concerning public access, if their request is approved, I would suggest no public access, at least for the first few years. A period of no access until the environmental concerns associated with the project can be properly addressed and discharged I respectfully request that you decline Kenai Hydro's request dated May 15, 2015 concerning FERC No. 13212 because the environmental concerns and considerations have not been explored thoroughly.	
Initial Statement					
23	DLA-IS-01	6/24/15 letter from ADNR	Page IS-3	Please cite the statute that covers permits and easement (AS 38.05), not just leasing. Utility infrastructure and access routes may be issued as an easement, not a lease. In Exhibit E, Table E.2-2, the measure "obtain easements" from ADNR is listed, but the description in the application [<i>Initial Statement, page. IS-5</i>] states that a lease will be required, not an easement. Easements and leases have different regulations. Please correlate the descriptions and applicable statute/regulations to correctly reflect the authorization being requested. ADNR would suggest including both leases and easements.	KHL has revised the text accordingly.
24	DLA-IS-02	6/24/15 letter from ADNR	Page IS-5	KHL's Initial Statement in the DLA states that "Upon license acquisition, KHL will collaborate with the Alaska Department of Natural Resources to appropriately apply for a lease for the requisite land managed by their agency." Exhibit C, Figure C.2-1 indicates in the Project schedule that the easements would be acquired starting 8/3/15 and be completed by 6/1/16, but the Final EIS is not being issued until 9/1/16, with the license order date of 12/30/16. Which the correct order (applying to DNR prior to the Final EIS being issued or after)?	KHL appreciates the comment and has revised the text to be consistent and adequately represent the approximate schedule. Figure C.2-1 has been modified to identify an updated and expanded lease/easement acquisition period based upon FERC FLA review and potential construction timing.
Exhibit A					
25	DLA-A-01	6/26/15 letter from ADF&G	Section 2	This section is missing a description of the penstock, at least from the tunnel outlet to the powerhouse, a distance of approximately 150 feet.	Detail related to the penstock from the tunnel to the powerhouse can be found in Section 4.4 of Exhibit A.

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26	DLA-A-02	6/24/15 letter from ADNR	Section 3	The Alaska Railroad is listed as adjacent to the project area, but it is in the project area on all the maps in later descriptions.	The text in Section 3 has been modified to clarify the location of the Alaska Railroad with respect to the Project area.
27	DLA-A-03	6/17/15 letter from FERC	Section 4	Similarly, because the supporting design report is considered Critical Energy Infrastructure Information (CEII) and access to CEII information is restricted, we suggest moving any Exhibit A, B, C & D information that is included in the supporting design report (but does not warrant CEII protections) to the respective exhibits.	The CEII designation on the Supporting Design Report was removed in October of 2015. Copies were distributed to stakeholders and the document was also filed with FERC for public access and review.
28	DLA-A-04	6/26/15 letter from ADF&G	Section 4	This Table (A.4-1) contains errors in several places. They appear to be in numbers not correctly placed in the table. Correct Table A. 4-1.	Based upon a supplemental review of Table A.4-1, we were not able to identify any inaccuracies in the table.
29	DLA-A-05	6/26/15 letter from ADF&G	Sections 4.1 and 4.2	In 4.1 it is stated: <i>“The proposed Project consists of a reinforced concrete intake structure located on the south side of the natural lake outlet.”</i> In 4.2 it is stated: <i>“The Project water intake would be a concrete structure located approximately 500 feet east of the natural outlet of Grant Lake and adjacent to the shore.”</i> These sections seem to conflict with each other, and if so, revisions are needed.	KHL has revised both sections 4.1 and 4.2 to read that the intake is located “east of the natural lake outlet adjacent to the south side of the shore.”
30	DLA-A-06	6/26/15 letter from ADF&G	Section 4.3	Page A-11 and A-12 <i>“A surge chamber is located at the transition between the two tunnel slopes. This chamber is approximately 10 feet in diameter and would extend from the tunnel invert elevation of 650 NAVD 88 to the ground surface at approximately elevation 790 NAVD 88.”</i> Further descriptions are needed regarding containment of the proposed 10 foot diameter, 140 foot deep hole in the ground. For example, a discussion is needed on safety measures that will be implemented to prevent people and wildlife from falling into the hole. The maximum lake elevation is 703 feet. The description of the surge chamber is identified at elevation 790 feet. It is not clear why this chamber would be located where an additional 87 feet above the maximum lake level must be drilled through? More information is needed to better understand these issues.	Edits to elevation numbers and additional detail related to safety measures associated with the surge chamber have been incorporated into Section 4.3 of Exhibit A. The surge chamber outlet is located an additional 87-feet above the maximum lake elevation to match existing ground elevation at that location, When a load rejection occurs, the surge chamber provides a location of the pressure wave and the associated volume of water to go which results in a rise in the water elevation in the chamber. Once the pressure wave

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					<p>passes, the water level in the surge chamber will return to the lake level elevation.</p> <p>Additional text is provided in Section 4.3 discussing this and the screened outlet on the surge chamber which excludes wildlife and public access.</p>
31	DLA-A-07	6/26/15 letter from ADF&G	Section 4.5	<p><i>“The tailrace channel would be trapezoidal in shape, with a bottom width of 43 feet, side slopes of 2H:1V and a channel depth ranging from 13 feet at the powerhouse to 7 feet at the creek.”</i></p> <p>Further information is needed on any safety measures that will be implemented to restrict wildlife access into the tailrace. The tailrace may pose a serious danger to large mammals, especially moose, if they enter the tailrace. It would be difficult for moose to escape the tailrace with rip-rap construction and slopes as described. Preventive measures are needed (e.g. fencing the tailrace area).</p> <p><i>“The powerhouse draft tubes would connect to a tailrace channel located on the north side of the powerhouse structure. The draft tubes would extend from a low point elevation of approximately 509 feet NAVD 88 up to the tailrace channel invert elevation of 515 feet NAVD 88. The channel would continue to the east bank of Grant Creek.”</i></p> <p>Details on the tailrace have been lacking. The point of discharge has been inconsistent. Furthermore, the DLA presents contradictory information on the point of discharge. Figure A.4-1 of Exhibit A contradicts most other figures (e.g. 20 figures presented in Exhibit E, such as Figure E.4-22). With anadromous fish use of this reach, this detail needs to be clearly presented.</p>	<p>Additional detail related to the exclusion of wildlife from the tailrace has been added to Section 4.5.</p> <p>Additional detail related to the point of discharge for the tailrace has been added to Section 4.5 of Exhibit A and all maps throughout the FLA have been modified to be consistent with respect to the tailrace outflow location.</p> <p>Additional detail on the tailrace channel can be found in Exhibit F-1, the Supporting Design Report. The CEII designation on the Supporting Design Report was removed in October of 2015. Copies were distributed to stakeholders and the document was also filed with FERC for public access and review.</p>
32	DLA-A-08	6/17/15 letter from FERC	Section 4.6	<p>Section 4.6, <i>Tailrace Detention Pond</i>, provides a general description of the purpose and use for the tailrace detention pond. However, this description is limited. In the final license application, please expand the proposed operation discussion to include some of the detail in the supporting design report on the reason for the pond (ramping concern) and how the pond would work,</p>	<p>Additional detail related to the purpose of and the need for the tailrace detention pond has been added to Section 4.6 of Exhibit A.</p>

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				including the volume of water diverted into the pond and the amount released to the tailrace during typical operation.	Additional detail on the tailrace Detention Pond can be found in Exhibit F-1, the Supporting Design Report. The CEII designation on the Supporting Design Report was removed in October of 2015. Copies were distributed to stakeholders and the document was also filed with FERC for public access and review.
33	DLA-A-09	6/26/15 letter from ADF&G	Section 4.6	The description of the tailrace detention pond features and operational use is limited and does not provide a sufficient understanding of this feature. Please provide additional details on the design and operation.	Additional detail related to the design and the need for the tailrace detention pond has been added to Section 4.6 of Exhibit A. Additional detail on the tailrace channel can be found in Exhibit F-1, the Supporting Design Report. The CEII designation on the Supporting Design Report was removed in October of 2015. Copies were distributed to stakeholders and the document was also filed with FERC for public access and review
34	DLA-A-10	6/26/15 letter from ADF&G	Section 4.7	<i>“The powerhouse would be located on the south bank of Grant Creek immediately west of the downstream tunnel portal and adjacent to the detention pond.”</i> The location of the powerhouse needs to be more clearly defined. As is, the DLA presents the locations of project features with reference to one another, failing to reference natural features. In our General Comments, we questioned information presented in many Exhibit E figures regarding the location of the powerhouse, tailrace, and detention pond and alignment of those features.	Additional detail related to the specific location of the powerhouse has been added to Section 4.7 of Exhibit A.
35	DLA-A-11	6/24/15 letter from ADNR	Section 4.10	Moving ADL 228890, the INHT easement, allows for the 90-degree crossing, not the current conditions, which places the powerhouse on the trail. The descriptions of the affects assume the easement has been moved, not the current condition.	KHL appreciates the comment. Section 4.10 describes the Access Road. Given the more direct access road alignment and our proposed

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					INHT re-route, only one 90-degree crossing would occur.
Exhibit B					
36	DLA-B-01	6/26/15 letter from ADF&G	Section 2.2.1.7	There appears to be a typo in 2.2.1.7 under 1) "...for the bank...". We believe it should read "...from the bank...".	KHL has revised the text accordingly.
37	DLA-B-02	6/26/15 letter from ADF&G	Section 2.2.2	The bulleted list mentions a penstock, but fails to describe the feature as a bullet item.	The intent of this list was simply to generally describe primary Project features. As it says immediately below the list, " <i>Detailed descriptions on the proposed Project facilities are provided in Exhibit A...</i> ".
38	DLA-B-03	6/26/15 letter from ADF&G	Section 2.2.3	We request flow duration estimates also be provided on a weekly basis. The monthly flow duration data provided in Table B.3-2 is poorly formatted and needs revision.	KHL does not recognize any formatting issues. KHL believes the analysis and presentation of the data is sufficient. That said, all of the data is available to develop the weekly duration estimates described in the comment and will provide the data to interested parties upon request.
39	DLA-B-04	6/26/15 letter from ADF&G	Section 2.2.3	The hydraulic data used to inform the operations model is correctly described as a composite record. That this correlation uses 66 years of data from the Kenai River at Cooper Landing should be mentioned in discussion. As written, the section gives the impression that Grant Creek has 66 years of gage record.	Additional text has been added to clarify that the composite record consisted of both Grant Creek and Kenai River stream flow data.
40	DLA-B-05	6/17/15 letter from FERC	Section 3.3	Section 3.3, <i>Dependable Capacity and Average Annual Production</i> , states that calculated average annual energy production was based on 66 years of streamflow data run through the project operations model. Please include, as an appendix to the final license application, the annual generation for each of the 66 model years.	KHL has incorporated a tabular appendix documenting the annual generation on a monthly basis for each of the 66 model years.
41	DLA-B-06	6/26/15 letter from ADF&G	Section 3.3.2	This section discusses the composite gage record. The use of the Kenai River gage for that composite was discussed in 3.3.1 Project Flow Data. The section should have something on the order of "...based on the 66 year composite record" as described previously in 3.3.1 Project Flow Data.	KHL has added the requested reference.

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42	DLA-B-07	6/26/15 letter from ADF&G	Section 3.3.4	<p><i>“The project will draw Grant Lake down to a maximum depth of 13 feet.”</i></p> <p>The maximum drawdown of Grant Lake will be 13 feet from the maximum lake surface elevation of 703 feet NAVD 88. The statement suggests that most of the water will be removed from Grant Lake. Recommend re-wording this statement.</p>	Additional text has been added to Section 3.3.4 to clarify that the normal operating range for the Project will be between 703 feet NAVD 88 and 690 feet NAVD 88.
43	DLA-B-08	6/26/15 letter from ADF&G	Section 3.3.6	<p><i>“The tailwater location is located where the tailrace channel will return powerhouse flow to Grant Creek at the downstream on the incised canyon (Reaches 4 and 5 transitions).”</i></p> <p>This sentence is difficult to understand and there seems to be some missing text after “downstream...”</p>	KHL has revised the text in Section 3.3.6 per recommendation.
Exhibit C					
Exhibit D					
44	DLA-D-01	6/26/15 letter from ADF&G	Section 5.5	It is expected that there will be stakeholder meeting/s, as necessary, to discuss the DLA comments and various plan comments prior to moving forward with filing the FLA with FERC.	After review of the DLA and Management Plan comments, KHL met with requisite stakeholders to discuss outstanding issues related to the PM&Es.
45	DLA-D-02	6/7/15 letter from Irene Lindquist	Section 8	The Alaska Division of Oil and Gas estimates that there are still proven and conventionally recoverable gas reserves in the Cook Inlet Region. Additionally, Alaska continues to work on ways to get North Slope gas to South-Central Alaska but none of the potential solutions indicate a shrinking natural gas price for the region. HEA, like the rest of the electric utilities, will continue to generate a majority of its electricity from natural gas. That said, HEA has a strong desire to diversify its energy mix, reduce its dependence on fossil fuels and develop responsible. HEA’s strong desire to diversify in the Trail and Grant Lakes area is not in the best interest of the general public and does not fit in with the current and proposed uses of this area. Please do not give a license for HEA to move forward with the Grant Lake project.	KHL respects all perspectives related to the development of the Grant Lake Project. As described in the FLA, our environmental study results, associated impact assessments and infrastructural design represent an efficient, environmentally conscious project that will provide renewable energy for years to come for Alaskans.
46	DLA-D-03	6/17/15 letter from FERC	Section 6.1	Section 6.1 states that a model was used to estimate the amount of spinning reserve available from the project. However, no details of the model are given and we have no way to validate the model results given in Table D.6-1 or the statement that the project would produce 8,322 to 14,559 MWh/year of spin	KHL has added detail related to spinning reserve in Section 6.1, and appropriate model detail has been

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				capacity. The final license application will need to include the details on the model and a clear explanation of the results. Additionally, the spinning operation should consider the project hydrology. From June until November, the average inflows exceed the proposed project's hydraulic capacity, so any spinning operation during these months would forego the chance to generate energy. From January till May, the inflows are barely high enough to generate at the minimum hydraulic capacity of one unit; therefore, the project would need to draft reservoir storage to operate as a spinning resource during these months.	added to the Exhibit as Attachment B-1.
47	DLA-D-04	6/17/15 letter from FERC	Section 6	Section 6.2 reports that Homer Electric Association Inc.'s (HEA) blended cost of power was \$118/MWh in 2014; however, the source of this information is not identified. The final license application should provide a reference for HEA's blended cost of power, which was used to calculate the project's potential power benefits.	KHL appreciates the comment. Per the request, the document has been footnoted to define the method for calculating the blended cost of power.
Exhibit E					
48	DLA-E-01	6/17/15 letter from FERC		Footnote 1 states that the maps in the draft license application may not accurately represent the proposed project. In the final license application, all figures (including maps), tables, and text should accurately represent the proposed project.	KHL appreciates and understands this comment. Per communications with FERC during the DLA development process, it was conveyed that certain components related to infrastructure mentioned would be absent from the DLA and/or present in the management plans at the draft phase and would be incorporated into the FLA once additional development took place and comments were reviewed from stakeholders. All figures, maps, tables and text accurately represent the proposed project in the FLA.
49	DLA-E-02	6/26/15 letter from ADF&G		In Exhibit E, several specified figures appear to display incorrect project feature representations of tailrace and detention pond locations, and their return to the creek:	KHL appreciates the comment and has amended all maps in the FLA to accurately show project features.

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50	DLA-E-03	6/17/15 letter from FERC	N/A	<p>In addition to resource-specific issues discussed below, the draft license application could be considered deficient with regard to section 4.41(f)(3)(i)-(iv) of the Commission’s regulations. For instance, the draft license application did not provide: (1) a description of spatial and temporal distributions, and densities for certain wildlife game species (section 4.41(f)(3)(i)); (2) project impacts, such as possible changes in size, distribution, and reproduction of essential populations (section 4.41(f)(3)(ii)); (3) detail for all proposed measures to protect or enhance fish, wildlife and botanical resources (section 4.41(f)(3)(iii)); or (4) supporting information for mitigation measures (section 4.41(f)(3)(iv)). When filing the final license application, Kenai Hydro, LLC (KHL) must comply with section 4.41(f)(3) of the Commission’s regulations by providing a complete report describing the fish, wildlife, and botanical resources in the vicinity of the project, including the detailed information required in subsections 4.41(f)(3)(i)-(iv) of the Commission’s regulations.</p>	<p>KHL appreciates and understands this comment. Per communications with FERC during the DLA development process, it was conveyed that certain components related to regulations mentioned would be absent from the DLA and/or present in the management plans at the draft phase and would be incorporated into the FLA once additional development took place and comments were reviewed from stakeholders. The additional information outlined in the comment has been incorporated into the FLA.</p>
51	DLA-E-04	6/26/15 letter from ADF&G	N/A	<p>In Exhibit E, the following figures appear to display incorrect project feature representations of tailrace and detention pond locations, and their return to the creek:</p> <ul style="list-style-type: none"> • Figure E. 4-5 Dated 11-17-2014 • Figure E. 4-17 Dated 3-3-2015 • Figure E. 4-18 Dated 3-3-2015 • Figure E. 4-19 Dated 3-3-2015 • Figure E. 4-21 Dated 3-3-2015 • Figure E. 4-22 Dated 3-3-2015 • Figure E. 4-23 Dated 3-3-2015 • Figure E. 4-24 Dated 3-26-2015 • Figure E. 4-25 Dated 3-3-2015 • Figure E. 4-26 Dated 3-3-2015 • Figure E. 4-27 Dated 3-3-2015 • Figure E. 4-28 Dated 3-3-2015 • Figure E. 4-29 Dated 3-3-2015 • Figure E. 4-32 Dated 3-3-2015 • Figure E. 4-40 Pages 1 of 6, 4 of 6, and 5 of 6. All Dated 3-11-2015 • Figure E. 4-41 Pages 1 of 3, and 3 of 3. All Dated 3-11-2015 • Figure E.4-98 Undated Representation. 	<p>KHL appreciates the comment and acknowledges the inconsistency and oversight in the documented and previously developed figures. The FLA has been updated to accurately represent the infrastructural design of the tailrace and associated detention pond; that being to accommodate a return flow from the tailrace to enter Grant Creek at the upstream extent of Reach 4. Since these comments were made, the Preliminary Design Report has been filed with FERC with a public designation and individual copies sent to stakeholders. These documents included the figures which illustrate the project and add additional detail. Additional text was also added to Exhibit E sections 4.4.2.1; 4.5.2; 4.5.2.1; and 4.6.2.1.2,</p>

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				<p>These figures also conflict with feature representations in Figures A.4-1 Dated 2-18-2015, E.2-1 Dated 2-18-2015, and E.4-82, E.4-83, and E.4-84 all dated 12-23-2014.. After lengthy discussions during the first half of 2014, it was our understanding that location and alignments for the tailrace and detention pond would flow to a point near the upstream extent of Reach 4. To accommodate this alignment, the powerhouse was slightly relocated to a slightly higher elevation that allowed said water release.</p> <p>Almost all of the disputed figures are dated after the figures identified in the above paragraph as being conflicted with. These figures are key elements of the DLA, and need to be accurate in presentation to allow for correct evaluation of the project. What is presented in the listed figures is not the same as what was represented in discussions. Since adequate descriptions of the design and operation of the tailrace, detention pond, and intake structure remains lacking, we are concerned with the completeness and correctness of the DLA Exhibits. The Figures listed above are not representative of the project; therefore they are not acceptable to be promoted in the DLA. It is unclear why new and incorrect drawings were completed months after the changes in the powerhouse, tailrace and detention pond positions, alignments, and outflow designs were identified to the agencies.</p>	
Proposed Action and Alternatives					
52	DLA-E-05	6/26/15 letter from ADF&G	Section 1.2	<p><i>“A comprehensive package of documents including the Draft Biological Evaluation (BE) for sensitive plants in the Project area and a series of management/monitoring plans is under development and will be distributed for comment between 30 and 60 days after the distribution of this DLA. This schedule will facilitate a seamless review in conjunction with the DLA and allow comments on all documents to be completed at the same time given the 90 day review period for this document.”</i></p> <p>We appreciate the opportunity to review these plans and will comment on the series of management/monitoring plans as time allows.</p>	KHL appreciates the comment.

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
Proposed Action and Alternatives					
53	DLA-E-06	6/26/15 letter from ADF&G	Section 2.1.2.2	<p><i>“The intake would allow for drawdown of Grant Lake to elevation 690 feet NAVD 88 thereby creating approximately 18,790 acre-feet of active storage for the project between elevations 703 feet NAVD 88 and 690 feet NAVD 88. The intake can be designed to allow the Project to draw water near the surface at various levels of storage, if deemed necessary.”</i></p> <p>More information is needed on how the intake will be constructed and operated. To avoid potential adverse impacts to aquatic resources, the intake needs to be designed to withdraw and bypass water that is similar in temperature to pre-project Grant Creek temperatures. Project features redacted from the DLA under CEII rules need to be provided for efficient understanding of the project and potential environmental effects.</p>	Additional detail related to the Project intake is provided in both Exhibit A (Section 4.2) and in Exhibit F of the DLA. In response to comments made on the DLA, KHL refiled the Preliminary Design Report (Attachment F-1 of Exhibit F) with a public designation and individual copies were sent to stakeholders. With respect to the drawings contained in Attachment F-2 of Exhibit F, per guidance from FERC, project facility design drawings contain Critical Energy Infrastructure Information (CEII). Procedures for obtaining access to CEII may be found at 18 CFR § 388.113 and requests should be made to the Commission’s CEII coordinator. If KHL can assist in facilitating the access of this information, we’d be happy to help.
54	DLA-E-07	6/17/15 letter from FERC	Section 2.1.5	Section 2.1.5, Table E.2-2, <i>KHL proposed environmental measures</i> , includes administrative permitting processes that are not environmental measures (e.g., section 404 permit, water rights, special use permits). While it is appropriate to acknowledge these processes within the final license application, they do not constitute environmental measures and should not be characterized as such. In contrast, many of the proposed environmental measures identified in section 4 of Exhibit E are not listed in Table E.2-2 (e.g., control water temperature in Grant Creek, provide minimum instream flows in Grant Creek, increase fish habitat in Grant Creek, spawning gravel augmentation, stream channel reconfiguration, conservation of wetland habitat). Each proposed environmental measure should be specifically identified in section 2.1.5.	KHL appreciates the comment and Table E.2-2 located in Section 2.1.5 has been revised accordingly.

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
<u>Consultation and Scoping</u>					
<u>Environmental Analysis</u>					
<i>Cumulative Effects</i>					
55	DLA-E-08	6/25/15 letter from USFS		<p>The Forest Service concurs with FERC Office of Energy Projects "Review of Draft License Application for the Proposed Grant lake Hydroelectric Project Identification of Potential Deficiencies and Additional Information Needs" dated June 17, 2015</p> <p>General-Forest Service Resources That Could Be Cumulatively Affected</p> <p>Water quantity, water quality, and fishery resources are resources identified that would be cumulatively affected by the proposed construction and operation of the project. It is Forest Service practice to analyze all affected resources for direct, indirect and cumulative effects. During public meetings, many comments and concerns were expressed related to recreation use in the project area. In particular, the direct, indirect, and cumulative effects to the Iditarod National Historic Trail (INHT) should be thoroughly analyzed.</p>	<p>A comprehensive description of the level of effort taken by KHL to reach a collaborative agreement on an acceptable re-route of the commemorative INHT (once constructed) is located in Table E.2-2 and Sections 4.8.2.3 and 4.8.3.3 of Exhibit E.</p> <p>In addition, Section 4.8.3.3 describes KHL's proposed PM&E to re-route the INHT through the Project area.</p>

56	DLA-E-09	6/25/15 letter from USFS	<p>Water Quantity and Quality</p> <p>Instream Flow Requirement — Chugach RLRMP, 2002 Water Wetlands and Riparian Areas Goal: "Provide instream flows to maintain and support aquatic life and habitat, recreation and aesthetics, the natural conveyance of water and sediment, and other resources that depend on such flows on National Forest System Lands."</p> <p>Need for Additional or New Information</p> <p>A reference identified in the Aquatic Resources Draft Study Plan (Source: Grant Lake Morphology in Marcuson, P. 1989. Coho Salmon Fry Stocking in Grant Lake, Alaska, USDA Forest Service, Seward Ranger District, Chugach National Forest, February 1989) states: "An upper basin of Grant Lake has a maximum depth of 80 feet and a lower, outlet end exceeding 90 feet in depth. The two basins are separated by a narrow isthmus with an island and less than 10 feet of depth." Lake depths in the area in question should be evaluated and this statement verified. If true, there could be a disproportionate drawdown of the lower basin and there may be a loss of connectivity between the deeper regions of the upper and lower portions of Grant Lake. Again, please note that the draft study plan should display the updated project map (<i>This was not analyzed in the Draft Water Resources — Geomorphology Report, Feb. 2014</i>). This drawdown may also have effects on water recreation through this narrow, shallow location and should be analyzed (06/11/2015).</p> <p>Approximately 11% of Grant Creek is covered by glaciers. The effects analysis of the project should include references and an analysis on how the project will affect water quantity/quality taking into account anticipated streamflow changes from glacial recession.</p> <p>Grant Creek was stream gaged by the USGS from 1947-1958. This time frame was within the Cold (Negative) Pacific Decadal Oscillation (PDO). Cold PDO phase summer flows have shown higher peak snowmelt runoff, and higher magnitude and timing of annual peak discharge events than Warm (positive) PDO phase summer flows (Neal, et. al, 2002). Additionally, many of these years during this timeframe were La Nina's which often produce higher amounts of snowfall lending to even higher flows. Utilizing only these years and only two separate discontinuous and incomplete years of data will likely not reflect the mean hydrograph. Modeling Grant</p>	<p>KHL appreciates the thoughts and perspective conveyed in the comment. KHL feels strongly that the comprehensive aquatic data collected during the licensing process, the associated impact analysis and existing historical data has facilitated the development of a Project infrastructure and operational regime that will result in no net impact to aquatic resources in the Project area.</p> <p>As described in Section 4.3.2 of Exhibit E, bathymetry data from Ebasco (1984) indicate maximum upper and lower basins depths of 290 ft and 283 ft, respectively. In addition, these detailed bathymetry data indicate the narrow channel that connects the two basins has an average depth of 28 ft at full pool elevation (703 ft NAVD 88). The current operation model shows the lowering of reservoir elevations by 13 ft (690ft NAVD 88) from typical full pool elevation (703 ft NAVD 88) and will maintain connectivity of the two lake basins.</p> <p>Based on agreement with the stakeholder group and per Section 4.3.2 of Exhibit E, In addition to the 10-year streamflow record from USGS gage 15246000, there has been intermittent streamflow monitoring at Grant Creek in 1981-1983 and during the current licensing effort(Ebasco 1984 and KHL 2014b). Statistics were applied to these intermittent data as well as developing a correlation to</p>
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Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
				<p>Creek's streamflow hydrograph should take into account that the gaged water flow years were likely much higher than the mean. Please include a climate change effects analysis. This analysis should include anticipated changes in streamflow. Hydrologic flow analyses should take into account both the long term warming climate change trend and the PDO and ENSO variation cycles.</p> <p>There will need to be an analysis of the project effects on Groundwater Resources within the project area and downstream. Activities occurring off of National Forest lands may still affect upstream and downstream Forest Service resources such as fish, water quality, water quantity, aquatic habitat and riparian areas. The Land and Resource Management Prescription within the project area has a Fish, Wildlife, and Recreation management Prescription. Apply Best Management Practices to minimize the effects of land disturbing activities on the beneficial uses of water.</p>	<p>USGS gage 15258000 (Kenai River at Cooper Landing) to create a composite streamflow record for Grant Creek that represents 66 years of daily streamflow data for calendar years 1948 through 2013. Although climate change has the potential to effect water quantities in the future, KHL feels it is speculative to base operational parameters on unknown climate change trends.</p> <p>As part of the collaborative study plan process, additional groundwater investigations were not requested by stakeholders. Historical summaries of groundwater conditions note that very few springs were identified in the Project area, mainly minor seeps along bedrock cliffs. Additionally, “[s]ummer rains coupled with snowmelt form the major source for recharging the groundwater system” (Ebasco, 1984)</p> <p>KHL will apply best management practices to protect all natural resources regardless of the land designation/ownership of the specific area.</p>
<i>Applicable Laws</i>					
57	DLA-E-10	6/17/15 letter from FERC	Section 4.2	In section 4.2.3, <i>Endangered Species Act</i> , the draft license application discusses the pale poppy, a U.S. Forest Service-designated sensitive species. However, section 4.2.3 should only discuss federally threatened and/or endangered species listed under the Endangered Species Act. Other special	KHL appreciates the comments and has modified Exhibit E accordingly.

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
				status species designated by state or federal agencies should be identified and discussed in section 4.7, <i>Terrestrial Resources</i> , of the final license application. Additionally, section 4.2.3 does not discuss any federally-listed species. We recognize that the Commission’s August 23, 2010 Scoping Document 2 stated that no federally-listed threatened and endangered species are known to occur in the project vicinity. However, that determination was made nearly five years ago. To ensure that no changes have occurred since the issuance of Scoping Document 2, KHL should consult with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service to confirm that no federally-listed threatened or endangered species, or critical habitat, occur in the project area or may be affected by the proposed project. The final license application should document any such consultation in section 4.2.3.	
58	DLA-E-11	6/17/15 letter from FERC	Section 4.2.3	Remove sensitive plant discussion (leave it to 4.7), and consult with USFWS/NMFS to confirm no new T&E species designations in Project area since SD2 issued.	KHL appreciates the comment and has modified Exhibit E accordingly.
<i>General Description of River Basin</i>					
<i>Geological and Soil Resources</i>					
59	DLA-E-12	6/25/15 letter from USFWS	N/A	Although the proponent identifies several potential geomorphic responses from Project operational conditions that could affect spawning habitat over time in Table E.4-6, no Cumulative Effects or Unavoidable Impacts were identified. The proponent also states that “Many of the geomorphic responses and the resulting impacts to spawning substrate are anticipated to occur incrementally over time measured in years and decades.” These potential responses from Project operations that could affect spawning substrate and fish populations will likely occur within the 30- to 50- year time horizon of consideration identified by FERC and should be quantified and addressed as Cumulative Effects, and if necessary, Unavoidable Impacts of the Project. Since the Project proponent has already identified potential mitigation measures such as gravel augmentation, more detail should be provided to quantify the need over time.	KHL appreciates the comment. With respect to geomorphic response, Cumulative Effects and/or Unavoidable Impacts were not identified with Project development and operations sediment supply into Grant Creek is naturally limited with bedrock from the Canyon Reach serving as the primary source. It is assumed that large scale flow events occurring no more than once per decade do enhance sediment supply to the lower reaches of Grant Creek. Without being able to quantify or predict the changes to spawning habitat over time, KHL took a proactive approach to add additional habitat via the Reach 1 distributary

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
					and undertake an adaptive management approach for determining if gravel supplementation in the future is necessary.
60	DLA-E-13	6/25/15 letter from USFS	Section 4.4	<p>Soil Resources-Erosion Control Plan</p> <p>Within 1 year following the date of license issuance and at least 90-days prior to any land disturbing activity, the Licensee shall file with the Director, Office of Hydropower Licensing for Commission approval, a plan that is approved by the Forest Service to control erosion, stream sedimentation, dust and soil mass movement consistent with the standards and guidelines of the Chugach National Forest Land Management Plan, the Soil and Water Conservation Handbook (FSH 2509.22) and the National Best Management Practices. Upon Commission approval, the Licensee shall implement the plan. The plan shall be based on actual-site geological, soil, surface water and groundwater conditions, and shall include: (1) a description of the actual site conditions, including any existing erosion or sedimentation problems from roads, stream crossings, trails, or other facilities; (2) detailed descriptions, design drawings, and specific topographic locations of all control measures; (3) measures to divert runoff over disturbed land surfaces, including sediment ponds at the diversion and powerhouse sites; (5) re-vegetating test-drive areas outside the roadbed; (6) measures to dissipate energy and prevent erosion at the tailrace; (7) a monitoring and maintenance schedule; (8) and any other measures the Forest Service, and the Licensee mutually identify as needing care to ensure resource protection. The plan and erosion control measures shall comply with Best Management Practices (Soil and Water Conservation Handbook FSH 2509.22 and National Best Management Practices for Water Quality Management on National Forest System Lands FS-990). Erosion control measures should be designed to retain the natural appearance of the area where practicable. The Commission may require changes to the plan to ensure adequate protection of the environmental, scenic, and cultural values of the project area. The Licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, Office of Hydropower, Licensing, prescribes a different commencement schedule.</p>	KHL appreciates this comment and per Table E.2-2 and Section 4.4.3, has plans to collaboratively develop an “ <i>Erosion and Sediment Control Plan</i> ” that complies with all requirements described in this comment.

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
61	DLA-E-14	6/25/15 letter from USFS	Section 4.4.1	The effects of project construction and operation on changes to heavy metal leakage as a result of water level fluctuations of Grant Lake, which is an area of past mining and milling operations, should be analyzed. The Forest Service currently has a Miner with an approved Mining Plan of Operations for a Placer and Loading mining operation in the Grant lake Area.	<p>KHL appreciates the thoughts and perspective conveyed in the comment. KHL feels strongly that the comprehensive aquatic data collected during the licensing process, the associated impact analysis and existing historical data has facilitated the development of a Project infrastructure and operational regime that will result in no net impact to aquatic resources in the Project area.</p> <p>Water level fluctuations associated with Project operations will not significantly deviate from what currently and naturally occurs at Grant Lake. Thus, no impact related heavy metal leakage is expected. With respect to approved but inactive mining operations in the “Grant lake Area”, KHL and their Project would not be responsible for impacts that occur to the watershed as a result of the mining operations.</p>
62	DLA-E-15	6/25/15 letter from NPS	Section 4.4.1.1	In Figure E.4-4, the legend presents the five relative shoreline wave erosion vulnerability categories alphabetically. It would be much easier to understand the figure if these relative vulnerabilities were listed in order of severity.	Figure E.4-4 of Exhibit E currently lists the “ <i>Erodibility Potential</i> ” in order of severity from high to low.
63	DLA-E-16	6/17/15 letter from FERC	Sections 4.4.2.1 and 4.4.3	The Commission’s Scoping Document 2 identified disposal/dispersion of spoil material resulting from construction of the proposed project facilities as having potential impacts on the surrounding area. However, the draft license application, sections 4.4, <i>Geological and Soil Resources</i> , 4.4.2.1, <i>Project Construction</i> , and 4.4.3, <i>Proposed Environmental Measures</i> , make no mention of spoil materials. So that we may fully evaluate the resource effects construction of the proposed project may have in the project’s vicinity, the	KHL appreciates the comment and the Sections described in the comment have been revised to address the disposal/dispersal of spoil material.

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
				final license application must describe the methods KHL intends to employ to dispose of or disperse spoil material. The proposed methods should also be described in the proposed Erosion and Sediment Control Plan and, if appropriate, spoils material dispersal areas should be addressed in the final vegetation management plan.	
64	DLA-E-17	6/17/15 letter from FERC	Section 4.4.4	In section 4.4.4, <i>Cumulative Effects Analysis</i> , the draft license application states that the availability of the project’s access road for public recreation will be determined based on stakeholder input. This same section also states that if public access is provided, the Public Safety Access Plan (PSAP) will address monitoring and maintenance measures related to the project’s access road and the associated recreation. We note that if the project’s access road is made available for public recreational access, the increased traffic volume may also increase the potential for erosion and sedimentation. As a result, the proposed Erosion and Sediment Control Plan should also include measures to address these potential resource concerns and the measures should be described in the final license application.	KHL appreciates this comment. As a result of local public sentiment and additional discussion with stakeholders, KHL has chosen to restrict public access to the Project Area via Project access routes. This is documented in the FLA.
65	DLA-E-18	6/26/15 letter from ADF&G	Section 4.4.5	<p><i>“Based on the comprehensive set of natural resources and engineering analyses conducted and reviewed as part of this licensing process and the proposed monitoring and management plans, KHL has identified no geologic or soil-related unavoidable adverse impacts associated with construction and operation of the Project. ‘</i></p> <p>Due to the lake drawdowns, shoreline erosion will be unavoidable in areas of the shoreline that are depositional in nature.</p>	KHL appreciates the comment. Water level fluctuations associated with Project operations will not significantly deviate from what currently and naturally occurs at Grant Lake.
<i>Water Quality and Quantity</i>					
66	DLA-E-19	6/24/15 letter from Andrew Bacon	N/A	I would like to cite two issues I have with the fisheries studies cited in the DLA. Second, KHL states that plant operators will be able to match natural ambient water temperature within 1 °C 2. If plant operators are able to achieve the stated goal of operating within plus or minus 1 °C of natural ambient stream temperatures, the project will still alter the natural timing of fry emergence. In order to mitigate this impact, KHL would have to monitor the daily stream temperature and adjust their lake water intakes to maintain natural ambient temperature. This is similar to the work of a fish culturist monitoring egg development in a controlled hatchery environment. I do not believe that	KHL appreciates the comment. It is notable that it is a bit difficult to understand given the wording. The type of system to be utilized at Grant Lake has been used successfully in many other locations to control water temperature deviations. Selective withdrawal intakes were specifically developed to address downstream temperature issues. The intakes are

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
				the automated system for controlling temperature put forth in this project proposal can adequately replicate the subtleties of nature.	designed to withdraw water from a specific location within the water column to reach the target temperature value. The Grant Lake intake is designed to operate in a similar manner to other selective withdrawal intakes. Monitoring of lake and downstream water temperatures are required to operate the system. With time, hands on experience with the system will allow predictive tools to be implemented to further optimize the intake operation.
67	DLA-E-20	6/25/15 letter from CWA	N/A	<p><u>The DLA Fails to Show that KHL has collected Adequate Streamflow Data.</u> KHL maintains that “[w]e have completed a comprehensive and robust biological study program incorporating all resource areas (Aquatics, Water Quantity/Quality, Terrestrial, Recreation and Visual and Cultural).” This contradicts the DLA, however, which provides that stream “gages were installed on Falls Creek (FC100) and Grant Creek (GC200) on 09 June and 10 June of 2009” only and that continuous “stage data was recorded at these locations until 12 October 2009”.</p> <p>Other than that the DLA, merely, references limited and previous studies conducted by separate entities. According to the DLA: A limited instream flow study was conducted on Grant Creek in the 1980s by Kenai Hydro, Inc. (KHI; unrelated to Kenai Hydro, LLC). The study related documents include reports and written communications between KHI and State and Federal agencies in 1986 and 1987 relative to a the Commission license application for the proposed Grant Lake Hydroelectric Project (the Commission No. 7633-002). The documents include draft and final reports of a limited instream flow incremental methodology (IFIM) investigation and negotiated minimum instream flows (MIF) and ramping rates (Envirosphere 1987, KHI 1987a, KHI 1987b).</p> <p>In addition, KHL has collected minimal hydrological data which amounts to only “five discharge measurements that were taken for flows ranging between</p>	<p>KHL believes that CWA is referencing study data and reports that have not been updated. As CWA is aware, KHL facilitated a structured and collaborative process for revising the 2010 study plans to ensure that a more quantitative and comprehensive study program/impact assessment was implemented related to the development of the Grant Lake Project. This included a comprehensive 1-D instream flow study, with a PHABSIM model vetted and calibrated from the flow ranges typical of unimpaired flow condition. The model outputs provide weighted usable area for all species and life stages that utilize Grant Creek.</p> <p>The stream gage at site GC 200 (formerly USGS Station 15246000) was re-established in April of 2013. The site utilized a USGS-approved</p>

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
				<p>17 and 706 cfs,” during the spring and summer of 2013. In fact, the only adequate hydrological data existing for Grant Creek is over half a century old. <i>“The USGS operated streamflow gage 1524600 on Grant Creek between 1947 and 1958. Daily and annual peak flows were recorded for this period. This 11-year record is the most complete hydrologic data that exists for Grant Creek.”</i></p> <p>In addition, much of the flow data collected by KHL is based on mere assumptions from data take from the Kenai River over 50 miles away. According to KHL:</p> <p style="padding-left: 40px;">The weighted peak streamflow estimates for Grant Creek are considered to be the most appropriate and suitable for use in the evaluation and design of the Grant Lake Hydroelectric Project moving forward [which] involves correlating short-term or incomplete gage data with one or more nearby gages that have more complete records (long-term gage). These long-term values and the relationship between the two gages are used to generate data to extend or fill in data at the short-term gage.</p> <p>In its June 18, 2015 denial of KHL’s rehearing request of the Commission’s previous Order denying KHL’s request for a ten-month extension of its second preliminary permit for the Project), the Commission, itself, concluded that KHL failed to make sufficient progress in obtaining data and information necessary to show that the extension request was warranted. In reaching this conclusion, the Commission rejected KHL’s rationale for failing to gather adequate data, including water flow measurements. According to the Commission:</p> <p style="padding-left: 40px;">Kenai Hydro raises the issue of limited site access for the first time in its March 27 rehearing request. Its progress reports and extension request fail to mention any difficulty gaining access to the project site during the terms of its permits. Rather, Kenai Hydro’s progress reports indicate that it suspended field studies in August 2010 (more than a year before its first permit expired on September 30, 2011), in order to review comments received on the proposed study plans and revise its study program.... Kenai Hydro’s progress reports indicate that it performed no fieldwork between August 2010 and March 2013... We have previously stated that the issue of obtaining access to the site for the performance of studies is one for the permittee to address...Kenai Hydro has held preliminary</p>	<p>stage recorder and was maintained and calibrated to USGS standards. The Grant Creek flow record from April 3, 2013 through December 31, 2014 would be rated as “excellent” by USGS criteria. For periods of time in which site-specific Grant Creek flow data are not available, the use of a surrogate gaging location to populate these missing data is a standard technique. The correlation of flow data from the Kenai River at Cooper Landing (USGS Station 15258000) and Grant Creek was at a high level ($R^2 = 0.92$) and approved by stakeholders versed in this form of record extension.</p> <p>Stakeholders played an integral role in the study development process and were kept involved and informed during all phases of the biological and water resource studies (design, permit acquisition, study season, site visit, data analysis, reporting, impact analysis, instream flow discussions, etc.).</p> <p>KHL feels strongly that the comprehensive aquatic and water resource data collected during the licensing process, the associated impact analysis and existing historical data has facilitated the development of a Project infrastructure and operational regime that will result in</p>

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
				permits for this proposed project for more than six years, and should have been well aware of, and able to adequately prepare for, the challenges posed by developing a project in a remote area that is frozen much of the year.	no net impact to aquatic resources in the Project area. Additionally and as documented in the FLA and associated Management Plans, KHL has proposed a series of aquatic habitat-based enhancement measures that per habitat analysis, will increase habitat value for the primary anadromous species that utilize Grant Creek beyond existing natural conditions.
68	DLA-E-21	6/26/15 letter from ADF&G	Section 4.5.1.1	Similar to our comment under 2.2.3, it would be helpful if weekly flow duration tables were also provided, in order to assess flow patterns as they relate to species periodicity and project operations.	KHL believes the analysis and presentation of the data is sufficient. That said, all of the data is available to develop the weekly duration estimates described in the comment and will provide the data to interested parties upon request.
69	DLA-E-22	6/17/15 letter from FERC	Section 4.5.1.3.2	Section 4.5.1.3.2, Figure E.4-12, provides a comparison of daily mean water temperatures in Grant Lake near the proposed intake structure at ten different depths. However, the figure is difficult to interpret due to the significant amount of data presented. Because KHL is proposing to install an intake structure that would be able to draw water from Grant Lake at varying depths, and water temperatures can vary significantly by depth/season and can affect aquatic resources downstream of the proposed project's tailrace, it would be helpful if KHL provided, in the final license application, individual figures that demonstrate daily mean water temperatures for each sampled depth in Grant Lake near the proposed intake structure. We also have a similar comment and request for Figure E.4-13, <i>A comparison of daily mean water temperatures for shallow depths (< 3 meters) of Grant Lake and Grant Creek.</i>	KHL appreciates the comment. Individual figures have been developed for the FLA.
70	DLA-E-23	6/17/15 letter from FERC	Section 4.5.2	Table E.4-14, <i>Proposed monthly and annual powerhouse flows and watershed inflows for Grant Lake Project</i> , list the months identified in the table as months 1 through 12. However, it is unclear whether the table utilized a calendar year	KHL appreciates the comment and the table has been revised for additional clarity.

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
				as its basis (in which case, month 1 would be January) or a water year (in which case month 1 would be October). Therefore, in the final license application, please clarify Table E.4-14.	
71	DLA-E-24	6/26/15 letter from ADF&G	Section 4.5.2	<p><i>“Based on available hydrology data, the Grant Lake Project proposes to utilize a mean annual flow of 200 cfs for power production and 6 cfs for bypass flows. Table E-4-14 summarizes the monthly and annual powerhouse and bypass flow volumes in comparison to natural inflows from the watershed.”</i></p> <p>Table E.4-14 summarizes monthly and annual powerhouse and bypass flows. The applicant should address the variability of projected flows within each month, and whether there will be any flow ramping anticipated, due to project operation.</p>	<p>Inherent variability in monthly flows exists at most hydroelectric projects based upon natural variability related to snowpack, rainfall, etc. Any attempt to define the natural conditions that may occur during any one year of the license term would be speculative.</p> <p>Bypass flows will be maintained per the instream flow requirements associated with the Project license. All ramping rates will comply with collaboratively agreed upon criteria to protect aquatic resources.</p> <p>The noted table presents a summary of the monthly and annual powerhouse and bypass flows. The analysis was completed using average daily flows for the period of record. This data was used to develop the inflow, outflow, and reservoir fluctuation. Since the reservoir storage volume can be used to accommodate hourly and daily flow fluctuations, ramping would not be required to accommodate flow adjustments. The bypass flows would be maintained constant by a control valve.</p>

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72	DLA-E-25	6/17/15 letter from FERC	Section 4.5.2.1	Section 4.5.2.1, <i>Water Quantity</i> , provides some analysis of project effects on aquatic resources as a result of changes to water quantity within Grant Creek, by study reach. To better understand the analysis in the final license application, please demarcate on Figure E.4-5, <i>Water Quality, Temperature, and Hydrology Study Locations, 2013</i> , the Grant Creek study reaches; all proposed project facilities, including the proposed bypass; and the location of the hydraulic control that separates Grant Creek from Grant Lake.	KHL has revised Figure E. 4-5 accordingly.
73	DLA-E-26	6/17/15 letter from FERC	Section 4.5.2.1	The draft license application at Exhibit B, section 2.2.3, <i>Grant Lake Operation Model</i> , indicates that an operations model was developed for the proposed project. Exhibit B, section 2.3, <i>Project Operation During Adverse, Average, and High Water Years</i> , generally states that proposed project operations will draw Grant Lake water surface elevation down 13 feet in “winter” (from 703 down to 690 feet NAVD 88) and project operations will maximize winter power production while ensuring that lake levels refill to the water surface elevation of 703 feet NAVD 88. However, in Exhibit E, section 4.5.2.1, <i>Water Quantity</i> , there is no discussion or analysis of project effects on water surface elevations of Grant Lake. So that we may better understand the proposed project operational effects on Grant Lake, the final license application should provide simulated monthly water surface elevations and corresponding surface area for Grant Lake under existing and proposed conditions. Additionally, the final license application should consider and address this comparison of lake level conditions in Exhibit E, section 4.9.2, <i>Aesthetic Resources, Environmental Analysis</i> .	The operations model was developed using daily average flows for the full period of record. The model simulated the annual fill and draw cycle of the lake which would occur. This data has been provided to illustrate the lake level fluctuations anticipated during the project operation. Additional text and a figure illustrating a typical lake level variation has been added to the text in Section 4.5.2.1.
74	DLA-E-27	6/17/15 letter from FERC	Section 4.5.2.3	In section 4.5.2.3, <i>Temperature</i> , the draft license application implies the proposed project will be operated to “match natural/ambient water temperature conditions within 1 °C.” If this is KHL’s proposal, this environmental measure should be articulated in section 2.1.5, <i>Proposed Environmental Measures</i> . This section also states that by “monitoring water temperatures, the delivery of water through project facilities should be able to match natural/ambient water temperature conditions within 1 °C.” However, the draft license application does not discuss or provide an analysis of how Grant Lake water temperature may be influenced by proposed project operations or how this potential influence may affect the project’s ability to match natural/ambient water temperature conditions in Grant Creek within 1 °C. In addition, section 4.5.2.3 does not describe how the project will physically maintain water temperature at	Temperature modeling was not necessary to determine how to maintain the pre-Project temperature condition in Grant Creek. Direct observation and measurement of Grant Lake and Grant Creek temperatures over multiple seasons provides that information. When Grant Lake is free of ice, withdrawing water from a depth of 1.5m from the surface will provide

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				“pre-Project” conditions. The final license application should address these issues and provide model results supporting the analysis.	Grant Creek with temperatures nearly identical to pre-Project conditions. When Grant Lake is frozen, a depth of 0.5m from the surface is what most closely approximates the Grant Creek winter temperature regime (Table E.4-13). The infrastructure of the intake system will be designed to consistently divert water from these two critical depth nodes. Despite a changing reservoir elevation, the variable intake opening will be monitored and maintained to insure Project diversions originate from the proper depth. This measure has been added to Table E.2-2.
75	DLA-E-28	6/26/15 letter from ADF&G	Section 4.5.2.3	<p><i>“Details of how water temperatures will be monitored and maintained to the pre-Project conditions can be found in the Draft Operational Compliance Monitoring Plan (OCMP).”</i></p> <p>Details on the intake structure are lacking. The intent of the applicant is to withdraw water at a lake depth to correspond with stream temperatures found in pre-project Grant Creek. Details of how water temperatures will be maintained should be provided in the DLA as well as the OCMP.</p>	Additional detail related to the Project intake is provided in both Exhibit A (Section 4.2) and in Exhibit F of the FLA. With respect to the latter Exhibit, the CEII designation on the Supporting Design Report was removed in October of 2015. Copies were distributed to stakeholders and the document was also filed with FERC for public access and review. .
76	DLA-E-29	6/26/15 letter from ADF&G	Section 4.5.4.2	<i>“The primary impact associated with Project operations is the reduction of flows in Reach 5. While a limited amount of anadromous and resident fish habitat and associated use has been documented in Reach 5, the potential for eliminating a portion of the flow and associated habitat will be far offset in the positive direction by the additional habitat made consistently available in the Reach 2/3 side channels and the Reach 1 distributary. The increase in aquatic habitat availability in Grant Creek has the potential for higher populations of</i>	KHL appreciates this comment. To be clear, this text was not only meant to document the habitat increases and availability that will be realized as a result of Project operations itself, but also to refer to the enhancement measures proposed and their

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				<p><i>anadromous and resident species in Grant Creek and therefore, the Kenai River drainage as a whole. Further documentation of this positive impact can be found in Sections 4.5.2 and 4.6.2 of this Exhibit E.</i></p> <p>In some cases there will be increases in aquatic habitat (in winter) and in others there will be a decrease in available habitat (in summer), based on the applicant's instream flow study. To say that these changes will have an overall effect of increasing populations is premature, at this point.</p>	associated value in increasing overall habitat availability.
77	DLA-E-30	6/26/15 letter from ADF&G	Section 4.5.5	<p><i>"Based on the comprehensive set of natural resources and engineering analyses conducted and reviewed as part of this licensing process, the proposed monitoring and management plans, and collaboration with stakeholders, KHL has identified no water quality or water quantity related unavoidable adverse impacts associated with construction and operation of the Project."</i></p> <p>As the DLA states, there may be losses in habitat and restrictions to fish passage in Reach 5 associated with the proposed level of dewatering. This may mean that there would be unavoidable adverse water quantity impacts associated with the project.</p>	KHL appreciates the comment. Based upon the analysis of Reach 5 habitat availability and use, KHL believes that the proposed instream flow regime in the reach along with the proposed aquatic enhancement measures for Grant Creek would offset the minor adverse impacts in Reach 5 (if any).
<i>Aquatic Resources</i>					
78	DLA-E-31	6/24/15 letter from Andrew Bacon	N/A	I would like to cite two issues I have with the fisheries studies cited in the DLA. First, sockeye salmon smolt enumeration data is not provided for Grant Creek. Without any smolt enumeration data, we would never know if their system works.	KHL respects all perspectives related to the Project.
79	DLA-E-32	6/25/15 letter from USFWS	N/A	We urge caution interpreting analyses and conclusions regarding Chinook Salmon abundance, spawning distribution, and juvenile rearing since studies conducted in 2013 occurred during the lowest abundance of early-run Chinook Salmon in the Kenai River that has ever been documented. Chinook Salmon in Grant Creek and other tributary streams are a component of the early-run and were also at extreme low levels of abundance in 2013. Similarly, low numbers of adult Chinook Salmon returning to the Kenai River (and Grant Creek) in 2012 likely affected abundance, habitat use, and distribution of juveniles sampled in 2013. Spawning distribution of adult salmon and habitat use by juveniles likely vary with changes in overall abundance, and current analyses	KHL appreciates the comment on recent Chinook salmon escapement numbers to the Kenai River drainage and therefore, Grant Creek. It is important to note that per our proposed enhancement measures and the associated habitat modeling, operations of the Grant Lake Project would result in, at worst, no net impact to habitat availability for anadromous species. Salmon

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				of potential effects are based on the lowest abundance of Chinook Salmon ever recorded in the Kenai River.	escapement into the Kenai River watershed in 2013, 2012 and prior years is not the result of the Grant Lake Project.
80	DLA-E-33	6/25/15 letter from USFWS	N/A	Although the Project proponent acknowledges likely reductions in streamflow in Reach 5, much of Reach 4 is upstream of the tailrace and flows will also be altered during Project operations. All fish species (resident and anadromous) utilize habitat in Reach 4 upstream of the tailrace, and this stretch of Grant Creek provides important spawning habitat for Coho and Sockeye Salmon and important rearing habitat for all fish species including Chinook Salmon. Although the Project proponent provides modeling and analysis for fish access to Reach 5 with proposed bypass flows of 5 and 10 cfs, no modeling or analyses are provided to estimate habitat availability in Reach 4 upstream of the tailrace using the same bypass flows. As the Project proponent acknowledges, proposed bypass flows into Reach 5 do not provide connectivity for Chinook Salmon and it is unknown whether or not the proposed bypass flows will provide connectivity for Chinook Salmon in Reach 4 above the tailrace. Analyses and conclusions that fail to consider reduced stream flows to the upper half of Reach 4 are incomplete.	KHL appreciates the comment. Per Comment #DLA-E-04, KHL acknowledges the inconsistency and oversight in the documented and previously developed figures related to tailrace location. To be clear, the tailrace outflow will deposit into Grant Creek at the Reach 4/5 break. The FLA has been updated to accurately represent the infrastructural design of the tailrace and associated detention pond; that being to accommodate a return flow from the tailrace to enter Grant Creek and the upstream extent of Reach 4.
81	DLA-E-34	6/25/15 letter from USFWS	N/A	Although no analyses were completed to assess adult spawning, egg incubation, or juvenile fish rearing in Reach 5 because study transects in the reach did not include suitable spawning habitat, Reach 5 and the upper half of Reach 4 provide important spawning, incubation, and rearing habitat for anadromous and resident fish species. The lack of spawning habitat within the study transects does not mean there is no spawning habitat in the reach, and the suitability of habitats for juvenile rearing is independent of spawning habitat. As stated earlier, we urge caution interpreting analyses and conclusions about the importance of Reach 5 (and the upper half of Reach 4) as spawning and rearing habitat for fish based predominantly on a single year of observations.	KHL appreciates the comment. As mentioned in the previous comment, the tailrace outflow will deposit into Grant Creek at the upstream extent of Reach 4 which should alleviate the portion of the comment related to that reach. The fisheries component of the study did acknowledge limited spawning in Reach 5 for sockeye and coho and also noted some juvenile rearing in the reach as well for Chinook and other salmonids. However, Reach 5 is higher gradient (average gradient 6.5%) than typically used for Chinook

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					<p>spawning or rearing (NMFS 1999; Essential Fish Habitat- Appendix A page A-20).</p> <p>In addition, the proposed operational flows and enhancement measures, as modeled, indicate that fry and juvenile WUA is greater with the Project than without, and spawning WUA is 99.9% of Pre-Project WUA in Reaches 1 – 4, including the Reach 1 Distributary and Reaches 2/3 side channels. Please also refer to Habitat Time Series in Section 4.6.2.2 of the FLA.</p>
82	DLA-E-35	6/25/15 letter from CWA	N/A	<p><u>The DLA’s Conclusion that the Project will have Minimal Impacts on Fish Habitat is unsupported by Adequate Data.</u> The seriousness of the DLA’s lack of adequate flow data to aquatic habitat is illustrated by KHL’s conclusion that the Project “meets the requirements of a responsible Project by achieving an extremely low level impact to the existing environment overall and in the case of priority aquatic species, actually increases habitat value in many instances.”</p> <p>14 Based on the fact, however, that “[t]he subsequent gage data collected in 2009...and 2013 by McMillen, along with the original USGS stream gage data...served as the basis for the flow” upon which the conclusion about minimum or improved habitat impacts is based, such conclusion is unsupported by the facts.</p> <p>In addition, the DLA, illustrates that KHL has not even come close to collecting sufficient data and information necessary for managing toward a natural flow regime. A large body of evidence has shown that the natural flow regime of virtually all rivers is inherently variable, and that this variability is critical to ecosystem function and native biodiversity. Rivers with highly altered and regulated flows lose their ability to support natural processes and native species. Thus, to protect pristine or nearly pristine systems, it is necessary to preserve the natural hydrologic cycle by safeguarding against upstream river development and damaging land uses that modify runoff and sediment supply in the watershed.</p>	<p>KHL strongly believes that the comprehensive aquatic data collected during the licensing process, the associated impact analysis and existing historical data has facilitated the development of a Project infrastructure and operational regime that will result in no net impact to aquatic resources in the Project area. Additionally and as documented in the FLA and associated Management Plans, KHL has proposed a series of aquatic, habitat-based enhancement measures that, per habitat analysis, will increase habitat value for the primary anadromous species that utilize Grant Creek beyond existing natural conditions.</p> <p>The Project will exhibit marked variation in flows, not only annually, but seasonally as well. Spring and Fall</p>

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				<p>Most rivers are highly modified and so the greatest challenges lie in managing and restoring rivers that are also used to satisfy human needs. Recognizing the natural variability of river flow and explicitly incorporating the five components of the natural flow regime (i.e., magnitude, frequency, duration, timing, and rate of change) into a broader framework for ecosystem management would constitute a major advance over most present management, which focuses on minimum flows and on just a few species.</p> <p>Such recognition also contributes to the developing science of stream restoration in heavily altered watersheds, where, all too often, physical channel features (e.g., bars and woody debris) are re-created without regard to restoring the flow regime that will help to maintain these re-created features. Just as rivers have been incrementally modified, they can be incrementally restored, with resulting improvements to many physical and biological processes.</p> <p>In Grant Creek, year-to-year differences in the timing and quantity of flow result in substantial variability around any average flow condition. Accordingly, managing for the “average” condition can be misguided. For example, due to the alterations to the River from the Project, restoring a flow pattern that is simply proportional to the natural hydrograph in years with little runoff may provide few if any ecological benefits, because many geomorphic and ecological processes show nonlinear responses to flow. Half of the peak discharge, for example, will not move half of the sediment, half of a migration motivational flow will not motivate half of the fish, and half of an overbank flow will not inundate half of the floodplain. In the Grant Creek Watershed, therefore, more ecological benefits would accrue from capitalizing on the natural between- year variability in flow</p> <p>For example, in years with above-average flow, “surplus” water could be used to exceed flow thresholds that drive critical geomorphic and ecological processes. If full flow restoration is impossible as a result of Project impacts, mimicking certain geomorphic processes may provide some ecological benefits. Strategically clearing vegetation from river banks, for example, could provide new sources of gravel for sediment starved regulated rivers with reduced peak flows.</p>	<p>flows will mimic the natural hydrograph, while summer flows will still be higher than spring and summer, with the highly flashy flows removed. Winter flows will remain less than the other seasons; however, flows will be augmented to provide additional incubation and rearing habitat that was previously unavailable. Grant Creek is a naturally “flashy” system, where high flows, which may not be adequate to mobilize significant sediment, are sufficient to impede salmonid spawning and rearing.</p> <p>The assertion that there are inadequate flow data for the project is false. KHL conducted a record extension, using the 11-year gage data from 1947-1958, and correlated it to data from the Kenai River at Coopers Landing (USGS Station 15258000). The procedure applied to Grant Creek was the “maintenance of variance extension” (MOVE), specifically the MOVE1 procedure (Hirsch 1982; Robison 1991).</p> <p>The MOVE1 procedure involves correlating short-term or incomplete gage data with one or more nearby gages that have more complete records (long-term gage). These long-term values and the relationship between the two gages are used to</p>

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				<p>The DLA, however, does not make judgments about specific restoration goals and work with appropriate components of the natural flow regime to achieve those goals. Recognition of the natural flow variability and careful identification of key processes that are linked to various components of the flow regime are critical to making these judgments. Setting specific goals to restore a more natural regime in rivers with altered flows or, equally important, to preserve unaltered flows in pristine rivers such as the Grant Creek, should ideally be a cooperative process involving river scientists, resource managers, and appropriate stakeholders.</p> <p>In addition, KHL must work to develop quantitative, river-specific standards, based on the reconstruction of the natural flow regime.16 Restoration actions based on such guidelines should be viewed as experiments to be monitored and evaluated—that is, adaptive management—to provide critical knowledge for creative management of natural ecosystem variability.</p>	<p>generate data to extend or fill in data at the short-term gage.</p> <p>The coefficient of determination (r^2) of 0.92 represents an excellent correlation between the two gages. This record extension was approved by the natural resource agencies.</p>
83	DLA-E-36	6/25/15 letter from CWA	N/A	<p><u>Requested Data and Information in the DLA.</u> In order to comply with licensing standards and meet adequate aquatic habitat protection needs, the DLA must include the following data and information:</p> <p>a. Data. At minimum, KHL should develop three hydrologic data sets to compare Project hydrology with unimpaired hydrology and the effects of other developments within the watershed. The three watershed hydrologic scenarios which data sets should be developed are: Unimpaired (e.g., natural flow conditions throughout the Watershed), YRDP (accounting for the hydrological effects of just the Project, and all other water development projects are represented in an unimpaired condition) and Current (e.g., current conditions with all water development in the Watershed). Unimpaired hydrology should be developed in an open and transparent manner, with step-by-step, written accounting of the methods and processes used to develop the data set. This is to ensure continuity with the unimpaired hydrology developed for this Project and allow for adequate comparisons throughout the entire watershed. The data sets should be comprised of average daily flow for the water years 1975-2015 for each of the three</p>	<p>KHL appreciates the comment. A majority of the analysis you request has been conducted such as unimpaired vs. Project hydrology (see FLA Sections 4.5.2 and 4.6.2). Stringent coordination with agencies has been conducted to provide the hydrologic data set necessary to evaluate Project effects. Without a clear description of how these flow statistics will aid with evaluating Project effects, KHL does not intend to calculate these additional statistics. Upon request, KHL can provide the raw data necessary for CWA to complete these calculations.</p>

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				<p>scenarios. The following parameters should be developed for all three sets of data</p> <ul style="list-style-type: none"> Average annual flow Monthly averages for each month 1, 3, 7-day maximum – mean for all years 1, 3, 7-day minimum – mean for all years Julian date and magnitude of annual maximum Julian date and magnitude of annual minimum 	
84	DLA-E-37			<p>b. Peak Flows. Alterations of peak flows by project operations can have a number of direct and indirect effects on fishery species in the Grant Creek Watershed. Peak flows are responsible for forming and maintaining aquatic habitats such as holding pools and spawning riffles. They can also affect migration cues and passage at partial barriers to migration. This information will illuminate how the magnitude and duration of peak flows have been altered by Project operations or operations related to the Project.</p> <p>A log-Pearson type III flood frequency analysis should be performed on all three data sets, at all locations of interest. Magnitudes of the flood events with return intervals of 1.01, 1.5, 2, 5, 10, 25, 50, and 100 years should be calculated. In addition to the return intervals above, KHL should compute average monthly maximums for the years 1975-2015 for the all three scenarios. Any flow greater than 1.01 year return interval or greater than the unimpaired average monthly maximum flow will be considered a pulse flow. The date of the beginning and end of each occurrence of a pulse flow should be recorded, along with the magnitude and duration of each pulse flow event. A table comparing the frequency, magnitude and duration of the pulse flows documented for each scenario should be prepared at all locations of interest listed above. Such a table would document the occurrence of pulse flows in each water year (1975-2015) as well as each water year type. Annual hydrographs should be developed for a representative year of each water year.</p> <p>A comparison of hydrology at major confluences under the three different watershed development scenarios should be performed for</p>	<p>KHL appreciates the comment. A majority of the analysis you request has been conducted such as unimpaired vs. Project hydrology (see FLA Sections 4.5.2 and 4.6.2). Stringent coordination with agencies have been conducted to provide the hydrologic data set necessary to evaluate Project effects. Without a clear description of how these flow statistics will aid with evaluating Project effects, KHL does not intend to calculate the these additional statistics. KHL can provide the raw data necessary for CWA to complete these calculations.</p>

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				<p>the purpose of characterizing the Projects' effects on magnitude and timing of attraction flows into each tributary. Pulse flow events along with average monthly flow should be compared and evaluated in terms of altered immigration attraction flows into one or more tributaries during times the months of January-June. In KHL's Anadromous Ecosystem Effects Analysis, this information will be assessed for the capability of these attraction flows to influence the immigration of adult salmon in each reach to be assessed.</p>	
85	DLA-E-38			<p>c. Ramping. KHL should analyze 15-minute data from water years 1975-2015 below the point of diversion. An exceedance probability of change in flow and stage in 15 minute and 1 hour intervals as measured at the nearest stream gage below the facility should be calculated for upramps and down-ramps as observed during the period of record. The greatest hourly rate of change in flow for the largest 10 rate-of-change events will also be provided to characterize extreme change events. For the 10 largest events, 24-hour hydrographs with descriptions of event conditions should be provided.</p> <p>Effects of the powerhouse discharge and ramping rate on the hydraulic characteristics of the reaches below the powerhouse should also be examined. Changes in the stage of the reach below the powerhouse due to project operations can have numerous effects on anadromous species and the physical habitats they may occupy. Down ramping events can rapidly change the water surface elevation and wetted perimeter of a reach, stranding juvenile fish or dewatering redds. Up ramping can scour redds and create increased velocities which can be barriers to upstream migration.</p> <p>In order to assess these Project effects, a detailed two-dimensional hydraulic model of the reach below the Powerhouse should be developed to determine depth, water surface elevations and velocities continuously along the entire reach below the Powerhouse to the upstream extent of the Reservoir. Two-dimensional models eliminate the problem of site selection of representative cross-sections that traditional one-dimensional models have been hampered by.¹⁸ Development of two-dimensional models such as SRH 2-D developed</p>	<p>KHL appreciates the comment. Ramping rates have been discussed as part of the Aquatic Resource Workgroup meetings. The basis for ramping rate criteria is based on site-specific stage changes from the unimpaired hydrology as well as what has been described in the literature (Hunter 1992). KHL calculated ramping rates for the most sensitive areas of Grant Creek based upon those transects used in the Instream Flow study. This reference has been added to the FLA in Section 4.6.2.1.2.</p> <p>After 3.5 years of collaboration with State and Federal Resource agencies a two-dimensional (2D) instream flow study has not been requested.</p>

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				<p>by the Bureau of Reclamation, enable modeling many kilometers of river at a fine resolution (<1 meter) accurately and quickly. Rapid advances in technology enable data gathering to be done in a comprehensive and cost-effective manner.</p> <p>As input to the two-dimensional hydraulic model, KHL should develop a digital elevation model (DEM) of the Colgate reach (from the outflow of the Powerhouse downstream to the normal water surface elevation of Englebright Reservoir) spanning the maximum flow width. Mapping of this reach should take place when the Reservoir is at or near its yearly minimum water surface level, to insure that exposed riverbed is surveyed for any migration barriers. The DEM should have a resolution of less than 1 meter both vertically and horizontally. DEM collection methods should involve an airborne light detection and ranging (LiDAR) topography survey that is field checked with a ground based total station and GPS surveys. This data should be combined with detailed stream bed bathymetry surveys by a boat mounted fathometer.</p> <p>The DEM should be used as input to the two-dimensional model to predict depths and velocities at various discharges. Applicant should model current average monthly discharges below the Powerhouse using hydraulic models. In addition, KHL should also model the 10 greatest rate-of-change events identified above. Because flows from the Powerhouse combine with the discharge from Grant Creek, the range of flows discharged from the Powerhouses can have a varying effect on depths and velocities downstream, depending on how much flow is coming down Grant Creek. The 10 greatest rate-of-change events should be evaluated in terms of what time of year and how much flow was present in the Creek. If it is determined that the 10 greatest rate-of-change events do not accurately represent the full range of flows in the mainstem (winter storm runoff, spring snowmelt and summer low flows) then additional flow scenarios should be completed. The model should also be detailed enough to capture any hydraulic jets that occur immediately below reservoir discharge.</p>	

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				<p>The two-dimensional model should be validated using field measurements of depth, water surface elevations and velocity. An Acoustic Doppler Current Profiler (ACDP) can be used to accurately and quickly gather the necessary validation information at multiple discharges. At minimum, measurements should be taken at every significant geomorphic unit as classified by Montgomery and Buffington with more complex units such as braided channels requiring more intensive sampling.</p> <p>This information should be evaluated for its capacity to affect fish passage barriers and operation of fish passage facilities. It will also shed light on riparian recruitment processes, sediment transport capacity, attraction and outmigration flows for salmonids, amount and quality of aquatic habitat, potential for stranding and dewatering of redds.</p> <p>The DEM and the two-dimensional model should also be used in the sediment budget analysis of project effects on physical habitat such as deposition or scour of spawning gravel.</p>	
86	DLA-E-39			<p>d. Floodplains. Floodplain functions and ecological processes depend on seasonal and periodic inundation of the floodplain. The floodplain is defined as "...the flat area adjoining a river channel constructed by the river in the present climate and overflowed at high discharge."²⁰ The timing, or predictability, of flow events, is ecologically critical because the life cycles of many aquatic and riparian species depend on environmental cues provided by flow events and are timed to avoid or exploit flows of variable magnitude.²¹</p> <p>Using a two-dimensional hydraulic model, KHL should compare the unimpaired and current frequency, magnitude and duration of floodplain inundation. It should, also use a two-dimensional model of Grant Creek, to determine how much floodplain area is currently accessible. KHL should then use current and unimpaired hydrology to determine the frequency, duration, and magnitude of floodplain inundation under both scenarios as well as the total area and depth of inundation during the ecologically important spring snowmelt season.</p>	<p>KHL appreciates the comment. After 3.5 years of collaboration with State and Federal Resource agencies, the use of a two-dimensional (2D) instream flow model has not been requested. KHL believes that floodplain inundation can be evaluated based on the one-dimensional instream flow model as well as comparing the unimpaired and Project hydrographs.</p>

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				<p>KHL should work collaboratively with licensing participants to define additional, specific ecologically important time periods for floodplain inundation modeling.</p>	
87	DLA-E-40			<p>e. Natural Gradient Impediment/Barriers. Information from the peak flow, dam spill and the Powerhouse analyses should be used to analyze project effects on hydrology at partial and full natural impediments or barriers to adult salmonid migration. KHL should analyze helicopter video, ground surveys and the results of previous studies to identify these natural gradient features within the study area. Once a barrier is located, GPS coordinate points of its location should be recorded and a number of physical measurements should be taken which include: height of falls, depth of plunge pool, velocity, slope and depth of fish exit. While initial sampling should take place during annual low-flow conditions, once a barrier is located, the same physical measurements should be taken to the extent safely possible during flows greater than 200 cfs.</p> <p>Alteration of the hydrograph at these barriers affects the hydraulic characteristics at the potential barrier, and, therefore, anadromous immigration potential. Average daily flow for all three watershed development scenarios should be developed at any potential barrier found. Analysis of the hydrology under the different watershed scenarios should be combined with the physical attributes of the barrier and species criteria, to develop a comprehensive assessment of fish passage “windows”, the dates and durations when adult salmon would likely be able to ascend the barrier under different scenarios. This information should be supplied to partly fulfill the Anadromous Ecosystem Effects Analysis information request.</p>	<p>KHL appreciates the comment. The primary fish passage barrier has been identified at the Reach 5/Reach 6 break. This barrier cannot become passable at any flow condition.</p> <p>Several areas where water stage could be barriers to upstream migration were surveyed using the Oregon Method (Thompson 1972).</p> <p>Analysis of these habitats using Thompson (1972), indicates that connectivity is accomplished for trout at a flow of 7 cfs for both total wetted and continuous width. Connectivity for sockeye and coho was accomplished at flows ranging from 7 cfs – 15 cfs, averaging 10 cfs for both transects. Chinook passage is accomplished at flows ranging from 7 cfs – 30 cfs, averaging 25 cfs (continuous passage) and 30 cfs (total wetted width) where measured.</p>
88	DLA-E-41			<p>f. Hydrologic Change. Climate change models project that the greatest increases in temperature will occur at high latitudes. Over the past 50 years, Alaska has warmed at more than twice the average rate for the rest of the United States. Average annual temperature has increased 3.4 °F (2.1 °C), while winters have warmed by 6.3 °F (3.5 °C) (Karl, et al. 2009). As a result, climate change impacts could be expected to be more pronounced in Alaska than in other regions of the United</p>	<p>KHL appreciates the comment. Although climate change has the potential to effect water quantities in the future, KHL feels it is speculative to base operational parameters on unknown climate change trends.</p>

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				<p>States. Among other effects, higher temperatures should contribute to earlier spring snowmelt, a higher percentage of precipitation falling as rain instead of snow, and glacier retreat.</p> <p>In order to determine the effect of increasing average annual temperatures on annual average streamflow, therefore, major factors to be considered include climate change effects on precipitation, evaporation, transpiration, snow ablation (direct change in phase from solid to vapor), and the net rate of glacier loss. Increased flows from glacial melt can be more than balanced by reduced runoff due to increased evaporation and transpiration. Power studies have traditionally used historic flow records as the basic hydrologic input data. KHL should continue to use inflows developed directly from USGS records as the basic hydrologic input dataset for the reservoir operation and power studies. However, KHL should also consider alternative hydrologic input datasets, which account for potential future hydrologic change.</p>	<p>KHL will operate the Project to be adaptable and insure that all resource protection measures are met throughout the term of the license.</p>
89	DLA-E-42			<p>g. Goals and Objectives. The goals and objectives of the DLA and the information to be obtained should include:</p> <ol style="list-style-type: none"> 1) Accurately quantify the effects of the Project on hydrologic regimes at a relevant temporal and geographic scale, that in turn affect anadromous fish and their habitats. If this request is incorporated in KHL’s Study Plan and implemented in a scientifically defensible manner, the results would inform NMFS’ decisions with respect to this ILP, consistent with conservation resource goals and objectives with respect to anadromous fish, listed species and their habitats; 2) Develop information that will be aggregated with other information requests to determine the Project’s effects on anadromous fish, listed species and the ecosystems that support them. 3) Resource Management Goal and Objectives apply with respect to species listed under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. §1801 et seq.) and the Endangered Species Act (ESA) (16 U.S.C. §1531 et seq.), as well 	<p>KHL appreciates the comment. KHL feels strongly that the comprehensive aquatic data collected during the licensing process, the associated impact analysis and existing historical data has facilitated the development of a Project infrastructure and operational regime that will result in no net impact to aquatic resources in the Project area.</p>

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				<p>as anadromous species that are not currently listed but are affected by continuing operations of the Project or may require listing in the future. Project management goals and objectives, therefore, must include:</p> <p>i. Protect, conserve, enhance, and recover native anadromous fishes, listed species and their habitats by providing access to suitable habitats and by restoring fully functioning habitat conditions for related rearing and feeding, migration, spawning, and adjoining riparian and aquatic benthic macroinvertebrate (BMI) habitats;</p> <p>i. Identify and implement measures to protect, mitigate or minimize direct, indirect, and cumulative impacts to, and enhance native anadromous fish and subsistence resources, including related rearing and feeding, migration, spawning, riparian and BMI habitats, protection from adverse Fish Hatchery operations and predation, and ensure coordination within and outside of the Project to minimize risk to anadromous fishes.</p>	
90	DLA-E-43	6/25/15 letter from USFS	4.6	The Forest Service is in concurrence with comments that were made by Alaska Dept. of Fish and Game with regard to Fisheries and Aquatic Resources. Along with their comments the effects of project construction and operation on changes in distribution and abundance of aquatic insects and their predators should be analyzed.	KHL appreciates the comment.
91	DLA-E-44	6/17/15 letter from FERC	Section 4.6.1	Section 4.6.4, <i>Cumulative Effects Analysis</i> , of the draft license application states that KHL's fishery studies concentrated on Grant Creek and the Trail Lakes Narrows Area because of the lack of fishery resources in Grant Lake. Section 4.6.1, <i>Affected Environment</i> , states that waterfalls pose a barrier to upstream migration of fish and, as a result, study reach 6 in Grant Creek and Grant Lake were not included in recent research efforts. However, section 4.6.1 does not present any historical (or current) data that describes aquatic resources (existing or non-existing) within reach 6 or Grant Lake. In Scoping Document 2, we noted that: (1) fish and aquatic resources in Grant Lake may be affected by project construction and operation, (2) fish populations in Grant Lake, and subsequently Grant Creek, may be affected by entrainment at the project; and (3) project operations may result in a loss of habitat connectivity and bi-directional passage for resident fish populations in Grant Lake and	<p>KHL appreciates the comment and has added text to Section 4.6.1 to describe the existing environment in Reach 6 of Grant Creek as well as Grant Lake. Additional text has also been added to Section 4.6.4 documenting the fact that no cumulative effects are expected in these areas.</p> <p>Sampling during 1981-1982 found no fish in any of the tributaries to Grant Lake (AEIDC 1983). Sculpin and threespine stickleback were the only</p>

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				Grant Creek. Section 4.41(f)(3) of the Commission’s regulations require that the license application describe the fish, wildlife, and botanical resources in the vicinity of the proposed project; expected impacts of the project on these resources; and mitigation, enhancement, or protection measures proposed by the applicant. Therefore, the final license application must describe the existing aquatic resources in Grant Lake and address any potential project effects on aquatic resources there (i.e., all aquatic species of interest and their habitats), and any proposed environmental measure intended to address those effects. If this information is not included in the final license application, the application will likely be found deficient.	fish found to inhabit Grant Lake. A series of impassable falls below Grant Lake’s outlet (Reach 5/6 break) prevents colonization of the lake by salmonids via Grant Creek (Ebasco 1984). Because of these impassable falls, no anadromous fish species occur in Grant Lake and its tributaries (USFWS 1961, AEIDC 1983, Ebasco 1984), and Grant Lake is not included in the Anadromous Waters Catalog (AWC) published by ADF&G (Johnson and Daigneault 2008). The only fish found in Reach 6 and Grant Lake are sculpins and threespine stickleback.
92	DLA-E-45	6/26/15 letter from ADF&G	Section 4.6.1.1.2	In this section the applicant states that they examined female fish carcasses to determine spawner success (egg retention). Table E.24 lists species specific data on the average number of retained eggs in the carcasses examined. More information is needed on how this information will be used to evaluate fish resources in Grant Creek. It would seem that other information would be needed or estimated, such as average fecundity and fertilization rates.	KHL appreciates ADF&G comments and has clarified this section with additional text and language. Examining female carcasses was one way to quantify baseline conditions on the numbers of eggs retained post spawning. KHL has compared egg retention in Grant Creek to average fecundities of similar salmon to show the percent of eggs evacuated by females in Grant Creek.
93	DLA-E-46	6/26/15 letter from ADF&G	Section 4.6.1.1.2	<i>“Of the nine Chinook that were radio-tagged, seven were detected within Reach 1, three within Reach 2, none in Reaches 3 and 4, and five within Reach 5 (Table E.4-27). While five Chinook were detected within Reach 5, no redds were associated with these detections nor were any Chinook redds observed in Reach 5.”</i>	KHL believes the text being referred to is actually located in Section 4.6.1.1.3. During spring radio telemetry surveys for Rainbow Trout, observations could only be accomplished from the canyon

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				<p>For safety reasons Reach 5 observations had to be made from a distance at the top of the canyon walls.</p> <p>The importance of Reach 5 remains unknown, but due to geomorphic characteristics such as a canyon with cascades and a fairly steep slope, the productivity of spawning attempts in this Reach is difficult to assess. We believe it would be difficult to safely quantify the importance of Reach 5 for Chinook salmon production.</p> <p>Because of the limited Chinook radio tag effort (n=9), data derived from this study should be recognized as reconnaissance in nature and a limited representation of Chinook adult movements within Grant Creek. Discussion of radio-tagged adult salmon detection describes unique tag detections and in certain cases of no unique tag detections. It is not clear what is meant by “unique tag detections” as mentioned in the DLA. This is compounded in Table E.4-27 describing “unique detections” where the number of a species radio tagged (n=X) is less than the total detections listed. It is not clear if the same fish were seen in different reaches, something which could account for more detections than fish tagged. This also would seem to raise a question of accuracy of spawning distribution presented using this data. These radio-tagged fish moved freely up and down the stream, probably spawning somewhere. The inclusion of this data under Spawning Distribution is questioned.</p> <p>Minnow trapping is discussed with tables presented and diagrams provided showing effort. What is missing from this analysis is a table of minnow trapping effort by reach and month. Also needed is a measure of minnow trapping success by specie, in reach, by month. Figure E.4-29 on page E.139 (no page number on diagram) illustrates minnow trapping locations by month in 2013. It is noted that, based on this figure, the upper stream area was only sampled in October. A complex table is necessary to evaluate effort to determine if the timing of the effort was unbiased or selective.</p> <p>It appears that the importance of Chinook utilization of Grant Creek may have been understated. It is noted that in 2013 minnow trapping results as shown in Table E.4-42, Chinook juveniles comprised the largest number of fish</p>	<p>walls (high flows) for safety reasons. However, during anadromous salmonid telemetry surveys access through most of the canyon was improved and telemetry surveys were conducted within the canyon. Of the five Chinook detected in Reach 5, only one was detected by a mobile telemetry survey in Reach 5. All five were detected at the fixed station antenna array/receiver at the Reach 4/5 boundary. Hence, the mobile telemetry surveys that were conducted two times per week did not pick up Chinook residing in the canyon for any length of time that would suggest spawning behavior like areas further downstream (Reaches 1-4).</p> <p>A unique tag detection is simply a detection that differs by either the radio tag, location or date. A single tag can have several “unique tag detections” if the location and/or date of detection are different. Over the course of the study there were numerous telemetry surveys creating numerous detections that differ by radio tag, location and date. Unique tag detections will be defined in the DLA to remove any confusion.</p> <p>There are tables within the DLA that show catch by month and with the new tables should satisfy the request.</p>

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				<p>collected (n=1244), totaling almost 75% of all salmon collected. In 2013 night snorkel surveys, Chinook juveniles were the most observed (N=481) totaling over 97% of salmon observations. In 2013, sampling at the lower incline plane trap (effective at sampling fish greater than 50mm in length) revealed that chinook juveniles (n=577) totaled almost 62% of salmon sampled. Even though few Chinook adults were documented spawning, some spawning success appears obvious based upon these sampling results. Similar results are reported in Table E.4-53 which reported the beach seining results for the Trail Lake Narrows with Chinook (n=100) representing over 96% of salmon captured. There is a possibility that Chinook juveniles may emigrate from other adjacent waters to rear in Grant Creek, however the April and May 2013 snorkel sampling results would probably minimize that potential since the systems would be at a reduced spring flows with cold water. This would imply that overwintering salmon juveniles would be more sedentary and would not be migrating to or from Grant Creek.</p> <p>We recognize the importance of sockeye production in Grant Creek, and that sampling of sockeye juveniles is problematic since sockeye fry will emerge from the gravel substrate and quickly drop out of Grant Creek to rear in downstream lake environments.</p>	<p>KHL appreciates ADF&G's observations on juvenile Chinook rearing in Grant Creek. Prior adult escapement and corresponding juvenile recruitment as well as emigration from other areas likely all contribute to juvenile numbers observed in 2013.</p> <p>Again, KHL appreciates ADF&G's working knowledge of studying migrant sockeye fry in either Grant Creek or the Trail Lakes narrows. The infrequent observations of juvenile sockeye in Grant Creek in 2013 suggests a typical life history pattern of brief fry rearing in natal streams with predominant rearing occurring in lake systems like the Trail Lakes.</p>
94	DLA-E-47	6/26/15 letter from ADF&G	Section 4.6.2.1.2	<p><u>Reach 5 Flows, Connectivity, Spawning, Incubation, and Juvenile Rearing</u> <i>“For Chinook, the required depth is 0.80 feet; for sockeye and coho, the depth is 0.60 feet; and for resident species (rainbow and Dolly Varden), the depth is 0.40 feet. Detailed discussions regarding the methods used in this analysis and results can be found in Section 4.6.2.2 of this Exhibit E.”</i></p> <p>The instream flow sections of the DLA are difficult to follow and seem out of order. It would be helpful if the methods used were presented before the results and the analysis of potential impacts.</p> <p><i>“In 2013, no Chinook were observed spawning within Reach 5 and with only three sockeye and two coho redds documented. Collectively, the five redds observed in Reach 5 in 2013 only represented 1.3 percent of the total redds documented in all of Grant Creek (n = 388).”</i></p>	<p>KHL appreciates the comment. Please see response to Comment #DLA-E-46 re: the suitability of Reach 5 for Chinook spawning and the ability to survey Reach 5 for Chinook.</p> <p>The fisheries component of the study did acknowledge limited spawning in Reach 5 for sockeye and coho and also noted some juvenile rearing in the reach as well for Chinook and other salmonids. However, Reach 5 is higher gradient (average gradient 6.5%) than typically used for Chinook spawning or rearing (NMFS 1999;</p>

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				The pools in Reach 5 are deep and the water surface is turbulent. It would be difficult to view redds under these conditions.	Essential Fish Habitat- Appendix A page A-20).
95	DLA-E-48	6/26/15 letter from ADF&G	Section 4.6.2.1.2	<p><u>Ramping Rates.</u> “At this time, ramping rates have not been proposed by either the stakeholders or during the development of the initial operating guidelines. As such, guidelines will be developed in consultation with the stakeholders.”</p> <p>Information is needed on ramping rates to ensure protection of fish resources in Grant Creek. KHL is proposing a diversion pond but information on the construction and operation are lacking, which makes it difficult to assess the need for ramping rates. If needed, ramping rates would initially be based on Hunter (1992) until site-specific recommendations can be developed.</p>	<p>Preliminary ramping rates are based upon Hunter (1992). KHL proposes using data (cross section and stage/discharge) from Transect 430 to establish ramping rates.</p> <p>KHL notes that there seems to be some confusion related to the detention pond and its impacts (or lack thereof) on potential ramping rates. Additional text has been added to Section 4.6.2.1.2 to clear up the misconception that spin reserve and the detention pond will have an impact on ramping rates.</p>
96	DLA-E-49	6/26/15 letter from ADF&G	Section 4.6.2.2.2	<p><u>Instream Flow Assessment.</u> KHL conducted two instream flow assessments on Grant Creek based on channel habitat mapping and stream hydraulics. The Lower Grant Creek study included reaches 1 – 4 and the Upper Grant Creek study included reaches 5 and 6. Our comments on the assessments are discussed below.</p> <p><i>Lower Grant Creek.</i> KHL selected the Instream Flow Incremental Methodology to evaluate flow-habitat relationships in the Lower Grant Creek. The general theory behind habitat models is based on the assumption that aquatic species will react to change in quality and quantity of the hydraulic environment (USGS 1998).</p> <p>KHL, in cooperation with Instream Flow Technical Working Group, selected 18 transects for this study. USGS advises, and we concur, that hydraulic calibration data should include at least 3 water surface elevation (WSE)-discharge (Q) pairs and one set of calibration velocities (Bovee et al. 1998). The applicant collected up to 5 WSE-Q pairs at some locations and one</p>	<p>KHL appreciates the comments and has discussed these recommendations with ADF&G. In summary:</p> <p><u>HSC curves:</u> The text has been expanded to explain how HSC curves were developed. Please see HSC under Section 4.6.2.2.2. HSC curves can be found in Appendix 2 of KHL (2014d).</p> <p><u>Mesohabitat Specific Analysis:</u> Habitat for spawning and rearing fish by transect is found in Appendix 5 of KHL (2014d). KHL has added the following series of graphs for spawning and rearing fish: 1) Reach</p>

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				<p>velocity calibration dataset that was averaged with a depth calibration method for simulating high flows.</p> <p>PHABSIM results show spawning habitat peaks at flows from 100 – 200 cfs for all target species (KHL 2015b, Figure E.4-44; Chinook, coho, and sockeye salmon, Dolly Varden and rainbow trout) and continues in an asymptotic manner for 3 species (Chinook, coho, and sockeye salmon). We believe these asymptotic results may be related to simulation variables that can be adjusted to provide more meaningful predictions and clarity. These issues are further discussed in the recommendation section below.</p> <p>Fry rearing habitat (KHL 2015b, Figure E.4-45) shows an initial peak at approximately 50 cfs and a second peak near 400 cfs. Peak fry rearing habitat at lower flows is commonly observed and reflects to large extent, the inability of the model to adequately capture these types of flow-habitat relationships. The second peak is likely related to similar issues.</p> <p>Juvenile/adult rearing habitat (KHL 2015b, Figure E.4-46) peaks from approximately 50 cfs to 120 cfs, then increases with increasing discharge. More refinement is needed to better identify flow-habitat relationships, in particular with main channel versus off-channel habitats. We believe adjustments to the model are needed, as discussed in the recommendations section below. These adjustments should provide greater detail and understanding of habitat-flow relationships.</p> <p><i>Habitat Time Series.</i> Analysis Results from PHABSIM discussed above were included in a Habitat Time Series. KHL compared the amount of total habitat under pre- and post-project for each target species.</p> <p>This information provides a basic overview but more detail is needed to better understand habitat relationships over time. Specifically, habitat duration curves are needed for each of these analyses (i.e. by target species and life stage) as well as a basic statistical summary (mean, min and max) over key target species and life stages.</p>	<p>1, Main Channel; 2) Reach 2, Main channel; 3) Reach 3, Main Channel; 4) Reach 4, Main Channel; 5) All Mainstem Transects in Reaches 1, 2, 3, and 4; 6) Reach 1 Distributary, and 7) Reach 2/3 Side channels. These can be found in the Weighted Usable Area under Section 2.6.2.2.2.</p> <p><u>Combined Suitabilities:</u> Per discussion with ADF&G, the WUA graphs provided above will suffice and this request has been retracted</p> <p><u>Habitat Duration Curves: Habitat duration curves for each species and life stage are provided, based on Grant Lake periodicity.</u></p>

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				<p><i>Effective Spawning Analysis.</i> KHL conducted an analysis to evaluate the percentage of incubating eggs that would be protected as flows were reduced during the winter. The criterion was selected was that at least 0.1-foot of water was needed over the spawning substrate. We believe this is an important analysis with an appropriate criterion level. Results shows that higher protection for incubating eggs will be provided during post-project. This is reasonable with higher winter flows proposed during project operation.</p> <p><i>Upper Grant Creek Assessment.</i> Upper Grant Creek instream flow study included reaches 5 and 6. The project pipeline and penstock would extend from the lake outlet to powerhouse at the top of reach 4 and would bypass reaches 5 and 6.</p> <p>KHL used the Oregon Method (Thompson 1972) to assess connectivity of pools within reach 5. Two transects were established and used with model criteria for evaluation of minimum depth requirements. The basic premise was to identify flows at which target species could access pool habitats.</p> <p>Reach 5 is a difficult area to study due to confinement, high gradient², and stream hydraulics. Limited information is available regarding fish use of the area, however, it would be difficult and with a level of risk to attempt a robust, directed effort to collect detailed fish use information. Further discussion on these issues is needed.</p> <p><i>Recommendations.</i> As mentioned, we believe habitat results could be improved with modeling adjustments. We believe the upper limit of modeling simulations is too high to provide meaningful predictions. The general rule of thumb for the upper end is 2.5 x the highest velocity calibration; however, this is only a rule of thumb and model results and diagnostics should be evaluated to further refine and identify this decision. For this study, the rule of thumb would equate a flow of approximately 500 cfs. KHL and USGS note that because of the way the model simulates velocities, downward extrapolations (e.g., simulating discharges lower than the calibration discharge) are more accurate than upward extrapolations” (KHL 2015a and Bovee et al. 1998). To improve simulations at higher flows, KHL averaged the one velocity set with the depth calibration method. This is an acceptable approach and provided</p>	

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				<p>robust velocity predictions. We noticed, however, that simulation results show velocity predictions begin to incur greater variability and uncertainty extending past 500 cfs in the main channel (and corresponding discharges in off-channel habitats). The developed model provides good prediction up to 500 cfs, but it is not appropriate to use the model much beyond this point. We believe it is prudent modeling practice and in the best interest for evaluating modeling results to limit the upper end to 500 cfs in the main channel (and corresponding discharges in the off-channel habitats). This would help to provide greater resolution on the range of flows under primary consideration. Therefore, we will focus our analysis on this range and request additional simulations should be restricted to an upper limit of 500 cfs.</p> <p>Furthermore, we believe it is likely modeling results may be complicated by inclusion of all transects, as well as simulating beyond the predictive capability of the model as discussed above. This may be a primary factor in some of the results showing asymptotic flow-habitat curves; habitat continues to increase as more flow enters off-channel areas. However, this may be due to high quantity but low quality habitat. Comparison of main channel versus off-channel habitat will provide greater refinement on these issues and flow-habitat relationships.</p> <p>We recommend the following information be provided to inform our decision making process:</p> <p><u>Habitat Suitability Criteria:</u> More detailed descriptions are needed on how HSCs were developed and normalized and criteria should be included with the report and not just referenced.</p> <p><u>Mesohabitat Specific Analysis:</u> Habitat based modeling should be used to generate output on a cross section by cross section basis, or a group of cross sections enabling the development of habitat-flow results for specific species and life stages on a mesohabitat basis. This type of analysis can help focus on species and life stage specific sensitivities to particular habitat types, which may be important during critical periods of the year. We recommend this analysis for spawning target species in areas identified in the fish surveys, which appear to be main channel habitats. Similarly, this analysis should be</p>	

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				<p>performed for rearing species. We prefer to see results separated into main channel and off-channel habitats.</p> <p><u>Combined Suitabilities:</u> Computations techniques within PHABSIM should be used to simulate thresholds of combined suitabilities by target species/life stage. For example, combined suitabilities greater than 0.75 could evaluate for spawning fish species; similar evaluations should be conducted for rearing life phases. This analysis should be separated according to the Mesohabitat Specific Analysis as discussed above, to include main channel versus off-channel habitat.</p> <p><u>Habitat Duration Curves:</u> We would like to see the Habitat Time Series results presented as duration curves (e.g. Habitat Area vs Percent Equaled or Exceeded) in graphical and tabular (5 percent increments) formats. This analysis should be separated according to the Mesohabitat Specific Analysis as discussed above, to include main channel versus off-channel habitats. A basic statistical summary (mean, min and max) for key target species and life stages should also be presented.</p>	
97	DLA-E-50	6/17/15 letter from FERC	Section 4.6.3	<p>In section 4.6.3, <i>Proposed Environmental Measures</i>, the draft license application provides a general summary of some, but not all of the proposed aquatic environmental measures. This section of the application must describe how <u>each</u> proposed measure would protect or enhance the existing environment. Where possible, this section should also provide a quantification of the anticipated benefit of each proposed measure. While some of this information is provided in section 4.6.2, <i>Environmental Analysis</i> (e.g., available weighted usable area pre- and post-project), not all of the proposed environmental measures are discussed in any detail in either section. For example, section 4.6.2, <i>Environmental Analysis</i>, of the draft license application states “[t]his analysis does not take into consideration potential mitigation and enhancement measures for the Project” and it provides an example of a proposed enhancement measure to reconfigure the Grant Creek stream channel to allow more water into a distributary at lower flows in Grant Creek in an effort to provide significantly greater habitat within the distributary. However, as stated, there is no analysis or quantification in the draft license application to support the statement in section 4.6.2, and the proposed measure is not discussed in section 4.6.3. Section 4.41(f)(3) of the Commission’s regulations</p>	<p>KHL appreciates and understands this comment. Per communications with FERC during the DLA development process, it was conveyed that certain components related to the regulations mentioned would be absent from the DLA and/or present in the management plans at the draft phase and would be incorporated into the FLA once additional development took place and comments were reviewed from stakeholders. This is the case with respect to respective <i>Proposed Environmental Measures</i> sections of the DLA. Text has been added to comply with regulations in the FLA.</p>

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				requires that the license application describe the mitigation, enhancement, or protection measures proposed by the applicant. Therefore, the final license application must describe <u>each</u> proposed resource measure and how <u>each</u> measure would protect or enhance the existing environment including, where possible, quantification of the anticipated benefit(s) of <u>each</u> proposed measure. If this type of information is not included in the final license application, the application may be found deficient.	
<i>Terrestrial Resources</i>					
98	DLA-E-51	6/24/15 letter from Andrew Bacon	N/A	Wildlife movement in the area will be significantly impacted by the construction of this project. The lands extending from Vagt Lake up to the inlet of Upper Trail Lake provide a travel corridor for moose and bears that allows animals to avoid the Seward Highway. I have spent a lot of time in this area over the years and have seen how moose and bears use the bench lands between Grant and the Trail lakes for feeding and migration. Grant creek is an important feeding location for bears, and moose use the area for feeding and breeding. The research in the DLA is insufficient with regard to wildlife abundance and the impact the project will have on habitat.	KHL appreciates the comment. KHL feels strongly that the comprehensive set of terrestrial data collected during the licensing process, the associated impact analysis and existing historical data has facilitated the development of a Project infrastructure and operational regime that will result in limited to no impacts to terrestrial resources in the Project area.
99	DLA-E-52	6/25/15 letter from USFS	N/A	The Forest Service is in concurrence with comments that were made by Alaska Dept. of Fish and Game with regard to Terrestrial Resources. The effects of project construction and operation on changes to animal movement in and through the project area as well as displacement and disruption of seasonal movement patterns should be analyzed. The effects of increased access on harvestable wildlife should also be analyzed.	KHL appreciates the comment.
100	DLA-E-53	6/17/15 letter from FERC	Section 4.7	Our Scoping Document 2 identified potentially substantive project effects on increased access to harvestable wildlife. Section 4.8.2.1, <i>Recreation</i> , states that project impacts include a possible increase in hunting and fishing pressure as a result of the proposed access road that would more easily facilitate access to Grant Lake. However, the draft license application also discusses uncertainty as to whether the project will provide public access to the project area. Because such public access will affect access to harvestable wildlife, the final license application should provide updated information in accordance with the final project proposal on public access and any additional infrastructure proposed to accommodate such access. More broadly, the license application should also provide updated information for any other	KHL appreciates the comment. With specific respect to the public aspect portion of the comment, based on public sentiment and agency interaction, KHL has decided that that FLA will propose that the Project be operated in such a fashion as to restrict public access via all Project developed routes. This will be documented in the FLA. As such, it is not anticipated that any infrastructural

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				<p>effects to terrestrial resources that might be caused by public access and any associated infrastructure accommodating such access. Similarly, section 4.8.2.3, <i>INHT</i> (Iditarod National Historic Trail), provides information regarding the potential re-routing of the trail. If the project would cause the Iditarod National Historic Trail to be re-routed, the final license application should identify any associated potential incremental project effects on terrestrial resources, as well as recreation, cultural and aquatic resources.</p>	<p>aspects of the Project will provide supplemental public access that could impact terrestrial resources.</p> <p>With respect to the Iditarod National Historic Trail and as documented in the FLA, the INHT is an unconstructed commemorative trail that is proposed to go through the Project area. KHL did not mean to imply in any way that an existing trail would be moved as a result of Project development. Beyond being able to state that our proposed re-route location would enhance the recreational user experience of the trail when constructed (positive impact), it would be speculative to quantify any other impacts associated with the trail configuration.</p>
101	DLA-E-54	6/17/15 letter from FERC	Section 4.7.1.3	<p>Section 4.41(f)(3)(i) of the Commission’s regulations requires a description of spatial and temporal distributions and densities of species considered important because of their commercial or recreational value. Section 4.8.1.1.1, <i>Recreation Facilities</i>, states that hunting in the Grant Lake area is open for “black bear, brown bear, caribou, Dall sheep, moose, mountain goat, wolf, and wolverine.” However, section 4.7.1.3, <i>Wildlife</i>, provides various levels of description for only some of these species. In addition, section 4.7.1.3.3, <i>Terrestrial Mammals</i>, states that Dall sheep habitat “does not likely occur in the Project Area”; however, no reasoning is provided to support this conclusion. The final license application should include additional descriptions for wildlife communities that may be affected by the proposed project, including information pertaining to species that are considered important because of their commercial or recreational value. KHL may reference existing data sources and literature reviews on species’ habitat and distributions to obtain these descriptions. If this information is not included in the final license application, the application may be found deficient.</p>	<p>KHL appreciates the comment and has included additional text related to the requested information.</p>

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
102	DLA-E-55	6/17/15 letter from FERC	Section 4.7.2	Scoping Document 2 identified potentially substantial effects pertaining to the impact of spoil materials on surrounding areas. While section 4.7.2, <i>Environmental Analysis</i> , lists fill material placement as a direct impact to vegetation, wetlands, and waters, it is unclear whether the draft license application specifically accounts for the effects of spoil material placement on terrestrial resources. The final license application should identify the potential effects spoil material placement may have on terrestrial resources, and should describe any proposed measures to protect resources from such effects.	KHL appreciates the comment and multiple sections of the document have been revised to address the disposal/dispersal of spoil material.
103	DLA-E-56	6/25/15 letter from NPS	Section 4.7.2.1.1	Please add the tailrace detention pond to the narrative description of your proposed project. Clearing and grubbing to create this pond is mentioned in table E 4-96, but if the pond would be five acres in area, how can the total area of affected vegetation be less than this: i.e. 3.12 acres, as reported on p. E-307?	Project descriptions and design drawings of the detention pond are located in Exhibit A and F respectively.
104	DLA-E-57	6/25/15 letter from NPS	Section 4.7.2.2	Table E-96 does not include vegetation cover changes due to wind throw or mass wasting along the new road and transmission line ROWs. What is the likelihood of these events?	KHL appreciates the comment and has added the potential for wind throw along the access roads and transmission line to the “Indirect” “Long term permanent impacts” column of the table.
105	DLA-E-58	6/17/15 letter from FERC	Section 4.7.2.3	Section 4.7.2.3, <i>Wildlife</i> , utilizes the factor of vegetation to qualitatively assess species presence and the overall impact of the project on wildlife resources. For instance, section 4.7.2.3.1, <i>Potential Impacts to Raptors</i> , states that the removal of vegetation affects raptors in several ways that include loss of old growth trees for nesting platforms and perches. While such analyses are generally informative, they do not provide detailed information necessary to analyze project effects. So that we may fully evaluate the resource effects the proposed project might have, the final license application must evaluate possible changes in size, distribution, and reproduction of essential populations of wildlife resources and any impacts on human utilization of these resources, as described in section 4.41(f)(3)(ii) of the Commission’s regulations.	KHL appreciates the comment and has included additional text related to the requested information.
106	DLA-E-59	6/17/15 letter from FERC	Section 4.7.2.3	Our Scoping Document 2 identified potentially substantive project effects on wildlife critical life stages, distribution, and abundance for specific wildlife species designated by the Forest Service and the State of Alaska as Management Indicator Species, Species of Special Interest, and Species of Special Concern. Section 4.7.2.3, <i>Wildlife</i> , provides a qualitative description of anticipated project effects on wildlife resources, but does not fully describe	KHL appreciates the comment and has included additional text related to the requested information.

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
				how the project would affect wildlife critical life stages (such as egg incubation in avian species, and juveniles and breeding adults). In addition, the draft license application does not describe whether/how the project would affect the distribution and abundance of all species listed in Scoping Document 2. The final license application should identify potentially substantive project effects on species listed in Scoping Document 2.	
107	DLA-E-60	6/17/15 letter from FERC	Section 4.7.2.3	Scoping Document 2 also identified potentially substantive project effects on the availability of fish as food for wildlife. Section 4.7.2.3, <i>Wildlife</i> , does not provide an environmental analysis of how the project-related impacts on fisheries affect the availability of fish as food for wildlife. The final license application should describe the project effects on the availability of fish as food for wildlife, as discussed in Scoping Document 2.	KHL appreciates the comment. Additional text has been added to address level of impact on wildlife related to the availability of fish as a food source.
108	DLA-E-61	6/17/15 letter from FERC	Sections 4.7.2.3.1 through 4.7.2.3.4	Scoping Document 2 also identified potentially substantive project effects on wildlife movement as well as displacement and disruption of seasonal movement patterns through the project area. The draft license application provides only qualitative information on the movement of avian species and terrestrial mammals. Section 4.7.2.3, <i>Wildlife</i> , provides similar assessments for all wildlife species that are discussed by KHL; namely, that activities related to construction, project operation, forest removal and anthropogenic access may cause species that are sensitive to disturbance to move to other less-disturbed areas (<i>see</i> draft license application, section 4.7.2.3.1, <i>Potential Impacts to Raptors</i> ; section 4.7.2.3.2, <i>Potential Impacts to Breeding Birds and Shorebirds</i> ; section 4.7.2.3.3, <i>Potential Impacts to Waterbirds</i> ; and section 4.7.2.3.4, <i>Potential Impacts to Terrestrial Mammals</i>). Additional information should be provided on the effects of project construction and operations on wildlife movement. For instance, additional analysis could be provided on wildlife movement caused by: noise and lighting during project construction; project operations and maintenance; and anthropogenic access. Also, beyond labeling “sensitive” and “shy” species, the draft license application does not account for differences in wildlife behavioral patterns associated with dispersal habits, territorial distributions, habitat requirements, and predator-prey dynamics. These and other factors could result in potentially substantive project effects for some species, but not others, throughout the various project phases. The final license application should describe project effects on	KHL appreciates the comment and has included additional text related to the requested information.

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
				wildlife movement as well as displacement and disruption of seasonal movement patterns through the project area.	
109	DLA-E-62	6/17/15 letter from FERC	Sections 4.7.2.3.2 and 4.7.2.3.3	Scoping Document 2 also identified potentially substantive project effects on: breeding and rearing habitat, and nesting success of shorebirds and waterfowl; and other avian use in and around Grant Lake and Inlet Creek. Section 4.7.2.3.2, <i>Potential Impacts to Breeding Birds and Shorebirds</i> , and section 4.7.2.3.3, <i>Potential Impacts to Waterbirds</i> , provide a qualitative analysis of project effects to conclude that vegetation removal may impact nesting, foraging, and cover habitat for shorebirds and waterfowl. However, this broad, qualitative analysis does not allow for an assessment of potential project effects. For instance, the draft license application does not provide sufficient information to assess the effects of project construction and operations on species with different behavioral patterns. The final license application should provide additional information on potentially substantive project effects on: breeding and rearing habitat, and nesting success of shorebirds and waterfowl; and other avian use in and around Grant Lake and Inlet Creek, as discussed in Scoping Document 2.	KHL appreciates the comment and has included additional text related to the requested information.
110	DLA-E-63	6/17/15 letter from FERC	Section 4.7.3	Section 4.7.3, <i>Proposed Environmental Measures</i> , provides only general references to best management practices and mitigation strategies that are being proposed by KHL. The final license application should include a description of proposed measures for protecting resources.	KHL has added additional text related to specific measures that will be implemented to protect wildlife species that may be potentially impacted as a result of Project construction and operations.
111	DLA-E-64	6/17/15 letter from FERC	Section 4.7.3.2	Section 4.7.3.2, <i>Wetlands</i> , proposes to apply mitigation for the loss of approximately 0.49 acre of wetlands/waters as part of project construction and operations. However, the environmental analysis in section 4.7.2.2, <i>Wetlands</i> , states that the project will cause permanent, direct impacts to 1.91 acres of wetlands and permanent, indirect impacts to 18.18 acres of wetlands. So that we may fully evaluate the proposed measures for protecting wetland resources, the final license application should discuss the basis for limiting wetland mitigation to 0.49 acre. In addition, the proposed mitigation for project-induced wetlands loss should be summarized in section 2.1.5, <i>Proposed Environmental Measures</i> .	To clarify, compensatory mitigation is assumed to be required by the CWA Section 404 permit only for jurisdictional wetlands or waters that are filled (0.49 acres). The remaining impacts are not due to fill, but due to other types of impacts, e.g. vegetation clearing, which is not expected to require compensatory mitigation. Additional detail related to KHL's discussions with the ACOE and

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
					associated mitigation plan for the 0.49 acres was added to the Section 4.7.3.2.
<i>Recreation and Land Use Resources</i>					
112	DLA-E-65	6/7/15 letter from Irene Lindquist	N/A	I am opposed to licensing Kenai Hydro for the Grant Lake project. The project area is within a popular recreation area that is used year round, and also within the planned Iditarod National Historic Trail. The access road will cross the proposed INHT trail, the project is not compatible with the year round Recreation use that occurs between Trail Lake and Grant Lake. Kenai Hydro says they can reroute the layout completed by the US Forest Service to minimize impacts to recreational users. The USFS has spent many days on trail layout through the project area, there is not much suitable terrain that will allow for this type of mitigation.	KHL appreciates the comment. Per the FLA and based upon public sentiment and additional agency discussion, KHL will be restricting public access to the area via Project developed routes. With specific respect to the proposed INHT and as documented in the FLA, KHL has taken significant steps to collaborate with appropriate stakeholders. KHL has proposed to develop an alternate route through the Project area that would increase the user experience. KHL is committed to ensuring that the INHT provides a high quality user experience and provides beneficial use characteristics once it is designed and built.
113	DLA-E-66	6/7/15 letter from Irene Lindquist	N/A	There appears to be a lack of a solid Rec. and Vis. Resource Study Plan, I'd like to point out the following paragraph from the Recreation and Visual Resource Study Plan June 2014, page 16, 'Though there may be some use of Grant Lake for snowmachining, there was no evidence of trails leading to Grant Lake from trails along the Trail Lakes shoreline. Terrain challenges and the lack of a well-defined trail may limit the interest in snowmachining at the lake. However, it is expected that the mine access road that is north of Grant Creek may provide access to Grant Lake for snowmachining.	KHL appreciates the comment.
114	DLA-E-67	6/7/15 letter from Irene Lindquist	N/A	The Grant Lake Portage trail is a major winter/summer access to Grant Lake, it is an easy ski, snow machine, or hike, due to the easy terrain. The trail in summer is down to mineral soil, and the US Forest Service maintains this trail year round primarily cutting down trees from across the trail. I have not been	KHL appreciates the comment.

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				able to find the Grant Lake Portage trail identified on any HEA maps for this project.	
115	DLA-E-68	6/24/15 letter from Andrew Bacon	N/A	Use of the proposed project area fluctuates with the weather, and I don't believe the recreation study accurately accounts for the amount of winter use this area actually gets, due to the low amount of snow that year. The construction of the INHT will further increase winter recreational opportunities for skiers, hikers, and trappers. The INHT will also improve access to the area for hikers and fishermen in the summer. Recreational use will be highly impacted by construction of this project. The wilderness character of the area would be gone.	<p>KHL appreciates the comment. Per the FLA and based upon public sentiment and additional agency discussion, KHL will be restricting public access to the area via Project developed routes.</p> <p>With specific respect to the proposed INHT and as documented in the FLA, KHL has taken significant steps to collaborate with appropriate stakeholders. KHL has proposed to develop an alternate route through the Project area that would increase the user experience. KHL is committed to ensuring that the INHT provides a high quality user experience and provides beneficial use characteristics once it is designed and built.</p>
116	DLA-E-69	6/25/15 letter from NPS	N/A	In contrast to most other resources that would be affected by this project, no draft management plans to mitigate the project's impacts on recreation or aesthetics have been submitted by KHI in conjunction with its DLA filing. (The Public Access and Safety Plan KHI proposes to develop post-licensing appears to differ from a true recreation management plan.) NPS and other agencies discussed the need for a recreation management plan for the project area on several occasions during the consultation process, including at the March 18th, 2014 meeting. At that meeting, NPS expressed concern about the lack of baseline recreational use data for the project area. We also noted the need for more baseline information about recreational use conflicts and visitor safety. At the conclusion of the March 2014 meeting, KHI committed to convening a conference call among NPS, U.S. Forest Service, and Alaska	<p>KHL appreciates the comment. With respect to the conference call referred to, KHL did follow-up in regard to the establishment of trail cameras at strategic locations per discussions at the meeting on March 8, 2014.</p> <p>Additionally and given the recent decisions made to restrict public access to the area via Project developed routes, KHL.</p>

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				DNR staff to discuss these data needs and recreational management planning for the project area, but to NPS's knowledge, this call never took place. NPS remains concerned that, without better information about existing recreational use in the area, it will be difficult to develop 10(a) recommendations to mitigate project impacts on this important resource. A short-coming of the TLP is that issues such as this can fall through the cracks, with no formal deadline for parties to reach agreement.	discussed the “lack of baseline data,” extensively with agencies during open coordination meetings and it was requested that KHL initiate camera recordings of uses at key locations. KHL agreed to provide that and that information is provided in the FLA.
117	DLA-E-70	6/25/15 letter from NPS	N/A	Likewise, the DLA includes no details on the impacts associated with rerouting the Iditarod National Historic Trail away from the existing easement that was conveyed by the State of Alaska for trail construction purposes over a decade ago. KHI proposes to wait until after the project license to determine where the trail will be located, and, presumably, to determine what its role would be in managing recreational use of the trail as it crosses project lands. It may prove premature for FERC to consider the project ready for environmental analysis when the project's impacts on a nationally- designated trail are as yet unknown. Delaying the determination of where the INHT should go, if not within the existing easement, until after a final decision has been made on project facilities that affect this existing easement, could result in significant impacts to trail users. NPS understands that multiple parties are involved in any INHT relocation decision, and that such decisions take time. However, we urge KHI to delay issuance of its FLA until this decision is final. Only then will stakeholders and FERC be able to assess the actual impacts of the rerouting decision, describing alternatives as mandated by NEPA and assessing whether the applicant's proposed mitigation measures adequately compensate for the impacts of the proposed project.	Per documentation in the FLA, KHL went to substantive effort to develop an MOA for INHT re-route with requisite agencies in advance of DLA and subsequent FLA filing. Per agency request, that process was halted until additional input could be attained. With specific respect to the proposed INHT, KHL has proposed to develop an alternate route through the Project area that would increase the user experience. KHL is committed to ensuring that the INHT provides a high quality user experience and provides beneficial use characteristics once it is designed and built.
118	DLA-E-71	6/25/15 letter from NPS	N/A	NPS observes that KHI has based its characterization of the project area's baseline recreational and aesthetic resources on very few field observations. For example, to our knowledge, the DLA's description of winter recreational use is based on a single day of observation: Saturday March 3rd, 2013. Likewise, summer use as described in the DLA appears to have been based on what was observed on Friday, July 12th, 2013, which was not even a weekend day. We have previously commented on the inadequacy of basing conclusions	Based on input from NPS and other agencies, KHL agreed to extend the study effort beyond the approved Work Plan to include the use of strategically placed cameras. This provided extensive collection of data

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				<p>about a broad range of activities and users on a single day of observations, especially given the dependency of use on weather conditions, work schedules, fishing and hunting season dates, and, in winter, snow and ice conditions. In response to our comments, KHI has stated that the level of effort they intended to devote to baseline recreational resource data collection was commensurate with the importance of this resource in the project area.</p> <p>At the September 2013 site visit, we suggested that field staff already present in the project area, working on aquatics and terrestrial resources, utilize incidental observation forms to record encounters with recreational visitors. However, it appears that this method of augmenting recreational use data collection was not implemented. It is unfortunate that several weeks' worth of potential observations, that could have been compiled at no great additional cost, were lost. Numerous stakeholders have attested to the project area's recreational importance at meetings and in scoping comments. Area land use plans (state, borough and Forest Service) also attest to the project area's high recreational values, both to residents and visitors. Tourism is one of the few sectors in the local economy. Based on this, NPS thinks recreation and associated aesthetic resources deserve more attention than KHI has chosen to give them during the study process. We urge KHI to rethink its strategy. Without reliable data on baseline resources, NPS doubts the FERC will be able to assess project impacts. Nor will NPS or stakeholders have a basis for developing recommended license conditions to avoid, minimize, mitigate or compensate for project impacts.</p>	<p>to document use and that data is included in the FLA.</p> <p>Though no “form” was created, KHL did receive updates from field staff regarding use of the stream by fishermen and other recreational users.</p>
119	DLA-E-72	6/25/15 letter from NPS	N/A	<p>In addition, KHI, contrary to our requests, has not attempted to determine what kinds of recreational experiences are currently supplied by the project area, and how changes in the availability of such experiences might result in displacement if the project is licensed. The DLA includes no survey data, just estimated head counts of users based on four trail camera locations during spring and summer. These camera locations did not include the lake itself, or many other areas that are accessible during the winter, when snow and ice cover allows off-trail uses. Mere numbers of users, even if the recreational studies had adequately included all areas that could be affected by the project, and in all four seasons, do not suffice to inform the public or FERC about licensing trade-offs. Without basic social science (i.e. user surveys, not just head counts) to determine why existing users go where they go within the project area, what kinds of experiences they</p>	<p>Cameras were employed based on agency input and request and at locations approved by the agencies. One camera was located at Grant Lake.</p> <p>The work plan for recreation studies clearly indicated the level of effort related to the collection of data concerning use and was approved by agencies and KHL has extended its studies far beyond that approved level</p>

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				seek, whether they experience conflicts that could be mitigated through project design and management, and whether project construction and operation, or the presence of project facilities, would cause them to go elsewhere (displacement), it is virtually impossible to assess the project's likely impacts on recreational resources.	<p>of effort, at agency request, specifically including documenting use by deployment of cameras. NPS in particular was key in promoting the use of cameras to quantify use, but did not attend the meeting in November 2014 where the particular location of these cameras was discussed for agency approval.</p> <p>The data collected via cameras has confirmed that the level of use is relatively low compared to many places in Southcentral Alaska, and documents findings of our field effort. That information is included in the FLA.</p>
119b	DLA-E-73	6/25/15 letter from Mark Luttrell	N/A	<u>Problems with the recreation study.</u> The study relies on short visit and anecdotal information. For example, rather than a controlled assessment of usage over a relevant period of time, KHL determined the level of fishing use on Grant Creek by relying on the anecdotal observation of the project fisheries research team who noted approximately 12 anglers on Grant Creek over the entire summer and fall data gathering period.	KHL appreciates the comment. It is notable that this comment is contradictory to the NPS (Comment #DLA-E-71) which states, <i>“At the September 2013 site visit, we suggested that field staff already present in the project area, working on aquatics and terrestrial resources, utilize incidental observation forms to record encounters with recreational visitors. However, it appears that this method of augmenting recreational use data collection was not implemented.”</i>
120	DLA-E-74			The study relies on information gathered at four camera locations, one of which gathered information on bathroom habits of travelers, a significant breach of assumed privacy. “Rest room facilities are limited in the area for recreation users. A camera that has been posted at the Vagt Lake Trailhead has	This location was vetted and approved with resource agencies prior to implementation. Cameras were located as to recognize passage by the

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				shown that the pulloff at that location is often used as an “unofficial” place for relief and approximately 300 motorists along the Seward Highway paused at the Vagt Lake Trailhead for “break” purposes of one type or another during the period March 31 to September 30, 2014.” Such an invasion of privacy is unprofessional at best.	camera. Those locations were fully visible to the general public and did not capture activity that was not visible by the general public.
121	DLA-E-75			The study fails to recognize the most popular winter activity: ice skating. Dozens of families use the area for hockey (a Moose Pass resident plows a rink and skating trails) and long distance skating. When conditions are favorable, the entire surfaces of Upper Trail Lake, Lower Trail Lake, Vagt Lake and Grant Lake provide exceptional opportunities.	Text has been updated to reflect that ice skating takes place at those locations. KHL activities will not impact ice skating. Skating is now addressed in the FLA.
122	DLA-E-76			Recreational hunting was addressed only by recognizing that the project area falls within ADF&G game management unit 7 which extends from Gore Point to Girdwood, a distance of 152 miles. Zero relevant and specific usage data was considered.	KHL appreciates the comment. Additional detail related to hunting opportunities in the Project Area can be found in the terrestrial section of the FLA (Section 4.7). Recordings of users passing by cameras that were used in the inventory process recorded the number of users who used project area trailheads for access to hunting and those numbers are now included in the FLA.
123	DLA-E-77			The recreation study did not consider the recreational and visual impact of above-ground transmission lines despite KHL identifying above-ground transmission as their preference (DLA E-11).	KHL appreciates the comment. Section 4.9.2.3.1 specifically discusses the individual “ <i>Project Components</i> ” and acknowledges the potential for visual “contrast” with the natural setting.
124	DLA-E-78			KHL’s study contains many unsubstantiated statements like, “Ice fishing is not expected to expand beyond the existing use” (DLA E-353) and “the use of Grant Lake by non-motorized users tends to be small to absent in the winter” (DLA E-354). The study fails to provide supporting evidence of current or anticipated usage. The KHL minutes from the November 6, 2014 meeting inaccurately state the following: “these uses have been quantifies in the current study”. They haven’t.	The use of the study area has been quantified to better reflect use within the area with more accurate information and is included in the FLA. While those studies demonstrate that public use of the proposed project facilities is low, the

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
				<p>Had KHL conducted a user study, they would have gained a valuable perspective on the variety of recreation, locations and season specific knowledge. Over the course of the lengthy application and study process (since 2008), KHL has heard frequently that the public values wildland recreation and has major concerns about impacts.</p>	<p>local population has a high appreciation for undisturbed spaces.</p>
125	DLA-E-79			<p>At a public meeting in Moose Pass on November 6, 2014, the recreation study's author was asked why no user study had been conducted. The author mentioned the difficulty of assessing "latent demand". Another KHL presenter asked (rhetorically) what communities should be surveyed, Cooper Landing, Seward, snowmachiners from Anchorage? And what questions should be asked to elicit the desired information? It was astonishing that the public was expected to have these answers. And the way the questions were posed was meant to suggest that such a study would be difficult and maybe irrelevant.</p> <p>But it is technically feasible to conduct extensive community interviews. For example, in March and April of 2001, ADF&G researchers conducted 203 interviews with residents of Moose Pass and Seward (Wild Resource Harvests and Uses by Residents of Seward and Moose Pass, Alaska 2000; Davis, Brian and J. Fall and G. Jennings).</p> <p>Had KHL bothered to interview users, they would not have needed to speculate on snowmachine use: "However, it is expected that the Saddle Trail and the mine access road both of which are north of Grant Creek may provide access to Grant Lake for snowmachining" (DLA E-341). Nor would KHL have revealed its unfamiliarity with the community by identifying "Trail Lake" (DLA E 4-88). No one refers to it as Trail Lake; it's either Upper Trail Lake or Lower Trail Lake. Nor would they have failed to recognize that the Alaska Railroad trestle is on Upper Trail Lake, not Lower Trail Lake (DLA E-353).</p>	<p>KHL has collected data on summer and winter recreational use within the area and that new data is included in the FLA.</p> <p>Additionally, information from the referenced ADF&G report is now included</p>
126	DLA-E-80			<p>At the November 6, 2014 meeting, I asked the recreation study author if he/KHL would consider a comprehensive usage study involving Seward, Moose Pass and Cooper Landing. His response? "How would this be relevant to the questions for Grant Lake?" That statement starkly reflects the author and KHL's misdirected and unprofessional treatment of recreation.</p>	<p>KHL respects all perspectives related to the development of the Grant Lake Project. As described in the FLA, our environmental study results, associated impact assessments and infrastructural design represent an</p>

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					efficient, environmentally conscious project that will provide renewable energy for years to come for Alaskans.
127	DLA-E-81			The most disruptive impact to recreation will be the access road. Yet KHL failed to address it in any meaningful way, instead deferring discussion to a later date. KHL has provided no outline of how public and agency review will be evaluated. “If however, the local public would prefer access be allowed via the Project related corridor, further discussion with respect to specifics of the access infrastructure would be discussed with stakeholders and the public prior to implementation”. Within the DLA (E-359), KHL admits that it doesn’t understand public preference for the access road. Had KHL invested in the recreation study more than a brief nod, they would understand public preference.	As a result of additional public input and agency discussion, KHL has chosen to restrict public access to the area via all Project developed routes.
128	DLA-E-82			At the November 6, 2014 meeting at which KHL presented its study results, KHL lamely passed around a questionnaire asking whether the access road should be open or closed. It was a haphazard and unprofessional approach that could yield no reliable data.	KHL respects all perspectives related to the development of the Grant Lake Project. As described in the FLA, our environmental study results, associated impact assessments and infrastructural design represent an efficient, environmentally conscious project that will provide renewable energy for years to come for Alaskans.

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
129	DLA-E-83	6/25/15 letter from USFS	Section 4.8.1.1.1	<p>It is unclear from the Recreation Resources Study Report description that the initial winter survey actually included the National Forest System Lands around Grant Lake. Normal winter routes to Grant Lake do not utilize the Vagt Lake Trail. Rather, access is gained from one of two winter trails at the northern end of the Trail Lake narrows. The Study only indicates one winter and one summer visit.</p> <p>Existing Observed Winter Use This section of the Recreation Resources Study Report is not accurate. Winter access to the Grant Lake area is most commonly via crossing Upper Trail Lake and one of two winter trails which leave the shoreline just south of the mouth of the lake. The most used trail is a portage trail which is easily negotiated via snowshoe, ski or snow machine. This trail is located in the southern portion of Section 31. It would be difficult to identify the winter use of the Grant Lake area without observing these routes. Another known winter use of the Grant Lake area would be trapping of fur bearing animals.</p>	<p>KHL appreciates the comment. The project study plan included the documented trips and was approved by the agencies.</p> <p>We have included a thorough review of information collected from additional visits performed from camera placement and maintenance as well as the data collected from cameras. That information is included in the FLA.</p>
130	DLA-E-84	6/25/15 letter from USFS	Section 4.8.1.1.1	<p>Other known uses include hiking to Grant Lake on one of the trails mentioned above and boating in paddle craft portaged from Upper Trail Lake. Though mentioned later in the document, it would seem appropriate to include here that summer use of the Grant Lake area can be expected to increase with the completion of planned developments associated with the Iditarod National Historic Trail, The study also describes the existing use of the Vagt Lake Trail as "light". If a conclusion is drawn on the amount of use, then the term, light, should be defined. Again it would seem appropriate to mention that use can be expected to increase once the planned development of the INHT is completed.</p>	<p>KHL appreciates the comment. We have added text to this Section to quantify the term "<i>light</i>".</p> <p>With respect to the development of the INHT and the associated potential for increased recreational use of the area, as previously mentioned, KHL feels it would be speculative to quantify the amount of increased activity that could be expected as a result of the INHT when it is not clear as of yet when the USFS plans on developing and constructing the section of the trail near the Project Area. Recognizing the interest in providing forecasts of future use of the area, the FLA now provides an</p>

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					estimate of future use within the study area.
131	DLA-E-85	6/24/15 letter from ADNR	Section 4.8.1.2.2	ADNR recently issued a final finding for conveyance to the Kenai Peninsula Borough for Units 380g, 380f, and 381 on February 24, 2015. Some areas within the units adjacent to the Seward Highway were conditionally approved, others were rejected (including those along Grant Creek). The Decision and associated maps can be accessed online at http://dnr.alaska.gov/mlx/muni/ .	KHL appreciates the comment.
132	DLA-E-86	6/24/15 letter from ADNR	Section 4.8.1.3	Commemorative routes are allowed for segments of a national historic trail, per the National Trails Act. As a result, a determination of significant interference from BLM may be required for the INHT under the Act, and for the title encumbrances and citation authorities included in the patent from the BLM to the State. Please contact the federal trail administrator to request a decision on whether this review will be required.	KHL appreciates the comment.
133	DLA-E-87	6/25/15 letter from USFS	Section 4.8.1.3	<p>In general, the Forest Service concurs with comments made by the Alaska Department of Natural Resources that were submitted to FERC on June 23, 2015. Specifically, related to the Iditarod National Historic Trail (INHT), the Forest Service reiterates the comments made in these sections: 4.8.1.3 Iditarod National Historical Trail [INHT], 4.8.2.1.7 Recreational Opportunities, 4.8.2.3 INHT, 4.9.2.2.4, and 4.9.2.3.1.</p> <p>The Grant Lake Hydro project proposes development of a vehicular road that would directly overlay or generally parallel the Iditarod National Historic Trail (INHT) Easement. The Grant Lake project also proposes development of a Powerhouse, and Tailrace Detention Pond at the location of a planned INHT pedestrian bridge crossing of Grant Creek. National Historic Trails are established under the National Trails System Act (P.L. 90543, as amended through P.L. 11111, March 30, 2009).</p> <p>National Trails in Alaska are considered a Conservation System Unit (CSU) under the Alaska National Interest Lands Conservation Act (ANILCA). When a transportation or utility system (TUS) is proposed within a CSU, each Federal agency having jurisdiction must follow the requirements of Title XI of ANILCA. Sections 1104 and 1107 of Title XI describe the procedural requirements that apply. Section 1106 describes the decision-making process for final approval or disapproval by the agencies.</p>	KHL appreciates the comment. With specific respect to the proposed INHT and as documented in the FLA, KHL has taken significant steps to collaborate with appropriate stakeholders. KHL has proposed to develop an alternate route through the Project area that would increase the user experience. KHL is committed to ensuring that the INHT provides a high quality user experience and provides beneficial use characteristics once it is designed and built.

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				<p>FERC is the lead federal agency with responsibility for preparing the National Environmental Policy Act (NEPA) document. An environmental impact statement is required for a TUS in a CSU. Upon completion of the EIS, each federal agency will make its decision regarding its authorization and include detailed findings as required by Section 1104(g) of Title XI. Section 1104 (g) (2) identifies eight specific criteria that must be considered before a federal agency makes a decision and Section 1107 (a) specifies terms and conditions that must be included in an authorization. Section 1104 also requires the Federal agencies to hold hearings on the EIS in Alaska and Washington, D.C.</p> <p>Title XI requires that an applicant apply to the appropriate federal agencies for an authorization for the TUS. KHL must submit an application to the Forest Service and the Federal Energy Regulatory Commission on form SF-299 along with the substantial evidence outlined in Section 1104 (g) (2) that is needed by the agencies to make a decision.</p> <p>While the INHT through the Vagt Lake / Grant Lake area is on State of Alaska land, development of this INHT segment is being performed by the Forest Service under an easement issued by the State of Alaska Department of Natural Resources (<u>Final Finding and Decision</u>, ADL 228890 Grant of Public Easement Iditarod National Historic Trail Seward to Girdwood, 2004). The DNR decision stipulates the reservation of "a 1,000-foot-wide corridor which will provide a buffer with enough width to, a) conserve the wilderness characteristics of the Iditarod Trail, b) provide enough width to separate conflicting uses such as motorized and non-motorized uses in areas where multiple uses are recommended, and c) allow for development of future compatible trail facilities."</p> <p>The issue to be addressed is the access road location. The Recreation Resources Study Report is correct in that discussions of a reroute of the INHT easement are ongoing with state and federal agencies, and other stakeholders. Further analysis and discussion will be required to assess the effects to the Iditarod National Historic Trail and the public use and development scale of the proposed road to Grant Lake. Until this analysis</p>	

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				<p>and review of alternative routes is completed, it seems inappropriate to describe the benefits or deficiencies of the alternative routes.</p> <p>The Chugach National Forest has identified the following general issues regarding any alternative to the reroute of the INHT for the Grant Lake Hydro Project as currently proposed:</p> <p><u>Quality Recreation Experience:</u> Development and provision of a single-track trail that provides a high quality backcountry recreation experience through a predominantly unmodified setting of high scenic value. The road and substation, as proposed, would substantially alter and compromise the desired INHT recreation experience.</p> <p><u>Cost:</u> The Forest Service has invested significant time and resources to locate an alignment of the INHT through this area (which provides challenging topography and limited alignment options) that meets INHT management objectives. Even if an alternate location that meets management objectives could be found, by provision of the DNR Final Finding and Decision, the cost of identifying and developing a new alignment (including any increase in construction cost), would be borne by the proponent.</p> <p><u>Sustainable Trail:</u> The INHT trail alignment is intended to provide a sustainable trail that meets the INHT management objectives and Forest Service design parameters, while minimizing long-term maintenance needs, and avoiding or minimizing negative impacts to other resources. Any revised alignment would need to fulfill the same objectives.</p>	
134	DLA-E-88	6/17/15 letter from FERC	Sections 4.8.1.2.3 and 4.8.2.2	Section 4.8.1.2.3, <i>Chugach National Forest Revised Land and Resource Management Plan</i> , of the draft license application states that the areas north and east of the lake are managed as backcountry, and that the Grant Lake/Ptarmigan unit is designated for motorized use. However, section 4.8.2.2, <i>Land Use</i> , states that backcountry areas are only available for non-motorized recreation. Please clarify these statements and consider providing maps if possible.	KHL appreciates the comment and has revised the text to clarify the statements in question.

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135	DLA-E-89	6/25/15 letter from USFS	Section 4.8.1.2.3	The National Forest portion of the project area is located in the Kenai Mountains Roadless Area. The effects of the proposed project on the Roadless character should be fully analyzed, including vegetation clearing along the shoreline of Grant Lake. The Secretary of Agriculture has reserved decision authority on projects within Inventoried Roadless Areas.	KHL appreciates the comment. Given the character and coverage of the area near the lake on USFS land where the access road will be located for the intake, minimal to no clearing will occur as a result of Project construction.
136	DLA-E-90	6/17/15 letter from FERC	Section 4.8.1.2.3 and 4.8.2.2.	Clarify the contradictory statements in Sections 4.8.1.2.3 and 4.8.2.2 about areas designated backcountry and motorized or not; consider providing maps if possible.	KHL appreciates the comment and has clarified the text.
137	DLA-E-91	6/25/15 letter from USFS	Section 4.8.2.1	Conclusions on recreational use of the National Forest System lands in the vicinity of Grant Lake can't be reached based on two visits as described in the Recreation Resources Study Report. The inaccuracies and omissions mentioned should be corrected and further study should be undertaken to more accurately characterize this recreational use of National Forest System lands in the vicinity of Grant Lake. Further analysis and discussion will be required to assess the effects to the Iditarod National Historic Trail and the public use and development scale of the proposed road to Grant Lake. We are also concerned about how the proposed buildings, fluctuating lake level, and power distribution lines will affect the visual integrity of the CNF in this area.	<p>KHL appreciates the comment. With specific respect to the proposed INHT and as documented in the FLA, KHL has taken significant steps to collaborate with appropriate stakeholders. KHL has proposed to develop an alternate route through the Project area that would increase the user experience. KHL is committed to ensuring that the INHT provides a high quality user experience and provides beneficial use characteristics once it is designed and built.</p> <p>Beyond being able to state that our proposed re-route location would enhance the recreational user experience of the trail when constructed (positive impact), it would be speculative to quantify any other impacts associated with the trail configuration until further specificity related to trail development and timing for implementation are decided.</p>

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					As the comment pertains to the public use of the proposed road and per additional input from the public and discussions with agency representatives, KHL has chosen to restrict public access in the area via Project developed routes. This is documented in the FLA.
138	DLA-E-92	6/17/15 letter from FERC	Section 4.8.2.1.1	Section 4.8.2.1.1, <i>Winter Use</i> , of the draft license application indicates that snowmobiling on Grant Lake during the winter is possible. Please provide the approximate dates when sufficient ice cover is present on Grant Lake to support snowmobiling.	KHL appreciates the comment. Snowmobile use ranges widely in the study area, owing to drastic variations in ice accumulation sufficient to support snowmachines. Typically, snowmachine use ranges from late November till March. Use is not necessarily limited by freezing of the Grant Lake surface, but by freezing of Upper/Lower Trail Lakes which provide the best access to Saddle Trail and the Grant Lake Trail.
139	DLA-E-93	6/25/15 letter from NPS	Sections 4.8.2.1.1 and 4.8.2.1.2	KHI does not describe the likely increase in recreational use in the area over the next 30-50 years even if the project is not built. It is necessary to predict these increases, and changes in activity types and sought-after experiences, in order to fully describe the project's baseline conditions.	KHL appreciates the comment. Predictions beyond near term are highly speculative and are related to many things including highs and lows of independent travel as well as changing preferences of residents and visitors. We have provided text that addresses the magnitude and range of possible use given the proposed construction of the INHT through the area and historic trends.
140	DLA-E-94	6/25/15 letter from NPS	Section 4.8.2.1.3	KHI states on p. E-353 <i>"It is not expected that sightseeing flights will be affected by the Project."</i> What about the extensive new infrastructure associated with the project, including a mile-long 100' wide cleared road to the	KHL appreciates the comment. Flight routes begin in a developed setting and for the route typically flown,

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				intake, another mile-long 150' wide clearing for the road and T-line to the Seward Highway, the powerhouse, and a five-acre detention pond? Presumably most flight-seers come to the Kenai Peninsula from more populous areas, seeking vistas of undeveloped landscapes. Post project, however, they will see extensive areas of cleared forest, new roads, a transmission line, a powerhouse, and, depending on project operations, a "bathtub ring" along the shores of Grant Lake.	<p>planes takeoff and turn eastbound far before reaching the proposed project site. The planes will have views when inbound, but they are approaching over an active road and utility corridor, into a developed setting. There will be no diminution of overall visual resources that passengers have paid to view and the change is insignificant with respect to those resources.</p> <p>With respect to the "bathtub ring," this is a phenomenon that currently occurs based on natural fluctuations of lake levels and the proposed fluctuations will not deviate significantly from that situation.</p>
141	DLA-E-95	6/25/15 letter from USFS	Section 4.8.2.1.3	The description of typical routes seems to indicate the Harding Ice field is in the vicinity of Prince William Sound. This is inaccurate; perhaps the writer is referring to the Sargent Ice field or that flights also continue south and west to view the Harding Ice field.	KHL appreciates the comment however we find it a bit confusing as the Harding Ice Field is not mentioned in Exhibit E.
142	DLA-E-96	6/17/15 letter from FERC	Section 4.8.2.1.4	Section 4.8.2.1.4, <i>Hunting and Fishing</i> , of the draft license application states that hunters gain access to Grant Lake via float plane. Please clarify whether float planes would still have adequate surface area to land on Grant Lake at the proposed project's minimum reservoir elevation of 690 ft msl.	KHL appreciates the comment and has updated the text to clarify the statement. The ability for float planes to land on Grant Lake will not be impacted as a result of Project operations.
143	DLA-E-97	6/17/15 letter from FERC	Section 4.8.2.1.5	Section 4.8.2.1.5, <i>Noise</i> , of the draft license application reports the current noise environment of the proposed project area and estimates how vehicle traffic at the project may affect the baseline noise environment. However, KHL does not report an estimate or provide an analysis on the noise the powerhouse will produce. In the final license application, please provide an analysis for the powerhouse and other project facilities that could produce noise.	KHL appreciates the comment and has updated the text accordingly.

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144	DLA-E-98	6/25/15 letter from NPS	Section 4.8.2.1.5	KHI states on p. E-354 that <i>"the use of Grant Lake by non-motorized users tends to be small to absent in the winter in particular, thus the overall impact [of increased snow machine use due to the project on non-motorized users] to existing conditions would be relatively small."</i> Since KHI did not adequately study non-motorized recreational use of the lake, this statement is not supported. In contrast, numerous residents have stated that they enjoy Nordic skiing on the lake.	KHL appreciates the comment. The report is accurate that on any given day, use is small to absent. This does not deny that it exists, nor that there are users, but use is limited to a small amount of users as evidenced by recordings of users passing cameras, as well as tracks on access trails and the lake itself, particularly as compared with many other locations such as Johnson Trail or Turnagain Pass.
145	DLA-E-99	6/25/15 letter from USFS	Section 4.8.2.1.5	There has not been sufficient study of non-motorized recreational use of the Grant Lake area to describe as "small to absent".	KHL appreciates the comment. Further observations as well as data collected from cameras has shown evidence that use on a given day, use is small to absent. It is true that there are periods of time where there may be more use than at other times. However, as compared with other recreation sites on the Kenai Peninsula, use is small to absent on most days.
146	DLA-E-100	6/25/15 letter from NPS	Section 4.8.2.1.6	The DLA does not mention whether any trail closures would be needed to protect users during the construction phase of the project. Since Alaska's summers are short, and both construction and recreational users will want to access the project area as much as possible, this is an important detail. Please include this in the FLA. Such details are one of the reasons it is desirable to develop a draft Recreation Management Plan prior to licensing.	KHL appreciates the comment. Section 4.8.2.1.6 has been revised to account for trail maintenance and use during Project construction activities.
147	DLA-E-101	6/24/15 letter from ADNR	Section 4.8.2.1.7	Please provide more detailed information on the parking facilities being proposed.	Given KHL's decision to restrict access to the area via Project constructed routes, KHL proposes no public parking areas.

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148	DLA-E-102	6/24/15 letter from ADNR	Section 4.8.2.3	<p>ADL 228890 is a 100' public access easement issued to the Chugach National Forest, within a 1000' corridor reserved to the State of Alaska. The management intent and guidelines for this corridor are in Chapter 2 of the KAP, with further definition in the Final Findings and Decision for ADL 228890. While the proposed road would cross the easement and corridor at 90 degrees (which is potentially allowed), the powerhouse and ancillary facilities are within it and conflict with the KAP and ADL 228890. An amendment to the area plan, granted by the Commissioner of the ADNR, would be required to issue an authorization for this project without the relocation of the trail easement and corridor. The Final Findings and Decision for ADL 228890 does address potential relocations of this trail:</p> <p style="padding-left: 40px;">Any relocation in size or relocation of the trail easement would be done in consultation with the USFS and at the sole expense of the party requesting the relocation. Any relocation shall provide continuous uninterrupted trail easement consistent with the 1986 Comprehensive [Management] Plan for the INHT and protect the capital investment of trail construction and facilities should relocation be needed.</p> <p>Kenai Hydro would need to formally request the relocation of the INHT, ADL 228890. Per ADL 228890, a relocation would be at the sole expense of Kenai Hydro (including any survey requirements) and must adhere to the KAP, the Comprehensive Management Plan for the INHT, and the Final Finding and Decision for ADL 228890. If a relocation is granted, it would require that the 1000' buffer be intact, that the wilderness characteristics of the trail are conserved, and the conflicting uses be done in coordination with ADNR, Chugach National Forest, and the Kenai Peninsula Borough (KAP and ADL 228890).</p>	<p>KHL appreciates the comment. A comprehensive description of the level of effort taken by KHL to reach a collaborative agreement on an acceptable re-route of the commemorative INHT (once constructed is located in Table E.2-2 and Sections 4.8.23 and 4.8.3.3 of Exhibit E.</p> <p>With specific respect to the proposed INHT and as documented in the FLA, KHL has taken significant steps to collaborate with appropriate stakeholders. KHL has proposed to develop an alternate route through the Project area that would increase the user experience. KHL is committed to ensuring that the INHT provides a high quality user experience and provides beneficial use characteristics once it is designed and built.</p>
149	DLA-E-103	6/17/15 letter from FERC	Section 4.8.3.1	<p>Section 4.8.3.1, <i>Recreation</i>, states that a Public Safety and Access Plan (PSAP) will be submitted with the final license application, if public access is determined to be warranted. However, the description of the PSAP is more in line with a traditional Recreation Management Plan (RMP). A traditional public safety plan is separate from a RMP and generally filed post-licensing with the Commission's Division of Dam Safety and Inspections (for guidance on preparing public safety plans you may review the Guidelines for Public Safety at Hydropower Projects on the FERC website).² To reduce confusion</p>	<p>Given the recent decisions made to restrict public access to the area via Project developed routes, KHL will not be proposing to develop a PSAP.</p>

² <http://www.ferc.gov/industries/hydropower/safety/guidelines/public-safety.pdf>.

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				once the final license application is filed, please refer to the plan managing recreation (including the identification of recreation sites, recreation facilities, recreation amenities, recreation monitoring, and rules and regulations regarding recreation) as a RMP.	
150	DLA-E-104	6/17/15 letter from FERC	Section 4.8.3.1	<p>Section 4.8.3.1, <i>Recreation</i>, also describes a number of possible environmental measures for recreation and land use at the project, but stops short of proposing any specific measures. If KHL decides to propose any of these possible environmental measures in its final license application, specific items that should be addressed include:</p> <ol style="list-style-type: none"> (1) Will boat access to Grant Lake be provided? If so, will access be provided for motor boats or car top boats only? (2) If parking will be provided, where will it be located and how many spots will each lot contain for single cars and cars with trailers? (3) Will access to the project be limited by season? If so, what season(s) will access be limited and how will access be limited? If access is limited, and if a gate will be used, where would the gate be placed? (4) Will there be pull-offs along the access road? If so, what are the number, location, and size of the pull-offs? (5) Will restrooms be provided? If so, please describe the type and seasonal availability. (6) Will signage and interpretation be located at the project? 	KHL appreciates the comment. KHL has chosen to restrict public access in the area via Project developed routes. This is documented in the FLA.
151	DLA-E-105	6/25/15 letter from NPS	Section 4.8.3.1	<p>Why was KHI unable to develop the draft PSAP sooner, so that it could be filed with the DLA instead of the FLA? The TLP consultation requirements for recreational resources are no different than for other resources. NPS does not understand why it was not within KHI's ability to develop this important plan, and associated proposals to make project lands available (or not) for recreational access, provide new recreational facilities, etc., sooner in the process. We note that had a Recreation and Aesthetics TWG been formed to consult with KHI on this and other issues, it would likely have been possible to disclose alternatives for public comment and narrow down the range of likely scenarios for public access sooner.</p>	<p>Given the recent decisions made to restrict public access to the area via Project developed routes, KHL will not be proposing to develop a PSAP.</p> <p>It is important to note that the development of any sort of management plans is not required per the process at this point. KHL chose to proactively develop these documents in an effort to be as collaborative and comprehensive with it FLA as possible.</p>

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152	DLA-E-106	6/17/15 letter from FERC	Section 4.8.3.3	In section 4.8.3.3, <i>INHT</i> (Iditarod National Historic Trail), KHL states their willingness to bear the costs of any expenses related to trail construction that would exceed that necessary for the existing alignment of the INHT, and also states a willingness to address re-platting of the easement as necessary to provide the trail alignment and the associated 1,000-foot wide easement. However, the draft license application does not include an estimated cost for these potentially proposed measures. In the event KHL deems it appropriate to propose these measures in the final license application, it should also include detailed cost estimates for the construction and/or maintenance of the INHT, including any necessary infrastructure (e.g., bridges, parking areas, signage, etc.) in section 4.12.2, <i>Cost of Environmental Measures</i> . Additionally, the draft license application is unclear on whether or not a parking area would be included to provide access to the INHT, and whether the INHT would be considered a project recreation asset or non-project use of project lands. Please clearly state in the final license application whether KHL proposes to consider the INHT as part of the project's recreation.	KHL appreciates the comment. Per previous responses and as explained in the FLA, a comprehensive description of the level of effort taken by KHL to reach a collaborative agreement on an acceptable re-route of the commemorative INHT (once constructed is located in Table E.2-2 and Sections 4.8.2.3 and 4.8.3.3 of Exhibit E. With specific respect to the proposed INHT and as documented in the FLA, KHL has taken significant steps to collaborate with appropriate stakeholders. KHL has proposed to develop an alternate route through the Project area that would increase the user experience. KHL is committed to ensuring that the INHT provides a high quality user experience and provides beneficial use characteristics once it is designed and built.
153	DLA-E-107	6/25/15 letter from NPS	Section 4.8.4	KHL has not addressed the potential for displacement of current recreational users from the project area to other locations as a result of the project. This issue should be addressed in the FLA.	KHL appreciates the comment. KHL has provided additional discussion of displacement issues in the FLA. .
<i>Aesthetic Resources</i>					
154	DLA-E-108	6/25/15 letter from NPS	N/A	With respect to aesthetic resources, NPS has two main comments. First, the project area's soundscape was apparently surveyed on only two days (the same March and July dates upon which the winter and summer recreation study was based), using a hand-held monitor, at a very limited number of locations. The DLA provides no information about whether the monitor was adequately calibrated, what its sensitivity and accuracy was, or exactly where the samples were taken, or their duration. Based on this, it is impossible to determine	KHL appreciates the comment. While no calibration was completed, the readings were commensurate to what would be expected at the distances recordings were made from roadways and operating vehicles. If this were a project the size of the contemplated

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				<p>whether the sampling methods used resulted in reliable data. NPS notes that on a proposed major original hydropower project in Alaska, the Susitna Watana project, P-14241, multiple fixed monitors that operate continuously over many months have been used to sample the project area's soundscape baseline. While Grant Lake is a far smaller project in a less remote location, nonetheless measurements taken for a least a few days during summer and winter in locations where recreational use is likely to coincide with the location of project facilities (e.g. the project road and powerhouse) would have done much to ensure an accurate baseline against which the impacts of project construction and operation could be assessed. In the absence of such data, it will be difficult if not impossible to develop 10(a) recommendations.</p>	<p>Watana Dam Project, more empirical study might be warranted. However, given the setting, the proximity to an active motorized corridor, the amount of motorized use of Kenai Lake and Upper/Lower Trail Lakes, the samples that were taken were appropriate to the level of analysis needed, relative to the project facilities and their placement.</p>
155	DLA-E-109	6/25/15 letter from NPS	N/A	<p>Second, NPS takes issue with the identification of the Key Observation Points (KOPs) used to collect baseline visual resource data and to assess the project's impacts. Contrary to commitments made when the project was first initiated and use of the TLP was approved, and contrary to KHI's statement on p. E-338 of the DLA that input on KOP locations was sought from agencies and stakeholders, NPS was never contacted about this. To NPS's knowledge, a functioning Recreation and Aesthetics TWG was never formed. Discussions of these resources at project meetings with resource agency staff, including comments on scope of studies, proposed methods, and preliminary results, were brief, and despite requests made at these meetings by the Forest Service, NPS, and others, no separate conference calls were scheduled (or if they were, NPS was not notified) to go over the details of the aesthetics studies. As a result, the project's visual resource assessment work was based on too few KOPs located in the wrong areas.</p> <p>For example, none of the four KOPs included the falls or cascades immediately below the outlet of Grant Lake. While few people currently view this scenic feature in summer because there is at present no trail to the area, the number of current winter viewers is unknown because use at this location does not appear to have been studied. Also, over the life of a 30-50 year license, it is possible, even likely, that a trail to a feature like this will be constructed, especially once the INHT is in place.</p>	<p>KHL appreciates the comment. KHL provided a review of the key view simulations in the work plan with a review of them at the coordination meeting held December 12, 2012. We identified, "1 air, 2 summer, and 1 winter simulations to be provided of primary facilities, and 1 of transmission line and access road." This was discussed with all those present. The study plan employed the key view analysis to those views that had the impact on the greater part of the recreating public. The number of views to the Project area is highly limited due to natural conditions and the key views captured those locations.</p>

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156	DLA-E-110	6/25/15 letter from Mark Luttrell	N/A	<p><u>Aesthetic Resources</u>. KHL’s study of visual resources provides an academic overview of how visual impacts are assessed but fails to gain any insight into the value of scenery to user groups.</p> <p>Three user groups are identified - residents, tourists and flight seers. Flight seeing, it should be noted, is probably not a large user group though how significant, is not identified by KHL. A more significant user group are passengers on the Alaska Railroad (ARR). The study correctly notes that drivers are exposed to scenery (natural or disrupted) for only seconds. But ARR passengers enjoy longer periods of exposure and take the train specifically to enjoy the view. Yet the viewshed conditions and impacts from the passenger’s view point are not considered.</p>	<p>KHL appreciates the comment. The aesthetic resources study employed accepted methods of evaluating scenery that have been employed by the BLM, USFS, and in many studies of similar scope and scale..</p> <p>With respect to flightseers, this is a user group worthy of analysis based on both the values they have and the numbers of individuals who choose to partake of this activity.</p> <p>With respect to ARRC passengers, they are exposed to the Project for mere seconds but within this corridor are parallel to an active roadway for as much as an hour or more from their travel to and from Seward.</p> <p>Text has been amended to account for views from the ARR.</p>
157	DLA-E-111			<p>The study identifies four key views (DLA E-376). The number, location and season of examination is too limited to provide an understanding of impacts. More views that reflect actual experience by viewers should be considered, especially at the Vagt Lake trailhead, points within/on Lower Trail Lake, on Grant Lake and from several points along the railroad and Seward Highway. All views should be assessed during full foliage and during the winter.</p> <p>Specifically, key view 1 isn’t relevant but accurately mentions that driveways are a common feature along the highway. Key view 2 is from the air, not a common viewpoint plus the photo doesn’t show the surge tank, transmission lines, the entire access road or detention pond. It is incomplete and irrelevant. Key view 3 presents only one of many possible views from the highway. Key view 4 is relevant and helps viewers understand anticipated changes.</p>	<p>KHL appreciates the comment but feels that these views are representative of primary key views in the Project Area.</p> <p>Key view 1 is relevant with respect to what might be viewed from a major viewing platform, the Seward Highway which is a designated National Scenic Byway. Likewise with Key View 3. In reality, there are few views to the project from the Seward Highway and as mentioned by the commenter, this is one of them.</p>

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					<p>Key view 2 was specifically requested by agencies and the detention basin and access roadway are shown as are project facilities.</p> <p>Additional modeling of existing images is provided in the FLA to address the surge tank size and the transmission line.</p>
158	DLA-E-112			<p>The access road will require a bridge, yet the visual impact is not addressed. The visual disturbance of the above-ground transmission line which KHL prefers (DLA E-11) was not addressed at all. It doesn't appear in any of the key views. Nor does the 95 foot tall surge tank, certainly visible from a distance, get any attention.</p>	<p>KHL appreciates the comment. The bridge is not visible from key views though text identifies locations at which views could be available. Additional modeling of existing images is provided in the FLA to address the surge tank size and the transmission line. It should be noted that the surge tank height is the height from the penstock invert elevation, not from the ground.</p>
159	DLA-E-113			<p>KHL claims that Project's intake structure and the access road would be unseen by those along the lakeshore and surface of Grant Lake (DLA E-375). This is incorrect. The intake structure, access road, parking lot and security lights would be visible from nearly any point of Grant Lake's western leg. (Incidental to the discussion of visual impact, KHL also reveals its failure to understand the recreational uses of Grant Lake by claiming that boaters gain lake access by packraft and airplane. Most summertime boaters use canoes. At least six canoes and one Zodiac inflatable boat stashed on the shoreline are known to exist. Additionally, the study mentions that "[project components] would be seen in the middleground for those who hike around the lake". Because the shoreline is choked with deadfall, no one hikes around the lake.)</p>	<p>This comment is inaccurate and incomplete. Per the FLA, the actual statement being referred to is, <i>"Project components that would be located within the area would include the Project's intake structure and the access roadway, located at the southerly most portion of the lake, near the Grant Lake outfall. These components would generally be unseen by those along the lake shore. The intake structure would be seen by boaters who currently gain access via packraft or</i></p>

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					<p><i>plane. It would be seen in the middleground for those who hike around the lake and can view the outlet of the lake to Grant Creek. Aircraft would be able to see the structures as well though the exposure time would be limited.</i></p>
160	DLA-E-115			<p>Apart from the impact to visual resources from the infrastructure is the impact on the shoreline of Grant Lake. A drawdown of 13 feet vertically could translate to an enormous horizontal exposure of shoreline, especially at the east end of the lake where it is presumed to be more shallow. KHL claims that “the lower level attributed to KHL would persist for more periods of time though the character would be similar to that of historic patterns, perhaps slightly pronounced”. “Slightly pronounced” is at best an understatement. Visitors to the lake in the fall and early winter will see a significantly changed, more exposed and scoured view of the shoreline and lake bed as a result of the drawdown.</p> <p>KHL mentions that a “change in lake level could provide evidence of vegetation die back as the vegetation adapts to changing lake levels” (DLA E-382) though fails to mention if this alleged dieback is aquatic, nor its location, species and extent. But KHL does admit this: “This vegetation as it dies, or the remaining shoreline as the lake level changes, would provide an expanded shoreline around the lake. While this could occur, there are currently natural seasonal fluctuations at the shoreline edge and during drought conditions the shoreline currently is visible as an exposed edge, thus the possible shoreline expansion would be an increase to the visibility of the shoreline rock edge, not a new condition”. This adverse effect is grossly understated. The horizontal expression of a historically unprecedented 13 foot drawdown would very much be a new condition. It will provide a version of a bathtub ring and a significant change to recreation patterns. It will be extraordinarily visible and be used as a recreation corridor. KHL then claims that the rock edge will be “visible to those traveling by foot but less conspicuous to those traveling over the area by plane. This would be a minor change to the shoreline landscape”. This is exactly opposite of what is expected. Those traveling by air would see the entirety of the changed landscape. They’d see the contrast between the snow</p>	<p>KHL respects all perspectives related to the development of the Grant Lake Project. As described in the FLA, our environmental study results, associated impact assessments and infrastructural design represent an efficient, environmentally conscious project that will provide renewable energy for years to come for Alaskans.</p>

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				covered terrestrial edge and the bare and exposed “rock edge”. But, oddly, by KHL’s own admission, “there is little small aircraft traffic in the winter” (DLA E-363).	
161	DLA-E-116			Most of the components of the industrial facility will be visible throughout the winter but will be made especially so by the presence of security lighting. Nowhere in the DLA is the location and impact of lighting adequately addressed though the topic is dismissed with “there should be little indication of lighting, if any, that would compromise the dark skies visible from key viewpoints or from any locations near Moose Pass “(DLA E-384).	KHL appreciates the comment. KHL does not intend to light the facility except when workers are on-site which should be sporadically. Because of the location of the facility within a ravine/valley that is largely composed of spruce trees in much of the major part of the Project development, the Project will not be visible. Unless travelers on the ground hike up the road to the facility which per previous comment response and the FLA will be restricted.
162	DLA-E-117			Astonishingly, the aesthetic resources study concludes with, “no negative cumulative effects were identified associated with aesthetic resources. Given that the local area is heavily forested, visual anomalies associated with Project construction and operation would be minimal to non-existent from the local community of Moose Pass (see Figure E.4-112). Any Project impacts would be localized and unseen by most viewers” (DLA E-385). No thoughtful reviewer could come to that conclusion.	KHL appreciates the comments but disagrees with the conclusion. See previous comment for additional detail.
163	DLA-E-118	6/25/15 letter from USFS	Section 4.9	Effects of project construction, facilities and operation on the aesthetic values of the project area should also consider aerial views. Trail Lake provides a base for commercial and noncommercial flightseeing activities.	Aerial views are considered throughout Section 4.9 of Exhibit E.
164	DLA-E-119	6/25/15 letter from NPS	Section 4.9.1.1	Were any actual viewers interviewed to confirm this section's findings, or are they solely based on professional judgment?	KHL appreciates the comment. Analysis uses techniques commonly used in visual impact analysis and relies on view lines, topography, and impact relative to the context of setting and use. The FLA provides information on extensive survey work that was provided from the Cooper Lake Relicensing Project which

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					characterized user expectations for a similar project in a nearby community.
165	DLA-E-120	6/25/15 letter from NPS	Section 4.9.2.1.1	The DLA states that viewers would "possibly" see transmission lines. Presumably this section of text was written before KHI decided on overhead rather than buried transmission and power lines, as described in the project summary narrative. This section should be revised to acknowledge that the power line from the intake to the powerhouse and the transmission line from the powerhouse to the highway will be overhead.	KHL appreciates the comment and has revised text in the FLA to document this decision.
166	DLA-E-121	6/25/15 letter from ADNR	Section 4.9.2.2.1	Key View I: Access Road from Seward Highway -- The photo rendering of this viewpoint does not take into account a viewer's ability to turn and look down the new road intersecting the right hand (eastern) side of the highway once the viewer draws abreast with it. This tends to underestimate project impacts. Please include a more accurate rendering in the FLA, i.e. a view from the Seward Highway down the 150' wide clearing for the new access road.	KHL appreciates the comment. The image represents the primary view that the traveling public would have of the access roadway. This represents a possible exposure period of as much as ¼ mile, or approximately 15 seconds. It does not deny that passengers might look down the corridor to the east, however, the exposure of those viewers to that clearing and roadway assumes travel speeds of approximately 50mph, producing a possible exposure time of 2 seconds.
167	DLA-E-122	6/24/15 letter from ADNR	Section 4.9.2.2.4	Assumes that the reroute of the INHT will occur, as only the road and trail are discussed and not the powerhouse and ancillary facilities that would block the trail.	KHL appreciates the comment. With specific respect to the proposed INHT and as documented in the FLA, KHL has taken significant steps to collaborate with appropriate stakeholders. KHL has proposed to develop an alternate route through the Project area that would increase the user experience. KHL is committed to ensuring that the INHT provides a high quality user experience and

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					provides beneficial use characteristics once it is designed and built.
168	DLA-E-123	6/25/15 letter from NPS	Section 4.9.2.2.4	<p>This (Figure E.4-113) rendering lacks the additional cleared width now proposed to accommodate an overhead transmission line, and the transmission line itself. The actual cleared ROW is proposed to be 150' wide; the rendering version seems narrower. Like the rendering of the Seward highway view, by showing what the intersection looks like as one approaches it, rather than as one arrives at the intersection and turns one's head, the rendering presents project impacts in the best possible light. For those on foot, skis, bikes or snow machines in particular, this is not a realistic view. They are not inside a vehicle with somewhat restricted lateral visibility, and are not traveling at highway speeds. They are instead very likely to pause as they cross the road, and look up and down it. Please include a rendering of this view in the FLA.</p> <p>The FLA should also include details of the transmission line route, and renderings of it at various points along the access road. Will it be possible to site the line to minimize visual impacts, e.g. taking into consideration grade changes, nearby forest types, etc.?</p>	KHL appreciates the comment. The FLA has been revised to recognize this change.
169	DLA-E-124	6/24/15 letter from ADNR	Section 4.9.2.3.1	The latest maps that DNR has of the INHT and project facilities has the trail going down the edge of the detention basin and through the middle of the powerhouse. Has the powerhouse been moved? The structure would not only be seen by hikers, they would have to traverse it.	The proposed location of the powerhouse has not been moved. The current route of the INHT that the USFS is referring to is the currently afforded easement. Per previous comment responses and as explained in the FLA, a comprehensive description of the level of effort taken by KHL to reach a collaborative agreement on an acceptable re-route of the commemorative INHT (once constructed is located in Table E.2-2 and Sections 4.8.23 and 4.8.3.3 of Exhibit E.

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					With specific respect to the proposed INHT and as documented in the FLA, KHL has taken significant steps to collaborate with appropriate stakeholders. KHL has proposed to develop an alternate route through the Project area that would increase the user experience. KHL is committed to ensuring that the INHT provides a high quality user experience and provides beneficial use characteristics once it is designed and built.
170	DLA-E-125	6/25/15 letter from NPS	Section 4.9.2.3.1	Construction period visual impacts — will no materials need to be staged near the highway, along the new road, or in other areas visible to recreational users during the construction period? If not, where will materials like power poles and building materials be stored? Where will borrow pits or debris stockpiles be located? Please provide more detail in the FLA.	KHL appreciates this comment and has added additional detail to this section to describe the short-term visual impacts that will be associated with Project construction.
171	DLA-E-126	6/17/15 letter from FERC	Section 4.9.3	In section 4.9.3, <i>Proposed Environmental Measures</i> , the draft license application states that most construction work would be conducted during the summer months to reduce or eliminate light intrusion. If preventing light intrusion is important during the construction phase, it is likely to also be important during the operation phase of the project. However, section 4.9.2.3.1, <i>Project Effects</i> , does not discuss environmental effects associated with light intrusion/pollution during project operation. The final license application should address this potential concern and if appropriate, section 4.9.3 of the final license application should describe any measures proposed to address light intrusion/pollution during project operation. .	KHL appreciates the comment and the text referenced in the comment has been removed as it was not intended to imply that light intrusion was anticipated to be a significant issue. Rather, given the geography and canopy cover present in the Project area, it is anticipated that the minimal lighting need associated with both Project construction and operations will be minimally visible at worst.
<i>Cultural Resources</i>					
172	DLA-E-127	6/25/15 letter from USFS	Section 4.10.1.1	The survey and report are thorough and document cultural resources within the Area of Potential Effects (APE). We anticipate further discussion regarding the determinations of eligibility and finding of effect during our formal review of the determinations for historic properties in the coming	KHL appreciates the comment.

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				months. As for the proposed INHT reroute, our main concern is adding the reroute to the APE and surveying for cultural resources as potential re-routes are proposed. The Forest Service is in concurrence with the SHPO comments to the DLA.	
<i>Socioeconomics</i>					
173	DLA-E-128	6/25/15 letter from USFS	Section 4.11	The project effects on subsistence use should include rural residents. Section 811 of the Alaska National Interest Lands Conservation Act (ANILCA) requires that rural residents engaged in subsistence uses have reasonable access to subsistence resources on public lands. The subsistence analysis will need to include a distinct finding on whether the proposed action may significantly restrict access to subsistence. The communities of Cooper Landing and Hope have customary and traditional use determinations for subsistence fishing, and moose/caribou hunting in the Grant lake area.	KHL appreciates the comment and has revised the text accordingly.
174	DLA-E-129	6/25/15 letter from USFS	Section 4.11.1.1	<p>Most of the proposed project facilities are located on State of Alaska lands. However, project facilities, such as impoundments, on National Forest System lands will require special use authorization from the Forest Service prior to construction. Authorization for use of federal right-of-ways or easements, such as use of the Crown Point Mine Road and the INHT must also be obtained.</p> <p>The proposed constructed facilities are generally located on State of Alaska lands. These lands were patented to the State of Alaska under the Alaska Statehood Act on September 21, 1992. The Forest Service retained reservations and easements for continued public access to National Forest System lands. The United States reserved a 60-foot wide road easement on the Crown Point Road. Reconstruction and use of the Crown Point Road would require Forest Service authorization.</p> <p>The Forest Service has been granted a 1000-foot wide trail easement from the State of Alaska for the INHT. Any use on or adjacent to the land encumbered by the easement must not unreasonably interfere with the rights granted to the United States. The United States, acting by and through the USDA Forest Service, is responsible for the administration of the easement including the right to regulate occupancy and use.]</p>	<p>KHL appreciates the comment. With respect to the INHT issue, per previous responses and as explained in the FLA, a comprehensive description of the level of effort taken by KHL to reach a collaborative agreement on an acceptable re-route of the commemorative INHT (once constructed is located in Table E.2-2 and Sections 4.8.23 and 4.8.3.3 of Exhibit E.</p> <p>With specific respect to the proposed INHT and as documented in the FLA, KHL has taken significant steps to collaborate with appropriate stakeholders. KHL has proposed to develop an alternate route through the Project area that would increase the user experience. KHL is committed to ensuring that the INHT provides a high quality user experience and</p>

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					provides beneficial use characteristics once it is designed and built.
<i>Developmental Analysis</i>					
175	DLA-E-130	6/17/15 letter from FERC	Section 4.12.2	Supporting information for proposed mitigation measures, including information on costs and schedules, is not included in the draft license application and should be incorporated into section 4.12.2, <i>Cost of Environmental Measures</i> , in the final license application.	KHL appreciates and understands this comment. Per communications with FERC during the DLA development process, it was conveyed that certain components related to the regulations mentioned would be absent from the DLA and/or present in the management plans at the draft phase and would be incorporated into the FLA once additional development took place and comments were reviewed from stakeholders; costs and schedules associated with proposed enhancement and mitigation measures are included in the FLA.
<i>Consistency with Comprehensive Plans</i>					
176	DLA-E-131	6/24/15 letter from ADNR	Section 4.13	<p>The description states that this section is reviewing consistency with federal and state comprehensive plans in the area, but contains a lot of ADFG plans that are hundreds of miles outside the project area. For ADNR, the following plans are listed:</p> <ul style="list-style-type: none"> i. Fish Creek Management Plan ii. SCORP <p>The Fish Creek Management Plan is in the Matanuska-Susitna Borough and is not on the Kenai Peninsula. Additionally, the KAP and the KRCMP (and designation and agreements) are not listed, but are referenced throughout the document (4.8.1.2.1 and 4.8.1.2.2 for example). Please include a description of the consistency with comprehensive plans for those that apply to the project area. Currently, the two major ADNR plans in the project area are not listed to evaluate for consistency in section 4.13. Additionally, the comprehensive management plan for the INHT should be listed, as it is cited both the KAP</p>	KHL appreciates the comment and has revised the text accordingly to incorporate the KAP and KRCMP into this section.

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				and ADL 228890, which is also referenced multiple times in the license application materials.	
<u>Attachment 1: Consultation Record</u>					
<u>Attachment 2: Aquatic Mapping and Instream Flow Study, Addendum</u>					
<u>Attachment 3: Terrestrial Resources Study, Final Report Addendum</u>					
Exhibit F					
Exhibit G					
MP General Comments					
1	DLA-MP-01	7/15/15 letter from CWA	All MPs	<p>The General public has been provided with a Lack of Adequate time to Comment on the DRMP</p> <p>As part of the DRMP, KHL has distributed a series of documents for stakeholder review and comment. Four documents (Operation Compliance Monitoring Plan, Avian Protection Plan, Vegetation Management Plan (public version) and Biological Evaluation for Plants) were distributed on May 15, 2015. Along with this distribution, additional documents were developed and distributed for appropriate entities to review and comment on based on their privileged or content specific nature (Historic Properties Management Plan, Vegetation Management Plan (Privileged Version), ACOE Section 404 Application).</p> <p>Then on June 1, 2015, KHL distributed the final management plan for review and comment during this phase (Biotic Monitoring Plan). Although stakeholders had 6 weeks to review the initial four management plans sent (Operation Compliance Monitoring Plan, Avian Protection Plan, Vegetation Management Plan (public version) and Biological Evaluation for Plants) and 3 ½ weeks to review the final distribution (Biotic Monitoring Plan), with the to submit comments on the Draft Licensing Application deadline of June 25, 2015, due to the size and difficulties with wading through the DLA1 we had to spend all of our limited resources on reviewing and commenting on that document up until the 25th. In reality, therefore, we had less than 3 weeks to review and comment on the DRMP. This does not provide enough time for all parties interested to review and comment on the suite of management plans KHL has drafted and distributed.</p>	KHL appreciates the comment and level of effort that CWA placed in supplying comments.

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				1 See, Comments of CWA and other Entities on Draft Licensing Application Re: Project P-13212 Grant Lake and Creek, Alaska; Kenai Hydro LLC (June 25, 2015).	
2	DLA-MP-02	7/15/15 letter from CWA	All MPs	<p>The Management Plan Process Excludes Stakeholder Participation</p> <p>In the case of the Instream flow section of the management plan the some total of KHL’s public participation process includes “KHL held a collaborative workshop in Anchorage, Alaska on July 8, 2014 during which, [an]instream flow regime for the bypass reach of Grant Creek (RM 0.5-1.0) was proposed.” 2 This another, example of KHL’s failure to provide adequate notice and opportunity to comment on the planning phase of the Project which has substantially affected CWA and other stakeholder participation in violation of the Federal Power Act and the Commission’s regulations.</p> <p>2 Grant Lake Hydroelectric Project (FERC No. 13212) Operation Compliance Monitoring Plan Draft Kenai Hydro, LLC, p. 12 (May 2015).</p>	To add appropriate context to this comment, the “collaborative workshop” and the associated “instream flow regime” that was proposed were the result of a collaborative effort amongst stakeholders over the course of the entire licensing process to develop an appropriate biological study program, secure requisite permits, implement the approved plans in the field, report back to stakeholders on study results, and discuss potential impacts (positive and negative) to constructing and operating the Project. To single out the individual point in the process that is referenced in the comment is to ignore the significant amount of collaboration and outreach that took place over the course of the entire process.
3	DLA-MP-03	7/15/15 letter from CWA	All MPs	<p>The MP Fails to Show an Adequate Streamflow Management Strategy</p> <p>The some total of KHL’s management strategy for instream flows includes: Water used for power production would be returned to Grant Creek at the downstream end of the Canyon Reach (RM 0.5). For the tailrace reach (RM 0.0-0.5), peak flow events would be reduced in the summer while winter flows would be slightly elevated from pre-Project conditions. From approximately August 16 through October 31, inflow volumes would match outflows downstream of the powerhouse....Although there will be no specific instream flow requirements for the tailrace reach, flows will be monitored to assess the deviation from pre-Project conditions.³</p>	KHL has never claimed that the intent of the Project from an instream flow perspective was to manage the tailrace portion of Grant Creek (Reaches 1-4) consistent with natural conditions. As has been pointed out multiple times, Grant Creek is an extremely “flashy” system whose current natural high flows negatively impact fish production by minimizing the ability for species to successfully utilize the high quality habitat areas on Grant Creek consistently. Primary emphasis

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				<p>The DRMP, therefore, illustrates that KHL has not even come close to developing a strategy for managing toward a natural flow regime. A large body of evidence has shown that the natural flow regime of virtually all rivers is inherently variable, and that this variability is critical to ecosystem function and native biodiversity. Rivers with highly altered and regulated flows lose their ability to support natural processes and native species. Thus, to protect pristine or nearly pristine systems, it is necessary to preserve the natural hydrologic cycle by safeguarding against upstream river development and damaging land uses that modify runoff and sediment supply in the watershed.</p> <p>³ Management Plan at 12.</p>	<p>has been placed on confirming that operational conditions will take off some of the “top-end” flows and provided more consistency in flows over longer periods of time which will facilitate higher levels of successful use (spawning and rearing) or high quality habitat on Grant Creek. Higher winter flows will provide increased salmon rearing, especially in the Reach 2/3 side channels.</p>
4	DLA-MP-04			<p>The DRMP does not address Floodplain Modeling Floodplain functions and ecological processes depend on seasonal and periodic inundation of the floodplain. The floodplain is defined as “...the flat area adjoining a river channel constructed by the river in the present climate and overflowed at high discharge.”⁴ The timing, or predictability, of flow events, is ecologically critical because the life cycles of many aquatic and riparian species depend on environmental cues provided by flow events and are timed to avoid or exploit flows of variable magnitude.⁵</p> <p>The DRMP, therefore, should include floodplain modeling that incorporates the use of a two-dimensional hydraulic models, to compare the unimpaired and current frequency, magnitude and duration of floodplain inundation. KHL should use a two-dimensional model of Grant Creek to determine how much floodplain area is currently accessible. It should then use current and unimpaired hydrology to determine the frequency, duration, and magnitude of floodplain inundation under both scenarios as well as the total area and depth of inundation during the ecologically important spring snowmelt season. Finally, KHL should work collaboratively with stakeholders to define additional, specific ecologically important time periods for floodplain inundation modeling.</p> <p>⁴ Dunne and Leopold 1978. ⁵ Poff <i>et al.</i> 1997.</p>	<p>Throughout the 4 years of collaborative effort with the technical agencies, we have had numerous comprehensive discussions related to natural resource issues and at no time has a study like this been requested.</p>
5	DLA-MP-05			<p>- The DRMP Does not Provide for Managing Toward a Natural Flow Regime</p>	<p>As mentioned in Comment # DLA-MP-03, KHL has never claimed that</p>

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				<p>A large body of evidence has shown that the natural flow regimes of virtually all rivers is inherently variable, and that this variability is critical to ecosystem function and native biodiversity. Rivers with altered and regulated flows lose their ability to support natural processes and native species. Based on the fact, however, that KHL’s proposed operating scenarios do not provide a reasonable range of alternatives, the modeling listed in the DRMP requires a simplification of the riverine system that does not represent the full ecologic complexity of the riverine processes. Thus, to protect Grant Creek’s relatively pristine systems, it is necessary to preserve the natural hydrologic cycle by studying the impacts of Project operations that would modify runoff and sediment supply in the watershed.</p>	<p>the intent of the Project from an instream flow perspective was to manage the tailrace portion of Grant Creek (Reaches 1-4) consistent with natural conditions. As has been pointed out multiple times, Grant Creek is an extremely “flashy” system whose current natural high flows negatively impact fish production by minimizing the ability for species to successfully utilize the high quality habitat areas on Grant Creek consistently. Primary emphasis has been placed on confirming that operational conditions will take off some of the “top-end” flows and provided more consistency in flows over longer periods of time which will facilitate higher levels of successful use (spawning and rearing) or high quality habitat on Grant Creek. Please also refer to response to Comment DLA-E-35.</p>
6	DLA-MP-06			<p>As a result, we agree with the Commission, itself notes that in relation to the impacts of the Project on spawning habitat: “Given the above, we find the BMP unclear. It appears that the need for gravel augmentation has not yet been determined, although it is stated that spawning substrate is naturally limited within Grant Creek...The BMP should articulate the process KHL proposes to implement.”⁶</p> <p>This process should incorporate that fact that in Grant Creek, year-to-year differences in the timing and quantity of flow result in substantial variability around any average flow condition. Accordingly, as in the case of the DRMP, modeling for the “average” condition can be misguided. For example, in due to the alterations to the River from the Project, restoring a flow pattern that is simply proportional to the natural hydrograph in years with little runoff may</p>	<p>KHL appreciates the comment. It is important to note that per the BMP and the Grant Lake Geomorphology Report, a majority of the substrate recruited into the Grant Creek system is the result of natural episodic events (earthquakes, glaciers, floods, etc.) as opposed to consistent “water forces” as a result of typical flows down Grant Creek. The Project would not preclude these episodic events from continuing to occur. The sediment size characteristics in Reaches 1 through 4</p>

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				<p>provide some ecological benefits, because many geomorphic and ecological processes show nonlinear responses to flow. Half of the peak discharge, for example, will not move half of the sediment, half of a migration motivational flow will not motivate half of the fish, and half of an overbank flow will not inundate half of the floodplain.</p> <p>The Commission, itself notes that: In section 4.1 <i>Potential Project-related effects on fish from Project Operations</i>, the BMP identifies decreased sediment recruitment and flows in reach 5 as a potential project effect. Based on our review of the proposed project description and operation, it appears that these potential effects may also occur in reach 6; however, the BMP makes no mention of potential effects to reach 6.7</p> <p>In the Grant Creek Watershed, therefore, more ecological benefits would accrue from capitalizing on the natural between- year variability in flow. For example, in years with above-average flow, “surplus” water could be used to exceed flow thresholds that drive critical geomorphic and ecological processes. The DRMP, therefore, should include modeling that focuses on restoration goals and to work with appropriate components of the natural flow regime to achieve those goals. Recognition of the natural flow variability and careful identification of key processes that are linked to various components of the flow regime are critical to making these determinations. Similarly, setting specific goals to restore a more natural regime in rivers with altered flows or, equally important, to preserve unaltered flows in pristine rivers such as the Grant Creek, should ideally be a cooperative process involving river scientists, resource managers, and all stakeholders.</p> <p>In addition, the DRMP should include modeling that develops quantitative, river-specific standards, based on the reconstruction of the natural flow regime.⁶ Restoration actions based on such guidelines should be viewed as experiments to be monitored and evaluated—that is, adaptive management—to provide critical new knowledge for creative management of natural ecosystem variability.</p> <p>⁶ FERC, Review of Draft Resource Management Plans for the Proposed Grant Lake Hydroelectric Project (FERC Review), p. 4 (July 9, 2015)(FERC Review). ⁷ Id.</p>	<p>will be monitored and compared to existing sediment conditions per the plan, and if necessary, adaptive management practices potentially including, supplemental gravel augmentation, will be implemented.</p>

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7	DLA-MP-07	7/15/15 letter from CWA	All MPs	<p>8 <i>See e.g., Richter et al. 1997.</i></p> <p>The DRMP Does Not Incorporate Release Flow Modeling The DRMP should incorporate modeling efforts that describes how experimental high and steady flows during a specific time period, could help and assess the long-term benefits to aquatic habitat salmon and fine sediment along the Grant Creek downstream of the Project site. This would allow for an adaptive management approach, wherein the relationship between dam operations and down stream resources was recognized as uncertain and an active experimental approach was adopted. In fact, the Bureau of Reclamation has directed that such experimental releases take place in relation to the operation of Glen Canyon Dam in Arizona in order to: ...determine if prescribed releases can benefit resources located downstream of the dam in Glen, Marble, and Grand canyons, Glen Canyon National Recreation Area and Grand Canyon National Park, respectively, in accordance with applicable federal law, including the GCPA, while meeting the project purposes of the dam.⁹</p> <p>Specifically, the modeling of this action may analyze numerous experimental releases from the Project Dam site, including: high flows and alternating between fluctuating and stable flows. Experimentation with release flows would assess relationships between dam operations and resources in and along the Grant Creek Watershed. The purpose of the high flow test portion of release flows, for example, could be to rebuild sandbars and beaches and rejuvenate backwaters – which may be important rearing habitat for native fish – during a period of enriched sediment storage conditions and to monitor changes over time. The purpose of the steady flow portion of the experiment is to potentially enhance the population of salmon and test the impact of steady flows on salmon and other aspects of the aquatic environment, particularly backwater environments. ¹⁰</p> <p>⁹ Bureau of Reclamation Final Environmental Assessment Experimental Releases from Watana Dam, Arizona, 2008 through 2012, p. 5. (February 2008). ¹⁰ Bureau of Reclamation Final Environmental Assessment Experimental Releases from Watana Dam, Arizona, 2008 through 2012, p. 5. (February 2008).</p>	<p>KHL has conducted an extensive Instream Flow study that examined flows and associated habitat over a 66 year period (actual flows and composite flows – see response to Comment DLA-E-35). Modeling efforts indicate that habitat, expressed as Weighted Usable Area, will provide generally the same or increased habitat over the natural flows. Proposed flows are the same over the spring and fall period as the natural flows, with increased flows during the winter and decreased flows during the summer. These high summer flows negatively impact salmonids and salmonid habitat.</p> <p>Glen Canyon Dam is a significantly larger project by orders of magnitude when compared to the Grant Lake Project. It also includes a dam, which is not incorporated into the Grant Lake Project design. No structural modifications would be made to the existing lake natural outlet at Grant Lake. These factors contribute to making Glen Canyon Dam a poor project for comparison with the Grant Lake Project.</p>

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8	DLA-MP-08	7/21/15 letter from ADFG	All MPs	<p>Initial Review Statement</p> <p>We have identified additional information and clarifications that are needed in these plans. To complete these reviews, further coordination and discussion is needed to resolve identified issues. Additional consultation with the agencies is needed. Plan adjustments may require multiple discussions and reviews, in order to thoroughly resolve outstanding issues prior to filing with FERC.</p>	KHL appreciates the comment.
9	DLA-MP-09	7/21/15 letter from ADFG	All MPs	<p>General Comments</p> <p>These plans lack the detail necessary to perform an adequate review. All plans presented use the identical language and format to describe project features. These plans have similar issues that were identified in ADF&G comments to the Draft License Application (DLA) dated June 26, 2015. The descriptions and drawings of many features have been made non-public under a Critical Energy Infrastructure Information (CEII) designation. Issues with the DLA include, but may not be limited to:</p> <ul style="list-style-type: none"> • project descriptions given in all plans are not identical to those presented in the DLA. <p>Until descriptions agree, it is not clear what constitutes the actual and most up to date project feature presentation;</p> <p>Other issues include but are not limited to:</p> <ul style="list-style-type: none"> • plans promote values for yet to be determined issues such as instream flow requirements; and • plans present monitoring schemes which may not pass scientific validity, and which have not been discussed with the agencies. 	Given the primary intent of all of the Biological Management Plans (MP's) was to describe the monitoring and PM&E measures proposed by KHL for the Grant Lake Project, the synonymous Project language present in all MP's was intentional and meant primarily as introductory and reference material for the biological components of each individual document. Per multiple responses above related to the FLA, KHL has modified the Project infrastructure descriptions to ensure consistency and provide additional detail, where deemed necessary. Additionally, all specific detail related to Project infrastructure can be accessed in Exhibit F of the FLA as all Management Plans that have been developed will be appended to this document.
10	DLA-MP-10	7/16/15 letter from KRWF	All MPs	As established in KRWF DLA comments submitted June 24, 2015, the applicant KHL has lost public credibility and trust. This situation involves the taking of a precious public resource, without public need, for private gain. Public accountability is an absolute requirement in the entire licensing process.	KHL appreciates and welcomes all comments related to the Management Plans. As communicated previously, KHL continues to be concerned with the inaccuracies being conveyed by the KRWF. Per our letter to FERC dated 6/1/15, " <i>KHL is concerned by</i>

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					<p><i>the numerous inaccurate and misleading comments made by the KRWF and the CFWA in these letters and encourages FERC to review the comprehensive Project record to judge for itself the inaccuracies associated with these and other KRWF and CFWA statements made on the record during the licensing process.”.</i></p> <p>At this time, KHL would simply choose to reiterate this statement.</p>
11	DLA-MP-11	7/16/15 letter from KRWF	All MPs	Accountability must be must be proactive and not simply responsive after the fact. It is not acceptable to rely on self-monitoring of performance by the applicant. Accountability must consider truth in all licensing matters, and management, monitoring, design, construction, and operation as approved by resource agencies and FERC. Compliance and determination of accountability requires more than vague, superficial details as a basis, which must be clearly defined and can be enforced both pre-performance and post-performance.	KHL has and will continue to comply with the FERC licensing process. If granted a license to construct and operate the proposed Project, KHL will do so in a responsible manner complying with all requirements of their FERC license.
12	DLA-MP-12	7/16/15 letter from KRWF	All MPs	The applicant cannot be allowed to ignore obvious negative impacts as simple as uncontrollable road access in a road-less area, the unaesthetic bathtub ring magnified on slopes, and undetermined noise levels in a narrow mountain valley. More technical impacts have been minimized, such as: speculation involving statistically unsupportable hydrology, historic seismic risk, potential for compromised water quality from introduction of "heavy metals" pollution in Grant Creek, and accelerated climate change.	KHL appreciates the comment and respectfully disagrees that a comprehensive analysis of Project related impacts has not been conducted.
13	DLA-MP-13	7/16/15 letter from KRWF	All MPs	The applicant is expected to submit additional management information, for example the missing Clean Water Act Section 404 removal and fill application and permit, which has not been granted by the Army Corps of Engineers. The Corps is expected to have serious misgivings about a 404 permit under these circumstances. As noted by public stewards and the resource agencies, it is clear that the applicant is required to submit much greater detail prior to approval of licensing. Public stewards include highly qualified reviewers, who	Per the FLA, KHL has had significant consultation with the ACOE related to the 404 permit. A draft permit application has been developed and reviewed and is currently pending until further infrastructural detail related to very specific structure information is developed. This

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				are also the most knowledgeable about the natural setting of the Grant Lake and Creek project in the highly sensitive Kenai River watershed.	process is standard in new development and has been discussed and approved by the ACOE.
14	DLA-MP-14	7/16/15 letter from KRWF	All MPs	All critical performance contracts require independent quality control inspection, reporting to the owner, and a performance bond. Independent, highly qualified review and monitoring of management performance, design, and construction is required. The public is unable to review and monitor vague, superficial details in a haphazard process also shrouded in secrecy.	KHL appreciates and welcomes all comments related to the Management Plans. As communicated previously, KHL continues to be concerned with the inaccuracies being conveyed by the KRWF. Per our letter to FERC dated 6/1/15, " <i>KHL is concerned by the numerous inaccurate and misleading comments made by the KRWF and the CFWA in these letters and encourages FERC to review the comprehensive Project record to judge for itself the inaccuracies associated with these and other KRWF and CFWA statements made on the record during the licensing process.</i> ".
15	DLA-MP-15	7/16/15 letter from KRWF	All MPs	A surety bond is commonly required under these circumstances, for the entire amount of design and construction. Bonding for performance of preliminary feasibility studies would have been forfeited, automatically justifying a subsequent surety bond to cover design and construction performance.	KHL appreciates the comment.
16	DLA-MP-16	7/21/15 letter from ADFG	All MPs that describe project features – Section 1.1.2	Grant Lake Intake <i>"The intake can be designed to allow the Project to draw water near the surface at various levels of storage, if deemed necessary to meet downstream temperature requirements."</i> Since it has already been identified that water at a depth of 0.5 to 1.5 meters most closely mimics the temperature pattern of Grant Creek, the intake should be designed to allow for near-surface withdrawals at these depths. This will require development of a variable intake. Plans should be developed and provided for this configuration. Operation procedures to mimic natural thermal	Additional detail related to the Project intake is provided in both Exhibit A (Section 4.2) and in Exhibit F of the FLA. With respect to the latter Exhibit and per guidance from FERC, project facility design drawings contain Critical Energy Infrastructure Information (CEII). Procedures for obtaining access to CEII may be

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				patterns in Grant Creek needs to be described in greater detail. These plans should be incorporated here, within this plan.	found at 18 CFR § 388.113 and requests should be made to the Commission's CEII coordinator. If KHL can assist in facilitating the access of this information, we'd be happy to help.
17	DLA-MP-17	7/21/15 letter from ADFG	All MPs that describe project features – Section 1.2.3	Tunnel and Surge Chamber This section describes a surge chamber but fails to describe safety and security features necessary for the protection of people and wildlife.	Additional detail related to the tunnel and surge chamber is provided in both Exhibit A (Section 4.2) and in Exhibit F of the FLA. With respect to the latter Exhibit and per guidance from FERC, project facility design drawings contain Critical Energy Infrastructure Information (CEII). Procedures for obtaining access to CEII may be found at 18 CFR § 388.113 and requests should be made to the Commission's CEII coordinator. If KHL can assist I facilitating the access of this information, we'd be happy to help.
18	DLA-MP-18	7/21/15 letter from ADFG	All MPs that describe project features – Section 1.2.4	Penstock and Surge Tank This section discusses the penstock, support saddles, and steel thrust rings. There is no mention of a surge tank in this section.	The reference to surge tank has been removed. There is no surge tank on the project. The surge chamber provides the function for transient flow control.
19	DLA-MP-19	7/21/15 letter from ADFG	All MPs that describe project features – Sections 1.2.5	These sections are out of order in that the powerhouse description (1.2.7.) should follow 1.2.4., if the descriptive sequence is continued from the lake. The ability to follow the plan is compromised by errors in sequence. As is, the plan does not read well (sequentially).	KHL appreciates the comment but feels that the current sequence with respect to the Project works is sufficient.

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
			through 1.27		
20	DLA-MP-20	7/21/15 letter from ADFG	All MPs that describe project features – Section 1.2.5	<p>Tailrace The description of the tailrace appears to be more complete than that provided in the DLA. There is no description of safety features for the tailrace designed to prevent people and animals from accessing or falling into the tailrace. The tailrace should be secured by fencing to reduce potential impact and mortality to wildlife.</p>	Consistent with ADFG’s comment on the DLA, text related to the tailrace has been revised to describe measures that will be implemented to reduce potential impact and mortality to wildlife.
21	DLA-MP-21	7/21/15 letter from ADFG	All MPs that describe project features – Section 1.2.6	<p>Tailrace Detention Pond The description lacks specific details related to the design and construction of this feature. Lacking is a:</p> <ul style="list-style-type: none"> • Description of the design of the pond sidewalls; • Description of construction materials; • Description of the permeability of the detention pond (lined?); • Description of the state of the detention pond when not being used (water depth, dry etc.); and • Description of any safety features to be incorporated to prevent people or animals from inadvertently becoming trapped in, or injured attempting to escape the pond. • Description of failsafe mechanisms to prevent all water from being diverted to the detention pond from the tailrace. 	KHL has revised the language in this section to discuss the additional detail outlined in the comment.
22	DLA-MP-22	7/21/15 letter from ADFG	All MPs that describe project features – Section 1.2.7	<p>Powerhouse <i>“The penstock would tie into the powerhouse on the south side and the tailrace channel on the north side of the building.”</i></p> <p>There have been no drawings provided to illustrate what you are doing at the powerhouse. It is not clear how the penstock can deliver water to the tailrace. It is not clear if there will be a direct bypass to shift diverted water past the generators in the event of a project shutdown. At the end of this page it is stated: <i>“An energy dissipation valve would extend off the penstock and provide bypass flows into the Project tailrace.”</i> This process is not defined in the plan.</p>	Additional detail related to the Project powerhouse is provided in both Exhibit A (Section 4.2) and in Exhibit F of the FLA. With respect to the latter Exhibit and per guidance from FERC, project facility design drawings contain Critical Energy Infrastructure Information (CEII). Procedures for obtaining access to CEII may be found at 18 CFR § 388.113 and requests should be made to the Commission’s CEII coordinator. If KHL can assist in

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					facilitating the access of this information, we'd be happy to help.
23	DLA-MP-23	7/21/15 letter from ADFG	All MPs that describe project features – Section 1.2.7	<p>Transmission Line/Switchyard <i>“Design of the line would also incorporate the latest raptor protection guidelines.”</i></p> <p>The plan should state those guidelines. While we usually defer to the United States Fish and Wildlife Service (USFWS) on Avian protection issues, especially raptors, we do utilize the following language in our Recommended 10(J) Terms and Conditions:</p> <p style="padding-left: 40px;">“Transmission line power poles shall conform to guidelines accepted by the USFWS as described in the most recent “Suggested Practices for Avian Protection on Power Lines– State of the Art, a joint document prepared by Avian Powerline Interaction Committee (APLIC) and the U.S. Fish and Wildlife Service.”</p> <p><i>“Collision avoidance devices would be installed on the line at appropriate locations to protect migratory birds.”</i></p> <p>There needs to be a definition of what constitutes <i>“appropriate locations”</i> and who makes that designation. Migratory birds include swans, geese, ducks etc. Protection designs should reflect specific protection measures necessary for different species of birds.</p> <p>An additional concern related here is that the Trail Lakes system is used by small floatplane operators for transportation, recreation, sightseeing excursions, and hunting support activities. Consideration should also to be given to Federal Aviation Administration requirements for transmission lines between this project and the interconnection point located at or near, Moose Pass, to ensure the safety of those floatplanes, especially during landing approaches.</p>	<p>Additional detail related to the Project transmission line and switchyard is provided in both Exhibit A (Section 4.2) and in Exhibit F of the DLA. With respect to the latter Exhibit and per guidance from FERC, project facility design drawings contain Critical Energy Infrastructure Information (CEII). Procedures for obtaining access to CEII may be found at 18 CFR § 388.113 and requests should be made to the Commission’s CEII coordinator. If KHL can assist in facilitating the access of this information, we’d be happy to help.</p> <p>The specific guideline referred to in this ADF&G comment is referenced in Section 2.9.2.1 of Exhibit F.</p>
24	DLA-MP-24	7/21/15 letter from ADFG	All MPs that describe	Appurtenant Facilities	KHL appreciates the comment. All fundamental components of the Project infrastructure are defined in

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			project features – Section 1.2.9	<p>“This equipment along with other identified miscellaneous mechanical and electrical equipment will be developed during the final design and included in the construction documents.”</p> <p>It is almost impossible to comment on a plan when features remain to be defined. Future inclusion in construction documents circumvents the review process required by the Federal Power Act. All plans need to be complete and need stand alone, without deferring to something unidentified in the future. Construction documents should be prepared after these plans are complete and have been accepted.</p>	multiple locations throughout the FLA as well as in each individual management plan.
Draft Biological Evaluation					
25	DLA-BE-01	7/13/15 letter from USFS	Project Description	Shouldn't “Moose Lake” in the following sentence be Moose Pass? <i>The Project would be located just east of the Seward Highway, near the community of Moose Lake, Alaska approximately 25 miles north of Seward, Alaska.</i>	KHL appreciates the comment and has revised the document accordingly.
26	DLA-BE-02	7/13/15 letter from USFS	Sensitive Plants	Change the number of sensitive plant species known or suspected to occur on the Seward Ranger District from eight to nine based on the most current version (November 2013) of the Alaska Region Sensitive Plants matrix.	KHL appreciates the comment and has revised the document accordingly.
27	DLA-BE-03	7/13/15 letter from USFS	Sensitive Plants	Based on the most current version (November 2013) of the Alaska Region Sensitive Plants matrix the following species should be added as suspected to occur on the Seward Ranger District: <i>Cochlearia sessilifolia</i> (sessileleaf scurvygrass) and <i>Tanacetum bipinnatum</i> ssp. <i>huronense</i> (dune tansy). However, neither species is expected in the project area since maritime beaches nor beach meadows are present.	KHL appreciates the comment and has revised the document accordingly.
28	DLA-BE-04	7/13/15 letter from USFS	Sensitive Plants	Based on the most current version (November 2013) of the Alaska Region Sensitive Plants matrix drop <i>Ligusticum calderi</i> from being suspected to occur on the Chugach National Forest.	KHL appreciates the comment and has revised the document accordingly.
29	DLA-BE-05	7/13/15 letter from USFS	Sensitive Plants	<i>Cypripedium guttatum</i> and <i>Romanzoffia unalaschcensis</i> are known to occur on the Chugach National Forest and are suspected on the Seward Ranger district.	KHL appreciates the comment and has revised the document accordingly.
30	DLA-BE-06	7/13/15 letter from USFS	Pre-Field Review of Existing Information	Rather than “unspecified”, list the nearest known population of <i>Aphragmus eschscholtzianus</i> to the project area as near the headwaters of Palmer Creek.	KHL appreciates the comment and has revised the document accordingly.

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31	DLA-BE-07	7/13/15 letter from USFS	Determination of Effects	<i>Cypripedium guttatum</i> is historically known to occur on the Chugach National Forest and are suspected on the Seward Ranger district.	KHL appreciates the comment and has revised the document accordingly.
32	DLA-BE-08	7/13/15 letter from USFS	Determination of Effects	<i>Romanzoffia unalaschcensis</i> is known to occur on the Chugach National Forest and is suspected on the Seward Ranger district.	KHL appreciates the comment and has revised the document accordingly.
33	DLA-BE-09	7/13/15 letter from USFS	Determination of Effects	In regard to <i>Papaver alboroseum</i> (pale poppy, which was found in the project area), I agree with the assessment that the overall risk to this plant on the Chugach National Forest as a result of this project viewed in conjunction with other past, present, and reasonably foreseeable projects is low.	KHL appreciates the comment.
34	DLA-BE-10	7/13/15 letter from USFS	Determination of Effects	In regard to <i>Papaver alboroseum</i> (which was found in the project area), I think the consequence of adverse impacts from the project on pale poppy is moderate rather than high. From the description of direct and indirect effects it appears that adverse effects are better described as possible rather than obvious.	KHL appreciates the comment and has revised the document accordingly.
35	DLA-BE-11	7/13/15 letter from USFS	Determination of Effects	Similarly, as above, I think the overall risk to pale poppy as a result of the project is moderate rather than moderate to high.	KHL appreciates the comment and has revised the document accordingly.
36	DLA-BE-12	7/13/15 letter from USFS	Determination of Effects	At the end of the Determination of Effects section I think it more accurate to conclude “the project may result in a loss of viability of pale poppy in the project area but would not cause a trend toward federal listing”.	KHL appreciates the comment and has revised the document accordingly.
37	DLA-BE-13	7/13/15 letter from USFS	Additional Management Recommendations	With mitigation measures, I agree with the determination that the project “may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing”.	KHL appreciates the comment.
Draft Operation Compliance Monitoring Plan					
38	DLA-OCMP-01	7/21/15 letter from ADFG	N/A	The same comments on project features that were made under Specific Comments for Project Features (all plans) apply to this plan.	KHL appreciates the comment and per comment response DLA-MP-09, detailed descriptions of all project infrastructure can be reviewed in Exhibit F of the FLA to which, this document is appended.

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39	DLA-OCMP-02	7/21/15 letter from ADFG	Section 2.1	<p>Background and Objectives</p> <p><i>“Following a series of natural resource studies conducted in 2013 and consultation with stakeholders, certain physical conditions (i.e. instream flows and water temperature) were discussed as critical to minimizing impacts to biological and water resources. Key study results as well as generic operational expectations were the following:</i></p> <ul style="list-style-type: none"> <i>• Established relationships between flow and habitat so that Project operations shall not diminish available habitat for resident and anadromous fish species.”</i> <p>This statement is not clear in intent. The project will alter the timing of natural flows and will reduce high flows by impounding water at certain times of the year. During the winter, flows will increase through drawdown of the reservoir to facilitate additional electrical production due to increased electrical demand. These activities will alter habitat availability with anticipated reduced habitat availability during the spring and early summer and increased habitat availability during the winter.</p>	<p>KHL appreciates the comment. The intent of the comment was simply to note that instream flows (with and without Project) had been modeled and assessed in comparison to habitat values for the fish species present.</p> <p>The text in Section 2.1 has been minimally revised to more adequately convey its intent.</p>
40	DLA-OCMP-03	7/21/15 letter from ADFG	Section 2.1	<p><i>“The objective of the OCMP is to insure a comprehensive and adaptive operational scenario that insures recommended instream flow and temperature regimes for the Project are provided.”</i></p> <p>Recommend change to: “The objective of the OCMP is to identify comprehensive and adaptive operational scenarios which will provide recommended instream flow volumes and water temperature regimes for Grant Creek, to meet compliance with FERC License articles. “</p> <p>An objective does not insure, it sets the stage for methods which will attempt to comply with standards. Adaptive management will allow for project changes necessary to meet stated goals and objectives.</p>	KHL has modified the document accordingly.
41	DLA-OCMP-04	7/21/15 letter from ADFG	Section 2.4	<p>The applicant presents an untitled table of proposed instream flow to the bypass reach. These proposed flows were presented by the applicant at a July 8, 2014 workshop. There is no justification for the flows presented and these are not anything that was agreed to by the agencies at, or after that meeting. We will identify our requested instream flows when we file our Recommended 10(j) Terms and Conditions for this project with FERC. The development of</p>	Additional detail related to Reach 1 thru 4 flows and a turbine bypass (PRV) is provided in Exhibit F of the DLA. Per guidance from FERC, project facility design drawings contain Critical Energy Infrastructure

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				<p>this plan would seem to be premature, in that a plan should be conditioned on FERC License Articles, not the other way around.</p> <p>Additionally, a minimum instream flow for Reaches 1-4 needs to be specified. As written, the penstock could be closed and the only flow to Grant Creek would be provided by the bypass pipe to Reach 5. If this would occur during a period when the reservoir is not at full capacity, Grant Creek would be greatly harmed, especially if Chinook, red and coho salmon, and rainbow trout juveniles or adults are present. Perhaps the bypass reach pipe should be sized to allow for appropriate water release in the event of a failure within the conveyance system. The plan needs to be more comprehensive in identifying operational scenarios and problems which may arise.</p>	<p>Information (CEII). Procedures for obtaining access to CEII may be found at 18 CFR § 388.113 and requests should be made to the Commission’s CEII coordinator. If KHL can assist I facilitating the access of this information, we’d be happy to help.</p> <p>With respect to the turbine bypass, Exhibit F includes details of a pressure relief valve in Section 7.2.5 and on Figure F-14 that allows for flows in Reach 1 thru 4 in the event of a turbine going offline.</p>
42	DLA-OCMP-05	7/21/15 letter from ADFG	Section 3.1	This plan needs to identify, in greater detail, the installation and operation of temperature monitors, and procedures to be followed in the event of a communications failure.	Additional detail related to the installation and operation of temperature monitoring is included in Exhibit F of the FLA. Per guidance from FERC, project facility design drawings contain Critical Energy Infrastructure Information (CEII). Procedures for obtaining access to CEII may be found at 18 CFR § 388.113 and requests should be made to the Commission’s CEII coordinator. If KHL can assist I facilitating the access of this information, we’d be happy to help.
43	DLA-OCMP-06	7/15/15 letter from CWA	Section 3.1	According to the DRMP, “[t]he Project will divert waters from Grant Lake to the bypass reach or the powerhouse at either 0.5 m or 1.5 m below the water surface elevation of Grant Lake. KHL will monitor temperature at select	KHL appreciates the comment and confirms that this text is present in the OCMP.

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
				<p>locations throughout the Project area to insure monthly lake and creek temperatures agree within 1 degree Celsius (°C).”¹¹ According to the OCMP: The water temperatures at this site will be used, in combination with temperature data from the lower bypass reach of Grant Creek (Station ST-1), to meet temperature criteria described in Section 2.5. Lake level and associated water temperature data will be collected for the duration of the licenses term. All data will be summarized and documented as part of the annual compliance report/meeting process described in Section 4. If deviations in temperature of more than 1 °C are documented, KHL will determine the reason and if it is determined to be the result of infrastructural or operational considerations as opposed to anomalous natural conditions, the stakeholder group associated with the Annual Compliance Report will be consulted during the annual process and modifications to the operational regime will be agreed upon to confirm that temperature conditions are adhered to.¹²</p> <p>¹¹ OMCP at 13. ¹² <i>Id.</i> at 14.</p>	
44	DLA-OCMP-07	7/21/15 letter from ADFG	Section 3.2	<p>The plan lists flow releases for compliance at 5-10 cfs. Required instream flow releases have not been identified. Plans should cover failsafe mechanisms to maintain minimum instream flows at the appropriate temperature in Reaches 1 – 5.</p>	<p>Additional detail related to the instream flow releases in Grant Creek and the associated fail-safes for ensuring continued flow in the event of the Project going offline are included in Exhibit F of the FLA. Per guidance from FERC, project facility design drawings contain Critical Energy Infrastructure Information (CEII). Procedures for obtaining access to CEII may be found at 18 CFR § 388.113 and requests should be made to the Commission’s CEII coordinator. If KHL can assist I facilitating the access of this information, we’d be happy to help.</p>

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45	DLA-OCMP-08	7/15/15 letter from CWA	Section 3.2	<p>Similarly, “Measurements of flow volumes at the bypass pipe will start at commencement of Project operations and will ensure compliance with the minimum required flow releases of 5-10 cfs (Station ISF-1).”¹³ The DRMP, therefore, not only, fails to discuss what type of management actions will be taken to compensate for the impacts of warming temperatures in Alaska but what that management will include to address the factors contributing to warming water temperature from operation of the Project, itself.</p> <p>This is contrary to the fact that hydropower projects can gather and store what should be cold spring runoff from snow melt, and prevent it from reaching the ocean. This cold water is warmed by the sun throughout the summer and when people call for more electricity in the winter, this warm water is released into the ocean at a time when little or no water or warmth should reach it. The far-reaching effects does of warming the ocean when it should be cold circulation patterns are obvious.</p> <p>Climate change models project that the greatest increases in temperature will occur at high latitudes. Over the past 50 years, Alaska has warmed at more than twice the 6 year average rate for the rest of the United States. Average annual temperature has increased 3.4 °F (2.1 °C), while winters have warmed by 6.3 °F (3.5 °C)⁹. As a result, climate change impacts could be expected to be more pronounced in Alaska than in other regions of the United States. Among other effects, higher temperatures contribute to earlier spring snowmelt, a higher percentage of precipitation falling as rain instead of snow, and glacier retreat.</p> <p>¹³ <i>Id.</i></p> <p>In order to determine the effect of increasing average annual temperatures on annual average streamflow, therefore, the DRMP should include a strategy that accounts for climate change effects on precipitation, evaporation, transpiration, and snow ablation (direct change in phase from solid to vapor). Reservoir operation and power studies have traditionally used historic flow records as the basic hydrologic input data.</p> <p>To this end, KHL should consider alternative hydrologic input datasets, which account for potential future hydrologic change.</p>	<p>KHL intends to match natural water temperatures as described in Section 2.5 of the OCMP. The design and configuration of our variable depth intake would facilitate KHL drawing water from the two directly observed depth strata in Grant Lake that establish water temperatures in Grant Creek. Multiple years of pre-Project temperature data confirm no matter the natural ambient condition (i.e. air temperatures), Grant Creek water temperatures are directly correlated to the Grant Lake depth strata of 0.5 m and 1.5 m..</p> <p>Although climate change has the potential to effect water quantities in the future, KHL feels it is speculative base operational parameters on unknown climate change trends. KHL will operate the Project to be adaptable and insure that all resource protection measures are met throughout the term of the license.</p>

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46	DLA-OCMP-09	7/21/15 letter from ADFG	Section 3.3	<p>This section discusses the re-establishment in 2013 of a streamgage at the location of the former USGS Gage No. 15246000 which operated from 1947-1958.</p> <p><i>“The current streamgage was serviced and calibrated from April 2013 to December 2014....” “The gage was then reestablished in February 2015 with the intent of KHL maintaining for the duration of the license.”</i></p> <p>This is confusing in that the text describes gage support for the “<i>current gage</i>”, but then states that the gage was re-established in February of 2015. Was the gage re-established in 2013 and removed in 2014, only to be again re-established in 2015?</p> <p>This section discusses the tailrace reach but does not define what the tailrace reach is. The gage location is downstream of the outflow of the project tailrace. To assist with temperature compliance, we recommend a temperature sensor be established at the project tailrace location. Backup sensors are also recommended.</p>	<p>KHL appreciates the comment. Text has been modified to more clearly describe the stream gage effort that has occurred as a result of the licensing process.</p> <p>With respect to the “tailrace reach” and associated temperature sensors, additional detail is located in Exhibit F of this FLA.</p>
47	DLA-OCMP-10	7/21/15 letter from ADFG	Section 3.4	<p>Because intake features were not included by the applicant in detail sufficient to evaluate the plan, it is difficult to understand how this project is intended to function and how bypass flows (once determined) will be monitored.</p> <p>There is no identification of required flows in Grant Creek below the powerhouse and tailrace. While this section describes a powerhouse bypass feature, there is no identification of water flow release requirements based on fish periodicity and habitat needs in Grant Creek. If the reservoir is not full and the project must shutdown, the diverted flow requirement from the powerhouse needs to be quantified to protect Grant Creek aquatic resources. As written, there is no guarantee that adequate water will flow to Grant Creek because the project could reduce flows to protect reservoir levels while the generators are shut down.</p> <p>There is no discussion of the use of the detention pond under failsafe provisions. Not described is how the powerhouse will bypass flow into the detention pond while maintaining flow through the tailrace and into Grant Creek. Since this is to be a remotely operated facility, it is important that the</p>	<p>KHL appreciates the comment and has provided references in the OCMP to the appropriate sections/attached documents in the FLA where detail related to the proposed instream flow regime for the bypass reach can be found</p> <p>In addition and per the operational description in Exhibit B, KHL has proposed operational flows in Reaches 1-4 of Grant Creek that mimic the spring and fall flows, with lower flows during the summer period and higher flows during the winter. A 66-year period of record and habitat duration analysis indicate fry and juvenile rearing habitat is increased with the proposed project flows, and spawning</p>

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				<p>descriptions of the use of the detention pond be complete. What governs the split of flow from the powerhouse to the tailrace and detention pond?</p> <p>The detention pond, described under section 1.2.6, has a surface area of 5 acres and a capacity of 15 acre feet. That would calculate to a volume at capacity of 653,400 cubic feet. If the project is operating at maximum flow of 385 cfs through the turbines, it would take more than 28 minutes to fill the detention pond to capacity assuming the detention pond was dry prior to filling. Similarly, if the project is operating at 200 cfs flow and that water was sent to the detention pond, it would take more than 54 minutes to fill to pond. If, to avoid ramping issues during a response to power demand when the reservoir is at less than at full pool, all water is sent to the detention pond by mistake, Grant Creek will be essentially dewatered for the times listed above. This would be catastrophic for adult and juvenile fish in Grant Creek as they would become trapped in small pools and would quickly deplete available oxygen. Since this system would be remotely operated, there would seem to be limited opportunity to identify and correct a mistake.</p> <p>There needs to be clarification of detention pond operation and failsafe provisions.</p>	<p>habitat is 99.93% of pre-project flows, without considering mitigation and enhancement measures.</p> <p>Additional failsafe detail regarding spinning reserve has been added to this section. Infrastructural detail related to the design, utilization and operation of the intake, bypass flow pipe and detention pond has been expanded further in the FLA and can be found in multiple locations including exhibits A, E and F along with the appended Supporting Design Report.</p>
48	DLA-OCMP-11	7/9/15 letter from FERC	Section 4	<p>The draft Operation Compliance Monitoring Plan (OCMP) details how water temperatures will be monitored within Grant Lake, Grant Creek, and through project facilities. Section 4 Reporting and Coordination, includes provisions to annually report all compliance monitoring activities and results. However, the OCMP does not include a provision for Kenai Hydro, LLC (KHL) to promptly notify the resource agencies and the Federal Energy Regulatory Commission (Commission) shortly after a “non-compliance” event is documented. Including a provision in the OCMP for KHL to promptly notify state and federal resource agencies of a non-compliance event would allow the agencies and the Commission to assess the situation and take timely corrective actions to protect environmental resources.</p>	<p>KHL appreciates the comment. Text has been added to account for “non-compliance” events and the methods by which KHL will account for these issues and notify requisite parties.</p>

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Draft Biotic Monitoring Plan					
49	DLA-BMP-01	7/21/15 letter from ADFG	N/A	The same comments on project features that were made under Specific Comments for Project Features (all plans) apply to this plan.	KHL appreciates the comment and per comment response DLA-MP-09, detailed descriptions of all project infrastructure can be reviewed in Exhibit F of the FLA to which, this document is appended.
50	DLA-BMP-02	7/9/15 letter from FERC	Section 2.1	In section 2.1 <i>Historical Fisheries Information and Data</i> , the draft Biotic Monitoring Plan (BMP) states that Grant Creek was divided into 6 study reaches and that relative abundance and distribution of juvenile fish were determined for each reach. However, no data for reach 6 is provided, other than a statement that “rainbow trout were caught throughout the creek” and “[a]dult rainbow trout were observed in the upper portions of the canyon reach” (although it is unclear where the “canyon reach” is located, as it has not been defined in the BMP). Similarly, while section 2.2 <i>Summary of the 2013 Fisheries Research</i> , states that information on adult rainbow trout and Dolly Varden spawning and feeding was collected, no data for reach 6 was presented.	KHL appreciates the comment. KHL has revised Section 2.1 to clarify the scope of the 2013 study; specifically, that no sampling occurred within Reach 6. Also, Section 2.1 has been revised to define the “Canyon Reach”, which is another term to describe Reach 5 since it exists entirely within the Canyon portion of Grant Creek. A series of impassable falls are located at the Reach 5/6 break, so no resident or anadromous salmonids are found in Reach 6 above the anadromous barrier. The only fish present in Reach 6 are sculpins and threespine stickleback.
51	DLA-BMP-03	7/9/15 letter from FERC	Section 2.3	In section 2.3 <i>Summary of Projected Project Impacts</i> , the discussion and analysis of potential project effects and benefits in Grant Creek is limited to reaches 1 through 5. There is no discussion of potential project effects on reach 6, which extends from the base of a downstream waterfall to the Grant Lake outlet. Based on our understanding of the proposed project design and operations, reach 6 is likely to be the most severely affected reach within Grant Creek. Project drawdown operations result in reduced flow in reach 6 year-round, and when the surface elevation of Grant Lake is drawn below 703 feet NAVD 88, reach 6 may become dewatered. However, while this concern may not be relevant to the BMP, it must be addressed in the final license application	KHL appreciates the comment. Please see the response above (DLA-BMP-02). KHL has revised the text in the FLA (Section 4.6.1.1) and the text in the BMP, Section 2.1, to reflect that the falls located at the Reach 5/6 break presents a passage barrier to both resident and anadromous species, and that the only species observed historically in Reach 6 and Grant Lake were sculpin and threespine stickleback. As such, Reach 6 was not

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					sampled in 2013. Please also refer to Comment DLA-BMP-02 and DLA-E-44.
52	DLA-BMP-04	7/21/15 letter from ADFG	Section 2.3	<p>The last paragraph in this section (page 18) identifies potential negative project impacts and potential positive impacts.</p> <p><i>“Potential positive impacts from the Project in Reach 5 include better maintenance of juvenile rearing habitat along with the likelihood of increased juvenile rearing habitat availability in addition to higher/more stable flows in the quality reaches (i.e., Reaches 1 – 4) during incubation and rearing; decreased summer flows will maintain habitat and help prevent stranding and potential egg desiccation as flows decrease, and operational changes will allow for high quality side channels to be more consistently wetted.”</i></p> <p>This paragraph is confusing in that it mixes Reach 5 potential impacts with Reach 1-4 potential impacts, in the same run together sentence.</p>	KHL appreciates the comment and has modified the text to be clearer.
53	DLA-BMP-05	7/15/15 letter from CWA	Section 2.3	<p>While KHL maintains that the Project will not only minimally impacts but will actually benefit fish species, the DRMP fails to provide a strategy for how these claims will be realized. The Commission, itself, for example, states:</p> <p style="padding-left: 40px;">In section 2.3 <i>Summary of Projected Project Impacts</i>, the discussion and analysis of potential project effects and benefits in Grant Creek is limited to reaches 1 through 5. There is no discussion of potential project effects on reach 6, which extends from the base of a downstream waterfall to the Grant Lake outlet. Based on our understanding of the proposed project design and operations, reach 6 is likely to be the most severely affected reach within Grant Creek. Project drawdown operations result in reduced flow in reach 6 year-round, and when the surface elevation of Grant Lake is drawn below 703.14</p> <p>14 FERC, Review of Draft Resource Management Plans for the Proposed Grant Lake Hydroelectric Project (FERC Review) (July 9, 2015).</p>	KHL appreciates the comment and has addressed the FERC referenced comment as part of the text revision process. Please see our responses to comments DLA-BMP-02 and DLA-BMP-03 above. A series of anadromous barriers at the Reach 5/6 break precludes passage into Reach 6 and Grant Lake, where only sculpins and threespine stickleback have been found.
54	DLA-BMP-06	7/9/15 letter from FERC	Section 3	Section 3 of the BMP describes the method and timing for monitoring juvenile and adult salmonid populations during the project’s two year construction timeframe. However, the BMP does not include any actions to be taken in the	KHL appreciates the comment; please see the new section, Section 3.6 in the

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				event monitoring results demonstrate an unexpected or unacceptable effect on those populations. The BMP should describe how the monitoring data would be used and should also identify corrective actions or a process for developing corrective actions, in the event monitoring results demonstrate an unexpected or unacceptable effect on the salmonid populations in Grant Creek.	BMP for language addressing this comment.
55	DLA-BMP-07	7/21/15 letter from ADFG	Section 3.3	<p><i>“The objectives include:</i></p> <ul style="list-style-type: none"> • <i>Determine if construction activities displace juvenile salmonids from critical rearing habitat, and</i> • <i>Determine if construction actions disrupt either the distribution or timing of adult salmonids in Grant Creek.”</i> <p>Objectives should be framed around parameters to be estimated. For example, estimates of displacement of juvenile salmon should utilize structured tests for catch per unit effort, or some other proxy for abundance. Also, replace the word determine with estimate.</p> <p>The applicant should also address how disruptions and displacements will be tested for and detected. What constitutes disruption and displacement? How will samples, pre and post-project, be statistically compared to assess disruptions and displacements? Appropriate statistical tests should be conducted.</p> <p><i>“A series of best management practices (BMP) and construction associated plans will be developed in advance of any construction activities to ensure that environmental impacts are avoided. These plans will account for water quality conditions, amongst other variables.”</i></p> <p>Management practices and plans of avoidance and mediation should be described in this draft management plan. Outlined plans, yet to be developed, need to identify guidelines and criteria standards to be met.</p> <p><i>“In addition, an Environmental Compliance Monitor (ECM) will be on-site daily during all construction activities. This individual will be responsible for assessing water quality conditions during construction and notifying appropriate parties, if necessary.”</i></p> <p>We recommend changing the “<i>if necessary</i>” to ...as required by the FERC license.</p>	<p>KHL appreciates the comments. We have edited the second of the objectives to be consistent with the level of monitoring proposed within the BMP. Specifically, we have omitted the reference to the timing of adult spawning. The proposed surveys will assess peak adult counts by species, which will not yield data that will allow an assessment of timing.</p> <p>As discussed in the draft BMP, KHL proposed to assess presence/absence of both adults and juveniles, which will not allow statistical assessments with pre-project.</p> <p>Please note we have included a new section, Section 3.6 that discusses management practices and plans of avoidance and mediation processes.</p> <p>The text has been modified to include the language, “<i>as required by the FERC license</i>”.</p>

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56	DLA-BMP-08	7/21/15 letter from ADFG	Section 3.4.2	<p><i>“Adult sampling will consist of three primary components: visual, redd, and carcass surveys. All three surveys will be conducted twice for each species within each of the two construction years, and will be conducted on separate days within the sample week. Sample timing will be based on 2013 data, and will be conducted to coincide with the documented peak run-timing for each species.”</i></p> <p>The plan for adult sampling falls short of being adequate to identify post construction adult use of Grant Creek. We will likely request weekly surveys during identified spawning times for species utilizing Grant Creek for spawning. To select only a single week for sampling would not provide indication of run strength or any increased or reduced trend in use. The plan should include a periodicity table which has been updated, as necessary, to include 2013 data.</p> <p>Additionally, we would ask for post construction monitoring because adult return to Grant Creek during construction years would be a factor of pre-construction conditions only, and would not show long term project effects. Biotic monitoring will be included in our recommended 10(j) Terms and Conditions yet to be filed with FERC for this project. While this plan is a start, it may not be inclusive of FERC license articles.</p> <p><i>“Additionally, all females will be inspected as to spawning success (i.e., pre-spawn mortality, completely spawned, the number of remaining eggs).”</i></p> <p>This is not a good definition of spawning success since other factors may be in play. A female may have voided all her eggs without them being fertilized by a male. A female might have had water infiltrate her vent, effectively water hardening some or all of her eggs, making them not viable. Simply counting remaining eggs in a carcass does not provide any estimation of spawning success. Typically, spawning success involves redd sampling for fertilization rates, fry emergence counts in the spring, etc. The sampling proposed does not even provide a fecundity estimate for each species or determine an accurate percentage of eggs remaining in a carcass. After a gravid female lays her eggs into her established redd, she may drift expelling some or all remaining unfertilized eggs before her death. Carcass counts may be subjected to these inaccuracies. The information that can be gathered with the proposed carcass</p>	KHL appreciates the comment and has conducted further consultation with ADFG (and other stakeholders in advance of the FLA filing to agree on a mutually acceptable monitoring protocol.

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				<p>sampling is limited to an appearance of spawning, identification of pre spawning mortality, and probable counts of spawning adults.</p> <p><i>“Visual and redd surveys will be conducted as in 2013. Biologists will hike upstream along each bank of Grant Creek wearing polarized sunglasses to reduce glare, and will document adult fish and redds (by species).”</i></p> <p>Include the main channel, side channels, and distributary channels in these survey plans. Also include how counts will be made and what reporting metrics will be included.</p>	
57	DLA-BMP-09	7/9/15 letter from FERC	Section 4.1	In section 4.1 <i>Potential Project-related effects on fish from Project Operations</i> , the BMP identifies decreased sediment recruitment and flows in reach 5 as a potential project effect. Based on our review of the proposed project description and operation, it appears that these potential effects may also occur in reach 6; however, the BMP makes no mention of potential effects to reach 6.	KHL appreciates the comment and has added text to discuss Project effects on Reach 6. Reach 6 would also be affected by decreased flows; however, Reach 6 is located above a series of impassable falls below Grant Lake’s outlet (Reach 5/6 break), which prevents colonization of Reach 6 and the lake by salmonids via Grant Creek (Ebasco 1984). The only fish species found in Reach 6 and Grant Lake are sculpins and threespine stickleback. Please also refer to response to Comment DLA-E-44.
58	DLA-BMP-10	7/9/15 letter from FERC	Section 4.1	Section 4 of the BMP describes the method and timing for monitoring juvenile and adult salmonid populations during the project’s operation. However, the BMP does not include any actions to be taken in the event monitoring results demonstrate an unexpected or unacceptable effect on salmonid populations. The BMP should describe how monitoring data would be used and should also identify corrective actions or a process for developing corrective actions, in the event monitoring results demonstrate an unexpected or unacceptable effect on the salmonid populations in Grant Creek.	KHL appreciates the comment and has incorporated additional text to address the identification and implementation of corrective actions, if necessary. Please see response to Comment DLA-BMP-06.
59	DLA-BMP-11	7/15/15 letter from CWA	Section 4.1	Similarly, the Commission is concerned that the Biotic Monitoring Plan (BMP) does not include any actions to be taken in the event monitoring results demonstrate an unexpected or unacceptable effect on juvenile fish populations. The BMP, therefore “should describe how the monitoring data would be used	KHL appreciates the comment and has incorporated additional text to address the identification and implementation of corrective actions, if necessary.

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				and should also identify corrective actions or a process for developing corrective actions, in the event monitoring results demonstrate an unexpected or unacceptable effect on the salmonid populations in Grant Creek.” ¹⁵ ¹⁵ <i>Id.</i> at 3.	Please see new Section 3.6 of the BMP, and response to Comment DLA-BMP-06.
60	DLA-BMP-12	7/21/15 letter from ADFG	Section 4.3	<p><i>“The objectives include:</i></p> <ul style="list-style-type: none"> • <i>Determine if greater flows in the Reach 2/3 side channels during the winter result in juvenile rearing during this timeframe and at these locations;</i> • <i>Determine if mitigation efforts in the Reach 1 distributary result in increased juvenile utilization;</i> • <i>Determine if relative juvenile abundance and distribution deviates from baseline conditions due to Project operations, and</i> • <i>Determine if adult distribution deviates from baseline conditions due to project</i> <p>As with the objectives under section 3.3, these should be framed around parameters to be estimated. Plans should identify existing baseline condition data to allow for statistical comparison of baseline and post-project utilization.</p>	KHL appreciates the comment. Text in Section 4 has been revised to more adequately describe the methodologies to be implemented.
61	DLA-BMP-13	7/15/15 letter from USFWS	Section 4.3	The U. S. Fish and Wildlife Service’s (Service) goal in making recommendations for the draft Biotic Monitoring Plan (Plan) is to develop a thorough understanding of existing fish and wildlife populations and habitat characteristics that are potentially at risk from the proposed Grant Lake Hydroelectric Project (Project). As we suggested during comments to draft study plans in 2010, studies should be developed with the appropriate level of scientific precision and accuracy so that rigorous analyses can be made of the direct, indirect, and cumulative effects associated with Project development and operation. In many cases, the quality of information needed for understanding the potential effects of the Project is of finer resolution than information currently gathered or available for fisheries or resource management purposes. Data collected must be of sufficient quality to differentiate potential impacts of the Project from background natural variation and studies should be designed to quantify potential Project impacts and cumulative effects at the appropriate spatial and temporal scale of a potential	KHL appreciates the comment and perspective. As the USFWS is aware, KHL facilitated a structured and collaborative process for revising the 2010 study plans to ensure that a more quantitative and comprehensive study program/impact assessment was implemented related to the development of the Grant Lake Project. The USFWS played an integral role in the study development process and was kept involved and informed during all phases of the biological studies (design, permit acquisition, study season, site visit, data analysis, reporting, impact

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				<p>license, which includes the Kenai River watershed over a 30 to 50 year timeframe.</p> <p>As we suggested in 2010, specific objectives should be developed for each study component with a clearly specified level of precision and accuracy such that the objectives are statistically sound. With this in mind, we recommend that specific study needs and recommendations be based on the SMART objectives concept (Specific- concrete, detailed, well defined; Measurable- numbers, quantity, comparison; Achievable- feasible, actionable; Realistic- considering resources; and Time-Bound- a defined time line). We have previously provided references that discuss developing objectives and the specification of statistical criteria and have also previously provided examples of SMART objectives for use on this Project.</p> <p>Currently, study objectives identified in sections 4.3 and 5.2.2 are not well-defined and results of the proposed field work are likely to be ambiguous. None of the listed objectives specify a level of precision or accuracy that would inform sample size determination. Also, no statistical tests are identified that will be performed to evaluate implied hypotheses for each objective and no mention is made of a critical value of the test that will inform rejection or acceptance of hypotheses. It is also unclear why sampling is only proposed in post-construction years 2 and 5. The Service recommends that the Project revisit the draft Plan to address statistical rigor. We also suggest implementing as many aspects of this Plan during the 2015 field season as possible in order to establish a scientifically- defensible pre-Project baseline that will be consistent with methods used to monitor the Project during the construction and operational phases.</p>	<p>analysis, instream flow discussions, etc.).</p> <p>KHL feels strongly that the comprehensive aquatic data collected during the licensing process, the associated impact analysis and existing historical data has facilitated the development of a Project infrastructure and operational regime that will result in no net impact to aquatic resources in the Project area. Additionally and as documented in the FLA and associated Management Plans, KHL has proposed a series of aquatic habitat-based enhancement measures that per habitat analysis, will increase habitat value for the primary anadromous species that utilize Grant Creek beyond existing natural conditions.</p> <p>KHL appreciates the comment and has conducted further consultation with USFWS (and other stakeholders in advance of the FLA filing to agree on a mutually acceptable monitoring protocol.</p>
62	DLA-BMP-14	7/21/15 letter from ADFG	Section 4.4.1	<p><i>“Sampling will be conducted in years 2 and 5 of operations.”</i></p> <p>Post project construction sampling needs further discussion to arrive at an acceptable sampling methodology, frequency, and duration.</p>	<p>KHL appreciates the comment and has conducted further consultation with ADFG (and other stakeholders in advance of the FLA filing to agree on a mutually acceptable monitoring protocol.</p>

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63	DLA-BMP-15	7/21/15 letter from ADFG	Section 4.4.1	<p>In a discussion of sampling using minnow traps it is stated: <i>“Traps will be baited with a 16.4 cm³ mass of sterilized salmon eggs and will be fished for approximately 24 hours.”</i></p> <p>The mass of salmon eggs is stated to be “16.4 cm³.” Since 16.4 cm is equal to about 6 ½ inches, is the plan proposing to utilize a 6 ½ inch cube of salmon eggs in each trap as bait?</p>	KHL appreciates the comment. The cubic measurement 16.54 cm ³ is equivalent to a 1 inch x 1 inch x 1 inch mass of eggs.
64	DLA-BMP-16	7/21/15 letter from ADFG	Section 4.4.1	<p><i>“Minnow trap data will address the issues of whether operations influence the relative abundance and distribution of juvenile salmonids with Reaches 1-5 and the side channels and distributaries of Grant Creek, as well as winter-time usage of the Reach 1 distributary and the Reach 2/3 side channels.”</i></p> <p>The use of the Reach 1 distributary at the time of the agency site visit in 2013 was minimal despite streamflow in excess of 300cfs. There was only 1-3 inches of water in the Reach 1 distributary at that time. The applicant has mentioned possible mitigation which may occur in this distributary but has not included any proposals for this measure in the DLA or draft plans. It is impossible to address minnow trapping effectiveness in these areas until a mitigation proposal is prepared.</p>	Section 5.1 of the BMP generally describes the “Additional Flow in the Reach 1 Distributary” enhancement measure. Additional detail has been provided in the FLA to detail the intent and methods for implementing this measure.
65	DLA-BMP-17	7/21/15 letter from ADFG	Section 4.4.1	<p><i>“Concurrent with April minnow trapping, snorkel surveys will be conducted in the side channels of Reach 2/3 and the Reach 1 distributary.”</i></p> <p>Again it is not clear what the water depth will be during April since the reservoir will be refilling and the project would likely be operating at a lower production level. This is true in the main channel as well as side channels and the Reach 1 distributary. Snorkel survey success may be limited.</p>	KHL appreciates the comment. It is notable that based upon the current operational flow regime that KHL will be distributing between 77 -92 cfs down the mainstem of Grant Creek during April. This will correlated to 13-15 cfs down the Reach 2/3 side channel which is approximately twice the natural flow.
66	DLA-BMP-18	7/21/15 letter from ADFG	Section 4.4.2	The same comments made for construction sampling are valid here. Post project construction sampling needs further discussion to arrive at an acceptable sampling methodology, frequency, and duration. See previous statements under 3.4.2. as they relate here as well. Include the main channel, side channels, and distributary channels in these surveys.	KHL appreciates the comment and has conducted further consultation with ADFG (and other stakeholders in advance of the FLA filing to agree on

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
					a mutually acceptable monitoring protocol.
67	DLA-BMP-19	7/21/15 letter from ADFG	Section 4.4.2	<p><i>To address sockeye populations: “KHL proposes, in addition to conducting counts in Grant Creek, to monitor other fish runs to the Kenai River. Fish numbers may be available for other systems on the Kenai Peninsula, notably the Russian and Kasilof rivers.”</i></p> <p>More information is needed on KHL’s proposal to conduct this monitoring. The Grant Creek sockeye run returns to the headwaters of the Kenai River system and is subjected to fisheries all along the length of the system. Other tributary systems may have different factors which affect the returns of sockeye. Timing of returns is critical to the sockeye arriving at a tributary, since they must pass Cook inlet commercial fisheries, personal use fisheries and sport fisheries to arrive at spawning grounds. Each listed watershed will have different factors which may preclude comparison to Grant Creek. The Kasilof River is a completely different river system with a very different run composition. Comparison of Grant Creek sockeye returns to returns to all of these systems would be very difficult due to variability in harvests and watershed conditions, such as those caused by recent wildfire activity at the Russian River, Kasilof River, and middle Kenai River. This proposal may be interesting to research, but it is unclear how it will inform on Grant Creek project effects?</p>	KHL appreciates the comment. Rather, the intent of monitoring other fish runs on the Kenai River is to provide information on the overall Kenai system and offer additional information into whether the system as a whole is experiencing a relatively high, average or depressed run of the species of interest. This information will be valuable during years when runs are lower than normal in Grant Creek and KHL needs to determine whether depressed numbers are the result of Project effects occurring in the Kenai system as a whole.
68	DLA-BMP-20	7/21/15 letter from ADFG	Section 4.5	Post project construction sampling needs further discussion to arrive at an acceptable sampling methodology, frequency, and duration.	KHL appreciates the comment and has conducted further consultation with ADFG (and other stakeholders in advance of the FLA filing to agree on a mutually acceptable monitoring protocol.
69	DLA-BMP-21	7/9/15 letter from FERC	Section 5	In section 5.1 <i>Proposed Protection, Mitigation and Enhancement</i> , the BMP states that spawning substrate is naturally limited within Grant Creek and that the proposed monitoring would evaluate the need for channel maintenance flows and/or gravel supplementation within the mainstem of Grant Creek. Section 5.3.3 <i>Gravel Supplementation/Channel Maintenance Methodologies</i> specifies that channel maintenance flows and gravel augmentation will be	KHL appreciates the comment and has revised the text to more clearly define the plans/process associated with assessing the need for gravel augmentation/channel maintenance

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				<p>provided as appropriate and in consultation with stakeholders. Section 5.4 <i>Schedule</i>, states that “[o]nce PM&E measures are in place,” efficacy surveys during years 2 and 5 post-construction will be implemented. This section also states that channel maintenance type flows may occur naturally which may negate the need for gravel augmentation in Grant Creek.</p> <p>Given the above, we find the BMP unclear. It appears that the need for gravel augmentation has not yet been determined, although it is stated that spawning substrate is naturally limited within Grant Creek. In contrast, the statement in section 5.4, that efficacy surveys will be conducted during years 2 and 5, implies that the success of gravel augmentation efforts will be evaluated during those years.</p> <p>The BMP should articulate the process KHL proposes to implement. Does KHL propose to initially enhance Grant Creek by introducing spawning gravel, and then monitor the efficacy of that effort in order to inform an adaptive management approach on the need for and/or design of future spawning gravel augmentation efforts; or is it KHL’s proposal to first evaluate the project operational effects on spawning gravel recruitment to Grant Creek and if a need is determined, to then augment spawning gravel? In either case, the BMP should clearly describe the process KHL proposes to pursue. Additionally, the BMP should specify biological and/or physical thresholds that will be used to determine whether future (post 2- and 5-year surveys) spawning gravel augmentation will be applied.</p>	flows and what implementation would look like, if needed.
70	DLA-BMP-22	7/21/15 letter from ADFG	Section 5.1	Possible PM&E measures have been mentioned in meetings but have not been discussed at length. In depth discussions on mitigation proposals need to happen. This section also lacks sufficient detail to evaluate a value to the Grant Creek system. PM&E Goals and Objectives may need modification once discussions are held.	“KHL appreciates the comment and has conducted further consultation with ADFG (and other stakeholders in advance of the FLA filing to agree on a mutually acceptable monitoring protocol”. Additional text related to proposed PM&E’s has been expanded to further detail implementation methodology.

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71	DLA-BMP-23	7/21/15 letter from ADFG	Section 5.1	<p>The following comments are relative to the proposed PM&E measures listed in this section. At this time we have no endorsement of proposed PM&E measures.</p> <p><i>“A suite of PM&E measures have been proposed for the Project. These measures include, but are not limited to the following:”</i></p> <ul style="list-style-type: none"> <i>• “Enhancement of Reach 2/3 Side Channels. KHL has proposed more consistent flows and winter-time inundation of these side channels as a result of Project operations. The proposed operational flows will increase aquatic habitat in these side channels.”</i> <p>Provide specific details or references to study results that demonstrate how estimated increases in side channel habitat are a result of proposed project operation.</p>	<p>KHL conducted a Habitat Time Series Analysis for Grant Creek, using 66-year composite flows records, with and without the Project. WUA for each species and life history stage were compiled from this record. Results can be found in the Grant Creek Aquatic Habitat Mapping and Instream Flow Study, Final Report (KHL 2014d) and the FLA. The text has been revised to further describe the increases in habitat.</p>
72	DLA-BMP-24	7/21/15 letter from ADFG	Section 5.1	<p>The following comments are relative to the proposed PM&E measures listed in this section. At this time we have no endorsement of proposed PM&E measures.</p> <p><i>“Additional Flow in the Reach 1 Distributary. This measure, proposed by KHL, would remove the upstream control, providing greater and more consistent flows in this distributary, increasing both rearing and spawning habitat.”</i></p> <p>Need to provide an estimate of how flow will be increased due to removal of the hydraulic control, including timing, frequency and duration. Along with this information, more detail is needed on specifically how habitat will be increased as a result of these increases in flow. Develop a plan to monitor and maintain the hydraulic control and increases in <i>“Spawning Gravel Augmentation/Flushing Flows.”</i></p>	<p>Currently, no water enters the Reach 1 Distributary until Grant Creek flows exceed 190 cfs. Analysis of habitat in the side channel indicates that significant increases in WUA can be obtained as flows increase up to and including 30 cfs.</p> <p>Text has been revised to describe this proposed measure more fully. Please also refer to Section 4.6.3.1.2 of the FLA.</p>
73	DLA-BMP-25	7/21/15 letter from ADFG	Section 5.1	<p>The following comments are relative to the proposed PM&E measures listed in this section. At this time we have no endorsement of proposed PM&E measures.</p> <p><i>Spawning substrate is naturally limited within Grant Creek. This PM&E measure, proposed by KHL, would evaluate the need for gravel supplementation within the mainstem of Grant Creek, and/or periodic</i></p>	<p>KHL appreciates the comment and has revised the text to more clearly define the plans/process associated with assessing the need for gravel augmentation/channel maintenance flows and what implementation would</p>

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				<p><i>need for channel maintenance (i.e., flushing) flows to move upstream sediment.”</i></p> <p>This proposal is unclear. How will the applicant evaluate the need for gravel and how would this evaluation translate into a PM&E measure?</p>	look like, if needed. Please also see response to Comment DLA-BMP-21.
74	DLA-BMP-26	7/21/15 letter from ADFG	Section 5.1	<p>The following comments are relative to the proposed PM&E measures listed in this section. At this time we have no endorsement of proposed PM&E measures.</p> <p><i>“Spawning Gravel Augmentation within the Reach 1 Distributary. To create spawning habitat within the Reach 1 distributary, gravel augmentation, in addition to enhanced flows due to the upstream control removal, will be implemented at this location.”</i></p> <p>A gravel augmentation plan is needed for this distributary with detailed information and appropriate maps. Specify material composition, sizes, augmentation depths, and distribution of gravel. See comments provided under 5.3.2.2.1. <i>Site Selection, Gravel Placement, and Schedule</i>, for determination of gravel origin, type, size, and distribution.</p>	KHL appreciates the comment. Per previous responses, additional detail related to the adaptive management approach to be taken related to the need for gravel augmentation has been incorporated into the Biotic Monitoring Plan.
75	DLA-BMP-27	7/21/15 letter from ADFG	Section 5.2.1	<p>Specific goals state: “Maintain minimum instream flows of 5 to 10 cfs in Reach 5.”</p> <p>We appreciate the applicant’s proposal for instream flow release. This proposal will be evaluated for adequacy and will be the subject of further discussion.</p>	KHL appreciates the comment.
76	DLA-BMP-28	7/15/15 letter from USFWS	Section 5.2.2	<p>The U. S. Fish and Wildlife Service’s (Service) goal in making recommendations for the draft Biotic Monitoring Plan (Plan) is to develop a thorough understanding of existing fish and wildlife populations and habitat characteristics that are potentially at risk from the proposed Grant Lake Hydroelectric Project (Project). As we suggested during comments to draft study plans in 2010, studies should be developed with the appropriate level of scientific precision and accuracy so that rigorous analyses can be made of the direct, indirect, and cumulative effects associated with Project development and operation. In many cases, the quality of information needed for understanding the potential effects of the Project is of finer resolution than information currently gathered or available for fisheries or resource management purposes. Data collected must be of sufficient quality to differentiate potential impacts of the Project from background natural variation</p>	KHL appreciates the comment and perspective. As the USFWS is aware, KHL facilitated a structured and collaborative process for revising the 2010 study plans to ensure that a more quantitative and comprehensive study program/impact assessment was implemented related to the development of the Grant Lake Project. The USFWS played an integral role in the study development process and was kept involved and informed during all phases of the

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				<p>and studies should be designed to quantify potential Project impacts and cumulative effects at the appropriate spatial and temporal scale of a potential license, which includes the Kenai River watershed over a 30 to 50 year timeframe.</p> <p>As we suggested in 2010, specific objectives should be developed for each study component with a clearly specified level of precision and accuracy such that the objectives are statistically sound. With this in mind, we recommend that specific study needs and recommendations be based on the SMART objectives concept (Specific- concrete, detailed, well defined; Measurable- numbers, quantity, comparison; Achievable- feasible, actionable; Realistic- considering resources; and Time-Bound- a defined time line). We have previously provided references that discuss developing objectives and the specification of statistical criteria and have also previously provided examples of SMART objectives for use on this Project.</p> <p>Currently, study objectives identified in sections 4.3 and 5.2.2 are not well-defined and results of the proposed field work are likely to be ambiguous. None of the listed objectives specify a level of precision or accuracy that would inform sample size determination. Also, no statistical tests are identified that will be performed to evaluate implied hypotheses for each objective and no mention is made of a critical value of the test that will inform rejection or acceptance of hypotheses. It is also unclear why sampling is only proposed in post-construction years 2 and 5. The Service recommends that the Project revisit the draft Plan to address statistical rigor. We also suggest implementing as many aspects of this Plan during the 2015 field season as possible in order to establish a scientifically- defensible pre-Project baseline that will be consistent with methods used to monitor the Project during the construction and operational phases.</p>	<p>biological studies (design, permit acquisition, study season, site visit, data analysis, reporting, impact analysis, instream flow discussions, etc.).</p> <p>KHL feels strongly that the comprehensive aquatic data collected during the licensing process, the associated impact analysis and existing historical data has facilitated the development of a Project infrastructure and operational regime that will result in no net impact to aquatic resources in the Project area. Additionally and as documented in the FLA and associated Management Plans, KHL has proposed a series of aquatic habitat-based enhancement measures that per habitat analysis, will increase habitat value for the primary anadromous species that utilize Grant Creek beyond existing natural conditions.</p> <p>KHL appreciates the comment and has conducted further consultation with stakeholders in advance of the FLA filing to agree on a mutually acceptable monitoring protocol.</p>
77	DLA-BMP-29	7/21/15 letter from ADFG	Section 5.2.2	<p><i>“Determine if greater flows in the Reach 2/3 side channels during the winter increase juvenile salmonid numbers in these side channels;”</i></p> <p>There has been no winter study of side channel use by juvenile salmonids completed to provide for a comparison between pre and post construction. The</p>	<p>KHL appreciates the comment. It is important to note that under natural conditions, the side channels in question are either dry or significantly frozen over thus significantly minimizing any viability for juvenile</p>

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				PHABSIM study indicated that there was no available habitat in side channels during the winter. Currently under winter flow conditions access to side channel habitat is limited. Increased flows in side channels due to project operation may attract fish into an environment which may be more prone to freeze out. Additional studies need to be made to identify project effects (both positive and negative) in these areas.	overwintering. KHL doesn't see a need for additional winter analysis to assess the current question. Rather, KHL is proposing to monitor these areas in the winter to confirm that the modeled values related to increases in habitat value under operational conditions are being realized.
78	DLA-BMP-30	7/21/15 letter from ADFG	Section 5.3	Post project construction sampling needs further discussion to arrive at an acceptable sampling methodology, frequency, and duration.	KHL appreciates the comment and has conducted further consultation with ADFG (and other stakeholders in advance of the FLA filing to agree on a mutually acceptable monitoring protocol.
79	DLA-BMP-31	7/21/15 letter from ADFG	Section 5.3.1	<p><i>“Juvenile sampling methodologies will be consistent with the methods described in Section 3.4.1, that is, minnow trapping as well as snorkeling, will be used to gather data on juvenile salmonid distribution and numbers within the Reach 1 distributary and the Reach 2/3 side channels.”</i></p> <p>How does the applicant propose to assess increases in utilization in these channel types? Appropriate metrics should be listed and appropriate statistical tests should be proposed.</p>	KHL appreciates the comment. As discussed in the BMP, we propose to assess presence/absence of both adults and juveniles. Please also see response to Comment DLA-BMP-07.
80	DLA-BMP-32	7/21/15 letter from ADFG	Section 5.3.3.2.1	<p><i>“In lieu of the Reach 4/5 recruitment station, gravel may also be placed manually at select locations within the Reach 1-4 mainstem; this alternative would also be developed in consultation with the stakeholders.”</i></p> <p><i>“...all gravel used during the implementation of this PM&E measure will be native material mined during the construction of the tunnel”...</i></p> <p>The applicant is encouraged to research and identify criteria for substrate size and depth. These criteria should relate to redd site selection and egg deposition depths. The applicant is also encouraged to identify and specify the use of criteria to assess the need for gravel augmentation.</p> <p>There is a huge difference between appropriate spawning substrate (gravels) and mined material from a blasted tunnel. Fractured rock does not make viable</p>	KHL appreciates the comment.

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				spawning substrate for salmonids. If a boring machine is used, the removed materials resemble powder, also which is not good spawning substrate.	
81	DLA-BMP-33	7/21/15 letter from ADFG	Section 5.3.3.2.1	<p><i>“Gravel (25 –150 mm) will be placed in the stream or at recruitment stations, per Merz and Setka (2004).”</i></p> <p>Merz and Setka (2004) and Merz et al. 2004¹, both described enhancement through gravel supplementation on the Mokelumne River at downstream sites below the Comanche Dam. This project placed more than 11,000 m3 of gravel at 12 spawning bed enhancement sites between 1991 and 2003. Merz et al. 2004 stated that this project: ... <i>“placed washed river rock in berms, staggered bar, riffle, or complex channel geometry configurations to improve spawning habitat.”</i> As is reflected in the Mokelumne River study report, the project used washed river gravel which was strategically placed to develop features within the study areas. Gravel was not simply dumped and allowed to wash downstream. Gravel 25mm to 150mm (1 inch to approximately 6.25 inches) is stated to be used. A more complete description of the gravel is necessary to identify composition size percentage. Little would be gained is 100% of gravels provided were 6 inch cobbles. This would fall within the proposed size range but would probably reduce spawning ability for most species spawning in Grant Creek.</p> <p>¹ Merz, J.E., J.D. Setka, G.B. Pasternack, and J.M. Wheaton. 2004. Predicting benefits of spawning habitat rehabilitation to salmonid (<i>Oncorhynchus</i> spp.) fry production in a regulated California river. <i>Canadian J. Fish. Aquat. Sci.</i>, Volume 61, page 1433-1446. Published by NRC Research Press Web site at http://cjfas.nrc.ca. October 2004..</p>	KHL appreciates the comment. Per previous responses, additional detail related to the adaptive management approach to be taken related to the need for gravel augmentation has been incorporated into the Biotic Monitoring Plan.
82	DLA-BMP-34	7/21/15 letter from ADFG	Section 5.3.3.2.1	<p><i>“At the conclusion of the 5-year period, KHL in consultation with stakeholders, will make a determination on the need for gravel augmentation within the mainstem.”</i></p> <p>If gravel augmentation is accepted as a PM&E measure by the agencies and FERC, it could be said that gravel augmentation is necessary because gravel recruitment in Grant Creek has been reduced or ceased altogether by project operations. It is not clear how KHL will define the <i>“need”</i> after five years. Gravel movement from lower Grant Creek would continue after the five years,</p>	KHL appreciates the comment. Per previous responses, additional detail related to the adaptive management approach to be taken related to the need for gravel augmentation has been incorporated into the Biotic Monitoring Plan.

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				therefore it would seem that some form of gravel augmentation would be necessary for the life of the project, perhaps on an intermittent basis. As reflected in Merz et al. 2004, the Mokelumne River spawning gravel augmentation project had been in operation for 12-13 years at the time of reporting. It is not clear if periodic maintenance flows will provide similar gravel recruitment when compared to pre-project gravel recruitment.	
83	DLA-BMP-35	7/21/15 letter from ADFG	Section 5.3.2.2	The citation of Metz and Setka (2004) is incorrect. It is Merz and Setka (2004).	KHL appreciates the comment. Due to subsequent consultation related to methodology with ADFG (and other stakeholders) the reference has been removed.
84	DLA-BMP-36	7/21/15 letter from ADFG	Section 5.3.2.2.3	This section cites Sections 3.4.2. and 4.4.2. for identifying methods of conducting adult surveys. We have commented on those sections in this draft plan. We refer to those comments as being appropriate for this section.	KHL appreciates the comment and has conducted further consultation with ADFG (and other stakeholders) in advance of the FLA filing to agree on a mutually acceptable monitoring protocol.
85	DLA-BMP-37	7/21/15 letter from ADFG	Section 5.4	<p><i>“It is important to note that additional collaboration with stakeholders is planned post-license issuance and during construction to fully develop an appropriate plan for any gravel supplementation efforts associated with Grant Creek.”</i></p> <p>PM&E measures should be fully described and defined prior to issuance of the FERC license.</p>	Per the BMP and with specific respect to the gravel augmentation/channel maintenance flows, an adaptive management approach is being proposed by KHL and the process for assessing need and determining timing is outlined in the FLA and the BMP. Until determination of need, amount and timing is assessed during the first 5 years of the license and associated consultation take place, the measure (if needed) itself cannot be defined. The BMP has been revised to further detail this approach.

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86	DLA-BMP-38	7/21/15 letter from ADFG	Section 5.4	<p><i>“Based upon the operational analysis conducted by KHL, the potential exists for channel maintenance type flows to occur via the natural outlet from Grant Lake during operation that would be sufficient for gravel recruitment from Reach 5. This may occur on a consistent enough periodic timeline to preclude the need for gravel supplementation in the mainstem of Grant Creek. This will need to be determined once operations commence.”</i></p> <p>Description of this facility has been presented as a lake storage system which will be drawn down as much as 13 feet during the winter and spring to meet power production demand. Refill timing will depend on spring snow melt and rainfall events. Reach 5 has been identified by the applicant as the source for gravel recruitment to lower Grant Creek. This reach currently is subjected to the force of water from all flows out of Grant Lake. Reach 5 has been described as primarily a bedrock influenced pool and cascade reach flowing through a canyon section. As such, water forces are necessary to produce erosion of materials which make up the replacement gravels for downstream reaches. Under normal project operations, short term channel maintenance type flows would probably lack the duration necessary to maintain the erosion function needed to sustain gravel recruitment at pre-project levels. We will address channel maintenance flows in our Recommended 10(j) Terms and Conditions.</p>	<p>KHL appreciates the comment. It is important to note that per the BMP and the Grant Lake Geomorphology Report, a majority of the substrate recruited into the Grant Creek system is the result of episodic events (earthquakes, glaciers, floods, etc.) as opposed to consistent “<i>water forces</i>” as a result of typical flows down Grant Creek. The Project would not preclude these episodic events from continuing to occur. In addition, periodic flushing flows have been proposed as a potential mitigation strategy to help recruit sediment from the canyon reach and transport it to the lower reaches of Grant Creek. These sediment size characteristics in Reaches 1 through 4 will be monitored and compared to existing sediment conditions per the plan, and if necessary, adaptive management practices potentially including, supplemental gravel augmentation, will be implemented.</p> <p>Per previous responses, additional detail related to the adaptive management approach to be taken related to the need for gravel augmentation has been incorporated into the Biotic Monitoring Plan.</p>
87	DLA-BMP-39	7/21/15 letter from ADFG	Section 5.4	<p><i>“Thus the need for continued collaboration with stakeholders to determine the appropriate need for and level of analysis related to the effectiveness of the measure.”</i></p>	KHL appreciates the comment.

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				Regardless of any PM&E measures chosen, there will be a need for continued collaboration if adaptive management is to be attempted. That is why it is vitally important that all plans be developed completely and thoroughly to establish requirements and expectations for construction and post construction implementation of PM&E measures.	
88	DLA-BMP-40	7/21/15 letter from ADFG	Section 6	<p><i>“Every winter, KHL will convene a global meeting with all stakeholders and FERC to review all management plans and related monitoring efforts associated with construction and subsequent operation of the Project.”</i></p> <p>We support the use of annual meeting to review and address management plans and monitoring efforts, when needed. We recommend adding language that provides this flexibility.</p>	KHL appreciates the comment and has added the phrase, “when needed” to this referred to sentence to provide the appropriate level of flexibility related to the annual compliance meeting process.
Draft Vegetation Management Plan					
89	DLA-VMP-01	7/21/15 letter from ADFG	N/A	The same comments on project features that were made under Specific Comments for Project Features (all plans) apply to this plan.	KHL appreciates the comment and per comment response DLA-MP-09, detailed descriptions of all project infrastructure can be reviewed in Exhibit F of the FLA to which, this document is appended.
90	DLA-VMP-02	7/13/15 letter from USFS	Introduction	I agree with the statement that the “activities and structures associated with this Project have the potential to impact sensitive plant species and to introduce invasive plants”.	KHL appreciates the comment.
91	DLA-VMP-03	7/13/15 letter from USFS	Section 3.1	Add the following bullet: “To reduce risk of spreading invasive plants begin project operations in uninfested areas before operating in infested areas.”	KHL has added the requested text.
92	DLA-VMP-04	7/13/15 letter from USFS	Section 3.1	Add the following bullet: “Locate and use project staging areas that are free of invasive plants. Avoid or minimize all types of travel through areas infested with invasive plants, or restrict to those periods when spread of seed or propagules are least likely.”	KHL has added the requested text.
93	DLA-VMP-05	7/13/15 letter from USFS	Section 3.1	At the bottom of the page it is stated “After invasive plants are removed, bare areas will be seeded”. However, the following two guidelines are listed on page 3-25 of the Forest Plan: “Use natural revegetation where seed source and site conditions are favorable towards achieving revegetation objectives” and	KHL has added the requested text.

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				“Use native plant species in revegetation/restoration projects when natural revegetation conditions are not favorable.”	
94	DLA-VMP-06	7/13/15 letter from USFS	Section 3.1	The draft plan suggests monitoring of invasive plant treatment sites will continue for 2 years after construction is completed to ensure treatments are effective. However, page 12 of the Chugach National Forest Invasive Plant Management Plan states “In general, successful control of the invasive species at the site will be considered as achieved when no occurrence of the species has been documented for five consecutive years of annual monitoring.”	KHL appreciates the comment and has proposed “surveys for and treatment of invasive plan infestations during the first growing season after construction completion and year 5 post-construction”.
Draft Avian Protection Plan					
95	DLA-APP-01	7/21/15 letter from ADFG	N/A	<p>The same comments on project features that were made under Specific Comments for Project Features (all plans) apply to this plan.</p> <p>There is very little stated in the draft plan that reflects on Avian Protections. The plan lacks specificity in identification of avian protection standards to be used and seemingly lumps wildlife into the mix. We have questions about definitions and how decisions will be made as to when something is “cost effective”, and when protections can be ignored.</p>	KHL appreciates the comment and per comment response DLA-MP-09, detailed descriptions of all project infrastructure can be reviewed in Exhibit F of the FLA to which, this document is appended.
96	DLA-APP-02	7/21/15 letter from ADFG	Section 5	<p><i>“KHL will comply with the regulatory requirements protecting avian species, as well as the need to obtain and comply with all necessary permits, monitor incidents of avian mortality, and make reasonable efforts to construct and maintain infrastructure to reduce the incidence of avian mortality.”</i></p> <p>How are reasonable efforts to be defined? Will this definition be accomplished through agency coordination and discussions?</p> <p><i>“KHL plans on limiting avian mortality by focusing its efforts in a cost-effective manner on the areas that pose the greatest risk to migratory birds. Therefore, the protection measures outlined below focus on: 1) avoiding disturbance during the breeding season; 2) avoiding incompatible power line design; and 3) establishment of vegetation removal timelines.”</i></p> <p>Explain how “cost effective” methods and areas of greatest risk will be defined?</p> <p>The applicant is encouraged to include water birds in their plan. Interactions between lake level manipulation, through project operation, and shoreline</p>	<p>KHL appreciates the comment and has modified the text in the APP.</p> <p>Lake level will not increase during the construction or operation phases or the project; therefore there will not be project related impacts to shoreline habitat loss.</p>

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				avian activities may be significant. The applicant should utilize existing information on species periodicity and proposed project operation to assess all potential interactions, prior to developing a protection plan. The applicant is encouraged to consider all species utilizing the shoreline of Grant Lake. Avoidance of habitat loss should be targeted, unavoidable habitat loss should be estimated, and protection/mitigation measures should be identified and proposed. These measures and plans are currently absent from the proposed plan.	
97	DLA-APP-03	7/9/15 letter from FERC	Section 5.1.1	In section 5.1.1 <i>Plan of Construction and Operation Timeline</i> , the Avian Protection Plan (APP) states that removal of vegetation during the breeding season directly impacts avian species protected under the Migratory Bird Treaty Act (MBTA). The APP states that, to the extent practicable, “KHL will adopt best management practices [] associated with the typical vegetation growing season between May 1 and July 15 of construction years.” The APP further states that, “[w]here curtailment of construction activities is not practicable, KHL will conduct nest surveys in advance of vegetation clearing to avoid areas with active nests.” Section 5.1.1 of the APP does not clearly list the best management practices that KHL is proposing to implement to protect avian species, and it is unclear whether the curtailment of construction activities and nest surveys are a part of (or the entire extent of) KHL’s proposed best management practices. The APP should fully describe the best management practices that KHL proposes to use to protect avian species, including: (1) a comprehensive list of the best management practices; (2) the circumstances under which these practices will be utilized; and (3) how these practices will reduce project effects.	KHL appreciates the comment and has modified/expanded its methodology description.
98	DLA-APP-04	7/21/15 letter from ADFG	Section 5.1.3.1	The discussion of avian post construction monitoring would seem better placed in the Biotic Monitoring Plan as a Section titled Avian Post Construction Monitoring. Wherever placed, the plan needs to include monitoring methodologies, protocol identification, and reporting. The same would go for monitoring described later in this document under various headings, including 5.2.3. 1.	KHL appreciates the comment. The intent of the BMP is to be aquatic-centric. As such KHL proposes to address all avian topics in the APP. A respective section (“ <i>Reporting</i> ”) is provided for both MBTA and BGEPA discussions.

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
99	DLA-APP-05	7/21/15 letter from ADFG	Section 5.1.3.2	Same comment as above under 5.1.3.1. (The discussion of avian post construction monitoring would seem better placed in the Biotic Monitoring Plan as a Section titled Avian Post Construction Monitoring. Wherever placed, the plan needs to include monitoring methodologies, protocol identification, and reporting. The same would go for monitoring described later in this document under various headings, including 5.2.3. 1.)	KHL appreciates the comment. The intent of the BMP is to be aquatic-centric. As such KHL proposes to address all avian topics in the APP. A respective section (“ <i>Reporting</i> ”) is provided for both MBTA and BGEPA discussions.
100	DLA-APP-06	7/9/15 letter from FERC	Section 5.1.3.2	Section 5.1.3.2 <i>Monitoring Associated with Power Lines and Infrastructure Placement</i> , provides for a review of existing recommended construction configurations for power line and infrastructure placement. We note that the final APP should use the most recent power line construction guidelines, including: (1) Avian Power Line Interaction Committee (APLIC). 2006. <i>Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006</i> . Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and Sacramento, CA; and (2) Avian Power Line Interaction Committee (APLIC). 2012. <i>Reducing Avian Collisions with Power Lines. The State of the Art in 2012</i> . Edison Electric Institute and APLIC. Washington, D.C.	KHL appreciates the comment and has revised the text to explicitly confirm compliance with the most recent guidelines from the APLIC.
101	DLA-APP-07	7/9/15 letter from FERC	Section 5.1.3.2	<i>Monitoring Associated with Power Lines and Infrastructure Placement</i> , states that KHL will consider infrastructure design measures to avoid or minimize the impacts of the project’s overhead transmission lines on avian species. The APP states that “KHL will develop a list of specific infrastructure design parameters designed for protecting avian species and distribute to stakeholders for comment and approval prior to finalizing and implementing associated construction efforts.” However, section 5.1.3.2 does not state that these design measures will be submitted to the Commission with the finalized APP and the final license application. Because the Commission will need to review and approve any such proposed infrastructure design measures prior to project construction and implementation, the APP should include the measures that KHL is proposing to use to minimize the impacts of the project’s overhead transmission lines. The APP should also discuss any additional/alternative infrastructure design measures that were proposed by resources agencies and stakeholders, and why KHL has determined such measures are inappropriate.	KHL appreciates the comment and has incorporated text into the FLA to acknowledge development of specific design parameters and further consultation/approval from FERC and stakeholders prior to construction commencing.

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
102	DLA-APP-08	7/9/15 letter from FERC	Section 5.1.3.2	<i>Monitoring Associated with Power Lines and Infrastructure Placement</i> , states that KHL will utilize line-transect surveys to determine the effectiveness of the infrastructure design measures used to minimize the impacts of the project's overhead transmission lines. However, the APP does not include any actions to be taken in the event monitoring results demonstrate an unexpected or unacceptable effect on avian species. The APP should describe how the monitoring data would be used and should identify corrective actions or a process for developing corrective actions, in the event monitoring results demonstrate an unexpected or unacceptable effect on avian species within the transmission line corridor.	KHL appreciates the comment and has incorporated additional text to address the identification and implementation of corrective actions, if necessary.
103	DLA-APP-09	7/21/15 letter from ADFG	Section 5.1.4.2	Same comment as above under 5.1.3.1. and 5.1.3.2. (The discussion of avian post construction monitoring would seem better placed in the Biotic Monitoring Plan as a Section titled Avian Post Construction Monitoring. Wherever placed, the plan needs to include monitoring methodologies, protocol identification, and reporting. The same would go for monitoring described later in this document under various headings, including 5.2.3. 1.)	KHL appreciates the comment. The intent of the BMP is to be aquatic-centric. As such KHL proposes to address all avian topics in the APP. A respective section (" <i>Reporting</i> ") is provided for both MBTA and BGEPA discussions.
104	DLA-APP-10	7/21/15 letter from ADFG	Appendix 1	This appears to be a broad topic which would include all wildlife, not just birds. It is not clear why it is included in the Avian Protection Plan. Since the project is proposed by KHL, inclusion of a section of the Homer Electric Association Management Directives Manual does not mean that this document is relative to the KHL application. In this document, ADF&G, and the Alaska State Trooper Wildlife Protection are left off the requirements for reporting incidents. This requirement is necessary for inclusion in plans relating to wildlife, such as the Bear Protection Plan yet to be written. Incidents with wildlife need to be reported to agencies with management jurisdiction over those animals. Appendix 1 is not clear in demonstrating its value to the Avian Protection Plan.	KHL appreciates the comment and has revised the text to state that required notifications will occur. Additionally, KHL has removed the Appendix 1 from the document.
Draft Historic Properties Management Plan					
105	DLA-HPMP-01	6/19/15 email from SHPO	N/A	Several suggested editorial revisions (document pages 1, 7, 13, 14, 27, 28)	KHL appreciates the comment and has revised the document accordingly.
106	DLA-HPMP-02	6/14/15 letter from	N/A	Summary •Hire a monitor for all ground-disturbing activities that occur within the APE.	KHL respects all perspectives related to the development of the Grant Lake

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
		Mark Luttrell		<ul style="list-style-type: none"> •Hire archaeologists and historians to monitor the exposed lake bottom surface as it becomes exposed. The entire shoreline needs to be examined weekly during drawdown. •Establish a detailed response plan for artifacts and sites that emerge during drawdown. •The HPMP coordinator should have relevant education and experience, not just the completion of an administrative course. S(he) should possess the skill and authority to assess significance and initiate protective procedures. 	Management Plans. KHL believes that the HPMP adequately identifies measures required to manage historic properties within the Project APE.
107	DLA-HPMP-03	6/14/15 letter from Mark Luttrell	N/A	<p>Overall, the HPMP reads like a collection of paragraphs lifted from elsewhere. Its heavy on boilerplate and light on specific, relevant and effective measures to protect cultural resources. FERC should not accept the HPMP as written. The weak plan appears to reflect KHL’s motivation to meet only the bare minimum legal requirements for licensing.</p> <p>Surprisingly, KHL offers this statement: “This plan proposes operating procedures to help protect cultural resources, with the <i>highest priority being the avoidance of impacts</i> (emphasis added) (HPMP page 19) yet presents no reasonable strategy to address that priority.</p> <p>FERC, USFS, ADF&G, USFWS, NPS and ADNR suggested that KHL failed to gather adequate and sufficient data to support its claims. But no amount of additional data can properly mitigate the loss of nonrenewable historic resources promised by the construction of KHL’s hydroelectric project. The project offers no significant benefits to Alaskans but may significantly damage fisheries, recreation, aesthetics and cultural resources, all of which are part of the core identity of Moose Pass residents.</p> <p>The only responsible way to protect cultural resources is to not build the facility. And to that sensible end, FERC should deny a permit to KHL.</p>	KHL appreciates the comment. The HPMP is a regulatory document that requires certain sections and, as such, includes language that may not change significantly between projects of similar size and scope. KHL’s project goal has been to avoid or minimize impacts to all resources. This strategy is evident in the Project’s reduced design footprint and decision to close the access road to public access
108	DLA-HPMP-04	6/19/15 email from SHPO	Section 1	Referring to development of a Programmatic Agreement, asked if probably a Memorandum of Agreement (MOA)?	KHL appreciates the comment and has revised the text accordingly.

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
109	DLA-HPMP-05	6/19/15 email from SHPO	Section 2.4	Global comment to make sure term for the resource – historic properties or cultural resources – is consistent throughout the plan.	KHL appreciates the comment. However, “historic property” and “cultural resource” are not synonymous and the use of both terms is warranted in the document. NHPA defines an historic property as a resource that is on or eligible for the National Register of Historic Places. Cultural resource is a more general term that makes no statement concerning eligibility.
110	DLA-HPMP-06	6/14/15 letter from Mark Luttrell	Section 2.4	<p>The biggest threat to cultural resources: lake level drop</p> <p>The most significant threat to cultural resources as a result of the project will be the exposure of the shoreline during fall drawdown. The proposed 13 foot vertical drawdown will result in a significantly larger horizontal exposure of the previously obscured lake bottom surface. This is a threat to cultural resources for two reasons. First, the entire shoreline of the lake will be available for easy foot traffic and thus, increased visitation. Currently, walking the shoreline is difficult due to dense vegetation and recent blowdown of beetle-killed spruce. Second, there is great potential that objects and sites will be revealed as the level of Grant Lake drops. Typically, humans view bodies of water as convenient garbage dumps. Water hides unsightly trash. It is very likely that potentially well preserved objects will be exposed to theft, vandalism and environmental decay. The final report recognizes this: “Project operations, as proposed, would cause the lake level to fluctuate, potentially affecting cultural sites or exposing previously unidentified sites” (Cultural Resources Study Final report, page 5). But the HPMP is weak on addressing the potential of undiscovered cultural resources. The plan claims that if something is discovered, work <i>in the immediate vicinity</i> would cease. That’s appropriate for on-site ground disturbing activities, but it is insufficient to address objects exposed as a result of drawdown over the entire Grant Lake shoreline.</p>	The Project design continued to evolve after the final draft of the cultural resource report and some statements concerning Project impacts in that report are now out-of-date. The HPMP comprises the most recent evaluation of possible Project effects on historic properties. As previously mentioned, the range of lake level fluctuation now being proposed as part of Project operations is only minimally different from natural variation in the lake level. Any impacts associated with drawdown are expected to be minor. Text has been added to the document to clarify this.
111	DLA-HPMP-07	6/14/15 letter from	Section 2.4	The plan states that, “[p]ossible archaeological resources that could currently be underwater, but may be exposed in the future due to drawdown or decreased	KHL appreciates the comment.

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		Mark Luttrell		lake level will be addressed later in this HPMP“ (HPMP page 7). It is not addressed later. Plus, “ [a]s a major part of its licensing proposal for the Project, KHL is proposing mitigation of the Alaska Railroad (SEW-00029), the Seward-Moose Pass Trail (SEW-00148), Solars Sawmill (SEW-00285), and the Case Mine District (SEW-00659). Yet under the site specific management measures section, only Solars Sawmill (SEW-00285), and the Case Mine District (SEW-00659) would receive any mitigation measures. It’s hard to see how any of the plan could be considered a “major part” of the licensing proposal.	See the comment response above. Mitigation is proposed for the Alaska Railroad (Section 5.1.4) and Seward-Moose Pass Trail (Section 5.2.4).
112	DLA-HPMP-08	6/19/15 email from SHPO	Section 3.1	Should the summary of meetings/consultations include information about the site visit that was attended by SHPO staff?	KHL appreciates the comment and has added the site visit to the meetings/consultations.
113	DLA-HPMP-09	6/19/15 email from SHPO	Section 3.2	Explain difference between the OHA and SHPO or just clarify roles. Perhaps just referring to us as SHPO would be appropriate in this document, since that is the primary role that we play?	KHL appreciates the comment and has added some clarifying text.
114	DLA-HPMP-10	7/9/15 letter from FERC	Section 3.3	In section 3.3 <i>Background Research</i> , the right column of Table 1 lists the eligibility status of site SEW-00029 (Alaska Railroad) as: “Nomination Closed”; however, on page 14 it states that KHL and the Alaska SHPO agree that the Alaska Railroad is eligible for the National Register. We are not sure what “Nomination Closed” means. Please clarify.	KHL appreciates the comment. “Nomination Closed” is the eligibility status ascribed to the Alaska Railroad in the AHRS. The property is “treated-as-eligible” for the purposes of the Project. A more complete discussion of the railroad’s eligibility is included in KHL 2015a. .
115	DLA-HPMP-11	7/9/15 letter from FERC	Section 3.4	In section 3.4 <i>Field Inventory</i> , in the last paragraph of page 17, there is a reference to Appendix E of the Second Amended Programmatic Agreement Among the USDA Forest Service, Alaska Region, the Advisory Council on Historic Preservation and the Alaska State Historic Preservation Officer Regarding Heritage Resource Management on National Forest in the State of Alaska (USFS 2002). Please attach Appendix E as an appendix to the HPMP.	Appendix E has been added as an appendix to the HPMP.
116	DLA-HPMP-12	6/14/15 letter from Mark Luttrell	Section 4.1	KHL states that the coordinator for the plan “will not be a cultural resources specialist, but will receive training” and “[t]he main responsibility of the HPMP Coordinator will be to review maintenance activities to determine when further archaeological review and consultation might be necessary” (HPMP	KHL appreciates your comment. The protocol outlined by KHL meets agency approval and industry standards for projects of similar scope.

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
				<p>pages 19-20). This is disturbing and wholly inadequate. An untrained administrator - the Project Operations and Maintenance Manager - will be unable to assess the significance of any objects or impacts nor determine which situations require consultation with an archaeologist. In fact, the incentive for this untrained person is to focus on construction and operation, not potential costly and time consuming peripheral adverse impacts to cultural resources.</p> <p>Instead, KHL should hire a trained archaeologist or historian that can adequately monitor all phases of ground disturbance and lead a team of researchers whose task it to monitor the entire lakeshore as it is revealed during drawdown.</p>	The coordinator will have responsibilities outside the HPMP and will need a generalized knowledge of numerous resource types. The coordinator will be guided by the HPMP, a document crafted by cultural resource specialists. Sections 4.2, 4.3, 4.4, and 4.6 discuss anticipated eventualities pertinent to cultural resources, including which actions do or do not require consultation.
117	DLA-HPMP-13	6/19/15 email from SHPO	Section 4.2	Referring to the proposed environmental restoration or repair measure, is this in-kind?	KHL appreciates the comment and has added some clarifying text.
118	DLA-HPMP-14	6/19/15 email from SHPO	Section 4.2	Referring to the proposed acquisition of equipment, property, right-of-way, or easements, is this from the USFS and what historic properties are present?	KHL appreciates the comment and has added some clarifying text. This refers to the process of acquisition itself, not any subsequent ground disturbing activities.
119	DLA-HPMP-15	6/14/15 letter from Mark Luttrell	Section 4.3	<p>Shoreline exposure (not just erosion) should be included on the list of nonexempt actions (HPMP page 22). New dewatered acreage will emerge next to known sites.</p> <p>It's important to understand that the definition of the term "site" must include this area and not be limited to predewatering terrestrial boundaries. This distinction is important in order to avoid confusion about the extent of KHL's management responsibilities of cultural resources.</p>	KHL appreciates the comment. See the response to comment DLA-HPMP-06.
120	DLA-HPMP-16	6/14/15 letter from Mark Luttrell	Section 4.5	The plan promises a "commitment to ongoing consultation with the Consulting Parties" yet suggests that the plan will only be "re-evaluated every five (5) years during the term of the license". Instead, the plan should be presented yearly for re-evaluation during the first three years when impacts are most likely to occur and then re-evaluated every other year.	KHL appreciates the comment. As stated in Section 4.5, if any of the consulting parties have an objection to the HPMP, or the way it is being carried out, they can, at any time, request consultation with FERC to resolve the concern.

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
121	DLA-HPMP-17	7/9/15 letter from FERC	Section 4.6	In section 4.6 <i>Previously Unidentified Properties</i> , on page 25, there should be language added that in the event human remains are found on USFS lands, the FS would be in charge, pursuant to NAGPRA. Please add the additional text.	KHL appreciates the comment and has added text accordingly. If human remains are found on USFS lands, the USFS, pursuant to NAGPRA, will be lead agency and will follow necessary protocols.
122	DLA-HPMP-18	6/14/15 letter from Mark Luttrell	Section 4.6	<p>In the section addressing previously unidentified properties, KHL promises, “[i]f the Consulting Parties agree that the discovery may be significant, then KHL shall proceed in accordance with an agreed-upon treatment of the historic property”. Yet nowhere in the plan is this agreed-upon treatment identified. The plan comes close though. Within the section on non-exempt actions, there is a description of the process that the consulting parties and a professional archaeologist would use to determine if additional survey work, consultation and a site specific plan should be developed. But crucially, it applies only to improvements “<i>that are outside the inventoried APE</i>” (emphasis added) (HPMP page 22). Treatment of exposed Grant Lake shoreline objects - which are within the APE - is not addressed.</p> <p>A thorough description of KHL’s plan to address expected types of objects should be included. For example, its reasonable to expect that an abundance of glass bottles will be exposed. How will KHL manage this? How will KHL prevent theft? Will KHL document and collect artifacts? Who owns the objects? Who will curate them? Who pays? Similarly, its possible that larger objects like heavy mining equipment or boat related objects may be revealed. How will KHL treat the exposure of these objects? How will they prevent vandalism?</p> <p>None of this is clear in the HPMP. Despite language implying otherwise, the plan offers as mitigation measures only two bare minimum strategies: interpretive panels and yearly monitoring.</p>	KHL appreciates the comment. Section 4.6 discusses discovery of previously unidentified cultural resources within the Project APE. Section 4.10 of the HPMP outlines the agreed-upon treatment of potential historic properties. The HPMP is designed to be a guide to aid consultation between parties with an interest in the cultural resources within or near the Project Area. It is through the consultation process that case-specific issues will be resolved. .
123	DLA-HPMP-19	6/14/15 letter from Mark Luttrell	Section 4.10	The plan states that “KHL will appoint an HPMP Coordinator at the time of its acceptance of the new license” (HPMP page 26), yet elsewhere claims that KHL’s identified Project Operations and Maintenance Manager will serve as the HPMP Coordinator” (HPMP page 19). This is unclear.	They are one in the same but the individual cannot be identified until chosen which will not occur until after the Project receives its operating license.

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
124	DLA-HPMP-20	6/19/15 email from SHPO	Section 5	This section may need some work. For the properties that may be affected, the primary mitigation proposed in interpretation. This section does not specify other means for avoidance, minimization of impacts, or other mitigation options. Are these management recommendations sufficient (i.e., interpretation and some annual monitoring)?	KHL appreciates the comment and has revised the HPMP text to clarify KHL's mitigation proposal. KHL feels that the proposed measures are adequate given the remote nature of these historic properties. Potential for increased visitation to sites as a result of Project development has been reduced by prohibiting public use of the access road. See also the response to comment DLA-HPMP-06 above.
125	DLA-HPMP-21	7/9/15 letter from FERC	Section 5	In section 5 <i>Site-Specific Management Measures</i> , on page 26, more information is needed to determine if any portion of the Sawmill-Upper Trail Lake Trail (SEW-01521) would be potentially affected by the proposed project. If a portion of this site would be potentially affected, then the HPMP should state that prior to any construction-related ground disturbing activities within the vicinity of this site, it would be evaluated for National Register eligibility, and if determined eligible, specific measures (please identify) would be taken to resolve any potential adverse effects to it. Please provide this additional information.	KHL appreciates the comment and has revised the text as suggested. No ground disturbing activities will occur as a result Project development near the Sawmill-Upper Trail Lake Trail. Future planning and design will seek to avoid activities that have potential to impact the site. If ground-disturbing activities are required in the future near the trail, then procedures outlined in Section 4.3 will be followed to determine the trail's eligibility status and as necessary, determine appropriate mitigation measures through consultation.
126	DLA-HPMP-22	6/14/15 letter from Mark Luttrell	Section 5	The plan fails to address the lake drawdown as a separate manageable adverse effect. Instead, drawdown is addressed on a site specific basis. But there are sites left out of KHL's plan and there is a high potential for the exposure of previously unknown objects and sites. KHL proposes yearly monitoring and an interpretive panel as a default strategy for two of the known sites (and nothing for others). Yearly monitoring (or, weakly, "future monitoring" HPMP page 26) is inadequate and will only document damage. A better strategy is to monitor the entire shoreline, not just the known sites, weekly during the first year of operation as the dewatering process takes place. A pedestrian survey of	KHL appreciates the comment. The HPMP is a primarily a management document for properties that are eligible for or listed on the National Register of Historic Places. However, measures to address previously unknown, but potentially significant, cultural resources are also included in the document (Section 4.6).

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
				the horizontal expression of the lake drawdown as it occurs, that is, having staff be the first to observe and document any revealed cultural resources will ensure the best protection.	
127	DLA-HPMP-23	6/14/15 letter from Mark Luttrell	Section 5	The plan state's that "no further work is proposed at sites determined ineligible for the National Register" (HPMP page 26). However, objects associated with these ineligible sites may be revealed during drawdown.	KHL appreciates the comment. See also the response to the previous comment.
128	DLA-HPMP-24	6/14/15 letter from Mark Luttrell	Section 5	The southern shore of the Grant Lake on the east side of Grant Creek is likely to contain more cultural resources than has been identified. There is a gravel beach that is easily accessible by boat and an open low-angle meadow. It has high potential for evidence of past use. KHL should require a full-time monitor at the area during construction of the intake, intake bypass tunnel, access road and any staging or parking areas.	KHL respects all perspectives related to the development of the Grant Lake Management Plans. KHL believes that the HPMP adequately identifies measures required to manage historic properties within the Project APE.
129	DLA-HPMP-25	7/9/15 letter from FERC	Section 5.1.3	In section 5.1.3 <i>Impact Status</i> , on page 27, first sentence. It appears that this sentence is incomplete. Please modify the sentence, accordingly.	KHL appreciates the comment but believes the sentence is complete as written.
130	DLA-HPMP-26	6/14/15 letter from Mark Luttrell	Section 5.1.3	KHL states: "A good HPMP should identify the nature and significance of historic properties that may be affected by project maintenance and operation, any proposed improvements to project facilities, and <i>public access</i> ." (emphasis added) (Guidelines for the Development of Historic Properties Management Plans For FERC Hydroelectric Projects May 20, 2002 page 2). The Draft License Application defers management of the access road to an unspecified later date, yet the road will present the second biggest threat to cultural resources by encouraging increased visitation. Roads attract all the bad habits of humans: litter, poaching, oil spills, vegetation damage, dumping, further incursions into wild land on side trails, multiple trails, an increase in "defense of life and property" kills of bears, stray fires (most wild land fires are started by humans), noise, vandalism and loss of the sense of wilderness. An access road threatens cultural resources, yet a meaningful discussion of it is missing.	As previously mentioned, based on public sentiment and agency interaction, KHL has proposed in the FLA that the Project be operated in such a fashion as to restrict public access via all Project developed routes.
131	DLA-HPMP-27	7/9/15 letter from FERC	Section 5.2.3	In section 5.2.3 <i>Impact Status</i> , on page 27, there is some question whether a 1904 historic trail runs along the eastern side of the Trail lakes (See section 5.2.1). Although the trail was not located during field surveys, remnants of it may still be affected by the proposed project, if present. Therefore, this portion of the proposed project should be monitored in case of an inadvertent discover	KHL appreciates your comment and has amended the text accordingly. Ground-disturbance activities on the eastern side of the Trail lakes and near the Seward Highway will be limited

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
				of the 1904 historic trail. Also, please reconcile this issue in section 5.2.4 on page 28.	as much as possible. The HPMP Coordinator will notify individuals working in the area of the potential to encounter cultural resources and remind them of appropriate procedures should materials be encountered. The presence of a cultural resource specialist monitor in these areas during ground-disturbance activities will be considered during the consultation process. .
132	DLA-HPMP-28	6/14/15 letter from Mark Luttrell	Section 5.5	<p>“...[T]he site contains artifacts and building remains that could be adversely affected by increased visitation and/or use as a modern campsite. Fluctuation in the lake level will likely increase the rate of erosion along the water’s edge at the site. Lower lake levels will expose two rock jetties and possibly other historic features that are currently underwater” (HPMP page 29). Plus, “Solars Sawmill is eligible for the National Register under Criterion D” (HPMP page 30).</p> <p>The site will be easily accessible to users of the access road (whether officially closed or not). Once at the dewatered shoreline of Grant Lake, visitors will be able to walk on the shoreline to the site (currently, to access the site from the proposed end of the access road, a visitor must wade across the outlet of Grant Lake). Increased access equals increased threat.</p> <p>So far, documents related to the cultural resources of the project have been restricted under “privileged” status. The reason for the restriction is to avoid calling attention to the specific location of a particular site. Yet that negative effect is exactly what KHL proposes as a mitigation measure. Their proposal: “installation of an interpretive panel” (HPMP page 30). Doing so will encourage theft and vandalism.</p>	Consistent with many other projects of this type, key cultural artifacts within the project area are known to be identified via interpretive signs to document their importance and mitigate against irresponsible individuals inadvertently causing harm to them. As is inherent anywhere, a certain portion of individuals may detrimentally impact cultural resources. KHL’s proposal to document these resources is intended to protect them to the greatest extent possible. If FERC views the interpretative sign at this location as a detriment, KHL will remove the proposal to install a sign at this location.
133	DLA-HPMP-29	6/19/15 email from SHPO	Section 5.5.4	Expand on how annual monitoring would be implemented. Who would be responsible, how, when, etc.	KHL will coordinate with USFS to ensure the site is monitored yearly. Timing and personnel will be arranged cooperatively between KHL and

Number	Comment number	Comment source	DLA / document reference	Stakeholder comment	KHL response
					USFS. KHL tentatively proposes to time the first monitoring to occur concurrently with the first scheduled drawdown .
134	DLA-HPMP-30	6/14/15 letter from Mark Luttrell	Section 5.6	The final report documents many modern and historic features and objects on land where the trail ends at Grant Lake. It is likely that other associated objects will be revealed with drawdown. Like other sites on the shore of Grant Lake, this site should be monitored during the entire course of the 13 foot drawdown during the first yea. KHL promises that it “will consider SEW-01455’s location and significance in future planning in order to avoid any possible impact to this site”. There could not be weaker language.	KHL appreciates the comment. The materials recorded at the end of Grant Lake Trail are part of the Grant Lake Dock site, which was determined not eligible for the National Register by USFS prior to KHL’s study (KHL 2015a).
135	DLA-HPMP-31	6/14/15 letter from Mark Luttrell	Section 5.7	The plan calls for “periodic monitoring of site condition and the installation of an interpretive panel at the site” (HPMP page 32). As a mitigation measure, an interpretive panel is appropriate at this site since the site’s presence is well known and is easily accessible. However, the term “periodic monitoring” is weak and noncommittal. Instead KHL should monitor the site and exposed shoreline weekly during the first year of drawdown and perform yearly inspections in subsequent years.	KHL appreciates the comment and has amended the text.
136	DLA-HPMP-32	6/14/15 letter from Mark Luttrell	Section 5.7	This cabin dates to the 1920s. Like other sites, there is the potential for associated cultural objects to be revealed during drawdown.	KHL appreciates the comment.

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KHL. 2015c. Grant Lake Hydroelectric Project (FERC No. 13212), Draft Operation Compliance Monitoring Plan. May 2015.

KHL. 2015d. Grant Lake Hydroelectric Project (FERC No. 13212), Draft Biotic Monitoring Plan. June 2015.

KHL. 2015e. Grant Lake Hydroelectric Project (FERC No. 13212), Draft Vegetation Management Plan. May 2015.

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Attachment E-2. Summary of Licensing Consultation and Associated Formal Comment Letters

This attachment contains a summary table of the Grant Lake Hydroelectric Project licensing consultation record and the full corresponding documentation.

Because of the potentially sensitive nature of information regarding archeological and historic sites, records related to the topic of cultural resources containing such information (as identified in the summary table) are not being distributed to the general public. This information is being filed separately as Volume 2 with a Privileged designation. It may be obtained by request to Kenai Hydro, LLC or FERC, subject to confidentiality provisions.

Grant Lake Hydroelectric Project
Licensing Consultation Record Summary

*Individual consultation record files can be viewed online at: <http://www.kenaihydro.com/index.htm>

Date	Summary of Contact	Agency/Organization Consulted	Documentation filename (pdf)
7/1/2009	Paul McLarnon (HDR) and Karen O'Leary (USFS) exchanged emails regarding Kenai Hydro's special use permit for studies.	USFWS	2009-07-01USFSSpecialUsePermit.pdf
7/8/2009	Jenna Borovansky (LVA) and Mark Luttrell (RBCA) exchanged emails regarding public availability of the PAD.	Resurrection Bay Conservation Alliance	2009-08-07LuttrellPADavailability.pdf
8/6/2009	Kenai Hydro, LLC filed a Pre-Application Document (PAD) with FERC.	All Licensing Contacts	2009-08-06PAD.pdf
8/27/2009	Jenna Borovansky (LVA) provided Mark Luttrell (RBCA) with requested PAD background information via email.	Resurrection Bay Conservation Alliance	2009-08-27LuttrellRBCA.pdf
9/1/2009	Jenna Borovansky (LVA) emailed agencies a reminder that comments on Kenai Hydro's request to use the Traditional Licensing Process were due.	ADFG; ADNR; USFWS; USFS; USACE; NOAA; NPS	2009-09-01TLPcommentReminder.pdf
9/14/2009	Steve Gilbert (KHL) filed with FERC a request for use of the Traditional Licensing Process (TLP).	FERC	2009-09-14TLPrequest.pdf
9/15/2009	Jennifer Hill (FERC) sent Steve Gilbert (KHL) a letter authorizing KHL to initiate Section 106 consultation.	FERC	2009-09-15Section106Designation.pdf
9/15/2009	Ann Miles (FERC) issued Steve Gilbert (KHL) a letter approving the use of the TLP.	FERC	2009-09-15TLPapproval.pdf
9/22/2009	Kenai Hydro, LLC held an aquatic resources technical work group meeting with agencies and interested stakeholders, and conducted a site visit to Grant Creek to receive input on the fisheries and instream flow studies.	ADFG; ADNR; USFWS; USFS; NOAA; Citizen	2009-09-22_TWG_Final_Mtg_Summary.pdf
9/23/2009	Jason Werner emailed Brad Zubeck (KHL) information regarding his private property located on Grant Creek.	Property owners	2009-09-23Werner.pdf
9/30/2009	Steve Gilbert (KHL) filed with FERC the second preliminary permit progress report.	FERC	2009-09-30ProgressReport2nd.pdf
10/7/2009	Jim Ferguson (ADFG) emailed Jenna Borovansky (LVA) regarding his availability for upcoming public meetings.	ADFG	2009-10-07FergusonADFG.pdf
10/7/2009	Bruce Jaffa emailed Jenna Borovansky (LVA) regarding his availability for upcoming public meetings.	Citizen	2009-10-07Jaffa.pdf
10/7/2009	Lynnda Kahn (UWFWS) emailed Jenna Borovansky (LVA) regarding her availability for upcoming public meetings.	USFWS	2009-10-07KahnUSFWS.pdf
10/7/2009	Karen O'Leary emailed Jenna Borovansky (LVA) regarding her availability for upcoming public meetings.	USFS	2009-10-07OlearyUSFS.pdf
10/7/2009	Sue Walker (NOAA-NMFS) emailed Jenna Borovansky (LVA) regarding her availability for upcoming public meetings.	NOAA	2009-10-07WalkerNMFS.pdf

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10/7/2009	Jason Werner emailed Jenna Borovansky (LVA) regarding his availability for upcoming public meetings.	Property owners	2009-10-07WernerLandowner.pdf
10/7/2009	Jenna Borovansky (LVA) emailed all licensing contacts proposed dates for a Joint Meeting and FERC Scoping meeting.	All Licensing Contacts	2009-10-07JointMtgDatesProposal.pdf
10/7/2009	Jenna Borovansky (LVA) emailed the Hydropower Reform Coalition regarding updated contact information.	Hydropower Reform Coalition	2009-10-07HRCcontact.pdf
10/11/2009	Gary Fandrei (CIAA) emailed Jenna Borovansky (LVA) regarding his availability for upcoming public meetings.	Cook Inlet Aquaculture Association	2009-10-11Fandrei.pdf
10/12/2009	Bob Baldwin (FOCL) emailed comments to Jenna Borovansky (LVA) regarding scheduling of scoping meetings.	FOCL	2009-10-12BaldwinFOCL.pdf
10/12/2009	Valerie Connor (Alaska Center for the Environment) emailed Jenna Borovansky (LVA) recommendations for upcoming public meeting locations and participation.	Alaska Center for the Environment	2009-10-12ConnorACE.pdf
10/12/2009	Mark Luttrell (RBCA) emailed Jenna Borovansky (LVA) recommendations for upcoming public meeting locations and participation.	Resurrection Bay Conservation Alliance	2009-10-12LuttrellRBCA.pdf
10/12/2009	Joshua O. Milligan (USFS) emailed Jenna Borovansky (LVA) regarding his availability for upcoming public meetings.	USFS	2009-10-12MilliganUSFS.pdf
10/13/2009	Katherine McCafferty (USACE) emailed Jenna Borovansky (LVA) regarding her availability for upcoming public meetings.	USACE	2009-10-13McCaffertyACOE.pdf
10/21/2009	Karen Kromrey (USFS) emailed Jenna Borovansky (LVA) regarding her availability for upcoming public meetings.	USFS	2009-10-21KromreyUSFS.pdf
10/22/2009	Bruce Jaffaa emailed Jenna Borovansky (LVA) regarding a recommendation from the Moose Pass Advisory Planning Commission to hold a public meeting regarding the Grant Lake Project in Moose Pass.	Moose Pass Advisory Planning Commission	2009-10-22JaffaMPAPC.pdf
10/23/2009	Jenna Borovansky (LVA) emailed all licensing contacts notification of a November 12, 2009 Joint Meeting.	All Licensing Contacts	2009-10-23JointMtgAnnouncement.pdf
10/23/2009	Brad Zubeck (KHL) emailed Moose Pass parties in response to requests regarding the location of public meetings regarding the Grant Lake Project.	All Licensing Contacts; Moose Pass representatives	2009-10-23PublicMtgLocation.pdf
10/27/2009	Steve Gilbert (KHL) filed with FERC notice of the November 12, 2009 Public Meeting.	FERC	2009-10-27PublicMtgNotice.pdf
10/31/2009	Jan Odhner emailed Jenna Borovansky (LVA) regarding the location of the Grant Lake Project.	Citizen	2009-10-31Odhner.pdf
11/6/2009	Lynnda Kahn (USFWS) emailed Siera Brownlee (HDR) regarding wildlife studies and eagle nest locations in the Grant Lake Project area.	USFWS	Priv_2009-11-06KahnUSFWS.pdf

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11/10/2009	Jenna Borovansky (LVA) notified Aquatic Resources Technical Work Group members that a meeting summary for the September 22-23, 2009 meeting was available on the Kenai Hydro website and provided an agenda for the November 12, 2009 Joint Meeting.	ADFG; ADNDR; FERC; USFWS; USFS; USACE; NOAA; NPS; Citizen	2009-11-10FinalTWGmtgSummary.pdf
11/12/2009	KHL held a public meeting regarding the Grant Lake Project licensing process on November 12, 2009.	All Licensing Contacts	2009-11-12PublicMtg.pdf
11/13/2009	Brad Zubeck (KHL) and Karen O'Leary (USFS) exchanged emails regarding Forest Service representation at the November 12, 2009 Joint Meeting.	USFS	2009-11-13OlearyUSFS.pdf
11/19/2009	Brad Zubeck (KHL) emailed Mike Cooney the participant list for the November 12, 2009 Joint Meeting	Citizen	2009-11-19Cooney.pdf
11/24/2009	Jeff Estes (City of Seward) emailed Brad Zubeck (KHL) information regarding the transmission line proposal for the Grant Lake Project.	City of Seward	2009-11-24EstesCityofSeward.pdf
12/4/2009	Kenai Hydro, LLC filed a transcript of the November 12, 2009 Joint Meeting and proof of public notice.	FERC	2009-12-04JointMtgTranscript.pdf
12/7/2009	Jenna Borovansky (LVA) and Mark Luttrell (RBCA) exchanged emails regarding access to the November 12, 2009 Joint Meeting transcript and attendance sheet.	Resurrection Bay Conservation Alliance	2009-12-07LuttrellRBCA.pdf
12/17/2009	Brad Zubeck (KHL) filed a letter with FERC regarding incorrect contact information contained in the Friends of Cooper Lake's December 9, 2009 comment letter.	FERC	2009-12-17FERCkBose.pdf
12/21/2009	Mike Cooney wrote to Kenai Hydro regarding CIRT's participation in Kenai Hydro, LLC and the timing of FERC scoping meetings.	Citizen	2009-12-21Cooney.pdf
12/31/2009	Kenai Hydro, LLC filed affidavits of publication for the Joint Meeting and notice of a public meeting to be held in January 2010 in Moose Pass, Alaska.	FERC	2009-12-31Project13211-13212mtgnotice.pdf
12/31/2009	Jenna Borovansky (LVA) notified all relicensing contacts that a public meeting regarding the Grant Lake Project will be held in Moose Pass, Alaska on January 13, 2010.	All Licensing Contacts	2009-12-31MoosePassMtgNotice.pdf
1/1/2010	William Coulson emailed Brad Zubeck (KHL) comments on the Grant Lake Project.	Citizen	2010-01-01Coulson.pdf
1/8/2010	Brita Mjos emailed Brad Zubeck (KHL) comments on the Grant Lake Project.	Citizen	2010-01-08Mjos.pdf
1/11/2010	Brad Zubeck (KHL) gave a powerpoint presentation to the ADF&G Advisory Committee and answered questions regarding the Grant Lake Project.	ADFG	2010-01-11ADFGAdvisoryCommitteeMtg.pdf

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1/11/2010	Valerie Connor provided Kenai Hydro, LLC with comments on the PAD.	Alaska Center for the Environment	2010-01-11ConnorACE.pdf
1/11/2010	Robert Baldwin (Friends of Cooper Landing) provided Kenai Hydro, LLC comments on the Grant Lake PAD.	FOCL	2010-01-11FOCL.pdf
1/11/2010	Mark Luttrell (RBCA) submitted comments on the Grant Lake PAD to Kenai Hydro, LLC.	Resurrection Bay Conservation Alliance	2010-01-11RBCA.pdf
1/12/2010	Mike Cooney and Brad Zubeck (KHL) exchanged emails regarding information for the January 13, 2010 public meeting in Moose Pass.	Citizen	2010-01-12Cooney.pdf
1/13/2010	Bruce Jaffa emailed Brad Zubeck (KHL) follow-up to the January 13, 2010 public meeting.	Citizen	2010-01-13Jaffa.pdf
1/14/2010	Irene Lindquist emailed Brad Zubeck (KHL) information regarding trails in the Grant Lake Project area.	Citizen	2010-01-14Lindquist.pdf
1/14/2010	Bruce Jaffa emailed Brad Zubeck (KHL) information regarding a cabin located on Grant Lake and local use of the area.	Citizen	2010-01-14Jaffa.pdf
2/8/2010	Kenai Hydro, LLC filed a summary of the January 13, 2010 public meeting in Moose Pass.	FERC	2010-02-08GrantLake_FallsCreek_comments.pdf
3/1/2010	Kenai Hydro, LLC filed updated contact information with FERC.	FERC	2010-03-01_updated_applicant_contact_info_KHL.pdf
3/2/2010	Kenai Hydro, LLC filed its 2009 environmental study report with FERC.	FERC	2010_03_02_P13211_13212KHLstudyreportfiling.pdf
3/4/2010	Jenna Borovansky (LVA) notified all licensing contacts that the 2009 environmental baseline study report was available on the Kenai Hydro website.	All Licensing Contacts	2010-03-04Notice2009StudyReport.pdf
3/4/2010	Jenna Borovansky (LVA) emailed the Aquatics Technical Work Group that the 2009 environmental baseline study report was posted on the Kenai Hydro website.	ADFG; ADNR; FOCL; FERC; USFWS; USFS; USACE; NOAA; NPS; Kenaitze Indian Tribe	2010-03-04TWGstudyReportNotice.pdf
3/5/2010	Bruce Jaffa and Jenna Borovansky (LVA) exchanged emails regarding availability of information from the Moose Pass public meeting.	Citizen	2010-03-05Jaffa.pdf
3/15/2010	Brad Zubeck (KHL) exchanged emails with Thomas Harkreader regarding the mine near Grant Lake.	Citizen	2010-03-15Harkreader.pdf
3/31/2010	Steve Gilbert (KHL) filed with FERC the third preliminary permit progress report.	FERC	2010-03-31ProgressReport3rd.pdf
4/16/2010	Sirena Brownlee (HDR) discussed by phone the timing of bear den surveys in the Grant Lake area with Jeff Selinger (ADFG).	ADFG	2010-04-16SelingerADFG.pdf

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4/16/2010	Sirena Brownlee (HDR) emailed Jeff Selinger (ADFG) to confirm the timing of bear den surveys in the Grant Lake area.	ADFG	2010-04-16SelingerADFG2.pdf
4/20/2010	Brad Zubeck (KHL), Mike Salzetti (KHL), Jenna Borovansky (LVA), Joe Adamson (FERC), Jennifer Hill (FERC), and Kim Nyguen (FERC) met by conference call to discuss the initiation of the 2010 study season and early scoping.	FERC	2010-04-20FERC.pdf
4/20/2010	Lesli Schick (ADNR) emailed John Wolfe (HDR) maps with the Iditarod Trail location in the Trail Lake/Grant Lake area.	ADNR	2010-04-30SchickANDR.pdf
4/23/2010	Jenna Borovansky (LVA) emailed agency and tribal representatives regarding their availability for early June meetings.	ADFG; FERC; USFWS; USFS; USACE; NOAA; NPS; Kenai Peninsula Borough; EPA; Qutekcak Native Tribe; Kenaitze Tribe	2010-04-23AgencyStudyNotice.pdf
4/23/2010	Jenna Borovansky (LVA) emailed licensing contacts that the 2010 study season will proceed and that draft study plans will be provided for review.	All Licensing Contacts	2010-04-23StudyProgramNotice.pdf
5/3/2010	Jenna Borovansky (LVA) emailed Kim Nguyen and Mark Ivy (FERC) a list of agency representatives' availability for the first week in June for a scoping meeting.	FERC	2010-05-03NguyenIvyFERC.pdf
5/3/2010	Kenai Hydro, LLC filed a revised project description and PAD study issues with FERC.	FERC	2010-05-03RevisedProjectDescription.pdf
5/4/2010	Jenna Borovansky (LVA) emailed all licensing contacts notification that draft study plans for the Aquatic and Water Resources were posted on the Kenai Hydro website and that a review Project description was filed with FERC on May 3, 2010.	All Licensing Contacts	2010-05-04AquaticsWaterStudyPlanNotice.pdf
5/4/2010	Brad Zubeck (KHL) had a phone conversation with Mark Ivy (FERC) regarding scoping meeting logistics, and future Project permitting needs.	FERC	2010-05-04IvyFERC.pdf
5/4/2010	John Wolfe (HDR) exchanged emails with Jamie Schmidt (USFS) regarding the USFS easements on ANDR land for the Iditarod trail and information on proposed road alignments to follow-up on a phone conversation regarding the Iditarod Trail location relative to proposed road access to the Grant Lake Project.	USFS	2010-05-04SchmidtUSFS.pdf
5/5/2010	Mary Ann Benoit (USFS-Seward Ranger District) called Sirena Brownlee (HDR) to provide information on bear den surveys and raptor surveys to be conducted in the Project area.	USFS	2010-05-05BenoitUSFS.pdf
5/11/2010	Thomas Harkreader emailed Jenna Borovansky (LVA) information regarding ongoing mining activities in the Grant Lake area.	Citizen	2010-05-11Harkreader.pdf

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5/11/2010	Jenna Borovansky (LVA) emailed all licensing contacts notification of the FERC scoping meetings and that draft study plans for the Recreation and Visual, Terrestrial, and Cultural Resources were posted on the Kenai Hydro website.	All Licensing Contacts	2010-05-11RecreationTerrestrialCulturalStudyPlanNotice.pdf
5/17/2010	David Pearson emailed Kenai Hydro comments on the Recreation and Visual Resources draft study plan.	Citizen	2010-05-17PearsonRecreationComments.pdf
5/18/2010	Brad Zubeck (KHL) exchanged emails with Valerie Connor (ACE) regarding questions on the schedule for the Grant Lake Project.	USACE	2010-05-18ConnorACE.pdf
5/18/2010	Jack Dean emailed Jenna Borovansky (LVA) regarding assistance with access to the study plans.	Citizen	2010-05-18Dean.pdf
5/20/2010	Jenna Borovansky (LVA) emailed Instream Flow TWG members notice of a June 22, 2010 meeting to discuss the instream flow study.	ADFG; ADNR; FERC; USFWS; USFS; Kenai River Sportsfishing; CIAA	2010-05-20TWGmtgNotice.pdf
5/21/2010	Brad Zubeck (KHL) exchanged emails with Doug Palmer (USFWS), Jason Mouw (ADFG), Karen O'Leary (USFS) and other agency representatives regarding a request for an extended comment deadline on the draft study plans.	ADFG; NMFS; FOCL; FERC; USFWS; USFS; USACE; ADNR	2010-05-21AgencyStudyPlanCommentDeadline.pdf
5/21/2010	Jenna Borovansky (LVA) emailed all licensing contacts notice of a study plan discussion session and reminder of upcoming FERC scoping meetings.	All Licensing Contacts	2010-05-21StudyPlanMeetingNotice.pdf
5/23/2010	Kate Glaser and Jenna Borovansky (LVA) exchanged emails regarding the FERC environmental site visit.	Citizen	2010-05-23Glaser.pdf
5/24/2010	Jeff Estes (City of Seward) emailed Kenai Hydro, LLC comments on the proposed road alignment.	City of Seward	2010-05-24EstesSeward.pdf
5/25/2010	Mary Ann Benoit (USFS) emailed Sirena Brownlee (HDR) regarding the Terrestrial Resources draft study plan and frequency of bird surveys in the Project area.	USFS	2010-05-25BenoitUSFS.pdf
5/25/2010	Jenna Borovansky (LVA) emailed details regarding the FERC environmental site review on June 2, 2010.	ADFG; FERC; USFS; USACE; NOAA; Citizen; ADNR	2010-05-25SiteVisitDetails.pdf
5/26/2010	Jenna Borovansky (LVA) emailed agency representatives regarding an extension of the draft study plan comment deadline.	ADFG; FERC; USFWS; USFS; USACE; EPA; ADNR	2010-05-26AgencyStudyPlanCommentExtension.pdf
5/26/2010	James Hasbrouck (ADFG) emailed James Brady (HDR) information on fish stocking in Vagt Lake.	ADFG	2010-05-26HasbrouckADFG.pdf
5/26/2010	Brad Zubeck (KHL) exchanged emails with Eric Rothwell (NOAA) regarding arranging a time for Eric to accompany field crews in the Project area.	NOAA	2010-05-26RothwellNOAA.pdf

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5/26/2010	Brad Zubeck (KHL) sent a letter to Judith Bittner (SHPO) and consulting parties to initiate Section 106 consultation and propose a meeting to review the proposed Cultural Resources APE.	See Summary of Contact	2010-05-26Section106ConsultInitiation.pdf
5/26/2010	Jenna Borovansky (LVA) exchanged emails with Mark Ivy (FERC) to clarify the study plan comment schedule.	FERC	2010-05-26IvyFERC.pdf
5/29/2010	Jenna Borovansky (LVA) and Thomas Harkreader exchanged emails regarding the mine near Grant Lake.	Citizen	2010-05-29Harkreader.pdf
6/8/2010	Jenna Borovansky (LVA) emailed Mark Luttrell (RBCA) information regarding the cultural resources study.	Resurrection Bay Conservation Alliance	2010-06-08LuttrellRBCA.pdf
7/30/2010	Jennifer Hill (FERC) issued a letter to Brad Zubeck (KHL) requesting that KHL meet with USFS within 120 days to discuss the Grant Lake Project proposed location and configuration.	FERC	2010-07-30FERCjHill.pdf
8/10/2010	Jenna Borovansky and Steve Padula (LVA) held a conference call with the USFS regarding land management objectives.	USFS	2010-08-10GrantLakeUSFSConfCallSummary.pdf
8/31/2010	Kenai Hydro, LLC filed a revised project description with FERC.	FERC	2010-08-13RevisedProjectDescription.pdf
9/30/2010	Mike Salzetti (KHL) filed with FERC the fourth preliminary permit progress report.	FERC	2010-09-30ProgressReport4th.pdf
10/12/2010	Mike Salzetti (KHL) filed with FERC notes from the August 10, 2010 meeting with the USFS.	USFS	2010-10-12USFSmtgNotes.pdf
3/21/2011	Tim Welch (FERC) issued a letter to Brad Zubeck (KHL) requesting a status of the preliminary permit for Falls Creek.	FERC	2011-03-21FallsCrPPstatusRequest.pdf
3/31/2011	Mike Salzetti (KHL) filed with FERC the fifth preliminary permit progress report.	FERC	2011-03-31ProgressReport5th.pdf
9/30/2011	Mike Salzetti (KHL) filed with FERC the sixth preliminary permit progress report.	FERC	2011-09-30ProgressReport6th.pdf
9/30/2011	Mike Salzetti (KHL) filed with FERC an application for a second preliminary permit for the Grant Lake Project.	FERC	2011-09-30PP2ndAppl.pdf
12/29/2011	Ken Hogan (FERC) issued a letter to Mike Salzetti (KHL) notifying KHL of acceptance of the application for a second preliminary permit.	FERC	2011-12-29PP2ndApplAccept.pdf
8/28/2012	Mike Salzetti (KHL) filed with FERC the first preliminary permit progress report.	FERC	2012-08-28ProgressReport1st.pdf
10/31/2012	Cory Warnock (LVA) emailed licensing participants with a meeting proposal to gauge appropriate dates for re-initiation of stakeholders into the licensing process.	All Licensing Contacts	2012-10-31ProcessReinitiation.pdf

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10/31/2012	Cory Warnock (LVA) exchanged emails with Monte Miller (ADFG) regarding the potential location and timing of the Natural Resources Studies Meeting.	ADFG	2012-10-31ADFGmMiller.pdf
10/31/2012	Cory Warnock (LVA) exchanged emails with Cassie Thomas (NPS) regarding potential locations for the Natural Resources Studies Meeting.	NPS	2012-10-31NPScThomas.pdf
11/1/2012	Cory Warnock (LVA) exchanged emails with Michael Walton (ADNR) regarding potential locations for the Natural Resources Studies Meeting.	ADNR	2012-11-01ADNRmWalton.pdf
11/1/2012	Cory Warnock (LVA) exchanged emails with Robin Swinford (ADNR) regarding potential dates for the Natural Resources Studies Meeting.	ADNR	2012-11-01ADNRrSwinford.pdf
11/1/2012	Cory Warnock (LVA) exchanged emails with Sue Walker (NOAA Fisheries) regarding potential locations for the Natural Resources Studies Meeting.	NOAA	2012-11-01NOAAsWalker.pdf
11/5/2012	Lynnda Kahn (USFWS) emailed Cory Warnock (LVA) regarding her unavailability to participate in a Natural Resources Studies Meeting between December 6 through January 7.	USFWS	2012-11-05USFWSIKahn.pdf
11/9/2012	Cory Warnock (LVA) notified licensing participants by email that a meeting to discuss the 2013 study program would be held on December 12, 2012 in Anchorage, Alaska.	All Licensing Contacts	2012-11-09StudiesMtgNotice.pdf
11/9/2012	Cory Warnock (LVA) exchanged emails with Monte Miller (ADFG) regarding logistics and attendees associated with the December 12, 2012 Natural Resources Studies Meeting.	ADFG	2012-11-09ADFGmMiller.pdf
11/9/2012	Amal Ajmi (Oasis ERM) emailed Mary Ann Benoit (USFS) regarding a proposed schedule for the wildlife studies.	USFS	2012-11-09USFSmBenoit.pdf
11/9/2012	Cory Warnock (LVA) emailed Ginny Litchfield (ADFG) regarding addition of name to contact list for the Grant Lake Project licensing process.	ADFG	2012-11-09ADFGgLitchfield.pdf
11/9/2012	Cory Warnock (LVA) exchanged emails with Brent Goodrum (ADNR) regarding adding relevant ADNR staff to contact list for the Grant Lake Project licensing process.	ADNR	2012-11-09ADNRbGoodrum.pdf
11/13/2012	Amal Ajmi (Oasis ERM) exchanged emails with Mary Ann Benoit (USFS) regarding the potential existence of ALMS survey plots.	USFS	2012-11-13USFSmBenoit.pdf
11/14/2012	Cory Warnock (LVA) emailed Valerie Conner (Alaska Center for Environment), Mike Cooney (Friends of Cooper Landing), Ricky Gease (KRSFA), and Jan Konigsberg (HRC) regarding the December 12, 2012 Natural Resources Studies Meeting.	Kenai River Sportsfishing; Friends of Cooper Landing; Alaska Center for Environment; Hydro Reform Coalition	2012-11-14StudiesMtgNotice2.pdf
11/14/2012	Cory Warnock (LVA) emailed Ken Hogan (FERC) requesting a call to discuss the re-initiation of the licensing process for the Grant Lake Project.	FERC	2012-11-14FERCkHogan.pdf

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11/14/2012	Cory Warnock (LVA) and Ken Hogan (FERC) discussed by phone the re-initiation of the licensing process for the Grant Lake Project.	FERC	2012-11-14FERCkHogan2.pdf
11/16/2012	Cory Warnock (LVA) emailed Doug Ott (AEA) regarding adding him to the contact list for the Grant Lake Project licensing process.	AEA	2012-11-16AEAdOtt.pdf
11/19/2012	Cory Warnock (LVA) exchanged emails with Lynnda Kahn (USFWS) regarding general approach for scheduling of future stakeholder meetings.	USFWS	2012-11-19USFWSIKahn.pdf
11/26/2012	Cory Warnock (LVA) emailed licensing participants the agenda for the December 12, 2012 Natural Resources Studies Meeting.	All Licensing Contacts	2012-11-26StudiesMtgAgenda.pdf
11/27/2012	Cory Warnock (LVA) exchanged emails with Kevin Laves (USFS) regarding who the main USFS contact is for the Grant Lake Project.	USFS	2012-11-27USFSkLaves4.pdf
11/27/2012	Dwayne Adams (USKH) and Cliff Larson (ADNR) discussed by phone potential permit requirements for the visual and recreational survey work planned for 2013.	ADNR	2012-11-27ADNRcLarson.pdf
11/27/2012	Amal Ajmi (Oasis ERM) and Kevin Laves (USFS) discussed by phone special use permit needs and USFS staff involved on the Grant Lake Project.	USFS	2012-11-27USFSkLaves2.pdf
11/27/2012	Amal Ajmi (Oasis ERM) exchanged emails with Kevin Laves (USFS) regarding permit needs for the Grant Lake Project wildlife studies.	USFS	2012-11-27USFSkLaves3.pdf
11/27/2012	Amal Ajmi (Oasis ERM) exchanged emails with Kevin Laves (USFS) regarding the USFS representatives for the Grant Lake Project.	USFS	2012-11-27USFSkLaves.pdf
11/28/2012	Amal Ajmi (Oasis ERM) exchanged emails with Thomas McDonough (ADFG) regarding permit needs for the Grant Lake Project wildlife studies.	ADFG	2012-11-28ADFGtMcDonough.pdf
11/29/2012	Cory Warnock (LVA) exchanged emails with Kevin Laves (USFS) regarding the identification of the main USFS representative for the Grant Lake Project.	USFS	2012-11-29USFSkLaves.pdf
11/29/2012	Cory Warnock (LVA) and Robert Stovall (USFS) discussed by phone the agenda for the December 12, 2012 Natural Resources Studies Meeting and the general plan for the 2013 study season.	USFS	2012-11-29USFSrStovall.pdf
11/30/2012	Cory Warnock (LVA) exchanged emails with Katherine McCafferty (ACOE) regarding who the main ACOE representative is for the Grant Lake Project.	USACE	2012-11-30ACOEkMcCafferty.pdf
12/3/2012	Cory Warnock (LVA) emailed licensing participants requesting a response regarding participation in the December 12, 2012 Natural Resources Studies Meeting.	All Licensing Contacts	2012-12-03StudiesMtgAttendeeRequest.pdf

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12/3/2012	Cory Warnock (LVA) exchanged emails with Pamela Russell (ADNR) regarding the identification of the main ADNR representative for the Grant Lake Project.	ADNR	2012-12-03ADNRpRussell.pdf
12/3/2012	Kevin Laves (USFS) emailed Cory Warnock (LVA) that he will not be attending the December 12, 2012 Natural Resources Studies Meeting.	USFS	2012-12-03USFSkLaves.pdf
12/3/2012	Cory Warnock (LVA) exchanged emails with Sue Walker (NOAA Fisheries) regarding general approach for scheduling of future stakeholder meetings.	NOAA	2012-12-03NOAAsWalker.pdf
12/3/2012	Amal Ajmi (Oasis ERM) exchanged emails with Clifford Larson (ADNR) regarding permit needs for the Grant Lake Project wildlife studies.	ADNR	2012-12-03ADNRcLarson.pdf
12/4/2012	Krissy Plett (ADNR) emailed Cory Warnock (LVA) regarding the addition of ADNR staff to the contact list for the Grant Lake Project.	ADNR	2012-12-04ADNRkPlett.pdf
12/7/2012	Cory Warnock (LVA) exchanged emails with Barbara Stanley (USFS) regarding her participation at the December 12, 2012 Natural Resources Studies Meeting and the availability of meeting materials on the Kenai Hydro website.	USFS	2012-12-07USFSbStanley.pdf
12/12/2012	HEA held a meeting on December 12, 2012 to discuss the Grant Lake Project Natural Resources Study Plans.	All Licensing Contacts	2012-12-12StudiesMtg.pdf
12/13/2012	Cory Warnock (LVA) emailed Ken Hogan (FERC) thanking him for participating in the December 12, 2012 Natural Resources Studies Meeting.	FERC	2012-12-13FERCkHogan.pdf
12/13/2012	Cory Warnock (LVA) emailed Eric Rothwell (NOAA Fisheries) contact information for Paul Pittman (Element Solutions), the lead on the geomorphology tasks associated with the Water Resources Study Plan.	NOAA	2012-12-13NOAAeRothwell.pdf
12/17/2012	Cory Warnock (LVA) exchanged emails with Eric Rothwell (NOAA Fisheries) regarding comments on the the geomorphology tasks associated with the Water Resources Study Plan and the anticipated deadline for comments on the meeting summary and study plans.	NOAA	2012-12-17NOAAeRothwell.pdf
12/28/2012	Paul Pittman (Element Solutions) emailed Eric Rothwell (NOAA Fisheries) regarding questions related to the the geomorphology tasks associated with the Water Resources Study Plan.	NOAA	2012-12-28NOAAeRothwell.pdf
1/3/2013	John Blum (McMillen) emailed Eric Rothwell (NOAA Fisheries) a copy of the K. Thompson paper regarding determining instream flows for fish (1972).	NOAA	2013-01-03NOAAeRothwell.pdf
1/3/2013	Cory Warnock (McMillen) exchanged emails with Katherine VanMassenhove (USFS) regarding scheduling a call to discuss the existing USFS' Special Use Permit for the Grant Lake Project.	USFS	2013-01-03USFSkVanMassenhove.pdf

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Date	Summary of Contact	Agency/Organization Consulted	Documentation filename (pdf)
1/7/2013	Cory Warnock (McMillen) and Eric Rothwell (NOAA Fisheries) discussed by phone the geomorphology tasks associated with the Water Resources Study Plan.	NOAA	2013-01-07NOAAeRothwell.pdf
1/7/2013	Cory Warnock (LVA) emailed licensing participants the draft summary from the December 12, 2012 Natural Resources Studies Meeting and indicated a deadline of February 1, 2013 to provide comments on the draft summary, study plans, and permit table.	All Licensing Contacts	2013-01-07StudiesMtgDraftSummary.pdf
1/7/2013	Cory Warnock (McMillen) exchanged emails with Deidre StLouis (USFS) confirming a call for January 9, 2013 to discuss the existing USFS' Special Use Permit for the Grant Lake Project.	USFS	2013-01-07USFSdStLouis.pdf
1/9/2013	Cory Warnock (McMillen), Deidre StLouis (USFS) and Katherine VanMassenhove (USFS) discussed by phone the use of an existing Special Use Permit for Grant Lake Project 2013 study season.	USFS	2013-01-09USFSdStLouisKVanMassenhove.pdf
1/11/2013	Cory Warnock (McMillen) emailed Scott Ayers (ADFG) requesting a time to discuss the multi-agency permitting process as it relates to the Grant Lake Project.	ADFG	2013-01-11ADFGsAyers.pdf
1/11/2013	Cory Warnock (McMillen) exchanged emails with Monte Miller (ADFG) regarding the current ADFG contact for permitting.	ADFG	2013-01-11ADFGmMiller.pdf
1/14/2013	Amal Ajmi (ERM) emailed Jeff Selinger (ADFG) with an introduction to the planned 2013 Grant Lake terrestrial studies work.	ADFG	2013-01-14ADFGjSelinger.pdf
1/16/2013	Dwayne Adams (USKH) and Robert Stovall (USFS) discussed by phone the permit needs for the Grant Lake Project recreation studies.	USFS	2013-01-16USFSrStovall.pdf
1/18/2013	Cory Warnock (McMillen) exchanged emails with Katherine VanMassenhove (USFS) following up to the January 9, 2013 phone call re: the use of the existing Special Use Permit for the Grant Lake Project 2013 study season.	USFS	2013-01-18USFSkVanMassenhove.pdf
1/22/2013	Cory Warnock (McMillen) exchanged emails with Katherine VanMassenhove (USFS) with the permit needs table and a study methodologies summary related to the discussion about the use of the existing USFS' Special Use Permit for the Grant Lake Project.	ADFG	2013-01-22USFSkVanMassenhove.pdf
1/23/2013	Cory Warnock (McMillen) exchanged emails with Katherine VanMassenhove (USFS) regarding the use of the existing USFS' Special Use Permit for the Grant Lake Project 2013 study program.	USFS	2013-01-23USFSkVanMassenhove.pdf
1/25/2013	Cory Warnock (McMillen) exchanged emails with Katherine VanMassenhove (USFS) regarding the use of the existing USFS' Special Use Permit for the Grant Lake Project 2013 study program.	USFS	2013-01-25USFSkVanMassenhove.pdf

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Date	Summary of Contact	Agency/Organization Consulted	Documentation filename (pdf)
1/25/2013	Cory Warnock (McMillen) exchanged emails with Katherine VanMassenhove (USFS) with modifications to list of primary activities planned on USFS lands (related to the ongoing discussion about the use of existing USFS' SUP for the 2013 study program).	USFS	2013-01-25USFSkVanMassenhove2.pdf
1/28/2013	Cory Warnock (McMillen) exchanged emails with Lynnda Kahn (USFWS) regarding McMillen's offer for follow up call to discuss December 12 meeting, and USFWS' target date to submit its study plan comments.	USFWS	2013-01-28USFSIKahn.pdf
1/29/2013	Amal Ajmi (ERM) emailed Jeff Selinger (ADFG) regarding logistics of conducting aerial surveys of moose.	ADFG	2013-01-29ADFGjSelinger.pdf
2/1/2013	Cory Warnock (McMillen) exchanged emails with Katherine VanMassenhove (USFS) regarding the Special Use Permit amendment to allow access by helicopter and snow machine.	USFS	2013-02-01USFSkVanMassenhove.pdf
2/4/2013	Cory Warnock (McMillen) exchanged emails with Cassie Thomas (NPS) regarding the NPS comments on the December 12, 2012 meeting note and the Recreation/Visual Resources Study Plan.	NPS	2013-02-04NPScThomas.pdf
2/6/2013	Mike Salzetti (HEA) emailed Katherine VanMassenhove (USFS) the Special Use Permit amendment to allow access by helicopter and snow machine signed by HEA.	USFS	2013-02-06USFSkVanMassenhove.pdf
2/10/2013	Cory Warnock (McMillen) emailed Katherine VanMassenhove (USFS) regarding the fully executed Special Use Permit amendment to allow access by helicopter and snow machine (signed amendment attached).	USFS	2013-02-10USFSkVanMassenhove.pdf
2/11/2013	Cory Warnock (LVA) emailed Pamela Russell (ADNR) a map of the data collection locations with respect to the Multi-Agency Permit Application for the Grant Lake 2013 studies program.	ADNR	2013-02-11ADNRpRussell.pdf
2/11/2013	Eric Rothwell (NOAA Fisheries) emailed Cory Warnock (McMillen) comments on the Aquatics Resources and Water Resources final study plans.	NOAA	2013-02-11NOAAeRothwell.pdf
2/12/2013	Mike Salzetti (HEA) emailed Patti Berkahn (ADFG) responses to follow up questions related to the Multi-Agency Permit Application.	ADFG	2013-02-12ADFGpBerkahn.pdf
2/12/2013	Patti Berkahn (ADFG) emailed Mike Salzetti (HEA) the Fish Habitat Permit.	ADFG	2013-02-12ADFGpBerkahn2.pdf
2/13/2013	Scott Ayers (ADFG) emailed Cory Warnock (McMillen) regarding the need for HEA to apply for a Fish Resources Permit for the Grant Lake 2013 study program (permit application attached).	ADFG	2013-02-13ADFGsAyers.pdf
2/13/2013	Mike Yarborough (CRC Consultants) emailed Cultural Resources Work Group (CRWG) members regarding scheduling a meeting to discuss the Area of Potential Effect (APE).	CRWG	2013-02-13CRWGmtgDateRequest.pdf

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2/13/2013	Frank Winchell (FERC) emailed Mike Yarborough (CRC Consultants) regarding his availability for a call to discuss the APE.	FERC	2013-02-13FERCfWinchell.pdf
2/13/2013	Shina Duvall (SHPO) emailed Mike Yarborough (CRC Consultants) regarding her availability for a call to discuss the APE.	SHPO	2013-02-13SHPOsDuvall.pdf
2/20/2013	Mike Salzetti (HEA) emailed Scott Ayers (ADFG) the completed Fish Resources Permit application.	ADFG	2013-02-20ADFGsAyers.pdf
2/21/2013	Cory Warnock (McMillen) emailed Scott Ayers (ADFG) the link to the Multi-Agency Permit Application.	ADFG	2013-02-21ADFGsAyers.pdf
2/21/2013	Cory Warnock (McMillen) exchanged emails with Scott Ayers (ADFG) regarding the receipt of an approximate timeframe for processing the Fish Resources Permit application.	ADFG	2013-02-21ADFGsAyers2.pdf
2/22/2013	Cory Warnock (McMillen) exchanged emails with Monte Miller and Shawn Johnson (ADFG) regarding the potential for ADFG to assist with fish DNA sampling.	ADFG	2013-02-22ADFGmMiller.pdf
2/26/2013	Mike Salzetti (HEA) emailed Claire Leclair (ADNR) requesting a status on the processing of the Multi-Agency Permit Application.	ADNR	2013-02-26ADNRcLeclair.pdf
2/26/2013	Mike Yarborough (CRC Consultants) emailed CRWG members a second time regarding scheduling a meeting to discuss the APE.	CRWG	2013-02-26CRWGmtgDateRequest.pdf
2/26/2013	Frank Winchell (FERC) emailed Mike Yarborough (CRC Consultants) regarding his availability for a call to discuss the APE.	FERC	2013-02-26FERCfWinchell.pdf
2/27/2013	Levia Shoutis (ERM) exchanged emails with Rob Develice (USFS) regarding vegetation cover type maps.	USFS	2013-02-27USFSrDevelice.pdf
2/27/2013	Katy Beck (Beck Botanical) and Betty Charmon (USFS) discussed via phone sensitive plants and invasive weeds in the vicinity of the proposed Grant Creek Project.	USFS	2013-02-27USFSbCharmon.pdf
2/27/2013	Ed DeCleva (USFS) emailed Mike Yarborough (CRC Consultants) regarding his availability for a call to discuss the APE.	USFS	2013-02-27USFSedeCleva.pdf
2/27/2013	Mike Salzetti (HEA) filed with FERC the second preliminary permit progress report.	FERC	2013-02-27ProgressReport2nd.pdf
3/4/2013	Cory Warnock (McMillen) exchanged emails with Claire Leclair (ADNR) regarding the status on the processing of the Multi-Agency Permit Application.	ADNR	2013-03-04ADNRcLeclair.pdf
3/5/2013	Cory Warnock (McMillen) and Claire Leclair (ADNR) discussed via phone clarifying questions ADNR had regarding the Multi-Agency Permit Application.	ADNR	2013-03-05ADNRcLeclair.pdf

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Date	Summary of Contact	Agency/Organization Consulted	Documentation filename (pdf)
3/7/2013	Cory Warnock (McMillen) exchanged emails with Monte Miller (ADFG) regarding the contact information for the ADFG representative to discuss the potential for ADFG assisting with fish DNA sampling.	ADFG	2013-03-07ADFGmMiller.pdf
3/7/2013	Cory Warnock (McMillen) and Bill Templin (ADFG) discussed via phone HEA using ADFG genetic sampling supplies and the potential for ADFG's lab to conduct genetic analysis of anadromous fish samples.	ADFG	2013-03-07ADFGbTemplin.pdf
3/7/2013	Ed DeCleva (USFS) emailed Mike Yarborough (CRC Consultants) checking in on the status of scheduling a call to discuss the APE.	USFS	2013-03-07USFSDeCleva.pdf
3/8/2013	Cory Warnock (McMillen) emailed Bill Templin (ADFG) the Aquatic Resources Study Plan with regard to an ongoing discussion about ADFG assisting HEA with fish DNA sampling.	ADFG	2013-03-08ADFGbTemplin.pdf
3/8/2013	Mike Yarborough (CRC Consultants) emailed Ed DecLeva (USFS) with a status on the scheduling of a call to discuss the APE.	USFS	2013-03-08USFSDeCleva.pdf
3/11/2013	Cory Warnock (McMillen) exchanged emails with Kathy VanMassenhove (USFS) regarding clarifying questions about coverage of digging as part of the 2013 Grant Lake study efforts under the Special Use Permit amendment.	USFS	2013-03-11USFSkVanMassenhove.pdf
3/12/2013	Cory Warnock (McMillen) and Scott Ayers (ADFG) exchanged emails regarding ADFG follow up questions regarding the Fish Resources Permit application.	ADFG	2013-03-12ADFGsAyers.pdf
3/13/2013	Cory Warnock (McMillen) and Andy Barclay (ADFG) exchanged emails regarding scheduling a call to discuss fish DNA sampling.	ADFG	2013-03-13ADFGaBarclay.pdf
3/13/2013	Cory Warnock (McMillen) exchanged emails with Scott Ayers (ADFG) regarding responses to ADFG follow up questions related to the Fish Resources Permit application.	ADFG	2013-03-13ADFGsAyers.pdf
3/13/2013	Cory Warnock (McMillen) exchanged emails with Claire Leclair (ADNR) regarding the status on the processing of the Multi-Agency Permit Application, specifically as it relates to ground-disturbing activity.	ADNR	2013-03-18ADNRcLeclair.pdf
3/14/2013	Cory Warnock (McMillen) and Andy Barclay (ADFG) discussed via phone fish DNA sampling.	ADFG	2013-03-14ADFGaBarclay.pdf
3/18/2013	Scott Ayers (ADFG) emailed Mike Salzetti (HEA) about issuance of the Fish Resource Permit for the Grant Lake studies program.	ADFG	2013-03-18ADFGsAyers.pdf
3/19/2013	Cory Warnock (McMillen) exchanged emails with Scott Ayers (ADFG) regarding HEA questions related to the Fish Resource Permit.	ADFG	2013-03-19ADFGsAyers.pdf

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3/19/2013	Cory Warnock (McMillen) and Ken Hogan (FERC) discussed via phone the status of the licensing process and filing of the final study plans.	FERC	2013-03-19FERCkHogan.pdf
3/20/2013	Cory Warnock (McMillen) exchanged emails with Scott Ayers (ADFG) regarding a request to amend the Fish Resource Permit.	ADFG	2013-03-20ADFGsAyers.pdf
3/20/2013	Cory Warnock (McMillen) exchanged emails with Claire Leclair (ADNR) regarding confirmation that the pending ADNR permit is not needed to conduct the fish survey work by foot along Grant Creek.	ADNR	2013-03-20ADNRcLeclair.pdf
3/20/2013	Cory Warnock (LVA) emailed licensing participants the December 12, 2012 Natural Resources Studies Meeting summary, the Final Study Plans comment/response table, and notification of the availability of revised Final Study Plans on the Project website.	All Licensing Contacts	2013-03-20FinalStudyPlans.pdf
3/20/2013	Cory Warnock (McMillen) exchanged emails with Eric Volk (ADFG) regarding scheduling a call to discuss scale sampling.	ADFG	2013-03-20ADFGeVolk.pdf
3/21/2013	Cory Warnock (McMillen) exchanged emails with Katherine VanMassenhove (USFS) regarding the potential need to amend the existing Special Use Permit for ground disturbing activities related to the 2013 Grant Lake study program.	USFS	2013-03-21USFSkVanMassenhove.pdf
3/25/2013	Cory Warnock (McMillen) emailed Andy Barclay (ADFG) regarding scheduling a call to discuss fish DNA sampling.	ADFG	2013-03-25ADFGaBarclay.pdf
3/25/2013	Mike Salzetti (HEA) filed with FERC the Final Study Plans, comment/response tables related to comments on the Final Study Plans as discussed at the December 12, 2012 Natural Resources Studies Meeting, and the December 12 meeting summary.	FERC	2013-03-25FinalStudyPlans.pdf
3/25/2013	Cory Warnock (McMillen) exchanged emails with Katherine VanMassenhove (USFS) regarding scheduling a call to discuss the need to amend the existing Special Use Permit for ground disturbing activities related to the 2013 Grant Lake study program.	USFS	2013-03-25USFSkVanMassenhove.pdf
3/26/2013	Scott Ayers (ADFG) emailed Cory Warnock (McMillen) an amendment to the Fish Resource Permit.	ADFG	2013-03-26ADFGsAyers.pdf
3/27/2013	Cory Warnock (McMillen) exchanged emails with Eric Volk (ADFG) regarding scheduling a call to discuss scale sampling.	ADFG	2013-03-27ADFGeVolk.pdf
3/27/2013	Mike Salzetti (HEA), Cory Warnock (McMillen), Andy Barclay (ADFG), and Bill Templin (ADFG) discussed via phone ADFG assisting HEA with fish DNA sampling.	ADFG	2013-03-27ADFGaBarclay.pdf
3/28/2013	Cory Warnock (McMillen) and Mark Willette (ADFG) discussed via phone the potential for Mr. Willette's group to provide scale cards and subsequent analysis of Chinook scales.	ADFG	2013-03-28ADFGmWillette.pdf

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3/28/2013	Cory Warnock (McMillen) and Tim McKinley (ADFG) discussed via phone the potential for scale reabsorption to be an issue with Chinook in the upper Kenai Watershed.	ADFG	2013-03-28ADFGtMcKinley.pdf
3/28/2013	Cory Warnock (McMillen) called various ADFG staff to inform them of the start of the Grant Lake Study Program, per requirements of HEA's Fish Habitat Permit and Fish Resource Permit.	ADFG	2013-03-28ADFGstudyNotifications.pdf
3/29/2013	Cory Warnock (McMillen) exchanged emails with Claire Leclair (ADNR) regarding the status of the pending ADNR Special Park Use permit.	ADNR	2013-03-29ADNRcLeclair.pdf
3/29/2013	Mike Salzetti (HEA), Cory Warnock (McMillen), and Katherine VanMassenhove (USFS) discussed via phone the pending amendment to the existing Special Use Permit to allow for wetlands core sampling.	USFS	2013-03-29USFSkVanMassenhove.pdf
4/1/2013	Cory Warnock (McMillen) emailed Pam Russell (ADNR) regarding whether there are any permits needed by the State to allow for wetlands core sampling.	ADNR	2013-04-01ADNRpRussell.pdf
4/1/2013	Mike Salzetti (HEA) and Cory Warnock (McMillen) exchanged emails with Katherine VanMassenhove (USFS) regarding fees associated with the amendment to the existing Special Use Permit for ground disturbing activities.	USFS	2013-04-01USFSkVanMassenhove.pdf
4/1/2013	Cory Warnock (McMillen) emailed Clair Leclair (ADNR) requested information regarding the planned wetlands core sampling.	ADNR	2013-04-01ADNRcLeclair.pdf
4/2/2013	Cory Warnock (McMillen) exchanged emails with Claire Leclair (ADNR) regarding the status of the pending ADNR Special Park Use permit.	ADNR	2013-04-02ADNRcLeclair.pdf
4/2/2013	Sarah Meitl (CRC Consultants) emailed Dara Glass (CIRI), Sherry Nelson (USFS), Shina DuVall (SHPO), and Frank Winchell (FERC) an agenda for the April 3, 2013 call to discuss the APE.	FERC; USFS; SHPO; Cook Inlet Region	2013-04-02APEdiscussionAgenda.pdf
4/2/2013	Cory Warnock (McMillen) exchanged emails with Claire Leclair (ADNR) regarding the stipulation in the issued ADNR Special Park Use permit regarding vegetation clearing.	ADNR	2013-04-02ADNRcLeclair2.pdf
4/3/2013	Cory Warnock (McMillen) exchanged emails with Claire Leclair (ADNR) regarding the stipulation in the issued ADNR Special Park Use permit associated with hauling out human waste.	ADNR	2013-04-02ADNRcLeclair3.pdf
4/3/2013	HEA held a CRWG conference call to discuss the Area of Potential Effect (APE).	CRWG	2013-04-03CRWGmtg.pdf
4/4/2013	Cory Warnock (McMillen) exchanged emails with Jack Blackwell and Claire Leclair (ADNR) regarding scheduling of a site visit at the Grant Creek man camp.	ADNR	2013-04-04ADNRjBlackwell.pdf

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4/4/2013	Cory Warnock (McMillen) emailed Claire Leclair (ADNR) the signed stream gauge Special Park Use Permit.	ADNR	2013-04-04ADNRcLeclair.pdf
4/5/2013	Cory Warnock (McMillen) exchanged emails with Claire Leclair (ADNR) regarding an error with the permit number identified in the ground disturbing Special Park Use permit.	ADNR	2013-04-05ADNRcLeclair.pdf
4/5/2013	Claire Leclair (ADNR) emailed Cory Warnock (McMillen) links to information related to regarding management of human waste in remote camps.	ADNR	2013-04-05ADNRcLeclair2.pdf
4/5/2013	Cory Warnock (McMillen) exchanged emails with Katherine McCafferty (USACE) regarding scheduling a call to discuss the planned wetlands core sampling.	USACE	2013-04-05USACEkMcCafferty.pdf
4/15/2013	Cory Warnock (McMillen) exchanged emails with Candice Snow (ADNR) regarding schedule a call to discuss the potential need for a ANDR permit related to the installation of thermistors in Grant Lake.	ADNR	2013-04-15ADNRcSnow.pdf
4/16/2013	Cory Warnock (McMillen) exchanged emails with Katherine VanMassenhove (USFS) regarding the amendment to the existing Special Use Permit for ground disturbing activities.	USFS	2013-04-16USFSkVanMassenhove.pdf
4/16/2013	Cory Warnock (McMillen) exchanged emails with Scott Ayers (ADFG) requesting clarification regarding the proposed technique for marking fish relative to the provisions of the Fish Resource Permit.	ADFG	2013-04-16ADFGsAyers.pdf
4/16/2013	Candice Snow (ADNR) emailed Charles Sauvageau (McMillen) the application for ANDR permit related to the installation of thermistors in Grant Lake.	ADNR	2013-04-16ADNRcSnow.pdf
4/16/2013	Cory Warnock, Charles Sauvageau (McMillen), and Candice Snow (ADNR) discussed by phone the need for an ANDR permit related to the installation of thermistors in Grant Lake.	ADNR	2013-04-16ADNRcSnow2.pdf
4/16/2013	Cory Warnock (McMillen), Levia Shoutis and Jeanette Blank (ERM), and Katherine McCafferty (USACE) discussed by phone the planned wetlands core sampling.	USACE	2013-04-16USACEkMcCafferty.pdf
4/17/2013	Cory Warnock (McMillen) exchanged emails with Candice Snow (ADNR) regarding completion of application for ANDR permit related to the installation of thermistors in Grant Lake.	ADNR	2013-04-17ADNRcSnow.pdf
4/17/2013	Cory Warnock (McMillen) exchanged emails with Scott Ayers (ADFG) regarding scheduling a call to discuss potential techniques for marking fish relative to the provisions of the Fish Resource Permit.	ADFG	2013-04-17ADFGsAyers.pdf

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4/17/2013	Sarah Meitl (CRC Consultants) exchanged emails with Sherry Nelson and Katherine VanMassenhove (USFS) regarding requested information related to the cultural resources survey provided by CRC Consultants to the USFS.	USFS	2013-04-17USFSsNelson.pdf
4/17/2013	Cory Warnock (McMillen) exchanged emails with Scott Ayers (ADFG) confirming a call for April 18 to discuss potential techniques for marking fish relative to the provisions of the Fish Resource Permit.	ADFG	2013-04-17ADFGsAyers2.pdf
4/18/2013	Cory Warnock (McMillen) emailed Candice Snow (ADNR) the completed and signed application for an ADNR permit related to the installation of thermistors in Grant Lake.	ADNR	2013-04-18ADNRcSnow.pdf
4/18/2013	Cory Warnock (McMillen), John Stevenson and Mark Miller (BioAnalysts), and Scott Ayers (ADFG) discussed by phone potential techniques for marking fish relative to the provisions of the Fish Resource Permit.	ADFG	2013-04-18ADFGsAyers.pdf
4/19/2013	Cory Warnock (McMillen) exchanged emails with Scott Ayers (ADFG) with follow up questions to the April 18 call to discuss potential techniques for marking fish relative to the provisions of the Fish Resource Permit.	ADFG	2013-04-19ADFGsAyers.pdf
4/19/2013	Cory Warnock (McMillen) exchanged emails with Jack Blackwell (ADNR) following up to ADNR's April 15 site visit to the Grant Creek man camp and agreement to amend the ground disturbing permit.	ADNR	2013-04-19ADNRjBlackwell.pdf
4/19/2013	Mike Salzetti (HEA) mailed a letter to Judith Bittner (SHPO) regarding the proposed APE.	SHPO	2013-04-19SHPOjBittner.pdf
4/22/2013	Mike Salzetti (HEA) filed with FERC the April 3 CRWG conference call meeting summary.	FERC	2013-04-22CRWGmtgNotes.pdf
4/23/2013	Cory Warnock (McMillen) discussed with Scott Ayers (ADFG) by phone the potential use of staining baths versus VIE tags.	ADFG	2013-04-23ADFGsAyers.pdf
4/24/2013	Claire Leclair emailed Cory Warnock (McMillen) a revised ground disturbing Special Park Use permit with the correct permit number.	ADNR	2013-04-24ADNRcLeclair.pdf
4/24/2013	Cory Warnock (McMillen) emailed with Sherry Nelson (USFS) requesting a status update on the proposed approach for the amendment to the existing Special Use Permit for ground disturbing activities.	USFS	2013-04-24USFSsNelson.pdf
4/25/2013	Scott Ayers (ADFG) emailed Mike Salzetti (HEA) an amendment to the Fish Resource Permit.	ADFG	2013-04-25ADFGsAyers.pdf
4/25/2013	Cory Warnock (McMillen) and Sherry Nelson (USFS) discussed by phone the USFS' preferred approach for the amendment to the existing Special Use Permit for ground disturbing activities.	USFS	2013-04-25USFSsNelson.pdf

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4/29/2013	Cory Warnock (McMillen) exchanged emails with Claire Leclair (ADNR) requesting a status on issuance of the amendment to the ground disturbing Special Park Use permit.	ADNR	2013-04-29ADNRcLeclair.pdf
4/29/2013	Scott Ayers (ADFG) emailed Mike Salzetti (HEA) a revised amendment to the Fish Resource Permit.	ADFG	2013-04-29ADFGsAyers.pdf
4/29/2013	Cory Warnock (McMillen) exchanged emails with Shina Duvall (SHPO) confirming receipt of HEA's April 19 regarding the proposed APE.	SHPO	2013-04-29SHPOsDuvall.pdf
4/30/2013	Claire Leclair (ADNR) emailed Cory Warnock (McMillen) the amendment to the ground disturbing Special Park Use permit.	ADNR	2013-04-30ADNRcLeclair.pdf
5/3/2013	Cory Warnock (McMillen) exchanged emails with Katherine VanMassenhove (USFS) clarifying the proposed approach for the amendment to the existing Special Use Permit for ground disturbing activities.	USFS	2013-05-03USFSkVanMassenhove.pdf
5/7/2013	Cory Warnock (McMillen) exchanged emails with Candice Snow (ADNR) regarding the status of the application for an ADNR permit related to the installation of thermistors in Grant Lake.	ADNR	2013-05-07ADNRcSnow.pdf
5/7/2013	Cory Warnock (McMillen) emailed Shina Duvall (SHPO) a letter from HEA confirming the proposed approach for the amendment to the existing Special Use Permit for ground disturbing activities.	SHPO	2013-05-07SHPOsDuvall.pdf
5/8/2013	Judith Bittner (SHPO) mailed a letter to Mike Salzetti (HEA) confirming the proposed APE and the proposed approach for the amendment to the existing Special Use Permit for ground disturbing activities.	SHPO	2013-05-08SHPOjBittner.pdf
5/10/2013	Jeanette Blank (ERM) emailed Katherine McCafferty (USACE) a memo summarizing the proposed wetlands functional assessment methodology.	USACE	2013-05-10USACEkMcCafferty.pdf
5/13/2013	Cory Warnock (McMillen) exchanged emails with Claire Leclair (ADNR) confirming that provisions of the ground disturbing Special Park Use permit allow for the cutting/removal of dead/downed logs for purposes of accessing the stream.	ADNR	2013-05-13ADNRcLeclair.pdf
5/14/2013	Cory Warnock (McMillen) exchanged emails with Candice Snow (ADNR) regarding the status of the application for an ADNR permit related to the installation of thermistors in Grant Lake.	ADNR	2013-05-14ADNRcSnow.pdf
5/21/2013	Cory Warnock (McMillen) exchanged emails with Ed DeCleva, Sherry Nelson, and Katherine VanMassenhove (USFS) confirming that the SHPO has all relevant information to issue the amendment to the existing Special Use Permit for ground disturbing activities.	USFS	2013-05-21USFSeDecleva.pdf

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Date	Summary of Contact	Agency/Organization Consulted	Documentation filename (pdf)
5/23/2013	Jeanette Blank (ERM) emailed Katherine McCafferty (USACE) a second time a memo summarizing the proposed wetlands functional assessment methodology.	USACE	2013-05-23USACEkMcCafferty.pdf
5/23/2013	Emily Hutchison (HEA) emailed Candice Snow (ADNR) certificate of insurance for the ADNR permit related to the installation of thermistors in Grant Lake.	USFS	2013-05-23ADNRcSnow.pdf
5/24/2013	Cory Warnock (McMillen) exchanged emails with Katherine VanMassenhove (USFS) regarding the status for processing the amendment to the existing Special Use Permit for ground disturbing activities.	USFS	2013-05-24USFSkVanMassenhove.pdf
5/28/2013	Sherry Nelson (USFS) emailed HEA, McMillen, and other USFS staff confirming that the SHPO has all relevant information to issue the amendment to the existing Special Use Permit for ground disturbing activities.	USFS	2013-05-28USFSsNelson.pdf
5/30/2013	Katherine VanMassenhove (USFS) emailed Cory Warnock (McMillen) the fully executed amendment to the existing Special Use Permit, specific to the cultural resources study.	USFS	2013-05-30USFSkVanMassenhove.pdf
6/5/2013	Mike Salzetti (HEA) emailed Candice Snow (ADNR) the bond for the ADNR permit related to the installation of thermistors in Grant Lake.	ADNR	2013-06-05ADNRcSnow.pdf
6/11/2013	Monet Miller (ADFG) emailed Cory Warnock (McMillen) comments to the final study plans for the water, aquatics, and terrestrial resources.	ADFG	2013-06-11ADFGmMiller.pdf
6/12/2013	Cory Warnock (McMillen) exchanged emails with Candice Snow (ADNR) regarding the status of the issuance of an ADNR permit related to the installation of thermistors in Grant Lake.	ADNR	2013-06-12ADNRcSnow.pdf
6/12/2013	Candice Snow (ADNR) emailed Mike Salzetti (HEA) the fully executed ADNR permit related to the installation of thermistors in Grant Lake.	ADNR	2013-06-12ADNRcSnow2.pdf
6/13/2013	Cory Warnock (McMillen) and Ken Hogan (FERC) discussed by phone a number of items pertaining to the Project.	FERC	2013-06-13FERCkHogan.pdf
6/14/2013	Cory Warnock (McMillen) exchanged emails with Tom Harkreader (White Rock Mining) regarding the current status of the Falls Creek Project at FERC.	White Rock Mining	2013-06-14FallsCrInquiry.pdf
6/14/2013	Cory Warnock (McMillen) forwarded to Tom Harkreader (White Rock Mining) an email from FERC staff related to Section 24 reserved authority for the Falls Creek Project.	White Rock Mining	2013-06-14FallsCrInquiry2.pdf
6/17/2013	Mike Salzetti (HEA) exchanged emails with Paul Torgerson (Grant Lake Mining) regarding the current status of the Grant Lake Project licensing process.	Grant Lake Mining	2013-06-17GrLkMiningPtorgerson.pdf

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6/21/2013	Cory Warnock (McMillen) exchanged emails with Scott Ayers (ADFG) requesting an amendment to the Fish Resource Permit to allow for continued tagging of rainbow through the month of July.	ADFG	2013-06-21ADFGsAyers.pdf
6/21/2013	Cory Warnock (McMillen) exchanged emails with Katherine VanMassenhove (USFS) regarding the status for processing the amendment to the existing Special Use Permit for ground disturbing activities, specifically for the cultural resources work.	USFS	2013-06-21USFSkVanMassenhove.pdf
6/24/2013	Scott Ayers (ADFG) emailed Mike Salzetti (HEA) a signed amendment to the Fish Resource Permit (4).	ADFG	2013-06-24ADFGsAyers.pdf
6/26/2013	Katy Beck (Beck Botanicals) emailed Betty Charnon (USFS) requesting completion of the pre-field sensitive plant review form.	USFS	2013-06-26USFSbCharnon.pdf
6/27/2013	Andrew Scott (McMillen) exchanged emails with Brock Tabor (ADEC) regarding relevant water quality standards.	ADEC	2013-06-27ADECbTabor.pdf
6/27/2013	Andrew Scott (McMillen) and Brock Tabor (ADEC) discussed via phone relevant water quality standards.	ADEC	2013-06-27ADECbTabor2.pdf
6/27/2013	Nancy Norvell (Alaska Natural Heritage Program) emailed Katy Beck (Beck Botanicals) GIS data regarding sensitive plant locations in the Grant Lake Project area.	Alaska Natural Heritage Program	2013-06-27AKNHPnNorvell.pdf
6/27/2013	Katy Beck (Beck Botanicals) exchanged emails with Betty Charnon (USFS) regarding sensitive and invasive plant species in the Grant Lake Project area.	USFS	2013-06-27USFSbCharnon.pdf
6/27/2013	Linda Kelly (USFS) emailed Katy Beck (Beck Botanicals) a draft map of invasive plant species occurrences in the Grant Lake Project area.	USFS	2013-06-27USFSlKelly.pdf
6/27/2013	Katy Beck (Beck Botanicals) exchanged emails with Matt Carlson (Alaska Natural Heritage Program) regarding the GIS data for sensitive plant locations in the Grant Lake Project area.	Alaska Natural Heritage Program	2013-06-27AKNHPmCarlson.pdf
7/8/2013	Katherine VanMassenhove (USFS) emailed Mike Salzetti (HEA) a fully executed amendment to the existing Special Use Permit for ground disturbing activities, specifically for the cultural resources work.	USFS	2013-07-08USFSkVanMassenhove.pdf
7/11/2013	Nancy Norvell (Alaska Natural Heritage Program) emailed Katy Beck (Beck Botanicals) a map of sensitive plant locations in the Grant Lake Project area. NOTE: Map is designated privileged.	Alaska Natural Heritage Program	2013-07-11AKNHPnNorvell.pdf
7/22/2013	Dwayne Adams (USKH) met with Lesli Schick (ADNR) to discuss the approach for the INHT relocation from its currently planned location and easement.	ADNR	2013-07-22ADNRlSchick.pdf

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7/26/2013	Dwayne Adams (USKH) and Katherine Van Massenhove (USFS) discussed via phone who the USFS staff person(s) is responsible for the INHT.	USFS	2013-07-26USFSkVanMassenhove.pdf
7/30/2013	Cory Warnock (McMillen) exchanged emails with Ken Gates (USFWS) regarding update on current fish capture numbers related to the Grant Lake Project aquatics studies.	USFWS	2013-07-30USFWSkGates.pdf
8/5/2013	Cory Warnock (McMillen) exchanged emails with Ken Gates (USFWS) regarding update on current fish capture numbers related to the Grant Lake Project aquatics studies.	USFWS	2013-08-05USFWSkGates.pdf
8/7/2013	Dwayne Adams (USKH) met with Alice Rein (USFS) to discuss who the USFS staff person(s) is responsible for the INHT.	USFS	2013-08-07USFSaRein.pdf
8/8/2013	Cory Warnock (McMillen) exchanged emails with William Ashton (ADEC) regarding the requirements for a QAPP related to water quality studies.	ADEC	2013-08-08ADECwAshton.pdf
8/8/2013	Cory Warnock (McMillen) emailed licensing participants notice regarding a September 5 agency site visit.	All Licensing Contacts	2013-08-08SiteVisitNotice.pdf
8/8/2013	Cory Warnock (McMillen) emailed Ken Gates (USFWS) preliminary data collected from the weir.	USFWS	2013-08-08USFWSkGates.pdf
8/8/2013	Cory Warnock (McMillen) exchanged emails with Lynnda Kahn (USFWS) regarding who is the primary fisheries USFWS representative.	USFWS	2013-08-08USFWSIKahn.pdf
8/8/2013	Cory Warnock (McMillen) exchanged emails with Jeff Anderson (USFWS) regarding is unavailability to attend the September 5, 2013 project site visit.	USFWS	2013-08-08USFWSjAnderson.pdf
8/13/2013	Ken Gates (USFWS) emailed Cory Warnock (McMillen) regarding the preliminary data collected from the weir.	USFWS	2013-08-13USFWSkGates.pdf
8/15/2013	Cory Warnock (McMillen) emailed licensing participants additional information regarding the September 5 agency site visit.	All Licensing Contacts	2013-08-15SiteVisitNotice2.pdf
8/20/2013	Cory Warnock (McMillen) emailed Lesli Schick and Pam Russell (ADNR) regarding INHT discussions relative to the September 5 project site visit.	ADNR	2013-08-20ADNRISchickPrussell.pdf
8/23/2013	Mike Salzetti (HEA) filed with FERC a response letter to ADFG's informal study plan comments.	FERC	2013-08-23StPICommentResponses.pdf
8/23/2013	Amal Ajmi (ERM) emailed Jeff Selinger (ADFG) regarding planning for upcoming moose surveys.	ADFG	2013-08-23ADFGjSelinger.pdf
8/26/2013	Cory Warnock (McMillen) emailed Monte Miller (ADFG) a letter (dated August 20) with HEA responses to ADFG study plan comments.	ADFG	2013-08-26ADFGmMiller.pdf
8/27/2013	Cory Warnock (McMillen) emailed site visit participants with logistical details regarding the September 5 visit.	All Licensing Contacts	2013-08-27SiteVisitDetails.pdf

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8/27/2013	Cory Warnock (McMillen) emailed licensing participants a letter with HEA responses to ADFG study plan comments.	All Licensing Contacts	2013-08-27StPICommentResponses2.pdf
8/27/2013	Cory Warnock (McMillen) emailed licensing participants the third Project progress report as filed with FERC.	All Licensing Contacts	2013-08-27ProgressReport.pdf
8/28/2013	Amal Ajmi (ERM) and Jeff Selinger (ADFG) discussed by phone planning for upcoming moose surveys.	ADFG	2013-08-28ADFGjSelinger.pdf
8/30/2013	Cory Warnock (McMillen) emailed site visit participants final logistical details regarding the September 5 visit.	All Licensing Contacts	2013-08-30SiteVisitDetails2.pdf
9/5/2013	HEA conducted a site visit of the Grant Lake Project.	All Licensing Contacts	2013-09-05SiteVisit.pdf
9/5/2013	Dwayne Adams (USKH) and John Eavis (USFS) discussed via phone a November INHT meeting. (Dwayne left voicemails for Eavis to discuss same further on 9/23, 9/26, and 10/21.)	USFS	2013-09-05USFSjEavis.pdf
9/9/2013	Patti Berkahn (ADFG) emailed Mike Salzetti (HEA) and John Stevenson (BioAnalysts) regarding the fuel containment structure currently located near the weir.	ADFG	2013-09-09ADFGpBerkahn.pdf
9/9/2013	Cory Warnock (McMillen) emailed licensing participants regarding the tentative plan for upcoming natural resources study report distribution and organization of work groups that will meet to discuss the study results.	All Licensing Contacts	2013-09-09WGmtgOrg.pdf
9/9/2013	Cassie Thomas (NPS) emailed Cory Warnock (McMillen) regarding work group designation.	NPS	2013-09-09NPScThomas.pdf
9/9/2013	Cory Warnock (McMillen) exchanged emails with Monte Miller (ADFG) regarding work group designations and issues related to the fuel containment structure currently located near the weir as discussed at the September 5 project site visit.	ADFG	2013-09-09ADFGmMiller.pdf
9/9/2013	Brenda Trefon (Kenaitze Indian Tribe) emailed Cory Warnock (McMillen) regarding work group designations.	Kenaitze Indian Tribe	2013-09-09KenaitzeBtrefon.pdf
9/10/2013	Eric Rothwell (NOAA Fisheries) emailed Cory Warnock (McMillen) regarding work group designations.	NOAA	2013-09-10NOAAeRothwell.pdf
9/10/2013	David Griffin (ADNR) emailed Cory Warnock (McMillen) regarding work group designations.	ADNR	2013-09-10ADNRdGriffin.pdf
9/10/2013	Cory Warnock (McMillen) exchanged emails with Pam Russell (ADNR) regarding work group designations and issues related to the fuel containment structure currently located near the weir as discussed at the September 5 project site visit.	ADNR	2013-09-10ADNRpRussell.pdf
9/10/2013	Patti Berkahn (ADFG) emailed Cory Warnock (McMillen) regarding work group designations.	ADFG	2013-09-10ADFGpBerkahn.pdf

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9/11/2013	Cory Warnock (McMillen) exchanged emails with Paul Torgerson (Grant Lake Mining) about timing of distribution of study reports.	Grant Lake Mining	2013-09-11GrLkMiningPtorgerson.pdf
9/13/2013	Jan Konigsberg (HRC) emailed Cory Warnock (McMillen) regarding work group designations.	HRC	2013-09-13HRCjKonigsberg.pdf
9/13/2013	Katy Beck (Beck Botanicals) exchanged emails with Betty Charnon (USFS) regarding guidance related to preparing a botany resource report.	USFS	2013-09-13USFSbCharnon.pdf
9/14/2013	Mike Cooney emailed Cory Warnock (McMillen) regarding work group designations.	Citizen	2013-09-14mCooney.pdf
9/14/2013	Robert Baldwin (Kenai River Watershed Foundation) emailed Cory Warnock (McMillen) regarding work group designations.	Kenai River Watershed Foundation	2013-09-14KenaiWatershedRbaldwin.pdf
9/16/2013	Katy Beck (Beck Botanicals) exchanged emails with Rob Develice and Betty Charnon (USFS) regarding information and guidelines related to invasive plant species in Alaska.	USFS	2013-09-16USFSrDevelice.pdf
9/17/2013	Mike Salzetti (HEA) emailed Doug Ott (AEA) regarding communications with Grant Lake Mining.	AEA	2013-09-17AEAdOtt.pdf
9/17/2013	Cory Warnock (McMillen) emailed licensing participants that the fuel containment issue raised at the September 5 project site visit has been resolved.	All Licensing Contacts	2013-09-17FuelContainment.pdf
9/17/2013	Paul Torgerson (Grant Lake Mining) emailed Cory Warnock (McMillen) regarding work group designations.	Grant Lake Mining	2013-09-17GrLkMiningPtorgerson.pdf
9/18/2013	Cory Warnock (McMillen) exchanged emails with Monte Miller (ADFG) regarding communications with Paul Torgerson (Grant Lake Mining).	ADFG	2013-09-18ADFGmMiller.pdf
9/19/2013	Cory Warnock (McMillen) emailed Paul Torgerson (Grant Lake Mining) regarding his request to participate in work group meetings and a general status update of the Grant Lake Project licensing process.	Grant Lake Mining	2013-09-19GrLkMiningPtorgerson.pdf
9/23/2013	Cory Warnock (McMillen) emailed licensing participants who did not respond with the first inquiry regarding the work group he/she would like to participate in.	All Licensing Contacts	2013-09-23WGrequests.pdf
9/23/2013	Kathleen Mushovic (BLM) emailed Cory Warnock (McMillen) regarding work group designations.	BLM	2013-09-23BLMkMushovic.pdf
9/23/2013	Cory Warnock (McMillen) exchanged emails with Doug Ott (AEA) regarding work group designations.	AEA	2013-09-23AEAdOtt.pdf
9/23/2013	Dwayne Adams (USKH) exchanged emails with John Eavis (USFS) regarding scheduling of a INHT meeting.	USFS	2013-09-23USFSjEavis.pdf
9/25/2013	Katie McCafferty (USACE) emailed Cory Warnock (McMillen) regarding work group designations.	USACE	2013-09-25USACEkMcCafferty.pdf

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9/25/2013	Joe Klein (ADFG) emailed Cory Warnock (McMillen) regarding work group designations.	ADFG	2013-09-25ADFGjKlein.pdf
9/27/2013	Cory Warnock (McMillen) emailed Pam Russell (ADNR) and Patti Berkhahn (ADFG) with a photo of the fuel containment structure.	ADFG; ADNR	2013-09-27ADNRpRussellADFGpBerkhahn.pdf
9/30/2013	Scott Ayers (ADFG) emailed Cory Warnock Amendment 5 to the Fish Resource Permit.	ADFG	2013-09-30ADFGsAyers.pdf
10/7/2013	Cory Warnock (McMillen) emailed Patti Berkhahn and Ginny Litchfield (ADFG) regarding possible need for permit amendment in order to utilize box trap.	ADFG	2013-10-07ADFGpBerkhahn.pdf
10/7/2013	Cory Warnock (McMillen) and Patti Berkhahn (ADFG) exchanged emails regarding written authorization to permit use of box trap.	ADFG	2013-10-07ADFGpBerkhahn2.pdf
10/21/2013	Dwayne Adams (USKH) emailed John Eavis (USFS) regarding scheduling of a INHT meeting.	USFS	2013-10-21USFSjEavis.pdf
10/23/2013	Cory Warnock (McMillen) exchanged emails with Eric Rothwell (NOAA Fisheries) regarding general Grant Lake Hydroelectric Project information and potential agency meeting dates for discussing study reports.	NOAA	2013-10-23NOAAeRothwell.pdf
10/23/2013	Dwayne Adams (USKH) exchanged emails with John Eavis (USFS) regarding scheduling of a INHT meeting.	USFS	2013-10-23USFSjEavis.pdf
10/24/2013	Dwayne Adams (USKH) and Pam Russell (ADNR) discussed via phone a November INHT meeting. (Dwayne left voicemails for Russell to discuss same on 8/12 and 8/27.)	ADNR	2013-10-24ADNRpRussell.pdf
10/28/2013	Dwayne Adams (USKH) emailed interested licensing participants notice of a November 13, 2013 INHT meeting.	ADFG; ADNR; USFS; Kenai Peninsula Borough	2013-10-28INHTmtgNotice.pdf
11/1/2013	Amal Ajmi (ERM) exchanged emails with Katherine VanMassenhove (USFS) regarding winter moose surveys and relevant permits.	USFS	2013-11-01USFSkVanMassenhove.pdf
11/6/2013	Dwayne Adams (USKH) emailed interested licensing participants materials for the November 13, 2013 INHT meeting. NOTE: Map is designated privileged.	ADFG; ADNR; USFS; Kenai Peninsula Borough	2013-11-06INHTmtgMaterials.pdf
11/7/2013	Cory Warnock (McMillen) exchanged emails with Katherine VanMassenhove (USFS) regarding winter moose surveys and reissuance of the existing special use permit.	USFS	2013-11-07USFSkVanMassenhove.pdf
11/11/2013	Cory Warnock (McMillen) emailed Andy Barclay (ADFG) inquiring about assisting with genetic sampling of anadromous species.	ADFG	2013-11-11ADFGaBarclay.pdf

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11/12/2013	Cory Warnock (McMillen) emailed Ken Gates (USFWS) preliminary weir data collected during the 2013 field season.	USFWS	2013-11-12USFWSkGates.pdf
11/13/2013	Dwayne Adams (USKH) exchanged emails with Lesli Schick (ADNR) regarding next steps for laying out the INHT route.	ADNR	2013-11-13ADNRISchick.pdf
11/13/2013	HEA held a meeting to discuss the re-route of the INHT. NOTE: Presentation is designated privileged.	All Licensing Contacts	2013-11-13INHTmtg.pdf
11/15/2013	John Blum (McMillen) emailed Eric Rothwell (NOAA Fisheries), Jeff Anderson (USFWS) and Monte Miller (ADFG) regarding the status of the Grant Creek instream flow (IFIM) study and the Washington Department of Fish and Wildlife's IFIM study guidelines.	ADFG; USFWS; NOAA	2013-11-15HSI curves.pdf
11/18/2013	Cory Warnock (McMillen) emailed Shina Duvall and Lesli Schick (ADNR) follow up to the November 13, 2013 meeting regarding the proposed INHT route.	ADNR	2013-11-18ADNRISchickSduvall.pdf
11/19/2013	Cory Warnock (McMillen) exchanged emails with Eric Rothwell (NOAA Fisheries) and Monte Miller (ADFG) regarding habitat suitability (HSI) curves.	ADFG; NOAA	2013-11-19HSIcurves.pdf
11/19/2013	Monte Miller (ADFG) emailed Eric Rothwell (NOAA Fisheries), Jeff Anderson (USFWS), Joe Klein (ADFG), and Cory Warnock and John Blum (McMillen) the Cooper Lake Project instream flow study report (attachment not included).	ADFG; USFWS; NOAA	2013-11-19ADFGmMiller.pdf
11/20/2013	Cory Warnock (McMillen) exchanged emails with Eric Rothwell (NOAA Fisheries) regarding scheduling a call to discuss HSI curves.	NOAA	2013-11-20NOAAeRothwell.pdf
11/20/2013	Cory Warnock (McMillen) exchanged emails with Shina Duvall and Lesli Schick (ADNR) regarding scheduling a call to discuss cultural resources and the proposed INHT route.	ADNR	2013-11-20ADNRsDuvallLschick.pdf
11/22/2013	HEA held a conference call to discuss the INHT reroute and the associated cultural/historical impacts.	ADNR	2013-11-22INHTsection106Call.pdf
11/25/2013	Cory Warnock (McMillen) exchanged emails with Jeff Anderson (USFWS) regarding a proposed date for a call to discuss HSI curves.	USFWS	2013-11-25HSIcurves.pdf
11/25/2013	Cory Warnock (McMillen) exchanged emails with Monte Miller (ADFG) regarding a proposed date for a call to discuss HSI curves.	ADFG	2013-11-25HSCIcurves2.pdf
11/27/2013	HEA held a conference call to discuss HSI curves.	ADFG; USFWS; NOAA	2013-11-27HSIcurveCall.pdf
12/2/2013	Cory Warnock (McMillen) and Mark Luttrell (Artifact Illustration) exchanged emails regarding the overall status of the Grant Lake licensing process and the activities related to cultural resources.	Artifact Illustration	2013-12-02ArtifactIllustrationMluttrell.pdf

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12/2/2013	Cory Warnock (McMillen) exchanged emails with Harold Shepherd (Center for Water Advocacy) regarding work group designations.	Center for Water Advocacy	2013-12-02CWAhShepherd.pdf
12/2/2013	Cory Warnock (McMillen) exchanged emails with Mark Willette (ADFG) regarding the Chinook scale sample aging effort.	ADFG	2013-12-02ADFGmWillette.pdf
12/5/2013	John Blum (McMillen) emailed Eric Rothwell (NOAA Fisheries), Jeff Anderson (USFWS) and Monte Miller (ADFG) follow up to the November 27 conference call regarding HSI curves.	ADFG; USFWS; NOAA	2013-12-05HSIcurves.pdf
12/9/2013	Cory Warnock (McMillen) exchanged emails with Monte Miller (ADFG) regarding proposed HSI curves.	ADFG	2013-12-09ADFGmMiller.pdf
12/9/2013	Cory Warnock (McMillen) exchanged emails with Adam Reimer (ADFG) regarding preliminary counts of Chinook salmon that passed the weir in Grant Creek in 2013.	ADFG	2013-12-09ADFGaReimer.pdf
12/9/2013	Scott Ayers (ADFG) emailed John Stevenson (BioAnalysts) the data submission form related to ADFG's Fish Resources permit.	ADFG	2013-12-09ADFGsAyers.pdf
12/10/2013	Cory Warnock (McMillen) emailed interested stakeholders draft notes for the November 13, 2013 INHT meeting.	ADFG; ADNRR; USFS; Kenai Peninsula Borough	2013-12-10INHTmtgDraftNotes.pdf
12/11/2013	Shina Duvall (ADNR) emailed Cory Warnock (McMillen) that she had no comments on the November 13, 2013 INHT meeting draft notes.	ADNR	2013-12-11ADNRsDuvall.pdf
12/12/2013	Cory Warnock (McMillen) exchanged emails with Katherine VanMassenhove (USFS) regarding the status of renewal of the special use permit.	USFS	2013-12-12USFSkVanMassenhove.pdf
12/12/2013	Monte Miller (ADFG) emailed John Blum (McMillen) a report regarding HSI curves for Fall Creek Project.	ADFG	2013-12-12ADFGmMiller.pdf
12/13/2013	Robert Stovall (USFS) emailed Cory Warnock (McMillen) that he had no comments on the November 13, 2013 INHT meeting draft notes.	USFS	2013-12-13USFSrStovall.pdf
12/16/2013	Monte Miller (ADFG) emailed John Blum (McMillen) a study plan regarding an instream flow study for Falls Creek Project.	ADFG	2013-12-16ADFGmMiller.pdf
12/18/2013	Lesli Schick (ADNR) emailed Cory Warnock (McMillen) comments on the draft notes for the November 13, 2013 INHT meeting.	ADNR	2013-12-18ADNRISchick.pdf
12/18/2013	John Blum (McMillen) emailed Eric Rothwell (NOAA Fisheries), Jeff Anderson (USFWS) and Monte Miller, Joe Klein and Jason Mouw (ADFG) proposed HSI curves.	ADFG; USFWS; NOAA	2013-12-18HSIcurvesRev.pdf
12/19/2013	Monte Miller (ADFG) emailed Cory Warnock (McMillen) regarding the status of ADFG's review of proposed HSI curves.	ADFG	2013-12-19ADFGmMiller.pdf
12/31/2013	John Stevenson (BioAnalysts) emailed Scott Ayers (ADFG) the 2013 fish collection data form as required by the Grant Lake fish resource permit.	ADFG	2013-12-31ADFGsAyers.pdf

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1/2/2014	Cory Warnock (McMillen) exchanged emails with Harold Shepherd (Center for Water Advocacy) regarding the Grant Lake licensing process timeline.	Center for Water Advocacy	2014-01-02CWAhShepherd.pdf
1/3/2014	John Stevenson (BioAnalysts) exchanged emails with Scott Ayers (ADFG) regarding the 2013 fish collection data form provided by HEA as required by the Grant Lake fish resource permit.	ADFG	2014-01-03ADFGsAyers.pdf
1/6/2014	John Stevenson (BioAnalysts) exchanged emails with Adam Reimer (ADFG) regarding 2013 Grant Creek Chinook passage estimates.	ADFG	2014-01-06ADFGaReimer.pdf
1/8/2014	Cory Warnock (McMillen) exchanged emails with Paul Torgerson (Grant Lake Mining) regarding water tests on Grant Lake.	Grant Lake Mining	2014-01-08WGrLkMiningPtorgerson.pdf
1/9/2014	Cory Warnock (McMillen) emailed Ken Hogan (FERC) the email from Grant Lake Mining regarding water testing.	FERC	2014-01-09FERCkHogan2.pdf
1/9/2014	Cory Warnock (McMillen) and Ken Hogan (FERC) discussed via phone 1) Grant Lake licensing process status; 2) collaborative approach to the INHT re-route; and 3) inquiries of Grant Lake Mining.	FERC	2014-01-09FERCkHogan.pdf
1/10/2014	Mike Salzetti (HEA) filed with FERC the November 13, 2013 INHT meeting summary. NOTE: Presentation is designated privileged.	FERC	2014-01-10INHTmtgNotes.pdf
1/13/2014	Cory Warnock (McMillen) exchanged emails with Robert Stovall (USFS) regarding the status of submittal of draft study reports and upcoming work group meetings.	USFS	2014-01-13USFSrStovall.pdf
1/21/2014	Cory Warnock (McMillen) emailed licensing participants with proposed dates for study report meetings.	All Licensing Contacts	2014-01-21StudyReportMtgDates.pdf
1/27/2014	Cory Warnock (McMillen) exchanged emails with Eric Rothwell (NOAA Fisheries) regarding potential March study report meeting dates.	NOAA	2014-01-27NOAAeRothwell.pdf
1/27/2014	Mark Luttrell (Artifact Illustration) emailed Cory Warnock (McMillen) requesting the privileged INHT meeting presentation from the November 13, 2013 INHT meeting notes.	Artifact Illustration	2014-01-27ArtifactIllustrationMluttrell.pdf
1/27/2014	Cory Warnock (McMillen) emailed licensing participants with final dates for study report meetings (March 18-21).	All Licensing Contacts	2014-01-27StudyReportMtgFinalDates.pdf
1/31/2014	Monte Miller (ADFG) emailed Cory Warnock (McMillen) contact information for Barbara Stanley's (USFS) replacements.	ADFG	2014-01-31ADFGmMiller.pdf
2/3/2014	Katherine VanMassenhove (USFS) emailed Cory Warnock (McMillen) about being Barbara Stanley's (USFS) replacement.	USFS	2014-02-03USFSkVanMassenhove.pdf

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2/11/2014	Cory Warnock (McMillen) emailed the NRWG regarding availability of the water quality/hydrology and recreation/visual resources draft study reports on the McMillen ftp site.	NRWG (NOAA Fisheries, NPS, USACE, ADFG, ADNR, AEA, Center for Water Advocacy, Friends of Cooper Landing, Kenaitze Indian Tribe)	2014-02-11StudyReports.pdf
2/18/2014	Mike Yarborough (CRC) emailed the CRWG that the study report meeting would be held on March 21, 2014 and regarding the availability of the cultural resources study draft report.	CRWG (USFS, ADNR, SHPO, Cook Inlet Region, Artifact Illustration, AK Fed of Natives, Native Village of Eklutna, Kenai Native Association, Ninilchik Village Tribe, Chenega Corp, Quetekack Native Tribe, Kenaitze Indian Tribe)	2014-02-18CRWGmtgDate.pdf
2/20/2014	Frank Winchell (FERC) emailed Mike Yarborough (CRC) regarding participation in the March 21 CRWG meeting.	FERC	2014-02-20CRWGmtgDate.log
2/20/2014	Dara Glass (CIRI) and Mark Luttrell (Artifact Illustration) emailed Mike Yarborough (CRC) regarding attendance at the March 21 CRWG meeting and request for a CD of the cultural resources study draft report.	Cook Inlet Region; Artifact Illustration	2014-02-20CIRIandArtifactIllustration.pdf
2/25/2014	Mike Yarborough (CRC) exchanged emails with Mark Luttrell (Artifact Illustration) regarding the March 21 CRWG meeting.	Artifact Illustration	2014-02-25ArtifactIllustrationMluttrell.pdf
2/26/2014	Mike Salzetti (HEA) filed with FERC the fourth preliminary permit progress report.	FERC	2014-02-26ProgressReport4th.pdf
2/26/2014	Helen Sagner (USFS) emailed Mike Salzetti (HEA) the 2014 Special Use Permit for review and signature.	USFS	2014-02-26USFShSagner.pdf
2/26/2014	Mike Salzetti (HEA) exchanged voicemails with Monte Miller (ADFG) regarding the recently filed 4th progress report.	ADFG	2014-02-26ADFGmMiller.pdf
2/27/2014	Eric Rothwell (NOAA Fisheries) exchanged emails with Cassie Thomas (NPS) regarding the potential conflict between meetings scheduled for HEA's Grant Lake Project and AEA's Susitna-Watana Project.	NOAA; NPS	2014-02-27StReportMtgDates.pdf
2/27/2014	Cory Warnock (McMillen) emailed the NRWG regarding availability of the geomorphology and terrestrial resources draft study reports on the McMillen ftp site.	NRWG (NOAA Fisheries, NPS, USACE, ADFG, ADNR, AEA, Center for Water Advocacy, Friends of Cooper Landing, Kenaitze Indian Tribe)	2014-02-27StudyReports.pdf
2/27/2014	Cory Warnock (McMillen) emailed the ARWG regarding availability of the macroinvertebrate/periphyton study report on the McMillen ftp site.	ARWG (NOAA Fisheries, USFWS, USACE, ADFG, ADNR, AEA, Friends of Cooper Landing)	2014-02-27StudyReports2.pdf

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2/28/2014	Cory Warnock (McMillen) and Robert Stovall (USFS) exchanged emails regarding USFS' participation in the March 18-21 study report meetings and their review of draft study reports.	USFS	2014-02-28USFSrStovall.pdf
2/28/2014	Mike Yarborough (CRC) and Dara Glass (CIRI) exchanged emails regarding CIRI availability to attend the March 21 CRWG meeting.	Cook Inlet Region	2014-02-28CIRIdGlass.pdf
3/4/2014	Emily Andersen (McMillen) exchanged emails with Robert Stovall (USFS) regarding the specifics of the March 18-21 study report meetings.	USFS	2014-03-04USFSrStovall.pdf
3/4/2014	Cory Warnock (McMillen) exchanged emails with Jason Mouw (ADFG) regarding difficulties with ADFG being able to access McMillen's ftp site.	ADFG	2014-03-04ADFGjMouw.pdf
3/4/2014	Cory Warnock (McMillen) exchanged emails with Jason Mouw (ADFG) regarding trying to post study reports to the ADFG ftp site.	ADFG	2014-03-04ADFGjMouw2.pdf
3/4/2014	Cory Warnock (McMillen) emailed the NRWG with the March 18, 2014 meeting agenda.	NRWG (NOAA Fisheries, NPS, USACE, ADFG, ADNR, AEA, Center for Water Advocacy, Friends of Cooper Landing, Kenaitze Indian Tribe)	2014-03-04StudyReportMtgAgenda.pdf
3/4/2014	Cory Warnock (McMillen) emailed the ARWG with the March 19 and 20, 2014 meeting agendas.	ARWG (NOAA Fisheries, USFWS, USACE, ADFG, ADNR, AEA, Friends of Cooper Landing)	2014-03-04StudyReportMtgAgenda2.pdf
3/4/2014	Cory Warnock (McMillen) emailed Jason Mouw the geomorphology, macroinvertebrate, recreation/visual resources, and water quality/hydrology draft study reports.	ADFG	2014-03-04ADFGjMouw3.pdf
3/5/2014	Robert Stovall (USFS) emailed his staff and copied Cory Warnock (McMillen) with the March 18 meeting agenda.	USFS	2014-03-05USFSrStovall.pdf
3/5/2014	Cory Warnock (McMillen) emailed the ARWG regarding availability of the fisheries assessment study report on the McMillen ftp site.	ARWG (NOAA Fisheries, USFWS, USACE, ADFG, ADNR, AEA, Friends of Cooper Landing)	2014-03-05StudyReport.pdf
3/5/2014	Cory Warnock (McMillen) emailed the ARWG regarding availability of the instream flow study report on the McMillen ftp site.	ARWG (NOAA Fisheries, USFWS, USACE, ADFG, ADNR, AEA, Friends of Cooper Landing)	2014-03-05StudyReport2.pdf
3/5/2014	Cory Warnock (McMillen) emailed Ken Hogan (FERC) the agendas for the March 18-20 study report meetings and suggested a follow up call to de-brief on the meetings.	FERC	2014-03-05FERCkHogan.pdf
3/7/2014	Cory Warnock (McMillen) exchanged emails with Ken Hogan (FERC) regarding scheduling a follow up call to de-brief on the March 18-21 study report meetings.	FERC	2014-03-07FERCkHogan.pdf

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3/7/2014	Cory Warnock (McMillen) exchanged emails with Jason Mouw (ADFG) regarding getting ADFG the fisheries assessment and instream flow draft study reports.	ADFG	2014-03-07ADFGjMouw.pdf
3/10/2014	Amal Ajmi (ERM) exchanged emails with Mary Ann Benoit (USFS) regarding plans for the spring moose survey.	USFS	2014-03-10USFSmBenoit.pdf
3/10/2014	Mike Salzetti (HEA) exchanged emails with Helen Sagner (USFS) regarding the execution of the special use permit renewal.	USFS	2014-03-10USFSshSagner.pdf
3/13/2014	Mike Yarborough (CRC) emailed the CRWG the agenda for the March 21 CRWG meeting.	ADNR; FERC; USFS; Cook Inlet Region; SHPO; Artifact Illustration	2014-03-13CRWgmtgAgenda.pdf
3/18/2014	HEA held a meetings on March 18, 19 and 20, 2014 to discuss the Grant Lake Project Natural Resources, Draft Study Reports. [See 8/15/14 FERC filing entry for meeting materials.]	All Licensing Contacts	2014-03-18thru20-14SHmtgFinalNotes.pdf
3/19/2014	Audrey Alstrom (AEA) emailed Cory Warnock (McMillen) regarding not being able to attend the March 18-20 study report meetings.	AEA	2014-03-19AEAAalstrom.pdf
3/21/2014	HEA held a meetings on March 21, 2014 to discuss the Grant Lake Project Cultural Resources, Draft Study Report. [See 4/29/14 FERC filing entry for meeting materials.] NOTE: The meeting notes are designated privileged.	ADNR; FERC; USFS; Cook Inlet Region; SHPO	2014-03-21-14CRWgmtgFinalNotes.pdf
3/24/2014	Cory Warnock (McMillen) emailed the IFSG a Go-To meeting invite for the March 27, 2014 IFSG conference call.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-03-24IFSGcallInvite.pdf
3/24/2014	Cory Warnock (McMillen) exchanged emails with Monte Miller (ADFG) regarding the start time of the March 27, 2014 IFSG conference call.	ADFG	2014-03-24ADFGmMiller.pdf
3/24/2014	Cory Warnock (McMillen) emailed the ARWG and NRWG regarding the availability of the March 18-20 meeting presentations on the Project website, comment deadline for draft study reports, and planning for the next work group meetings.	ARWG and NRWG	2014-03-24StudyReportMtgFollowup.pdf
3/24/2014	Mike Salzetti (HEA) emailed Helen Sagner (USFS) regarding the status of the signing of the renewed special use permit.	USFS	2014-03-24USFSshSagner.pdf
3/25/2014	Cory Warnock (McMillen) exchanged emails with Hal Shepherd (Center for Water Advocacy) regarding access to draft study reports.	Center for Water Advocacy	2014-03-25CWAhShepherd.pdf
3/25/2014	Helen Sagner (USFS) emailed Mike Salzetti (HEA) the fully executed special use permit renewal.	USFS	2014-03-25USFSshSagner.pdf

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3/25/2014	Mark Miller (BioAnalysts) emailed Mark Willette (ADFG) requesting confirmation regarding the 0.x data of the scale age analysis.	ADFG	2014-03-25ADFGmWillette.pdf
3/25/2014	Mark Miller (BioAnalysts) and Jeff Anderson (USFWS) had a follow up discussion via phone to the March 19, 2014 ARWG meeting.	USFWS	2014-03-25USFWSjAnderson.pdf
3/25/2014	Mark Miller (BioAnalysts) exchanged emails with Jeff Anderson (USFWS) regarding additional relevant information pertaining to rainbow trout and Dolly Varden.	USFWS	2014-03-25USFWSjAnderson2.pdf
3/25/2014	Mike Yarborough (CRC) emailed Frank Winchell (FERC) the March 21, 2014 CRWG meeting presentation. NOTE: Presentation is designated privileged.	FERC	2014-03-25FERCfWinchell.pdf
3/26/2014	John Blum (McMillen) exchanged emails with Jason Mouw (ADFG) with the range of flows upon which measurements were taken for the HSI work in Grant Creek.	ADFG	2014-03-26ADFGjMouw.pdf
3/26/2014	John Blum (McMillen) emailed the IFSG an agenda for the March 27, 2014 IFSG conference call.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-03-26IFSGcallAgenda.pdf
3/27/2014	Levia Shoutis (ERM) emailed Katie McCafferty (USACE) with a proposed approach to the Grant Lake waters functional assessment, including a guidelines document.	USACE	2014-03-27USACEkMcCafferty.pdf
3/27/2014	Katie McCafferty (USACE) emailed Cory Warnock (McMillen) comments on the terrestrial resources study draft report.	USACE	2014-03-27USACEkMcCafferty2.pdf
3/27/2014	HEA held an IFSG conference call.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-03-27IFSGcall.pdf
3/28/2014	John Blum (McMillen) emailed the IFSG draft notes from the March 27, 2014 IFSG conference call for review.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-03-28IFSGcallDraftNotes.pdf
3/28/2014	John Blum (McMillen) emailed the IFSG an updated periodicity chart for review and comment.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-03-28Periodicity.pdf
3/31/2014	Levia Shoutis (ERM) and Katie McCafferty (USACE) discussed via phone ERM's proposed approach to the waters functional assessment.	USACE	2014-03-31USACEkMcCafferty.pdf
4/2/2014	Cory Warnock (McMillen) exchanged emails with Ken Hogan (FERC) regarding follow up to their call about the March 18-21 study report meetings and the licensing process moving forward.	FERC	2014-04-02FERCkHogan.pdf
4/3/2014	Jason Mouw (ADFG) emailed John Blum (McMillen) regarding the updated periodicity chart.	ADFG	2014-04-03ADFGjMouw.pdf
4/3/2014	Jason Mouw (ADFG) emailed the IFSG a paper regarding fish incubation and groundwater.	ADFG	2014-04-03ADFGjMouw2.pdf

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4/3/2014	John Blum (McMillen) emailed the IFSG the final notes from the March 27, 2014 conference call and proposed dates for the next IFSG call.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-04-03IFSGcallFinalNotes.pdf
4/4/2014	Jeff Anderson (USFWS) emailed John Blum (McMillen) regarding being unavailable for any of the proposed dates for the next IFSG conference call.	USFWS	2014-04-04USFWSjAnderson.pdf
4/9/2014	John Blum (McMillen) emailed the IFSG notice of the April 18, 2014 IFSG conference call.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-04-09IFSGcallNotice.pdf
4/9/2014	Cory Warnock (McMillen) emailed the IFSG a Go-To meeting invite for the April 18, 2014 IFSG conference call.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-04-09IFSGcallInvite.pdf
4/9/2014	Cory Warnock (McMillen) emailed Sue Walker (NOAA Fisheries) regarding her replacing Eric Rothwell (NOAA Fisheries) on the Grant Lake Project.	NOAA	2014-04-09NOAAsWalker.pdf
4/10/2014	Cory Warnock (McMillen) emailed Robert Stovall and John Eavis (USFS), Cassie Thomas (NPS), Lesli Schick (ADNR), and Dara Glass (CIRI) regarding the additional recreational study work planned for spring/summer 2014.	ADNR; USFS; NPS; Cook Inlet Region	2014-04-10TrailCams.pdf
4/15/2014	Cory Warnock (McMillen) and Dwayne Adams (USKH) exchanged emails with Cassie Thomas (NPS), John Eavis (USFS), and Pam Russell (ADNR) regarding feedback on the proposed trail camera work.	ADNR; USFS; NPS	2014-04-15TrailCamInput.pdf
4/15/2014	Dwayne Adams (USKH) and Pam Russell (ADNR) discussed via phone the permitting needs related to the proposed 2014 trail camera work.	ADNR	2014-04-15ADNRpRussell.pdf
4/16/2014	Cory Warnock (McMillen) emailed Robert Stovall and John Eavis (USFS), Cassie Thomas (NPS), Pam Russell and Lesli Schick (ADNR), and Dara Glass (CIRI) with a response to agency feedback on the proposed trail camera work.	ADNR; USFS; NPS; Cook Inlet Region	2014-04-16TrailCamResponse.pdf
4/16/2014	Mike Salzetti (HEA) emailed Paul Torgerson (Grant Lake Mining) a response letter to inquiries made by Mr. Torgerson about the Grant Lake Project.	Grant Lake Mining	2014-04-16GrantLkMiningPtorgerson.pdf
4/16/2014	Mike Salzetti (HEA) filed with FERC a response letter to Paul Torgerson (Grant Lake Mining).	FERC	2014-04-16GrantLkMiningPtorgerson2.pdf
4/16/2014	Frank Winchell (FERC) emailed Mike Yarborough (CRC) to let him know comments on the Cultural Resources, draft report are in the mail on a CD.	FERC	2014-04-16FERCfWinchell.pdf
4/17/2014	John Blum (McMillen) emailed the IFSG the agenda and materials for the April 18, 2014 IFSG conference call.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-04-17IFSGcallAgendaMaterials.pdf
4/17/2014	Dwayne Adams (USKH) emailed Pam Russell (ADNR) a completed permit application for the proposed trail camera work.	ADNR	2014-04-17ADNRpRussell.pdf

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4/18/2014	Cory Warnock (McMillen) emailed Dara Glass (CIRI) the link to the Grant Lake Project website.	Cook Inlet Region	2014-04-18CIRIdGlass.pdf
4/18/2014	HEA held an IFSG conference call.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-04-18IFSGcall.pdf
4/24/2014	Dwayne Adams (USKH) emailed interested licensing participants regarding a proposed INHT site visit proposed for May 21, 2014.	ADNR; USFS; SHPO	2014-04-24INHTsiteVisitDate.pdf
4/24/2014	Dwayne Adams (USKH) emailed Marcus Mueller (Kenai Peninsula Borough) regarding participation in the May 21, 2014 INHT site visit.	Kenai Peninsula Borough	2014-04-24KenaiBoroughMmueller.pdf
4/25/2014	John Blum (McMillen) emailed the IFSG draft notes from the April 18, 2014 IFSG conference call for review, spawning and rearing utilization, and proposed dates for the next IFSG call.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-04-25IFSGcallDraftNotes.pdf
4/25/2014	Jeff Anderson (USFWS) emailed John Blum (McMillen) that he is unavailable for a IFSG meeting the week of May 19, 2014.	USFWS	2014-04-25USFWSjAnderson.pdf
4/29/2014	Dwayne Adams (USKH) emailed interested licensing participants regarding alternate dates for a INHT site visit.	ADNR; USFS; Kenai Peninsula Borough; SHPO	2014-04-29INHTsiteVisitDate.pdf
4/29/2014	Cory Warnock (McMillen) emailed the ARWG and NRWG draft notes for the March 18-20 study report meetings.	ARWG and NRWG	2014-04-29StudyReportMtgDraftNotes.pdf
4/29/2014	Mike Yarborough (CRC) emailed the CRWG draft notes for the March 21, 2014 CRWG meeting and proposed dates for the next CRWG meeting. NOTE: The meeting notes are designated privileged.	ADNR; FERC; USFS; Cook Inlet Region; SHPO; Artifact Illustration	2014-04-29CRWGmtgDraftNotes.pdf
4/30/2014	Jeff Anderson (USFWS) emailed Cory Warnock (McMillen) comments on the March 19, 2014 ARWG meeting draft notes.	USFWS	2014-04-30USFWSjAnderson.pdf
4/30/2014	Monte Miller (ADFG) emailed Cory Warnock (McMillen) comments of the draft natural resources study reports.	ADFG	2014-04-30ADFGmMiller.pdf
4/30/2014	Cory Warnock (McMillen) and Kathie McCafferty (USACE) exchanged emails regarding dates for a future Project Operations Workshop.	USACE	2014-04-30USACEkMcCafferty.pdf
5/1/2014	Frank Winchell (FERC) emailed Mike Yarborough (CRC) regarding his availability to attend the proposed July 2014 CRWG meeting.	FERC	2014-05-01FERCfWinchell.pdf
5/1/2014	John Blum (McMillen) emailed the IFSG following up regarding proposed May 22, 2014 date for next IFSG conference call.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-05-01IFSGcallDate.pdf
5/1/2014	Shina Duvall (SHPO) emailed Cory Warnock (McMillen) comments on the cultural resources study draft report.	SHPO	2014-05-01SHPOsDuvall.pdf
5/1/2014	Robert Stovall (USFS) emailed Cory Warnock (McMillen) a status update on USFS' draft study report comments.	USFS	2014-05-01USFSrStovall.pdf

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5/2/2014	Jason Mouw (ADFG) emailed John Blum (McMillen) confirmation of his and Monte Miller's availability for a May 22, 2014 IFSG call.	ADFG	2014-05-02ADFGjMouw.pdf
5/3/2014	Cory Warnock (McMillen) emailed the IFSG an Go-To Meeting invite for the May 22, 2014 IFSG conference call.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-05-03IFSGcallInvite.pdf
5/5/2014	Jeff Anderson (USFWS) emailed John Blum (McMillen) that he is unavailable for the May 22, 2014 IFSG meeting.	USFWS	2014-05-05USFWSjAnderson.pdf
5/7/2014	Dwayne Adams (USKH) emailed interested licensing participants regarding alternate dates for a INHT site visit.	ADNR; USFS; Kenai Peninsula Borough; SHPO	2014-05-07INHTsiteVisitDates.pdf
5/12/2014	John Blum (McMillen) emailed the IFSG the final meeting notes to the April 18, 2014 IFSG conference call.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-05-12IFSGcallFinalNotes.pdf
5/13/2014	John Stevenson (BioAnalysts) and Scott Ayers (ADFG) discussed via phone the deadline for the fish resources permit reporting requirement.	ADFG	2014-05-13ADFGsAyers.pdf
5/14/2014	Paul Torgerson (Grant Lake Mining) emailed Mike Salzetti (HEA) inquiring as to when water test results from the 2013 study season would be available.	Grant Lake Mining	2014-05-14GrantLkMiningPtorgerson.pdf
5/14/2014	Dwayne Adams (USKH) emailed interested licensing participants regarding alternate dates for a INHT site visit.	ADNR; USFS; Kenai Peninsula Borough; SHPO	2014-05-14INHTsiteVisitDates.pdf
5/14/2014	Dwayne Adams (Earthscope) emailed interested licensing participants notification of the July 15, 2014 INHT site visit.	ADNR; USFS; Kenai Peninsula Borough; SHPO	2014-05-14INHTsiteVisitNotice.pdf
5/15/2014	Dwayne Adams (Earthscope) and Katherine VanMassenhove (USFS) exchanged emails regarding Katherine's participation in the July 15, 2014 INHT site visit.	USFS	2014-05-15USFSkVanMassenhove.pdf
5/19/2014	Cory Warnock (McMillen) emailed the ARWG and NRWG notification of the July 7-8, 2014 Operations Workshop and Public Meeting.	ARWG and NRWG	2014-05-19JulyWorkshopDates.pdf
5/19/2014	Cory Warnock (McMillen) emailed Nicole Lantz (SHPO) a completed AHRS corporate user agreement application.	SHPO	2014-05-19SHPOnLantz.pdf
5/19/2014	Cory Warnock (McMillen) left a voicemail for Robert Stovall (USFS) regarding the status of finalization of the study reports.	USFS	2014-05-19USFSrStovall.pdf
5/20/2014	Cory Warnock (McMillen) emailed Nicole Lantz (SHPO) a completed AHRS corporate user agreement application and waiver for himself and Emily Andersen (McMillen).	SHPO	2014-05-20SHPOnLantz.pdf
5/21/2014	John Blum (McMillen) emailed the IFSG an agenda for the May 22, 2014 call.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-05-21IFSGmtgAgenda.pdf
5/21/2014	Cory Warnock (McMillen) and Nicole Lantz (SHPO) exchanged emails regarding the approval of McMillen's AHRS data access.	SHPO	2014-05-21SHPOnLantz.pdf

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5/22/2014	Cory Warnock (McMillen) and Dara Glass (CIRI) exchanged emails about Dara's unavailability to attend the May 22, 2014 IFSG call.	Cook Inlet Region	2014-05-22CIRIdGlass.pdf
5/22/2014	Cory Warnock (McMillen) emailed the IFSG a Go To Meeting invite for the June 12, 2014 IFSG call.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-05-22IFSGmtgInvite.pdf
5/22/2014	HEA held a IFSG conference call.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-05-22IFSGcall.pdf
5/23/2014	John Blum (McMillen) emailed the IFSG updated information regarding spawning and rearing locations.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-05-23SpawnRearLocations.pdf
5/27/2014	Dwayne Adams (Earthscope) emailed interested licensing participants notification of the July 15, 2014 INHT site visit.	ADNR; USFS; Kenai Peninsula Borough; SHPO	2014-05-27INHTmtgDate.pdf
5/28/2014	John Blum (McMillen) emailed the IFSG draft notes for the May 22, 2014 call.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-05-28IFSGDraftCallNotes.pdf
5/28/2014	Cory Warnock (McMillen) emailed the ARWG and NRWG the location of the July 7-8 Operations Workshop and Public Meeting.	ARWG and NRWG	2014-05-28OperationsWorkshopLocation.pdf
5/29/2014	Levia Shoutis (ERM) and Katie McCafferty (USACE) exchanged emails regarding direct and indirect impacts to wetlands.	USACE	2014-05-29USACEkMcCafferty.pdf
6/2/2014	Jason Mouw (ADFG) emailed John Blum (McMillen) comments on the draft notes from the May 22, 2014 call.	ADFG	2014-06-02ADFGjMouw.pdf
6/10/2014	Cory Warnock (McMillen) emailed the ARWG and NRWG an engineering/operations technical memo (1) in preparation for the July 7 Operations Workshop.	ARWG and NRWG	2014-06-10EngTechMemo.pdf
6/10/2014	John Blum (McMillen) and Monte Miller (ADFG) exchanged email regarding the requested input on the spawning transects and transect weighting information.	ADFG	2014-06-10ADFGmMiller.pdf
6/10/2014	John Blum (McMillen) emailed the IFSG final notes for the May 22, 2014 call.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-06-10IFSGFinalCallNotes.pdf
6/11/2014	Cory Warnock (McMillen) and Hal Shepherd (CWA) exchanged emailed regarding details related to the July 8, 2014 Public Meeting.	Clean Water Advocacy	2014-06-11CWAhShepherd.pdf
6/13/2014	Cory Warnock (McMillen) emailed the ARWG and NRWG an engineering/operations technical memo (2) in preparation for the July 7 Operations Workshop.	ARWG and NRWG	2014-06-13EngTechMemo2.pdf
6/13/2014	John Blum (McMillen) and Monte Miller (ADFG) exchanged emails regarding the requested input on the spawning transects and transect weighting information.	ADFG	2014-06-13ADFGmMiller.pdf
6/13/2014	John Blum (McMillen) emailed the IFSG revised final notes for the May 22, 2014 call.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-06-13IFSGrevFinalCallNotes.pdf

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6/16/2014	John Blum (McMillen) and IFSG members exchanged emailed regarding dates for a June call.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-06-16IFSGcallAvailability.pdf
6/16/2014	Cory Warnock (McMillen) emailed the IFSG a Go To Meeting invite for the June 23, 2014 IFSG call.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-06-16IFSGcallInvite.pdf
6/16/2014	Robert Stovall (USFS) emailed Cory Warnock (McMillen) comments on the draft study reports.	USFS	2014-06-16USFSrStovall.pdf
6/16/2014	Cory Warnock (McMillen) emailed Robert Stovall (USFS) regarding the USFS draft study report comments.	USFS	2014-06-16USFSrStovall2.pdf
6/17/2014	John Blum (McMillen) and Jason Mouw (ADFG) exchanged emails regarding the requested input on the spawning transects and transect weighting information.	ADFG	2014-06-17ADFGjMouw.pdf
6/20/2014	John Blum (McMillen) emailed the IFSG about rescheduling the June 23, 2014 call.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-06-20IFSGrescheduleCall.pdf
6/20/2014	Cory Warnock (McMillen) and Dara Glass (CIRI) exchanged emails about scheduling a meeting between HEA and CIRI.	Cook Inlet Region	2014-06-20CIRIdGlass.pdf
6/23/2014	Cory Warnock (McMillen) emailed the ARWG and NRWG regarding postponement of the July 8, 2014 Public Meeting to later in the year.	ARWG and NRWG	2014-06-23PublicMtgDelay.pdf
6/23/2014	Cory Warnock (McMillen) and Brendan Culverwell (SNL Financial) exchanged emails regarding the status of the licensing process.	SNL Financial	2014-06-23SNLfinancialBculverwell.pdf
6/27/2014	Cory Warnock (McMillen) emailed the ARWG and NRWG an engineering/operations technical memo (3) in preparation for the July 7 Operations Workshop.	ARWG and NRWG	2014-06-27EngTechMemo3.pdf
7/2/2014	Cory Warnock (McMillen) emailed the ARWG and NRWG an agenda for the July 7, 2014 Operations Workshop.	ARWG and NRWG	2014-07-02OpsWorkshopAgenda.pdf
7/3/2014	Cory Warnock (McMillen) and Jeff Anderson (USFWS) exchanged emails regarding meeting materials for the July 7, 2014 Operations Workshop.	USFWS	2014-07-03USFWSjAnderson.pdf
7/7/2014	HEA held a workshop on July 7, 2014 to discuss proposed engineering and operations of the Grant Lake Project. [See 8/15/14 FERC filing entry for meeting materials.]	All Licensing Contacts	2014-07-07OpsWorkshop.pdf
7/8/2014	Cory Warnock (McMillen) and Dara Glass (CIRI) exchanged emails about scheduling a meeting between HEA and CIRI for the end of August.	Cook Inlet Region	2014-07-08CIRIdGlass.pdf
7/9/2014	Dwayne Adams (Earthscope) emailed interested licensing participants a reminder about the July 15, 2014 INHT site visit.	ADNR; USFS; Kenai Peninsula Borough; SHPO	2014-07-09INHTsiteVisitReminder.pdf
7/9/2014	David Griffin (ADNR) emailed Dwayne Adams (Earthscope) that he will not be able to attend the July 15, 2014 INHT site visit.	ADNR	2014-07-09ADNRdGriffin.pdf

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7/11/2014	Dwayne Adams (Earthscape) emailed interested licensing participants requesting confirmation of planned attendance to the July 15, 2014 INHT site visit.	ADNR; USFS; Kenai Peninsula Borough; SHPO	2014-07-11INHTsiteVisitAttendance.pdf
7/11/2014	Lesli Schick (ADNR) emailed Dwayne Adams (Earthscape) that she will be unable to attend the July 15, 2014 INHT site visit.	ADNR	2014-07-11ADNRISchick.pdf
7/15/2014	Claire Leclair (ADNR) emailed Dwayne Adams (Earthscape) that no one at ADNR will be able to attend the July 15, 2014 INHT site visit.	ADNR	2014-07-15ADNRcLeclair.pdf
7/15/2014	HEA conducted a site visit on July 15, 2014 to discuss possible alternatives to a current alignment of the INHT.	ADNR; USFS; Kenai Peninsula Borough; SHPO	2014-07-15INHTsiteVisit.pdf
7/17/2014	John Blum (McMillen) emailed Joe Klein, Monte Miller, and Jason Mouw (ADFG) a draft Habitat Quantification and Transect Weighting Methodology report.	ADFG	2014-07-17ADFGhabQuantTransectWeight.pdf
7/17/2014	John Stevenson (BioAnalysts) emailed Joe Klein and Monte Miller (ADFG) maps discussed on the July 17, 2014 call regarding the draft Habitat Quantification and Transect Weighting Methodology report.	ADFG	2014-07-17ADFGtransectMaps.pdf
7/17/2014	Monte Miller (ADFG) emailed John Blum (McMillen) comments on the draft Habitat Quantification and Transect Weighting Methodology report.	ADFG	2014-07-17ADFGmMiller.pdf
7/17/2014	John Blum (McMillen), John Stevenson (BioAnalysts), and Joe Klein and Monte Miller (ADFG) discussed via phone the draft Habitat Quantification and Transect Weighting Methodology report.	ADFG	2014-07-17ADFGjKleinMmiller.pdf
7/18/2014	Cory Warnock (McMillen) and Betsy McCracken (USFWS) exchanged emails regarding logistics for transmitting study reports to USFWS.	USFWS	2014-07-18USFWSbMcCracken.pdf
7/25/2014	John Blum (McMillen) emailed Joe Klein, Monte Miller, and Jason Mouw (ADFG) a revised draft Habitat Quantification and Transect Weighting Methodology report.	ADFG	2014-07-25ADFGhabQuantTransectWeight.pdf
7/29/2014	Dwayne Adams (Earthscape) emailed interested licensing participants draft notes from the July 15, 2014 INHT Site Visit.	ADNR; USFS; Kenai Peninsula Borough; SHPO	2014-07-29INHTsiteVisitDraftNotes.pdf
7/29/2014	Dwayne Adams (Earthscape) left voicemails for John Eavis, Robert Stovall, and Alison Rein (USFS) requesting relevant Trail Management Objectives for the INHT.	USFS	2014-07-29USFSjEavisRequest.pdf
7/30/2014	John Eavis (USFS) emailed Dwayne Adams (Earthscape) the draft Trail Management Objectives (TMO) for the relevant section of the INHT.	USFS	2014-07-30USFSjEavis.pdf
8/1/2014	John Blum (McMillen) emailed Joe Klein, Monte Miller, and Jason Mouw (ADFG) a second revised draft Habitat Quantification and Transect Weighting Methodology report.	ADFG	2014-08-01ADFGhabQuantTransectWeight.pdf

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Date	Summary of Contact	Agency/Organization Consulted	Documentation filename (pdf)
8/1/2014	Dwayne Adams (Earthscope) and Robert Stovall (USFS) discussed via phone the TMOs for the relevant portion of the INHT and USFS comments on the draft notes for the July 15, 2014 INHT site visit.	USFS	2014-08-01USFSrStovall.pdf
8/1/2014	Dwayne Adams (Earthscope) and Shina Duvall (SHPO) exchanged emails regarding the draft notes for the July 15, 2014 INHT site visit.	SHPO	2014-08-01SHPOsDuvall.pdf
8/1/2014	John Blum (McMillen) and Joe Klein (ADFG) exchanged emails regarding comments on the second revised draft Habitat Quantification and Transect Weighting Methodology report.	ADFG	2014-08-01ADFGjKlein.pdf
8/4/2014	John Blum (McMillen) emailed Joe Klein, Monte Miller, and Jason Mouw (ADFG) a third revised draft Habitat Quantification and Transect Weighting Methodology report.	ADFG	2014-08-04ADFGhabQuantTransectWeight.pdf
8/4/2014	John Blum (McMillen) and Joe Klein (ADFG) exchanged emails regarding ADFG approval of the third revised draft Habitat Quantification and Transect Weighting Methodology report.	ADFG	2014-08-04ADFGjKlein.pdf
8/5/2014	John Blum (McMillen) emailed the IFSG the final Habitat Quantification and Transect Weighting Methodology report.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-08-05IFSGhabQuantTransectWeight.pdf
8/15/2014	Mike Salzetti (HEA) filed with FERC the final notes and materials from the March 18-20, 2014 Stakeholder Meetings and July 7, 2014 Operations Workshop, responses to stakeholder draft study report comments, and final study reports.	FERC	2014-08-13MarchJulyMtgNotesFinalReports.pdf
8/18/2014	Cory Warnock (McMillen) and Scott Ayers (ADFG) exchanged emails regarding the Fisheries Assessment, Final Report. [See 8/15/14 FERC filing entry for the attached report.]	ADFG	2014-08-18ADFGsAyers.pdf
8/19/2014	Cory Warnock (McMillen) emailed the ARWG and NRWG that the final notes from the March 18-20 and July 7 meetings, responses to stakeholder draft study report comments, and final study reports, are posted on the Kenai Hydro website.	ARWG and NRWG	2014-08-19MarchJulyMtgNotesFinalReports.pdf
8/20/2014	Cory Warnock (McMillen) and Scott Ayers (ADFG) exchanged emails regarding the Fisheries Assessment, Final Report.	ADFG	2014-08-20ADFGsAyers.pdf
8/20/2014	Mike Salzetti (HEA) emailed Jan Konigsberg (HRC) a status update on the progress made during the Grant Lake Project licensing process to date.	Hydro Reform Coalition	2014-08-20HRCjKonigsberg.pdf
8/22/2014	Dwayne Adams (Earthscope) emailed Gary Williams (KPB) an Initial Letter of Intent regarding the possible easement relocation for the INHT corridor and revised notes from the July 15, 2014 INHT site visit.	Kenai Peninsula Borough	2014-08-22KPBgWilliams.pdf

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Date	Summary of Contact	Agency/Organization Consulted	Documentation filename (pdf)
8/22/2014	Dwayne Adams (Earthscope) emailed Judy Bittner (SHPO) an Initial Letter of Intent regarding the possible easement relocation for the INHT corridor and revised notes from the July 15, 2014 INHT site visit.	SHPO	2014-08-22SHPOjBittner.pdf
8/22/2014	Dwayne Adams (Earthscope) emailed Jack Blackwell (ADNR) an Initial Letter of Intent regarding the possible easement relocation for the INHT corridor and revised notes from the July 15, 2014 INHT site visit.	ADNR	2014-08-22ADNRjBlackwell.pdf
8/22/2014	Dwayne Adams (Earthscope) emailed Clark Cox (ADNR) an Initial Letter of Intent regarding the possible easement relocation for the INHT corridor and revised notes from the July 15, 2014 INHT site visit.	ADNR	2014-08-22ADNRcCox.pdf
8/22/2014	Dwayne Adams (Earthscope) emailed Terri Maceron (USFS) an Initial Letter of Intent regarding the possible easement relocation for the INHT corridor and revised notes from the July 15, 2014 INHT site visit.	USFS	2014-08-22USFSStMaceron.pdf
8/25/2014	Dwayne Adams (Earthscope) and Marcus Mueller (KPB) exchanged emails regarding the management authority related to the Kenai Area Plan.	Kenai Peninsula Borough	2014-08-25KPBmMueller.pdf
8/25/2014	Dwayne Adams (Earthscope) and Shina Duvall (SHPO) discussed via phone the purposes of a Memorandum of Agreement (MOA) versus an Memorandum of Understanding (MOU).	SHPO	2014-08-25SHPOsDuvall.pdf
8/27/2014	Dwayne Adams (Earthscope) and John Eavis (USFS) exchanged emails regarding the status of flagging the alternate INHT route.	USFS	2014-08-27USFSjEavis.pdf
8/27/2014	Mike Salzetti (HEA) filed with FERC the fifth preliminary permit progress report.	FERC	2014-08-27ProgressReport5th.pdf
8/27/2014	Dwayne Adams (Earthscope) and Shina Duvall (SHPO) exchanged emails regarding the difference between a Memorandum of Agreement (MOA) and Memorandum of Understanding (MOU).	SHPO	2014-08-27SHPOsDuvall.pdf
8/29/2014	Cory Warnock (McMillen) and Scott Ayers (ADFG) exchanged emails regarding ADFG's input on the Fisheries Assessment, Final Report with respect to the Fish Resources permit.	ADFG	2014-08-29ADFGsAyers.pdf
8/29/2014	Cory Warnock (McMillen) emailed the ARWG and NRWG the 5th preliminary permit progress report.	ARWG and NRWG	2014-08-29ProgressReport5th.pdf
8/29/2014	David Griffin (ADNR) emailed Cory Warnock (McMillen) requesting that Ryan Thomas, a new ADNR staff person assigned to permitting, be added to the project distribution list.	ADNR	2014-08-29ADNRdGriffin.pdf
8/29/2014	Robert Stovall (USFS) emailed Dwayne Adams (Earthscope), Mike Salzetti (HEA), and Cory Warnock (McMillen) regarding providing comments on the proposed MOA related to the INHT re-alignment.	USFS	2014-08-29USFSrStovall.pdf

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9/4/2014	John Stevenson (BioAnalysts) emailed Jay Johnson (ADFG) requesting details regarding an AWC submittal.	ADFG	2014-09-04ADFGjJohnson.pdf
9/4/2014	John Stevenson (BioAnalysts) and Scott Ayers (ADFG) exchanged emails regarding AWC submittal.	ADFG	2014-09-04ADFGsAyers.pdf
9/5/2014	John Stevenson (BioAnalysts) and Scott Ayers (ADFG) exchanged emails regarding AWC submittal and completion of the fish resource permit requirements.	ADFG	2014-09-05ADFGsAyers.pdf
9/5/2014	John Stevenson (BioAnalysts) emailed Jay Johnson (ADFG) requisite materials for an AWC nomination.	ADFG	2014-09-05ADFGjJohnson.pdf
9/5/2014	John Stevenson (BioAnalysts) and Jay Johnson (ADFG) exchange emails regarding the transmittal of materials for an AWC nomination.	ADFG	2014-09-05ADFGjJohnson2.pdf
9/5/2014	John Stevenson (BioAnalysts) emailed Scott Ayers (ADFG) that AWC nomination materials had been submitted.	ADFG	2014-09-05ADFGsAyers2.pdf
9/19/2014	Robert Stovall (USFS) emailed Dwayne Adams (Earthscope), Mike Salzetti (HEA), and Cory Warnock (McMillen) a response letter on the Letter of Intent and MOA related to the INHT re-alignment.	USFS	2014-09-19USFSrStovall.pdf
9/22/2014	Cory Warnock (McMillen) and Robert Stovall (USFS) discussed via phone the USFS' response letter to the Letter of Intent and MOA related to the INHT re-alignment.	USFS	2014-09-22USFSrStovall.pdf
10/13/2014	Cory Warnock (McMillen) emailed Lesli Schick (ADNR) to request a phone conference to discuss the INHT re-alignment process moving forward.	ADNR	2014-10-13ADNRISchick.pdf
10/13/2014	Dwayne Adams (Earthscope) and Karen Morrissey (ARRC) exchanged emails regarding ARRC policy on public use of ARRC trestle in Moose Pass.	Alaska Railroad Corporation	2014-10-13ARRCkMorrissey.pdf
10/16/2014	Cory Warnock (McMillen) emailed an appointment notification to Lesli Schick (ADNR) for a phone conference on October 20 to discuss the INHT re-alignment process going forward.	ADNR	2014-10-16ADNRISchick.pdf
10/17/2014	Dara Glass (CIRI) emailed Ethan Shutt (CIRI), Mike Salzetti (KHL), and Cory Warnock (McMillen) an appointment notification for a meeting on November 5, 2014 to discuss the status of the Grant Lake Project licensing process.	Cook Inlet Region	2014-10-17CIRIdGlass.pdf
10/17/2014	Cory Warnock (McMillen) and Dara Glass (CIRI) exchanged emails confirming a meeting on November 5, 2014 to discuss the status of the Grant Lake Project licensing process.	Cook Inlet Region	2014-10-17CIRIdGlass2.pdf

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10/20/2014	Cory Warnock (McMillen) emailed the ARWG and NRWG a notice for the November 6, 2014 Public Meeting.	ARWG and NRWG	2014-10-20PublicMtgNotice.pdf
10/20/2014	Mike Salzetti (HEA) and Sean Skaling (AEA) exchanged emails regarding AEA's potential participation in the November 6 AEA meeting.	AEA	2014-10-20AEAsSkaling.pdf
10/20/2014	Cory Warnock (McMillen) emailed interested parties in the INHT with an update to the re-alignment process.	ADNR; USFS; SHPO	2014-10-20INHTprocess.pdf
10/20/2014	Cory Warnock (McMillen), Dwayne Adams (Earthscape), Mike Yarborough (CRC), and Lesli Schick (ADNR) discussed via phone a modified process for the INHT re-alignment.	ADNR	2014-10-20ADNRISchick.pdf
10/21/2014	Robert Stovall (USFS) emailed Mike Salzetti (HEA) and Cory Warnock (McMillen) regarding USFS' participation in the November 6 Public Meeting.	USFS	2014-10-21USFSrStovall.pdf
10/27/2014	John Blum (McMillen) emailed the IFSG the draft Aquatics Habitat Mapping and Instream Flow Study, report addendum.	IFSG (NOAA Fisheries, USFWS, ADFG, Cook Inlet Region)	2014-10-27IFIMaddendumReport.pdf
10/29/2014	Mike Salzetti (KHL) and Bruce Jaffa (Jaffa Construction) exchanged emails regarding adding Jaffa to the stakeholder distribution list.	Jaffa Construction	2014-10-29JaffaConstrBJaffa.pdf
10/31/2014	Levia Shoutis (ERM) and Katy McCafferty (USACE) exchanged emails regarding the 404 application review process and the differences between a preliminary JD and an approved JD.	USACE	2014-10-31USACEkMcCafferty.pdf
10/31/2014	Cory Warnock (McMillen) emailed Jeff Hetrick the public service announcement for the November 6 Public Meeting.	Citizen	2014-10-31jHetrick.pdf
11/1/2014	Mike Yarborough (CRC) was copied on an email from Mark Luttrell (Artifact Illustration) regarding the November 6 Public meeting.	Artifact Illustration	2014-11-01ArtifactIllustrationMluttrell.pdf
11/3/2014	Matt McMillan (Stantec) and Pam Russell (ADNR) exchanged emails regarding a permit for use of three trail cameras around Grant Lake.	ADNR	2014-11-03ADNRpRussell.pdf
11/5/2014	Mike Salzetti (HEA) and Cory Warnock (McMillen Jacobs) met with Ethan Shutt and Dara Glass (CIRI) to provide an update on the Grant Lake Hydroelectric Project progress.	Cook Inlet Region	2014-11-05CIRImtg.pdf
11/6/2014	HEA held a Public Meeting in Moose Pass, AK. [See 12/15/14 FERC filing entry for meeting materials.]	All Licensing Contacts	2014-11-06PublicMtg.pdf
11/8/2014	Dan Hertrich (AEA) emailed Mike Salzetti (HEA) and Cory Warnock and Mort McMillen (McMillen) thanking them for the Grant Lake Project description and sharing general approval for the project.	AEA	2014-11-08AEAdHertrich.pdf

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11/10/2014	Levia Shoutis (ERM) and Katie McCafferty (USACE) exchanged emails regarding the organization and content of the Section 404 permit application.	USACE	2014-11-10USACEkMcCafferty.pdf
11/11/2014	Cory Warnock (McMillen) and David Griffin (ADNR) exchanged emails regarding the ADNR proposal for an MOU between KHL and ADNR regarding post-licensing activities.	ADNR	2014-11-11ADNRdGriffin.pdf
11/11/2014	Cory Warnock (McMillen) and Mark Luttrell (Artifact Illustration) exchanged emails regarding Mark's request for a current Grant Lake Project description.	Artifact Illustration	2014-11-11ArtifactIllustrationMluttrell.pdf
11/15/2014	Cory Warnock (McMillen) and Jeff Hetrick exchanged emails regarding questions by Jeff following the November 6 Public Meeting.	Citizen	2014-11-15jHetrick.pdf
11/24/2014	Cory Warnock (McMillen) emailed the November 6, 2014 Public Meeting participants the draft notes from the meeting.	Public mtg participants	2014-11-24PublicMtgDraftNotes.pdf
11/24/2014	Joe Gallagher (HEA) emailed JJ Kaiser the November 6 Public Meeting draft notes.	Citizen	2014-11-24jjKaiser.pdf
11/24/2014	Cory Warnock (McMillen) and Mark Luttrell (Artifact Illustration) exchanged emails regarding Mark's request for a current Grant Lake Project description.	Artifact Illustration	2014-11-24ArtifactIllustrationMluttrell.pdf
12/5/2014	Levia Shoutis (ERM) and Katie McCafferty (USACE) discussed via phone the content and organization of the Section 404 permit application.	USACE	2014-12-05USACEkMcCafferty.pdf
12/11/2014	Mike Salzetti (HEA) gave a presentation to the Kenai River Special Management Area (KRSMA) Board.	ADNR	2014-12-11KRSMAboardMtg.pdf
12/12/2014	Levia Shoutis (ERM) and Katie McCafferty (USACE) discussed via phone various aspects of the wetlands-related discussion in the forthcoming Draft License Application and content of the Section 404 permit application.	USACE	2014-12-12USACEkMcCafferty.pdf
12/15/2014	Mike Salzetti (HEA) filed with FERC the final notes and materials from the November 6, 2014 Public Meeting.	All Licensing Contacts	2014-12-15PublicMtgFinalNotes.pdf
12/15/2014	Cory Warnock (McMillen) emailed ARWG and NRWG members the final notes from the November 6, 2014 Public Meeting. [See 12/15/14 FERC filing entry for minutes and materials.]	ARWG and NRWG	2014-12-15PublicMtgFinalNotes2.pdf
12/15/2014	Cory Warnock (McMillen) emailed public meeting participants the final notes from the November 6, 2014 Public Meeting. [See 12/15/14 FERC filing entry for minutes and materials.]	Public mtg participants	2014-12-15PublicMtgFinalNotes3.pdf

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12/17/2014	Cory Warnock (McMillen) and Katharine Glaser exchanged emails regarding timing of DLA commenting.	Citizen	2014-12-17kGlaser.pdf
12/29/2014	Dwayne Adams (Earthscope) and John Eavis (USFS) exchanged emails regarding potential costs for the new segment of the INHT.	USFS	2014-12-29USFSjEavis.pdf
1/5/2015	Levia Shoutis (ERM) and Katie McCafferty (USACE) exchanged emails regarding the need for an approved jurisdictional determination form with the application request for a preliminary determination.	USACE	2015-01-05USACEkMcKafferty.pdf
1/8/2015	Levia Shoutis (ERM) and Katie McCafferty (USACE) exchanged emails regarding the schedule for submittal of a Section 404 application.	USACE	2015-01-08USACEkMcCafferty.pdf
1/8/2015	Mike Salzetti (HEA) gave a presentation to the Kenai Peninsula Economic Outlook Forum.	Kenai Peninsula Economic Outlook Forum	2015-01-08KenaiPenOutlookForumPres.pdf
1/9/2015	Jason Mouw (ADF&G) emailed John Blum (McMillen Jacobs) requesting additional information regarding the Aquatic Habitat Mapping and Instream Flow Study, Addendum Report.	ADFG	2015-01-09ADFGjMouw.pdf
1/9/2015	John Mohorcich (KPB) emailed Joe Gallagher (HEA) regarding issuance of a preliminary decision by ADNDR for the conveyance of lands to the Kenai Peninsula Borough.	Kenai Peninsula Borough	2015-01-09KPBjMohorcich.pdf
1/13/2015	John Blum (McMillen) and Jason Mouw (ADF&G) discussed via phone ADF&G's request for additional information related to the Aquatic Habitat and Instream Flow Study, Addendum Report.	ADFG	2015-01-13ADFGjMouw.pdf
1/20/2015	Emily Andersen and Cory Warnock (McMillen Jacobs) and Ken Hogan (FERC) exchanged emails regarding scheduling a call for January 27 to discuss the status of the Grant Lake Project licensing process.	FERC	2015-01-20FERCkHogan.pdf
1/22/2015	Emily Andersen and Cory Warnock (McMillen Jacobs) and Ken Hogan (FERC) exchanged emails regarding preliminary permit extensions.	FERC	2015-01-22FERCkHogan.pdf
1/27/2015	Mike Salzetti (HEA) filed with FERC an preliminary permit extension request.	FERC	2015-01-27FERCextensionRequestLtr.pdf
1/27/2015	John Blum (McMillen Jacobs) and Jason Mouw (ADF&G) exchanged emails regarding McMillen's expanded WUA information.	ADFG	2015-01-27ADFGjMouw.pdf
1/28/2015	Jason Mouw (ADF&G) emailed John Blum (McMillen Jacobs) with a question about the Grant Creek hydrologic dataset.	ADFG	2015-01-28ADFGjMouw.pdf
2/1/2015	Mike Salzetti (HEA) emailed Karen Kromrey (USFS) about the current mining plan in the area of the proposed Grant Lake Hydroelectric Project.	USFS	2015-02-01USFSkKromrey.pdf
2/2/2015	Cory Warnock (McMillen Jacobs) emailed Irene Lindquist (USFS) with a status update on Draft License Application development and the target submittal date.	USFS	2015-02-02USFSiLindquist.pdf

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2/2/2015	Mike Salzetti (HEA) and Mary Hermon (ADNR) exchanged emails regarding HEA's comment regarding the Preliminary Decision of Land Conveyance.	ADNR	2015-02-02ADNRmHermon.pdf
2/6/2015	Mike Yarborough (CRC) emailed current CRWG members that a findings letter and Cultural Resources Study Final Report was mailed on CD.	CRWG: USFS, ADNR, SHPO, CIRI, Artifact Illustrations	2015-02-06CRfinalReport.pdf
2/6/2015	Mike Yarborough (CRC) mailed current CRWG members a findings letter and Cultural Resources Study Final Report on CD. Note: The letter and report are designated Privileged.	CRWG: USFS, ADNR, SHPO, CIRI, Artifact Illustrations	2015-02-06CRfinalReport2.pdf
2/9/2015	John Blum (McMillen Jacobs) emailed Jason Mouw (ADF&G) clarifying information regarding the Grant Creek hydrologic record.	ADFG	2015-02-09ADFGjMouw2.pdf
2/9/2015	John Blum (McMillen Jacobs) and Jason Mouw (ADF&G) discussed via phone ADF&G's questions regarding the Grant Creek hydrologic record.	ADFG	2015-02-09ADFGjMouw.pdf
2/18/2015	Barb Whiton (McMillen Jacobs) emailed select licensing contacts requesting mailing information for the forthcoming Draft License Application.	All Licensing Contacts	2015-02-18DLAmailingInfo.pdf
2/24/2015	Mike Salzetti (HEA) filed with FERC the findings letter and Cultural Resources Study, Final Report. Note: The letter and report are designated Privileged.	FERC	2015-02-24CRfinalReport.pdf
2/26/2015	Mike Salzetti (HEA) contributed to a letter from Sara Fisher-Goad (AEA) to Representative Gara responding to a letter from his office dated February 13 regarding concerns with the Grant Lake Project.	Representative Gara	2015-02-26RepGara.pdf
2/27/2015	FERC issued an order denying extension of term for preliminary permit.	FERC	2015-02-27ExtensionDenial.pdf
3/2/2015	Mike Salzetti (HEA) and David Griffin (ADNR) exchanged emails regarding ADNR's inquiry about the potential for development of an MOU between ADNR and HEA related to the Grant Lake Project.	ADNR	2015-03-02ADNRdGriffin.pdf
3/2/2015	Cory Warnock (McMillen Jacobs) emailed Monte Miller (ADF&G) requesting a phone call to discuss status of the Grant Lake Project.	ADFG	2015-03-02ADFGmMiller.pdf
3/9/2015	Cory Warnock (McMillen Jacobs) and Toyia Johnson (FERC) exchanged emails regarding a FOIA-CEII request from Robert Baldwin (Kenai River Watershed Foundation) for the cultural resources study, final report.	FERC	2015-03-09FERCtJohnson.pdf
3/27/2015	Mike Salzetti (HEA) filed a Draft License Application (DLA) with FERC.	FERC	2015-03-27DLA.pdf
3/27/2015	Cory Warnock (McMillen Jacobs) emailed licensing participants notification regarding filing of the DLA and to the regular and consistent participants mailing of a CD of the DLA.	All Licensing Contacts	2015-03-27DLAnotice.pdf

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3/27/2015	KHL filed with FERC a Request for Rehearing on the February 27, 2015 Order Denying Extension of Term of Preliminary Permit.	FERC	2015-03-27RehearingRequest.pdf
3/27/2015	Cory Warnock (McMillen Jacobs) resent the DLA notification email to Shina Duvall (SHPO) and Jeffrey Anderson (USFWS).	SHPO; USFWS	2015-03-27SHPOsDuvallUSFWSjAnderson.pdf
3/27/2015	Cory Warnock (McMillen Jacobs) and Katie McCafferty (USACE) exchanged emails regarding the status of the draft Section 404 application.	USACE	2015-03-27USACEkMcCafferty.pdf
3/27/2015	Cory Warnock (McMillen Jacobs) and Daniel Hertrich (AEA) exchanged emails regarding Exhibit F.	AEA	2015-03-31AEAdHertrich.pdf
4/3/2015	Cory Warnock (McMillen Jacobs) emailed Paul Torgerson (Grant Lake Mining) instructions on accessing the DLA.	Grant Lake Mining	2015-04-03GrantLkMiningPtorgerson.pdf
4/3/2015	Karen Kromrey (USFS) emailed Mike Salzetti (HEA) with the environmental assessment and draft decision notice for the proposed White Rock Mining Plan of Operation on/near Grant Lake.	USFS	2015-04-03USFSkKromrey.pdf
4/10/2015	Cory Warnock (McMillen Jacobs) and Hal Shepherd (Center for Water Advocacy) exchanged emails regarding transmittal of the DLA.	Center for Water Advocacy	2015-04-10CWAhShepherd.pdf
4/20/2015	Cory Warnock (McMillen Jacobs) and Cassie Thomas (NPS) exchanged emails regarding transmittal of the DLA.	NPS	2015-04-20NPScThomas.pdf
4/22/2015	Cory Warnock (McMillen Jacobs) and Cassie Thomas (NPS) exchanged emails regarding confirmation of receipt of the DLA.	NPS	2015-04-22NPScThomas.pdf
4/27/2015	FERC issued an Order Granting Rehearing for Further Consideration.	FERC	2015-04-27FERCorderFurtherConsideration.pdf
5/7/2015	Cory Warnock (McMillen Jacobs) and Bruce Jaffa (Jaffa Construction) exchanged emails regarding the distribution of the DLA.	Resident	2015-05-07bJaffa.pdf
5/11/2015	Katie McCafferty (USACE) emailed Cory Warnock (McMillen Jacobs) new contact information.	USACE	2015-05-11USACEkMcCafferty.pdf
5/15/2015	Cory Warnock (McMillen Jacobs) emailed licensing participants draft Biological Evaluation, Operation Compliance Monitoring Plan, Avian Protection Plan, and Vegetation Management Plan.	All Licensing Contacts	2015-05-15MPsBE.pdf
5/15/2015	Mike Yarborough (CRC) emailed current CRWG members a draft Historic Properties Management Plan (HPMP). Note: The HPMP is designated Privileged.	CRWG: USFS, ADNR, SHPO, CIRI, Artifact Illustrations	2015-05-15HPMP.pdf

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Date	Summary of Contact	Agency/Organization Consulted	Documentation filename (pdf)
5/18/2015	Mike Salzetti (HEA) filed draft Biological Evaluation (BE), Operation Compliance Monitoring Plan, Avian Protection Plan, Vegetation Management Plan (VMP), and Historic Properties Management Plan (HPMP) with FERC. [See 5/15/2015 email transmittal of plans and BE entry for materials.] Note: The HPMP and a portion of the VMP are designated Privileged.	FERC	2015-05-18MPsBE.pdf
5/18/2015	Cory Warnock (McMillen Jacobs) emailed Gary Fandrei (CIAA) the management/monitoring plans and BE in two separate emails.	CIAA	2015-05-18CIAAgFandrei.pdf
5/18/2015	Cory Warnock (McMillen Jacobs) emailed Frances Mann (USFWS) the management/monitoring plans and BE in two separate emails.	USFWS	2015-05-18USFWSfMann.pdf
5/18/2015	Cory Warnock (McMillen Jacobs) emailed Robert Stovall (USFS) the draft BE for purposes of internal agency distribution. [See 5/15/2015 email transmittal of plans and BE entry for materials.]	USFS	2015-05-18USFSrStovall.pdf
5/18/2015	Mike Salzetti (HEA) hand delivered to Katie McCafferty (USACE) the draft Section 404 permit application package.	USACE	2015-05-18Section404Appl.pdf
5/19/2015	Cory Warnock (McMillen Jacobs) emailed Ken Hogan (FERC) notification that HEA hand delivered a draft Section 404 permit application to the USACE on May 18, 2015.	FERC	2015-05-19FERCkHogan.pdf
5/19/2015	Cory Warnock (McMillen Jacobs) emailed the Niniilchik Tribe the management/monitoring plans and BE in two separate emails.	Niniilchik Tribe	2015-05-19NiniilchikTribe.pdf
5/20/2015	Mike Salzetti (HEA), Mark Luttrell (Artifact Illustration), and Shina Duvall (SHPO) exchanged emails regarding a request to be a consulting party.	Artifact Illustration, SHPO	2015-05-20SHPOsDuvall.pdf
5/21/2015	Mike Salzetti (HEA) emailed Katie McCafferty (USACE) the draft Section 404 permit application that he had hand delivered to her offices on May 18, 2015.	USACE	2015-05-21USACEkMcCafferty.pdf
5/26/2015	Mike Salzetti (HEA) mailed CDs with the DLA to the adjacent land owners, Leroy Bryce and Rachel Werner.	Adjacent land owners	2015-05-26AdjacentLandOwners.pdf
5/27/2015	Mike Salzetti (HEA) spoke on the phone and emailed follow up information to Dave Bryson (adjacent land owner) about commenting on the DLA.	Citizen	2015-05-27dBryson.pdf
5/27/2015	Cory Warnock (McMillen Jacobs) and Paul Torgerson (Grant Lake Mining) exchanged emails regarding availability of water quality and quantity and hydrology data.	Grant Lake Mining	2015-05-27GrantLkMiningPtorgerson.pdf
5/28/2015	Cory Warnock (McMillen Jacobs) emailed Monte Miller (ADF&G) in response to Monte's voicemail.	ADF&G	2015-05-28ADFGmMiller.pdf

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Date	Summary of Contact	Agency/Organization Consulted	Documentation filename (pdf)
5/29/2015	Cory Warnock (McMillen Jacobs) and Ken Hogan (FERC) exchanged emails regarding an archaeologist's request to become a consulting party and NGOs request for extension of the DLA commenting period.	FERC	2015-05-29FERCkHogan.pdf
5/29/2015	Cory Warnock (McMillen Jacobs) and Monte Miller (ADF&G) discussed via phone comment deadlines for the DLA and for the draft management/monitoring plans and Biological Evaluation.	ADF&G	2015-05-29ADFGmMiller.pdf
5/30/2015	Mike Salzetti (HEA) filed with and Cory Warnock (McMillen Jacobs) emailed to Ken Hogan (FERC) a letter responding to KRWF's and CFWA's requests for extension of DLA commenting period.	FERC	2015-05-30FERCkHogan.pdf
5/30/2015	Mike Salzetti (HEA) filed with and Cory Warnock (McMillen Jacobs) emailed to Ken Hogan and Frank Winchell (FERC) a letter responding to Mark Luttrell's request to become a Consulting Party.	Artificial Illustration	2015-05-30FERCkHoganFwinchell.pdf
6/1/2015	Frank Winchell (FERC) emailed Cory Warnock (FERC) regarding KHL's letter responding to Mark Luttrell's request to become a Consulting Party.	FERC	2015-06-01FERCfWinchell.pdf
6/1/2015	Mike Yarborough (CRC) emailed Mark Luttrell (Artificial Illustration) a reminder that privileged information regarding cultural resources shared with the CRWG is not to be distributed publically.	Artificial Illustration	2015-06-01ArtificialIllustrationMluttrell.pdf
6/1/2015	Mike Salzetti (HEA) filed the draft Biological Monitoring Plan with FERC.	FERC	2015-06-01BMP.pdf
6/1/2015	Cory Warnock (McMillen Jacobs) emailed licensing participants the draft Biological Monitoring Plan. [See 6/1/2015 email plan filing entry for materials.]	All Licensing Contacts	2015-06-01BMP2.pdf
6/2/2015	Cory Warnock (McMillen Jacobs) emailed Jeffry Anderson (USFWS) returning his vmail about the DLA commenting period.	USFWS	2015-06-02USFWSjAnderson.pdf
6/2/2015	Cory Warnock (McMillen Jacobs) and Jan Odhner (citizen) exchange emails regarding logistics of providing DLA comments.	Citizen	2015-06-02jOdhner.pdf
6/4/2015	Jan Odhner (citizen) emailed Cory Warnock (McMillen Jacobs) comments related to the proposed development of the Grant Lake Project.	Citizen	2015-06-04jOdhner.pdf
6/5/2015	Cory Warnock (McMillen Jacob) and Wade Strickland (ADEC) exchanged emails regarding the process for submitting a request for a Section 401 Certification waiver.	ADEC	2015-06-05ADECwStrickland.pdf
6/5/2015	Cory Warnock (McMillen Jacobs) and Jeffry Anderson (USFWS) exchanged emails regarding deadlines for filing DLA comments.	USFWS	2015-06-05USFWSjAnderson.pdf
6/10/2015	Cory Warnock (McMillen Jacobs) emailed licensing participants confirming the comment deadlines for the DLA and for the draft management/monitoring plans and Biological Evaluation.	All Licensing Contacts	2015-06-10CommentDeadlines.pdf

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Date	Summary of Contact	Agency/Organization Consulted	Documentation filename (pdf)
6/12/2015	Cory Warnock (McMillen Jacobs) and Ken Hogan (FERC) exchanged emails regarding Word files of the draft management/monitoring plans and Biological Evaluation.	FERC	2015-06-12FERCkHogan.pdf
6/12/2015	Cory Warnock (McMillen Jacobs) and Catherine Shaw (USFWS) exchanged emails regarding the current set of USFWS representatives associated with the Grant Lake Project.	USFWS	2015-06-12USFWScShaw.pdf
6/15/2015	Mike Salzetti (HEA) emailed James Rypkema (ADEC) a letter requesting a Section 401 certification waiver.	ADEC	2015-06-15ADECjRypkema.pdf
6/15/2015	Cory Warnock (McMillen Jacobs) and Monte Miller (ADF&G) exchanged emails regarding comment deadlines for the DLA-related materials.	ADF&G	2015-06-15ADFGmMiller.pdf
6/16/2015	Mike Salzetti (HEA) and Monte Miller (ADF&G) exchanged emails regarding comment deadlines for the DLA-related materials.	ADF&G	2015-06-16ADFGmMiller.pdf
6/17/2015	Ken Hogan (FERC) issued a letter to Mike Salzetti (HEA) with FERC's DLA comments.	FERC	2015-06-17FERCdlaComments.pdf
6/17/2015	Cory Warnock (McMillen Jacobs) and Ken Hogan (FERC) exchanged emails regarding FERC's DLA comments.	FERC	2015-06-17FERCkHogan.pdf
6/17/2015	Mike Salzetti (HEA) and David Griffin (ADNR) exchanged emails regarding the ADNR proposal for an MOU between KHL and ADNR regarding post-licensing activities.	ADNR	2015-06-17ADNRdGriffin.pdf
6/17/2015	Cory Warnock (McMillen Jacobs) and Robert Stovall (USFS) discussed via phone call the expectations and comment deadlines associated with review of the DLA.	USFS	2015-06-17USFSrStovall.pdf
6/18/2015	FERC issued an Order denying KHL's rehearing request regarding an extension of time on its preliminary permit.	FERC	2015-06-18RhrqRequestDenial.pdf
6/19/2015	Shina Duvall (SHPO) emailed current CRWG members a redline of the draft Historic Properties Management Plan (HPMP) with the SHPO's comments. Note: The redline HPMP is designated Privileged.	CRWG: USFS, ADNR, SHPO, CIRI, Artifact Illustrations	2015-06-19HPMP.pdf
6/24/2015	Lesli Schick (ADNR) emailed Cory Warnock (McMillen Jacobs) ADNR's DLA comment letter.	ADNR	2015-06-24ADNRISchick.pdf
6/24/2015	Katie McCafferty (USACE) emailed Mike Salzetti (HEA) comments on the draft Grant Lake Section 404 permit application.	USACE	2015-06-24USACEkMcCafferty.pdf
6/25/2015	Lesli Schick (ADNR) emailed Mike Yarbrough (CRC) and Cory Warnock (McMillen Jacobs) comments on the draft HPMP.	ADNR	2015-06-25ADNRISchick.pdf

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6/25/2015	Monte Miller (ADF&G) emailed Mike Salzetti (HEA) that ADF&G's DLA comments would be delayed.	ADF&G	2015-06-25ADFGmMiller.pdf
6/25/2015	Katherine VanMassenhove (USFS) emailed Mike Salzetti (HEA) USFS' DLA comment letter.	USFS	2015-06-25USFSkVanMassenhove.pdf
6/29/2015	Cory Warnock (McMillen Jacobs) and Katie McCafferty (USACE) discussed via phone call the USACE's comments on the draft Section 404 permit application and the timeframe for submittal of a final permit application.	USACE	2015-06-29USACEkMcCafferty.pdf
7/9/2015	Ken Hogan (FERC) issued a letter to Mike Salzetti (HEA) with FERC's management plan comments.	FERC	2015-07-09FERCmpComments.pdf
7/13/2015	Robert Stovall (USFS) emailed Cory Warnock (McMillen Jacobs) USFS' comments on the BE and VMP.	USFS	2015-07-13USFSrStovall.pdf
7/14/2015	Cory Warnock (McMillen Jacobs) and Ken Hogan (FERC) exchanged emails regarding notification of issuance of FERC's management plan comments.	FERC	2015-07-14FERCkHogan.pdf
8/3/2015	Cory Warnock (McMillen Jacobs) and Ken Hogan (FERC) exchanged emails regarding accessing Mark Luttrell's comments on the MPs and a possible face-to-face meeting in October 2015.	FERC	2015-08-03FERCkHogan.pdf
8/4/2015	Cory Warnock (McMillen Jacobs) and Ken Hogan (FERC) exchanged emails about a survey to schedule a face-to-face meeting in October 2015.	FERC	2015-08-04FERCkHogan.pdf
8/7/2015	Cory Warnock (McMillen Jacobs) and Ken Hogan (FERC) spoke on the phone about accessing Mark Luttrell's comments and coordinated on dates in October 2015 for a face-to-face meeting in Washington, D.C.	FERC	2015-08-07FERCkHogan.pdf
8/7/2015	Mark Luttrell provided McMillen Jacobs and its subcontractors with his comments on the MPs via email as suggested by Frank Winchell (FERC).	FERC	2015-08-07FERCfWinchell.pdf
8/14/2015	Cory Warnock (McMillen Jacobs), Mike Salzetti (HEA), and Ken Hogan (FERC) exchanged emails regarding the scheduling of a face-to-face meeting in Washington, D.C. in October 2015.	FERC	2015-08-14FERCkHogan.pdf
9/9/2015	Cory Warnock (McMillen Jacobs) exchanged emails with Monte Miller (ADFG), Jeffry Anderson (USFWS) and Mike Salzetti (HEA) about scheduling a face-to-face meeting in Anchorage in October 2015. The procedure for accessing CEII information (Exhibit F) was also discussed	ADF&G, USFWS	2015-09-09ADFGmMillerUSFWSjAnderson.pdf
9/11/2015	Cory Warnock (McMillen Jacobs) emailed a FERC Non-Disclosure Agreement to Monte Miller (ADFG), Jeffry Anderson (ADFG) and Mike Salzetti (HEA). The possibility of a face-to-face meeting in Anchorage in October 2015 was also mentioned.	ADF&G	2015-09-11ADFGmMiller.pdf

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9/15/2015	Laura Johnson (McMillen Jacobs) received the Alaska Region Sensitive Plants Matrix from Betty Charnon (USFS).	USFS	2015-09-15USFSAKSensitivePlantMatrix.pdf
9/17/2015	Laura Johnson (McMillen Jacobs) and Betty Charnon (USFS) exchanged emails about a citation for the Alaska Region Sensitive Plant Matrix.	USFS	2015-09-17USFSbCharnon.pdf
9/21/2015	Cory Warnock (McMillen Jacobs) emailed Monte Miller (ADF&G) about a meeting during the week of October 5, 2015.	ADF&G	2015-09-21ADFGmMiller.pdf
9/21/2015	Cory Warnock (McMillen Jacobs) and Sue Walker (NOAA) exchanged emails about a meeting date in October or November, 2015.	NOAA	2015-09-21NOAAsWalker.pdf
9/21/2015	Cory Warnock (McMillen Jacobs) and Jeff Anderson (USFWS) exchanged emails about a meeting date in October 2015.	USFWS	2015-09-21USFWSjAnderson.pdf
9/21/2015	Cory Warnock (McMillen Jacobs) emailed ADF&G, NOAA, and USFWS stakeholders about dates for an upcoming meeting.	ADF&G, NOAA, USFWS	2015-09-21GrantLakeMeetingDisc.pdf
9/21/2015	Cory Warnock (McMillen Jacobs) and Jeff Anderson (USFWS) exchanged emails about a meeting date in October 2015.	USFWS	2015-09-21USFWSjAnderson2.pdf
9/22/2015	Cory Warnock (McMillen Jacobs) and Monte Miller (ADF&G) exchanged emails about Exhibit F and the Supporting Design Document.	ADF&G	2015-09-22ADFGmMiller.pdf
9/25/2015	Cory Warnock (McMillen Jacobs) emailed ADF&G, NOAA, and USFWS stakeholders about dates for an upcoming meeting.	ADF&G, NOAA, USFWS	2015-09-25GrantLakeMeetingDisc.pdf
9/25/2015	Cory Warnock (McMillen Jacobs) and Sean Eagan (NOAA) exchanged emails about planning a Grant Lake meeting.	NOAA	2015-09-25NOAAsEagan.pdf
9/29/2015	Cory Warnock (McMillen Jacobs) and Ken Hogan (FERC) exchanged emails about CEII regulations and Exhibit F drawings.	FERC	2015-09-29FERCkHogan.pdf
10/05/2015	Cory Warnock (McMillen Jacobs), Sue Walker (NOAA), and Sean Eagan (NOAA) exchanged emails about transferring the Project Supporting Design Report via compact disc.	NOAA	2015-10-05NOAAsWalkersEagan.pdf
10/05/2015	Cory Warnock (McMillen Jacobs) and Drew Crane (USFWS) exchanged emails about endangered species in the Project area.	USFWS	2015-10-05USFWSdCrane.pdf
10/05/2015	Cory Warnock (McMillen Jacobs) and Jeff Anderson (USFWS) exchanged emails about distribution of the Project Supporting Design Report.	USFWS	2015-10-05USFWSjAnderson.pdf
10/07/2015	Cory Warnock (McMillen Jacobs) emailed Ken Hogan (FERC) to notify him of KHL's filing of a letter in response to a Kenai River Watershed Foundation request.	FERC	2015-10-07FERCkHogan.pdf
10/07/2015	Dwayne Adams (Earthscape) exchanged emails with John Eavis (USFS) about motorized use of National Forest land trails in the Project area.	USFS	2015-10-07USFSjEavis.pdf

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10/08/2015	Dwayne Adams (Earthscope) exchanged emails with John Eavis (USFS) about motorized use of National Forest land trails in the Project area.	USFS	2015-10-08USFSjEavis.pdf
10/12/2015	Cory Warnock (McMillen Jacobs) provided Ken Hogan (FERC) with a draft meeting agenda for the KHL/FERC meeting scheduled for 10/21/2015.	FERC	2015-10-12FERCkHogan.pdf
10/13/2015	Cory Warnock (McMillen Jacobs) and Ken Hogan (FERC) exchanged emails about preparation for a KHL/FERC meeting scheduled for 10/21/2015.	FERC	2015-10-13FERCkHogan.pdf
10/19/2015	Mike Salzetti (KHL) emailed Jessica Meybin (ADNR) regarding the extension of permit #LAS 29076	ADNR	2015-10-19ADNRjMeybin.pdf
10/26/2015	Cory Warnock (McMillen Jacobs) and Monte Miller (ADF&G) exchanged emails about the transfer of the Supporting Design Report to ADF&G)	ADF&G	2015-10-26ADFGmMiller.pdf
10/26/2015	Transcript of a telephone conversation between John Blum (McMillen Jacobs), Monte Miller (ADF&G) and Joe Klein (ADF&G)	ADF&G	2015-10-26ADFGmMillerjKlein.pdf
10/26/2015	Cory Warnock (McMillen Jacobs) and Sue Walker (NOAA) exchanged emails about an upcoming meeting and the lack of threatened or endangered species in the Project area.	NOAA	2015-10-26NOAAsWalker.pdf
11/10/2015	Cory Warnock (McMillen Jacobs) emailed the members of the Aquatic Resources Work Group about scheduling and in-person meeting to discuss the DLA and management plans.	ADFG, USFWS, USFS, NOAA, ADNR, USACE, FERC	2015-11-10ARWGMeetingPoll.pdf
11/10/2015	Cory Warnock (McMillen Jacobs) exchanged emails with Ken Hogan (FERC) about the Project boundary.	FERC	2015-11-10FERCkHogan.pdf
11/10/2015	Cory Warnock (McMillen Jacobs) received an out of office email from Sue Walker (NOAA).	NOAA	2015-11-10NOAAsWalker.pdf
11/10/2015	Cory Warnock (McMillen Jacobs) sent an email to Sue Walker (NOAA) and Sean Eagan (NOAA) with information about accessing key Project documents.	NOAA	2015-11-10NOAAsWalkersEagan.pdf
11/11/2015	Cory Warnock (McMillen Jacobs) exchanged emails with Pam Russell (ADNR) about setting up a remote meeting option for Aquatic Resources Work Group meeting.	ADNR	2015-11-11-ADNRpRussell.pdf
11/11/2015	Cory Warnock (McMillen Jacobs) exchanged emails with Katie McCafferty (USACE) about the content of the Aquatic Resources Work Group meeting relative to the USACE permitting process.	USACE	2015-11-11USACEkMcCafferty.pdf
12/07/2015	Cory Warnock (McMillen Jacobs) exchanged emails with Jeff Anderson (USFWS) about scheduling the Aquatic Resources Work Group meeting.	USFWS	2015-12-07USFWSjAnderson.pdf

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12/08/2015	Robert Stovall (USFWS) emailed Cory Warnock (McMillen Jacobs) regarding his upcoming retirement.	USFWS	2015-12-08USFWSrStovall.pdf
12/14/2015	Cory Warnock (McMillen Jacobs) notified the Aquatic Resources Work Group of the date established for an in-person meeting.	ADFG, USFWS, USFS, NOAA, ADNR, USACE, FERC	2015-12-14ARWGMeetingNotice.pdf
12/14/2015	Cory Warnock (McMillen Jacobs) and Steve Brockmann (USFWS) exchanged emails about the Aquatic Resources Work Group meeting.	USFWS	2016-12-14USFWSsBrockmann.pdf
12/14/2015	Cory Warnock (McMillen Jacobs) exchanged emails with Ken Hogan (FERC) about the timeline for filing the FLA.	FERC	2015-12-14FERCkHogan.pdf
01/04/2016	Cory Warnock (McMillen Jacobs) and Monte Miller (ADF&G) exchanged emails about the date of the Aquatic Resources Work Group meeting.	ADF&G	2016-01-04ADFGmMiller.pdf
01/05/2016	Cory Warnock (McMillen Jacobs) and Steve Brockmann (USFWS) exchanged emails about the Aquatic Resources Work Group meeting.	USFWS	2016-01-05USFWSsBrockmann.pdf
01/06/2016	Cory Warnock (McMillen Jacobs) and Monte Miller (ADF&G) exchanged emails about the Aquatic Resources Work Group meeting.	ADF&G	2016-01-06ADFGmMiller.pdf
01/06/2016	Cory Warnock (McMillen Jacobs) and Carl Reese (ADNR) exchanged emails about the Aquatic Resources Work Group meeting.	ADNR	2016-01-06ADNRcReese.pdf
01/06/2016	Cory Warnock (McMillen Jacobs) and Katie McCafferty (USACE) exchanged emails about the Aquatic Resources Work Group meeting.	USACE	2016-01-06USACEkMcCafferty.pdf
01/07/2016	Cory Warnock (McMillen Jacobs) and Virginia Litchfield (ADF&G) exchanged emails about changing the members of the Aquatic Resources Work Group email distribution list.	ADF&G	2016-01-07ADFGvLitchfield.pdf
01/07/2016	Cory Warnock (McMillen Jacobs) sent the Aquatic Resources Work Group meeting agenda and call-in details to the email distribution list.	ADFG, USFWS, USFS, NOAA, ADNR, USACE, FERC	2016-01-07ARWGMeetingNotice.pdf
01/11/2016	Cory Warnock (McMillen Jacobs) and Monte Miller (ADF&G) exchanged emails about the Aquatic Resources Work Group meeting.	ADF&G	2016-01-11ADFGmMiller.pdf
01/12/2016	Cory Warnock (McMillen Jacobs) sent the Aquatic Resources Work Group (ARWG) the draft Biotic Monitoring Plan comment response table in preparation for the ARWG meeting scheduled for 1/13/2016.	ADFG, USFWS, USFS, NOAA, ADNR, USACE, FERC	2016-01-12ARWG_BMP_CRT.pdf
01/13/2016	Cory Warnock (McMillen Jacobs) and Sean Eagan (NOAA) exchanged emails following up on the Aquatic Resources Work Group meeting.	NOAA	2016-01-13NOAAsEagan.pdf
01/13/2016	Cory Warnock (McMillen Jacobs) and Sue Walker (NOAA) exchanged emails following up on the Aquatic Resources Work Group meeting.	NOAA	2016-01-13NOAAsWalker.pdf
01/15/2016	Cory Warnock (McMillen Jacobs) and Monte Miller (ADF&G) exchanged emails following up on the Aquatic Resources Work Group meeting.	ADF&G	2016-01-15ADFGmMiller.pdf

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01/21/2016	Cory Warnock (McMillen Jacobs) and Joe Klein (ADF&G) exchanged emails following up on the Aquatic Resources Work Group meeting.	ADF&G	2016-01-21ADFGjKlein.pdf
01/29/2016	Cory Warnock (McMillen Jacobs), Monte Miller (ADF&G), and Joe Klein (ADF&G) exchanged emails regarding revisions to the Biotic Monitoring Plan (BMP).	ADF&G	2016-01-29ADFGmMillerjKlein.pdf
01/29/2016	Cory Warnock (McMillen Jacobs) provided the minutes of the Aquatic Resources Work Group meeting held on 1/13/2016 to the Work Group members.	ADFG, USFWS, USFS, NOAA, ADNR, USACE, FERC	2016-01-29ARWGMeetingMinutes.pdf
01/29/2016	Cory Warnock (McMillen Jacobs) and Sean Eagan (NOAA) exchanged emails following up on the Aquatic Resources Work Group meeting held on 1/13/2016.	NOAA	2016-01-29NOAAsEagan.pdf
02/09/2016	Cory Warnock (HDR), Monte Miller (ADF&G), and Joe Klein (ADF&G) exchanged emails regarding revisions to the Biotic Monitoring Plan (BMP).	ADF&G	2016-02-09ADFGmMillerjKlein.pdf
03/09/2016	Cory Warnock (HDR) and Ken Hogan (FERC) exchanged emails regarding the timeline for filing the Grant Lake FLA.	FERC	2016-03-09FERCkHogan.pdf
03/23/2016	Cory Warnock (HDR) and Ken Hogan (FERC) exchanged emails regarding the need for a board resolution letter at the time of FLA filing.	FERC	2016-03-23FERCkHogan.pdf
04/05/2016	Cory Warnock (HDR) emailed Ken Hogan (FERC) about filing logistics and requirements for the FLA.	FERC	2016-04-05FERCkHogan.pdf
04/05/2016	Cory Warnock (HDR) spoke with Ken Hogan (FERC) on the phone about FLA filing logistics and requirements. Cory provided a summary of their conversation.	FERC	2016-04-05FERCkHogan2.pdf
04/06/2016	Cory Warnock (HDR) spoke with Ken Hogan (FERC) on the phone about the level of detail required in the FLA related to the consultation record. Cory provided a summary of their conversation.	FERC	2016-04-06FERCkHogan.pdf
04/06/2016	Cory Warnock (HDR) exchanged emails with Ken Hogan (FERC) about the level of details required in the FLA related to the consultation record.	FERC	2016-04-06FERCkHogan2.pdf
04/07/2016	Cory Warnock (HDR) exchanged emails with Katherine Van Massenhove and Peter Keller (USFS) about revisions to the Grant Lake DLA that address the U.S. Forest Service Preliminary 4(e) Terms and Conditions.	USFS	2016-04-07USFSkVanMassenhovepKeller.pdf
04/11/2016	Cory Warnock (HDR) exchanged emails with Ken Hogan and James Fargo (FERC) about requirements to have a surveyor stamp preliminary Exhibit G drawings.	FERC	2016-04-11FERCkHoganjFargo.pdf

Irene Lindquist, moose pass, AK.

These comments are for the Grant Lake Hydro Project: P-13212

Irene Lindquist

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I am opposed to licensing Kenai Hydro for the Grant Lake project. The project area is within a popular recreation area that is used year round, and also within the planned Iditarod National Historic Trail. The access road will cross the proposed INHT trail, the project is not compatible with the year round Recreation use that occurs between Trail Lake and Grant Lake. Kenai Hydro says they can reroute the layout completed by the US Forest Service to minimize impacts to recreational users. The USFS has spent many days on trail layout through the project area, there is not much suitable terrain that will allow for this type of mitigation.

There appears to be a lack of a solid Rec. and Vis. Resource Study Plan, I'd like to point out the following paragraph from the Recreation and Visual Resource Study Plan June 2014, page 16:

Though there may be some use of Grant Lake for snowmachining, there was no evidence of

trails leading to Grant Lake from trails along the Trail Lakes shoreline. Terrain challenges and

the lack of a well-defined trail may limit the interest in snowmachining at the lake. However, it

is expected that the mine access road that is north of Grant Creek may provide access to Grant

Lake for snowmachining.

The Grant Lake Portage trail is a major winter/summer access to Grant Lake, it is an easy ski, snow machine, or hike, due to the easy terrain. The trail in summer is down to mineral soil, and the US Forest Service maintains this trail year round primarily cutting down trees from across the trail. I have not been able to find the Grant Lake Portage trail identified on any HEA maps for this project.

Excerpt from exhibit d-8

The Alaska Division of Oil and Gas estimates that there are still proven and conventionally

recoverable gas reserves in the Cook Inlet Region. Additionally, Alaska continues to work on

ways to get North Slope gas to South-Central Alaska but none of the potential solutions indicate

a shrinking natural gas price for the region. HEA, like the rest of the electric utilities, will

continue to generate a majority of its electricity from natural gas. That said, HEA has a strong

desire to diversify its energy mix, reduce its dependence on fossil fuels and develop responsible.

HEA's strong desire to diversify in the Trail and Grant Lakes area is not in the best interest of the general public and does not fit in with the current and proposed uses of this area. Please do not give a license for HEA to move forward with the Grant Lake project.

Thank you, Irene Lindquist, 6/7/2015

Document Content(s)

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KENAI RIVER

Special Management Area

"Working together...for the river"

P-13212

ORIGINAL

JUN 8, 2015

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FEDERAL ENERGY REGULATORY COMMISSION

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ADVISORY BOARD

Kenai Hydro, LLC
3977 Lake Street
Homer, AK 99603

Re: Comments on the Grant Lake Hydro Project

Dear Mike Selzetti:

The Kenai River Special Management Area Advisory Board submits this letter as its support for the proposed Grant Lake Hydroelectric Project following presentations by Homer Electric Association. The Kenai River Special Management Area Advisory Board was created under the authority of A.S. 41.21.510 in 1985 to advise local, state and federal agencies and legislative bodies on matters affecting the Kenai River and its habitat. The Board is comprised of public members, Soldotna, Kenai and the Kenai Peninsula Borough and non-voting state and federal agency representatives. The Board is guided by the Kenai River Comprehensive Plan, dated 1997 which mentions hydroelectric projects for the Kenai River watershed.

This letter reflects consideration and discussion by the Board of the project at its regularly scheduled monthly meetings for April and May 2015; however, the Board has previously received regular briefings on the proposed project over the many years the project has been under consideration and study. On May 14, 2015, the Board unanimously passed a resolution supporting the project in concept based upon the most recent plan presented by Homer Electric Association.

We understand the public comment process before the Federal Energy Regulatory Commission is just starting and the KRSMA Advisory Board reserves the right to make additional comments on the project as plans evolves, including the right to possibly withdraw our endorsement should major changes be made to the project which adversely affects the Kenai River Watershed.

Passed this 14th day of May, 2015

Ted Wellman

Ted Wellman, President



Kenai Area Office, PO Box 1247, Soldotna, AK 99669, 907-262-5581
Kenai Peninsula Borough, 144 N. Binkley, Soldotna, AK 99669 907-262-4441
Gilman River Center 514 Funny River Road, Soldotna, AK 99669, 907-260-4882
Alaska Division of Parks and Outdoor Recreation, Department of Natural Resources, in cooperation with the Kenai Peninsula Borough



Document Content(s)

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PRIVILEGED

June 14, 2015
Secretary Kimberly D. Bose
Federal Energy Regulatory Commission
888 First Street NE
Washington, DC 20426

Via electronic filing

Reference: **Docket P-13212-000, Grant Lake and Creek Hydroelectric Facility. Comments on draft license application, Historic Properties Management Plan.**

Dear Secretary Bose:

Attached to this cover sheet are privileged comments regarding the Historic Properties Management Plan presented by Kenai Hydro, LLC as part of their draft license application in support of their proposal to install a hydroelectric project at Grant Lake near Moose Pass, Alaska.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark Luttrell". The signature is written in a cursive style with a large initial "M".

Mark Luttrell, archaeologist and concurring party

prufrock@arctic.net
PO Box 511
Seward AK 99664

Document Content(s)

Mark Luttrell comments re HPMP, P13212 cover.PDF.....1-1

FEDERAL ENERGY REGULATORY COMMISSION

Washington, D.C. 20426

June 17, 2015

OFFICE OF ENERGY PROJECTS

Project No. 13212-000 – Alaska
Grant Lake Hydroelectric Project
Kenai Hydro, LLC

Mike Salzetti
Manager of Fuel Supply & Renewable Energy Development
Kenai Hydro, LLC
3977 Lake Street
Homer, AK 99603

Reference: Review of Draft License Application for the Proposed Grant Lake Hydroelectric Project; Identification of Potential Deficiencies and Additional Information Needs

Dear Mr. Salzetti:

On March 27, 2015, Kenai Hydro, LLC (KHL) provided stakeholders and Commission staff with a draft license application for the proposed Grant Lake Hydroelectric Project. The proposed project would be located on Grant Lake and Creek, near the town of Moose Pass, in Kenai Peninsula Borough, Alaska.

Upon review of the application we have identified some potential deficiencies and some additional information needs. License application deficiencies may result in the rejection of the application. When preparing the final license application, adequately addressing the potential deficiencies and the additional information requested in our comments on the draft license application will facilitate the licensing process for the proposed project.

Additionally, on May 18, 2015, subsequent to filing the draft license application, KHL submitted the following resource management plans:

- Draft Grant Lake Project Operation Compliance Monitoring Plan (OCMP)
- Draft Grant Lake Project Avian Protection Plan (APP)
- Draft Grant Lake Project Historic Properties Management Plan (HPMP)
- Draft Grant Lake Project Vegetation Management Plan (VMP)

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- Draft Grant Lake Project Biological Evaluation for Plants (BE)

Subsequently, on June 2, 2015, KHL filed its *Draft Biotic Monitoring Plan*.

We will review and, if deemed appropriate, provide comments on these resource management plans under separate cover. Any questions on our comments should be directed to me at (202) 502-8434, or via email at: Kenneth.hogan@ferc.gov.

Sincerely,

Kenneth Hogan, Project Coordinator
West Branch
Division of Hydropower Licensing

Attachment: Schedule A – Comments on Draft License Application

cc: Mailing List
Public File

Schedule A
Comments on Draft License Application
for the
Grant Lake Hydroelectric Project

Grant Lake Hydroelectric Project

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Exhibit A

Section 4 – Proposed Project Facilities

Section 4.6, *Tailrace Detention Pond*, provides a general description of the purpose and use for the tailrace detention pond. However, this description is limited. In the final license application, please expand the proposed operation discussion to include some of the detail in the supporting design report on the reason for the pond (ramping concern) and how the pond would work, including the volume of water diverted into the pond and the amount released to the tailrace during typical operation. Similarly, because the supporting design report is considered Critical Energy Infrastructure Information (CEII) and access to CEII information is restricted, we suggest moving any Exhibit A, B, C & D information that is included in the supporting design report (but does not warrant CEII protections) to the respective exhibits.

Exhibit B

Section 3 – Existing Resource Utilization

Section 3.3, *Dependable Capacity and Average Annual Production*, states that calculated average annual energy production was based on 66 years of streamflow data run through the project operations model. Please include, as an appendix to the final license application, the annual generation for each of the 66 model years.

Exhibit D

Section 6 – Value of Project Power

Section 6.1 – Contingency Spinning Reserve

Section 6.1 states that a model was used to estimate the amount of spinning reserve available from the project. However, no details of the model are given and we have no way to validate the model results given in Table D.6-1 or the statement that the project would produce 8,322 to 14,559 MWh/year of spin capacity. The final license application will need to include the details on the model and a clear explanation of the results. Additionally, the spinning operation should consider the project hydrology. From June until November, the average inflows exceed the proposed project's hydraulic capacity, so any spinning operation during these months would forego the chance to generate energy. From January till May, the inflows are barely high enough to generate at the minimum hydraulic capacity of one unit; therefore, the project would need to draft reservoir storage to operate as a spinning resource during these months.

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Section 6.2 – Estimated Average Annual Value of Power

Section 6.2 reports that Homer Electric Association Inc.'s (HEA) blended cost of power was \$118/MWh in 2014; however, the source of this information is not identified. The final license application should provide a reference for HEA's blended cost of power, which was used to calculate the project's potential power benefits.

Exhibit EGeneral

In addition to resource-specific issues discussed below, the draft license application could be considered deficient with regard to section 4.41(f)(3)(i)-(iv) of the Commission's regulations. For instance, the draft license application did not provide: (1) a description of spatial and temporal distributions, and densities for certain wildlife game species (section 4.41(f)(3)(i)); (2) project impacts, such as possible changes in size, distribution, and reproduction of essential populations (section 4.41(f)(3)(ii)); (3) detail for all proposed measures to protect or enhance fish, wildlife and botanical resources (section 4.41(f)(3)(iii)); or (4) supporting information for mitigation measures (section 4.41(f)(3)(iv)). When filing the final license application, Kenai Hydro, LLC (KHL) must comply with section 4.41(f)(3) of the Commission's regulations by providing a complete report describing the fish, wildlife, and botanical resources in the vicinity of the project, including the detailed information required in subsections 4.41(f)(3)(i)-(iv) of the Commission's regulations.

Supporting information for proposed mitigation measures, including information on costs and schedules, is not included in the draft license application and should be incorporated into section 4.12.2, *Cost of Environmental Measures*, in the final license application.

Footnote 1 states that the maps in the draft license application may not accurately represent the proposed project. In the final license application, all figures (including maps), tables, and text should accurately represent the proposed project.

Section 2 – Proposed Action and Alternatives*Section 2.1 – Proposed Action*

Section 2.1.5, Table E.2-2, *KHL proposed environmental measures*, includes administrative permitting processes that are not environmental measures (e.g., section

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404 permit, water rights, special use permits). While it is appropriate to acknowledge these processes within the final license application, they do not constitute environmental measures and should not be characterized as such. In contrast, many of the proposed environmental measures identified in section 4 of Exhibit E are not listed in Table E.2-2 (e.g., control water temperature in Grant Creek, provide minimum instream flows in Grant Creek, increase fish habitat in Grant Creek, spawning gravel augmentation, stream channel reconfiguration, conservation of wetland habitat). Each proposed environmental measure should be specifically identified in section 2.1.5.

Section 4 – Environmental Analysis

Section 4.2 – Applicable Laws

In section 4.2.3, *Endangered Species Act*, the draft license application discusses the pale poppy, a U.S. Forest Service-designated sensitive species. However, section 4.2.3 should only discuss federally threatened and/or endangered species listed under the Endangered Species Act. Other special status species designated by state or federal agencies should be identified and discussed in section 4.7, *Terrestrial Resources*, of the final license application. Additionally, section 4.2.3 does not discuss any federally-listed species. We recognize that the Commission's August 23, 2010 Scoping Document 2 stated that no federally-listed threatened and endangered species are known to occur in the project vicinity. However, that determination was made nearly five years ago. To ensure that no changes have occurred since the issuance of Scoping Document 2, KHL should consult with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service to confirm that no federally-listed threatened or endangered species, or critical habitat, occur in the project area or may be affected by the proposed project. The final license application should document any such consultation in section 4.2.3.

Section 4.4 – Geology and Soils

The Commission's Scoping Document 2 identified disposal/dispersion of spoil material resulting from construction of the proposed project facilities as having potential impacts on the surrounding area. However, the draft license application, sections 4.4, *Geological and Soil Resources*, 4.4.2.1, *Project Construction*, and 4.4.3, *Proposed Environmental Measures*, make no mention of spoil materials. So that we may fully evaluate the resource effects construction of the proposed project may have in the project's vicinity, the final license application must describe the methods KHL intends to employ to dispose of or disperse spoil material. The proposed methods should also be described in the proposed Erosion and Sediment Control Plan and, if appropriate, spoils material dispersal areas should be addressed in the final vegetation management plan.

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In section 4.4.4, *Cumulative Effects Analysis*, the draft license application states that the availability of the project's access road for public recreation will be determined based on stakeholder input. This same section also states that if public access is provided, the Public Safety Access Plan (PSAP) will address monitoring and maintenance measures related to the project's access road and the associated recreation. We note that if the project's access road is made available for public recreational access, the increased traffic volume may also increase the potential for erosion and sedimentation. As a result, the proposed Erosion and Sediment Control Plan should also include measures to address these potential resource concerns and the measures should be described in the final license application.

Section 4.5 - Water Quality and Quantity

Section 4.5.1.3.2, Figure E.4-12, provides a comparison of daily mean water temperatures in Grant Lake near the proposed intake structure at ten different depths. However, the figure is difficult to interpret due to the significant amount of data presented. Because KHL is proposing to install an intake structure that would be able to draw water from Grant Lake at varying depths, and water temperatures can vary significantly by depth/season and can affect aquatic resources downstream of the proposed project's tailrace, it would be helpful if KHL provided, in the final license application, individual figures that demonstrate daily mean water temperatures for each sampled depth in Grant Lake near the proposed intake structure. We also have a similar comment and request for Figure E.4-13, *A comparison of daily mean water temperatures for shallow depths (< 3 meters) of Grant Lake and Grant Creek*.

Table E.4-14, *Proposed monthly and annual powerhouse flows and watershed inflows for Grant Lake Project*, list the months identified in the table as months 1 through 12. However, it is unclear whether the table utilized a calendar year as its basis (in which case, month 1 would be January) or a water year (in which case month 1 would be October). Therefore, in the final license application, please clarify Table E.4-14.

Section 4.5.2.1, *Water Quantity*, provides some analysis of project effects on aquatic resources as a result of changes to water quantity within Grant Creek, by study reach. To better understand the analysis in the final license application, please demarcate on Figure E.4-5, *Water Quality, Temperature, and Hydrology Study Locations, 2013*, the Grant Creek study reaches; all proposed project facilities, including the proposed bypass; and the location of the hydraulic control that separates Grant Creek from Grant Lake.

The draft license application at Exhibit B, section 2.2.3, *Grant Lake Operation Model*, indicates that an operations model was developed for the proposed project. Exhibit B, section 2.3, *Project Operation During Adverse, Average, and High Water*

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Years, generally states that proposed project operations will draw Grant Lake water surface elevation down 13 feet in “winter” (from 703 down to 690 feet NAVD 88) and project operations will maximize winter power production while ensuring that lake levels refill to the water surface elevation of 703 feet NAVD 88. However, in Exhibit E, section 4.5.2.1, *Water Quantity*, there is no discussion or analysis of project effects on water surface elevations of Grant Lake. So that we may better understand the proposed project operational effects on Grant Lake, the final license application should provide simulated monthly water surface elevations and corresponding surface area for Grant Lake under existing and proposed conditions. Additionally, the final license application should consider and address this comparison of lake level conditions in Exhibit E, section 4.9.2, *Aesthetic Resources, Environmental Analysis*.

In section 4.5.2.3, *Temperature*, the draft license application implies the proposed project will be operated to “match natural/ambient water temperature conditions within 1 °C.” If this is KHL’s proposal, this environmental measure should be articulated in section 2.1.5, *Proposed Environmental Measures*. This section also states that by “monitoring water temperatures, the delivery of water through project facilities should be able to match natural/ambient water temperature conditions within 1 °C.” However, the draft license application does not discuss or provide an analysis of how Grant Lake water temperature may be influenced by proposed project operations or how this potential influence may affect the project’s ability to match natural/ambient water temperature conditions in Grant Creek within 1 °C. In addition, section 4.5.2.3 does not describe how the project will physically maintain water temperature at “pre-Project” conditions. The final license application should address these issues and provide model results supporting the analysis.

Section 4.6 – Aquatic Resources

In section 4.6.3, *Proposed Environmental Measures*, the draft license application provides a general summary of some, but not all of the proposed aquatic environmental measures. This section of the application must describe how each proposed measure would protect or enhance the existing environment. Where possible, this section should also provide a quantification of the anticipated benefit of each proposed measure. While some of this information is provided in section 4.6.2, *Environmental Analysis* (e.g., available weighted usable area pre- and post-project), not all of the proposed environmental measures are discussed in any detail in either section. For example, section 4.6.2, *Environmental Analysis*, of the draft license application states “[t]his analysis does not take into consideration potential mitigation and enhancement measures for the Project” and it provides an example of a proposed enhancement measure to reconfigure the Grant Creek stream channel to allow more water into a distributary at lower flows in Grant Creek in an effort to provide significantly greater habitat within the

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distributary. However, as stated, there is no analysis or quantification in the draft license application to support the statement in section 4.6.2, and the proposed measure is not discussed in section 4.6.3. Section 4.41(f)(3) of the Commission's regulations requires that the license application describe the mitigation, enhancement, or protection measures proposed by the applicant. Therefore, the final license application must describe each proposed resource measure and how each measure would protect or enhance the existing environment including, where possible, quantification of the anticipated benefit(s) of each proposed measure. If this type of information is not included in the final license application, the application may be found deficient.

Section 4.6.4, *Cumulative Effects Analysis*, of the draft license application states that KHL's fishery studies concentrated on Grant Creek and the Trail Lakes Narrows Area because of the lack of fishery resources in Grant Lake. Section 4.6.1, *Affected Environment*, states that waterfalls pose a barrier to upstream migration of fish and, as a result, study reach 6 in Grant Creek and Grant Lake were not included in recent research efforts. However, section 4.6.1 does not present any historical (or current) data that describes aquatic resources (existing or non-existing) within reach 6 or Grant Lake. In Scoping Document 2, we noted that: (1) fish and aquatic resources in Grant Lake may be affected by project construction and operation, (2) fish populations in Grant Lake, and subsequently Grant Creek, may be affected by entrainment at the project; and (3) project operations may result in a loss of habitat connectivity and bi-directional passage for resident fish populations in Grant Lake and Grant Creek. Section 4.41(f)(3) of the Commission's regulations require that the license application describe the fish, wildlife, and botanical resources in the vicinity of the proposed project; expected impacts of the project on these resources; and mitigation, enhancement, or protection measures proposed by the applicant. Therefore, the final license application must describe the existing aquatic resources in Grant Lake and address any potential project effects on aquatic resources there (i.e., all aquatic species of interest and their habitats), and any proposed environmental measure intended to address those effects. If this information is not included in the final license application, the application will likely be found deficient.

Section 4.7 Terrestrial Resources

Our Scoping Document 2 identified potentially substantive project effects on increased access to harvestable wildlife. Section 4.8.2.1, *Recreation*, states that project impacts include a possible increase in hunting and fishing pressure as a result of the proposed access road that would more easily facilitate access to Grant Lake. However, the draft license application also discusses uncertainty as to whether the project will provide public access to the project area. Because such public access will affect access to harvestable wildlife, the final license application should provide updated information in accordance with the final project proposal on public access and any additional

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infrastructure proposed to accommodate such access. More broadly, the license application should also provide updated information for any other effects to terrestrial resources that might be caused by public access and any associated infrastructure accommodating such access. Similarly, section 4.8.2.3, *INHT* (Iditarod National Historic Trail), provides information regarding the potential re-routing of the trail. If the project would cause the Iditarod National Historic Trail to be re-routed, the final license application should identify any associated potential incremental project effects on terrestrial resources, as well as recreation, cultural and aquatic resources.

Section 4.41(f)(3)(i) of the Commission's regulations requires a description of spatial and temporal distributions and densities of species considered important because of their commercial or recreational value. Section 4.8.1.1.1, *Recreation Facilities*, states that hunting in the Grant Lake area is open for "black bear, brown bear, caribou, Dall sheep, moose, mountain goat, wolf, and wolverine." However, section 4.7.1.3, *Wildlife*, provides various levels of description for only some of these species. In addition, section 4.7.1.3.3, *Terrestrial Mammals*, states that Dall sheep habitat "does not likely occur in the Project Area"; however, no reasoning is provided to support this conclusion. The final license application should include additional descriptions for wildlife communities that may be affected by the proposed project, including information pertaining to species that are considered important because of their commercial or recreational value. KHL may reference existing data sources and literature reviews on species' habitat and distributions to obtain these descriptions. If this information is not included in the final license application, the application may be found deficient.

Section 4.7.2.3, *Wildlife*, utilizes the factor of vegetation to qualitatively assess species presence and the overall impact of the project on wildlife resources. For instance, section 4.7.2.3.1, *Potential Impacts to Raptors*, states that the removal of vegetation affects raptors in several ways that include loss of old growth trees for nesting platforms and perches. While such analyses are generally informative, they do not provide detailed information necessary to analyze project effects. So that we may fully evaluate the resource effects the proposed project might have, the final license application must evaluate possible changes in size, distribution, and reproduction of essential populations of wildlife resources and any impacts on human utilization of these resources, as described in section 4.41(f)(3)(ii) of the Commission's regulations.

Scoping Document 2 identified potentially substantial effects pertaining to the impact of spoil materials on surrounding areas. While section 4.7.2, *Environmental Analysis*, lists fill material placement as a direct impact to vegetation, wetlands, and waters, it is unclear whether the draft license application specifically accounts for the effects of spoil material placement on terrestrial resources. The final license application should identify the potential effects spoil material placement may have on terrestrial

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resources, and should describe any proposed measures to protect resources from such effects.

Our Scoping Document 2 identified potentially substantive project effects on wildlife critical life stages, distribution, and abundance for specific wildlife species designated by the Forest Service and the State of Alaska as Management Indicator Species, Species of Special Interest, and Species of Special Concern. Section 4.7.2.3, *Wildlife*, provides a qualitative description of anticipated project effects on wildlife resources, but does not fully describe how the project would affect wildlife critical life stages (such as egg incubation in avian species, and juveniles and breeding adults). In addition, the draft license application does not describe whether/how the project would affect the distribution and abundance of all species listed in Scoping Document 2. The final license application should identify potentially substantive project effects on species listed in Scoping Document 2.

Scoping Document 2 also identified potentially substantive project effects on the availability of fish as food for wildlife. Section 4.7.2.3, *Wildlife*, does not provide an environmental analysis of how the project-related impacts on fisheries affect the availability of fish as food for wildlife. The final license application should describe the project effects on the availability of fish as food for wildlife, as discussed in Scoping Document 2.

Scoping Document 2 also identified potentially substantive project effects on wildlife movement as well as displacement and disruption of seasonal movement patterns through the project area. The draft license application provides only qualitative information on the movement of avian species and terrestrial mammals. Section 4.7.2.3, *Wildlife*, provides similar assessments for all wildlife species that are discussed by KHL; namely, that activities related to construction, project operation, forest removal and anthropogenic access may cause species that are sensitive to disturbance to move to other less-disturbed areas (*see* draft license application, section 4.7.2.3.1, *Potential Impacts to Raptors*; section 4.7.2.3.2, *Potential Impacts to Breeding Birds and Shorebirds*; section 4.7.2.3.3, *Potential Impacts to Waterbirds*; and section 4.7.2.3.4, *Potential Impacts to Terrestrial Mammals*). Additional information should be provided on the effects of project construction and operations on wildlife movement. For instance, additional analysis could be provided on wildlife movement caused by: noise and lighting during project construction; project operations and maintenance; and anthropogenic access. Also, beyond labeling “sensitive” and “shy” species, the draft license application does not account for differences in wildlife behavioral patterns associated with dispersal habits, territorial distributions, habitat requirements, and predator-prey dynamics. These and other factors could result in potentially substantive project effects for some species, but not others, throughout the various project phases. The final license application should

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describe project effects on wildlife movement as well as displacement and disruption of seasonal movement patterns through the project area.

Scoping Document 2 also identified potentially substantive project effects on: breeding and rearing habitat, and nesting success of shorebirds and waterfowl; and other avian use in and around Grant Lake and Inlet Creek. Section 4.7.2.3.2, *Potential Impacts to Breeding Birds and Shorebirds*, and section 4.7.2.3.3, *Potential Impacts to Waterbirds*, provide a qualitative analysis of project effects to conclude that vegetation removal may impact nesting, foraging, and cover habitat for shorebirds and waterfowl. However, this broad, qualitative analysis does not allow for an assessment of potential project effects. For instance, the draft license application does not provide sufficient information to assess the effects of project construction and operations on species with different behavioral patterns. The final license application should provide additional information on potentially substantive project effects on: breeding and rearing habitat, and nesting success of shorebirds and waterfowl; and other avian use in and around Grant Lake and Inlet Creek, as discussed in Scoping Document 2.

Section 4.7.3, *Proposed Environmental Measures*, provides only general references to best management practices and mitigation strategies that are being proposed by KHL. The final license application should include a description of proposed measures for protecting resources.

Section 4.7.3.2, *Wetlands*, proposes to apply mitigation for the loss of approximately 0.49 acre of wetlands/waters as part of project construction and operations. However, the environmental analysis in section 4.7.2.2, *Wetlands*, states that the project will cause permanent, direct impacts to 1.91 acres of wetlands and permanent, indirect impacts to 18.18 acres of wetlands. So that we may fully evaluate the proposed measures for protecting wetland resources, the final license application should discuss the basis for limiting wetland mitigation to 0.49 acre. In addition, the proposed mitigation for project-induced wetlands loss should be summarized in section 2.1.5, *Proposed Environmental Measures*.

Section 4.8 – Recreation and Land Use Resources

Section 4.8.1.2.3, *Chugach National Forest Revised Land and Resource Management Plan*, of the draft license application states that the areas north and east of the lake are managed as backcountry, and that the Grant Lake/Ptarmigan unit is designated for motorized use. However, section 4.8.2.2, *Land Use*, states that backcountry areas are only available for non-motorized recreation. Please clarify these statements and consider providing maps if possible.

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Section 4.8.2.1.4, *Hunting and Fishing*, of the draft license application states that hunters gain access to Grant Lake via float plane. Please clarify whether float planes would still have adequate surface area to land on Grant Lake at the proposed project's minimum reservoir elevation of 690 ft msl.

Section 4.8.2.1.1, *Winter Use*, of the draft license application indicates that snowmobiling on Grant Lake during the winter is possible. Please provide the approximate dates when sufficient ice cover is present on Grant Lake to support snowmobiling.

Section 4.8.2.1.5, *Noise*, of the draft license application reports the current noise environment of the proposed project area and estimates how vehicle traffic at the project may affect the baseline noise environment. However, KHL does not report an estimate or provide an analysis on the noise the powerhouse will produce. In the final license application, please provide an analysis for the powerhouse and other project facilities that could produce noise.

Section 4.8.3.1, *Recreation*, states that a Public Safety and Access Plan (PSAP) will be submitted with the final license application, if public access is determined to be warranted. However, the description of the PSAP is more in line with a traditional Recreation Management Plan (RMP). A traditional public safety plan is separate from a RMP and generally filed post-licensing with the Commission's Division of Dam Safety and Inspections (for guidance on preparing public safety plans you may review the Guidelines for Public Safety at Hydropower Projects on the FERC website).¹ To reduce confusion once the final license application is filed, please refer to the plan managing recreation (including the identification of recreation sites, recreation facilities, recreation amenities, recreation monitoring, and rules and regulations regarding recreation) as a RMP.

Section 4.8.3.1, *Recreation*, also describes a number of possible environmental measures for recreation and land use at the project, but stops short of proposing any specific measures. If KHL decides to propose any of these possible environmental measures in its final license application, specific items that should be addressed include:

- (1) Will boat access to Grant Lake be provided? If so, will access be provided for motor boats or car top boats only?
- (2) If parking will be provided, where will it be located and how many spots will each lot contain for single cars and cars with trailers?

¹ <http://www.ferc.gov/industries/hydropower/safety/guidelines/public-safety.pdf>.

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- (3) Will access to the project be limited by season? If so, what season(s) will access be limited and how will access be limited? If access is limited, and if a gate will be used, where would the gate be placed?
- (4) Will there be pull-offs along the access road? If so, what are the number, location, and size of the pull-offs?
- (5) Will restrooms be provided? If so, please describe the type and seasonal availability.
- (6) Will signage and interpretation be located at the project?

In section 4.8.3.3, *INHT* (Iditarod National Historic Trail), KHL states their willingness to bear the costs of any expenses related to trail construction that would exceed that necessary for the existing alignment of the INHT, and also states a willingness to address re-platting of the easement as necessary to provide the trail alignment and the associated 1,000-foot wide easement. However, the draft license application does not include an estimated cost for these potentially proposed measures. In the event KHL deems it appropriate to propose these measures in the final license application, it should also include detailed cost estimates for the construction and/or maintenance of the INHT, including any necessary infrastructure (e.g., bridges, parking areas, signage, etc.) in section 4.12.2, *Cost of Environmental Measures*. Additionally, the draft license application is unclear on whether or not a parking area would be included to provide access to the INHT, and whether the INHT would be considered a project recreation asset or non-project use of project lands. Please clearly state in the final license application whether KHL proposes to consider the INHT as part of the project's recreation.

In addition, any proposed recreational enhancements at the project should be summarized in section 2.1.5, *Proposed Environmental Measures*.

Section 4.9 – Aesthetic Resources

In section 4.9.3, *Proposed Environmental Measures*, the draft license application states that most construction work would be conducted during the summer months to reduce or eliminate light intrusion. If preventing light intrusion is important during the construction phase, it is likely to also be important during the operation phase of the project. However, section 4.9.2.3.1, *Project Effects*, does not discuss environmental effects associated with light intrusion/pollution during project operation. The final license application should address this potential concern and if appropriate, section 4.9.3 of the final license application should describe any measures proposed to address light intrusion/pollution during project operation.

Document Content(s)

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THE STATE
of **ALASKA**
GOVERNOR BILL WALKER

Department of Natural Resources

DIVISION OF MINING, LAND & WATER
Southcentral Regional Office

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June 24, 2015

Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE
Washington, DC 20426

Subject: DNR comments on the Draft License Application for Kenai Hydro, LLC-Grant Lake
Hydroelectric Project (FERC No. 13212)

Dear Secretary Bose:

The Department of Natural Resources (DNR) has reviewed the draft license application for the Grant Lake Hydroelectric Project (FERC No. 13212), located near the community of Moose Pass, Alaska on the Kenai Peninsula. Below are the combined comments of the Division of Mining, Land and Water (DMLW) and the Division of Parks and Outdoor Recreation (DPOR).

General Comments

1. The FERC Project boundary includes state owned land managed by DPOR under a Special Use Land Designation (11 AAC 96.014). The DNR managed land within the project area is within ADL 226527, a management agreement for additional lands that are to be included in the Kenai River Special Management Area (KRSMA), a legislatively designated area. Per ADL 226527 and the Kenai Area Plan (KAP), DPOR will manage the lands affected by this agreement consistent with the statutory objectives of the Kenai River Special Management Area (AS 41.21.500-514). Per AS 41.21.506, the Kenai River Comprehensive Management Plan (KRCMP) was developed and designates compatible and incompatible uses of KRSMA land. There are management and permitting guidelines within the Kenai River Comprehensive Management Plan and Kenai Area Plan that need to be addressed in order for DNR to determine if the project can be authorized. These include, but are not limited to:
 - a. KRCMP 4.5.2.3, new instream structures "must not impede fish passage, result in an overall reduction in fish habitat, present a hazard to public safety or diminish recreational opportunities."
 - b. KRCMP 4.5.3, development within the Kenai River watershed is to be managed to "avoid significant adverse impacts to the resources of the KRSMA, including but not limited to water, soils, fisheries, wildlife, visual quality, and recreation."
 - c. KRCMP 4.5.5.2 Impoundment Structures, "the construction of new dams or diversions on the Kenai River or its fish bearing tributaries, which block fish movements, or reduce essential stream flows for spawning, rearing or migration, will be prohibited. This recommendation is to be included in the KAP." In turn,

the Kenai Area Plan states “The construction of new dams or diversions on the Kenai River or its fish-bearing tributaries that impede fish movements or reduce essential stream flows for spawning, rearing or migration will be prohibited.” (See KAP, Page 3-107).

- d. KRCMP, Appendix C
 - i. The permitting matrix in the KRCMP includes hydropower projects in its list of activities. Hydropower projects are classified as “not compatible” within contiguous wetlands which are considered “high value.” Hydropower projects are classified as conditionally compatible in “low value” wetlands, provided that “[h]ydroelectric facilities shall be permitted in waters which do not provide anadromous fish habitat, or on reaches upstream from such habitat, only where water quality and quantity, including normal distribution of streamflow, can be maintained and where no significant individual or cumulative impacts will occur.”
 - ii. The General Guidelines apply to all allowable activities. How will this project adhere to all 18 guidelines? Specifically #5 through 7
- e. KRCMP, Appendix D Permitting of Instream Structures

Given the current project description in the license application, it appears that four items will need to occur in order for DNR to authorize this project:

- a. Amendment to the Kenai Area Plan
- b. Amendment to the Kenai River Comprehensive Management Plan
- c. Change to the Special Management Area
- d. Amendment to ADL 226527 and the MOU on the management roles for KRSMA

Amending the above plans, removing lands from a Special Management Area and amending existing authorizations can be a lengthy process that does not have a guarantee of approval.

- 2. This project requires a Permit to Appropriate Water. This is an important step to acquiring water rights.
- 3. The applicant has applied for water rights for the project. These rights are in application status, LAS 27264, with a priority date of April 2009. The Water Use Act (AS 46.15) requires the applicant to provide a “possessory interest” for the land. This project is occurring on state land within a Special Use Area which requires easements and/or leases to use the land. A Permit to Appropriate Water cannot be issued until the applicant adequately addresses substantial concerns addressed elsewhere in these comments.

Citation Specific Comments

4. IS-3

Please cite the statute that covers permits and easements (AS 38.05), not just leasing. Utility infrastructure and access routes may be issued as an easement, not a lease.

Table E.2-2, Page E-15

The measure "obtain easements" from ADNR is listed, but the description in the application states that a lease will be requested, not an easement. Easements and leases have different regulations. Please correlate the descriptions and applicable statute/regulations to correctly reflect the authorization being requested. ADNR would suggest including both leases and easements.

5. IS-5 and Exhibit C

KHL's Initial Statement in the DLA states that: "Upon license acquisition, KHL will collaborate with the Alaska Department of Natural Resources to appropriately apply for a lease for the requisite land managed by their agency." Exhibit C, Figure C.2-1 indicates in the project schedule that the easements would be acquired starting 8/3/2015 and be completed by 6/1/2016, but the Final EIS decision is not being issued until 9/1/2016, with the license order date of 12/30/2016. Which is the correct order (applying to DNR prior to the Final EIS being issued or after)?

6. Section 3, Page A-2

The Alaska Railroad is listed as adjacent to the project area, but it is in the project area on all the maps and in later descriptions.

7. 2.1.2.10, Page E-13 and 4-10, Page A-14

Moving ADL 228890, the Iditarod National Historic Trail easement, allows for the 90 degree crossing, not the current conditions, which places the powerhouse on the trail. The descriptions of the affects assume the easement has been moved, not the current conditions.

8. 4.8.1.3 Iditarod National Historical Trail [INHT]

Commemorative routes are allowed for segments of a national historic trail, per the National Trails Act. As a result, a determination of significant interference from BLM may be required for the Iditarod National Historic Trail under the Act, and for the title encumbrances and citation authorities included in the patent from the BLM to the State. Please contact the federal trail administrator to request a decision on whether this review will be required.

9. 4.8.1.2.2 Kenai Area Plan

ADNR recently issued a final finding for conveyance to the Kenai Peninsula Borough for Units 380G, 380F and 381 on February 24, 2015. Some areas within the units adjacent to the Seward Highway were conditionally approved, others were rejected (including those along Grant Creek). The Decision and associated maps can be accessed online at <http://dnr.alaska.gov/mlw/muni/>

10. 4.8.2.1.7 Recreational Opportunities

Please provide more detailed information on the parking facilities being proposed

11. 4.8.2.3 INHT

ADL 228890 is a 100' public access easement issued to the Chugach National Forest, within a 1000' corridor reserved to the State of Alaska. The management intent and guidelines for this corridor are in Chapter 2 of the Kenai Area Plan, with further definition in the Final Finding and Decision for ADL 228890. While the proposed road would cross the easement and corridor at 90 degrees (which is potentially allowed), the powerhouse and ancillary facilities are within it and conflict with the Kenai Area Plan and ADL 228890. An amendment to the area plan, granted by the Commissioner of the Department of Natural Resources, would be required to issue an authorization for this project without the relocation of the trail easement and corridor. The Final Finding and Decision for ADL 228890 does address potential relocations of this trail:

Any relocation in size or relocation of the trail easement would be done in consultation with the USFS and at the sole expense of the party requesting the relocation. Any relocation shall provide a continuous uninterrupted trail easement consistent with the 1986 Comprehensive [Management] Plan for the Iditarod National Historic Trail and protect the capitol investment of trail construction and facilities should relocation be needed.

Kenai Hydro would need to formally request the relocation of the Iditarod Trail, ADL 228890. Per ADL 228890, a relocation would be at the sole expense of Kenai Hydro (including any survey requirements) and must adhere to the Kenai Area Plan, the Comprehensive Management Plan for the INHT and the Final Finding and Decision for ADL 228890. If a relocation is granted, it would require that the 1000' buffer be intact, that the wilderness characteristics of the trail are conserved and conflicting uses adequately separated (per the Final Finding and Decision for ADL 228890). This would be done in coordination with DNR, the Chugach National Forest and the Kenai Peninsula Borough (KAP and ADL 228890).

12. 4.9.2.2.4

Assumes that the reroute of the Iditarod Trail will occur, as only the road and trail are discussed and not the powerhouse and ancillary facilities that would block the trail.

13. 4.9.2.3.1

The latest maps that DNR has of the INHT and project facilities has the trail going down the edge of the detention basin and through the middle of the powerhouse. Has the powerhouse been moved? The structure would not only be seen by hikers, they would have to traverse it.

14. 4.13, Page E-402 Consistency with Comprehensive Plans

The description states that this section is reviewing consistency with federal and state comprehensive plans in the area, but contains a lot of ADFG plans that are hundreds of miles outside the project area. For ADNR, the following plans are listed

- i. Fish Creek Management Plan
- ii. SCORP

The Fish Creek Management Plan is in the Matanuska-Susitna Borough and is not on the Kenai Peninsula. Additionally, the Kenai Area Plan and the Kenai River Comprehensive Management Plan (and designations and agreements) are not listed, but are referenced throughout the document (4.8.1.2.1 and 4.8.1.2.2 for example). Please include a description of the consistency with comprehensive plans for those that apply to the project area. Currently, the two major ADNDR plans in the project area are not listed or evaluated for consistency in section 4.13. Additionally, the comprehensive management plan for the Iditarod National Historic Trail should be listed, as it is cited in both the Kenai Area Plan and ADL 228890, which is also reference multiple times in the license application materials.

Thank you for the opportunity to comment.

Sincerely,



Lesli Schick

Department of Natural Resources

Email: lesli.schick@alaska.gov

Document Content(s)

2015_06_24_DNR comments.PDF.....1-5

Andrew Bacon, Seward, AK.
June 24, 2015
Andrew Bacon
PO Box 1921
Seward, AK 99664
andbacon2@yahoo.com

Re: Comments for the Grant Lake Hydro Project P-13212

I am opposed to licensing Kenai Hydro LLC (KHL) for the Grant Lake hydroelectric project. The project lies within lands designated by the State of Alaska to be conserved for wildlife habitat and used for dispersed recreation. These uses are outlined in the Kenai Area Plan and the specific statutes are noted below. Additionally, the projects interference with the proposed route of the Iditarod National Historic Trail (INHT) further increases the projects incompatibility with the designated land use.

KHL completed a series of studies that they submitted in their draft license application (DLA), outlining how they will mitigate impacts to fish & wildlife habitat, scenery, and vegetation. I would argue that their studies are thin and incomplete.

Use of the proposed project area fluctuates with the weather, and I don't believe the recreation study accurately accounts for the amount of winter use this area actually gets, due to the low amount of snow that year. The construction of the INHT will further increase winter recreational opportunities for skiers, hikers, and trappers. The INHT will also improve access to the area for hikers and fishermen in the summer. Recreational use will be highly impacted by construction of this project. The wilderness character of the area would be gone.

I would like to cite two issues I have with the fisheries studies cited in the DLA. First, sockeye salmon smolt enumeration data is not provided for Grant Creek. Second, KHL states that plant operators will be able to match natural ambient water temperature within 1 °C 2. If plant operators are able to achieve the stated goal of operating within plus or minus 1 °C of natural ambient stream temperatures, the project will still alter the natural timing of fry emergence. In order to mitigate this impact, KHL would have to monitor the daily stream temperature and adjust their lake water intakes to maintain natural ambient temperature. This is similar to the work of a fish culturist monitoring egg development in a controlled hatchery environment. I do not believe that the automated system for controlling temperature put forth in this project proposal can adequately replicate the subtleties of nature. Without any smolt enumeration data, we would never know if their system works.

Wildlife movement in the area will be significantly impacted by the construction of this project. The lands extending from Vagt Lake up to the inlet of Upper Trail Lake provide a travel corridor for moose and bears that allows animals to avoid the Seward Highway. I have spent a lot of time in this area over the years and have seen how moose and bears use the bench lands between Grant and the Trail lakes for feeding and migration. Grant creek is an important feeding location for bears, and moose use the area for feeding and breeding. The research in the DLA is insufficient with regard to wildlife abundance and the impact the project will have on habitat.

From an economic standpoint, this project is not viable. In the November 2014 public meeting held by KHL in Moose Pass, general manager Mike Salzetti fielded questions regarding the projected output as a percentage of HEA usage and the projects return on investment. He stated that the project will account for only 4% of HEA customers' power usage, and at the current cost estimate will see a ROI in 30 years. I would also like to point out that the cost estimate of this project has increased since 2008. No source of funding has been identified for this project. A major concern I have is in KHLs inability to follow through with completing this project should they be approved for construction. The small amount of power that this plant will generate relative to the extremely high cost of developing it does not seem enticing to investment. The project would also represent an irresponsible use of public money.

Please do not approve the license for KHL to proceed with the Grant Lake Project. The benefits of the energy that will be generated do not warrant the cost this will have both monetarily and in the permanent impact to the area. Thank you for taking the time to read my comments.

Sincerely,
Andrew Bacon

1. The project is located in area 380G on the following map:
<http://dnr.alaska.gov/mlw/planning/areaplans/kenai/pdfs/2b.pdf>

This land is also part of the Kenai River Special Management Area

11 AAC 55.160. Public Recreation Land. Land classified public recreation is land that is suitable for recreation uses, waysides, parks, campsites, scenic overlooks, hunting, fishing or boating access sites, trail corridors, or greenbelts along bodies of water or roadways.

11 AAC 55.230. Wildlife Habitat Land. Land classified wildlife habitat is land which is primarily valuable for: (1) fish and wildlife resource production, whether existing or through habitat manipulation, to supply sufficient numbers or a diversity of species to support commercial, recreational, or traditional uses on an optimum sustained yield basis; or (2) a unique or rare assemblage of a single or multiple species of regional, state, or national significance.

2. section 4.5.2.3 of the draft license application

Document Content(s)

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*Kenai River Watershed Foundation, Inc.
P.O. Box 815, Cooper Landing, Alaska 99572*

*907-595-2129
kenailake@arctic.net*

June 24, 2015

Secretary Kimberly D. Bose
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

(eFiling)

Subject: Comments on P-13212-000 Alaska Draft Licensing Application

Dear Secretary Bose:

The mission of the Kenai River Watershed Foundation (KRWF) is to defend the integrity of Alaska's Kenai River and its watershed. A river is the ecological sum of all of its sources. Salmon do not return from the sea to their birthplace waters by GPS. It is fundamental policy for KRWF to defend and protect the invaluable Kenai River resource by very strongly opposing any additional change to natural flows in its tributaries.

In commenting, the KRWF wishes to register continued opposition to the Grant Lake and Creek hydroelectric project. The KRWF, other organizations, and many individuals have been strong public opponents of the four hydroelectric proposals of Homer Electric Association (HEA) aka Kenai Hydro LLC (KHL) since 2007. Review of the KHL Draft License Application (DLA) has produced many critical pages of error, obfuscation, deficiency, and basic exceptions. In Alaska, indifferently threatening the integrity and imposing risk to the traditionally inviolate Kenai River and its watershed is unforgiveable. This additionally displays ignorance of the river's enormous importance to the Kenai Peninsula quality of life and economy. A vital Kenai Peninsula economy fundamentally supports the applicant.

The KRWF has decided not to provide enabling DLA review information to help this indifferent, incompetent applicant improve its defective application. Our following comments are reduced to the following overview: 1) Lack of Competency; 2) Lack of Public Need; 3) Lack of Due Process; 4) Lack of Public Trust; 5) The Ongoing Public Burden.

--Save the Kenai--

1) Lack of Competency. FERC obviously expects applicants to be well qualified as well as capable, a reasonable expectation. In business and industry, few contracts are awarded without prior applicable experience. In rural Alaska, prior applicable experience is essential. Specialized experience is also essential. Unfortunately for the public, an effective screening process for qualifications does not exist, as evidenced by this applicant.

Involved applicant staff is new to Alaska and have no known prior experience developing a remote hydroelectric project in a highly sensitive watershed. The applicant's consultants have no applicable Alaskan experience and no known prior hydroelectric development experience. Two construction contracts have been awarded. One exception to the lack of experience is the well-known consultant who specializes in providing FERC procedural advice, as an ex-FERC employee.

Demonstrated inability to perform routine preliminary feasibility studies within the prescribed time is a measure of experience and competence. The superficial DLA submission speaks for itself. Unreliable future performance by this type of applicant is predictable, and would not be tolerated in business or industry.

This is justification to deny licensing.

2) Lack of Public Need. There is no public need for this project. Public need for the risk imposed in the taking of a highly sensitive watershed tributary must exist, or be denied.

The applicant's justification for public need is based on scarcity of natural gas for generation, which is false. Abundant new sources of natural gas have been found and are being developed in Cook Inlet adjacent to the applicant's utility service area on the Kenai Peninsula. Natural gas is so abundant that a new LNG refining and export facility centrally located to the applicant is being developed. A local natural gas urea fertilizer production facility is being reactivated, also for export.

Additionally, the applicant is constructing large new local generation capacity to take advantage of the abundant natural gas. Further, Alaska's Governor and its Legislature have committed to build a high-priority natural gas pipeline from northern Prudhoe Bay to the central Kenai Peninsula, within the applicant's service area. Unlimited local natural gas will become available.

Additionally, the speculative, minor 2mW average generation of the Grant Lake and Creek hydroelectric project is not significant in scope relative to the large generating capacity of the adjacent power utility whose transmission line is required for transport. Dispatching of this project's small output to serve the applicant's distant utility customers is speculative dependent upon ongoing cooperation and regulatory permission. Obtaining energy from a remote source outside the

applicant's utility service area is highly inconsistent with its well-known "island" utility development policy.

The primary benefit of this project is obtaining a free power resource, largely funded by naïve state grants, for private gain. A vital public resource is proposed to be taken and sacrificed for private gain. Aside from whatever revenue is created, a highly-touted, romantic renewable energy public relations credit will be obtained. The taking of highly sensitive public land and water for private gain is simply not justified. A public need for this project does not exist.

This is justification to deny licensing.

3) Lack of Due Process. TLP process has been erratic from the onset of the project and manipulated to the disadvantage of the public. This has included utilization of obvious public and resource agency time conflicts and a total disrespect for over seven (7) years of very strong public opposition. Conduct of the TLP process has displayed both lack of knowledge and avoidance of routine local and state government procedures. Ongoing disrespect for the public has cost the applicant a total loss of public credibility. One example of this is the inability to complete the DLA within the allotted time. After being denied an additional time extension, the applicant simply took an extension by moving required and overdue elements of environmental studies to the yet to be completed Management Plan.

This is justification to deny licensing.

4) Lack of Public Trust. The manner in which the applicant has conducted matters to date has cost it a total loss of public trust. If the process to obtain a license is not credible, the applicant cannot be trusted to properly develop critical elements of the project. This applicant is not trust worthy to develop or operate the project. This is the worst public process we have encountered in decades. Where is the public accountability?

This is justification to deny licensing.

5) The Ongoing Public Burden. Kenai Hydro, LLC (KHL) is a Delaware company incorporated in 2008, as a shell company owned by conglomerate EDF-EN of Paris, France and "enXco" a subsidiary French wind farm manager. A pyramid of shell companies was formed. A speculative business venture was advanced to obtain soft Alaska Energy Authority (AEA) Renewable Energy (RE) grants. HEA was invited to participate to satisfy the naïve AEA granting requirement for an electric utility to guarantee technical quality control. HEA did not own KHL at that time.

It is instructive to note that the scheme was initiated using a progression of phony addresses in downtown Anchorage, Alaska, one of them a vacant lot.

Kenai River Watershed Foundation, Inc.
June 24, 2015

The shell company scheme was based on obtaining AEA renewable energy grants to explore four closely-clustered hydroelectric project locations in the headwaters of the Kenai River on the Kenai Peninsula. Soft AEA grants were obtained for hydroelectric projects at Crescent Lake, Grant Lake and Creek, Falls Creek, and Ptarmigan Lake and Creek. Public stakeholders strongly objected to these invasive, speculative business ventures, which would irreversibly industrialize the headwaters of the Kenai River and permanently compromise its ecological integrity. The scheme utilized FERC preliminary permit process documentation as federal endorsements of the projects, to obtain ongoing AEA grants. KHL continues to annually seek and depend upon these soft grants. This state energy agency denied FY16 grant funding to KHL, while requiring additional studies and listed KHL as inactive.

The foregoing invasive mess became known to stakeholders as the Kenai Hydro War. Strong public opposition gradually caused the shell company pyramid to collapse, leaving only HEA solely involved as the default owner of KHL. HEA is a small rural electric utility with a legacy of illogical, imprudent policies. HEA had zero hydroelectric project development experience, let alone for a project that is highly sensitive. HEA management is relatively new to Alaska and totally indifferent to traditional Alaska values, illogically even at its own expense.

The public has endured the great burden of waging the Kenai Hydro War for over seven (7) years. Thousands of hours, words and dollars have been committed to meet this ongoing threat. KRWF believes KHL/HEA will revisit other initial hydroelectric project proposals if the Grant Lake and Creek project is licensed. Impounding and diverting Falls Creek into Grant Lake is already being openly discussed.

Please do not license this applicant.

Sincerely,

/s/ Robert L. Baldwin, President
Kenai River Watershed Foundation, Inc.

Document Content(s)

KRWF P-13212-000 DLA Comments 062415.PDF.....1-4

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June 25, 2015

The Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

(eFiling)

Subject: Comments of CWA and other Entities on Draft Licensing Application Re: Project P-13212 Grant Lake and Creek, Alaska; Kenai Hydro LLC.

Dear Secretary Bose:

On behalf of the Center for Water Advocacy and the undersigned organizations and entities, I am submitting these Comments Re: Project P-13212-002 Grant Lake and Creek, Alaska; Kenai Hydro LLC Draft Licensing Application (DLA). The members, staff and constituents of the undersigned entities regularly use, enjoy, and benefit from a healthy ecosystem and the presence of diverse habitat in the Grant Creek Watershed, including fish, and other marine species that are likely to be harassed, disturbed, injured, or even killed by the proposed Grant Lake and Creek Hydropower Project (Project). Members, staff and constituents groups reside near, visit, or otherwise use and enjoy the Grant Creek Watershed for subsistence, recreation, whale-watching, education, scientific study, boat touring, fishing, photography, or aesthetic and spiritual enjoyment. The ability of such members, staff and constituents to pursue these interests hinges not only on the wellbeing of fish and wildlife that live, feed, breed, and migrate in Grant Creek Watershed, but also on the health of the watershed ecosystem on which these species depend.

In general, we are concerned that we have been provided insufficient time to provide adequate comments on the DLA due to Kenai Hydro LLC's (KHL's) history of lack of excluding the general public from participation in the licensing process, the manner in which the DLA was submitted for review and comment and the lack of adequate data collection and information gathered to support scientific and other conclusion provided.

I. The General public has been provided with a Lack of Adequate time to Comment on the DLA

The manner in which the KHL has organized the DLA makes it difficult to provide adequate comments, particularly from conservation organizations or private citizens with limited financial and other resources in keeping up with the voluminous and complex documentation related to the licensing process. In the case of the DLA, we had much difficulty locating the main documentation for review and commenting purposes, because the multiple documentation included in both the CD forwarded by KHL and posted on the the Commission online are not labeled so that it is clear what the contents

of each document was, could not be opened without difficulty and were not placed in any kind of order making it possible for locating relevant documents for purposes of review and comment without significant difficulty.

In fact, CWA, recently, requested an extension of the comment period on the DLA for the following reasons:

- 1) KHL filed an incomplete DLA on March 27, 2015. A routine 90-day comment period was established with a June 29 deadline;
- 2) KHL filed four several and substantial additional DLA related monitoring plans, reports and biological evaluations on May 18, 2015.¹ The 90-day comment deadline was not correspondingly adjusted to reflect this subsequent filing. Ninety days after the May 18 filing is August 16, 2015;
- 3) KHL changed the previously announced and anticipated 2014 Fall-Winter filing date for the Application to March 27, 2015 which coincides with the crucial, seasonal April to June 2015 resource agency data collection and mobilization period in Alaska. Non-programmatic matters, therefore, cannot be given a priority during this time. This change imposes a substantial paperwork burden on the resource agencies and the general public and will, likely, lead to default pass-through or declined reviews;
- 4) State of Alaska (SOA) resource agencies are now under additional stress, due to program contraction resulting from an unfunded operating budget. As of this Request's May 28 filing date, 30-day layoff notices are scheduled to be issued on June 1, for all state agencies not involved with essential life, health, and safety program responsibilities;
- 5) SOA resource agencies like the Department of Natural Resources and the Alaska Department of Fish and Game, each having critically important oversight responsibilities in this matter, are not considered generally essential in a budget crisis and will be shut down. There is no expectation that the large DLA will be addressed, let alone comprehensively reviewed, under these circumstances;
- 5) The general public depends upon resource agency expertise and authority to protect the highest public values. It is unreasonable to expect resource agencies to re-prioritize and set aside vital programs to respond to poorly timed filings by KHL. It is also recognized that additional feasibility studies will be required. It is important for these studies to be well defined by the agencies;
- 6) One or more additional DLA documents from KHL is expected and additional time must be provided for review. Serial filings without comment period adjustments further assure that stressed resource agencies cannot diligently review the current 444-plus MB DLA in its complete context, let alone anything additional submitted.

As a result of the issues with lack of adequate time to address the dysfunctional formatting of the DLA and related documents, most of our comments reference related

¹ See e.g., Kenai Hydro, LLC (KHL) for a 10-month extension of the successive 3-year Preliminary Permit for Project P-13212-002 (May 15, 2015).

reports and other documentation previously provided by KHL assuming that the DLA repeats similar information and data.

II. The DLA Process Excludes Stakeholder Participation

As CWA has, repeatedly, pointed out, KHL's constant disruption of the Study Process for the Project and process-related issues have substantially affected CWA and other stakeholder's participation in the Grant Creek study process and in violation of the Federal Power Act and the Commission regulations. As part of the study phase for the Project, for example, KHL maintains that "[e]very facet of the study program has been discussed, collaborated on and revised based upon stakeholder input and per the Traditional Licensing Process (TLP)."² To the extent, however, that KHL has discussed the Project, so far, with "stakeholders", public participation in the study phase of the project has been largely non-existent. Regardless of numerous requests, for example, the licensee (Homer Electric Association) HEA, has consistently refused to hold public meetings to discuss the study plan in Seward and Homer.

In fact, the one and only chance for meaningful input by the general public on the Project's recently completed study phase, was a November 2014 public meeting sponsored by KHL and HEA in Moose Pass, Alaska near the Project location. Needless to say, KHL's decision not to sufficiently engage the public in the process did not go over well with most of the participants at the meeting. This is due, in part, to the fact that Moose Pass and Seward which are outside of the HEA service area, will receive most of the potential environmental impacts and none of the energy benefits of the Project. Neither did it help that, regardless of the fact that the Moos pass participants were not informed that they could comment on the studies until after arriving at the meeting.

In addition, KHL's reference to extensive collaboration and discussions with "stakeholders"³ includes nothing more than federal and state agency representatives and not the public. In addition, KHL has provided no support that these stakeholders" participated in all of the over "ten formal meetings and Project-specific site visits, in addition to numerous calls with technical experts from our team and the stakeholders, have been held over the course of the current Permit term."⁴

Finally, KHL has attempted to downplay the almost, non-existent, public process related to the Project, by observing that the opportunity for the public input on the licensing decision starts in earnest with the draft licensing application which will be issued in early 2015. This conclusion, however, leaves out the fact that the Commission, generally relies heavily on the results of the study plan when making licensing decisions. In this case, therefore, once the Commission receives the study reports drafted, coordinated and controlled almost entirely by Project proponents, any licensing decision, along with the irreversible impacts on salmon and water would, likely, be a foregone conclusion.

KHL, itself acknowledges the significance of the study phase to the Commission decision making by stating:

² Kenai Hydro, LLC Preliminary Permit Application No. 2 Extension Request for Kenai Hydro, LLC – Grant Lake Project (the Commission No. 13212), p. 1 (January 27, 2015)(Extension Request).

³ *Id.* at 3.

⁴ *Id.* at 2.

Very early on, a series of work groups were created associated with the various natural resource disciplines. These groups were utilized as the mechanism to develop appropriate study methods, discuss initial and final results, review associated resource reports and discuss potential impacts (positive and negative) and associated mitigation and enhancement measures that may be employed associated with Project construction and operations.⁵

III. The DLA Fails to Show that KHL has collected Adequate Streamflow Data

KHL maintains that “[w]e have completed a comprehensive and robust biological study program incorporating all resource areas (Aquatics, Water Quantity/Quality, Terrestrial, Recreation and Visual and Cultural).”⁶ This contradicts the DLA, however, which provides that stream “gages were installed on Falls Creek (FC100) and Grant Creek (GC200) on 09 June and 10 June of 2009” only and that continuous “stage data was recorded at these locations until 12 October 2009”.⁷

Other than that the DLA, merely, references limited and previous studies conducted by separate entities. According to the DLA:

A limited instream flow study was conducted on Grant Creek in the 1980s by Kenai Hydro, Inc. (KHI; unrelated to Kenai Hydro, LLC). The study related documents include reports and written communications between KHI and State and Federal agencies in 1986 and 1987 relative to a the Commission license application for the proposed Grant Lake Hydroelectric Project (the Commission No. 7633-002). The documents include draft and final reports of a limited instream flow incremental methodology (IFIM) investigation and negotiated minimum instream flows (MIF) and ramping rates (Envirosphere 1987, KHI 1987a, KHI 1987b).⁸

In addition, KHL has collected minimal hydrological data which amounts to only “five discharge measurements that were taken for flows ranging between 17 and 706 cfs,” during the spring and summer of 2013.⁹ In fact, the only adequate hydrological data existing for Grant Creek is over half a century old. “The USGS operated streamflow gage 1524600 on Grant Creek between 1947 and 1958. Daily and annual peak flows were recorded for this period. *This 11-year record is the most complete hydrologic data that exists for Grant Creek.*”¹⁰

⁵ *Id.* at 2-3.

⁶ *Id.* t 1.

⁷ DLA, 2009 Environmental Baseline Study Report, Supplemental Information for the Grant Lake/Falls Creek Project (P-13211 and P-13212), p. 41

⁸ *Id.* at 5.

⁹ TECHNICAL MEMORANDUM TM002, Grant Lake Hydroelectric Project, Grant Creek Hydraulic Analysis, p. 5 (June 6, 2014).

¹⁰ TECHNICAL MEMORANDUM TM001, Grant Lake Hydroelectric Project, Grant Creek Hydraulic Analysis, p. 5 (May 30, 2014). (emphasis in original).

In addition, much of the flow data collected by KHL is based on mere assumptions from data take from the Kenai River over 50 miles away. According to KHL:

The weighted peak streamflow estimates for Grant Creek are considered to be the most appropriate and suitable for use in the evaluation and design of the Grant Lake Hydroelectric Project moving forward [which] involves correlating short-term or incomplete gage data with one or more nearby gages that have more complete records (long-term gage). These long-term values and the relationship between the two gages are used to generate data to extend or fill in data at the short-term gage.¹¹

In its June 18, 2015 denial of KHL's rehearing request of the Commission's previous Order denying KHL's request for a ten-month extension of its second preliminary permit for the Project),¹² the Commission, itself, concluded that KHL failed to make sufficient progress in obtaining data and information necessary to show that the extension request was warranted. In reaching this conclusion, the Commission rejected KHL's rationale for failing to gather adequate data, including water flow measurements. According to the Commission:

Kenai Hydro raises the issue of limited site access for the first time in its March 27 rehearing request. Its progress reports and extension request fail to mention any difficulty gaining access to the project site during the terms of its permits. Rather, Kenai Hydro's progress reports indicate that it suspended field studies in August 2010 (more than a year before its first permit expired on September 30, 2011), in order to review comments received on the proposed study plans and revise its study program.... Kenai Hydro's progress reports indicate that it performed no fieldwork between August 2010 and March 2013... We have previously stated that the issue of obtaining access to the site for the performance of studies is one for the permittee to address... Kenai Hydro has held preliminary permits for this proposed project for more than six years, and should have been well aware of, and able to adequately prepare for, the challenges posed by developing a project in a remote area that is frozen much of the year.¹³

IV. The DLA's Conclusion that the Project will have Minimal Impacts on Fish Habitat is unsupported by Adequate Data

The seriousness of the DLA's lack of adequate flow data to aquatic habitat is illustrated by KHL's conclusion that the Project "meets the requirements of a responsible Project by achieving an extremely low level impact to the existing environment overall and in the case of priority aquatic species, actually increases habitat value in many instances."¹⁴ Based on the fact, however, that "[t]he subsequent gage data collected in

¹¹ *Id.* at 6.

¹² Kenai Hydro, LLC Project No. 13212-004ORDER DENYING REHEARING (Issued June 18, 2015); the Commission, *Kenai Hydro, LLC*, 150 the Commission ¶ 62,115 (2015).

¹³ Kenai Hydro, LLC Project No. 13212-004, ORDER DENYING REHEARING, p. 6 (Issued June 18, 2015).

¹⁴ Extension Request at 2.

2009...and 2013 by McMillen, along with the original USGS stream gage data...served as the basis for the flow” upon which the conclusion about minimum or improved habitat impacts is based, such conclusion is unsupported by the facts.

In addition, the DLA, illustrates that KHL has not even come close to collecting sufficient data and information necessary for managing toward a natural flow regime. A large body of evidence has shown that the natural flow regime of virtually all rivers is inherently variable, and that this variability is critical to ecosystem function and native biodiversity. Rivers with highly altered and regulated flows lose their ability to support natural processes and native species. Thus, to protect pristine or nearly pristine systems, it is necessary to preserve the natural hydrologic cycle by safeguarding against upstream river development and damaging land uses that modify runoff and sediment supply in the watershed.

Most rivers are highly modified and so the greatest challenges lie in managing and restoring rivers that are also used to satisfy human needs. Recognizing the natural variability of river flow and explicitly incorporating the five components of the natural flow regime (i.e., magnitude, frequency, duration, timing, and rate of change) into a broader framework for ecosystem management would constitute a major advance over most present management, which focuses on minimum flows and on just a few species.

Such recognition also contributes to the developing science of stream restoration in heavily altered watersheds, where, all too often, physical channel features (e.g., bars and woody debris) are re-created without regard to restoring the flow regime that will help to maintain these re-created features. Just as rivers have been incrementally modified, they can be incrementally restored, with resulting improvements to many physical and biological processes.

In Grant Creek, year-to-year differences in the timing and quantity of flow result in substantial variability around any average flow condition. Accordingly, managing for the “average” condition can be misguided. For example, due to the alterations to the River from the Project, restoring a flow pattern that is simply proportional to the natural hydrograph in years with little runoff may provide few if any ecological benefits, because many geomorphic and ecological processes show nonlinear responses to flow. Half of the peak discharge, for example, will not move half of the sediment, half of a migration motivational flow will not motivate half of the fish, and half of an overbank flow will not inundate half of the floodplain. In the Grant Creek Watershed, therefore, more ecological benefits would accrue from capitalizing on the natural between- year variability in flow.

For example, in years with above-average flow, “surplus” water could be used to exceed flow thresholds that drive critical geomorphic and ecological processes. If full flow restoration is impossible as a result of Project impacts, mimicking certain geomorphic processes may provide some ecological benefits. Strategically clearing vegetation from river banks, for example, could provide new sources of gravel for sediment starved regulated rivers with reduced peak flows.¹⁵

The DLA, however, does not make judgments about specific restoration goals and work with appropriate components of the natural flow regime to achieve those goals. Recognition of the natural flow variability and careful identification of key processes that

¹⁵ (e.g., Ligon et al. 1995).

are linked to various components of the flow regime are critical to making these judgments. Setting specific goals to restore a more natural regime in rivers with altered flows or, equally important, to preserve unaltered flows in pristine rivers such as the Grant Creek, should ideally be a cooperative process involving river scientists, resource managers, and appropriate stakeholders.

In addition, KHL must work to develop quantitative, river-specific standards, based on the reconstruction of the natural flow regime.¹⁶ Restoration actions based on such guidelines should be viewed as experiments to be monitored and evaluated—that is, adaptive management—to provide critical knowledge for creative management of natural ecosystem variability.

V. Requested Data and Information in the DLA

In order to comply with licensing standards and meet adequate aquatic habitat protection needs, the DLA must include the following data and information:

a. Data

At minimum, KHL should develop three hydrologic data sets to compare Project hydrology with unimpaired hydrology and the effects of other developments within the watershed. The three watershed hydrologic scenarios which data sets should be developed are: Unimpaired (e.g., natural flow conditions throughout the Watershed), YRDP (accounting for the hydrological effects of just the Project, and all other water development projects are represented in an unimpaired condition) and Current (e.g., current conditions with all water development in the Watershed). Unimpaired hydrology should be developed in an open and transparent manner, with step-by-step, written accounting of the methods and processes used to develop the data set. This is to ensure continuity with the unimpaired hydrology developed for this Project and allow for adequate comparisons throughout the entire watershed. The data sets should be comprised of average daily flow for the water years 1975-2015 for each of the three scenarios.

The following parameters should be developed for all three sets of data

Average annual flow
 Monthly averages for each month
 1, 3, 7-day maximum – mean for all years
 1, 3, 7-day minimum – mean for all years
 Julian date and magnitude of annual maximum
 Julian date and magnitude of annual minimum

b. Peak Flows

Alterations of peak flows by project operations can have a number of direct and indirect effects on fishery species in the Grant Creek Watershed. Peak flows are responsible for forming and maintaining aquatic habitats such as

¹⁶ (e.g., Richter et al. 1997).

holding pools and spawning riffles. They can also affect migration cues and passage at partial barriers to migration. This information will illuminate how the magnitude and duration of peak flows have been altered by Project operations or operations related to the Project.

A log-Pearson type III flood frequency analysis should be performed on all three data sets, at all locations of interest. Magnitudes of the flood events with return intervals of 1.01, 1.5, 2, 5, 10, 25, 50, and 100 years should be calculated. In addition to the return intervals above, KHL should compute average monthly maximums for the years 1975-2015 for the all three scenarios. Any flow greater than 1.01 year return interval or greater than the unimpaired average monthly maximum flow will be considered a pulse flow. The date of the beginning and end of each occurrence of a pulse flow should be recorded, along with the magnitude and duration of each pulse flow event. A table comparing the frequency, magnitude and duration of the pulse flows documented for each scenario should be prepared at all locations of interest listed above. Such a table would document the occurrence of pulse flows in each water year (1975-2015) as well as each water year type. Annual hydrographs should be developed for a representative year of each water year.

A comparison of hydrology at major confluences under the three different watershed development scenarios should be performed for the purpose of characterizing the Projects' effects on magnitude and timing of attraction flows into each tributary. Pulse flow events along with average monthly flow should be compared and evaluated in terms of altered immigration attraction flows into one or more tributaries during times the months of January-June. In KHL's Anadromous Ecosystem Effects Analysis, this information will be assessed for the capability of these attraction flows to influence the immigration of adult salmon in each reach to be assessed.

c. Ramping

KHL should analyze 15-minute data from water years 1975-2015 below the point of diversion. An exceedance probability of change in flow and stage in 15 minute and 1 hour intervals as measured at the nearest stream gage below the facility should be calculated for upramps and down-ramps as observed during the period of record. The greatest hourly rate of change in flow for the largest 10 rate-of-change events will also be provided to characterize extreme change events. For the 10 largest events, 24-hour hydrographs with descriptions of event conditions should be provided.

Effects of the powerhouse discharge and ramping rate on the hydraulic characteristics of the reaches below the powerhouse should also be examined. Changes in the stage of the reach below the powerhouse due to project operations can have numerous effects on anadromous species and the physical habitats they may occupy.¹⁷ Down ramping events can rapidly change the water surface

¹⁷ Hunter, M.A. 1992. Hydropower flow fluctuations and salmonids: a review of the biological effects, mechanical causes, and options for mitigation. Technical Report Number 119. Department of Fisheries. State of Washington.

elevation and wetted perimeter of a reach, stranding juvenile fish or dewatering redds. Up ramping can scour redds and create increased velocities which can be barriers to upstream migration.

In order to assess these Project effects, a detailed two-dimensional hydraulic model of the reach below the Powerhouse should be developed to determine depth, water surface elevations and velocities continuously along the entire reach below the Powerhouse to the upstream extent of the Reservoir. Two-dimensional models eliminate the problem of site selection of representative cross-sections that traditional one-dimensional models have been hampered by.¹⁸ Development of two-dimensional models such as SRH 2-D developed by the Bureau of Reclamation, enable modeling many kilometers of river at a fine resolution (<1 meter) accurately and quickly. Rapid advances in technology enable data gathering to be done in a comprehensive and cost-effective manner.

As input to the two-dimensional hydraulic model, KHL should develop a digital elevation model (DEM) of the Colgate reach (from the outflow of the Powerhouse downstream to the normal water surface elevation of Englebright Reservoir) spanning the maximum flow width. Mapping of this reach should take place when the Reservoir is at or near its yearly minimum water surface level, to insure that exposed riverbed is surveyed for any migration barriers. The DEM should have a resolution of less than 1 meter both vertically and horizontally. DEM collection methods should involve an airborne light detection and ranging (LiDAR) topography survey that is field checked with a ground based total station and GPS surveys. This data should be combined with detailed stream bed bathymetry surveys by a boat mounted fathometer.

The DEM should be used as input to the two-dimensional model to predict depths and velocities at various discharges. Applicant should model current average monthly discharges below the Powerhouse using hydraulic models. In addition, KHL should also model the 10 greatest rate-of-change events identified above. Because flows from the Powerhouse combine with the discharge from Grant Creek, the range of flows discharged from the Powerhouses can have a varying effect on depths and velocities downstream, depending on how much flow is coming down Grant Creek. The 10 greatest rate-of-change events should be evaluated in terms of what time of year and how much flow was present in the Creek. If it is determined that the 10 greatest rate-of-change events do not accurately represent the full range of flows in the mainstem (winter storm runoff, spring snowmelt and summer low flows) then additional flow scenarios should be completed. The model should also be detailed enough to capture any hydraulic jets that occur immediately below reservoir discharge.

The two-dimensional model should be validated using field measurements of depth, water surface elevations and velocity. An Acoustic Doppler Current Profiler (ACDP) can be used to accurately and quickly gather the necessary validation information at multiple discharges. At minimum, measurements should be taken at every significant geomorphic unit as classified by Montgomery and Buffington¹⁹ with more complex units such as braided channels requiring more intensive sampling.

¹⁸ Moyle, P.B., J.G. Williams, J.D. Kiernan, G.M. Kondolf, and J.F. Mount. 2010. In Press. Improving environmental flow methodologies used in California the Commission relicensing.

¹⁹ Montgomery, D. R., Buffington, J. M. 1997. Channel Reach Morphology in Mountain

This information should be evaluated for its capacity to affect fish passage barriers and operation of fish passage facilities. It will also shed light on riparian recruitment processes, sediment transport capacity, attraction and outmigration flows for salmonids, amount and quality of aquatic habitat, potential for stranding and dewatering of redds.

The DEM and the two-dimensional model should also be used in the sediment budget analysis of project effects on physical habitat such as deposition or scour of spawning gravel.

d. Floodplains

Floodplain functions and ecological processes depend on seasonal and periodic inundation of the floodplain. The floodplain is defined as "...the flat area adjoining a river channel constructed by the river in the present climate and overflowed at high discharge."²⁰ The timing, or predictability, of flow events, is ecologically critical because the life cycles of many aquatic and riparian species depend on environmental cues provided by flow events and are timed to avoid or exploit flows of variable magnitude.²¹

Using a two-dimensional hydraulic model, KHL should compare the unimpaired and current frequency, magnitude and duration of floodplain inundation. It should, also use a two-dimensional model of Grant Creek, to determine how much floodplain area is currently accessible. KHL should then use current and unimpaired hydrology to determine the frequency, duration, and magnitude of floodplain inundation under both scenarios as well as the total area and depth of inundation during the ecologically important spring snowmelt season. KHL should work collaboratively with licensing participants to define additional, specific ecologically important time periods for floodplain inundation modeling.

e. Natural Gradient Impediment/Barriers

Information from the peak flow, dam spill and the Powerhouse analyses should be used to analyze project effects on hydrology at partial and full natural impediments or barriers to adult salmonid migration. KHL should analyze helicopter video, ground surveys and the results of previous studies to identify these natural gradient features within the study area. Once a barrier is located, GPS coordinate points of its location should be recorded and a number of physical measurements should be taken which include: height of falls, depth of plunge pool, velocity, slope and depth of fish exit. While initial sampling should take place during annual low-flow conditions, once a barrier is located, the same

Drainage Basins. GSA Bulletin. 5. p. 596-611.

²⁰ Dunne, T. and Leopold, L.B. 1978. Water in Environmental Planning. W.H. Freeman and Company.

²¹ Poff, N.L., J.D. Allan, M.B. Bain, J.R. Karr, K.L. Pretegaard, B.D. Richter, R.E. Sparks and J.C. Stromberg, 1997. The natural flow regime: a paradigm for river conservation and restoration. *BioScience* 47(11):769-784.

physical measurements should be taken to the extent safely possible during flows greater than 200 cfs.

Alteration of the hydrograph at these barriers affects the hydraulic characteristics at the potential barrier, and, therefore, anadromous immigration potential. Average daily flow for all three watershed development scenarios should be developed at any potential barrier found. Analysis of the hydrology under the different watershed scenarios should be combined with the physical attributes of the barrier and species criteria, to develop a comprehensive assessment of fish passage “windows”, the dates and durations when adult salmon would likely be able to ascend the barrier under different scenarios. This information should be supplied to partly fulfill the Anadromous Ecosystem Effects Analysis information request.

f. Hydrologic Change

Climate change models project that the greatest increases in temperature will occur at high latitudes. Over the past 50 years, Alaska has warmed at more than twice the average rate for the rest of the United States. Average annual temperature has increased 3.4 °F (2.1 °C), while winters have warmed by 6.3 °F (3.5 °C) (Karl, et al. 2009). As a result, climate change impacts could be expected to be more pronounced in Alaska than in other regions of the United States. Among other effects, higher temperatures should contribute to earlier spring snowmelt, a higher percentage of precipitation falling as rain instead of snow, and glacier retreat.

In order to determine the effect of increasing average annual temperatures on annual average streamflow, therefore, major factors to be considered include climate change effects on precipitation, evaporation, transpiration, snow ablation (direct change in phase from solid to vapor), and the net rate of glacier loss. Increased flows from glacial melt can be more than balanced by reduced runoff due to increased evaporation and transpiration. Power studies have traditionally used historic flow records as the basic hydrologic input data. KHL should continue to use inflows developed directly from USGS records as the basic hydrologic input dataset for the reservoir operation and power studies. However, KHL should also consider alternative hydrologic input datasets, which account for potential future hydrologic change.

G. Goals and Objectives

The goals and objectives of the DLA and the information to be obtained should include:

- 1) Accurately quantify the effects of the Project on hydrologic regimes at a relevant temporal and geographic scale, that in turn affect anadromous fish and their habitats. If this request is incorporated in KHL’s Study Plan and implemented in a scientifically defensible manner, the results would inform NMFS’ decisions with respect to this ILP, consistent with conservation resource goals and objectives with respect to anadromous fish, listed species and their habitats;

- 2) Develop information that will be aggregated with other information requests to determine the Project's effects on anadromous fish, listed species and the ecosystems that support them.
- 3) Resource Management Goal and Objectives apply with respect to species listed under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 U.S.C. §1801 *et seq.*) and the Endangered Species Act (ESA) (16 U.S.C. §1531 *et seq.*), as well as anadromous species that are not currently listed but are affected by continuing operations of the Project or may require listing in the future. Project management goals and objectives, therefore, must include:
 - i. Protect, conserve, enhance, and recover native anadromous fishes, listed species and their habitats by providing access to suitable habitats and by restoring fully functioning habitat conditions for related rearing and feeding, migration, spawning, and adjoining riparian and aquatic benthic macroinvertebrate (BMI) habitats;
 - i. Identify and implement measures to protect, mitigate or minimize direct, indirect, and cumulative impacts to, and enhance native anadromous fish and subsistence resources, including related rearing and feeding, migration, spawning, riparian and BMI habitats, protection from adverse Fish Hatchery operations and predation, and ensure coordination within and outside of the Project to minimize risk to anadromous fishes.

Conclusion

We have been provided insufficient time to provide adequate comments on the DLA due to Kenai Hydro LLC's history of excluding the general public from participation in the licensing process, the manner in which the DLA was submitted for review and comment and the lack of adequate data collection and information gathered to support scientific and other conclusion provided. In addition, DLA should include the river-specific standards and goals and objectives listed in section IV of these comments. Finally, KHL must be required to hold public meetings in additional locations that are economically and/or environmentally affected by the Project (in which adequate notice is provided) including in Homer, Seward and Grants Pass, Alaska.

Thank you for your attention to these comments and this request. Please contact me if you have any questions regarding these comments.

Sincerely,

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Cc: Intervening Parties via FERC mailing list.

Document Content(s)

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ORIGINAL

June 25, 2015

**Secretary Kimberly D. Bose
Federal Energy Regulatory Commission
ATTN: DHAC PJ-12.2,
888 First Street, NE
Washington, DC20426**

FILED
SECRETARY OF THE
COMMISSION
2015 JUL -1 A 11: 17
FEDERAL ENERGY
REGULATORY COMMISSION

RE: Grant Lake Hydroelectric Project P-13212 DLA

Dear Secretary Bose,

I am writing this letter today to express my concerns regarding what I feel are significant unanswered environmental issues associated with this project.

I also write this letter today because the applicant for the above permit, Kenai Hydro LLC, clearly states in their May 15, 2015 to you that the 90 day review period for making comments on this project ends on or before Jun 25, 2015. Which seems somewhat surprising and confusing as the applicant's own web site and other applicant information available to the public concerning this project clearly indicates Jun 29, 2015.

The Kenai River is unique and known to sport fishermen the world over because trophy, world record size, King Salmon inhabit the river and spawn in its tributaries. Grant Creek, the site of this hydro project, is a spawning area for these special king salmon, and other species of salmon and trout as well. The waters of Grant Creek drain into the Kenai river.

I am a life long Alaskan and have fished this particular river, Grant Creek for over 55 years. In the late 50's and early 60's spawning salmon and various trout were abundant, until the March 64 earthquake. During the following summer months a fish could not be caught. They were gone. They were just not there anymore. The ground shook for a few minutes, and several months later they were gone. The earthquake proved to me just how fragile these streams really are.

Others took note. In a noble effort to protect the world famous Kenai River and its tributaries, a wide variety of Federal, State, Borough, and City government entities over the years have made numerous and extensive environmental studies of the Kenai River and its tributaries, with special attention to the anadromous steams such as Grant Creek.

These environmental surveys and studies resulted in some of the most comprehensive and strictly enforced environmental laws and regulations in America. So vast and constantly changing were these regulations that The Kenai River Center was established to act as a clearing house for facilitating the issuance of permits and information.

To illustrate how just intense these environmental regulations are, the Kenai River Center created a useful publication, A GUIDE TO OWNING AND MANAGING WATERFRONT PROPERTY ON THE KENAI PENINSULA. On page 49 of the publication they suggest the following:

"If you are going to fish from your waterfront property, consider either standing in the river or on an elevated, light penetrating platform on the bank."

It seems pretty clear to me that there are a lot of Federal, State, Borough, and Local government entities that are very serious about the environmental health of the Kenai river and its anadromous tributaries.

Now comes the applicant, Kenai Hydro, LLC offering assurances to your organization and the public that they can build and operate this hydro project with little or no impact on the environment. These assurances based on an extensive and comprehensive two year study completed by their environmental consultants. Based on this two year study, Kenai Hydro offers that the project construction will be closely watched and that water temperature readings and water flow readings will be constantly monitored, and suggests that by doing so will ensure no damage to the environment, and might even enhance the river environment. Maybe give a helping hand to mother nature, so to speak.

The various government entities that are tasked with environmental regulation and enforcement on the Kenai River have over 50 or 60 years of environmental studies and surveys which have resulted in the strict regulation and enforcement to protect the River that we live by today.

I think 50 or 60 years of studying and surveying the river are a lot better than two.

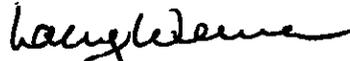
But Kenai Hydro appears extremely proud of their environmental efforts and the quality science behind this project. That fact is mentioned frequently to the press, public, and of course in their cover letter to you.

Are they proud enough to offer a guarantee to the public and other interested parties that there will be no harm to the environment or streams? A real guarantee, possibly post a bond or something.

Concerning public access, if their request is approved, I would suggest no public access is allowed, at least for the first few years. A period of no access until the environmental concerns associated with the project can be properly addressed and discharged.

I respectfully request that you decline Kenai Hydro's request dated May 15, 2015 concerning FERC No. 13212 because the environmental concerns and considerations have not been explored thoroughly.

Sincerely



**Larry Werner
P.O. Box 242782
Anchorage, Alaska 99524**

Document Content(s)

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June 25, 2015

Secretary Kimberly D. Bose
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Via electronic filing

Reference: **Docket P-13212 Grant Lake and Grant Creek Hydroelectric Facility. Comments on draft license application.**

Dear Secretary Bose:

I've read the draft license agreement (DLA) filed by Kenai Hydro, LLC and have the following comments regarding the recreation and aesthetics studies. The recreation study falls short of providing a complete understanding of recreation patterns and fails to adequately address future impacts. The aesthetic study considers the big picture but fails to properly assess it and draws exactly the wrong conclusions about impacts.

Problems with the recreation study

The study relies on short visit and anecdotal information. For example, rather than a controlled assessment of usage over a relevant period of time, KHL determined the level of fishing use on Grant Creek by relying on the anecdotal observation of the project fisheries research team who noted approximately 12 anglers on Grant Creek over the entire summer and fall data gathering period.

The study relies on information gathered at four camera locations, one of which gathered information on bathroom habits of travelers, a significant breach of assumed privacy. "Rest room facilities are limited in the area for

recreation users. A camera that has been posted at the Vagt Lake Trailhead has shown that the pulloff at that location is often used as an “unofficial” place for relief and approximately 300 motorists along the Seward Highway paused at the Vagt Lake Trailhead for “break” purposes of one type or another during the period March 31 to September 30, 2014.” Such an invasion of privacy is unprofessional at best.

The study fails to recognize the most popular winter activity: ice skating. Dozens of families use the area for hockey (a Moose Pass resident plows a rink and skating trails) and long distance skating. When conditions are favorable, the entire surfaces of Upper Trail Lake, Lower Trail Lake, Vagt Lake and Grant Lake provide exceptional opportunities.

Recreational hunting was addressed only by recognizing that the project area falls within ADF&G game management unit 7 which extends from Gore Point to Girdwood, a distance of 152 miles. Zero relevant and specific usage data was considered.

The recreation study did not consider the recreational and visual impact of above-ground transmission lines despite KHL identifying above-ground transmission as their preference (DLA E-11).

KHL’s study contains many unsubstantiated statements like, “Ice fishing is not expected to expand beyond the existing use” (DLA E-353) and “the use of Grant Lake by non-motorized users tends to be small to absent in the winter” (DLA E-354). The study fails to provide supporting evidence of current or anticipated usage. The KHL minutes from the November 6, 2014 meeting inaccurately state the following: “these uses have been quantified in the current study”. They haven’t.

Had KHL conducted a user study, they would have gained a valuable perspective on the variety of recreation, locations and season specific knowledge. Over the course of the lengthy application and study process

(since 2008), KHL has heard frequently that the public values wildland recreation and has major concerns about impacts.

At a public meeting in Moose Pass on November 6, 2014, the recreation study's author was asked why no user study had been conducted. The author mentioned the difficulty of assessing "latent demand". Another KHL presenter asked (rhetorically) what communities should be surveyed, Cooper Landing, Seward, snowmachiners from Anchorage? And what questions should be asked to elicit the desired information? It was astonishing that the public was expected to have these answers. And the way the questions were posed was meant to suggest that such a study would be difficult and maybe irrelevant.

But it is technically feasible to conduct extensive community interviews. For example, in March and April of 2001, ADF&G researchers conducted 203 interviews with residents of Moose Pass and Seward (Wild Resource Harvests and Uses by Residents of Seward and Moose Pass, Alaska 2000; Davis, Brian and J. Fall and G. Jennings).

Had KHL bothered to interview users, they would not have needed to speculate on snowmachine use: "However, it is expected that the Saddle Trail and the mine access road both of which are north of Grant Creek *may* provide access to Grant Lake for snowmachining" (DLA E-341). Nor would KHL have revealed its unfamiliarity with the community by identifying "Trail Lake" (DLA E 4-88). No one refers to it as Trail Lake; it's either Upper Trail Lake or Lower Trail Lake. Nor would they have failed to recognize that the Alaska Railroad trestle is on Upper Trail Lake, not Lower Trail Lake (DLA E-353).

At the November 6, 2014 meeting, I asked the recreation study author if he/KHL would consider a comprehensive usage study involving Seward, Moose Pass and Cooper Landing. His response? "How would this be relevant to the questions for Grant Lake?" That statement starkly reflects

the author and KHL's misdirected and unprofessional treatment of recreation.

The most disruptive impact to recreation will be the access road. Yet KHL failed to address it in any meaningful way, instead deferring discussion to a later date. KHL has provided no outline of how public and agency review will be evaluated. "If however, the local public would prefer access be allowed via the Project related corridor, further discussion with respect to specifics of the access infrastructure would be discussed with stakeholders and the public prior to implementation". Within the DLA (E-359), KHL admits that it doesn't understand public preference for the access road. Had KHL invested in the recreation study more than a brief nod, they would understand public preference.

At the November 6, 2014 meeting at which KHL presented its study results, KHL lamely passed around a questionnaire asking whether the access road should be open or closed. It was a haphazard and unprofessional approach that could yield no reliable data.

Aesthetic resources

KHL's study of visual resources provides an academic overview of how visual impacts are assessed but fails to gain any insight into the value of scenery to user groups.

Three user groups are identified - residents, tourists and flight seers. Flight seeing, it should be noted, is probably not a large user group though how significant, is not identified by KHL. A more significant user group are passengers on the Alaska Railroad (ARR). The study correctly notes that drivers are exposed to scenery (natural or disrupted) for only seconds. But ARR passengers enjoy longer periods of exposure and take the train specifically to enjoy the view. Yet the viewshed conditions and impacts from the passenger's view point are not considered.

The study identifies four key views (DLA E-376). The number, location and season of examination is too limited to provide an understanding of impacts. More views that reflect actual experience by viewers should be considered, especially at the Vagt Lake trailhead, points within/on Lower Trail Lake, on Grant Lake and from several points along the railroad and Seward Highway. All views should be assessed during full foliage and during the winter.

Specifically, key view 1 isn't relevant but accurately mentions that driveways are a common feature along the highway. Key view 2 is from the air, not a common viewpoint plus the photo doesn't show the surge tank, transmission lines, the entire access road or detention pond. It is incomplete and irrelevant. Key view 3 presents only one of many possible views from the highway. Key view 4 is relevant and helps viewers understand anticipated changes.

The access road will require a bridge, yet the visual impact is not addressed. The visual disturbance of the above-ground transmission line which KHL prefers (DLA E-11) was not addressed at all. It doesn't appear in any of the key views. Nor does the 95 foot tall surge tank, certainly visible from a distance, get any attention.

KHL claims that Project's intake structure and the access road would be unseen by those along the lakeshore and surface of Grant Lake (DLA E-375). This is incorrect. The intake structure, access road, parking lot and security lights would be visible from nearly any point of Grant Lake's western leg. (Incidental to the discussion of visual impact, KHL also reveals its failure to understand the recreational uses of Grant Lake by claiming that boaters gain lake access by packraft and airplane. Most summertime boaters use canoes. At least six canoes and one Zodiac inflatable boat stashed on the shoreline are known to exist. Additionally, the study mentions that "[project components] would be seen in the middleground for those who hike around the lake". Because the shoreline is choked with deadfall, no one hikes around the lake.)

Apart from the impact to visual resources from the infrastructure is the impact on the shoreline of Grant Lake. A drawdown of 13 feet vertically could translate to an enormous horizontal exposure of shoreline, especially at the east end of the lake where it is presumed to be more shallow. KHL claims that “the lower level attributed to KHL would persist for more periods of time though the character would be similar to that of historic patterns, perhaps slightly pronounced”. “Slightly pronounced” is at best an understatement. Visitors to the lake in the fall and early winter will see a significantly changed, more exposed and scoured view of the shoreline and lake bed as a result of the drawdown.

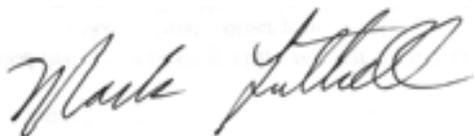
KHL mentions that a “change in lake level could provide evidence of vegetation die back as the vegetation adapts to changing lake levels” (DLA E-382) though fails to mention if this alleged dieback is aquatic, nor its location, species and extent. But KHL does admit this: “This vegetation as it dies, or the remaining shoreline as the lake level changes, would provide an expanded shoreline around the lake. While this could occur, there are currently natural seasonal fluctuations at the shoreline edge and during drought conditions the shoreline currently is visible as an exposed edge, thus the possible shoreline expansion would be an increase to the visibility of the shoreline rock edge, not a new condition”. This adverse effect is grossly understated. The horizontal expression of a historically unprecedented 13 foot drawdown would very much be a new condition. It will provide a version of a bathtub ring and a significant change to recreation patterns. It will be extraordinarily visible and be used as a recreation corridor. KHL then claims that the rock edge will be “visible to those traveling by foot but less conspicuous to those traveling over the area by plane. This would be a minor change to the shoreline landscape”. This is exactly opposite of what is expected. Those traveling by air would see the entirety of the changed landscape. They’d see the contrast between the snow covered terrestrial edge and the bare and exposed “rock edge”. But, oddly, by KHL’s own admission, “there is little small aircraft traffic in the winter” (DLA E-363).

Most of the components of the industrial facility will be visible throughout the winter but will be made especially so by the presence of security lighting. Nowhere in the DLA is the location and impact of lighting adequately addressed though the topic is dismissed with “there should be little indication of lighting, if any, that would compromise the dark skies visible from key viewpoints or from any locations near Moose Pass “(DLA E-384).

Astonishingly, the aesthetic resources study concludes with, “no negative cumulative effects were identified associated with aesthetic resources. Given that the local area is heavily forested, visual anomalies associated with Project construction and operation would be minimal to non-existent from the local community of Moose Pass (see Figure E.4-112). Any Project impacts would be localized and unseen by most viewers” (DLA E-385). No thoughtful reviewer could come to that conclusion.

Opportunities for recreation and enjoyment of spectacular scenery are critical reasons why people choose to live in and near Moose Pass. Yet KHL’s recreation and visual studies are cavalier in depth, at times grossly incomplete and frequently inaccurate. While reading through the other natural resource studies provided by KHL, a reader might be impressed with the specificity and quantity of the data. Yet when it comes to the impact on the aesthetic values of the daily lives of locals, KHL’s effort is cursory.

With respect,



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Document Content(s)

Mark Luttrell DLA comments.PDF.....1-7



United States Department of the Interior
NATIONAL PARK SERVICE

Alaska Region
240 West 5th Avenue, Room 114
Anchorage, Alaska 99501

IN REPLY REFER TO:
I.A.I.(AKRO-EPC)

Kimberly Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE Washington, DC 20426

Re: Draft License Application for Kenai Hydro, LLC - Grant Lake Hydroelectric Project, Moose Pass, Alaska (FERC No. 13212)

Dear Madam Secretary,

The National Park Service Hydropower Assistance Program has reviewed the Draft License Application (DLA) for the proposed Grant Lake Hydroelectric Project, located near the community of Moose Pass on the central Kenai Peninsula, Alaska. We offer the following comments and suggestions for KHI's consideration during preparation of the Final License Application, and for FERC's review of the FLA and preparation of its own environmental analysis of the project proposal.

The Grant Lake Project would consist of the Grant Lake/Grant Creek development, an intake structure in Grant Lake, a tunnel, a surge chamber, a penstock, a powerhouse, a tailrace channel with fish exclusion barrier, a tailrace detention pond (which was not mentioned in applicant's DLA Exhibit A project description summary), access roads, a step-up transformer, a breaker, an overhead transmission line, and a switchyard. The powerhouse would contain two Francis turbine generating units with a combined rated capacity of 5 MW with a maximum design flow of 385 cubic feet per second (cfs).

Traditional Licensing Process

At KHI's request, and with the consent of resource agency and other stakeholders, the FERC granted approval for use of the Traditional Licensing Process (TLP) for this project, in lieu of the default Integrated Licensing Process, in September 2009. In contrast to the ILP, the TLP relies on informal consultation regarding study topics, methods, and results, between the applicant, resource agencies, and stakeholders prior to the license application, with no strict notice and comment deadlines and far less involvement by FERC during the pre-application period.

The NPS has been engaged on this project since the Pre-application Document was filed in 2009. We participated in scoping, reviewed and commented on study plans and study reports, and participated in stakeholder meetings and site visits. We have focused our review of the DLA on

two major issues: 1) the adequacy of data collection to characterize the baseline condition of the project area's recreational and aesthetic resources, and 2) the accuracy of the DLA's description of likely project impacts.

Because we still have some concerns about both the adequacy of baseline data collection and the accuracy of KHI's preliminary assessment of project impacts, we are as-yet unable to formulate Section 10(a) recommendations that, if incorporated in a license, would enable the FERC to give equal consideration to the non-power uses of the project area. We note in our comments below where data gaps or potentially unsupported statements in the DLA will need to be remedied in the FLA before NPS, other stakeholders, and the public can develop recommendations to reduce or compensate for project impacts.

In contrast to most other resources that would be affected by this project, no draft management plans to mitigate the project's impacts on recreation or aesthetics have been submitted by KHI in conjunction with its DLA filing. (The Public Access and Safety Plan KHI proposes to develop post-licensing appears to differ from a true recreation management plan.) NPS and other agencies discussed the need for a recreation management plan for the project area on several occasions during the consultation process, including at the March 18th, 2014 meeting. At that meeting, NPS expressed concern about the lack of baseline recreational use data for the project area. We also noted the need for more baseline information about recreational use conflicts and visitor safety. At the conclusion of the March 2014 meeting, KHI committed to convening a conference call among NPS, U.S. Forest Service, and Alaska DNR staff to discuss these data needs and recreational management planning for the project area, but to NPS's knowledge, this call never took place. NPS remains concerned that, without better information about existing recreational use in the area, it will be difficult to develop 10(a) recommendations to mitigate project impacts on this important resource. A short-coming of the TLP is that issues such as this can fall through the cracks, with no formal deadline for parties to reach agreement.

Likewise, the DLA includes no details on the impacts associated with rerouting the Iditarod National Historic Trail away from the existing easement that was conveyed by the State of Alaska for trail construction purposes over a decade ago. KHI proposes to wait until after the project license to determine where the trail will be located, and, presumably, to determine what its role would be in managing recreational use of the trail as it crosses project lands. It may prove premature for FERC to consider the project ready for environmental analysis when the project's impacts on a nationally- designated trail are as yet unknown. Delaying the determination of where the INHT should go, if not within the existing easement, until after a final decision has been made on project facilities that affect this existing easement, could result in significant impacts to trail users. NPS understands that multiple parties are involved in any INHT relocation decision, and that such decisions take time. However, we urge KHI to delay issuance of its FLA until this decision is final. Only then will stakeholders and FERC be able to assess the actual impacts of the rerouting decision, describing alternatives as mandated by NEPA and assessing whether the applicant's proposed mitigation measures adequately compensate for the impacts of the proposed project.

Our detailed comments on the DLA follow.

1) Baseline Data Collection

NPS observes that KHI has based its characterization of the project area's baseline recreational and aesthetic resources on very few field observations. For example, to our knowledge, the DLA's description of winter recreational use is based on a single day of observation: Saturday March 3rd 2013. Likewise, summer use as described in the DLA appears to have been based on what was observed on Friday, July 12th, 2013, which was not even a weekend day. We have previously commented on the inadequacy of basing conclusions about a broad range of activities and users on a single day of observations, especially given the dependency of use on weather conditions, work schedules, fishing and hunting season dates, and, in winter, snow and ice conditions. In response to our comments, KHI has stated that the level of effort they intended to devote to baseline recreational resource data collection was commensurate with the importance of this resource in the project area.

At the September 2013 site visit, we suggested that field staff already present in the project area, working on aquatics and terrestrial resources, utilize incidental observation forms to record encounters with recreational visitors. However, it appears that this method of augmenting recreational use data collection was not implemented. It is unfortunate that several weeks' worth of potential observations, that could have been compiled at no great additional cost, were lost. Numerous stakeholders have attested to the project area's recreational importance at meetings and in scoping comments. Area land use plans (state, borough and Forest Service) also attest to the project area's high recreational values, both to residents and visitors. Tourism is one of the few sectors in the local economy. Based on this, NPS thinks recreation and associated aesthetic resources deserve more attention than KHI has chosen to give them during the study process. We urge KHI to rethink its strategy. Without reliable data on baseline resources, NPS doubts the FERC will be able to assess project impacts. Nor will NPS or stakeholders have a basis for developing recommended license conditions to avoid, minimize, mitigate or compensate for project impacts.

In addition, KHI, contrary to our requests, has not attempted to determine what kinds of recreational experiences are currently supplied by the project area, and how changes in the availability of such experiences might result in displacement if the project is licensed. The DLA includes no survey data, just estimated head counts of users based on four trail camera locations during spring and summer. These camera locations did not include the lake itself, or many other areas that are accessible during the winter, when snow and ice cover allows off-trail uses. Mere numbers of users, even if the recreational studies had adequately included all areas that could be affected by the project, and in all four seasons, do not suffice to inform the public or FERC about licensing trade-offs. Without basic social science (i.e. user surveys, not just head counts) to determine why existing users go where they go within the project area, what kinds of experiences they seek, whether they experience conflicts that could be mitigated through project design and management, and whether project construction and operation, or the presence of project facilities, would cause them to go elsewhere (displacement), it is virtually impossible to assess the project's likely impacts on recreational resources.

With respect to aesthetic resources, NPS has two main comments. First, the project area's soundscape was apparently surveyed on only two days (the same March and July dates upon which the winter and summer recreation study was based), using a hand-held monitor, at a very limited number of locations. The DLA provides no information about whether the monitor was adequately calibrated, what its sensitivity and accuracy was, or exactly where the samples were taken, or their duration. Based on this, it is impossible to determine whether the sampling methods used resulted in reliable data. NPS notes that on a proposed major original hydropower project in Alaska, the Susitna Watana project, P-14241, multiple fixed monitors that operate continuously over many months have been used to sample the project area's soundscape baseline. While Grant Lake is a far smaller project in a less remote location, nonetheless measurements taken for a least a few days during summer and winter in locations where recreational use is likely to coincide with the location of project facilities (e.g. the project road and powerhouse) would have done much to ensure an accurate baseline against which the impacts of project construction and operation could be assessed. In the absence of such data, it will be difficult if not impossible to develop 10(a) recommendations.

Second, NPS takes issue with the identification of the Key Observation Points (KOPs) used to collect baseline visual resource data and to assess the project's impacts. Contrary to commitments made when the project was first initiated and use of the TLP was approved, and contrary to KHI's statement on p. E-338 of the DLA that input on KOP locations was sought from agencies and stakeholders, NPS was never contacted about this. To NPS's knowledge, a functioning Recreation and Aesthetics TWG was never formed. Discussions of these resources at project meetings with resource agency staff, including comments on scope of studies, proposed methods, and preliminary results, were brief, and despite requests made at these meetings by the Forest Service, NPS, and others, no separate conference calls were scheduled (or if they were, NPS was not notified) to go over the details of the aesthetics studies. As a result, the project's visual resource assessment work was based on too few KOPs located in the wrong areas.

For example, none of the four KOPs included the falls or cascades immediately below the outlet of Grant Lake. While few people currently view this scenic feature in summer because there is at present no trail to the area, the number of current winter viewers is unknown because use at this location does not appear to have been studied. Also, over the life of a 30-50 year license, it is possible, even likely, that a trail to a feature like this will be constructed, especially once the INHT is in place.

2) Impact Assessment

4.8.2.1.1 Winter Use and 4.8.2.1.2 Summer Use

KHI does not describe the likely increase in recreational use in the area over the next 30-50 years even if the project is not built. It is necessary to predict these increases, and changes in activity types and sought-after experiences, in order to fully describe the project's baseline conditions.

4.8.2.1.3 Sight-Seeing Flights (Aircraft) – KHI states on p. E-353 “It is not expected that sight-seeing flights will be affected by the Project.”

What about the extensive new infrastructure associated with the project, including a mile-long 100' wide cleared road to the intake, another mile-long 150' wide clearing for the road and T-line to the Seward Highway, the powerhouse, and a five-acre detention pond? Presumably most flight-seers come to the Kenai Peninsula from more populous areas, seeking vistas of undeveloped landscapes. Post project, however, they will see extensive areas of cleared forest, new roads, a transmission line, a powerhouse, and, depending on project operations, a "bathtub ring" along the shores of Grant Lake.

4.8.2.1.5 Noise – KHI states on p. E-354 that "the use of Grant Lake by non-motorized users tends to be small to absent in the winter in particular, thus the overall impact [of increased snow machine use due to the project on non-motorized users] to existing conditions would be relatively small."

Since KHI did not adequately study non-motorized recreational use of the lake, this statement is not supported. In contrast, numerous residents have stated that they enjoy Nordic skiing on the lake.

4.8.2.1.6 Construction – The DLA does not mention whether any trail closures would be needed to protect users during the construction phase of the project. Since Alaska's summers are short, and both construction and recreational users will want to access the project area as much as possible, this is an important detail. Please include this in the FLA. Such details are one of the reasons it is desirable to develop a draft Recreation Management Plan prior to licensing.

P. E -359 -- Public Safety and Access Plan – Why was KHI unable to develop the draft PSAP sooner, so that it could be filed with the DLA instead of the FLA? The TLP consultation requirements for recreational resources are no different than for other resources. NPS does not understand why it was not within KHI's ability to develop this important plan, and associated proposals to make project lands available (or not) for recreational access, provide new recreational facilities, etc., sooner in the process. We note that had a Recreation and Aesthetics TWG been formed to consult with KHI on this and other issues, it would likely have been possible to disclose alternatives for public comment and narrow down the range of likely scenarios for public access sooner.

4.8.4. Cumulative Effects Analysis – KHI has not addressed the potential for displacement of current recreational users from the project area to other locations as a result of the project. This issue should be addressed in the FLA.

4.9.1.1. Viewers – Were any actual viewers interviewed to confirm this section's findings, or are they solely based on professional judgment?

P. E-375 – The DLA states that viewers would "possibly" see transmission lines. Presumably this section of text was written before KHI decided on overhead rather than buried transmission and power lines, as described in the project summary narrative. This section should be revised to acknowledge that the power line from the intake to the powerhouse and the transmission line from the powerhouse to the highway will be overhead.

4.9.2.2.1 Key View 1: Access Road from Seward Highway -- The photo rendering of this viewpoint does not take into account a viewer's ability to turn and look down the new road intersecting the right hand (eastern) side of the highway once the viewer draws abreast with it. This tends to underestimate project impacts. Please include a more accurate rendering in the FLA, i.e. a view from the Seward Highway down the 150' wide clearing for the new access road.

Figure E 4-113 – This rendering lacks the additional cleared width now proposed to accommodate an overhead transmission line, and the transmission line itself. The actual cleared ROW is proposed to be 150' wide; the rendering version seems narrower. Like the rendering of the Seward highway view, by showing what the intersection looks like as one approaches it, rather than as one arrives at the intersection and turns one's head, the rendering presents project impacts in the best possible light. For those on foot, skis, bikes or snow machines in particular, this is not a realistic view. They are not inside a vehicle with somewhat restricted lateral visibility, and are not traveling at highway speeds. They are instead very likely to pause as they cross the road, and look up and down it. Please include a rendering of this view in the FLA.

The FLA should also include details of the transmission line route, and renderings of it at various points along the access road. Will it be possible to site the line to minimize visual impacts, e.g. taking into consideration grade changes, nearby forest types, etc.?

P. E-383 – Construction period visual impacts – will no materials need to be staged near the highway, along the new road, or in other areas visible to recreational users during the construction period? If not, where will materials like power poles and building materials be stored? Where will borrow pits or debris stockpiles be located? Please provide more detail in the FLA.

Other Comments

In Figure E4.4, the legend presents the five relative shoreline wave erosion vulnerability categories alphabetically. It would be much easier to understand the figure if these relative vulnerabilities were listed in order of severity.

Please add the tailrace detention pond to the narrative description of your proposed project. Clearing and grubbing to create this pond is mentioned in table E 4-96, but if the pond would be five acres in area, how can the total area of affected vegetation be less than this: i.e. 3.12 acres, as reported on p. E-307?

Table E-96 does not include vegetation cover changes due to wind throw or mass wasting along the new road and transmission line ROWs. What is the likelihood of these events?

NPS appreciates the opportunity to provide these comments on the DLA, and looks forward to working with KHI, other agencies, stakeholders, and the FERC to ensure that the FLA and associated NEPA documents accurately assess the proposed project's impacts on recreation and aesthetic resources, so that we may perform our duties under the Federal Power Act by developing related Section 10(a) recommendations. If you have any questions about our

comments, please contact Cassie Thomas, Hydropower Assistance Program coordinator for AKR, at (907) 350-4139 or cassie_thomas@nps.gov.

Sincerely,



Joan B. Darnell
Team Manager, Environmental Planning and Compliance

Document Content(s)

NPS Comments 06-25-15.PDF.....1-8



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Kenai Fish and Wildlife Field Office
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Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., Room 1A
Washington, D.C. 20426

June 25, 2015

Re: Grant Lake Hydroelectric Project (P-13212)
Draft License Application

Dear Ms. Bose:

The U.S. Fish and Wildlife Service (Service) has reviewed the Draft License Application for the Grant Lake Hydroelectric Project (FERC Project Number 13212; Project). Comments to previous reports and filings have been provided by the Service to protect fish and wildlife resources pursuant to Section 10 (j) and Section 18 of the Federal Power Act (FPA), and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), Migratory Bird Treaty Act (MBTA), Bald and Golden Eagle Protection Act (BGEPA), Clean Water Act, and the National Environmental Policy Act. Our comments from 2010 on the draft study plans are attached for reference.

Although several of our suggestions in 2010 for biological monitoring were implemented during the 2013 field season, the biological studies, analyses, and assessments to date for all species represent a snapshot in time and are not sufficient to describe population status for fish species that could be affected by the project or differentiate potential impacts of the Project from natural background variation. We urge caution interpreting analyses and conclusions that are based predominantly on a single year of biological sampling. Also, studies were not designed (as recommended in 2010) to quantify potential project impacts and cumulative effects at the appropriate spatial and temporal scales identified by FERC: the Kenai River watershed over the time frame of 30 to 50 years. Studies to date and analyses of cumulative effects have failed to place the fisheries resources in Grant Creek in perspective to their contribution to overall stocks in the Kenai River watershed.

We urge caution interpreting analyses and conclusions regarding Chinook Salmon abundance, spawning distribution, and juvenile rearing since studies conducted in 2013 occurred during the lowest abundance of early-run Chinook Salmon in the Kenai River that has ever been documented. Chinook Salmon in Grant Creek and other tributary streams are a component of the early-run and were also at extreme low levels of abundance in 2013. Similarly, low numbers of adult Chinook Salmon returning to the Kenai River (and Grant Creek) in 2012 likely affected abundance, habitat use, and distribution of juveniles sampled in 2013. Spawning distribution of adult salmon and habitat use by juveniles likely vary with changes in overall abundance, and

current analyses of potential effects are based on the lowest abundance of Chinook Salmon ever recorded in the Kenai River.

Although the proponent identifies several potential geomorphic responses from Project operational conditions that could affect spawning habitat over time in Table E.4-6, no Cumulative Effects or Unavoidable Impacts were identified. The proponent also states that *“Many of the geomorphic responses and the resulting impacts to spawning substrate are anticipated to occur incrementally over time measured in years and decades.”* These potential responses from Project operations that could affect spawning substrate and fish populations will likely occur within the 30- to 50- year time horizon of consideration identified by FERC and should be quantified and addressed as Cumulative Effects, and if necessary, Unavoidable Impacts of the Project. Since the Project proponent has already identified potential mitigation measures such as gravel augmentation, more detail should be provided to quantify the need over time.

Although the Project proponent acknowledges likely reductions in streamflow in Reach 5, much of Reach 4 is upstream of the tailrace and flows will also be altered during Project operations. All fish species (resident and anadromous) utilize habitat in Reach 4 upstream of the tailrace, and this stretch of Grant Creek provides important spawning habitat for Coho and Sockeye Salmon and important rearing habitat for all fish species including Chinook Salmon. Although the Project proponent provides modeling and analysis for fish access to Reach 5 with proposed bypass flows of 5 and 10 cfs, no modeling or analyses are provided to estimate habitat availability in Reach 4 upstream of the tailrace using the same bypass flows. As the Project proponent acknowledges, proposed bypass flows into Reach 5 do not provide connectivity for Chinook Salmon and it is unknown whether or not the proposed bypass flows will provide connectivity for Chinook Salmon in Reach 4 above the tailrace. Analyses and conclusions that fail to consider reduced stream flows to the upper half of Reach 4 are incomplete.

Although no analyses were completed to assess adult spawning, egg incubation, or juvenile fish rearing in Reach 5 because study transects in the reach did not include suitable spawning habitat, Reach 5 and the upper half of Reach 4 provide important spawning, incubation, and rearing habitat for anadromous and resident fish species. The lack of spawning habitat within the study transects does not mean there is no spawning habitat in the reach, and the suitability of habitats for juvenile rearing is independent of spawning habitat. As stated earlier, we urge caution interpreting analyses and conclusions about the importance of Reach 5 (and the upper half of Reach 4) as spawning and rearing habitat for fish based predominantly on a single year of observations.

Given the limited time-frame of information collected to date, the Service must exercise caution in terms of developing recommendations that include benefits for the adequate protection, mitigation and enhancement of fish and wildlife resources. National Environmental Policy Act (NEPA) Regulation 40 C.F.R. 1508.27(b) requires consideration of certain factors, one of which is *Uncertain, Unique, or Unknown Risks*. Specifically...*“When determining the intensity and significance of a proposed action’s effects on the human environment, federal agencies are required to consider the degree to which these effects are highly uncertain or involve unique or unknown risks.”* Because fisheries and aquatic work to date represents a snapshot in time and does not account for any natural variation or provide a defensible baseline of information, the Service cannot effectively evaluate the Project’s potential ecological effects to Grant Creek or the rest of the Kenai River watershed and reasonably evaluate potential direct, indirect and cumulative effects on our trust resources. In 40 C.F.R. 1508.3, NEPA defines various effects

Ms. Kimberly D. Bose (FERC)
Grant Lake Hydroelectric Project (P-13212) DLA, USFWS comments

Page 3 of 3

that should be analyzed in preparing an Environmental Assessment (EA). *Ecological effects*, are defined as...*those effects on natural resources and on the components, structures, and functioning of the affected ecosystems*. We believe this Project, as proposed, has the potential to adversely affect the functioning of the Grant Creek ecosystem and its natural resources.

The Service appreciates the opportunity to provide comments and recommendations and looks forward to our continued involvement in the process. If you have any questions please contact me at 907-260-0132.

Sincerely,

Jeffrey L. Anderson
Field Office Supervisor

cc (via e-mail):
FERC, Ken Hogan
ADF&G, Monte Miller
NMFS, Susan Walker
USFS, Karen O'Leary
USFS, Robert Stovall
NPS, Cassie Thomas
USFWS, Ellen Lance
USFWS, Betsy McCracken
USFWS, Mike Buntjer
USACE, Katherine McCafferty
McMillen Jacobs Associates, Cory Warnock
HEA, Mike Salzetti



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Kenai Fish & Wildlife Field Office
43655 Kalifornsky Beach Road
Soldotna, AK 99669-8296

July 6, 2010

Mr. Brad Zubeck, Project Engineer
Kenai Hydro, LLC
3977 Lake Street
Homer, AK 99603

Re: Comments on 2010 Draft Aquatic, Terrestrial, and Water Resources Draft Study Plans

Dear Mr. Zubeck,

The U. S. Fish and Wildlife Service goal in making recommendations for the draft Aquatic, Water, and Terrestrial Resources Draft Study Plans is to develop a thorough understanding of existing fish and wildlife populations, habitat characteristics, and human uses that are potentially at risk from the proposed Grant Lake Hydroelectric Project (Project). Studies should be developed with the appropriate level of scientific precision and accuracy so that rigorous analyses can be made of the direct, indirect, and cumulative effects associated with Project development and operation. In many cases, the quality of information needed for understanding the potential effects of the Project is of finer resolution than information currently gathered or available for fisheries or resource management purposes. Data collected must be of sufficient quality to differentiate potential impacts of the Project from background natural variation and studies should be designed to quantify potential project impacts and cumulative effects at the appropriate spatial and temporal scales identified by FERC: the Kenai River watershed over the time frame of 30 to 50 years.

Following are some comments and suggestions that generally follow the layout of the Draft Study Plans. Our goal for providing these comments is to improve the quality of baseline data collected during the 2010 field sampling season to help evaluate potential Project impacts. If you have any questions regarding comments or recommendations please contact Lynnda Kahn at (907) 260-0131, or via e-mail at lynnda_kahn@fws.gov.

Sincerely,


Doug Palmer
Field Supervisor

cc: FERC, Mark Ivy

*USFWS comments on Draft Aquatic, Terrestrial, and Water Resources Study Plans July 6, 2010
Grant Lake/Falls Creek Hydroelectric Project Nos. 13212-001 and 13211-0011*

ADF&G, Jason Mouw
NMFS, Susan Walker
NMFS, Eric Rothwell
USFS, Karen O'Leary
USFS, Mary Ann Benoit
NPS, Cassie Thomas
USFWS, Phil Brna
USFWS, Fran Mann
USFWS, John Morton
AK Center for Environment, Valerie Connor

Aquatic Resources Draft Study Plan

Objectives

Specific objectives should be developed for each study component with a clearly specified level of precision and accuracy such that the objectives are statistically sound. With this in mind, we recommend that specific study needs and recommendations be based on the SMART objectives concept (Specific- concrete, detailed, well defined; Measurable- numbers, quantity, comparison; Achievable- feasible, actionable; Realistic- considering resources; and Time-Bound- a defined time line).

Attachment A (*Guidelines for Establishing Project Objectives for Biological Fisheries Investigations*) provides additional discussion concerning project objectives and the specification of statistical criteria. Currently, study objectives are not well-defined and results of the 2010 field work are likely to be ambiguous.

An example of a SMART objective with statistical criteria to estimate abundance of rainbow trout is as follows: “To estimate the abundance of rainbow trout > 250 mm in Grant Creek during May and June 2010 such that the estimate is within 25% of the true abundance 90% of the time.” This objective specifies an expected level of accuracy (within 25% of the true abundance) and precision (90% confidence interval) that can then be used to determine sample sizes of fish to mark and recapture to estimate abundance. For example, based on an initial guess at a population size of $N = 100$ spawning rainbow trout in Grant Creek, a sample size goal of $n = 40$ fish to mark and recapture will achieve the accuracy and precision stated above for a Petersen estimate. A study design can then be developed that addresses the assumptions of a mark-recapture experiment using rod-and-reel sampling that include efforts to minimize bias between sampling gears and crews, and identifies appropriate levels of effort to achieve sample size goals. If initial numbers of fish to mark cannot be achieved, equations can be solved to increase the number of fish to sample on the recapture events and still meet stated accuracy and precision levels. A similar objective and study design could also be developed for Dolly Varden. As currently written and planned for implementation, the rod-and-reel sampling study for rainbow trout will likely provide ambiguous results.

A second example of a SMART objective with statistical criteria to estimate the use of the canyon section by adult Chinook salmon is: “To detect the ultimate spawning destination upstream of the capture site in lower Grant Creek, via the presence of at least two tagged fish, of a population comprising 10% or more of all the Chinook salmon passing the capture site during each temporal stratum with probability 0.85.” Definitions of spawning destination (two tagged fish), population fraction (10%), and probability (0.85) can then be used to determine adequate sample sizes of fish to mark with radio tags. Using the above example, if sample sizes are achieved and no fish are detected in the canyon section, we would then be able to state with 85% certainty that less than 10% of the population uses that section for spawning. Similar objectives can be developed for sockeye and coho salmon. As currently written and planned for implementation, the radio telemetry study for Chinook salmon will likely provide ambiguous results.

We recommend developing SMART objectives with statistical criteria, sampling design, and methods that will provide quantitative estimates for the impact of Project construction and operation on commercial, sport, and subsistence fisheries supported by the Kenai River watershed. This is identified as a Goal/Objective/Impact on Page 2, but the Study Plan does not address this issue.

We recommend developing SMART objectives with statistical criteria, sampling design, and methods that will provide quantitative estimates for the impact of fluctuating levels in Grant Lake (Project operations) on fish populations. This is identified as a Goal/Objective/Impact on Page 2, but the Study Plan does not address this issue. We also recommend developing SMART objectives with statistical criteria, sampling design, and methods that will provide quantitative estimates for the impact of Project operations (changes in seasonal flow in Grant Creek, reduced flows between the dam and powerhouse on Grant Creek) on fish abundance and distribution.

We recommend developing SMART objectives with statistical criteria, sampling design, and methods that will provide quantitative estimates for the impact of Project construction and operation on biological productivity and abundance of fish food organisms in Grant Creek and Grant Lake. The current study design with samples from two locations will not provide enough information to fully evaluate potential project impacts because the current sampling design does not include any sample sites in Reach 5. We recommend including sample sites in Reach 5 to assess potential lost productivity since stream flow and available habitat will likely be reduced in that reach during Project operations.

We recommend developing SMART objectives with statistical criteria, sampling design, and methods that will provide quantitative estimates for the impact of the Project intake structure operation on fish populations. This is identified as a Goal/Objective/Impact on Page 2, but the Study Plan does not address this issue.

We recommend developing SMART objectives with statistical criteria, sampling design, and methods that will provide quantitative estimates for the impact of Project construction on fish habitat in Grant Creek. This is identified as a Goal/Objective/Impact on Page 2, but the Study Plan does not address this issue.

We recommend developing SMART objectives with statistical criteria, sampling design, and methods that will provide quantitative estimates for the impact of Project facilities (increased access) on fish populations due to potential increased recreational fishing. This is identified as a Goal/Objective/Impact on Page 2, but the Study Plan does not address this issue.

Salmon Spawning Distribution and Abundance

Estimating adult salmon escapement using walking surveys and area-under-the-curve (AUC) methods are not adequate in glacially-influenced systems where visibility is marginal and site-specific key parameters (residence time/survey life, observer efficiency) are not estimated. A fish counting weir would provide better estimates and was recommended during technical workgroup meetings in 2009. Furthermore, an objective was identified in the 2009 Draft Aquatic Biology Baseline Study Plan to

conduct a feasibility study for siting and installation of a counting weir, but no mention of this objective or any results were presented in the 2009 Grant Lake/Falls Creek Hydroelectric Project Environmental Baseline Studies Report. Was this feasibility study completed? If so, what was the outcome?

A SMART objective with statistical criteria would help guide sampling designs and methods to estimate abundance and spawning distribution of adult salmon in Grant Creek. If “order of magnitude” accuracy is sufficient, walking surveys and AUC estimates using professional judgment for key parameters may be appropriate. However, we believe more accurate and precise estimates are necessary to provide baseline data to evaluate potential Project impacts and cumulative effects, and a more robust technique such as a weir should be used. At a minimum, studies should be designed and implemented to quantify observer efficiency and survey life for all salmon species in Grant Creek since these two variables can have dramatic effects on AUC estimates. For example, estimates using the 2009 data for Chinook and sockeye salmon vary considerably with both parameters as detailed in the following table, and resulting escapement numbers are subjective.

Table 1. Example of variability of AUC estimates with changes in survey life and observer efficiency for Chinook and sockeye salmon using 2009 Grant Creek count data.

	Chinook Salmon			Sockeye salmon			
	Survey Life (days)			Survey Life (days)			
Observer Efficiency (%)	7	14	21	5	9	14	21
10	1,384	692	461	55,859	31,033	19,950	13,300
20	692	346	231	27,930	15,516	9,975	6,650
30	461	231	154	18,618	10,343	6,650	4,433
40	346	173	115	13,965	7,758	4,987	3,325
50	277	138	92	11,172	6,206	3,990	2,660
60	231	116	77	9,328	5,182	3,332	2,221
70	198	99	66	7,980	4,433	2,850	1,900

An objective could be developed that uses the proposed radio telemetry work to help define site-specific values for survey life and observer efficiency for all species. At a minimum, some discussion of these parameters as they relate to the peer-reviewed or gray literature for glacially-influenced systems in southcentral Alaska should be presented to justify the use of 50% observer efficiency and 9 days survey life for sockeye salmon and 30% efficiency and 14 days survey life for Chinook salmon. Finally, a single estimate for observer efficiency for all counts is likely not appropriate because stream and observation conditions can be variable over the course of a spawning season.

Regardless of method selected, counts need to be continued through November to estimate numbers of adult coho salmon returning to Grant Creek. The only information for coho salmon collected to date in Grant Creek includes juvenile numbers and a small number of adults counted during the last walking

survey in late September 2009. Coho salmon spawning abundance, distribution, and timing are key baseline population parameters that are necessary to evaluate potential Project impacts and cumulative effects.

We recommend developing SMART objectives with statistical criteria, sampling design, and methods to assess spawning distribution in Reach 5 for all salmon species, not just Chinook salmon. This information is necessary as baseline data to evaluate potential Project impacts and cumulative effects. Based on the presence of juvenile salmon sampled to date in 2010, it appears that Chinook, coho, and sockeye salmon all spawn in Reach 5.

Resident and Rearing Fish Distribution and Abundance

As mentioned above, we recommend developing SMART objectives with statistical criteria, study design, and methods to estimate the abundance and spawning distribution of rainbow trout in Grant Creek. This information is necessary as baseline data to evaluate potential Project impacts and cumulative effects. A primary concern while addressing this objective is to minimize sampling effects on spawning fish during this critical and vulnerable time of their life history. As currently proposed, catch-per-unit-effort (CPUE) estimates and other population parameters will be difficult to compare between and among anglers and years because of biases associated with the size-selectivity of the gear, differences in angler skill and effort, gear avoidance resulting from previous capture, and sampling locations. Observed differences in CPUE and other population parameters may reflect differences in angler skill, terminal tackle, or vulnerability and exposure to the gear rather than actual differences in CPUE (or other population parameters). If angling/rod-and-reel sampling continues to be the preferred method to assess this objective, we recommend developing and following a rigorous sampling protocol designed to minimize potential sources of bias in angling gear and its deployment including standardizing terminal tackle (bait and/or lure type), hook size, angler experience, effort (i.e., expend effort in proportion to catch), time of day, and other potential sources of bias.

Based on results of juvenile sampling in 2009, it appears that Dolly Varden are an important component of the fish assemblage in Grant Creek, yet little is known about their life history or habitat use in Grant Creek, particularly for adults. We therefore recommend investigations that describe the basic life history and habitat use of Dolly Varden in Grant Creek that includes estimates of spawning abundance and distribution and estimates of seasonal habitat use and migration patterns. This information is necessary as baseline data to evaluate potential Project impacts and cumulative effects. We recommend developing SMART objectives with statistical criteria, sampling designs, and methods to address these basic data needs.

Previous distribution and habitat use studies of rainbow trout and Dolly Varden in the Kenai River basin indicate that these two species are highly mobile and utilize different parts of the watershed during different times of the year. For example, it is likely that adult Dolly Varden that spawn in Grant Creek overwinter in a lake somewhere in the Kenai River watershed. We recommend developing SMART objectives with statistical criteria, study designs, and methods to describe the migratory patterns of

rainbow trout and Dolly Varden throughout the Kenai River watershed as baseline data to evaluate potential Project impacts and cumulative effects.

Round whitefish and Arctic grayling have been caught during angling surveys in Grant Creek and an assumption was made (page 5) that these species do not spawn in Grant Creek. We request additional information to justify this conclusion.

Basic life history investigations should be completed to address questions such as: Do juvenile Chinook, coho, or sockeye salmon overwinter in Grant Creek? What is the timing of smolt or pre-smolt out-migration for each of these species? How many juvenile salmon, rainbow trout, and Dolly Varden are produced each year in Grant Creek? This baseline information is necessary as baseline data to evaluate potential Project impacts and cumulative effects. We recommend developing SMART objectives with statistical criteria, study designs, and methods to address these baseline data needs. We recommend estimating the abundance of emigrant fry, parr, pre-smolt, and smolt from Grant Creek to answer many of these basic questions using outmigrant traps during the ice-free season. We also recommend collecting scale samples of juvenile Chinook, coho, and sockeye salmon to describe the length-at-age relationships for all three species and to describe juvenile salmon life histories in Grant Creek. Current assumptions of overwintering habitat use for juvenile salmon in Grant Creek are based on the length-frequency distribution of juvenile fish observed in 2009 and assuming that almost all were age 0+ fish. However, any fish over about 70 mm in length could be an age 1+ fish based on USFWS work in other Alaska streams. Grant Creek likely provides overwintering habitat for many fish, but the magnitude will remain unknown without further sampling.

Overwinter survival and the availability of suitable overwintering habitat is the critical factor affecting production of many stream-dwelling fish populations in northern latitudes. However, winter sampling of fish in streams is often difficult, especially beneath a layer of ice. Also, many sampling designs can lead to inconclusive results because sampling is often limited to habitat types such as pools and off-channel habitat that can be sampled more easily than other habitat types. For example, the proposed study will “*assess juvenile salmon presence in likely overwintering habitats such as open water, springs and seeps, deep pools, and backwater areas.*” Results of this sampling may give some insight into fish use of these targeted habitat types but will provide no information about fish use in other areas of the stream. Also, the use of passive sampling methods such as underwater video have been used successfully elsewhere and are promising for use in Grant Creek, but using bait to attract fish to a video camera will not provide representative habitat use information – fish will be drawn to the bait from other areas and habitat types, interstitial spaces, out of large woody debris cover, etc... However, without the use of bait, many fish may be undetected because they will remain hidden in interstitial spaces and large woody debris and results may falsely infer that fish are not present. Some recent investigations in Alaska have used mark-recapture techniques and emigrant trapping to derive estimates of habitat use and movement during winter months, and advances in PIT-tag technology appear promising for sampling tagged fish through the ice. We recommend developing a sampling design and methods based on SMART objectives with statistical criteria that will provide quantitative measures of fish use of

winter habitats in Grant Creek. This information is necessary as baseline data to evaluate potential Project impacts and cumulative effects.

Grant Creek Aquatic Habitat Mapping and Critical Factors Analysis and Instream Flow Analysis

It is difficult to map and determine critical factors affecting fish use of habitats without knowing more about the life history of fish in Grant Creek and their use of winter habitat. Therefore, we recommend developing SMART objectives with statistical criteria, sampling designs, and methods as discussed above to describe basic life history characteristics and winter habitat use for resident and rearing fish in Grant Creek. Statements such as “*The team will identify key fish habitats in Grant Creek, based on observed fish use*” require active sampling during winter for these analyses to have meaning for winter habitat use. We also recommend that Habitat Availability (3.2.4.1) and Habitat Utilization (3.2.4.2) studies be conducted during winter so that results of the Instream Flow Analysis will also be applicable during winter when stream flow will likely increase compared to current conditions. This information is necessary to evaluate potential Project impacts and cumulative effects.

The water temperature regime in Grant Creek is a driving factor that influences timing of spawning for adult fish, egg incubation and emergence timing, and rearing life histories for resident and anadromous fish. Project impacts due to changes in water temperatures could be dramatic at all life history stages. For example, an increase of 1°C during winter months can accelerate egg incubation times and cause fish to emerge from the gravel earlier in the year before sufficient food resources are available. We recommend presenting a table or other analysis using information available in the peer-reviewed literature that models emergence timing of Chinook salmon, coho salmon, sockeye salmon, rainbow trout, and Dolly Varden based on changes in water temperature from current incubation temperature regimes. This information is necessary to evaluate potential Project impacts and cumulative effects due to alterations of the water temperature regime in Grant Creek.

We recommend adding temperature as a “Habitat Use Parameter” for “rainbow trout spawning” in Table 2 on page 23 because it is likely an environmental cue that influences the onset of spawning for rainbow trout in Grant Creek.

Water Resources Draft Study Plan

We recommend developing SMART objectives with statistical criteria, sampling design, and methods that will provide quantitative estimates for the impact of Project construction and operation on water quality, hydrology, and ice conditions of Lower Trail Lake and Trail Creek. This is identified as a Goal/Objective/Impact on Page 2, but the Study Plan does not address this issue.

The Grant Lake shoreline erosion study and Grant Creek spawning substrate recruitment studies would both benefit from SMART objectives with statistical criteria to help guide sampling design and methods. As currently proposed, both studies will result in qualitative assessments that will be open to interpretation.

We recommend targeting data collection to adequately describe coho salmon spawning habitat and suitability criteria. Coho salmon likely spawn in Grant Creek as late as November, which may coincide with increased stream flows during project operations in future years. Adequately describing adult coho salmon spawning habitat is necessary as baseline data to evaluate potential Project impacts and cumulative effects.

We recommend describing flow conditions at transects during winter months. Discharge in winter during project operations will likely be higher than current conditions, which raises numerous questions. For example: How will this increase in discharge affect ice formation and the availability of off-channel habitats? Will velocities be different under ice with higher stream flows, and if so, how will this affect habitat use? Also, we recommend developing local suitability indices for depth, velocity, substrate, and cover during winter as well as summer because habitat conditions and fish use will likely change with changes in fish size, water temperatures, flow rates, ice formation, etc... as the seasons change. For example, the importance of interstitial spaces in the substrate as cover and winter habitat for juvenile fish will not be adequately modeled based on observations made during summer or fall sampling.

Terrestrial Resources Draft Study Plan

Terrestrial Resources Study: Goals and Objectives

Because of the wide-ranging movements of fish, birds and wildlife (in general) throughout this ecosystem, Kenai Hydro must put potential effects to birds and wildlife in a landscape / watershed context. Grant Lake is part of the larger Kenai River watershed and the proposed studies are too limited in scope.

There is a persistent lack of scientific integrity, and a reliance on, and an apparent lack of understanding, of some basic ecological concepts, such as density and relative abundance. Without good baseline information, we will not be able to determine probable effects of the project on birds and wildlife. Study objectives are not well-defined and results of the 2010 field work are likely to be ambiguous.

As referenced in the Aquatic Resources comments, specific objectives should be developed for each study component with a clearly specified level of precision and accuracy such that the objectives are statistically sound. With this in mind, we recommend that specific study needs and recommendations be based on the SMART objectives concept (Specific- concrete, detailed, well defined; Measurable- numbers, quantity, comparison; Achievable- feasible, actionable; Realistic- considering resources; and Time-Bound- a defined time line).

Before we can effectively evaluate the potential effects of the proposed project on our trust resources, we must have well-defined, statistically valid, measurable, achievable / realistic, specific and quantifiable objectives developed for each study component with a clearly specified level of precision and accuracy such that the objectives are statistically sound.

Botanical Resources – Existing Information

On Pg. 5, reference is made to invasive plant species being present on the Chugach National Forest and adjacent State, Borough, and private lands. Construction and maintenance of facilities may disperse invasive plants throughout the study area. A detailed plan will be necessary to effectively address this issue, with specific protocols mandated for contractors and others working in and around the project area. Proper implementation of measures to avoid the spread of invasives will be critical throughout the life of the project.

Wetland Mapping – NWI maps are referenced throughout the Terrestrial Resources Study Plan (Draft TRSP) as a source for wetland and other habitat mapping. However, these are considerably outdated, incomplete, and contain numerous mapping errors. We recommend using other sources, such as the Kenai Peninsula Land Cover Classification that was developed by the Kenai National Wildlife Refuge, which involved a supervised vegetation classification from LANDSAT imagery for the entire Kenai Peninsula. This classification can be found at:

http://agdc.usgs.gov/data/usfws/metadata/KP_Landcover/

Ground-truthing efforts to accurately map wetlands and other habitats in the watershed that may be affected by the proposed project will be necessary. We encourage Kenai Hydro to use Mike Gracz's Wetland Mapping and Classification protocol, which can be found at <http://www.kenaiwetlands.net/Methods.htm>. A classification such as this can ultimately lead to a map that can predict valuable wetland functions across the site which should allow a more thorough evaluation of potential habitat and species specific impacts.

Wildlife Resources: Existing Information & Need for Additional Information

There are many assumptions made throughout the Draft TRSP, which are based on 1981-1982 studies by Arctic Environmental Information and Data Center (AEIDC) and a 1984 Feasibility Analysis by Alaska Power Authority (APA). These studies are out-dated and the assumptions made are not considered valid. As an example, on Pg. 16, you indicate that the project vicinity provides only a small to moderate amount of habitat for wildlife resources relative to other areas of the northern Kenai Peninsula. However, based on observations by ADF&G biologists and those recreating and hunting in this area, wildlife resources are abundant and there is adequate information available to support this finding. Therefore, without the appropriate data to support the statement referenced above (Draft TRSP), we suggest you omit or revise such accordingly, as there is no basis to the claim that the project vicinity provides only a small to moderate amount of habitat for wildlife resources relative to other areas.

Again, on Pg. 16, reference is made to the eastern end of Grant Lake being preferred habitat for snowshoe hares, lynx, beavers and moose, with the area likely also providing nesting habitat for some waterfowl and passerine species. However, there does not appear to be any mention of analyzing the potential effects to wildlife from displacement when the area is inundated. Appropriate studies will be necessary to ascertain the potential effects to all of the terrestrial resources utilizing the habitat around Grant Lake, especially those areas that will be flooded as a result of project operation.

Mountain Goats - On Pg. 17, the Draft TRSP indicates that the Kenai Peninsula mountain goat population is subject to considerable short-term annual fluctuations and shifts in ranges that occur primarily due to winter weather conditions and recently to hunting pressures. It further states that, although the entire drainage is used by mountain goats, the principal area of use is the north side of Grant Lake on the south-facing slopes – generally small vegetated benches and ridges between 1,000 ft to 3,200 ft elevation. As such, specific mountain goat surveys are not a component of this study plan because they mainly occur on the higher ridges and slopes beyond the areas potentially affected by the project. This logic is contradictory as the Draft TRSP itself indicates that annual fluctuations and shifts in ranges occur in winter months.

Further, mountain goats are both grazing and browsing animals, depending on the particular habitat and season of the year. According to ADF&G – Division of Wildlife Conservation, mountain goats normally summer in high alpine meadows where they graze on grasses, herbs, and low-growing shrubs. However, most goats migrate from alpine summer ranges to winter ranges located at or below tree line. In fact, based on discussions with ADF&G biologists on July 6, 2010, there have been observations of mountain goats on both the north and south shores of Grant Lake for many years. In particular, on several occasions, goats have been observed well below tree line on the north shore of the lake, along a prominent cut within site of the Grant Lake outlet.

In addition, between 2006 and 2009, USFS and ADF&G collaborated on a collared mountain goat study. Radio collars were put on 10 mountain goats, and the study revealed that of those animals, a large proportion of them moved from mountain top to mountain top, consistently using the lowlands and low-level terrain features, below tree line. For further information you should contact Thomas McDonough (ADF&G).

Based on the above observations and survey information, we believe mountain goat surveys are a necessity and that these surveys should be conducted to ascertain potential effects from the proposed project.

Dall Sheep – On Pg. 17, the Draft TRSP again references out-dated studies to infer that Dall sheep will not be studied since they mainly occur on the higher ridges and slopes beyond the areas potentially affected by the project. Yet, it states that, as with goats, sheep sometimes move to lower altitudes. While they are generally high country animals, Dall sheep sometimes occur in rocky gorges below timberline. We therefore encourage Kenai Hydro to contact ADF&G for further information about sheep in and around the study area.

Moose – On Pg. 17, the assumption is made that snow depth and a corresponding lack of winter forage limit moose numbers in the project vicinity. However, without supporting data, the Service cannot concur with this statement. In fact, based on observations made by ADF&G biologists and hunters in the area, moose are known to overwinter at the eastern end and along the south shore within the study area. In addition, discussions with Rick Ernst (Kenai National Wildlife Refuge biologist) have confirmed moose winter range in the alpine valley (forested habitat) on the east end of Grant Lake. We

therefore recommend this and similar assumptions be omitted, and that an appropriate level of study be initiated to support the findings. We encourage you to contact the appropriate ADF&G staff to obtain moose data and trends for this area.

Brown and Black Bear – On Pg. 18, a reference is made in the first paragraph to brown bears being sparsely distributed throughout much of the region surrounding the project. At the end of that paragraph, the Draft TRSP states that few, if any, brown bears resided year-round within the project vicinity due to lack of food, limited denning habitat, and residential development along the Seward Highway. This supposition is apparently based on the aforementioned AEIDC and APA studies done in the early 1980's. As before, we reject the claims based on these outdated studies and again recommend further, detailed analysis of brown and black bear movements and habitat in the project area to accurately assess the potential for impacts from the project.

Wildlife Resources Study Methods

Raptor Nest Survey Methods – The Draft TRSP indicated a helicopter-based aerial survey would be conducted before leaf-out and that the flight path would be <150 ft above ground level. Low level flights such as those indicated using helicopters would be considered a form of “disturbance” and are therefore not acceptable. It is our understanding that the USFS conducted an aerial bald eagle nest survey in May 2010 and we are hopeful that HDR utilized this data accordingly.

Kenai Hydro must not only map eagle nests, but because of the new eagle “take” regulations, should also determine locations of breeding and feeding territories within and adjacent to the project area if the project poses a potential impact to eagles, their nests and/or young.

- ❖ Spacing of active nests appears to be especially sensitive to richness of food resources;
- ❖ Active nests can be closer together where food source is richest, so territories can be smaller in this case;
- ❖ Suitable territory includes suitable nesting habitat in proximity to reliable food sources – This may include several alternate nests; important feeding sites may be shared by several pairs;
- ❖ Sometimes clusters of nests can suggest alternate nests for each territory, which may help in estimating how large individual territories are

Regarding northern goshawks and other raptors, HDR should use the USFS protocol for surveying as appropriate.

Breeding Landbirds and Shorebirds – Nesting along the lakeshore that is to be inundated is an issue with respect to “take” of waterfowl, gulls, and other shorebirds under the MBTA, as “take” will not be authorized. Please explain how “take” will be avoided in the above scenario. Also, please indicate what aspects of the project will impact migratory birds – lake level fluctuations; clearing for roads, powerhouse and transmission lines; etc. Studies commensurate with potential direct and cumulative effects are needed.

With regard to lake level fluctuations, it is our understanding that Kenai Hydro is claiming Grant Lake has a natural lake level fluctuation of 9 ft. While natural fluctuations do occur due to run-off from rain, snow melt and ice fields, the Service is not aware of any data to support such an extreme natural fluctuation such as this. With no USGS gauge on the lake (to our knowledge) and no data available from the USFS, we are concerned with the validity of this data regarding potential effects to shorebirds and landbirds when proposed additional lake level increases will occur behind a dam. We therefore ask that current, supporting documentation be provided to verify this assertion, and that proper studies be implemented to address how far lake levels could rise and expand outward from the current lake edge, and the extent of impacts to breeding landbirds and shorebirds.

On pg. 22, HDR indicates that Grant Creek is not included in the study area for landbirds because it is virtually impossible to detect singing male songbirds along a loud creek corridor. Please explain, in detail, how songbird data will be assessed and quantified for this area, and how relative abundance and density will be determined.

Please explain the rationale to support the association of various species of birds to particular habitats when discussing the type and level of surveys to be conducted.

Regarding potential effects to migratory birds, there is no mention of how the clearing of the road and transmission line corridors will affect nesting and roosting habitat. An assessment will be needed to determine the extent of direct, indirect and cumulative effects on migratory birds and their habitat in conjunction with these proposed corridors. The added foot and motorized traffic that will result once roads and other right-of-ways are cleared must be considered in this analysis.

Terrestrial Mammal Surveys

Again, for bears, the Draft TRSP appears to rely heavily on data collected in the early 80's. The statement, on Pg. 18, that brown bears are sparsely distributed throughout much of the region surrounding the project relies on obsolete data and is not adequate to support this claim. We strongly recommend contacting Mr. Sean Farley (ADF&G) and Mr. Jeff Selinger for more recent data on habitat, movement corridors, den locations, etc., for both brown and black bears.

Based on the results of a 1995 -2003 brown bear study entitled "Brown Bear Den Habitat and Winter Recreation in South-Central Alaska" obtained from *The Journal of Wildlife Management* 74(1):35-42; 2010, several brown bear dens were documented to the north and west of Grant Lake. By putting in a new road to access the site, in addition to the dam structure itself and other appurtenances, a significant increase in the anthropogenic footprint will result, which increases the potential for defense of life or property (DLP's) and other development associated bear mortality.

Opening up access in conjunction with this project could have serious implications to brown and black bears and other wildlife in the area. Den disturbance through site development as well as that resulting from recreational access via snow machines along with newly found hunting opportunities, is likely.

Anadromous runs are important food resources for brown and black bears. With the potential for fisheries impacts, more information will be needed to ascertain what effects such would have on the brown bear which inhabit the study area. These issues will need to be addressed in the Draft TRSP to accurately evaluate the risk(s) to brown and black bears in and around the project area, and whether any of those resources managed by the Kenai National Wildlife Refuge will be affected. This hypothesis will need to be tested but using out-dated survey information will not be acceptable.

Finally, as referenced earlier, we understand that Kenai Hydro maintains that there is a natural lake level fluctuation on Grant Lake of 9 ft. We are not aware of any data to support such an extreme natural fluctuation and are concerned with the validity of this data regarding proposed additional lake level rises and their potential effects to terrestrial mammals. Specifically, animal movement along existing trails could be severely hampered and habitat, in general, could be significantly degraded by any additional lake level rises. We therefore ask that current, supporting documentation be provided to verify the 9 ft natural lake level fluctuation. To that end, appropriate studies will be needed to ascertain what, if any effects, the proposed lake level increases will have on all terrestrial resource habitats around Grant Lake. In addition, appropriate mapping to show the acreage to be inundated and extent of potential habitat impacts will be required.

Document Content(s)

USFWS_Comments_GrantLake DLA_P13212_Final.PDF.....1-17



THE STATE
of **ALASKA**
GOVERNOR BILL WALKER

Department of Fish and Game

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June 26, 2015

Mike Salzetti
Manager of Fuel Supply & Renewal Energy Department
Kenai Hydro, LLC
3977 Lake Street
Homer, Alaska 99603

RE: Draft License Application for the Grant Lake Hydroelectric Project
FERC No. 13212

Dear Mr. Salzetti:

On March 27, 2015, a Draft License Application (DLA) was filed on behalf of Kenai Hydro, LLC (KHL) for a potential hydroelectric project to be located on Grant Lake and Grant Creek near the community of Moose Pass. A ninety day comment period was established to collect comments from stakeholders. Attached are comments on the DLA from the Alaska Department of Fish and Game. Our comments are presented under a DLA General Comment heading to discuss issues with the DLA as well as specific comments on the application. The specific comments follow the format presented in the DLA.

We look forward to working with KHL to address issues raised.

Sincerely,

A handwritten signature in blue ink, appearing to read "Monte D. Miller".

Monte D. Miller
Statewide FERC Hydropower Coordinator
Alaska Department of Fish and Game
Division of Sport Fish / RTS
333 Raspberry Road
Anchorage, Alaska, 99518-1565

Attachments:

General Comments on DLA
Specific Comments on the DLA

Electronic File to FERC Docket Number 13212- 001

Grant Lake Hydroelectric Project

FERC No. 13212

Draft License Application

Alaska Department of Fish and Game

General Comments

June 26, 2015

Introduction

The Alaska Department of Fish and Game (ADF&G) submits the following general comments on the Draft License Application filed with FERC on March 27, 2015. Specific comments on the DLA Exhibits follow the General Comment section. ADF&G has worked collaboratively with Kenai Hydro LLC., (KHL), and their consultants throughout the life of this project. Staff participated in work groups to identify study needs and to develop study plans necessary for environmental review. We have provided input on study reports and modeling efforts to develop an understanding of resource needs for instream flows.

The DLA list project features including an intake structure in Grant Lake, a tunnel, a surge chamber, a penstock, a powerhouse containing two Francis turbines with a combined capacity of 5 MW, a tailrace, a tailrace detention pond, a switchyard, transmission lines, and appurtenant facilities such as access roads to the powerhouse and lake intake.

The Fish and Game Act requires ADF&G to "...manage, protect, maintain, improve, and extend the fish, game and aquatic plant resources of the state in the interest of the economy and general well-being of the state" (AS 16.05.020). Grant Creek is catalogued as important for Chinook salmon spawning/rearing, coho salmon spawning/rearing, sockeye salmon passage/spawning/rearing, and pink salmon passage, and is listed in the Anadromous Waters Catalog¹ as stream No. 244-30-10010-2225-3004.

General Comments

While the material presented in the DLA and Exhibits is extensive, there are many problems associated with format, content, and accuracy of information presented. Specific Comments follow our general comments and provide additional detail on many of the issues we have with the DLA, as written.

¹ Johnson, J. and V. Litchfield. 2015. Catalog of waters important for spawning, rearing, or migration of anadromous fishes – Southcentral Region, Effective June 1, 2015, Alaska Department of Fish and Game, Special Publication No. 15-07, Anchorage.

Format Issues

Some tables are included that contain cell errors, such a text and numbers split between two cells incorrectly (Table A.4-1). Table B.4-2 should probably be presented in a landscape format so that data is readable.

Content

KHL has chosen to declare some information as Critical Energy Infrastructure Information (CEII) and has not provided adequate information in the Exhibits. It is important that this information be made available to provide for a complete review of this project. Information is lacking on the intake structure, tailrace, and detention pond structure and operations.

Accuracy of Information

In Exhibit E, the following figures appear to display incorrect project feature representations of tailrace and detention pond locations, and their return to the creek:

- Figure E. 4-5 Dated 11-17-2014
- Figure E. 4-17 Dated 3-3-2015
- Figure E. 4-18 Dated 3-3-2015
- Figure E. 4-19 Dated 3-3-2015
- Figure E. 4-21 Dated 3-3-2015
- Figure E. 4-22 Dated 3-3-2015
- Figure E. 4-23 Dated 3-3-2015
- Figure E. 4-24 Dated 3-26-2015
- Figure E. 4-25 Dated 3-3-2015
- Figure E. 4-26 Dated 3-3-2015
- Figure E. 4-27 Dated 3-3-2015
- Figure E. 4-28 Dated 3-3-2015
- Figure E. 4-29 Dated 3-3-2015
- Figure E. 4-32 Dated 3-3-2015
- Figure E. 4-40 Pages 1 of 6, 4 of 6, and 5 of 6. All Dated 3-11-2015
- Figure E. 4-41 Pages 1 of 3, and 3 of 3. All Dated 3-11-2015
- Figure E.4-98 Undated Representation.

These figures also conflict with feature representations in Figures A.4-1 Dated 2-18-2015, E.2-1 Dated 2-18-2015, and E.4-82, E.4-83, and E.4-84 all dated 12-23-2014.. After lengthy discussions during the first half of 2014, it was our understanding that location and alignments for the tailrace and detention pond would flow to a point near the upstream extent of Reach 4. To accommodate this alignment, the powerhouse was slightly relocated to a slightly higher elevation that allowed said water release.

Almost all of the disputed figures are dated after the figures identified in the above paragraph as being conflicted with. These figures are key elements of the DLA, and need to be accurate in presentation to allow for correct evaluation of the project. What is presented in the listed figures is not the same as what was represented in discussions. Since adequate descriptions of the design and operation of the tailrace, detention pond, and intake structure remains lacking, we are concerned with the completeness and correctness of the DLA Exhibits. The Figures listed above

are not representative of the project; therefore they are not acceptable to be promoted in the DLA. It is unclear why new and incorrect drawings were completed months after the changes in the powerhouse, tailrace and detention pond positions, alignments, and outflow designs were identified to the agencies.

Instream Flow Assessment

KHL conducted two instream flow assessments on Grant Creek based on channel habitat mapping and stream hydraulics. The Lower Grant Creek study included reaches 1 – 4 and the Upper Grant Creek study included reaches 5 and 6. Our comments on the assessments are discussed below.

Lower Grant Creek

KHL selected the Instream Flow Incremental Methodology to evaluate flow-habitat relationships in the Lower Grant Creek. The general theory behind habitat models is based on the assumption that aquatic species will react to change in quality and quantity of the hydraulic environment (USGS 1998).

KHL, in cooperation with Instream Flow Technical Working Group, selected 18 transects for this study. USGS advises, and we concur, that hydraulic calibration data should include at least 3 water surface elevation (WSE)-discharge (Q) pairs and one set of calibration velocities (Bovee et al. 1998). The applicant collected up to 5 WSE-Q pairs at some locations and one velocity calibration dataset that was averaged with a depth calibration method for simulating high flows.

PHABSIM results show spawning habitat peaks at flows from 100 – 200 cfs for all target species (KHL 2015b, Figure E.4-44; Chinook, coho, and sockeye salmon, Dolly Varden and rainbow trout) and continues in an asymptotic manner for 3 species (Chinook, coho, and sockeye salmon). We believe these asymptotic results may be related to simulation variables that can be adjusted to provide more meaningful predictions and clarity. These issues are further discussed in the recommendation section below.

Fry rearing habitat (KHL 2015b, Figure E.4-45) shows an initial peak at approximately 50 cfs and a second peak near 400 cfs. Peak fry rearing habitat at lower flows is commonly observed and reflects to large extent, the inability of the model to adequately capture these types of flow-habitat relationships. The second peak is likely related to similar issues.

Juvenile/adult rearing habitat (KHL 2015b, Figure E.4-46) peaks from approximately 50 cfs to 120 cfs, then increases with increasing discharge. More refinement is needed to better identify flow-habitat relationships, in particular with main channel versus off-channel habitats. We believe adjustments to the model are needed, as discussed in the recommendations section below. These adjustments should provide greater detail and understanding of habitat-flow relationships.

Habitat Time Series Analysis

Results from PHABSIM discussed above were included in a Habitat Time Series. KHL compared the amount of total habitat under pre- and post-project for each target species.

This information provides a basic overview but more detail is needed to better understand habitat relationships over time. Specifically, habitat duration curves are needed for each of these analyses (i.e. by target species and life stage) as well as a basic statistical summary (mean, min and max) over key target species and life stages.

Effective Spawning Analysis

KHL conducted an analysis to evaluate the percentage of incubating eggs that would be protected as flows were reduced during the winter. The criterion was selected was that at least 0.1-foot of water was needed over the spawning substrate. We believe this is an important analysis with an appropriate criterion level.

Results shows that higher protection for incubating eggs will be provided during post-project. This is reasonable with higher winter flows proposed during project operation.

Upper Grant Creek Assessment

Upper Grant Creek instream flow study included reaches 5 and 6. The project pipeline and penstock would extend from the lake outlet to powerhouse at the top of reach 4 and would bypass reaches 5 and 6.

KHL used the Oregon Method (Thompson 1972) to assess connectivity of pools within reach 5. Two transects were established and used with model criteria for evaluation of minimum depth requirements. The basic premise was to identify flows at which target species could access pool habitats.

Reach 5 is a difficult area to study due to confinement, high gradient², and stream hydraulics. Limited information is available regarding fish use of the area, however, it would be difficult and with a level of risk to attempt a robust, directed effort to collect detailed fish use information. Further discussion on these issues is needed.

Recommendations

As mentioned, we believe habitat results could be improved with modeling adjustments. We believe the upper limit of modeling simulations is too high to provide meaningful predictions. The general rule of thumb for the upper end is 2.5 x the highest velocity calibration; however, this is only a rule of thumb and model results and diagnostics should be evaluated to further refine and identify this decision. For this study, the rule of thumb would equate a flow of approximately 500 cfs. KHL and USGS note that because of the way the model simulates velocities, downward extrapolations (e.g., simulating discharges lower than the calibration discharge) are more accurate than upward extrapolations” (KHL 2015a and Bovee et al. 1998). To improve simulations at higher flows, KHL averaged the one velocity set with the depth calibration method. This is an acceptable approach and provided robust velocity predictions. We noticed, however, that simulation results show velocity predictions begin to incur greater variability and uncertainty extending past 500 cfs in the main channel (and corresponding discharges in off-channel habitats). The developed model provides good prediction up to 500 cfs, but it is not appropriate to use the model much beyond this point. We believe it is prudent

² KHL stated that the average gradient is 6.4 percent in reach 5 (KHL 2015a, page E-198).

modeling practice and in the best interest for evaluating modeling results to limit the upper end to 500 cfs in the main channel (and corresponding discharges in the off-channel habitats). This would help to provide greater resolution on the range of flows under primary consideration. Therefore, we will focus our analysis on this range and request additional simulations should be restricted to an upper limit of 500 cfs.

Furthermore, we believe it is likely modeling results may be complicated by inclusion of all transects, as well as simulating beyond the predictive capability of the model as discussed above. This may be a primary factor in some of the results showing asymptotic flow-habitat curves; habitat continues to increase as more flow enters off-channel areas. However, this may be due to high quantity but low quality habitat. Comparison of main channel versus off-channel habitat will provide greater refinement on these issues and flow-habitat relationships.

We recommend the following information be provided to inform our decision making process:

Habitat Suitability Criteria: More detailed descriptions are needed on how HSCs were developed and normalized and criteria should be included with the report and not just referenced.

Mesohabitat Specific Analysis: Habitat based modeling should be used to generate output on a cross section by cross section basis, or a group of cross sections enabling the development of habitat-flow results for specific species and life stages on a mesohabitat basis. This type of analysis can help focus on species and life stage specific sensitivities to particular habitat types, which may be important during critical periods of the year. We recommend this analysis for spawning target species in areas identified in the fish surveys, which appear to be main channel habitats. Similarly, this analysis should be performed for rearing species. We prefer to see results separated into main channel and off-channel habitats.

Combined Suitabilities: Computations techniques within PHABSIM should be use to simulate thresholds of combined suitabilities by target species/life stage. For example, combined suitabilities greater than 0.75 could evaluate for spawning fish species; similar evaluations should be conducted for rearing life phases. This analysis should be separated according to the Mesohabitat Specific Analysis as discussed above, to include main channel versus off-channel habitat.

Habitat Duration Curves: We would like to see the Habitat Time Series results presented as duration curves (e.g. Habitat Area vs Percent Equaled or Exceeded) in graphical and tabular (5 percent increments) formats. This analysis should be separated according to the Mesohabitat Specific Analysis as discussed above, to include main channel versus off-channel habitats. A basic statistical summary (mean, min and max) for key target species and life stages should also be presented.

Tailrace Design

The tailrace is described as 4 to 13-feet deep, with rip-rap sidewalls at a 2 to 1 slope, and a screening device at the outflow. A description of protective measures to keep wildlife out of the tailrace is needed. Protective measures (such as fencing the tailrace area) need to be developed and included in the DLA.

Surge Chamber

More information is needed on the surge chamber. For example, what method will be used to secure access to the surge chamber? The DLA only describes the hole as coming to the surface. A description of protective measures that will be implemented is needed.

References Cited

Bovee, K.D., B.L. Lamb, J.M. Bartholow, C.B. Stalnaker, J. Taylor, and J. Henriksen. 1998.

Stream Habitat Analysis Using the Instream Flow Incremental Methodology. Information and Technology Report USGS/BRD/ITR-1998-0004. Fort Collins, CO: U.S. Geological Survey-BRD. 130 p.

KHL. 2015a. Grant Lake Hydroelectric Project (FERC No. 13212). Draft License Application, Exhibit E1 of 2, March 2015.

KHL. 2015b. Grant Lake Hydroelectric Project (FERC No. 13212). Draft License Application, Exhibit E2 of 2, March 2015.

Thompson, K. 1972. Determining Stream Flows for Fish. Presented at Instream Flow Requirement Workshop, Pacific Northwest River Basins Commission. March 1972.

End of General Comments

Grant Lake Hydroelectric Project
FERC No. 13212
Draft License Application

Alaska Department of Fish and Game
Specific Comments

June 26, 2015

DLA Exhibit A: Project Description

2 General project Description, Page A-1

ADF&G Comment: This section is missing a description of the penstock, at least from the tunnel outlet to the powerhouse, a distance of approximately 150 feet.

Table A. 4-1 General characteristics of the proposed Grant Lake Project Facility.

ADF&G Comment: This Table contains errors in several places. They appear to be in numbers not correctly placed in the table. Correct Table A. 4-1.

4.1 Grant Lake Diversion and 4.2 Grant Lake Intake

In 4.1 it is stated: *“The proposed Project consists of a reinforced concrete intake structure located on the south side of the natural lake outlet.”*

In 4.2 it is stated: *“The Project water intake would be a concrete structure located approximately 500 feet east of the natural outlet of Grant Lake and adjacent to the shore.”*

ADF&G Comment: These sections seem to conflict with each other, and if so, revisions are needed.

4.3 Tunnel and Surge Chamber

Page A-11 and A-12 *“A surge chamber is located at the transition between the two tunnel slopes. This chamber is approximately 10 feet in diameter and would extend from the tunnel invert elevation of 650 NAVD 88 to the ground surface at approximately elevation 790 NAVD 88.”*

ADF&G Comment: Further descriptions are needed regarding containment of the proposed 10 foot diameter, 140 foot deep hole in the ground. For example, a discussion is needed on safety measures that will be implemented to prevent people and wildlife from falling into the hole. The maximum lake elevation is 703 feet. The description of the surge chamber is identified at elevation 790 feet. It is not clear why this chamber would be located where an additional 87 feet above the maximum lake level must be drilled through? More information is needed to better understand these issues.

4.5 Tailrace

“The tailrace channel would be trapezoidal in shape, with a bottom width of 43 feet, side slopes of 2H:1V and a channel depth ranging from 13 feet at the powerhouse to 7 feet at the creek.”

ADF&G Comment: Further information is needed on any safety measures that will be implemented to restrict wildlife access into the tailrace. The tailrace may pose a serious danger to large mammals, especially moose, if they enter the tailrace. It would be difficult for moose to escape the tailrace with rip-rap construction and slopes as described. Preventive measures are needed (e.g. fencing the tailrace area).

“The powerhouse draft tubes would connect to a tailrace channel located on the north side of the powerhouse structure. The draft tubes would extend from a low point elevation of approximately 509 feet NAVD 88 up to the tailrace channel invert elevation of 515 feet NAVD 88. The channel would continue to the east bank of Grant Creek.”

ADF&G Comment: Details on the tailrace have been lacking. The point of discharge has been inconsistent. Furthermore, the DLA presents contradictory information on the point of discharge. Figure A.4-1 of Exhibit A contradicts most other figures (e.g. 20 figures presented in Exhibit E, such as Figure E.4-22). With anadromous fish use of this reach, this detail needs to be clearly presented.

4.6 Tailrace Detention Pond

ADF&G Comment: The description of the tailrace detention pond features and operational use is limited and does not provide a sufficient understanding of this feature. Please provide additional details on the design and operation.

4.7 Powerhouse

“The powerhouse would be located on the south bank of Grant Creek immediately west of the downstream tunnel portal and adjacent to the detention pond.”

ADF&G Comment: The location of the powerhouse needs to be more clearly defined. As is, the DLA presents the locations of project features with reference to one another, failing to reference natural features. In our General Comments, we questioned information presented in many Exhibit E figures regarding the location of the powerhouse, tailrace, and detention pond and alignment of those features.

EXHIBIT B Project Operations and Resource Utilization

Page B-6

ADF&G Comment: There appears to be a typo in 2.2.1.7 under 1) “...for the bank...”. We believe it should read “...from the bank...”.

2.2.2 Proposed Design, Page B-7

ADF&G Comment: The bulleted list mentions a penstock, but fails to describe the feature as a bullet item.

2.2.3. Grant Lake Operations Model

ADF&G Comment: We request flow duration estimates also be provided on a weekly basis. The monthly flow duration data provided in Table B.3-2 is poorly formatted and needs revision

ADF&G Comment: The hydraulic data used to inform the operations model is correctly described as a composite record. That this correlation uses 66 years of data from the Kenai River at Cooper Landing should be mentioned in discussion. As written, the section gives the impression that Grant Creek has 66 years of gage record.

3 Existing Resource Utilization

3.3 Dependable Capacity and Average Energy Production

3.3.2 *Flow Duration Curves*

ADF&G Comment: This section discusses the composite gage record. The use of the Kenai River gage for that composite was discussed in 3.3.1 *Project Flow Data*. The section should have something on the order of "...based on the 66 year composite record" as described previously in 3.3.1 *Project Flow Data*.

3.3.4 *Storage Capacity*

"The project will draw Grant Lake down to a maximum depth of 13 feet."

ADF&G Comment: The maximum drawdown of Grant Lake will be 13 feet from the maximum lake surface elevation of 703 feet NAVD 88. The statement suggests that most of the water will be removed from Grant Lake. Recommend re-wording this statement.

3.3.6 *Tailwater Rating Curve*

"The tailwater location is located where the tailrace channel will return powerhouse flow to Grant Creek at the downstream on the incised canyon (Reaches 4 and 5 transitions)."

ADF&G Comment: This sentence is difficult to understand and there seems to be some missing text after "downstream..."

EXHIBIT C: Construction Schedule

ADF&G has no comments on EXHIBIT C.

EXHIBIT D: Project Costs and Financing

5.5 Protection, Mitigation, and Enhancement Expenses (PM&E)

ADF&G Comment: It is expected that there will be stakeholder meeting/s, as necessary, to discuss the DLA comments and various plan comments prior to moving forward with filing the FLA with FERC.

EXHIBIT E: Environmental Analysis

1.2 Traditional Licensing Process (TLP) Schedule

"A comprehensive package of documents including the Draft Biological Evaluation (BE) for sensitive plants in the Project area and a series of management/monitoring plans is under development and will be distributed for comment between 30 and 60 days after the distribution of this DLA. This schedule will facilitate a seamless review in conjunction

with the DLA and allow comments on all documents to be completed at the same time given the 90 day review period for this document.”

ADF&G Comment: We appreciate the opportunity to review these plans and will comment on the series of management/monitoring plans as time allows.

2.1.2.2. Grant Lake Intake

“The intake would allow for drawdown of Grant Lake to elevation 690 feet NAVD 88 thereby creating approximately 18,790 acre-feet of active storage for the project between elevations 703 feet NAVD 88 and 690 feet NAVD 88. The intake can be designed to allow the Project to draw water near the surface at various levels of storage, if deemed necessary.”

ADF&G Comment: More information is needed on how the intake will be constructed and operated. To avoid potential adverse impacts to aquatic resources, the intake needs to be designed to withdraw and bypass water that is similar in temperature to pre-project Grant Creek temperatures. Project features redacted from the DLA under CEII rules need to be provided for efficient understanding of the project and potential environmental effects.

4.4.5. Unavoidable Adverse Impacts

“Based on the comprehensive set of natural resources and engineering analyses conducted and reviewed as part of this licensing process and the proposed monitoring and management plans, KHL has identified no geologic or soil-related unavoidable adverse impacts associated with construction and operation of the Project.”

ADF&G Comment: Due to the lake drawdowns, shoreline erosion will be unavoidable in areas of the shoreline that are depositional in nature.

4.5.1.1. Water Quantity

ADF&G Comment: Similar to our comment under 2.2.3, it would be helpful if -weekly flow duration tables were also provided, in order to assess flow patterns as they relate to species periodicity and project operations.

4.5.2. Environmental Analysis

“Based on available hydrology data, the Grant Lake Project proposes to utilize a mean annual flow of 200 cfs for power production and 6 cfs for bypass flows. Table E-4-14 summarizes the monthly and annual powerhouse and bypass flow volumes in comparison to natural inflows from the watershed.”

ADF&G Comment: Table E.4-14 summarizes monthly and annual powerhouse and bypass flows. The applicant should address the variability of projected flows within each month, and whether there will be any flow ramping anticipated, due to project operation.

4.5.2.3. Temperature

“Details of how water temperatures will be monitored and maintained to the pre-Project conditions can be found in the Draft Operational Compliance Monitoring Plan (OCMP).”

ADF&G Comment: Details on the intake structure are lacking. The intent of the applicant is to withdraw water at a lake depth to correspond with stream temperatures

found in pre-project Grant Creek. Details of how water temperatures will be maintained should be provided in the DLA as well as the OCOMP.

4.5.4.2. Water Quantity

“The primary impact associated with Project operations is the reduction of flows in Reach 5. While a limited amount of anadromous and resident fish habitat and associated use has been documented in Reach 5, the potential for eliminating a portion of the flow and associated habitat will be far offset in the positive direction by the additional habitat made consistently available in the Reach 2/3 side channels and the Reach 1 distributary. The increase in aquatic habitat availability in Grant Creek has the potential for higher populations of anadromous and resident species in Grant Creek and therefore, the Kenai River drainage as a whole. Further documentation of this positive impact can be found in Sections 4.5.2 and 4.6.2 of this Exhibit E.”

ADF&G Comment: In some cases there will be increases in aquatic habitat (in winter) and in others there will be a decrease in available habitat (in summer), based on the applicant’s instream flow study. To say that these changes will have an overall effect of increasing populations is premature, at this point.

4.5.5. Unavoidable Adverse Impacts

“Based on the comprehensive set of natural resources and engineering analyses conducted and reviewed as part of this licensing process, the proposed monitoring and management plans, and collaboration with stakeholders, KHL has identified no water quality or water quantity related unavoidable adverse impacts associated with construction and operation of the Project.”

ADF&G Comment: As the DLA states, there may be losses in habitat and restrictions to fish passage in Reach 5 associated with the proposed level of dewatering. This may mean that there would be unavoidable adverse water quantity impacts associated with the project.

4.6 Aquatic Resources

4.6.1.1.3. 2013 Study Results

Egg Voidance

Page E-112

ADF&G Comment: In this section the applicant states that they examined female fish carcasses to determine spawner success (egg retention). Table E.24 lists species specific data on the average number of retained eggs in the carcasses examined. More information is needed on how this information will be used to evaluate fish resources in Grant Creek. It would seem that other information would be needed or estimated, such as average fecundity and fertilization rates.

Spawning Distribution

Page E-129

“Of the nine Chinook that were radio-tagged, seven were detected within Reach 1, three within Reach 2, none in Reaches 3 and 4, and five within Reach 5 (Table E.4-27). While five Chinook were detected within Reach 5, no redds were associated with these detections nor were any Chinook redds observed in Reach 5.”

ADF&G Comment: For safety reasons Reach 5 observations had to be made from a distance at the top of the canyon walls.

The importance of Reach 5 remains unknown, but due to geomorphic characteristics such as a canyon with cascades and a fairly steep slope, the productivity of spawning attempts in this Reach is difficult to assess. We believe it would be difficult to safely quantify the importance of Reach 5 for Chinook salmon production.

Because of the limited Chinook radio tag effort (n=9), data derived from this study should be recognized as reconnaissance in nature and a limited representation of Chinook adult movements within Grant Creek. Discussion of radio-tagged adult salmon detection describes unique tag detections and in certain cases of no unique tag detections. It is not clear what is meant by "*unique tag detections*" as mentioned in the DLA. This is compounded in Table E.4-27 describing "*unique detections*" where the number of a species radio tagged (n=X) is less than the total detections listed. It is not clear if the same fish were seen in different reaches, something which could account for more detections than fish tagged. This also would seem to raise a question of accuracy of spawning distribution presented using this data. These radio-tagged fish moved freely up and down the stream, probably spawning somewhere. The inclusion of this data under Spawning Distribution is questioned.

Minnow trapping is discussed with tables presented and diagrams provided showing effort. What is missing from this analysis is a table of minnow trapping effort by reach and month. Also needed is a measure of minnow trapping success by specie, in reach, by month. Figure E.4-29 on page E.139 (no page number on diagram) illustrates minnow trapping locations by month in 2013. It is noted that, based on this figure, the upper stream area was only sampled in October. A complex table is necessary to evaluate effort to determine if the timing of the effort was unbiased or selective.

It appears that the importance of Chinook utilization of Grant Creek may have been understated. It is noted that in 2013 minnow trapping results as shown in Table E.4-42, Chinook juveniles comprised the largest number of fish collected (n=1244), totaling almost 75% of all salmon collected. In 2013 night snorkel surveys, Chinook juveniles were the most observed (N=481) totaling over 97% of salmon observations. In 2013, sampling at the lower incline plane trap (effective at sampling fish greater than 50mm in length) revealed that chinook juveniles (n=577) totaled almost 62% of salmon sampled. Even though few Chinook adults were documented spawning, some spawning success appears obvious based upon these sampling results. Similar results are reported in Table E.4-53 which reported the beach seining results for the Trail Lake Narrows with Chinook (n=100) representing over 96% of salmon captured. There is a possibility that Chinook juveniles may emigrate from other adjacent waters to rear in Grant Creek, however the April and May 2013 snorkel sampling results would probably minimize that potential since the systems would be at a reduced spring flows with cold water. This would imply that overwintering salmon juveniles would be more sedentary and would not be migrating to or from Grant Creek.

We recognize the importance of sockeye production in Grant Creek, and that sampling of sockeye juveniles is problematic since sockeye fry will emerge from the gravel substrate and quickly drop out of Grant Creek to rear in downstream lake environments.

4.6.2.1.2. Project Impacts Association with the Operation of the Grant Lake Project
Reach 5 Flows, Connectivity, Spawning, Incubation, and Juvenile Rearing

“For Chinook, the required depth is 0.80 feet; for sockeye and coho, the depth is 0.60 feet; and for resident species (rainbow and Dolly Varden), the depth is 0.40 feet. Detailed discussions regarding the methods used in this analysis and results can be found in Section 4.6.2.2 of this Exhibit E.”

ADF&G Comment: The instream flow sections of the DLA are difficult to follow and seem out of order. It would be helpful if the methods used were presented before the results and the analysis of potential impacts.

“In 2013, no Chinook were observed spawning within Reach 5 and with only three sockeye and two coho redds documented. Collectively, the five redds observed in Reach 5 in 2013 only represented 1.3 percent of the total redds documented in all of Grant Creek (n = 388).”

ADF&G Comment: The pools in Reach 5 are deep and the water surface is turbulent. It would be difficult to view redds under these conditions.

Ramping Rates

“At this time, ramping rates have not been proposed by either the stakeholders or during the development of the initial operating guidelines. As such, guidelines will be developed in consultation with the stakeholders.”

ADF&G Comment: Information is needed on ramping rates to ensure protection of fish resources in Grant Creek. KHL is proposing a diversion pond but information on the construction and operation are lacking, which makes it difficult to assess the need for ramping rates. If needed, ramping rates would initially be based on Hunter (1992) until site-specific recommendations can be developed..

End of Specific Comments

Document Content(s)

ADF&G DLA Comments 6-26-2015.PDF.....1-14

Enclosure 3

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

IN THE MATTER COMMENTS ON)
THE DRAFT LICENSE)
APPLICATION FOR THE GRANT)
LAKE HYDROELECTRIC PROJECT)

Project Number: P-13212

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that I have served the U.S.D.A. Forest Service's letter on submittal of Comments on the Draft License Application by electronic filing, with the Federal Energy Regulatory Commission, at www.ferc.gov, and a copy of said documents by electronic mail to the following listed parties:

Party	Primary Person or Counsel of Record to be Served	Other Contact to be Served
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Dated this 3rd day of July 2015

/s/ Roger Birk

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Forest Service Comments on the Gant Lake Hydroelectric Project (FERC No. 13212) for the Draft License Application

The Forest Service concurs with FERC Office of Energy Projects “Review of Draft License Application for the Proposed Grant lake Hydroelectric Project Identification of Potential Deficiencies and Additional Information Needs” dated June 17, 2015

General-Forest Service Resources That Could Be Cumulatively Affected

Water quantity, water quality, and fishery resources are the only resources identified that would be cumulatively affected by the proposed construction and operation of the project. It is Forest Service practice to analyze all affected resources for direct, indirect and cumulative effects. During public meetings, many comments and concerns were expressed related to recreation use in the project area. In particular, the direct, indirect, and cumulative effects to the Iditarod National Historic Trail (INHT) should be thoroughly analyzed.

Water Quantity and Quality

Instream Flow Requirement – Chugach RLRMP, 2002 Water Wetlands and Riparian Areas Goal: “Provide instream flows to maintain and support aquatic life and habitat, recreation and aesthetics, the natural conveyance of water and sediment, and other resources that depend on such flows on National Forest System Lands.”

Need for Additional or New Information

- A reference identified in the Aquatic Resources Draft Study Plan (Source: Grant Lake Morphology in Marcuson, P. 1989. Coho Salmon Fry Stocking in Grant Lake, Alaska, USDA Forest Service, Seward Ranger District, Chugach National Forest, February 1989) states: “An upper basin of Grant Lake has a maximum depth of 80 feet and a lower, outlet end exceeding 90 feet in depth. The two basins are separated by a narrow isthmus with an island and less than 10 feet of depth.” Lake depths in the area in question should be evaluated and this statement verified. If true, there could be a disproportionate drawdown of the lower basin and there may be a loss of connectivity between the deeper regions of the upper and lower portions of Grant Lake. Again, please note that the draft study plan should display the updated project map (*This was not analyzed in the Draft Water Resources – Geomorphology Report, Feb. 2014*). This drawdown may also have effects on water recreation through this narrow, shallow location and should be analyzed (06/11/2015).
- Approximately 11 % of Grant Creek is covered by glaciers. The effects analysis of the project should include references and an analysis on how the project will affect water

quantity/quality taking into account anticipated streamflow changes from glacial recession.

- Grant Creek was stream gaged by the USGS from 1947-1958. This time frame was within the Cold (Negative) Pacific Decadal Oscillation (PDO). Cold PDO phase summer flows have shown higher peak snowmelt runoff, and higher magnitude and timing of annual peak discharge events than Warm (positive) PDO phase summer flows (Neal, et. al, 2002). Additionally, many of these years during this timeframe were La Nina's which often produce higher amounts of snowfall lending to even higher flows. Utilizing only these years and only two separate discontinuous and incomplete years of data will likely not reflect the mean hydrograph. Modeling Grant Creek's streamflow hydrograph should take into account that the gaged water flow years were likely much higher than the mean.
- Please include a climate change effects analysis. This analysis should include anticipated changes in streamflow. Hydrologic flow analyses should take into account both the long term warming climate change trend and the PDO and ENSO variation cycles.
- There will need to be an analysis of the project effects on Groundwater Resources within the project area and downstream.

Activities occurring off of National Forest lands may still affect upstream and downstream Forest Service resources such as fish, water quality, water quantity, aquatic habitat and riparian areas. The Land and Resource Management Prescription within the project area has a Fish, Wildlife, and Recreation management Prescription. Apply Best Management Practices to minimize the effects of land disturbing activities on the beneficial uses of water.

Aquatic Resources

The Forest Service is in Concurrence with comments that were made by Alaska Dept. of Fish and Game with regard to Fisheries and Aquatic Resources. Along with their comments the effects of project construction and operation on changes in distribution and abundance of aquatic insects and their predators should be analyzed.

Terrestrial Resources

The Forest Service is in Concurrence with comments that were made by Alaska Dept. of Fish and Game with regard to Terrestrial Resources. The effects of project construction and operation on changes to animal movement in and through the project area as well as displacement and disruption of seasonal movement patterns should be analyzed. The effects of increased access on harvestable wildlife should also be analyzed

Soil Resources-Erosion Control Plan

Within 1 year following the date of license issuance and at least 90-days prior to any land disturbing activity, the Licensee shall file with the Director, Office of Hydropower Licensing for Commission approval, a plan that is approved by the Forest Service to control erosion, stream

sedimentation, dust and soil mass movement consistent with the standards and guidelines of the Chugach National Forest Land Management Plan, the Soil and Water Conservation Handbook (FSH 2509.22) and the National Best Management Practices. Upon Commission approval, the Licensee shall implement the plan. The plan shall be based on actual-site geological, soil, surface water and groundwater conditions, and shall include: (1) a description of the actual site conditions, including any existing erosion or sedimentation problems from roads, stream crossings, trails, or other facilities; (2) detailed descriptions, design drawings, and specific topographic locations of all control measures; (3) measures to divert runoff over disturbed land surfaces, including sediment ponds at the diversion and powerhouse sites; (5) re-vegetating test-drive areas outside the roadbed; (6) measures to dissipate energy and prevent erosion at the tailrace; (7) a monitoring and maintenance schedule; (8) and any other measures the Forest Service, and the Licensee mutually identify as needing care to ensure resource protection. The plan and erosion control measures shall comply with Best Management Practices (Soil and Water Conservation Handbook FSH 2509.22 and National Best Management Practices for Water Quality Management on National Forest System Lands FS-990). Erosion control measures should be designed to retain the natural appearance of the area where practicable. The Commission may require changes to the plan to ensure adequate protection of the environmental, scenic, and cultural values of the project area. The Licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, Office of Hydropower, Licensing, prescribes a different commencement schedule.

Mineral Resources

The effects of project construction and operation on changes to heavy metal leakage as a result of water level fluctuations of Grant Lake, which is an area of past mining and milling operations, should be analyzed. The Forest Service currently has a Miner with an approved Mining Plan of Operations for a Placer and Loading mining operation in the Grant lake Area.

Recreation Resources and Land Use

Iditarod National Historic Trail:

The Grant Lake Hydro project proposes development of a vehicular road that would directly overlay or generally parallel the Iditarod National Historic Trail (INHT) Easement. The Grant Lake project also proposes development of a Powerhouse, and Tailrace Detention Pond at the location of a planned INHT pedestrian bridge crossing of Grant Creek. National Historic Trails are established under the National Trails System Act (P.L. 90543, as amended through P.L. 111-11, March 30, 2009).

National Trails in Alaska are considered a Conservation System Unit (CSU) under the Alaska National Interest Lands Conservation Act (ANILCA). When a transportation or utility system (TUS) is proposed within a CSU, each Federal agency having jurisdiction must follow the

requirements of Title XI of ANILCA. Sections 1104 and 1107 of Title XI describe the procedural requirements that apply. Section 1106 describes the decision-making process for final approval or disapproval by the agencies.

FERC is the lead federal agency with responsibility for preparing the National Environmental Policy Act (NEPA) document. An environmental impact statement is required for a TUS in a CSU. Upon completion of the EIS, each federal agency will make its decision regarding its authorization and include detailed findings as required by Section 1104(g) of Title XI. Section 1104 (g) (2) identifies eight specific criteria that must be considered before a federal agency makes a decision and Section 1107 (a) specifies terms and conditions that must be included in an authorization. Section 1104 also requires the Federal agencies to hold hearings on the EIS in Alaska and Washington, D.C.

Title XI requires that an applicant apply to the appropriate federal agencies for an authorization for the TUS. KHL must submit an application to the Forest Service and the Federal Energy Regulatory Commission on form SF-299 along with the substantial evidence outlined in Section 1104 (g) (2) that is needed by the agencies to make a decision.

While the INHT through the Vagt Lake / Grant Lake area is on State of Alaska land, development of this INHT segment is being performed by the Forest Service under an easement issued by the State of Alaska Department of Natural Resources (Final Finding and Decision, ADL 228890 Grant of Public Easement Iditarod National Historic Trail Seward to Girdwood, 2004). The DNR decision stipulates the reservation of “a 1,000-foot-wide corridor which will provide a buffer with enough width to, a) conserve the wilderness characteristics of the Iditarod Trail, b) provide enough width to separate conflicting uses such as motorized and non-motorized uses in areas where multiple uses are recommended, and c) allow for development of future compatible trail facilities.”

The issue to be addressed is the access road location. The Recreation Resources Study Report is correct in that discussions of a reroute of the INHT easement are ongoing with state and federal agencies, and other stakeholders. Further analysis and discussion will be required to assess the effects to the Iditarod National Historic Trail and the public use and development scale of the proposed road to Grant Lake. Until this analysis and review of alternative routes is completed, it seems inappropriate to describe the benefits or deficiencies of the alternative routes.

The Chugach National Forest has identified the following general issues regarding any alternative to the reroute of the INHT for the Grant Lake Hydro Project as currently proposed:

- Quality Recreation Experience: Development and provision of a single-track trail that provides a high quality backcountry recreation experience through a predominantly unmodified setting of high scenic value. The road and substation, as proposed, would substantially alter and compromise the desired INHT recreation experience.
- Cost: The Forest Service has invested significant time and resources to locate an alignment of the INHT through this area (which provides challenging topography and limited alignment options) that meets INHT management objectives. Even if an alternate location

that meets management objectives could be found, by provision of the DNR Final Finding and Decision, the cost of identifying and developing a new alignment (including any increase in construction cost), would be borne by the proponent.

- **Sustainable Trail:** The INHT trail alignment is intended to provide a sustainable trail that meets the INHT management objectives and Forest Service design parameters, while minimizing long-term maintenance needs, and avoiding or minimizing negative impacts to other resources. Any revised alignment would need to fulfill the same objectives.

Other Comments on Recreation and Visual Resources:

It is unclear from the Recreation Resources Study Report description that the initial winter survey actually included the National Forest System Lands around Grant Lake. Normal winter routes to Grant Lake do not utilize the Vagt Lake Trail. Rather, access is gained from one of two winter trails at the northern end of the Trail Lake narrows. The Study only indicates one winter and one summer visit.

Existing Observed Winter Use

This section of the Recreation Resources Study Report is not accurate. Winter access to the Grant Lake area is most commonly via crossing Upper Trail Lake and one of two winter trails which leave the shoreline just south of the mouth of the lake. The most used trail is a portage trail which is easily negotiated via snowshoe, ski or snow machine. This trail is located in the southern portion of Section 31. It would be difficult to identify the winter use of the Grant Lake area without observing these routes. Another known winter use of the Grant Lake area would be trapping of fur bearing animals.

Existing Observed Summer Use

Other known uses include hiking to Grant Lake on one of the trails mentioned above and boating in paddle craft portaged from Upper Trail Lake. Though mentioned later in the document, it would seem appropriate to include here that summer use of the Grant Lake area can be expected to increase with the completion of planned developments associated with the Iditarod National Historic Trail. The study also describes the existing use of the Vagt Lake Trail as “light”. If a conclusion is drawn on the amount of use, then the term, light, should be defined. Again it would seem appropriate to mention that use can be expected to increase once the planned development of the INHT is completed.

Sight-Seeing Flights

The description of typical routes seems to indicate the Harding Ice field is in the vicinity of Prince William Sound. This is inaccurate; perhaps the writer is referring to the Sargent Ice field or that flights also continue south and west to view the Harding Ice field.

Noise

There has not been sufficient study of non-motorized recreational use of the Grant Lake area to describe as “small to absent”.

Conclusions on recreational use of the National Forest System lands in the vicinity of Grant Lake can't be reached based on two visits as described in the Recreation Resources Study Report. The inaccuracies and omissions mentioned should be corrected and further study should be undertaken to more accurately characterize this recreational use of National Forest System lands in the vicinity of Grant Lake. Further analysis and discussion will be required to assess the effects to the Iditarod National Historic Trail and the public use and development scale of the proposed road to Grant Lake. We are also concerned about how the proposed buildings, fluctuating lake level, and power distribution lines will affect the visual integrity of the CNF in this area.

Cultural Resources: Archaeological and Historic Study

The survey and report are very thorough, with an outstanding job of documenting cultural resources within the Area of Potential Effects (APE). We anticipate further discussion regarding the determinations of eligibility and finding of effect during our formal review of the determinations for historic properties in the coming months. As for the proposed INHT reroute, our main concern is adding the reroute to the APE and surveying for cultural resources once that route has been established. The Forest Service is in concurrence with the SHPO comments to the DLA.

Land Use Authorizations

Most of the proposed project facilities are located on State of Alaska lands. However, project facilities, such as impoundments, on National Forest System lands will require special use authorization from the Forest Service prior to construction. Authorization for use of federal right-of-ways or easements, such as use of the Crown Point Mine Road and the INHT must also be obtained.

- The proposed constructed facilities are generally located on State of Alaska lands. These lands were patented to the State of Alaska under the Alaska Statehood Act on September 21, 1992. The Forest Service retained reservations and easements for continued public access to National Forest System lands. The United States reserved a 60-foot wide road easement on the Crown Point Road. Reconstruction and use of the Crown Point Road would require Forest Service authorization.
- The Forest Service has been granted a 1000-foot wide trail easement from the State of Alaska for the INHT. Any use on or adjacent to the land encumbered by the easement must not unreasonably interfere with the rights granted to the United States. The United States, acting by and through the USDA Forest Service, is responsible for the administration of the easement including the right to regulate occupancy and use.

Inventoried Roadless Area

The National Forest portion of the project area is located in the Kenai Mountains Roadless Area. The effects of the proposed project on the Roadless character should be fully analyzed, including vegetation clearing along the shoreline of Grant Lake. The Secretary of Agriculture has reserved decision authority on projects within inventoried Roadless areas.

Aesthetic Resources

Effects of project construction, facilities and operation on the aesthetic values of the project area should also consider aerial views. Trail Lake provides a base for commercial and non-commercial flightseeing activities.

Socioeconomics

The project effects on subsistence use should include rural residents. Section 811 of the Alaska National Interest Lands Conservation Act (ANILCA) requires that rural residents engaged in subsistence uses have reasonable access to subsistence resources on public lands. The subsistence analysis will need to include a distinct finding on whether the proposed action may significantly restrict access to subsistence. The communities of Cooper Landing and Hope have customary and traditional use determinations for subsistence fishing, and moose/caribou hunting in the Grant lake area.

Appendix A

Grant Lake Hydroelectric Project

FERC No. 13212

USDA Forest Service

Alaska Region

Chugach National Forest

Preliminary 4(e) Terms and Conditions

General

License articles contained in the Federal Energy Regulatory Commission's (Commission) Standard Form L-1 issued by Order No. 540, dated October 31, 1975, cover those general requirements that the Secretary of Agriculture, acting by and through the USDA Forest Service, considers necessary for adequate protection and utilization of the land and related resources of the Chugach National Forest. Under authority of section 4(e) of the Federal Power Act (16 U.S.C. 797(e)), the following terms and conditions are deemed necessary for adequate protection and utilization of National Forest System lands and resources. These terms and conditions are based on those resources enumerated in the Organic Administration Act of 1897 (30 Stat. 11), the Multiple-Use Sustained Yield Act of 1960 (74 Stat. 215), the National Forest Management Act of 1976 (90 Stat. 2949), and any other law specifically establishing a unit of the National Forest System or prescribing the management thereof (such as the Wilderness Act or Wild and Scenic Rivers Act), as such laws may be amended from time to time, and as implemented by regulations and approved Land and Resources Management Plans prepared in accordance with the National Forest Management Act. Therefore, pursuant to section 4(e) of the Federal Power Act, the following conditions covering specific requirements for protection and utilization of the National Forest System lands shall also be included in any license issued for the Grant Lake Hydroelectric Project (Project).

Condition No. 1 - Requirement to Obtain a Forest Service Special-Use Authorization

The Licensee shall obtain a special-use authorization from the USDA Forest Service for the occupancy and use of National Forest System lands. The licensee shall obtain the executed authorization before beginning ground-disturbing activities on National Forest System lands or within one year of license issuance if no construction or reconstruction was proposed in the application for license.

The Licensee may commence ground-disturbing activities authorized by the License and special-use authorization no sooner 60 days following the date the licensee files the USDA Forest Service special-use authorization with the Commission, unless the Commission prescribes a different commencement schedule.

In the event there is a conflict between any provisions of the license and USDA Forest Service special-use authorization, the special-use authorization shall prevail to the extent that the USDA Forest Service, in consultation with the Commission, deems necessary to protect and utilize National Forest System resources.

Condition No. 2 – Forest Service Approval of Final Design

Prior to undertaking activities on National Forest System lands, the Licensee shall obtain written approval from the USDA Forest Service for all final design plans for project components that the USDA Forest Service deems as affecting or potentially affecting National Forest System lands and resources. As part of such prior written approval, the USDA Forest Service may require adjustments in final design plans and facility locations to preclude or mitigate impacts and to assure that the project is compatible with on-the-ground conditions. Should the USDA Forest Service, the Commission, or the Licensee determine that necessary changes are a substantial change; the Licensee shall follow the procedures of Article 2 of the license. Any changes to the license made for any reason pursuant to Article 2 or Article 3 shall be made subject to any new terms and conditions the Secretary of Agriculture may make pursuant to section 4(e) of the Federal Power Act.

Condition No. 3 – Approval of Changes

Notwithstanding any license authorization to make changes to the Project, when such changes directly affect NFS lands and easements the Licensee shall obtain written approval from the Forest Service prior to making any changes in any constructed Project features or facilities, or in the uses of Project lands and waters or any departure from the requirements of any approved exhibits filed with the Commission. Following receipt of such approval from the Forest Service, and a minimum of 60- days prior to initiating any such changes, the Licensee shall file a report with the Commission describing the changes, the reasons for the changes, and showing the approval of the Forest Service for such changes.

The Licensee shall file an exact copy of this report with the Forest Service at the same time it is filed with the Commission. This condition does not relieve the Licensee from other requirements of this license.

Condition No. 4 – Consultation

The Licensee shall, beginning the first full calendar year after license acceptance, participate in annual meetings with the Forest Service to present Project operation and maintenance activities planned for the next calendar year. In addition, Licensee shall present results from current year monitoring of invasive plants and other resources. The goals of this meeting are to share information, mutually agree upon planned maintenance activities, identify concerns that the Forest Service may have regarding activities and their potential effects on sensitive resources, and any measures required to avoid or mitigate potential effects. The date of the consultation meeting will be between January 10 and March 15 of each year, as mutually agreed to by the Licensee and the Forest Service. Representatives from the National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), Alaska Department of Fish and Game (ADF&G), interested tribes, other interested agency representatives, and other interested parties concerned with operation of the Project may attend the meeting.

Consultation shall include, but not be limited to:

- A status report regarding implementation of license conditions;
- Results of any monitoring studies performed over the previous year in formats agreed to by the Forest Service and the Licensee during development of implementation plans;
- Review of any non-routine maintenance;
- Discussion of any foreseeable changes to Project facilities or features;
- Discussion of any necessary revisions or modifications to implementation plans approved as part of this license;
- Discussion of needed protection measures for species newly listed as threatened, endangered, or sensitive, or changes to existing management plans that may no longer be warranted due to delisting of species or, to incorporate new knowledge about a species requiring protection;
- Discussion of elements of current year maintenance plans, e.g. access route maintenance; and
- Discussion of any planned pesticide use.

A record of the meeting shall be kept by the Licensee and shall include any recommendations made by the Forest Service for the protection of NFS lands and resources. The Licensee shall file the meeting record, if requested, with the Commission no later than 60 days following the meeting.

Copies of other reports related to Project safety and non-compliance shall be submitted to the Forest Service concurrently with submittal to the FERC. These include, but are not limited to: any non-compliance report filed by the Licensee, geologic or seismic reports, and structural safety reports for facilities located on or affecting NFS lands.

The Forest Service reserves the right, after notice and opportunity for comment, to require changes in the Project and its operation through revision of the Section 4(e) conditions to accomplish protection and utilization of NFS lands and resources.

Condition No. 5 - Compliance with Regulations

The Licensee shall comply with the regulations of the Department of Agriculture for activities on NFS lands, and all applicable Federal, State, county, and municipal laws, ordinances, or regulations in regards to the area or operations on or directly affecting NFS lands, to the extent those laws, ordinances or regulations are not preempted by federal law.

Condition No. 6 – Surrender of License or Transfer of Ownership

Prior to any surrender of this license, the Licensee shall provide assurance acceptable to the Forest Service that Licensee shall restore any Project area directly affecting NFS lands or easements to a condition satisfactory to the Forest Service upon or after surrender of the license, as appropriate. To the extent restoration is required, Licensee shall prepare a restoration plan which shall identify the measures to be taken to restore such NFS lands and shall include or identify adequate financial mechanisms to ensure performance of the restoration measures. In the event of any transfer of the license or sale of the Project, the Licensee shall assure that, in a manner satisfactory to the Forest Service, the Licensee or transferee will provide for the costs of surrender and restoration. If deemed necessary by the Forest Service to assist it in evaluating the Licensee's proposal, the Licensee shall conduct an analysis, using experts approved by the Forest Service, to estimate the potential costs associated with surrender and restoration of any Project area directly affecting NFS lands to Forest Service specifications. In addition, the Forest Service may require the Licensee to pay for an independent audit of the transferee to assist the Forest Service in determining whether the transferee has the financial ability to fund the surrender and restoration work specified in the analysis.

Condition No. 7- Protection of United States Property

The Licensee, including any agents or employees of the Licensee acting within the scope of their employment, shall exercise diligence in protecting from damage the land and property of the United States covered by and used in connection with this license.

Condition No. 8 – Indemnification

The Licensee shall indemnify, defend, and hold the United States harmless for:

- any violations incurred under any laws and regulations applicable to, or
- judgments, claims, penalties, fees, or demands assessed against the United States caused by, or
- costs, damages, and expenses incurred by the United States caused by, or
- The releases or threatened release of any solid waste, hazardous substances, pollutant, contaminant, or oil in any form in the environment related to the construction, maintenance, or operation of the Project works or of the works appurtenant or accessory thereto under the license.

The Licensee's indemnification of the United States shall include any loss by personal injury, loss of life or damage to property caused by the construction, maintenance, or operation of the Project works or of the works appurtenant or accessory thereto under the license.

Indemnification shall include, but is not limited to, the value of resources damaged or destroyed; the costs of restoration, cleanup, or other mitigation; fire suppression or other types of abatement costs; third party claims and judgments; and all administrative, interest, and other legal costs.

Upon surrender, transfer, or termination of the license, the Licensee's obligation to indemnify and hold harmless the United States shall survive for all valid claims for actions that occurred prior to such surrender, transfer or termination.

Condition No. 9 - Damage to Land, Property, and Interests of the United States

The Licensee has an affirmative duty to protect the land, property, and interests of the United States from damage arising from the Licensee's construction, maintenance, or operation of the Project works or the works appurtenant or accessory thereto under the license. The Licensee's liability for fire and other damages to NFS lands shall be determined in accordance with the Federal Power Act and standard Form L-1 Articles 22 and 24.

Condition No. 10 - Risks and Hazards on National Forest System Lands

As part of the occupancy and use of the Project area, the Licensee has a continuing responsibility to reasonably identify and report all known or observed hazardous conditions on or directly affecting NFS lands or easements within the Project boundary that would affect the improvements, resources, or pose a risk of injury to individuals. Licensee will abate those conditions, except those caused by third parties or related to the occupancy and use authorized by the License. Any non-emergency actions to abate such hazards on NFS lands shall be performed after consultation with the Forest Service. In emergency situations, the Licensee shall notify the Forest Service of its actions as soon as possible, but not more than 48 hours, after such actions have been taken. Whether or not the Forest Service is notified or provides consultation, the Licensee shall remain solely responsible for all abatement measures performed. Other hazards should be reported to the appropriate agency as soon as possible.

Condition No. 11 - Access

The Forest Service reserves the right to use or permit others to use any part of the licensed area on NFS lands for any purpose, provided such use does not interfere with the rights and privileges authorized by this license or the Federal Power Act.

Condition No. 12 - Maintenance of Improvements

The Licensee shall maintain all its improvements and premises on National Forest System lands or easements to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the USDA Forest Service. The Licensee shall comply with all applicable Federal, State, and local laws, regulations, including but not limited to, the Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq., the Resources Conservation and Recovery Act, 42 U.S.C. 6901 et seq., the Comprehensive Environmental Response, Control, and Liability Act, 42 U.S.C. 9601 et seq., and other relevant environmental laws, as well as public health and safety laws and other laws relating to the siting, construction, operation, maintenance of any facility, improvement, or equipment.

Condition No. 13 - Surveys, Land Corners

The Licensee shall avoid disturbance to all public land survey monuments, private property corners, and forest boundary markers. In the event that any such land markers or monuments on NFS lands are destroyed by an act or omission of the Licensee, in connection with the use and/or occupancy authorized by this license, depending on the type of monument destroyed, the Licensee shall reestablish or reference same in accordance with (1) the procedures outlined in the "Manual of Instructions for the Survey of the Public Land of the United States," or (2) the specifications of the Forest Service. Further, the Licensee shall ensure that any such official survey records affected are amended as provided by law.

Condition No. 14 – Pesticide Use Restrictions on National Forest System Lands

Pesticides may not be used on NFS lands or in areas affecting NFS lands to control undesirable woody and herbaceous vegetation, aquatic plants, insects, rodents, non-native fish, etc., without the prior written approval of the Forest Service. During the Annual Consultation Meeting described in Condition 4, the Licensee shall submit a request for approval of planned uses of pesticides for the upcoming year. The Licensee shall provide at a minimum the following information essential for review:

- whether pesticide applications are essential for use on NFS lands;
- specific locations of use;
- specific herbicides proposed for use;
- application rates;

- dose and exposure rates; and
- Safety risk and timeframes for application.

Exceptions to this schedule may be allowed only when unexpected outbreaks of pests require control measures that were not anticipated at the time the report was submitted. In such an instance, an emergency request and approval may be made.

Pesticide use will be excluded from NFS lands within 500 feet of known locations of Western Toad, or known locations of Forest Service Special Status or culturally significant plant populations. Application of pesticides must be consistent with Forest Service riparian conservation objectives.

On NFS lands, the Licensee shall only use those materials registered by the U.S. Environmental Protection Agency and consistent with those applied by the Chugach National Forest and approved through Forest Service review for the specific purpose planned. The Licensee must strictly follow label instructions in the preparation and application of pesticides and disposal of excess materials and containers.

Condition No. 15 - Modifications of 4(e) Conditions after Biological Opinion or Certification

The Forest Service reserves the right to modify these conditions, if necessary, to respond to any Final Biological Opinion issued for this Project by the National Marine Fisheries Service, United States Fish and Wildlife Service; or any Certification issued for this Project by the State of Alaska.

Condition No. 16 – Signs

The Licensee shall consult with the USDA Forest Service prior to erecting any signs on National Forest System lands and easements relating to this license. The Licensee must obtain the approval of the USDA Forest Service as to the location, design, size, color, and message. The Licensee shall be responsible for maintaining all Licensee erected signs to neat and presentable standards.

Condition No. 17 – Additional Ground Disturbing Activities

If the Licensee proposes ground-disturbing activities on or directly affecting NFS lands or easements that were not specifically addressed in the Commission's NEPA processes, the Licensee, in consultation with the Forest Service, shall determine the scope of work and potential for Project-related effects, and whether additional information is required to proceed with the planned activity.

Upon Forest Service request, the Licensee shall enter into an agreement with the Forest Service under which the Licensee shall fund a reasonable portion of Forest Service's staff time and expenses for staff activities related to the proposed activities.

Condition No. 18 – Implementation and Modification of Forest Service Conditions

(Applies only to issuance of Special Use Permit after licensing)

The USDA Forest Service reserves the authority to modify USDA Forest Service 4(e) terms and conditions if upon completion of the USDA Forest Service administrative appeals process at 36 Code of Federal Regulations (CFR) Part 214, the Chief, USDA Forest Service, or Secretary of Agriculture directs that substantial changes to the terms and conditions submitted herein be made.

Condition 19 - Use of Explosives

In the use of explosives, the Licensee shall exercise the utmost care not to endanger life or property and shall comply with Federal, State and local laws and ordinances. The Licensee shall contact the USDA Forest Service prior to blasting to obtain the requirements of the USDA Forest Service. The Licensee shall be responsible for any and all damages resulting from the use of explosives and shall adopt precautions to prevent damage to surrounding objects. The Licensee shall furnish and erect special signs to warn the public of the Licensee's blasting operations. The Licensee shall place and maintain such signs so they are clearly evident to the public during all critical periods of the blasting operations.

The Licensee shall store all explosives on National Forest System lands and Licensee adjoining fee title property in compliance with all applicable Federal, State and local laws and ordinances.

When using explosives on National Forest System lands and Licensee adjoining fee title property, the Licensee shall adopt precautions to prevent damage to landscape features and other surrounding objects. When directed by the USDA Forest Service, the Licensee shall leave trees within an area designated to be cleared as a protective screen for surrounding vegetation during blasting operations. The Licensee shall remove and dispose of trees so left when blasting is complete. When necessary, and at any point of special danger, the Licensee shall use suitable mats or some other approved method to smother blasts.

Condition No. 20 – Resource Management Plans

Within one year of license issuance, and in consultation with the Forest Service and applicable Federal and State agencies, the Licensee shall file with the Commission the following plans addressing specific resource issues covered by the Chugach National Forest Land and Resource Management Plan.

The licensee shall submit the draft plans for Forest Service review and approval, prior to submitting the plans to the Commission. The licensee shall provide at least 90 days for Forest Service review and approval before the filing deadline in the license.

Upon Commission approval, Licensee shall implement the Plans. The plans shall include the following:

- a) Construction Plan**
- b) Reservoir Management and Inundation Plan**
- c) Hazardous Substances Plan**
- d) Fire Prevention Plan**
- e) Heritage Resource Protection Plan**
- f) Scenery Management Plan**
- g) Vegetation Management Plan**
- h) Invasive Species Management Plan**
- i) Wildlife Mitigation and Monitoring Plan**
- j) Fish Mitigation and Monitoring Plan**
- k) Threatened, Endangered, Proposed for Listing, and Sensitive Species Plan**
- l) Aquatic Habitat Restoration and Monitoring Plan**
- m) Erosion and Sediment Control Plan**
- n) Solid Waste and Waste Water Plan**
- o) Spoil Disposal Plan**

The Plans shall include resource management objectives tied to the Chugach National Forest Land and Resource Management Plan and an implementation schedule.



United States
Department of
Agriculture

Forest Service
Alaska Region

P.O. Box 21628
Juneau, AK 99802-1628

File Code: 2770
Date: July 2, 2015

Ms. Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

**Forest Service DLA Comments and Preliminary 4(e) Terms and Conditions for the
Grant Lake Hydroelectric Project, FERC Project No. P-13212**

Dear Ms. Bose:

On June 25, 2015, the Forest Service submitted the enclosed comments to Kenai Lake Hydro, LLC (KHL) on its Draft License Application for the Grant Lake Hydroelectric Project. Please include these comments in the record for this project.

Enclosure 1 is the cover letter for our comments. The Draft License Application comments are Enclosure 2. Enclosure 3 is our Preliminary 4(e) Terms and Conditions. Enclosure 4 is the Certificate of Service.

If you have any questions or comments, please contact Roger Birk of this office at 907-586-8843 or rbirk@fs.fed.us.



Ms. Kimberly D. Bose

2

Sincerely,



for

BETH G. PENDLETON
Regional Forester

cc: Terri Marceron, Chugach Forest Supervisor, Tom Malecek, Seward District Ranger



United States
Department of
Agriculture

Forest
Service

Chugach National Forest

161 East 1st Avenue
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Anchorage, AK 99501-1639

File Code: 2720
Date: June 25, 2015

Mike Salzetti
Mgr of Fuel Supply and Renewable Energy Development
Kenai Hydro LLC
3977 Lake Street
Homer, AK 99603

Subject: Chugach NF comments on the Draft License Application for Kenai Hydro, LLC - Grant Lake Hydroelectric Project (FERC No. 13212)

Dear Mr. Salzetti:

Thank you for the opportunity to review and comment on the Draft License Application for Kenai Hydro, LLC - Grant Lake Hydroelectric Project (FERC No. 13212).

This project is located within the Chugach National Forest boundary in the Alaska Region. Our comments are related to National Forest System lands and interests within the project boundary.

Our comments and preliminary conditions are enclosed.

We look forward to working with the FERC and Kenai Hydro, LLC to ensure the needs of the public are addressed. If you have any questions regarding this submittal, please contact Deputy District Ranger, Robert Stovall at rstovall@fs.fed.us or 907-743-9474.

Sincerely,

For Terri Marceron
Forest Supervisor

Cc: Kathy Van Massenhove, Special Uses Team Leader, Chugach National Forest
Roger Birk, Special Uses Alaska Region

Enclosures
Grant Lake Hydro Preliminary 4(e) Terms and Conditions
Forest Service Comments on the Grant Lake Hydroelectric Project



Forest Service Comments on the Grant Lake Hydroelectric Project (FERC No. 13212) for the Draft License Application

The Forest Service concurs with FERC Office of Energy Projects “Review of Draft License Application for the Proposed Grant lake Hydroelectric Project Identification of Potential Deficiencies and Additional Information Needs” dated June 17, 2015

General-Forest Service Resources That Could Be Cumulatively Affected

Water quantity, water quality, and fishery resources are resources identified that would be cumulatively affected by the proposed construction and operation of the project. It is Forest Service practice to analyze all affected resources for direct, indirect and cumulative effects. During public meetings, many comments and concerns were expressed related to recreation use in the project area. In particular, the direct, indirect, and cumulative effects to the Iditarod National Historic Trail (INHT) should be thoroughly analyzed.

Water Quantity and Quality

Instream Flow Requirement – Chugach RLRMP, 2002 Water Wetlands and Riparian Areas
Goal: “Provide instream flows to maintain and support aquatic life and habitat, recreation and aesthetics, the natural conveyance of water and sediment, and other resources that depend on such flows on National Forest System Lands.”

Need for Additional or New Information

- A reference identified in the Aquatic Resources Draft Study Plan (Source: Grant Lake Morphology in Marcuson, P. 1989. Coho Salmon Fry Stocking in Grant Lake, Alaska, USDA Forest Service, Seward Ranger District, Chugach National Forest, February 1989) states: “An upper basin of Grant Lake has a maximum depth of 80 feet and a lower, outlet end exceeding 90 feet in depth. The two basins are separated by a narrow isthmus with an island and less than 10 feet of depth.” Lake depths in the area in question should be evaluated and this statement verified. If true, there could be a disproportionate drawdown of the lower basin and there may be a loss of connectivity between the deeper regions of the upper and lower portions of Grant Lake. Again, please note that the draft study plan should display the updated project map (*This was not analyzed in the Draft Water Resources – Geomorphology Report, Feb. 2014*). This drawdown may also have effects on water recreation through this narrow, shallow location and should be analyzed (06/11/2015).
- Approximately 11 % of Grant Creek is covered by glaciers. The effects analysis of the project should include references and an analysis on how the project will affect water

quantity/quality taking into account anticipated streamflow changes from glacial recession.

- Grant Creek was stream gaged by the USGS from 1947-1958. This time frame was within the Cold (Negative) Pacific Decadal Oscillation (PDO). Cold PDO phase summer flows have shown higher peak snowmelt runoff, and higher magnitude and timing of annual peak discharge events than Warm (positive) PDO phase summer flows (Neal, et. al, 2002). Additionally, many of these years during this timeframe were La Nina's which often produce higher amounts of snowfall lending to even higher flows. Utilizing only these years and only two separate discontinuous and incomplete years of data will likely not reflect the mean hydrograph. Modeling Grant Creek's streamflow hydrograph should take into account that the gaged water flow years were likely much higher than the mean.
- Please include a climate change effects analysis. This analysis should include anticipated changes in streamflow. Hydrologic flow analyses should take into account both the long term warming climate change trend and the PDO and ENSO variation cycles.
- There will need to be an analysis of the project effects on Groundwater Resources within the project area and downstream.

Activities occurring off of National Forest lands may still affect upstream and downstream Forest Service resources such as fish, water quality, water quantity, aquatic habitat and riparian areas. The Land and Resource Management Prescription within the project area has a Fish, Wildlife, and Recreation management Prescription. Apply Best Management Practices to minimize the effects of land disturbing activities on the beneficial uses of water.

Aquatic Resources

The Forest Service is in concurrence with comments that were made by Alaska Dept. of Fish and Game with regard to Fisheries and Aquatic Resources. Along with their comments the effects of project construction and operation on changes in distribution and abundance of aquatic insects and their predators should be analyzed.

Terrestrial Resources

The Forest Service is in concurrence with comments that were made by Alaska Dept. of Fish and Game with regard to Terrestrial Resources. The effects of project construction and operation on changes to animal movement in and through the project area as well as displacement and disruption of seasonal movement patterns should be analyzed. The effects of increased access on harvestable wildlife should also be analyzed.

Soil Resources-Erosion Control Plan

Within 1 year following the date of license issuance and at least 90-days prior to any land disturbing activity, the Licensee shall file with the Director, Office of Hydropower Licensing for Commission approval, a plan that is approved by the Forest Service to control erosion, stream

sedimentation, dust and soil mass movement consistent with the standards and guidelines of the Chugach National Forest Land Management Plan, the Soil and Water Conservation Handbook (FSH 2509.22) and the National Best Management Practices. Upon Commission approval, the Licensee shall implement the plan. The plan shall be based on actual-site geological, soil, surface water and groundwater conditions, and shall include: (1) a description of the actual site conditions, including any existing erosion or sedimentation problems from roads, stream crossings, trails, or other facilities; (2) detailed descriptions, design drawings, and specific topographic locations of all control measures; (3) measures to divert runoff over disturbed land surfaces, including sediment ponds at the diversion and powerhouse sites; (5) re-vegetating test-drive areas outside the roadbed; (6) measures to dissipate energy and prevent erosion at the tailrace; (7) a monitoring and maintenance schedule; (8) and any other measures the Forest Service, and the Licensee mutually identify as needing care to ensure resource protection. The plan and erosion control measures shall comply with Best Management Practices (Soil and Water Conservation Handbook FSH 2509.22 and National Best Management Practices for Water Quality Management on National Forest System Lands FS-990). Erosion control measures should be designed to retain the natural appearance of the area where practicable. The Commission may require changes to the plan to ensure adequate protection of the environmental, scenic, and cultural values of the project area. The Licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, Office of Hydropower, Licensing, prescribes a different commencement schedule.

Mineral Resources

The effects of project construction and operation on changes to heavy metal leakage as a result of water level fluctuations of Grant Lake, which is an area of past mining and milling operations, should be analyzed. The Forest Service currently has a Miner with an approved Mining Plan of Operations for a Placer and Loading mining operation in the Grant lake Area.

Recreation Resources and Land Use

Iditarod National Historic Trail:

In general, the Forest Service concurs with comments made by the Alaska Department of Natural Resources that were submitted to FERC on June 23, 2015. Specifically, related to the Iditarod National Historic Trail (INHT), the Forest Service reiterates the comments made in these sections: 4.8.1.3 Iditarod National Historical Trail [INHT], 4.8.2.1.7 Recreational Opportunities, 4.8.2.3 INHT, 4.9.2.2.4, and 4.9.2.3.1.

The Grant Lake Hydro project proposes development of a vehicular road that would directly overlay or generally parallel the Iditarod National Historic Trail (INHT) Easement. The Grant Lake project also proposes development of a Powerhouse, and Tailrace Detention Pond at the location of a planned INHT pedestrian bridge crossing of Grant Creek. National Historic Trails

are established under the National Trails System Act (P.L. 90543, as amended through P.L. 111-11, March 30, 2009).

National Trails in Alaska are considered a Conservation System Unit (CSU) under the Alaska National Interest Lands Conservation Act (ANILCA). When a transportation or utility system (TUS) is proposed within a CSU, each Federal agency having jurisdiction must follow the requirements of Title XI of ANILCA. Sections 1104 and 1107 of Title XI describe the procedural requirements that apply. Section 1106 describes the decision-making process for final approval or disapproval by the agencies.

FERC is the lead federal agency with responsibility for preparing the National Environmental Policy Act (NEPA) document. An environmental impact statement is required for a TUS in a CSU. Upon completion of the EIS, each federal agency will make its decision regarding its authorization and include detailed findings as required by Section 1104(g) of Title XI. Section 1104 (g) (2) identifies eight specific criteria that must be considered before a federal agency makes a decision and Section 1107 (a) specifies terms and conditions that must be included in an authorization. Section 1104 also requires the Federal agencies to hold hearings on the EIS in Alaska and Washington, D.C.

Title XI requires that an applicant apply to the appropriate federal agencies for an authorization for the TUS. KHL must submit an application to the Forest Service and the Federal Energy Regulatory Commission on form SF-299 along with the substantial evidence outlined in Section 1104 (g) (2) that is needed by the agencies to make a decision.

While the INHT through the Vagt Lake / Grant Lake area is on State of Alaska land, development of this INHT segment is being performed by the Forest Service under an easement issued by the State of Alaska Department of Natural Resources (Final Finding and Decision, ADL 228890 Grant of Public Easement Iditarod National Historic Trail Seward to Girdwood, 2004). The DNR decision stipulates the reservation of “a 1,000-foot-wide corridor which will provide a buffer with enough width to, a) conserve the wilderness characteristics of the Iditarod Trail, b) provide enough width to separate conflicting uses such as motorized and non-motorized uses in areas where multiple uses are recommended, and c) allow for development of future compatible trail facilities.”

The issue to be addressed is the access road location. The Recreation Resources Study Report is correct in that discussions of a reroute of the INHT easement are ongoing with state and federal agencies, and other stakeholders. Further analysis and discussion will be required to assess the effects to the Iditarod National Historic Trail and the public use and development scale of the proposed road to Grant Lake. Until this analysis and review of alternative routes is completed, it seems inappropriate to describe the benefits or deficiencies of the alternative routes.

The Chugach National Forest has identified the following general issues regarding any alternative to the reroute of the INHT for the Grant Lake Hydro Project as currently proposed:

- Quality Recreation Experience: Development and provision of a single-track trail that provides a high quality backcountry recreation experience through a predominantly

unmodified setting of high scenic value. The road and substation, as proposed, would substantially alter and compromise the desired INHT recreation experience.

- **Cost:** The Forest Service has invested significant time and resources to locate an alignment of the INHT through this area (which provides challenging topography and limited alignment options) that meets INHT management objectives. Even if an alternate location that meets management objectives could be found, by provision of the DNR Final Finding and Decision, the cost of identifying and developing a new alignment (including any increase in construction cost), would be borne by the proponent.
- **Sustainable Trail:** The INHT trail alignment is intended to provide a sustainable trail that meets the INHT management objectives and Forest Service design parameters, while minimizing long-term maintenance needs, and avoiding or minimizing negative impacts to other resources. Any revised alignment would need to fulfill the same objectives.

Other Comments on Recreation and Visual Resources:

It is unclear from the Recreation Resources Study Report description that the initial winter survey actually included the National Forest System Lands around Grant Lake. Normal winter routes to Grant Lake do not utilize the Vagt Lake Trail. Rather, access is gained from one of two winter trails at the northern end of the Trail Lake narrows. The Study only indicates one winter and one summer visit.

Existing Observed Winter Use

This section of the Recreation Resources Study Report is not accurate. Winter access to the Grant Lake area is most commonly via crossing Upper Trail Lake and one of two winter trails which leave the shoreline just south of the mouth of the lake. The most used trail is a portage trail which is easily negotiated via snowshoe, ski or snow machine. This trail is located in the southern portion of Section 31. It would be difficult to identify the winter use of the Grant Lake area without observing these routes. Another known winter use of the Grant Lake area would be trapping of fur bearing animals.

Existing Observed Summer Use

Other known uses include hiking to Grant Lake on one of the trails mentioned above and boating in paddle craft portaged from Upper Trail Lake. Though mentioned later in the document, it would seem appropriate to include here that summer use of the Grant Lake area can be expected to increase with the completion of planned developments associated with the Iditarod National Historic Trail. The study also describes the existing use of the Vagt Lake Trail as "light". If a conclusion is drawn on the amount of use, then the term, light, should be defined. Again it would seem appropriate to mention that use can be expected to increase once the planned development of the INHT is completed.

Sight-Seeing Flights

The description of typical routes seems to indicate the Harding Ice field is in the vicinity of Prince William Sound. This is inaccurate; perhaps the writer is referring to the Sargent Ice field or that flights also continue south and west to view the Harding Ice field.

Noise

There has not been sufficient study of non-motorized recreational use of the Grant Lake area to describe as “small to absent”.

Conclusions on recreational use of the National Forest System lands in the vicinity of Grant Lake can't be reached based on two visits as described in the Recreation Resources Study Report. The inaccuracies and omissions mentioned should be corrected and further study should be undertaken to more accurately characterize this recreational use of National Forest System lands in the vicinity of Grant Lake. Further analysis and discussion will be required to assess the effects to the Iditarod National Historic Trail and the public use and development scale of the proposed road to Grant Lake. We are also concerned about how the proposed buildings, fluctuating lake level, and power distribution lines will affect the visual integrity of the CNF in this area.

Cultural Resources: Archaeological and Historic Study

The survey and report are thorough and document cultural resources within the Area of Potential Effects (APE). We anticipate further discussion regarding the determinations of eligibility and finding of effect during our formal review of the determinations for historic properties in the coming months. As for the proposed INHT reroute, our main concern is adding the reroute to the APE and surveying for cultural resources as potential re-routes are proposed. The Forest Service is in concurrence with the SHPO comments to the DLA.

Land Use Authorizations

Most of the proposed project facilities are located on State of Alaska lands. However, project facilities, such as impoundments, on National Forest System lands will require special use authorization from the Forest Service prior to construction. Authorization for use of federal right-of-ways or easements, such as use of the Crown Point Mine Road and the INHT must also be obtained.

- The proposed constructed facilities are generally located on State of Alaska lands. These lands were patented to the State of Alaska under the Alaska Statehood Act on September 21, 1992. The Forest Service retained reservations and easements for continued public access to National Forest System lands. The United States reserved a 60-foot wide road easement on the Crown Point Road. Reconstruction and use of the Crown Point Road would require Forest Service authorization.
- The Forest Service has been granted a 1000-foot wide trail easement from the State of Alaska for the INHT. Any use on or adjacent to the land encumbered by the easement must not unreasonably interfere with the rights granted to the United States. The United States, acting by and through the USDA Forest Service, is responsible for the administration of the easement including the right to regulate occupancy and use.

Inventoried Roadless Area

The National Forest portion of the project area is located in the Kenai Mountains Roadless Area. The effects of the proposed project on the Roadless character should be fully analyzed, including vegetation clearing along the shoreline of Grant Lake. The Secretary of Agriculture has reserved decision authority on projects within Inventoried Roadless Areas.

Aesthetic Resources

Effects of project construction, facilities and operation on the aesthetic values of the project area should also consider aerial views. Trail Lake provides a base for commercial and non-commercial flightseeing activities.

Socioeconomics

The project effects on subsistence use should include rural residents. Section 811 of the Alaska National Interest Lands Conservation Act (ANILCA) requires that rural residents engaged in subsistence uses have reasonable access to subsistence resources on public lands. The subsistence analysis will need to include a distinct finding on whether the proposed action may significantly restrict access to subsistence. The communities of Cooper Landing and Hope have customary and traditional use determinations for subsistence fishing, and moose/caribou hunting in the Grant lake area.

Appendix A

Grant Lake Hydroelectric Project

FERC No. 13212

USDA Forest Service

Alaska Region

Chugach National Forest

Preliminary 4(e) Terms and Conditions

General

License articles contained in the Federal Energy Regulatory Commission's (Commission) Standard Form L-1 issued by Order No. 540, dated October 31, 1975, cover those general requirements that the Secretary of Agriculture, acting by and through the USDA Forest Service, considers necessary for adequate protection and utilization of the land and related resources of the Chugach National Forest. Under authority of section 4(e) of the Federal Power Act (16 U.S.C. 797(e)), the following terms and conditions are deemed necessary for adequate protection and utilization of National Forest System lands and resources. These terms and conditions are based on those resources enumerated in the Organic Administration Act of 1897 (30 Stat. 11), the Multiple-Use Sustained Yield Act of 1960 (74 Stat. 215), the National Forest Management Act of 1976 (90 Stat. 2949), and any other law specifically establishing a unit of the National Forest System or prescribing the management thereof (such as the Wilderness Act or Wild and Scenic Rivers Act), as such laws may be amended from time to time, and as implemented by regulations and approved Land and Resources Management Plans prepared in accordance with the National Forest Management Act. Therefore, pursuant to section 4(e) of the Federal Power Act, the following conditions covering specific requirements for protection and utilization of the National Forest System lands shall also be included in any license issued for the Grant Lake Hydroelectric Project (Project).

Condition No. 1 - Requirement to Obtain a Forest Service Special-Use Authorization

The Licensee shall obtain a special-use authorization from the USDA Forest Service for the occupancy and use of National Forest System lands. The licensee shall obtain the executed authorization before beginning ground-disturbing activities on National Forest System lands or within one year of license issuance if no construction or reconstruction was proposed in the application for license.

The Licensee may commence ground-disturbing activities authorized by the License and special-use authorization no sooner 60 days following the date the licensee files the USDA Forest Service special-use authorization with the Commission, unless the Commission prescribes a different commencement schedule.

In the event there is a conflict between any provisions of the license and USDA Forest Service special-use authorization, the special-use authorization shall prevail to the extent that the USDA Forest Service, in consultation with the Commission, deems necessary to protect and utilize National Forest System resources.

Condition No. 2 – Forest Service Approval of Final Design

Prior to undertaking activities on National Forest System lands, the Licensee shall obtain written approval from the USDA Forest Service for all final design plans for project components that the USDA Forest Service deems as affecting or potentially affecting National Forest System lands and resources. As part of such prior written approval, the USDA Forest Service may require adjustments in final design plans and facility locations to preclude or mitigate impacts and to assure that the project is compatible with on-the-ground conditions. Should the USDA Forest Service, the Commission, or the Licensee determine that necessary changes are a substantial change; the Licensee shall follow the procedures of Article 2 of the license. Any changes to the license made for any reason pursuant to Article 2 or Article 3 shall be made subject to any new terms and conditions the Secretary of Agriculture may make pursuant to section 4(e) of the Federal Power Act.

Condition No. 3 – Approval of Changes

Notwithstanding any license authorization to make changes to the Project, when such changes directly affect NFS lands and easements the Licensee shall obtain written approval from the Forest Service prior to making any changes in any constructed Project features or facilities, or in the uses of Project lands and waters or any departure from the requirements of any approved exhibits filed with the Commission. Following receipt of such approval from the Forest Service, and a minimum of 60- days prior to initiating any such changes, the Licensee shall file a report with the Commission describing the changes, the reasons for the changes, and showing the approval of the Forest Service for such changes.

The Licensee shall file an exact copy of this report with the Forest Service at the same time it is filed with the Commission. This condition does not relieve the Licensee from other requirements of this license.

Condition No. 4 – Consultation

The Licensee shall, beginning the first full calendar year after license acceptance, participate in annual meetings with the Forest Service to present Project operation and maintenance activities planned for the next calendar year. In addition, Licensee shall present results from current year monitoring of invasive plants and other resources. The goals of this meeting are to share information, mutually agree upon planned maintenance activities, identify concerns that the Forest Service may have regarding activities and their potential effects on sensitive resources, and any measures required to avoid or mitigate potential effects. The date of the consultation meeting will be between January 10 and March 15 of each year, as mutually agreed to by the Licensee and the Forest Service. Representatives from the National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), Alaska Department of Fish and Game (ADF&G), interested tribes, other interested agency representatives, and other interested parties concerned with operation of the Project may attend the meeting.

Consultation shall include, but not be limited to:

- A status report regarding implementation of license conditions;
- Results of any monitoring studies performed over the previous year in formats agreed to by the Forest Service and the Licensee during development of implementation plans;
- Review of any non-routine maintenance;
- Discussion of any foreseeable changes to Project facilities or features;
- Discussion of any necessary revisions or modifications to implementation plans approved as part of this license;
- Discussion of needed protection measures for species newly listed as threatened, endangered, or sensitive, or changes to existing management plans that may no longer be warranted due to delisting of species or, to incorporate new knowledge about a species requiring protection;
- Discussion of elements of current year maintenance plans, e.g. access route maintenance; and
- Discussion of any planned pesticide use.

A record of the meeting shall be kept by the Licensee and shall include any recommendations made by the Forest Service for the protection of NFS lands and resources. The Licensee shall file the meeting record, if requested, with the Commission no later than 60 days following the meeting.

Copies of other reports related to Project safety and non-compliance shall be submitted to the Forest Service concurrently with submittal to the FERC. These include, but are not limited to: any non-compliance report filed by the Licensee, geologic or seismic reports, and structural safety reports for facilities located on or affecting NFS lands.

The Forest Service reserves the right, after notice and opportunity for comment, to require changes in the Project and its operation through revision of the Section 4(e) conditions to accomplish protection and utilization of NFS lands and resources.

Condition No. 5 - Compliance with Regulations

The Licensee shall comply with the regulations of the Department of Agriculture for activities on NFS lands, and all applicable Federal, State, county, and municipal laws, ordinances, or regulations in regards to the area or operations on or directly affecting NFS lands, to the extent those laws, ordinances or regulations are not preempted by federal law.

Condition No. 6 – Surrender of License or Transfer of Ownership

Prior to any surrender of this license, the Licensee shall provide assurance acceptable to the Forest Service that Licensee shall restore any Project area directly affecting NFS lands or easements to a condition satisfactory to the Forest Service upon or after surrender of the license, as appropriate. To the extent restoration is required, Licensee shall prepare a restoration plan which shall identify the measures to be taken to restore such NFS lands and shall include or identify adequate financial mechanisms to ensure performance of the restoration measures. In the event of any transfer of the license or sale of the Project, the Licensee shall assure that, in a manner satisfactory to the Forest Service, the Licensee or transferee will provide for the costs of surrender and restoration. If deemed necessary by the Forest Service to assist it in evaluating the Licensee's proposal, the Licensee shall conduct an analysis, using experts approved by the Forest Service, to estimate the potential costs associated with surrender and restoration of any Project area directly affecting NFS lands to Forest Service specifications. In addition, the Forest Service may require the Licensee to pay for an independent audit of the transferee to assist the Forest Service in determining whether the transferee has the financial ability to fund the surrender and restoration work specified in the analysis.

Condition No. 7- Protection of United States Property

The Licensee, including any agents or employees of the Licensee acting within the scope of their employment, shall exercise diligence in protecting from damage the land and property of the United States covered by and used in connection with this license.

Condition No. 8 – Indemnification

The Licensee shall indemnify, defend, and hold the United States harmless for:

- any violations incurred under any laws and regulations applicable to, or
- judgments, claims, penalties, fees, or demands assessed against the United States caused by, or
- costs, damages, and expenses incurred by the United States caused by, or
- The releases or threatened release of any solid waste, hazardous substances, pollutant, contaminant, or oil in any form in the environment related to the construction, maintenance, or operation of the Project works or of the works appurtenant or accessory thereto under the license.

The Licensee's indemnification of the United States shall include any loss by personal injury, loss of life or damage to property caused by the construction, maintenance, or operation of the Project works or of the works appurtenant or accessory thereto under the license.

Indemnification shall include, but is not limited to, the value of resources damaged or destroyed; the costs of restoration, cleanup, or other mitigation; fire suppression or other types of abatement costs; third party claims and judgments; and all administrative, interest, and other legal costs. Upon surrender, transfer, or termination of the license, the Licensee's obligation to indemnify and hold harmless the United States shall survive for all valid claims for actions that occurred prior to such surrender, transfer or termination.

Condition No. 9 - Damage to Land, Property, and Interests of the United States

The Licensee has an affirmative duty to protect the land, property, and interests of the United States from damage arising from the Licensee's construction, maintenance, or operation of the Project works or the works appurtenant or accessory thereto under the license. The Licensee's liability for fire and other damages to NFS lands shall be determined in accordance with the Federal Power Act and standard Form L-1 Articles 22 and 24.

Condition No. 10 - Risks and Hazards on National Forest System Lands

As part of the occupancy and use of the Project area, the Licensee has a continuing responsibility to reasonably identify and report all known or observed hazardous conditions on or directly affecting NFS lands or easements within the Project boundary that would affect the improvements, resources, or pose a risk of injury to individuals. Licensee will abate those conditions, except those caused by third parties or related to the occupancy and use authorized by the License. Any non-emergency actions to abate such hazards on NFS lands shall be performed after consultation with the Forest Service. In emergency situations, the Licensee shall notify the Forest Service of its actions as soon as possible, but not more than 48 hours, after such actions have been taken. Whether or not the Forest Service is notified or provides consultation, the Licensee shall remain solely responsible for all abatement measures performed. Other hazards should be reported to the appropriate agency as soon as possible.

Condition No. 11 - Access

The Forest Service reserves the right to use or permit others to use any part of the licensed area on NFS lands for any purpose, provided such use does not interfere with the rights and privileges authorized by this license or the Federal Power Act.

Condition No. 12 - Maintenance of Improvements

The Licensee shall maintain all its improvements and premises on National Forest System lands or easements to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the USDA Forest Service. The Licensee shall comply with all applicable Federal, State, and local laws, regulations, including but not limited to, the Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq., the Resources Conservation and Recovery Act, 42 U.S.C. 6901 et seq., the Comprehensive Environmental Response, Control, and Liability Act, 42 U.S.C. 9601 et seq., and other relevant environmental laws, as well as public health and safety laws and other laws relating to the siting, construction, operation, maintenance of any facility, improvement, or equipment.

Condition No. 13 - Surveys, Land Corners

The Licensee shall avoid disturbance to all public land survey monuments, private property corners, and forest boundary markers. In the event that any such land markers or monuments on NFS lands are destroyed by an act or omission of the Licensee, in connection with the use and/or occupancy authorized by this license, depending on the type of monument destroyed, the Licensee shall reestablish or reference same in accordance with (1) the procedures outlined in the "Manual of Instructions for the Survey of the Public Land of the United States," or (2) the specifications of the Forest Service. Further, the Licensee shall ensure that any such official survey records affected are amended as provided by law.

Condition No. 14 – Pesticide Use Restrictions on National Forest System Lands

Pesticides may not be used on NFS lands or in areas affecting NFS lands to control undesirable woody and herbaceous vegetation, aquatic plants, insects, rodents, non-native fish, etc., without the prior written approval of the Forest Service. During the Annual Consultation Meeting described in Condition 4, the Licensee shall submit a request for approval of planned uses of pesticides for the upcoming year. The Licensee shall provide at a minimum the following information essential for review:

- whether pesticide applications are essential for use on NFS lands;
- specific locations of use;
- specific herbicides proposed for use;
- application rates;

- dose and exposure rates; and
- Safety risk and timeframes for application.

Exceptions to this schedule may be allowed only when unexpected outbreaks of pests require control measures that were not anticipated at the time the report was submitted. In such an instance, an emergency request and approval may be made.

Pesticide use will be excluded from NFS lands within 500 feet of known locations of Western Toad, or known locations of Forest Service Special Status or culturally significant plant populations. Application of pesticides must be consistent with Forest Service riparian conservation objectives.

On NFS lands, the Licensee shall only use those materials registered by the U.S. Environmental Protection Agency and consistent with those applied by the Chugach National Forest and approved through Forest Service review for the specific purpose planned. The Licensee must strictly follow label instructions in the preparation and application of pesticides and disposal of excess materials and containers.

Condition No. 15 - Modifications of 4(e) Conditions after Biological Opinion or Certification

The Forest Service reserves the right to modify these conditions, if necessary, to respond to any Final Biological Opinion issued for this Project by the National Marine Fisheries Service, United States Fish and Wildlife Service; or any Certification issued for this Project by the State of Alaska.

Condition No. 16 – Signs

The Licensee shall consult with the USDA Forest Service prior to erecting any signs on National Forest System lands and easements relating to this license. The Licensee must obtain the approval of the USDA Forest Service as to the location, design, size, color, and message. The Licensee shall be responsible for maintaining all Licensee erected signs to neat and presentable standards.

Condition No. 17 – Additional Ground Disturbing Activities

If the Licensee proposes ground-disturbing activities on or directly affecting NFS lands or easements that were not specifically addressed in the Commission's NEPA processes, the Licensee, in consultation with the Forest Service, shall determine the scope of work and potential for Project-related effects, and whether additional information is required to proceed with the planned activity.

Upon Forest Service request, the Licensee shall enter into an agreement with the Forest Service under which the Licensee shall fund a reasonable portion of Forest Service's staff time and expenses for staff activities related to the proposed activities.

Condition No. 18 – Implementation and Modification of Forest Service Conditions

(Applies only to issuance of Special Use Permit after licensing)

The USDA Forest Service reserves the authority to modify USDA Forest Service 4(e) terms and conditions if upon completion of the USDA Forest Service administrative appeals process at 36 Code of Federal Regulations (CFR) Part 214, the Chief, USDA Forest Service, or Secretary of Agriculture directs that substantial changes to the terms and conditions submitted herein be made.

Condition 19 - Use of Explosives

In the use of explosives, the Licensee shall exercise the utmost care not to endanger life or property and shall comply with Federal, State and local laws and ordinances. The Licensee shall contact the USDA Forest Service prior to blasting to obtain the requirements of the USDA Forest Service. The Licensee shall be responsible for any and all damages resulting from the use of explosives and shall adopt precautions to prevent damage to surrounding objects. The Licensee shall furnish and erect special signs to warn the public of the Licensee's blasting operations. The Licensee shall place and maintain such signs so they are clearly evident to the public during all critical periods of the blasting operations.

The Licensee shall store all explosives on National Forest System lands and Licensee adjoining fee title property in compliance with all applicable Federal, State and local laws and ordinances.

When using explosives on National Forest System lands and Licensee adjoining fee title property, the Licensee shall adopt precautions to prevent damage to landscape features and other surrounding objects. When directed by the USDA Forest Service, the Licensee shall leave trees within an area designated to be cleared as a protective screen for surrounding vegetation during blasting operations. The Licensee shall remove and dispose of trees so left when blasting is complete. When necessary, and at any point of special danger, the Licensee shall use suitable mats or some other approved method to smother blasts.

Condition No. 20 – Resource Management Plans

Within one year of license issuance, and in consultation with the Forest Service and applicable Federal and State agencies, the Licensee shall file with the Commission the following plans addressing specific resource issues covered by the Chugach National Forest Land and Resource Management Plan.

The licensee shall submit the draft plans for Forest Service review and approval, prior to submitting the plans to the Commission. The licensee shall provide at least 90 days for Forest Service review and approval before the filing deadline in the license.

Upon Commission approval, Licensee shall implement the Plans. The plans shall include the following:

- a) **Construction Plan**
- b) **Reservoir Management and Inundation Plan**
- c) **Hazardous Substances Plan**
- d) **Fire Prevention Plan**
- e) **Heritage Resource Protection Plan**
- f) **Scenery Management Plan**
- g) **Vegetation Management Plan**
- h) **Invasive Species Management Plan**
- i) **Wildlife Mitigation and Monitoring Plan**
- j) **Fish Mitigation and Monitoring Plan**
- k) **Threatened, Endangered, Proposed for Listing, and Sensitive Species Plan**
- l) **Aquatic Habitat Restoration and Monitoring Plan**
- m) **Erosion and Sediment Control Plan**
- n) **Solid Waste and Waste Water Plan**
- o) **Spoil Disposal Plan**

The Plans shall include resource management objectives tied to the Chugach National Forest Land and Resource Management Plan and an implementation schedule.

Document Content(s)

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FEDERAL ENERGY REGULATORY COMMISSION

Washington, D.C. 20426

July 9, 2015

OFFICE OF ENERGY PROJECTS

Project No. 13212-000 – Alaska
Grant Lake Hydroelectric Project
Kenai Hydro, LLC

Mike Salzetti
Manager of Fuel Supply & Renewable Energy Development
Kenai Hydro, LLC
3977 Lake Street
Homer, AK 99603

Reference: Review of Draft Resource Management Plans for the Proposed Grant Lake Hydroelectric Project

Dear Mr. Salzetti:

On May 18, 2015, Kenai Hydro, LLC (KHL) submitted the following draft resource management plans (draft plans):

- Draft Grant Lake Project Operation Compliance Monitoring Plan (OCMP)
- Draft Grant Lake Project Avian Protection Plan (APP)
- Draft Grant Lake Project Historic Properties Management Plan (HPMP)
- Draft Grant Lake Project Vegetation Management Plan (VMP)
- Draft Grant Lake Project Biological Evaluation for Plants (BE)

Subsequently, on June 2, 2015, KHL filed its *Draft Biotic Monitoring Plan* (BMP) for our review and comment.

We have reviewed the draft plans and have comments on the OCMP, BMP, APP and the HPMP. We provide these comments in the attached Schedule A.

Project No. 13212-000

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If you have any questions or concerns you may reach me at (202) 502-8434, or via email at: Kenneth.hogan@ferc.gov.

Sincerely,

Kenneth Hogan, Project Coordinator
West Branch
Division of Hydropower Licensing

Attachment: Schedule A – Comments on Draft Resource Management Plans

cc: Mailing List
Public File

Schedule A

Comments on Draft Resource Management Plans

for the

Grant Lake Hydroelectric Project

Grant Lake Hydroelectric Project

Project No. 13212-000

Schedule A

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General Comment for All Draft Resource Management Plans

When preparing the final resource management plans, please attach an appendix to each final plan that includes the comments made on that plans draft, KHL's responses to the comments, and whether KHL incorporated them or not, and if not incorporated, KHL's reasons why.

Draft Operational Compliance Monitoring Plan

The draft Operation Compliance Monitoring Plan (OCMP) details how water temperatures will be monitored within Grant Lake, Grant Creek, and through project facilities. Section 4 *Reporting and Coordination*, includes provisions to annually report all compliance monitoring activities and results. However, the OCMP does not include a provision for Kenai Hydro, LLC (KHL) to promptly notify the resource agencies and the Federal Energy Regulatory Commission (Commission) shortly after a "non-compliance" event is documented. Including a provision in the OCMP for KHL to promptly notify state and federal resource agencies of a non-compliance event would allow the agencies and the Commission to assess the situation and take timely corrective actions to protect environmental resources.

Draft Biotic Monitoring Plan

Section 2 – Information and Data

In section 2.1 *Historical Fisheries Information and Data*, the draft Biotic Monitoring Plan (BMP) states that Grant Creek was divided into 6 study reaches and that relative abundance and distribution of juvenile fish were determined for each reach. However, no data for reach 6 is provided, other than a statement that "rainbow trout were caught throughout the creek" and "[a]dult rainbow trout were observed in the upper portions of the canyon reach" (although it is unclear where the "canyon reach" is located, as it has not been defined in the BMP). Similarly, while section 2.2 *Summary of the 2013 Fisheries Research*, states that information on adult rainbow trout and Dolly Varden spawning and feeding was collected, no data for reach 6 was presented.

In section 2.3 *Summary of Projected Project Impacts*, the discussion and analysis of potential project effects and benefits in Grant Creek is limited to reaches 1 through 5. There is no discussion of potential project effects on reach 6, which extends from the base of a downstream waterfall to the Grant Lake outlet. Based on our understanding of the proposed project design and operations, reach 6 is likely to be the most severely affected reach within Grant Creek. Project drawdown operations result in reduced flow in reach 6 year-round, and when the surface elevation of Grant Lake is drawn below 703

Grant Lake Hydroelectric Project

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feet NAVD 88, reach 6 may become dewatered. However, while this concern may not be relevant to the BMP, it must be addressed in the final license application

Section 3 Biotic Monitoring During Construction

Section 3 of the BMP describes the method and timing for monitoring juvenile and adult salmonid populations during the project's two year construction timeframe. However, the BMP does not include any actions to be taken in the event monitoring results demonstrate an unexpected or unacceptable effect on those populations. The BMP should describe how the monitoring data would be used and should also identify corrective actions or a process for developing corrective actions, in the event monitoring results demonstrate an unexpected or unacceptable effect on the salmonid populations in Grant Creek.

Section 4 – Biotic Monitoring During Project Operation

In section 4.1 *Potential Project-related effects on fish from Project Operations*, the BMP identifies decreased sediment recruitment and flows in reach 5 as a potential project effect. Based on our review of the proposed project description and operation, it appears that these potential effects may also occur in reach 6; however, the BMP makes no mention of potential effects to reach 6.

Section 4 of the BMP describes the method and timing for monitoring juvenile and adult salmonid populations during the project's operation. However, the BMP does not include any actions to be taken in the event monitoring results demonstrate an unexpected or unacceptable effect on salmonid populations. The BMP should describe how monitoring data would be used and should also identify corrective actions or a process for developing corrective actions, in the event monitoring results demonstrate an unexpected or unacceptable effect on the salmonid populations in Grant Creek.

Section 5 – Biological Monitoring for Enhancement/Mitigation Measures

In section 5.1 *Proposed Protection, Mitigation and Enhancement*, the BMP states that spawning substrate is naturally limited within Grant Creek and that the proposed monitoring would evaluate the need for channel maintenance flows and/or gravel supplementation within the mainstem of Grant Creek. Section 5.3.3 *Gravel Supplementation/Channel Maintenance Methodologies* specifies that channel maintenance flows and gravel augmentation will be provided as appropriate and in consultation with stakeholders. Section 5.4 *Schedule*, states that “[o]nce PM&E measures are in place,” efficacy surveys during years 2 and 5 post-construction will be

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implemented. This section also states that channel maintenance type flows may occur naturally which may negate the need for gravel augmentation in Grant Creek.

Given the above, we find the BMP unclear. It appears that the need for gravel augmentation has not yet been determined, although it is stated that spawning substrate is naturally limited within Grant Creek. In contrast, the statement in section 5.4, that efficacy surveys will be conducted during years 2 and 5, implies that the success of gravel augmentation efforts will be evaluated during those years.

The BMP should articulate the process KHL proposes to implement. Does KHL propose to initially enhance Grant Creek by introducing spawning gravel, and then monitor the efficacy of that effort in order to inform an adaptive management approach on the need for and/or design of future spawning gravel augmentation efforts; or is it KHL's proposal to first evaluate the project operational effects on spawning gravel recruitment to Grant Creek and if a need is determined, to then augment spawning gravel? In either case, the BMP should clearly describe the process KHL proposes to pursue. Additionally, the BMP should specify biological and/or physical thresholds that will be used to determine whether future (post 2- and 5-year surveys) spawning gravel augmentation will be applied.

Draft Avian Protection Plan

Section 5 – Avian Protection Measures

In section 5.1.1 *Plan of Construction and Operation Timeline*, the Avian Protection Plan (APP) states that removal of vegetation during the breeding season directly impacts avian species protected under the Migratory Bird Treaty Act (MBTA). The APP states that, to the extent practicable, “KHL will adopt best management practices [] associated with the typical vegetation growing season between May 1 and July 15 of construction years.” The APP further states that, “[w]here curtailment of construction activities is not practicable, KHL will conduct nest surveys in advance of vegetation clearing to avoid areas with active nests.” Section 5.1.1 of the APP does not clearly list the best management practices that KHL is proposing to implement to protect avian species, and it is unclear whether the curtailment of construction activities and nest surveys are a part of (or the entire extent of) KHL's proposed best management practices. The APP should fully describe the best management practices that KHL proposes to use to protect avian species, including: (1) a comprehensive list of the best management practices; (2) the circumstances under which these practices will be utilized; and (3) how these practices will reduce project effects.

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Section 5.1.3.2 *Monitoring Associated with Power Lines and Infrastructure Placement*, provides for a review of existing recommended construction configurations for power line and infrastructure placement. We note that the final APP should use the most recent power line construction guidelines, including: (1) Avian Power Line Interaction Committee (APLIC). 2006. *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006*. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and Sacramento, CA; and (2) Avian Power Line Interaction Committee (APLIC). 2012. *Reducing Avian Collisions with Power Lines. The State of the Art in 2012*. Edison Electric Institute and APLIC. Washington, D.C.

Section 5.1.3.2 *Monitoring Associated with Power Lines and Infrastructure Placement*, states that KHL will consider infrastructure design measures to avoid or minimize the impacts of the project's overhead transmission lines on avian species. The APP states that "KHL will develop a list of specific infrastructure design parameters designed for protecting avian species and distribute to stakeholders for comment and approval prior to finalizing and implementing associated construction efforts." However, section 5.1.3.2 does not state that these design measures will be submitted to the Commission with the finalized APP and the final license application. Because the Commission will need to review and approve any such proposed infrastructure design measures prior to project construction and implementation, the APP should include the measures that KHL is proposing to use to minimize the impacts of the project's overhead transmission lines. The APP should also discuss any additional/alternative infrastructure design measures that were proposed by resources agencies and stakeholders, and why KHL has determined such measures are inappropriate.

Section 5.1.3.2 *Monitoring Associated with Power Lines and Infrastructure Placement*, states that KHL will utilize line-transect surveys to determine the effectiveness of the infrastructure design measures used to minimize the impacts of the project's overhead transmission lines. However, the APP does not include any actions to be taken in the event monitoring results demonstrate an unexpected or unacceptable effect on avian species. The APP should describe how the monitoring data would be used and should identify corrective actions or a process for developing corrective actions, in the event monitoring results demonstrate an unexpected or unacceptable effect on avian species within the transmission line corridor.

Grant Lake Hydroelectric Project

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Draft Historic Properties Management Plan*Section 3 - Inventory and Assessment*

In section 3.3 *Background Research*, the right column of Table 1 lists the eligibility status of site SEW-00029 (Alaska Railroad) as: “Nomination Closed”; however, on page 14 it states that KHL and the Alaska SHPO agree that the Alaska Railroad is eligible for the National Register. We are not sure what “Nomination Closed” means. Please clarify.

In section 3.4 *Field Inventory*, in the last paragraph of page 17, there is a reference to Appendix E of the Second Amended Programmatic Agreement Among the USDA Forest Service, Alaska Region, the Advisory Council on Historic Preservation and the Alaska State Historic Preservation Officer Regarding Heritage Resource Management on National Forest in the State of Alaska (USFS 2002). Please attach Appendix E as an appendix to the HPMP.

Section 4 – General Management Measures

In section 4.6 *Previously Unidentified Properties*, on page 25, there should be language added that in the event human remains are found on USFS lands, the FS would be in charge, pursuant to NAGPRA. Please add the additional text.

Section 5 – Site-Specific Management Measures

In section 5 *Site-Specific Management Measures*, on page 26, more information is needed to determine if any portion of the Sawmill-Upper Trail Lake Trail (SEW-01521) would be potentially affected by the proposed project. If a portion of this site would be potentially affected, then the HPMP should state that prior to any construction-related ground disturbing activities within the vicinity of this site, it would be evaluated for National Register eligibility, and if determined eligible, specific measures (please identify) would be taken to resolve any potential adverse effects to it. Please provide this additional information.

In section 5.1.3 *Impact Status*, on page 27, first sentence. It appears that this sentence is incomplete. Please modify the sentence, accordingly.

In section 5.2.3 *Impact Status*, on page 27, there is some question whether a 1904 historic trail runs along the eastern side of the Trail lakes (See section 5.2.1). Although the trail was not located during field surveys, remnants of it may still be affected by the proposed project, if present. Therefore, this portion of the proposed project should be

Grant Lake Hydroelectric Project

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monitored in case of an inadvertent discover of the 1904 historic trail. Also, please reconcile this issue in section 5.2.4 on page 28.

Document Content(s)

P-13212-000Letter4.DOC.....1-9



Forest Service Alaska Region

P.O. Box 21628
Juneau, AK 99802-1628

ORIGINAL

File Code: 2770
Date: July 2, 2015

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FEDERAL ENERGY
REGULATORY COMMISSION

Ms. Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Forest Service DLA Comments and Preliminary 4(e) Terms and Conditions for the Grant Lake Hydroelectric Project, FERC Project No. P-13212

Dear Ms. Bose:

On June 25, 2015, the Forest Service submitted the enclosed comments to Kenai Lake Hydro, LLC (KHL) on its Draft License Application for the Grant Lake Hydroelectric Project. Please include these comments in the record for this project.

Enclosure 1 is the cover letter for our comments. The Draft License Application comments are Enclosure 2. Enclosure 3 is our Preliminary 4(e) Terms and Conditions. Enclosure 4 is the Certificate of Service.

If you have any questions or comments, please contact Roger Birk of this office at 907-586-8843 or rbirk@fs.fed.us.



Ms. Kimberly D. Bose

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Sincerely,



fox BETH G. PENDLETON
Regional Forester

cc: Terri Marceron, Chugach Forest Supervisor, Tom Malecek, Seward District Ranger



Forest Service Chugach National Forest

161 East 1st Avenue
Door 8
Anchorage, AK 99501-1639

File Code: 2720
Date: June 25, 2015

Mike Salzetti
Mgr of Fuel Supply and Renewable Energy Development
Kenai Hydro LLC
3977 Lake Street
Homer, AK 99603

Subject: Chugach NF comments on the Draft License Application for Kenai Hydro, LLC - Grant Lake Hydroelectric Project (FERC No. 13212)

Dear Mr. Salzetti:

Thank you for the opportunity to review and comment on the Draft License Application for Kenai Hydro, LLC - Grant Lake Hydroelectric Project (FERC No. 13212).

This project is located within the Chugach National Forest boundary in the Alaska Region. Our comments are related to National Forest System lands and interests within the project boundary.

Our comments and preliminary conditions are enclosed.

We look forward to working with the FERC and Kenai Hydro, LLC to ensure the needs of the public are addressed. If you have any questions regarding this submittal, please contact Deputy District Ranger, Robert Stovall at rstovall@fs.fed.us or 907-743-9474.

Sincerely,

For Terri Marceron
Forest Supervisor

Cc: Kathy Van Massenhove, Special Uses Team Leader, Chugach National Forest
Roger Birk, Special Uses Alaska Region

Enclosures
Grant Lake Hydro Preliminary 4(e) Terms and Conditions
Forest Service Comments on the Grant Lake Hydroelectric Project



Forest Service Comments on the Grant Lake Hydroelectric Project (FERC No. 13212) for the Draft License Application

The Forest Service concurs with FERC Office of Energy Projects “Review of Draft License Application for the Proposed Grant lake Hydroelectric Project Identification of Potential Deficiencies and Additional Information Needs” dated June 17, 2015

General-Forest Service Resources That Could Be Cumulatively Affected

Water quantity, water quality, and fishery resources are resources identified that would be cumulatively affected by the proposed construction and operation of the project. It is Forest Service practice to analyze all affected resources for direct, indirect and cumulative effects. During public meetings, many comments and concerns were expressed related to recreation use in the project area. In particular, the direct, indirect, and cumulative effects to the Iditarod National Historic Trail (INHT) should be thoroughly analyzed.

Water Quantity and Quality

Instream Flow Requirement – Chugach RLRMP, 2002 Water Wetlands and Riparian Areas Goal: “Provide instream flows to maintain and support aquatic life and habitat, recreation and aesthetics, the natural conveyance of water and sediment, and other resources that depend on such flows on National Forest System Lands.”

Need for Additional or New Information

- A reference identified in the Aquatic Resources Draft Study Plan (Source: Grant Lake Morphology in Marcuson, P. 1989. Coho Salmon Fry Stocking in Grant Lake, Alaska, USDA Forest Service, Seward Ranger District, Chugach National Forest, February 1989) states: “An upper basin of Grant Lake has a maximum depth of 80 feet and a lower, outlet end exceeding 90 feet in depth. The two basins are separated by a narrow isthmus with an island and less than 10 feet of depth.” Lake depths in the area in question should be evaluated and this statement verified. If true, there could be a disproportionate drawdown of the lower basin and there may be a loss of connectivity between the deeper regions of the upper and lower portions of Grant Lake. Again, please note that the draft study plan should display the updated project map (*This was not analyzed in the Draft Water Resources – Geomorphology Report, Feb. 2014*). This drawdown may also have effects on water recreation through this narrow, shallow location and should be analyzed (06/11/2015).
- Approximately 11 % of Grant Creek is covered by glaciers. The effects analysis of the project should include references and an analysis on how the project will affect water

quantity/quality taking into account anticipated streamflow changes from glacial recession.

- Grant Creek was stream gaged by the USGS from 1947-1958. This time frame was within the Cold (Negative) Pacific Decadal Oscillation (PDO). Cold PDO phase summer flows have shown higher peak snowmelt runoff, and higher magnitude and timing of annual peak discharge events than Warm (positive) PDO phase summer flows (Neal, et al, 2002). Additionally, many of these years during this timeframe were La Nina's which often produce higher amounts of snowfall lending to even higher flows. Utilizing only these years and only two separate discontinuous and incomplete years of data will likely not reflect the mean hydrograph. Modeling Grant Creek's streamflow hydrograph should take into account that the gaged water flow years were likely much higher than the mean.
- Please include a climate change effects analysis. This analysis should include anticipated changes in streamflow. Hydrologic flow analyses should take into account both the long term warming climate change trend and the PDO and ENSO variation cycles.
- There will need to be an analysis of the project effects on Groundwater Resources within the project area and downstream.

Activities occurring off of National Forest lands may still affect upstream and downstream Forest Service resources such as fish, water quality, water quantity, aquatic habitat and riparian areas. The Land and Resource Management Prescription within the project area has a Fish, Wildlife, and Recreation management Prescription. Apply Best Management Practices to minimize the effects of land disturbing activities on the beneficial uses of water.

Aquatic Resources

The Forest Service is in concurrence with comments that were made by Alaska Dept. of Fish and Game with regard to Fisheries and Aquatic Resources. Along with their comments the effects of project construction and operation on changes in distribution and abundance of aquatic insects and their predators should be analyzed.

Terrestrial Resources

The Forest Service is in concurrence with comments that were made by Alaska Dept. of Fish and Game with regard to Terrestrial Resources. The effects of project construction and operation on changes to animal movement in and through the project area as well as displacement and disruption of seasonal movement patterns should be analyzed. The effects of increased access on harvestable wildlife should also be analyzed.

Soil Resources-Erosion Control Plan

Within 1 year following the date of license issuance and at least 90-days prior to any land disturbing activity, the Licensee shall file with the Director, Office of Hydropower Licensing for Commission approval, a plan that is approved by the Forest Service to control erosion, stream

sedimentation, dust and soil mass movement consistent with the standards and guidelines of the Chugach National Forest Land Management Plan, the Soil and Water Conservation Handbook (FSH 2509.22) and the National Best Management Practices. Upon Commission approval, the Licensee shall implement the plan. The plan shall be based on actual-site geological, soil, surface water and groundwater conditions, and shall include: (1) a description of the actual site conditions, including any existing erosion or sedimentation problems from roads, stream crossings, trails, or other facilities; (2) detailed descriptions, design drawings, and specific topographic locations of all control measures; (3) measures to divert runoff over disturbed land surfaces, including sediment ponds at the diversion and powerhouse sites; (5) re-vegetating test-drive areas outside the roadbed; (6) measures to dissipate energy and prevent erosion at the tailrace; (7) a monitoring and maintenance schedule; (8) and any other measures the Forest Service, and the Licensee mutually identify as needing care to ensure resource protection. The plan and erosion control measures shall comply with Best Management Practices (Soil and Water Conservation Handbook FSH 2509.22 and National Best Management Practices for Water Quality Management on National Forest System Lands FS-990). Erosion control measures should be designed to retain the natural appearance of the area where practicable. The Commission may require changes to the plan to ensure adequate protection of the environmental, scenic, and cultural values of the project area. The Licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, Office of Hydropower, Licensing, prescribes a different commencement schedule.

Mineral Resources

The effects of project construction and operation on changes to heavy metal leakage as a result of water level fluctuations of Grant Lake, which is an area of past mining and milling operations, should be analyzed. The Forest Service currently has a Miner with an approved Mining Plan of Operations for a Placer and Loading mining operation in the Grant lake Area.

Recreation Resources and Land Use

Iditarod National Historic Trail:

In general, the Forest Service concurs with comments made by the Alaska Department of Natural Resources that were submitted to FERC on June 23, 2015. Specifically, related to the Iditarod National Historic Trail (INHT), the Forest Service reiterates the comments made in these sections: 4.8.1.3 Iditarod National Historical Trail [INHT], 4.8.2.1.7 Recreational Opportunities, 4.8.2.3 INHT, 4.9.2.2.4, and 4.9.2.3.1.

The Grant Lake Hydro project proposes development of a vehicular road that would directly overlay or generally parallel the Iditarod National Historic Trail (INHT) Easement. The Grant Lake project also proposes development of a Powerhouse, and Tailrace Detention Pond at the location of a planned INHT pedestrian bridge crossing of Grant Creek. National Historic Trails

are established under the National Trails System Act (P.L. 90543, as amended through P.L. 111-11, March 30, 2009).

National Trails in Alaska are considered a Conservation System Unit (CSU) under the Alaska National Interest Lands Conservation Act (ANILCA). When a transportation or utility system (TUS) is proposed within a CSU, each Federal agency having jurisdiction must follow the requirements of Title XI of ANILCA. Sections 1104 and 1107 of Title XI describe the procedural requirements that apply. Section 1106 describes the decision-making process for final approval or disapproval by the agencies.

FERC is the lead federal agency with responsibility for preparing the National Environmental Policy Act (NEPA) document. An environmental impact statement is required for a TUS in a CSU. Upon completion of the EIS, each federal agency will make its decision regarding its authorization and include detailed findings as required by Section 1104(g) of Title XI. Section 1104 (g) (2) identifies eight specific criteria that must be considered before a federal agency makes a decision and Section 1107 (a) specifies terms and conditions that must be included in an authorization. Section 1104 also requires the Federal agencies to hold hearings on the EIS in Alaska and Washington, D.C.

Title XI requires that an applicant apply to the appropriate federal agencies for an authorization for the TUS. KHL must submit an application to the Forest Service and the Federal Energy Regulatory Commission on form SF-299 along with the substantial evidence outlined in Section 1104 (g) (2) that is needed by the agencies to make a decision.

While the INHT through the Vagt Lake / Grant Lake area is on State of Alaska land, development of this INHT segment is being performed by the Forest Service under an easement issued by the State of Alaska Department of Natural Resources (Final Finding and Decision, ADL 228890 Grant of Public Easement Iditarod National Historic Trail Seward to Girdwood, 2004). The DNR decision stipulates the reservation of "a 1,000-foot-wide corridor which will provide a buffer with enough width to, a) conserve the wilderness characteristics of the Iditarod Trail, b) provide enough width to separate conflicting uses such as motorized and non-motorized uses in areas where multiple uses are recommended, and c) allow for development of future compatible trail facilities."

The issue to be addressed is the access road location. The Recreation Resources Study Report is correct in that discussions of a reroute of the INHT easement are ongoing with state and federal agencies, and other stakeholders. Further analysis and discussion will be required to assess the effects to the Iditarod National Historic Trail and the public use and development scale of the proposed road to Grant Lake. Until this analysis and review of alternative routes is completed, it seems inappropriate to describe the benefits or deficiencies of the alternative routes.

The Chugach National Forest has identified the following general issues regarding any alternative to the reroute of the INHT for the Grant Lake Hydro Project as currently proposed:

- Quality Recreation Experience: Development and provision of a single-track trail that provides a high quality backcountry recreation experience through a predominantly

unmodified setting of high scenic value. The road and substation, as proposed, would substantially alter and compromise the desired INHT recreation experience.

- **Cost:** The Forest Service has invested significant time and resources to locate an alignment of the INHT through this area (which provides challenging topography and limited alignment options) that meets INHT management objectives. Even if an alternate location that meets management objectives could be found, by provision of the DNR Final Finding and Decision, the cost of identifying and developing a new alignment (including any increase in construction cost), would be borne by the proponent.
- **Sustainable Trail:** The INHT trail alignment is intended to provide a sustainable trail that meets the INHT management objectives and Forest Service design parameters, while minimizing long-term maintenance needs, and avoiding or minimizing negative impacts to other resources. Any revised alignment would need to fulfill the same objectives.

Other Comments on Recreation and Visual Resources:

It is unclear from the Recreation Resources Study Report description that the initial winter survey actually included the National Forest System Lands around Grant Lake. Normal winter routes to Grant Lake do not utilize the Vagt Lake Trail. Rather, access is gained from one of two winter trails at the northern end of the Trail Lake narrows. The Study only indicates one winter and one summer visit.

Existing Observed Winter Use

This section of the Recreation Resources Study Report is not accurate. Winter access to the Grant Lake area is most commonly via crossing Upper Trail Lake and one of two winter trails which leave the shoreline just south of the mouth of the lake. The most used trail is a portage trail which is easily negotiated via snowshoe, ski or snow machine. This trail is located in the southern portion of Section 31. It would be difficult to identify the winter use of the Grant Lake area without observing these routes. Another known winter use of the Grant Lake area would be trapping of fur bearing animals.

Existing Observed Summer Use

Other known uses include hiking to Grant Lake on one of the trails mentioned above and boating in paddle craft portaged from Upper Trail Lake. Though mentioned later in the document, it would seem appropriate to include here that summer use of the Grant Lake area can be expected to increase with the completion of planned developments associated with the Iditarod National Historic Trail. The study also describes the existing use of the Vagt Lake Trail as "light". If a conclusion is drawn on the amount of use, then the term, light, should be defined. Again it would seem appropriate to mention that use can be expected to increase once the planned development of the INHT is completed.

Sight-Seeing Flights

The description of typical routes seems to indicate the Harding Ice field is in the vicinity of Prince William Sound. This is inaccurate; perhaps the writer is referring to the Sargent Ice field or that flights also continue south and west to view the Harding Ice field.

Noise

There has not been sufficient study of non-motorized recreational use of the Grant Lake area to describe as "small to absent".

Conclusions on recreational use of the National Forest System lands in the vicinity of Grant Lake can't be reached based on two visits as described in the Recreation Resources Study Report. The inaccuracies and omissions mentioned should be corrected and further study should be undertaken to more accurately characterize this recreational use of National Forest System lands in the vicinity of Grant Lake. Further analysis and discussion will be required to assess the effects to the Iditarod National Historic Trail and the public use and development scale of the proposed road to Grant Lake. We are also concerned about how the proposed buildings, fluctuating lake level, and power distribution lines will affect the visual integrity of the CNF in this area.

Cultural Resources: Archaeological and Historic Study

The survey and report are thorough and document cultural resources within the Area of Potential Effects (APE). We anticipate further discussion regarding the determinations of eligibility and finding of effect during our formal review of the determinations for historic properties in the coming months. As for the proposed INHT reroute, our main concern is adding the reroute to the APE and surveying for cultural resources as potential re-routes are proposed. The Forest Service is in concurrence with the SHPO comments to the DLA.

Land Use Authorizations

Most of the proposed project facilities are located on State of Alaska lands. However, project facilities, such as impoundments, on National Forest System lands will require special use authorization from the Forest Service prior to construction. Authorization for use of federal right-of-ways or easements, such as use of the Crown Point Mine Road and the INHT must also be obtained.

- The proposed constructed facilities are generally located on State of Alaska lands. These lands were patented to the State of Alaska under the Alaska Statehood Act on September 21, 1992. The Forest Service retained reservations and easements for continued public access to National Forest System lands. The United States reserved a 60-foot wide road easement on the Crown Point Road. Reconstruction and use of the Crown Point Road would require Forest Service authorization.
- The Forest Service has been granted a 1000-foot wide trail easement from the State of Alaska for the INHT. Any use on or adjacent to the land encumbered by the easement must not unreasonably interfere with the rights granted to the United States. The United States, acting by and through the USDA Forest Service, is responsible for the administration of the easement including the right to regulate occupancy and use.

Inventoried Roadless Area

The National Forest portion of the project area is located in the Kenai Mountains Roadless Area. The effects of the proposed project on the Roadless character should be fully analyzed, including vegetation clearing along the shoreline of Grant Lake. The Secretary of Agriculture has reserved decision authority on projects within Inventoried Roadless Areas.

Aesthetic Resources

Effects of project construction, facilities and operation on the aesthetic values of the project area should also consider aerial views. Trail Lake provides a base for commercial and non-commercial flightseeing activities.

Socioeconomics

The project effects on subsistence use should include rural residents. Section 811 of the Alaska National Interest Lands Conservation Act (ANILCA) requires that rural residents engaged in subsistence uses have reasonable access to subsistence resources on public lands. The subsistence analysis will need to include a distinct finding on whether the proposed action may significantly restrict access to subsistence. The communities of Cooper Landing and Hope have customary and traditional use determinations for subsistence fishing, and moose/caribou hunting in the Grant lake area.

Appendix A

Grant Lake Hydroelectric Project

FERC No. 13212

**USDA Forest Service
Alaska Region
Chugach National Forest**

Preliminary 4(e) Terms and Conditions

General

License articles contained in the Federal Energy Regulatory Commission's (Commission) Standard Form L-1 issued by Order No. 540, dated October 31, 1975, cover those general requirements that the Secretary of Agriculture, acting by and through the USDA Forest Service, considers necessary for adequate protection and utilization of the land and related resources of the Chugach National Forest. Under authority of section 4(e) of the Federal Power Act (16 U.S.C. 797(e)), the following terms and conditions are deemed necessary for adequate protection and utilization of National Forest System lands and resources. These terms and conditions are based on those resources enumerated in the Organic Administration Act of 1897 (30 Stat. 11), the Multiple-Use Sustained Yield Act of 1960 (74 Stat. 215), the National Forest Management Act of 1976 (90 Stat. 2949), and any other law specifically establishing a unit of the National Forest System or prescribing the management thereof (such as the Wilderness Act or Wild and Scenic Rivers Act), as such laws may be amended from time to time, and as implemented by regulations and approved Land and Resources Management Plans prepared in accordance with the National Forest Management Act. Therefore, pursuant to section 4(e) of the Federal Power Act, the following conditions covering specific requirements for protection and utilization of the National Forest System lands shall also be included in any license issued for the Grant Lake Hydroelectric Project (Project).

Condition No. 1 - Requirement to Obtain a Forest Service Special-Use Authorization

The Licensee shall obtain a special-use authorization from the USDA Forest Service for the occupancy and use of National Forest System lands. The licensee shall obtain the executed authorization before beginning ground-disturbing activities on National Forest System lands or within one year of license issuance if no construction or reconstruction was proposed in the application for license.

The Licensee may commence ground-disturbing activities authorized by the License and special-use authorization no sooner 60 days following the date the licensee files the USDA Forest Service special-use authorization with the Commission, unless the Commission prescribes a different commencement schedule.

In the event there is a conflict between any provisions of the license and USDA Forest Service special-use authorization, the special-use authorization shall prevail to the extent that the USDA Forest Service, in consultation with the Commission, deems necessary to protect and utilize National Forest System resources.

Condition No. 2 – Forest Service Approval of Final Design

Prior to undertaking activities on National Forest System lands, the Licensee shall obtain written approval from the USDA Forest Service for all final design plans for project components that the USDA Forest Service deems as affecting or potentially affecting National Forest System lands and resources. As part of such prior written approval, the USDA Forest Service may require adjustments in final design plans and facility locations to preclude or mitigate impacts and to assure that the project is compatible with on-the-ground conditions. Should the USDA Forest Service, the Commission, or the Licensee determine that necessary changes are a substantial change; the Licensee shall follow the procedures of Article 2 of the license. Any changes to the license made for any reason pursuant to Article 2 or Article 3 shall be made subject to any new terms and conditions the Secretary of Agriculture may make pursuant to section 4(e) of the Federal Power Act.

Condition No. 3 – Approval of Changes

Notwithstanding any license authorization to make changes to the Project, when such changes directly affect NFS lands and easements the Licensee shall obtain written approval from the Forest Service prior to making any changes in any constructed Project features or facilities, or in the uses of Project lands and waters or any departure from the requirements of any approved exhibits filed with the Commission. Following receipt of such approval from the Forest Service, and a minimum of 60- days prior to initiating any such changes, the Licensee shall file a report with the Commission describing the changes, the reasons for the changes, and showing the approval of the Forest Service for such changes.

The Licensee shall file an exact copy of this report with the Forest Service at the same time it is filed with the Commission. This condition does not relieve the Licensee from other requirements of this license.

Condition No. 4 – Consultation

The Licensee shall, beginning the first full calendar year after license acceptance, participate in annual meetings with the Forest Service to present Project operation and maintenance activities planned for the next calendar year. In addition, Licensee shall present results from current year monitoring of invasive plants and other resources. The goals of this meeting are to share information, mutually agree upon planned maintenance activities, identify concerns that the Forest Service may have regarding activities and their potential effects on sensitive resources, and any measures required to avoid or mitigate potential effects. The date of the consultation meeting will be between January 10 and March 15 of each year, as mutually agreed to by the Licensee and the Forest Service. Representatives from the National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), Alaska Department of Fish and Game (ADF&G), interested tribes, other interested agency representatives, and other interested parties concerned with operation of the Project may attend the meeting.

Consultation shall include, but not be limited to:

- A status report regarding implementation of license conditions;
- Results of any monitoring studies performed over the previous year in formats agreed to by the Forest Service and the Licensee during development of implementation plans;
- Review of any non-routine maintenance;
- Discussion of any foreseeable changes to Project facilities or features;
- Discussion of any necessary revisions or modifications to implementation plans approved as part of this license;
- Discussion of needed protection measures for species newly listed as threatened, endangered, or sensitive, or changes to existing management plans that may no longer be warranted due to delisting of species or, to incorporate new knowledge about a species requiring protection;
- Discussion of elements of current year maintenance plans, e.g. access route maintenance; and
- Discussion of any planned pesticide use.

A record of the meeting shall be kept by the Licensee and shall include any recommendations made by the Forest Service for the protection of NFS lands and resources. The Licensee shall file the meeting record, if requested, with the Commission no later than 60 days following the meeting.

Copies of other reports related to Project safety and non-compliance shall be submitted to the Forest Service concurrently with submittal to the FERC. These include, but are not limited to: any non-compliance report filed by the Licensee, geologic or seismic reports, and structural safety reports for facilities located on or affecting NFS lands.

The Forest Service reserves the right, after notice and opportunity for comment, to require changes in the Project and its operation through revision of the Section 4(e) conditions to accomplish protection and utilization of NFS lands and resources.

Condition No. 5 - Compliance with Regulations

The Licensee shall comply with the regulations of the Department of Agriculture for activities on NFS lands, and all applicable Federal, State, county, and municipal laws, ordinances, or regulations in regards to the area or operations on or directly affecting NFS lands, to the extent those laws, ordinances or regulations are not preempted by federal law.

Condition No. 6 – Surrender of License or Transfer of Ownership

Prior to any surrender of this license, the Licensee shall provide assurance acceptable to the Forest Service that Licensee shall restore any Project area directly affecting NFS lands or easements to a condition satisfactory to the Forest Service upon or after surrender of the license, as appropriate. To the extent restoration is required, Licensee shall prepare a restoration plan which shall identify the measures to be taken to restore such NFS lands and shall include or identify adequate financial mechanisms to ensure performance of the restoration measures. In the event of any transfer of the license or sale of the Project, the Licensee shall assure that, in a manner satisfactory to the Forest Service, the Licensee or transferee will provide for the costs of surrender and restoration. If deemed necessary by the Forest Service to assist it in evaluating the Licensee's proposal, the Licensee shall conduct an analysis, using experts approved by the Forest Service, to estimate the potential costs associated with surrender and restoration of any Project area directly affecting NFS lands to Forest Service specifications. In addition, the Forest Service may require the Licensee to pay for an independent audit of the transferee to assist the Forest Service in determining whether the transferee has the financial ability to fund the surrender and restoration work specified in the analysis.

Condition No. 7- Protection of United States Property

The Licensee, including any agents or employees of the Licensee acting within the scope of their employment, shall exercise diligence in protecting from damage the land and property of the United States covered by and used in connection with this license.

Condition No. 8 – Indemnification

The Licensee shall indemnify, defend, and hold the United States harmless for:

- any violations incurred under any laws and regulations applicable to, or
- judgments, claims, penalties, fees, or demands assessed against the United States caused by, or
- costs, damages, and expenses incurred by the United States caused by, or
- The releases or threatened release of any solid waste, hazardous substances, pollutant, contaminant, or oil in any form in the environment related to the construction, maintenance, or operation of the Project works or of the works appurtenant or accessory thereto under the license.

The Licensee's indemnification of the United States shall include any loss by personal injury, loss of life or damage to property caused by the construction, maintenance, or operation of the Project works or of the works appurtenant or accessory thereto under the license.

Indemnification shall include, but is not limited to, the value of resources damaged or destroyed; the costs of restoration, cleanup, or other mitigation; fire suppression or other types of abatement costs; third party claims and judgments; and all administrative, interest, and other legal costs. Upon surrender, transfer, or termination of the license, the Licensee's obligation to indemnify and hold harmless the United States shall survive for all valid claims for actions that occurred prior to such surrender, transfer or termination.

Condition No. 9 - Damage to Land, Property, and Interests of the United States

The Licensee has an affirmative duty to protect the land, property, and interests of the United States from damage arising from the Licensee's construction, maintenance, or operation of the Project works or the works appurtenant or accessory thereto under the license. The Licensee's liability for fire and other damages to NFS lands shall be determined in accordance with the Federal Power Act and standard Form L-1 Articles 22 and 24.

Condition No. 10 - Risks and Hazards on National Forest System Lands

As part of the occupancy and use of the Project area, the Licensee has a continuing responsibility to reasonably identify and report all known or observed hazardous conditions on or directly affecting NFS lands or easements within the Project boundary that would affect the improvements, resources, or pose a risk of injury to individuals. Licensee will abate those conditions, except those caused by third parties or related to the occupancy and use authorized by the License. Any non-emergency actions to abate such hazards on NFS lands shall be performed after consultation with the Forest Service. In emergency situations, the Licensee shall notify the Forest Service of its actions as soon as possible, but not more than 48 hours, after such actions have been taken. Whether or not the Forest Service is notified or provides consultation, the Licensee shall remain solely responsible for all abatement measures performed. Other hazards should be reported to the appropriate agency as soon as possible.

Condition No. 11 - Access

The Forest Service reserves the right to use or permit others to use any part of the licensed area on NFS lands for any purpose, provided such use does not interfere with the rights and privileges authorized by this license or the Federal Power Act.

Condition No. 12 - Maintenance of Improvements

The Licensee shall maintain all its improvements and premises on National Forest System lands or easements to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the USDA Forest Service. The Licensee shall comply with all applicable Federal, State, and local laws, regulations, including but not limited to, the Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq., the Resources Conservation and Recovery Act, 42 U.S.C. 6901 et seq., the Comprehensive Environmental Response, Control, and Liability Act, 42 U.S.C. 9601 et seq., and other relevant environmental laws, as well as public health and safety laws and other laws relating to the siting, construction, operation, maintenance of any facility, improvement, or equipment.

Condition No. 13 - Surveys, Land Corners

The Licensee shall avoid disturbance to all public land survey monuments, private property corners, and forest boundary markers. In the event that any such land markers or monuments on NFS lands are destroyed by an act or omission of the Licensee, in connection with the use and/or occupancy authorized by this license, depending on the type of monument destroyed, the Licensee shall reestablish or reference same in accordance with (1) the procedures outlined in the "Manual of Instructions for the Survey of the Public Land of the United States," or (2) the specifications of the Forest Service. Further, the Licensee shall ensure that any such official survey records affected are amended as provided by law.

Condition No. 14 - Pesticide Use Restrictions on National Forest System Lands

Pesticides may not be used on NFS lands or in areas affecting NFS lands to control undesirable woody and herbaceous vegetation, aquatic plants, insects, rodents, non-native fish, etc., without the prior written approval of the Forest Service. During the Annual Consultation Meeting described in Condition 4, the Licensee shall submit a request for approval of planned uses of pesticides for the upcoming year. The Licensee shall provide at a minimum the following information essential for review:

- whether pesticide applications are essential for use on NFS lands;
- specific locations of use;
- specific herbicides proposed for use;
- application rates;

- dose and exposure rates; and
- Safety risk and timeframes for application.

Exceptions to this schedule may be allowed only when unexpected outbreaks of pests require control measures that were not anticipated at the time the report was submitted. In such an instance, an emergency request and approval may be made.

Pesticide use will be excluded from NFS lands within 500 feet of known locations of Western Toad, or known locations of Forest Service Special Status or culturally significant plant populations. Application of pesticides must be consistent with Forest Service riparian conservation objectives.

On NFS lands, the Licensee shall only use those materials registered by the U.S. Environmental Protection Agency and consistent with those applied by the Chugach National Forest and approved through Forest Service review for the specific purpose planned. The Licensee must strictly follow label instructions in the preparation and application of pesticides and disposal of excess materials and containers.

Condition No. 15 - Modifications of 4(e) Conditions after Biological Opinion or Certification

The Forest Service reserves the right to modify these conditions, if necessary, to respond to any Final Biological Opinion issued for this Project by the National Marine Fisheries Service, United States Fish and Wildlife Service; or any Certification issued for this Project by the State of Alaska.

Condition No. 16 – Signs

The Licensee shall consult with the USDA Forest Service prior to erecting any signs on National Forest System lands and easements relating to this license. The Licensee must obtain the approval of the USDA Forest Service as to the location, design, size, color, and message. The Licensee shall be responsible for maintaining all Licensee erected signs to neat and presentable standards.

Condition No. 17 – Additional Ground Disturbing Activities

If the Licensee proposes ground-disturbing activities on or directly affecting NFS lands or easements that were not specifically addressed in the Commission's NEPA processes, the Licensee, in consultation with the Forest Service, shall determine the scope of work and potential for Project-related effects, and whether additional information is required to proceed with the planned activity.

Upon Forest Service request, the Licensee shall enter into an agreement with the Forest Service under which the Licensee shall fund a reasonable portion of Forest Service's staff time and expenses for staff activities related to the proposed activities.

Condition No. 18 – Implementation and Modification of Forest Service Conditions
(Applies only to issuance of Special Use Permit after licensing)

The USDA Forest Service reserves the authority to modify USDA Forest Service 4(e) terms and conditions if upon completion of the USDA Forest Service administrative appeals process at 36 Code of Federal Regulations (CFR) Part 214, the Chief, USDA Forest Service, or Secretary of Agriculture directs that substantial changes to the terms and conditions submitted herein be made.

Condition 19 - Use of Explosives

In the use of explosives, the Licensee shall exercise the utmost care not to endanger life or property and shall comply with Federal, State and local laws and ordinances. The Licensee shall contact the USDA Forest Service prior to blasting to obtain the requirements of the USDA Forest Service. The Licensee shall be responsible for any and all damages resulting from the use of explosives and shall adopt precautions to prevent damage to surrounding objects. The Licensee shall furnish and erect special signs to warn the public of the Licensee's blasting operations. The Licensee shall place and maintain such signs so they are clearly evident to the public during all critical periods of the blasting operations.

The Licensee shall store all explosives on National Forest System lands and Licensee adjoining fee title property in compliance with all applicable Federal, State and local laws and ordinances.

When using explosives on National Forest System lands and Licensee adjoining fee title property, the Licensee shall adopt precautions to prevent damage to landscape features and other surrounding objects. When directed by the USDA Forest Service, the Licensee shall leave trees within an area designated to be cleared as a protective screen for surrounding vegetation during blasting operations. The Licensee shall remove and dispose of trees so left when blasting is complete. When necessary, and at any point of special danger, the Licensee shall use suitable mats or some other approved method to smother blasts.

Condition No. 20 – Resource Management Plans

Within one year of license issuance, and in consultation with the Forest Service and applicable Federal and State agencies, the Licensee shall file with the Commission the following plans addressing specific resource issues covered by the Chugach National Forest Land and Resource Management Plan.

The licensee shall submit the draft plans for Forest Service review and approval, prior to submitting the plans to the Commission. The licensee shall provide at least 90 days for Forest Service review and approval before the filing deadline in the license.

Upon Commission approval, Licensee shall implement the Plans. The plans shall include the following:

- a) **Construction Plan**
- b) **Reservoir Management and Inundation Plan**
- c) **Hazardous Substances Plan**
- d) **Fire Prevention Plan**
- e) **Heritage Resource Protection Plan**
- f) **Scenery Management Plan**
- g) **Vegetation Management Plan**
- h) **Invasive Species Management Plan**
- i) **Wildlife Mitigation and Monitoring Plan**
- j) **Fish Mitigation and Monitoring Plan**
- k) **Threatened, Endangered, Proposed for Listing, and Sensitive Species Plan**
- l) **Aquatic Habitat Restoration and Monitoring Plan**
- m) **Erosion and Sediment Control Plan**
- n) **Solid Waste and Waste Water Plan**
- o) **Spoil Disposal Plan**

The Plans shall include resource management objectives tied to the Chugach National Forest Land and Resource Management Plan and an implementation schedule.

Forest Service Comments on the Gant Lake Hydroelectric Project (FERC No. 13212) for the Draft License Application

The Forest Service concurs with FERC Office of Energy Projects “Review of Draft License Application for the Proposed Grant lake Hydroelectric Project Identification of Potential Deficiencies and Additional Information Needs” dated June 17, 2015

General-Forest Service Resources That Could Be Cumulatively Affected

Water quantity, water quality, and fishery resources are the only resources identified that would be cumulatively affected by the proposed construction and operation of the project. It is Forest Service practice to analyze all affected resources for direct, indirect and cumulative effects. During public meetings, many comments and concerns were expressed related to recreation use in the project area. In particular, the direct, indirect, and cumulative effects to the Iditarod National Historic Trail (INHT) should be thoroughly analyzed.

Water Quantity and Quality

Instream Flow Requirement – Chugach RLRMP, 2002 Water Wetlands and Riparian Areas Goal: “Provide instream flows to maintain and support aquatic life and habitat, recreation and aesthetics, the natural conveyance of water and sediment, and other resources that depend on such flows on National Forest System Lands.”

Need for Additional or New Information

- A reference identified in the Aquatic Resources Draft Study Plan (Source: Grant Lake Morphology in Marcuson, P. 1989. Coho Salmon Fry Stocking in Grant Lake, Alaska, USDA Forest Service, Seward Ranger District, Chugach National Forest, February 1989) states: “An upper basin of Grant Lake has a maximum depth of 80 feet and a lower, outlet end exceeding 90 feet in depth. The two basins are separated by a narrow isthmus with an island and less than 10 feet of depth.” Lake depths in the area in question should be evaluated and this statement verified. If true, there could be a disproportionate drawdown of the lower basin and there may be a loss of connectivity between the deeper regions of the upper and lower portions of Grant Lake. Again, please note that the draft study plan should display the updated project map (*This was not analyzed in the Draft Water Resources – Geomorphology Report, Feb. 2014*). This drawdown may also have effects on water recreation through this narrow, shallow location and should be analyzed (06/11/2015).
- Approximately 11 % of Grant Creek is covered by glaciers. The effects analysis of the project should include references and an analysis on how the project will affect water

quantity/quality taking into account anticipated streamflow changes from glacial recession.

- Grant Creek was stream gaged by the USGS from 1947-1958. This time frame was within the Cold (Negative) Pacific Decadal Oscillation (PDO). Cold PDO phase summer flows have shown higher peak snowmelt runoff, and higher magnitude and timing of annual peak discharge events than Warm (positive) PDO phase summer flows (Neal, et. al, 2002). Additionally, many of these years during this timeframe were La Nina's which often produce higher amounts of snowfall lending to even higher flows. Utilizing only these years and only two separate discontinuous and incomplete years of data will likely not reflect the mean hydrograph. Modeling Grant Creek's streamflow hydrograph should take into account that the gaged water flow years were likely much higher than the mean.
- Please include a climate change effects analysis. This analysis should include anticipated changes in streamflow. Hydrologic flow analyses should take into account both the long term warming climate change trend and the PDO and ENSO variation cycles.
- There will need to be an analysis of the project effects on Groundwater Resources within the project area and downstream.

Activities occurring off of National Forest lands may still affect upstream and downstream Forest Service resources such as fish, water quality, water quantity, aquatic habitat and riparian areas. The Land and Resource Management Prescription within the project area has a Fish, Wildlife, and Recreation management Prescription. Apply Best Management Practices to minimize the effects of land disturbing activities on the beneficial uses of water.

Aquatic Resources

The Forest Service is in Concurrence with comments that were made by Alaska Dept. of Fish and Game with regard to Fisheries and Aquatic Resources. Along with their comments the effects of project construction and operation on changes in distribution and abundance of aquatic insects and their predators should be analyzed.

Terrestrial Resources

The Forest Service is in Concurrence with comments that were made by Alaska Dept. of Fish and Game with regard to Terrestrial Resources. The effects of project construction and operation on changes to animal movement in and through the project area as well as displacement and disruption of seasonal movement patterns should be analyzed. The effects of increased access on harvestable wildlife should also be analyzed

Soil Resources-Erosion Control Plan

Within 1 year following the date of license issuance and at least 90-days prior to any land disturbing activity, the Licensee shall file with the Director, Office of Hydropower Licensing for Commission approval, a plan that is approved by the Forest Service to control erosion, stream

sedimentation, dust and soil mass movement consistent with the standards and guidelines of the Chugach National Forest Land Management Plan, the Soil and Water Conservation Handbook (FSH 2509.22) and the National Best Management Practices. Upon Commission approval, the Licensee shall implement the plan. The plan shall be based on actual-site geological, soil, surface water and groundwater conditions, and shall include: (1) a description of the actual site conditions, including any existing erosion or sedimentation problems from roads, stream crossings, trails, or other facilities; (2) detailed descriptions, design drawings, and specific topographic locations of all control measures; (3) measures to divert runoff over disturbed land surfaces, including sediment ponds at the diversion and powerhouse sites; (5) re-vegetating test-drive areas outside the roadbed; (6) measures to dissipate energy and prevent erosion at the tailrace; (7) a monitoring and maintenance schedule; (8) and any other measures the Forest Service, and the Licensee mutually identify as needing care to ensure resource protection. The plan and erosion control measures shall comply with Best Management Practices (Soil and Water Conservation Handbook FSH 2509.22 and National Best Management Practices for Water Quality Management on National Forest System Lands FS-990). Erosion control measures should be designed to retain the natural appearance of the area where practicable. The Commission may require changes to the plan to ensure adequate protection of the environmental, scenic, and cultural values of the project area. The Licensee shall not commence activities the Forest Service determines to be affected by the plan until after 60 days following the filing date, unless the Director, Office of Hydropower, Licensing, prescribes a different commencement schedule.

Mineral Resources

The effects of project construction and operation on changes to heavy metal leakage as a result of water level fluctuations of Grant Lake, which is an area of past mining and milling operations, should be analyzed. The Forest Service currently has a Miner with an approved Mining Plan of Operations for a Placer and Loading mining operation in the Grant lake Area.

Recreation Resources and Land Use

Iditarod National Historic Trail:

The Grant Lake Hydro project proposes development of a vehicular road that would directly overlay or generally parallel the Iditarod National Historic Trail (INHT) Easement. The Grant Lake project also proposes development of a Powerhouse, and Tailrace Detention Pond at the location of a planned INHT pedestrian bridge crossing of Grant Creek. National Historic Trails are established under the National Trails System Act (P.L. 90543, as amended through P.L. 111-11, March 30, 2009).

National Trails in Alaska are considered a Conservation System Unit (CSU) under the Alaska National Interest Lands Conservation Act (ANILCA). When a transportation or utility system (TUS) is proposed within a CSU, each Federal agency having jurisdiction must follow the

requirements of Title XI of ANILCA. Sections 1104 and 1107 of Title XI describe the procedural requirements that apply. Section 1106 describes the decision-making process for final approval or disapproval by the agencies.

FERC is the lead federal agency with responsibility for preparing the National Environmental Policy Act (NEPA) document. An environmental impact statement is required for a TUS in a CSU. Upon completion of the EIS, each federal agency will make its decision regarding its authorization and include detailed findings as required by Section 1104(g) of Title XI. Section 1104 (g) (2) identifies eight specific criteria that must be considered before a federal agency makes a decision and Section 1107 (a) specifies terms and conditions that must be included in an authorization. Section 1104 also requires the Federal agencies to hold hearings on the EIS in Alaska and Washington, D.C.

Title XI requires that an applicant apply to the appropriate federal agencies for an authorization for the TUS. KHL must submit an application to the Forest Service and the Federal Energy Regulatory Commission on form SF-299 along with the substantial evidence outlined in Section 1104 (g) (2) that is needed by the agencies to make a decision.

While the INHT through the Vagt Lake / Grant Lake area is on State of Alaska land, development of this INHT segment is being performed by the Forest Service under an easement issued by the State of Alaska Department of Natural Resources (Final Finding and Decision, ADL 228890 Grant of Public Easement Iditarod National Historic Trail Seward to Girdwood, 2004). The DNR decision stipulates the reservation of “a 1,000-foot-wide corridor which will provide a buffer with enough width to, a) conserve the wilderness characteristics of the Iditarod Trail, b) provide enough width to separate conflicting uses such as motorized and non-motorized uses in areas where multiple uses are recommended, and c) allow for development of future compatible trail facilities.”

The issue to be addressed is the access road location. The Recreation Resources Study Report is correct in that discussions of a reroute of the INHT easement are ongoing with state and federal agencies, and other stakeholders. Further analysis and discussion will be required to assess the effects to the Iditarod National Historic Trail and the public use and development scale of the proposed road to Grant Lake. Until this analysis and review of alternative routes is completed, it seems inappropriate to describe the benefits or deficiencies of the alternative routes.

The Chugach National Forest has identified the following general issues regarding any alternative to the reroute of the INHT for the Grant Lake Hydro Project as currently proposed:

- **Quality Recreation Experience:** Development and provision of a single-track trail that provides a high quality backcountry recreation experience through a predominantly unmodified setting of high scenic value. The road and substation, as proposed, would substantially alter and compromise the desired INHT recreation experience.
- **Cost:** The Forest Service has invested significant time and resources to locate an alignment of the INHT through this area (which provides challenging topography and limited alignment options) that meets INHT management objectives. Even if an alternate location

that meets management objectives could be found, by provision of the DNR Final Finding and Decision, the cost of identifying and developing a new alignment (including any increase in construction cost), would be borne by the proponent.

- **Sustainable Trail:** The INHT trail alignment is intended to provide a sustainable trail that meets the INHT management objectives and Forest Service design parameters, while minimizing long-term maintenance needs, and avoiding or minimizing negative impacts to other resources. Any revised alignment would need to fulfill the same objectives.

Other Comments on Recreation and Visual Resources:

It is unclear from the Recreation Resources Study Report description that the initial winter survey actually included the National Forest System Lands around Grant Lake. Normal winter routes to Grant Lake do not utilize the Vagt Lake Trail. Rather, access is gained from one of two winter trails at the northern end of the Trail Lake narrows. The Study only indicates one winter and one summer visit.

Existing Observed Winter Use

This section of the Recreation Resources Study Report is not accurate. Winter access to the Grant Lake area is most commonly via crossing Upper Trail Lake and one of two winter trails which leave the shoreline just south of the mouth of the lake. The most used trail is a portage trail which is easily negotiated via snowshoe, ski or snow machine. This trail is located in the southern portion of Section 31. It would be difficult to identify the winter use of the Grant Lake area without observing these routes. Another known winter use of the Grant Lake area would be trapping of fur bearing animals.

Existing Observed Summer Use

Other known uses include hiking to Grant Lake on one of the trails mentioned above and boating in paddle craft portaged from Upper Trail Lake. Though mentioned later in the document, it would seem appropriate to include here that summer use of the Grant Lake area can be expected to increase with the completion of planned developments associated with the Iditarod National Historic Trail. The study also describes the existing use of the Vagt Lake Trail as "light". If a conclusion is drawn on the amount of use, then the term, light, should be defined. Again it would seem appropriate to mention that use can be expected to increase once the planned development of the INHT is completed.

Sight-Seeing Flights

The description of typical routes seems to indicate the Harding Ice field is in the vicinity of Prince William Sound. This is inaccurate; perhaps the writer is referring to the Sargent Ice field or that flights also continue south and west to view the Harding Ice field.

Noise

There has not been sufficient study of non-motorized recreational use of the Grant Lake area to describe as "small to absent".

Conclusions on recreational use of the National Forest System lands in the vicinity of Grant Lake can't be reached based on two visits as described in the Recreation Resources Study Report. The inaccuracies and omissions mentioned should be corrected and further study should be undertaken to more accurately characterize this recreational use of National Forest System lands in the vicinity of Grant Lake. Further analysis and discussion will be required to assess the effects to the Iditarod National Historic Trail and the public use and development scale of the proposed road to Grant Lake. We are also concerned about how the proposed buildings, fluctuating lake level, and power distribution lines will affect the visual integrity of the CNF in this area.

Cultural Resources: Archaeological and Historic Study

The survey and report are very thorough, with an outstanding job of documenting cultural resources within the Area of Potential Effects (APE). We anticipate further discussion regarding the determinations of eligibility and finding of effect during our formal review of the determinations for historic properties in the coming months. As for the proposed INHT reroute, our main concern is adding the reroute to the APE and surveying for cultural resources once that route has been established. The Forest Service is in concurrence with the SHPO comments to the DLA.

Land Use Authorizations

Most of the proposed project facilities are located on State of Alaska lands. However, project facilities, such as impoundments, on National Forest System lands will require special use authorization from the Forest Service prior to construction. Authorization for use of federal right-of-ways or easements, such as use of the Crown Point Mine Road and the INHT must also be obtained.

- The proposed constructed facilities are generally located on State of Alaska lands. These lands were patented to the State of Alaska under the Alaska Statehood Act on September 21, 1992. The Forest Service retained reservations and easements for continued public access to National Forest System lands. The United States reserved a 60-foot wide road easement on the Crown Point Road. Reconstruction and use of the Crown Point Road would require Forest Service authorization.
- The Forest Service has been granted a 1000-foot wide trail easement from the State of Alaska for the INHT. Any use on or adjacent to the land encumbered by the easement must not unreasonably interfere with the rights granted to the United States. The United States, acting by and through the USDA Forest Service, is responsible for the administration of the easement including the right to regulate occupancy and use.

Inventoried Roadless Area

The National Forest portion of the project area is located in the Kenai Mountains Roadless Area. The effects of the proposed project on the Roadless character should be fully analyzed, including vegetation clearing along the shoreline of Grant Lake. The Secretary of Agriculture has reserved decision authority on projects within inventoried Roadless areas.

Aesthetic Resources

Effects of project construction, facilities and operation on the aesthetic values of the project area should also consider aerial views. Trail Lake provides a base for commercial and non-commercial flightseeing activities.

Socioeconomics

The project effects on subsistence use should include rural residents. Section 811 of the Alaska National Interest Lands Conservation Act (ANILCA) requires that rural residents engaged in subsistence uses have reasonable access to subsistence resources on public lands. The subsistence analysis will need to include a distinct finding on whether the proposed action may significantly restrict access to subsistence. The communities of Cooper Landing and Hope have customary and traditional use determinations for subsistence fishing, and moose/caribou hunting in the Grant lake area.

Appendix A

Grant Lake Hydroelectric Project

FERC No. 13212

USDA Forest Service

Alaska Region

Chugach National Forest

Preliminary 4(e) Terms and Conditions

General

License articles contained in the Federal Energy Regulatory Commission's (Commission) Standard Form L-1 issued by Order No. 540, dated October 31, 1975, cover those general requirements that the Secretary of Agriculture, acting by and through the USDA Forest Service, considers necessary for adequate protection and utilization of the land and related resources of the Chugach National Forest. Under authority of section 4(e) of the Federal Power Act (16 U.S.C. 797(e)), the following terms and conditions are deemed necessary for adequate protection and utilization of National Forest System lands and resources. These terms and conditions are based on those resources enumerated in the Organic Administration Act of 1897 (30 Stat. 11), the Multiple-Use Sustained Yield Act of 1960 (74 Stat. 215), the National Forest Management Act of 1976 (90 Stat. 2949), and any other law specifically establishing a unit of the National Forest System or prescribing the management thereof (such as the Wilderness Act or Wild and Scenic Rivers Act), as such laws may be amended from time to time, and as implemented by regulations and approved Land and Resources Management Plans prepared in accordance with the National Forest Management Act. Therefore, pursuant to section 4(e) of the Federal Power Act, the following conditions covering specific requirements for protection and utilization of the National Forest System lands shall also be included in any license issued for the Grant Lake Hydroelectric Project (Project).

Condition No. 1 - Requirement to Obtain a Forest Service Special-Use Authorization

The Licensee shall obtain a special-use authorization from the USDA Forest Service for the occupancy and use of National Forest System lands. The licensee shall obtain the executed authorization before beginning ground-disturbing activities on National Forest System lands or within one year of license issuance if no construction or reconstruction was proposed in the application for license.

The Licensee may commence ground-disturbing activities authorized by the License and special-use authorization no sooner 60 days following the date the licensee files the USDA Forest Service special-use authorization with the Commission, unless the Commission prescribes a different commencement schedule.

In the event there is a conflict between any provisions of the license and USDA Forest Service special-use authorization, the special-use authorization shall prevail to the extent that the USDA Forest Service, in consultation with the Commission, deems necessary to protect and utilize National Forest System resources.

Condition No. 2 – Forest Service Approval of Final Design

Prior to undertaking activities on National Forest System lands, the Licensee shall obtain written approval from the USDA Forest Service for all final design plans for project components that the USDA Forest Service deems as affecting or potentially affecting National Forest System lands and resources. As part of such prior written approval, the USDA Forest Service may require adjustments in final design plans and facility locations to preclude or mitigate impacts and to assure that the project is compatible with on-the-ground conditions. Should the USDA Forest Service, the Commission, or the Licensee determine that necessary changes are a substantial change; the Licensee shall follow the procedures of Article 2 of the license. Any changes to the license made for any reason pursuant to Article 2 or Article 3 shall be made subject to any new terms and conditions the Secretary of Agriculture may make pursuant to section 4(e) of the Federal Power Act.

Condition No. 3 – Approval of Changes

Notwithstanding any license authorization to make changes to the Project, when such changes directly affect NFS lands and easements the Licensee shall obtain written approval from the Forest Service prior to making any changes in any constructed Project features or facilities, or in the uses of Project lands and waters or any departure from the requirements of any approved exhibits filed with the Commission. Following receipt of such approval from the Forest Service, and a minimum of 60- days prior to initiating any such changes, the Licensee shall file a report with the Commission describing the changes, the reasons for the changes, and showing the approval of the Forest Service for such changes.

The Licensee shall file an exact copy of this report with the Forest Service at the same time it is filed with the Commission. This condition does not relieve the Licensee from other requirements of this license.

Condition No. 4 – Consultation

The Licensee shall, beginning the first full calendar year after license acceptance, participate in annual meetings with the Forest Service to present Project operation and maintenance activities planned for the next calendar year. In addition, Licensee shall present results from current year monitoring of invasive plants and other resources. The goals of this meeting are to share information, mutually agree upon planned maintenance activities, identify concerns that the Forest Service may have regarding activities and their potential effects on sensitive resources, and any measures required to avoid or mitigate potential effects. The date of the consultation meeting will be between January 10 and March 15 of each year, as mutually agreed to by the Licensee and the Forest Service. Representatives from the National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), Alaska Department of Fish and Game (ADF&G), interested tribes, other interested agency representatives, and other interested parties concerned with operation of the Project may attend the meeting.

Consultation shall include, but not be limited to:

- A status report regarding implementation of license conditions;
- Results of any monitoring studies performed over the previous year in formats agreed to by the Forest Service and the Licensee during development of implementation plans;
- Review of any non-routine maintenance;
- Discussion of any foreseeable changes to Project facilities or features;
- Discussion of any necessary revisions or modifications to implementation plans approved as part of this license;
- Discussion of needed protection measures for species newly listed as threatened, endangered, or sensitive, or changes to existing management plans that may no longer be warranted due to delisting of species or, to incorporate new knowledge about a species requiring protection;
- Discussion of elements of current year maintenance plans, e.g. access route maintenance; and
- Discussion of any planned pesticide use.

A record of the meeting shall be kept by the Licensee and shall include any recommendations made by the Forest Service for the protection of NFS lands and resources. The Licensee shall file the meeting record, if requested, with the Commission no later than 60 days following the meeting.

Copies of other reports related to Project safety and non-compliance shall be submitted to the Forest Service concurrently with submittal to the FERC. These include, but are not limited to: any non-compliance report filed by the Licensee, geologic or seismic reports, and structural safety reports for facilities located on or affecting NFS lands.

The Forest Service reserves the right, after notice and opportunity for comment, to require changes in the Project and its operation through revision of the Section 4(e) conditions to accomplish protection and utilization of NFS lands and resources.

Condition No. 5 - Compliance with Regulations

The Licensee shall comply with the regulations of the Department of Agriculture for activities on NFS lands, and all applicable Federal, State, county, and municipal laws, ordinances, or regulations in regards to the area or operations on or directly affecting NFS lands, to the extent those laws, ordinances or regulations are not preempted by federal law.

Condition No. 6 – Surrender of License or Transfer of Ownership

Prior to any surrender of this license, the Licensee shall provide assurance acceptable to the Forest Service that Licensee shall restore any Project area directly affecting NFS lands or easements to a condition satisfactory to the Forest Service upon or after surrender of the license, as appropriate. To the extent restoration is required, Licensee shall prepare a restoration plan which shall identify the measures to be taken to restore such NFS lands and shall include or identify adequate financial mechanisms to ensure performance of the restoration measures. In the event of any transfer of the license or sale of the Project, the Licensee shall assure that, in a manner satisfactory to the Forest Service, the Licensee or transferee will provide for the costs of surrender and restoration. If deemed necessary by the Forest Service to assist it in evaluating the Licensee's proposal, the Licensee shall conduct an analysis, using experts approved by the Forest Service, to estimate the potential costs associated with surrender and restoration of any Project area directly affecting NFS lands to Forest Service specifications. In addition, the Forest Service may require the Licensee to pay for an independent audit of the transferee to assist the Forest Service in determining whether the transferee has the financial ability to fund the surrender and restoration work specified in the analysis.

Condition No. 7- Protection of United States Property

The Licensee, including any agents or employees of the Licensee acting within the scope of their employment, shall exercise diligence in protecting from damage the land and property of the United States covered by and used in connection with this license.

Condition No. 8 – Indemnification

The Licensee shall indemnify, defend, and hold the United States harmless for:

- any violations incurred under any laws and regulations applicable to, or
- judgments, claims, penalties, fees, or demands assessed against the United States caused by, or
- costs, damages, and expenses incurred by the United States caused by, or
- The releases or threatened release of any solid waste, hazardous substances, pollutant, contaminant, or oil in any form in the environment related to the construction, maintenance, or operation of the Project works or of the works appurtenant or accessory thereto under the license.

The Licensee's indemnification of the United States shall include any loss by personal injury, loss of life or damage to property caused by the construction, maintenance, or operation of the Project works or of the works appurtenant or accessory thereto under the license.

Indemnification shall include, but is not limited to, the value of resources damaged or destroyed; the costs of restoration, cleanup, or other mitigation; fire suppression or other types of abatement costs; third party claims and judgments; and all administrative, interest, and other legal costs. Upon surrender, transfer, or termination of the license, the Licensee's obligation to indemnify and hold harmless the United States shall survive for all valid claims for actions that occurred prior to such surrender, transfer or termination.

Condition No. 9 - Damage to Land, Property, and Interests of the United States

The Licensee has an affirmative duty to protect the land, property, and interests of the United States from damage arising from the Licensee's construction, maintenance, or operation of the Project works or the works appurtenant or accessory thereto under the license. The Licensee's liability for fire and other damages to NFS lands shall be determined in accordance with the Federal Power Act and standard Form L-1 Articles 22 and 24.

Condition No. 10 - Risks and Hazards on National Forest System Lands

As part of the occupancy and use of the Project area, the Licensee has a continuing responsibility to reasonably identify and report all known or observed hazardous conditions on or directly affecting NFS lands or easements within the Project boundary that would affect the improvements, resources, or pose a risk of injury to individuals. Licensee will abate those conditions, except those caused by third parties or related to the occupancy and use authorized by the License. Any non-emergency actions to abate such hazards on NFS lands shall be performed after consultation with the Forest Service. In emergency situations, the Licensee shall notify the Forest Service of its actions as soon as possible, but not more than 48 hours, after such actions have been taken. Whether or not the Forest Service is notified or provides consultation, the Licensee shall remain solely responsible for all abatement measures performed. Other hazards should be reported to the appropriate agency as soon as possible.

Condition No. 11 - Access

The Forest Service reserves the right to use or permit others to use any part of the licensed area on NFS lands for any purpose, provided such use does not interfere with the rights and privileges authorized by this license or the Federal Power Act.

Condition No. 12 - Maintenance of Improvements

The Licensee shall maintain all its improvements and premises on National Forest System lands or easements to standards of repair, orderliness, neatness, sanitation, and safety acceptable to the USDA Forest Service. The Licensee shall comply with all applicable Federal, State, and local laws, regulations, including but not limited to, the Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq., the Resources Conservation and Recovery Act, 42 U.S.C. 6901 et seq., the Comprehensive Environmental Response, Control, and Liability Act, 42 U.S.C. 9601 et seq., and other relevant environmental laws, as well as public health and safety laws and other laws relating to the siting, construction, operation, maintenance of any facility, improvement, or equipment.

Condition No. 13 - Surveys, Land Corners

The Licensee shall avoid disturbance to all public land survey monuments, private property corners, and forest boundary markers. In the event that any such land markers or monuments on NFS lands are destroyed by an act or omission of the Licensee, in connection with the use and/or occupancy authorized by this license, depending on the type of monument destroyed, the Licensee shall reestablish or reference same in accordance with (1) the procedures outlined in the "Manual of Instructions for the Survey of the Public Land of the United States," or (2) the specifications of the Forest Service. Further, the Licensee shall ensure that any such official survey records affected are amended as provided by law.

Condition No. 14 – Pesticide Use Restrictions on National Forest System Lands

Pesticides may not be used on NFS lands or in areas affecting NFS lands to control undesirable woody and herbaceous vegetation, aquatic plants, insects, rodents, non-native fish, etc., without the prior written approval of the Forest Service. During the Annual Consultation Meeting described in Condition 4, the Licensee shall submit a request for approval of planned uses of pesticides for the upcoming year. The Licensee shall provide at a minimum the following information essential for review:

- whether pesticide applications are essential for use on NFS lands;
- specific locations of use;
- specific herbicides proposed for use;
- application rates;

- dose and exposure rates; and
- Safety risk and timeframes for application.

Exceptions to this schedule may be allowed only when unexpected outbreaks of pests require control measures that were not anticipated at the time the report was submitted. In such an instance, an emergency request and approval may be made.

Pesticide use will be excluded from NFS lands within 500 feet of known locations of Western Toad, or known locations of Forest Service Special Status or culturally significant plant populations. Application of pesticides must be consistent with Forest Service riparian conservation objectives.

On NFS lands, the Licensee shall only use those materials registered by the U.S. Environmental Protection Agency and consistent with those applied by the Chugach National Forest and approved through Forest Service review for the specific purpose planned. The Licensee must strictly follow label instructions in the preparation and application of pesticides and disposal of excess materials and containers.

Condition No. 15 - Modifications of 4(e) Conditions after Biological Opinion or Certification

The Forest Service reserves the right to modify these conditions, if necessary, to respond to any Final Biological Opinion issued for this Project by the National Marine Fisheries Service, United States Fish and Wildlife Service; or any Certification issued for this Project by the State of Alaska.

Condition No. 16 - Signs

The Licensee shall consult with the USDA Forest Service prior to erecting any signs on National Forest System lands and easements relating to this license. The Licensee must obtain the approval of the USDA Forest Service as to the location, design, size, color, and message. The Licensee shall be responsible for maintaining all Licensee erected signs to neat and presentable standards.

Condition No. 17 - Additional Ground Disturbing Activities

If the Licensee proposes ground-disturbing activities on or directly affecting NFS lands or easements that were not specifically addressed in the Commission's NEPA processes, the Licensee, in consultation with the Forest Service, shall determine the scope of work and potential for Project-related effects, and whether additional information is required to proceed with the planned activity.

Upon Forest Service request, the Licensee shall enter into an agreement with the Forest Service under which the Licensee shall fund a reasonable portion of Forest Service's staff time and expenses for staff activities related to the proposed activities.

Condition No. 18 – Implementation and Modification of Forest Service Conditions

(Applies only to issuance of Special Use Permit after licensing)

The USDA Forest Service reserves the authority to modify USDA Forest Service 4(e) terms and conditions if upon completion of the USDA Forest Service administrative appeals process at 36 Code of Federal Regulations (CFR) Part 214, the Chief, USDA Forest Service, or Secretary of Agriculture directs that substantial changes to the terms and conditions submitted herein be made.

Condition 19 - Use of Explosives

In the use of explosives, the Licensee shall exercise the utmost care not to endanger life or property and shall comply with Federal, State and local laws and ordinances. The Licensee shall contact the USDA Forest Service prior to blasting to obtain the requirements of the USDA Forest Service. The Licensee shall be responsible for any and all damages resulting from the use of explosives and shall adopt precautions to prevent damage to surrounding objects. The Licensee shall furnish and erect special signs to warn the public of the Licensee's blasting operations. The Licensee shall place and maintain such signs so they are clearly evident to the public during all critical periods of the blasting operations.

The Licensee shall store all explosives on National Forest System lands and Licensee adjoining fee title property in compliance with all applicable Federal, State and local laws and ordinances.

When using explosives on National Forest System lands and Licensee adjoining fee title property, the Licensee shall adopt precautions to prevent damage to landscape features and other surrounding objects. When directed by the USDA Forest Service, the Licensee shall leave trees within an area designated to be cleared as a protective screen for surrounding vegetation during blasting operations. The Licensee shall remove and dispose of trees so left when blasting is complete. When necessary, and at any point of special danger, the Licensee shall use suitable mats or some other approved method to smother blasts.

Condition No. 20 – Resource Management Plans

Within one year of license issuance, and in consultation with the Forest Service and applicable Federal and State agencies, the Licensee shall file with the Commission the following plans addressing specific resource issues covered by the Chugach National Forest Land and Resource Management Plan.

The licensee shall submit the draft plans for Forest Service review and approval, prior to submitting the plans to the Commission. The licensee shall provide at least 90 days for Forest Service review and approval before the filing deadline in the license.

Upon Commission approval, Licensee shall implement the Plans. The plans shall include the following:

- a) **Construction Plan**
- b) **Reservoir Management and Inundation Plan**
- c) **Hazardous Substances Plan**
- d) **Fire Prevention Plan**
- e) **Heritage Resource Protection Plan**
- f) **Scenery Management Plan**
- g) **Vegetation Management Plan**
- h) **Invasive Species Management Plan**
- i) **Wildlife Mitigation and Monitoring Plan**
- j) **Fish Mitigation and Monitoring Plan**
- k) **Threatened, Endangered, Proposed for Listing, and Sensitive Species Plan**
- l) **Aquatic Habitat Restoration and Monitoring Plan**
- m) **Erosion and Sediment Control Plan**
- n) **Solid Waste and Waste Water Plan**
- o) **Spoil Disposal Plan**

The Plans shall include resource management objectives tied to the Chugach National Forest Land and Resource Management Plan and an implementation schedule.

Enclosure 3

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

IN THE MATTER COMMENTS ON)
THE DRAFT LICENSE)
APPLICATION FOR THE GRANT)
LAKE HYDROELECTRIC PROJECT)

Project Number: P-13212

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that I have served the U.S.D.A. Forest Service's letter on submittal of Comments on the Draft License Application by electronic filing, with the Federal Energy Regulatory Commission, at www.ferc.gov, and a copy of said documents by electronic mail to the following listed parties:

Party	Primary Person or Counsel of Record to be Served	Other Contact to be Served
Department of Agriculture		**Kathy Van Massenhove CHUGACH NATIONAL FOREST 161 East 1 st Avenue, Door 8 Anchorage, ALASKA 99501
Department of Agriculture	Roger Birk PO Box 21628 Juneau, ALASKA 99802-1628 UNITED STATES rbirk@fs.fed.us	Dawn Collinworth Office of the General Counsel U.S. Department of Agriculture PO Box 21628 Juneau, ALASKA 99802-1628 Dawn.Germain@ogc.usda.gov
Department of the Interior	Office of Solicitor- Office of the Solicitor 4230 University Drive, Suite 300 Anchorage, ALASKA 99508 UNITED STATES	Douglas L. Mutter OEPC-Anchorage Office of Environmental Policy and Compliance 1689 C Street Room 119 Anchorage, ALASKA 99501 douglas_mutter@ios.doi.gov
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Department of the	Lynnda Kahn Fish & Wildlife Biologist	**Ann Rappoport U.S. Fish & Wildlife Service

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Friends of Cooper Landing, Inc.	Robert Baldwin President, Friends of Cooper L PO Box 815 Cooper Landing,ALASKA 99572-0815 UNITED STATES kenailake@arctic.net	
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Dated this 3rd day of July 2015/s/ Roger Birk

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Document Content(s)

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Below are my review comments regarding the May 2015 “Draft Biological Evaluation for Plants: Grant Lake Hydroelectric Project”:

page	comment
1	Shouldn't "Moose Lake" in the following sentence be Moose Pass? <i>The Project would be located just east of the Seward Highway, near the community of Moose Lake, Alaska approximately 25 miles north of Seward, Alaska.</i>
17	Change the number of sensitive plant species known or suspected to occur on the Seward Ranger District from eight to nine based on the most current version (November 2013) of the Alaska Region Sensitive Plants matrix.
17	Based on the most current version (November 2013) of the Alaska Region Sensitive Plants matrix the following species should be added as suspected to occur on the Seward Ranger District: <i>Cochlearia sessilifolia</i> (sessileleaf scurvygrass) and <i>Tanacetum bipinnatum</i> ssp. <i>huronense</i> (dune tansy). However, neither species is expected in the project area since maritime beaches nor beach meadows are present.
17	Based on the most current version (November 2013) of the Alaska Region Sensitive Plants matrix drop <i>Ligusticum calderi</i> from being suspected to occur on the Chugach National Forest.
17 and 18	<i>Cypripedium guttatum</i> and <i>Romanzoffia unalaschcensis</i> are known to occur on the Chugach National Forest and are suspected on the Seward Ranger district.
18	Rather than "unspecified", list the nearest known population of <i>Aphragmus eschscholtzianus</i> to the project area as near the headwaters of Palmer Creek.
20	<i>Cypripedium guttatum</i> is historically known to occur on the Chugach National Forest and are suspected on the Seward Ranger district.
21	<i>Romanzoffia unalaschcensis</i> is known to occur on the Chugach National Forest and is suspected on the Seward Ranger district.
24-25	In regard to <i>Papaver alboroseum</i> (pale poppy, which was found in the project area), I agree with the assessment that the overall risk to this plant on the Chugach National Forest as a result of this project viewed in conjunction with other past, present, and reasonably foreseeable projects is low.
25	In regard to <i>Papaver alboroseum</i> (which was found in the project area), I think the consequence of adverse impacts from the project on pale poppy is moderate rather than high. From the description of direct and indirect effects it appears that adverse effects are better described as possible rather than obvious.
25	Similarly, as above, I think the overall risk to pale poppy as a result of the project is moderate rather than moderate to high.
25	At the end of the Determination of Effects section I think it more accurate to conclude "the project may result in a loss of viability of pale poppy in the project area but would not cause a trend toward federal listing".
25	With mitigation measures, I agree with the determination that the project "may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward federal listing".

Below are my review comments regarding the May 2015 *Grant Lake Hydroelectric Project (FERC No. 13212), Vegetation Management Plan, Draft*:

page	comment
1	I agree with the statement that the “activities and structures associated with this Project have the potential to impact sensitive plant species and to introduce invasive plants”.
14	Add the following bullet: “To reduce risk of spreading invasive plants begin project operations in uninfested areas before operating in infested areas.”
14	Add the following bullet: “Locate and use project staging areas that are free of invasive plants. Avoid or minimize all types of travel through areas infested with invasive plants, or restrict to those periods when spread of seed or propagules are least likely.”
17	At the bottom of the page it is stated “After invasive plants are removed, bare areas will be seeded”. However, the following two guidelines are listed on page 3-25 of the Forest Plan: “Use natural revegetation where seed source and site conditions are favorable towards achieving revegetation objectives” and “Use native plant species in revegetation/restoration projects when natural revegetation conditions are not favorable.”
18	The draft plan suggests monitoring of invasive plant treatment sites will continue for 2 years after construction is completed to ensure treatments are effective. However, page 12 of the Chugach National Forest Invasive Plant Management Plan states “In general, successful control of the invasive species at the site will be considered as achieved when no occurrence of the species has been documented for five consecutive years of annual monitoring.”

Robert L. DeVelice 7/13/2015

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July 15, 2015

Mike Salzetti
Manager of Fuel Supply & Renewable Energy Development
Kenai Hydro, LLC
3977 Lake Street
Homer, AK 99603

Subject: Review of Draft Resource Management Plans for the Proposed Grant Lake Hydroelectric Project, under P-13212.

Dear Mr. Salzetti:

On behalf of the Center for Water Advocacy I am submitting these Comments Re: the Project P-13212-002 Grant Lake and Creek, Alaska; Kenai Hydro LLC Draft Resource Management Plan (DRMP). The members, staff and constituents of CWA regularly use, enjoy, and benefit from a healthy ecosystem and the presence of diverse habitat in the Grant Creek Watershed, including fish, and other aquatic species that may be impacted by the proposed Grant Lake and Creek Hydropower Project (Project). Members, staff and constituents groups reside near, visit, or otherwise use and enjoy the Grant Creek Watershed for subsistence, recreation, wildlife-watching, education, scientific study, boat touring, fishing, photography, or aesthetic and spiritual enjoyment. The ability of such members, staff and constituents to pursue these interests hinges not only on the wellbeing of fish and wildlife that live, feed, breed, and migrate in Grant Creek Watershed, but also on the health of the watershed ecosystem on which these species depend.

Our specific comments are listed below:

I. The General public has been provided with a Lack of Adequate time to Comment on the DRMP

As part of the DRMP, KHL has distributed a series of documents for stakeholder review and comment. Four documents (Operation Compliance Monitoring Plan, Avian Protection Plan, Vegetation Management Plan (public version) and Biological Evaluation for Plants) were distributed on May 15, 2015. Along with this distribution, additional documents were developed and distributed for appropriate entities to review and comment on based on their privileged or content specific nature (Historic Properties Management Plan, Vegetation Management Plan (Privileged Version), ACOE Section 404 Application).

Then on June 1, 2015, KHL distributed the final management plan for review and comment during this phase (Biotic Monitoring Plan). Although stakeholders had 6 weeks

to review the initial four management plans sent (Operation Compliance Monitoring Plan, Avian Protection Plan, Vegetation Management Plan (public version) and Biological Evaluation for Plants) and 3 ½ weeks to review the final distribution (Biotic Monitoring Plan), with the to submit comments on the Draft Licensing Application deadline of June 25, 2015, due to the size and difficulties with wading through the DLA¹ we had to spend all of our limited resources on reviewing and commenting on that document up until the 25th. In reality, therefore, we had less than 3 weeks to review and comment on the DRMP. This does not provide enough time for all parties interested to review and comment on the suite of management plans KHL has drafted and distributed.

II. The Management Plan Process Excludes Stakeholder Participation

In the case of the Instream flow section of the management plan the some total of KHL's public participation process includes "KHL held a collaborative workshop in Anchorage, Alaska on July 8, 2014 during which, [an]instream flow regime for the bypass reach of Grant Creek (RM 0.5-1.0) was proposed."² This another, example of KHL's failure to provide adequate notice and opportunity to comment on the planning phase of the Project which has substantially affected CWA and other stakeholder participation in violation of the Federal Power Act and the Commission's regulations.

III. The MP Fails to Show an Adequate Streamflow Management Strategy

The some total of KHL's management strategy for instream flows includes:

Water used for power production would be returned to Grant Creek at the downstream end of the Canyon Reach (RM 0.5). For the tailrace reach (RM 0.0-0.5), peak flow events would be reduced in the summer while winter flows would be slightly elevated from pre-Project conditions. From approximately August 16 through October 31, inflow volumes would match outflows downstream of the powerhouse...Although there will be no specific instream flow requirements for the tailrace reach, flows will be monitored to assess the deviation from pre-Project conditions.³

The DRMP, therefore, illustrates that KHL has not even come close to developing a strategy for managing toward a natural flow regime. A large body of evidence has shown that the natural flow regime of virtually all rivers is inherently variable, and that this variability is critical to ecosystem function and native biodiversity. Rivers with highly altered and regulated flows lose their ability to support natural processes and native species. Thus, to protect pristine or nearly pristine systems, it is necessary to preserve the natural hydrologic cycle by safeguarding against upstream river development and damaging land uses that modify runoff and sediment supply in the watershed.

a. The DRMP Does not Include Run of the River Modeling

¹ See, Comments of CWA and other Entities on Draft Licensing Application Re: Project P-13212 Grant Lake and Creek, Alaska; Kenai Hydro LLC (June 25, 2015).

² Grant Lake Hydroelectric Project (FERC No. 13212) Operation Compliance Monitoring Plan Draft Kenai Hydro, LLC, p. 12 (May 2015).

³ Management Plan at 12.

The DRMP does not provide how run-of-river modeling will provide necessary information on project-related effects that cannot be obtained through any of the other alternatives. In order, therefore, to fully comply with the information requirements of the Revised Study Plan and to support the development of a range of reasonable project alternatives and mitigation consistent with the Federal Power Act and the National Environmental Policy Act, the DRMP should address how modeling will illustrate:

i) How a run-of-river scenario Could be Incorporated into Project Needs.

Modeling a run-of-river scenario will be useful for assessing those time periods with complex and critical flow- related ecosystem and riverine functions that could be maintained with operational flows that mimic natural flows. The base case Project operation scenario, for example, must include operating rules for daily maximum and minimum flow releases that allow for minimum and maximum flow releases during winter months that are higher than long-term average flows, and maximum flow releases. Similarly, during the summer months, average flows could be less than half of natural average monthly flows. Therefore, under the appropriate time period and hydrologic conditions, a run-of-river scenario would show how project operations, under the proposed alternative, could meet the project's purpose and need while minimizing Project impacts.

ii) The DRMP does not address Floodplain Modeling

Floodplain functions and ecological processes depend on seasonal and periodic inundation of the floodplain. The floodplain is defined as "...the flat area adjoining a river channel constructed by the river in the present climate and overflowed at high discharge."⁴ The timing, or predictability, of flow events, is ecologically critical because the life cycles of many aquatic and riparian species depend on environmental cues provided by flow events and are timed to avoid or exploit flows of variable magnitude.⁵

The DRMP, therefore, should include floodplain modeling that incorporates the use of a two-dimensional hydraulic models, to compare the unimpaired and current frequency, magnitude and duration of floodplain inundation. KHL should use a two-dimensional model of Grant Creek to determine how much floodplain area is currently accessible. It should then use current and unimpaired hydrology to determine the frequency, duration, and magnitude of floodplain inundation under both scenarios as well as the total area and depth of inundation during the ecologically important spring snowmelt season. Finally, KHL should work collaboratively with stakeholders to define additional, specific ecologically important time periods for floodplain inundation modeling.

⁴ Dunne and Leopold 1978.

⁵ Poff *et al.* 1997.

iii) **The DRMP Does not Provide for Managing Toward a Natural Flow Regime**

A large body of evidence has shown that the natural flow regimes of virtually all rivers is inherently variable, and that this variability is critical to ecosystem function and native biodiversity. Rivers with altered and regulated flows lose their ability to support natural processes and native species. Based on the fact, however, that KHL's proposed operating scenarios do not provide a reasonable range of alternatives, the modeling listed in the DRMP requires a simplification of the riverine system that does not represent the full ecologic complexity of the riverine processes. Thus, to protect Grant Creek's relatively pristine systems, it is necessary to preserve the natural hydrologic cycle by studying the impacts of Project operations that would modify runoff and sediment supply in the watershed.

As a result, we agree with the Commission, itself notes that in relation to the impacts of the Project on spawning habitat: "Given the above, we find the BMP unclear. It appears that the need for gravel augmentation has not yet been determined, although it is stated that spawning substrate is naturally limited within Grant Creek... The BMP should articulate the process KHL proposes to implement."⁶

This process should incorporate that fact that in Grant Creek, year-to-year differences in the timing and quantity of flow result in substantial variability around any average flow condition. Accordingly, as in the case of the DRMP, modeling for the "average" condition can be misguided. For example, in due to the alterations to the River from the Project, restoring a flow pattern that is simply proportional to the natural hydrograph in years with little runoff may provide some ecological benefits, because many geomorphic and ecological processes show nonlinear responses to flow. Half of the peak discharge, for example, will not move half of the sediment, half of a migration motivational flow will not motivate half of the fish, and half of an overbank flow will not inundate half of the floodplain.

The Commission, itself notes that:

In section 4.1 *Potential Project-related effects on fish from Project Operations*, the BMP identifies decreased sediment recruitment and flows in reach 5 as a potential project effect. Based on our review of the proposed project description and operation, it appears that these potential effects may also occur in reach 6;

⁶ FERC, Review of Draft Resource Management Plans for the Proposed Grant Lake Hydroelectric Project (FERC Review), p. 4 (July 9, 2015)(FERC Review).

however, the BMP makes no mention of potential effects to reach 6.⁷

In the Grant Creek Watershed, therefore, more ecological benefits would accrue from capitalizing on the natural between-year variability in flow. For example, in years with above-average flow, “surplus” water could be used to exceed flow thresholds that drive critical geomorphic and ecological processes.

The DRMP, therefore, should include modeling that focuses on restoration goals and to work with appropriate components of the natural flow regime to achieve those goals. Recognition of the natural flow variability and careful identification of key processes that are linked to various components of the flow regime are critical to making these determinations. Similarly, setting specific goals to restore a more natural regime in rivers with altered flows or, equally important, to preserve unaltered flows in pristine rivers such as the Grant Creek, should ideally be a cooperative process involving river scientists, resource managers, and all stakeholders.

In addition, the DRMP should include modeling that develops quantitative, river-specific standards, based on the reconstruction of the natural flow regime.⁸ Restoration actions based on such guidelines should be viewed as experiments to be monitored and evaluated—that is, adaptive management—to provide critical new knowledge for creative management of natural ecosystem variability.

b. The DRMP Does Not Incorporate Release Flow Modeling

The DRMP should incorporate modeling efforts that describes how experimental high and steady flows during a specific time period, could help and assess the long-term benefits to aquatic habitat salmon and fine sediment along the Grant Creek downstream of the Project site. This would allow for an adaptive management approach, wherein the relationship between dam operations and down stream resources was recognized as uncertain and an active experimental approach was adopted.

In fact, the Bureau of Reclamation has directed that such experimental releases take place in relation to the operation of Glen Canyon Dam in Arizona in order to:

...determine if prescribed releases can benefit resources located downstream of the dam in Glen, Marble, and Grand canyons, Glen Canyon National Recreation Area and Grand Canyon National Park, respectively, in accordance with applicable federal

⁷ *Id.*

⁸ *See e.g.*, Richter et al. 1997.

law, including the GCPA, while meeting the project purposes of the dam.⁹

Specifically, the modeling of this action may analyze numerous experimental releases from the Project Dam site, including: high flows and alternating between fluctuating and stable flows. Experimentation with release flows would assess relationships between dam operations and resources in and along the Grant Creek Watershed. The purpose of the high flow test portion of release flows, for example, could be to rebuild sandbars and beaches and rejuvenate backwaters – which may be important rearing habitat for native fish – during a period of enriched sediment storage conditions and to monitor changes over time. The purpose of the steady flow portion of the experiment is to potentially enhance the population of salmon and test the impact of steady flows on salmon and other aspects of the aquatic environment, particularly backwater environments.¹⁰

IV. Proposed Grant Lake and Grant Creek Temperature Requirements

According to the DRMP, “[t]he Project will divert waters from Grant Lake to the bypass reach or the powerhouse at either 0.5 m or 1.5 m below the water surface elevation of Grant Lake. KHL will monitor temperature at select locations throughout the Project area to insure monthly lake and creek temperatures agree within 1 degree Celsius (°C).”¹¹

According to the OCMP:

The water temperatures at this site will be used, in combination with temperature data from the lower bypass reach of Grant Creek (Station ST-1), to meet temperature criteria described in Section 2.5. Lake level and associated water temperature data will be collected for the duration of the licenses term. All data will be summarized and documented as part of the annual compliance report/meeting process described in Section 4. If deviations in temperature of more than 1 °C are documented, KHL will determine the reason and if it is determined to be the result of infrastructural or operational considerations as opposed to anomalous natural conditions, the stakeholder group associated with the Annual Compliance Report will be consulted during the annual process and modifications to the operational regime will be agreed upon to confirm that temperature conditions are adhered to.¹²

Similarly, “Measurements of flow volumes at the bypass pipe will start at commencement of Project operations and will ensure compliance with the minimum

⁹ Bureau of Reclamation Final Environmental Assessment Experimental Releases from Watana Dam, Arizona, 2008 through 2012, p. 5. (February 2008).

¹⁰ Bureau of Reclamation Final Environmental Assessment Experimental Releases from Watana Dam, Arizona, 2008 through 2012, p. 5. (February 2008).

¹¹ OMCP at 13.

¹² *Id.* at 14.

required flow releases of 5-10 cfs (Station ISF-1).¹³ The DRMP, therefore, not only, fails to discuss what type of management actions will be taken to compensate for the impacts of warming temperatures in Alaska but what that management will include to address the factors contributing to warming water temperature from operation of the Project, itself.

This is contrary to the fact that hydropower projects can gather and store what should be cold spring runoff from snow melt, and prevent it from reaching the ocean. This cold water is warmed by the sun throughout the summer and when people call for more electricity in the winter, this warm water is released into the ocean at a time when little or no water or warmth should reach it. The far-reaching effects of warming the ocean when it should be cold circulation patterns are obvious.

Climate change models project that the greatest increases in temperature will occur at high latitudes. Over the past 50 years, Alaska has warmed at more than twice the 6 year average rate for the rest of the United States. Average annual temperature has increased 3.4 °F (2.1 °C), while winters have warmed by 6.3 °F (3.5 °C)⁹. As a result, climate change impacts could be expected to be more pronounced in Alaska than in other regions of the United States. Among other effects, higher temperatures contribute to earlier spring snowmelt, a higher percentage of precipitation falling as rain instead of snow, and glacier retreat.

In order to determine the effect of increasing average annual temperatures on annual average streamflow, therefore, the DRMP should include a strategy that accounts for climate change effects on precipitation, evaporation, transpiration, and snow ablation (direct change in phase from solid to vapor). Reservoir operation and power studies have traditionally used historic flow records as the basic hydrologic input data.

To this end, KHL should consider alternative hydrologic input datasets, which account for potential future hydrologic change.

V. Draft Biotic Monitoring Plan

While KHL maintains that the Project will not only minimally impacts but will actually benefit fish species, the DRMP fails to provide a strategy for how these claims will be realized. The Commission, itself, for example, states:

In section 2.3 *Summary of Projected Project Impacts*, the discussion and analysis of potential project effects and benefits in Grant Creek is limited to reaches 1 through 5. There is no discussion of potential project effects on reach 6, which extends from the base of a downstream waterfall to the Grant Lake outlet. Based on our understanding of the proposed project design and operations, reach 6 is likely to be the most severely affected reach within Grant Creek. Project drawdown operations result in reduced flow in reach 6 year-round, and when the surface elevation of Grant Lake is drawn below 703.¹⁴

¹³ *Id.*

¹⁴ FERC, Review of Draft Resource Management Plans for the Proposed Grant Lake Hydroelectric Project (FERC Review) (July 9, 2015).

Similarly, the Commission is concerned that the Biotic Monitoring Plan (BMP) does not include any actions to be taken in the event monitoring results demonstrate an unexpected or unacceptable effect on juvenile fish populations. The BMP, therefore “should describe how the monitoring data would be used and should also identify corrective actions or a process for developing corrective actions, in the event monitoring results demonstrate an unexpected or unacceptable effect on the salmonid populations in Grant Creek.”¹⁵

Conclusion

We have been provided insufficient time to provide adequate comments on the DRMP due to Kenai Hydro LLC’s due to KHL’s imposed deadline for submitting comments within a few weeks after the formal deadline for submission of comments on the voluminous Draft Licensing Application. In addition, the DRMP should include the river-specific standards and goals and objectives listed in these comments. Finally, KHL must hold public meetings in additional locations that are economically and/or environmentally affected by the Project (in which adequate notice is provided) including in Homer, Seward and Grants Pass, Alaska.

Thank you for your attention to these comments and this request. Please contact me if you have any questions regarding these comments.

Sincerely,

/s/ Harold Shepherd
Harold Shepherd, President
Center for Water Advocacy
P.O. Box 15332
Fritz Creek, AK 99603
hal@tcfwa.org

¹⁵ *Id.* at 3.

Document Content(s)

CWA_Cmmnt_DRMP.PDF.....1-8



*Kenai River Watershed Foundation, Inc.
P.O. Box 815, Cooper Landing, Alaska 99572*

*907-595-2129
kenailake@arctic.net*

June 24, 2015, Amended July 16, 2015

Secretary Kimberly D. Bose
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

(eFiling)

Subject: Comments on P-13212-000 Alaska Draft Licensing Application; including Amendment A, Review of Draft Natural Resource Management Plan

Dear Secretary Bose:

The mission of the Kenai River Watershed Foundation (KRWF) is to defend the integrity of Alaska's Kenai River and its watershed. A river is the ecological sum of all of its sources. Salmon do not return from the sea to their birthplace waters by GPS. It is fundamental policy for KRWF to defend and protect the invaluable Kenai River resource by very strongly opposing any additional change to natural flows in its tributaries.

In commenting, the KRWF wishes to register continued opposition to the Grant Lake and Creek hydroelectric project. The KRWF, other organizations, and many individuals have been strong public opponents of the four hydroelectric proposals of Homer Electric Association (HEA) aka Kenai Hydro LLC (KHL) since 2007. Review of the KHL Draft License Application (DLA) has produced many critical pages of error, obfuscation, deficiency, and basic exceptions. In Alaska, indifferently threatening the integrity and imposing risk to the traditionally inviolate Kenai River and its watershed is unforgiveable. This additionally displays ignorance of the river's enormous importance to the Kenai Peninsula quality of life and economy. A vital Kenai Peninsula economy fundamentally supports the applicant.

The KRWF has decided not to provide enabling DLA review information to help this indifferent, incompetent applicant improve its defective application. Our following comments are reduced to the following overview: 1) Lack of Competency; 2) Lack of Public Need; 3) Lack of Due Process; 4) Lack of Public Trust; 5) The Ongoing Public Burden.

--Save the Kenai--

1) Lack of Competency. FERC obviously expects applicants to be well qualified as well as capable, a reasonable expectation. In business and industry, few contracts are awarded without prior applicable experience. In rural Alaska, prior applicable experience is essential. Specialized experience is also essential. Unfortunately for the public, an effective screening process for qualifications does not exist, as evidenced by this applicant.

Involved applicant staff is new to Alaska and have no known prior experience developing a remote hydroelectric project in a highly sensitive watershed. The applicant's consultants have no applicable Alaskan experience and no known prior hydroelectric development experience. Two construction contracts have been awarded. One exception to the lack of experience is the well-known consultant who specializes in providing FERC procedural advice, as an ex-FERC employee.

Demonstrated inability to perform routine preliminary feasibility studies within the prescribed time is a measure of experience and competence. The superficial DLA submission speaks for itself. Unreliable future performance by this type of applicant is predictable, and would not be tolerated in business or industry.

This is justification to deny licensing.

2) Lack of Public Need. There is no public need for this project. Public need for the risk imposed in the taking of a highly sensitive watershed tributary must exist, or be denied.

The applicant's justification for public need is based on scarcity of natural gas for generation, which is false. Abundant new sources of natural gas have been found and are being developed in Cook Inlet adjacent to the applicant's utility service area on the Kenai Peninsula. Natural gas is so abundant that a new LNG refining and export facility centrally located to the applicant is being developed. A local natural gas urea fertilizer production facility is being reactivated, also for export.

Additionally, the applicant is constructing large new local generation capacity to take advantage of the abundant natural gas. Further, Alaska's Governor and its Legislature have committed to build a high-priority natural gas pipeline from northern Prudhoe Bay to the central Kenai Peninsula, within the applicant's service area. Unlimited local natural gas will become available.

Additionally, the speculative, minor 2mW average generation of the Grant Lake and Creek hydroelectric project is not significant in scope relative to the large generating capacity of the adjacent power utility whose transmission line is required for transport. Dispatching of this project's small output to serve the applicant's distant utility customers is speculative dependent upon ongoing cooperation and regulatory permission. Obtaining energy from a remote source outside the

applicant's utility service area is highly inconsistent with its well-known "island" utility development policy.

The primary benefit of this project is obtaining a free power resource, largely funded by naïve state grants, for private gain. A vital public resource is proposed to be taken and sacrificed for private gain. Aside from whatever revenue is created, a highly-touted, romantic renewable energy public relations credit will be obtained. The taking of highly sensitive public land and water for private gain is simply not justified. A public need for this project does not exist.

This is justification to deny licensing.

3) Lack of Due Process. TLP process has been erratic from the onset of the project and manipulated to the disadvantage of the public. This has included utilization of obvious public and resource agency time conflicts and a total disrespect for over seven (7) years of very strong public opposition. Conduct of the TLP process has displayed both lack of knowledge and avoidance of routine local and state government procedures. Ongoing disrespect for the public has cost the applicant a total loss of public credibility. One example of this is the inability to complete the DLA within the allotted time. After being denied an additional time extension, the applicant simply took an extension by moving required and overdue elements of environmental studies to the yet to be completed Management Plan.

This is justification to deny licensing.

4) Lack of Public Trust. The manner in which the applicant has conducted matters to date has cost it a total loss of public trust. If the process to obtain a license is not credible, the applicant cannot be trusted to properly develop critical elements of the project. This applicant is not trust worthy to develop or operate the project. This is the worst public process we have encountered in decades. Where is the public accountability?

This is justification to deny licensing.

5) The Ongoing Public Burden. Kenai Hydro, LLC (KHL) is a Delaware company incorporated in 2008, as a shell company owned by conglomerate EDF-EN of Paris, France and "enXco" a subsidiary French wind farm manager. A pyramid of shell companies was formed. A speculative business venture was advanced to obtain soft Alaska Energy Authority (AEA) Renewable Energy (RE) grants. HEA was invited to participate to satisfy the naïve AEA granting requirement for an electric utility to guarantee technical quality control. HEA did not own KHL at that time.

It is instructive to note that the scheme was initiated using a progression of phony addresses in downtown Anchorage, Alaska, one of them a vacant lot.

Kenai River Watershed Foundation, Inc.
June 24, 2015, Amended July 16, 2015

The shell company scheme was based on obtaining AEA renewable energy grants to explore four closely-clustered hydroelectric project locations in the headwaters of the Kenai River on the Kenai Peninsula. Soft AEA grants were obtained for hydroelectric projects at Crescent Lake, Grant Lake and Creek, Falls Creek, and Ptarmigan Lake and Creek. Public stakeholders strongly objected to these invasive, speculative business ventures, which would irreversibly industrialize the headwaters of the Kenai River and permanently compromise its ecological integrity. The scheme utilized FERC preliminary permit process documentation as federal endorsements of the projects, to obtain ongoing AEA grants. KHL continues to annually seek and depend upon these soft grants. This state energy agency denied FY16 grant funding to KHL, while requiring additional studies and listed KHL as inactive.

The foregoing invasive mess became known to stakeholders as the Kenai Hydro War. Strong public opposition gradually caused the shell company pyramid to collapse, leaving only HEA solely involved as the default owner of KHL. HEA is a small rural electric utility with a legacy of illogical, imprudent policies. HEA had zero hydroelectric project development experience, let alone for a project that is highly sensitive. HEA management is relatively new to Alaska and totally indifferent to traditional Alaska values, illogically even at its own expense.

The public has endured the great burden of waging the Kenai Hydro War for over seven (7) years. Thousands of hours, words and dollars have been committed to meet this ongoing threat. KRWF believes KHL/HEA will revisit other initial hydroelectric project proposals if the Grant Lake and Creek project is licensed. Impounding and diverting Falls Creek into Grant Lake is already being openly discussed.

Please do not license this applicant.

Sincerely,

/s/ Robert L. Baldwin, President
Kenai River Watershed Foundation, Inc.

Attachment: Amendment A

Amendment A -- Review of Draft Natural Resource Management Plan

As established in KRWF DLA comments submitted June 24, 2015, the applicant KHL has lost public credibility and trust. This situation involves the taking of a precious public resource, without public need, for private gain. Public accountability is an absolute requirement in the entire licensing process.

Accountability must be must be proactive and not simply responsive after the fact. It is not acceptable to rely on self-monitoring of performance by the applicant. Accountability must consider truth in all licensing matters, and management, monitoring, design, construction, and operation as approved by resource agencies and FERC. Compliance and determination of accountability requires more than vague, superficial details as a basis, which must be clearly defined and can be enforced both pre-performance and post-performance.

The applicant cannot be allowed to ignore obvious negative impacts as simple as uncontrollable road access in a road-less area, the unaesthetic bathtub ring magnified on slopes, and undetermined noise levels in a narrow mountain valley. More technical impacts have been minimized, such as: speculation involving statistically unsupportable hydrology, historic seismic risk, potential for compromised water quality from introduction of "heavy metals" pollution in Grant Creek, and accelerated climate change.

The applicant is expected to submit additional management information, for example the missing Clean Water Act Section 404 removal and fill application and permit, which has not been granted by the Army Corps of Engineers. The Corps is expected to have serious misgivings about a 404 permit under these circumstances. As noted by public stewards and the resource agencies, it is clear that the applicant is required to submit much greater detail prior to approval of licensing. Public stewards include highly qualified reviewers, who are also the most knowledgeable about the natural setting of the Grant Lake and Creek project in the highly sensitive Kenai River watershed.

All critical performance contracts require independent quality control inspection, reporting to the owner, and a performance bond. Independent, highly qualified review and monitoring of management performance, design, and construction is required. The public is unable to review and monitor vague, superficial details in a haphazard process also shrouded in secrecy.

A surety bond is commonly required under these circumstances, for the entire amount of design and construction. Bonding for performance of preliminary feasibility studies would have been forfeited, automatically justifying a subsequent surety bond to cover design and construction performance.

These comments may be updated as more details become available.

Document Content(s)

KRWF P-13212-000 DLA DNRMP Comments Amended 071615.PDF.....1-5



THE STATE
of **ALASKA**
GOVERNOR BILL WALKER

Department of Fish and Game

DIVISION OF SPORT FISH
Research & Technical Services

333 Raspberry Road
Anchorage, Alaska 99518-1565
Main: 907.267.2294
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July 21, 2015

Ms. Kimberly Bose, Secretary
Federal Energy Regulatory Commission
888 First Street
Washington D.C. 20426

Subject: Grant Lake Hydroelectric Project
FERC No. 13212
ADF&G Comments on filed Draft Management Plans

Dear Ms. Bose:

Attached are ADF&G comments on Draft natural Resource Management Plans filed by Kenai Hydro, LLC.

Filed with the Commission on May 15, 2015 were:

- Grant Lake Project Avian Protection Plan Draft (APP);
- Grant Lake Project Operation Compliance Monitoring Plan Draft (OCMP);
- Grant Lake Project Historic Properties Management Plan Draft (HPMP)
- Grant Lake Project Vegetation Management Plan (VMP);
- Grant Lake Project Biological Evaluation for Plants (BE).

Filed with the Commission on June 1, 2015 was:

- Grant Lake Biotic Monitoring Plan Draft (BMP).

While we appreciate the opportunity to provide comment on these plans, we are concerned that these plans lack specific information necessary to do a thorough review. We recognize that project features may change prior to construction of the project. These changes may require plan modification. Because of missing or incomplete information, we believe that additional plan reviews will be necessary prior to FERC acceptance.

Thank you for your consideration of our comments.

Sincerely,

A handwritten signature in blue ink, appearing to read "Monte D. Miller".

Monte D. Miller
Statewide FERC Project Hydropower Coordinator

Kimberly Bose, Secretary
Federal Energy Regulatory Commission

FERC No. 13212

July 21, 2015

Alaska Department of Fish and Game
Division of Sport Fish/RTS
333 Raspberry Road
Anchorage, Alaska 99518-1565
907 267-2312

E-Copy: Mike Salzetti

COMMENTS

Grant Lake Hydroelectric
FERC No. 13212
Alaska Department of Fish and Game Draft Plan Comments
July 20, 2015

The following draft natural resource management plans were identified in the May 15, 2015 Kenai Hydro, LLC (KHL) cover letter to the Federal Energy Regulatory Commission (FERC) and submitted for agency review:

- Grant Lake Project Avian Protection Plan Draft (APP);
- Grant Lake Project Operation Compliance Monitoring Plan Draft (OCMP);
- Grant Lake Project Historic Properties Management Plan Draft (HPMP)
- Grant Lake Project Vegetation Management Plan (VMP);
- Grant Lake Project Biological Evaluation for Plants (BE).
-

On June 1, 2015 an additional draft plan was provided, as follows:

- Grant Lake Biotic Monitoring Plan Draft (BMP).

Initial Review Statement

We have identified additional information and clarifications that are needed in these plans. To complete these reviews, further coordination and discussion is needed to resolve identified issues. Additional consultation with the agencies is needed. Plan adjustments may require multiple discussions and reviews, in order to thoroughly resolve outstanding issues prior to filing with FERC.

General Comments

These plans lack the detail necessary to perform an adequate review. All plans presented use the identical language and format to describe project features. These plans have similar issues that were identified in ADF&G comments to the Draft License Application (DLA) dated June 26, 2015. The descriptions and drawings of many features have been made non-public under a Critical Energy Infrastructure Information (CEII) designation. Issues with the DLA include, but may not be limited to:

- project descriptions given in all plans are not identical to those presented in the DLA. Until descriptions agree, it is not clear what constitutes the actual and most up to date project feature presentation;

Other issues include but are not limited to:

- plans promote values for yet to be determined issues such as instream flow requirements; and
- plans present monitoring schemes which may not pass scientific validity, and which have not been discussed with the agencies.

Specific Comments on Project Features (all Plans)

The features described in each plan should conform to those described in the DLA. We recognize that some features may change during the FERC process and therefore in all likelihood

plans cannot be completely finalized until the FERC license order is issued. However, most of the details of the plans can be worked out prior to issuance of the license order and thus can streamline this process.

1.1.2. Grant Lake Intake

“The intake can be designed to allow the Project to draw water near the surface at various levels of storage, if deemed necessary to meet downstream temperature requirements.”

Since it has already been identified that water at a depth of 0.5 to 1.5 meters most closely mimics the temperature pattern of Grant Creek, the intake should be designed to allow for near-surface withdrawals at these depths. This will require development of a variable intake. Plans should be developed and provided for this configuration. Operation procedures to mimic natural thermal patterns in Grant Creek needs to be described in greater detail. These plans should be incorporated here, within this plan.

1.2.3. Tunnel and Surge Chamber

This section describes a surge chamber but fails to describe safety and security features necessary for the protection of people and wildlife.

1.2.4 Penstock and Surge Tank

This section discusses the penstock, support saddles, and steel thrust rings. There is no mention of a surge tank in this section.

1.2.5 through 1.2.7

These sections are out of order in that the powerhouse description (1.2.7.) should follow 1.2.4., if the descriptive sequence is continued from the lake. The ability to follow the plan is compromised by errors in sequence. As is, the plan does not read well (sequentially).

1.2.5 Tailrace

The description of the tailrace appears to be more complete than that provided in the DLA. There is no description of safety features for the tailrace designed to prevent people and animals from accessing or falling into the tailrace. The tailrace should be secured by fencing to reduce potential impact and mortality to wildlife.

1.2.6 Tailrace Detention Pond

The description lacks specific details related to the design and construction of this feature.

Lacking is a:

- Description of the design of the pond sidewalls;
- Description of construction materials;
- Description of the permeability of the detention pond (lined?);
- Description of the state of the detention pond when not being used (water depth, dry etc.); and
- Description of any safety features to be incorporated to prevent people or animals from inadvertently becoming trapped in, or injured attempting to escape the pond.
- Description of failsafe mechanisms to prevent all water from being diverted to the detention pond from the tailrace.

1.2.7. Powerhouse

“The penstock would tie into the powerhouse on the south side and the tailrace channel on the north side of the building.”

There have been no drawings provided to illustrate what you are doing at the powerhouse. It is not clear how the penstock can deliver water to the tailrace. It is not clear if there will be a direct bypass to shift diverted water past the generators in the event of a project shutdown. At the end of this page it is stated: *“An energy dissipation valve would extend off the penstock and provide bypass flows into the Project tailrace.”* This process is not defined in the plan.

Transmission Line/Switchyard

“Design of the line would also incorporate the latest raptor protection guidelines.”

The plan should state those guidelines. While we usually defer to the United States Fish and Wildlife Service (USFWS) on Avian protection issues, especially raptors, we do utilize the following language in our Recommended 10(J) Terms and Conditions:

“Transmission line power poles shall conform to guidelines accepted by the USFWS as described in the most recent “Suggested Practices for Avian Protection on Power Lines—State of the Art, a joint document prepared by Avian Powerline Interaction Committee (APLIC) and the U.S. Fish and Wildlife Service.”

“Collision avoidance devices would be installed on the line at appropriate locations to protect migratory birds.”

There needs to be a definition of what constitutes *“appropriate locations”* and who makes that designation. Migratory birds include swans, geese, ducks etc. Protection designs should reflect specific protection measures necessary for different species of birds.

An additional concern related here is that the Trail Lakes system is used by small floatplane operators for transportation, recreation, sightseeing excursions, and hunting support activities. Consideration should also to be given to Federal Aviation Administration requirements for transmission lines between this project and the interconnection point located at or near, Moose Pass, to ensure the safety of those floatplanes, especially during landing approaches.

1.2.9 Appurtenant Facilities

“This equipment along with other identified miscellaneous mechanical and electrical equipment will be developed during the final design and included in the construction documents.”

It is almost impossible to comment on a plan when features remain to be defined. Future inclusion in construction documents circumvents the review process required by the Federal Power Act. All plans need to be complete and need stand alone, without deferring to something unidentified in the future. Construction documents should be prepared after these plans are complete and have been accepted.

Draft Avian Protection Plan (APP)

General Comments

The same comments on project features that were made under Specific Comments for Project Features (all plans) apply to this plan.

There is very little stated in the draft plan that reflects on Avian Protections. The plan lacks specificity in identification of avian protection standards to be used and seemingly lumps wildlife into the mix. We have questions about definitions and how decisions will be made as to when something is “cost effective”, and when protections can be ignored.

Specific Comments

Page 16

5 Avian Protection Measures

“KHL will comply with the regulatory requirements protecting avian species, as well as the need to obtain and comply with all necessary permits, monitor incidents of avian mortality, and make reasonable efforts to construct and maintain infrastructure to reduce the incidence of avian mortality.”

How are reasonable efforts to be defined? Will this definition be accomplished through agency coordination and discussions?

“KHL plans on limiting avian mortality by focusing its efforts in a cost-effective manner on the areas that pose the greatest risk to migratory birds. Therefore, the protection measures outlined below focus on: 1) avoiding disturbance during the breeding season; 2) avoiding incompatible power line design; and 3) establishment of vegetation removal timelines.”

Explain how “cost effective” methods and areas of greatest risk will be defined?

The applicant is encouraged to include water birds in their plan. Interactions between lake level manipulation, through project operation, and shoreline avian activities may be significant. The applicant should utilize existing information on species periodicity and proposed project operation to assess all potential interactions, prior to developing a protection plan. The applicant is encouraged to consider all species utilizing the shoreline of Grant Lake. Avoidance of habitat loss should be targeted, unavoidable habitat loss should be estimated, and protection/mitigation measures should be identified and proposed. These measures and plans are currently absent from the proposed plan.

Page 18-20

5.1.3.1 Monitoring Associated with Vegetation Removal

The discussion of avian post construction monitoring would seem better placed in the Biotic Monitoring Plan as a Section titled Avian Post Construction Monitoring. Wherever placed, the plan needs to include monitoring methodologies, protocol identification, and reporting. The same would go for monitoring described later in this document under various headings, including 5.2.3. 1.

Page 20

5.1.3.2 Monitoring Associated with Power Lines and Infrastructure Placement

Same comment as above under 5.1.3.1.

Page 22

5.1.4.2 Power Lines and Infrastructure

Same comment as above under 5.1.3.1. and 5.1.3.2.

Page 26-27

6. Coordination and Reporting

“All APP activities in a given year will be documented as part of an annual compliance reporting/meeting process. Every winter, KHL will convene a global meeting with all stakeholders and FERC to review all management plans and related monitoring efforts associated with construction and subsequent operation of the Project. It is during these annual proceedings when results will be documented, identified issues will be discussed and modifications to plans and/or additional measures will be adopted to ensure that minimal impact to the natural environment is occurring as a result of Project construction and operations.”

Is KHL committing to a review meeting to be conducted annually for the life of the project?

Appendix 1: HEA’s Management Directive for Wildlife Protection

This appears to be a broad topic which would include all wildlife, not just birds. It is not clear why it is included in the Avian Protection Plan. Since the project is proposed by KHL, inclusion of a section of the Homer Electric Association Management Directives Manual does not mean that this document is relative to the KHL application. In this document, ADF&G, and the Alaska State Trooper Wildlife Protection are left off the requirements for reporting incidents. This requirement is necessary for inclusion in plans relating to wildlife, such as the Bear Protection Plan yet to be written. Incidents with wildlife need to be reported to agencies with management jurisdiction over those animals.

Appendix 1 is not clear in demonstrating its value to the Avian Protection Plan.

Draft Operation Compliance Monitoring Plan (OCMP)

General Comments

The same comments on project features that were made under Specific Comments for Project Features (all plans) apply to this plan.

Specific Comments

Page 10

2 PROJECT OPERATIONAL AND MONITORING REQUIREMENTS

2.1 Background and Objectives

“Following a series of natural resource studies conducted in 2013 and consultation with stakeholders, certain physical conditions (i.e. instream flows and water temperature) were

discussed as critical to minimizing impacts to biological and water resources. Key study results as well as generic operational expectations were the following:

- *Established relationships between flow and habitat so that Project operations shall not diminish available habitat for resident and anadromous fish species.”*

This statement is not clear in intent. The project will alter the timing of natural flows and will reduce high flows by impounding water at certain times of the year. During the winter, flows will increase through drawdown of the reservoir to facilitate additional electrical production due to increased electrical demand. These activities will alter habitat availability with anticipated reduced habitat availability during the spring and early summer and increased habitat availability during the winter.

“The objective of the OCMP is to insure a comprehensive and adaptive operational scenario that insures recommended instream flow and temperature regimes for the Project are provided.”

Recommend change to: “The objective of the OCMP is to identify comprehensive and adaptive operational scenarios which will provide recommended instream flow volumes and water temperature regimes for Grant Creek, to meet compliance with FERC License articles. “

An objective does not insure, it sets the stage for methods which will attempt to comply with standards. Adaptive management will allow for project changes necessary to meet stated goals and objectives.

Page 12

2.4. Proposed Grant Creek Instream Flow Requirements

The applicant presents an untitled table of proposed instream flow to the bypass reach. These proposed flows were presented by the applicant at a July 8, 2014 workshop. There is no justification for the flows presented and these are not anything that was agreed to by the agencies at, or after that meeting. We will identify our requested instream flows when we file our Recommended 10(j) Terms and Conditions for this project with FERC. The development of this plan would seem to be premature, in that a plan should be conditioned on FERC License Articles, not the other way around.

Additionally, a minimum instream flow for Reaches 1-4 needs to be specified. As written, the penstock could be closed and the only flow to Grant Creek would be provided by the bypass pipe to Reach 5. If this would occur during a period when the reservoir is not at full capacity, Grant Creek would be greatly harmed, especially if Chinook, red and coho salmon, and rainbow trout juveniles or adults are present. Perhaps the bypass reach pipe should be sized to allow for appropriate water release in the event of a failure within the conveyance system. The plan needs to be more comprehensive in identifying operational scenarios and problems which may arise.

Page 13

3.1. Level and Temperature Monitoring – Grant Lake

This plan needs to identify, in greater detail, the installation and operation of temperature monitors, and procedures to be followed in the event of a communications failure.

Page 14

3.2 Flow and Temperature Monitoring - Grant Creek Bypass Reach

The plan lists flow releases for compliance at 5-10 cfs. Required instream flow releases have not been identified. Plans should cover failsafe mechanisms to maintain minimum instream flows at the appropriate temperature in Reaches 1 – 5.

Page 17

3.3. Flow and Temperature Monitoring – Grant Creek Tailrace Reach Flow

This section discusses the re-establishment in 2013 of a streamgage at the location of the former USGS Gage No. 15246000 which operated from 1947-1958.

“The current streamgage was serviced and calibrated from April 2013 to December 2014....”
“The gage was then reestablished in February 2015 with the intent of KHL maintaining for the duration of the license.”

This is confusing in that the text describes gage support for the “*current gage*”, but then states that the gage was re-established in February of 2015. Was the gage re-established in 2013 and removed in 2014, only to be again re-established in 2015?

This section discusses the tailrace reach but does not define what the tailrace reach is. The gage location is downstream of the outflow of the project tailrace. To assist with temperature compliance, we recommend a temperature sensor be established at the project tailrace location. Backup sensors are also recommended.

Page 18

3.4. Failsafe Provisions

Because intake features were not included by the applicant in detail sufficient to evaluate the plan, it is difficult to understand how this project is intended to function and how bypass flows (once determined) will be monitored.

There is no identification of required flows in Grant Creek below the powerhouse and tailrace. While this section describes a powerhouse bypass feature, there is no identification of water flow release requirements based on fish periodicity and habitat needs in Grant Creek. If the reservoir is not full and the project must shutdown, the diverted flow requirement from the powerhouse needs to be quantified to protect Grant Creek aquatic resources. As written, there is no guarantee that adequate water will flow to Grant Creek because the project could reduce flows to protect reservoir levels while the generators are shut down.

There is no discussion of the use of the detention pond under failsafe provisions. Not described is how the powerhouse will bypass flow into the detention pond while maintaining flow through the tailrace and into Grant Creek. Since this is to be a remotely operated facility, it is important that the descriptions of the use of the detention pond be complete. What governs the split of flow from the powerhouse to the tailrace and detention pond?

The detention pond, described under section 1.2.6, has a surface area of 5 acres and a capacity of 15 acre feet. That would calculate to a volume at capacity of 653,400 cubic feet. If the project is operating at maximum flow of 385 cfs through the turbines, it would take more than 28 minutes

to fill the detention pond to capacity assuming the detention pond was dry prior to filling. Similarly, if the project is operating at 200 cfs flow and that water was sent to the detention pond, it would take more than 54 minutes to fill to pond. If, to avoid ramping issues during a response to power demand when the reservoir is at less than at full pool, all water is sent to the detention pond by mistake, Grant Creek will be essentially dewatered for the times listed above. This would be catastrophic for adult and juvenile fish in Grant Creek as they would become trapped in small pools and would quickly deplete available oxygen. Since this system would be remotely operated, there would seem to be limited opportunity to identify and correct a mistake.

There needs to be clarification of detention pond operation and failsafe provisions.

Grant Lake Project Historic Properties Management Plan Draft (HPMP)

The Alaska Department of Fish and Game submits no comments on the HPMP.

Vegetation Management Plan Draft (VMP)

General Comments

The same comments on project features that were made under Specific Comments for Project Features (all plans) apply to this plan.

Specific Comments

The Alaska Department of Fish and Game submits no additional comments on the VMP.

Draft Biological Evaluation for Plants (BE)

General Comments

The same comments on project features that were made under Specific Comments for Project Features (all plans) apply to this plan.

Specific Comments

The Alaska Department of Fish and Game will support the United States Forest Service position on compliance with their policies involving a required biologic evaluation for plants.

Grant Lake Biotic Monitoring Plan Draft (BMP)

General Comments

The same comments on project features that were made under Specific Comments for Project Features (all plans) apply to this plan.

Specific Comments

Page 16-18

2.3 Summary of Projected Project Impacts

The last paragraph in this section (page 18) identifies potential negative project impacts and potential positive impacts.

“Potential positive impacts from the Project in Reach 5 include better maintenance of juvenile rearing habitat along with the likelihood of increased juvenile rearing habitat availability in addition to higher/more stable flows in the quality reaches (i.e., Reaches 1 – 4) during incubation and rearing; decreased summer flows will maintain habitat and help prevent stranding and potential egg desiccation as flows decrease, and operational changes will allow for high quality side channels to be more consistently wetted.”

This paragraph is confusing in that it mixes Reach 5 potential impacts with Reach 1-4 potential impacts, in the same run together sentence.

Page 19

3.3. Objectives

“The objectives include:

- *Determine if construction activities displace juvenile salmonids from critical rearing habitat, and*
- *Determine if construction actions disrupt either the distribution or timing of adult salmonids in Grant Creek.”*

Objectives should be framed around parameters to be estimated. For example, estimates of displacement of juvenile salmon should utilize structured tests for catch per unit effort, or some other proxy for abundance. Also, replace the word determine with estimate.

The applicant should also address how disruptions and displacements will be tested for and detected. What constitutes disruption and displacement? How will samples, pre and post-project, be statistically compared to assess disruptions and displacements? Appropriate statistical tests should be conducted.

“A series of best management practices (BMP) and construction associated plans will be developed in advance of any construction activities to ensure that environmental impacts are avoided. These plans will account for water quality conditions, amongst other variables.”

Management practices and plans of avoidance and mediation should be described in this draft management plan. Outlined plans, yet to be developed, need to identify guidelines and criteria standards to be met.

“In addition, an Environmental Compliance Monitor (ECM) will be on-site daily during all construction activities. This individual will be responsible for assessing water quality conditions during construction and notifying appropriate parties, if necessary.”

We recommend changing the “if necessary” to ...as required by the FERC license.

Page 20

3.4.2. Adult Salmon Investigations

“Adult sampling will consist of three primary components: visual, redd, and carcass surveys. All three surveys will be conducted twice for each species within each of the two construction years, and will be conducted on separate days within the sample week. Sample timing will be based on 2013 data, and will be conducted to coincide with the documented peak run-timing for each species.”

The plan for adult sampling falls short of being adequate to identify post construction adult use of Grant Creek. We will likely request weekly surveys during identified spawning times for species utilizing Grant Creek for spawning. To select only a single week for sampling would not provide indication of run strength or any increased or reduced trend in use. The plan should include a periodicity table which has been updated, as necessary, to include 2013 data.

Additionally, we would ask for post construction monitoring because adult return to Grant Creek during construction years would be a factor of pre-construction conditions only, and would not show long term project effects. Biotic monitoring will be included in our recommended 10(j) Terms and Conditions yet to be filed with FERC for this project. While this plan is a start, it may not be inclusive of FERC license articles.

“Additionally, all females will be inspected as to spawning success (i.e., pre-spawn mortality, completely spawned, the number of remaining eggs).”

This is not a good definition of spawning success since other factors may be in play. A female may have voided all her eggs without them being fertilized by a male. A female might have had water infiltrate her vent, effectively water hardening some or all of her eggs, making them not viable. Simply counting remaining eggs in a carcass does not provide any estimation of spawning success. Typically, spawning success involves redd sampling for fertilization rates, fry emergence counts in the spring, etc. The sampling proposed does not even provide a fecundity estimate for each species or determine an accurate percentage of eggs remaining in a carcass. After a gravid female lays her eggs into her established redd, she may drift expelling some or all remaining unfertilized eggs before her death. Carcass counts may be subjected to these inaccuracies. The information that can be gathered with the proposed carcass sampling is limited to an appearance of spawning, identification of pre spawning mortality, and probable counts of spawning adults.

“Visual and redd surveys will be conducted as in 2013. Biologists will hike upstream along each bank of Grant Creek wearing polarized sunglasses to reduce glare, and will document adult fish and redds (by species).”

Include the main channel, side channels, and distributary channels in these survey plans. Also include how counts will be made and what reporting metrics will be included.

Page 21

4.1. Potential Project-related effects on fish from Project Operations

In this section potential biological response is listed. The second bullet states that there may be a: *“Potential increase in juvenile rearing habitat availability in Reach 5;”*

It is not clear how habitat in Reach 5 will increase with substantially less flow. Reach 5 is located in a canyon area with cascades and pools which currently allow fish to utilize this reach. It is not clear how accessibility will be increased with significantly reduced flows. There was only a limited survey of the canyon conducted due to safety and access issues. The plan provides no rationale for the statement made.

Page 22

4.3. Objectives

“The objectives include:

- *Determine if greater flows in the Reach 2/3 side channels during the winter result in juvenile rearing during this timeframe and at these locations;*
- *Determine if mitigation efforts in the Reach 1 distributary result in increased juvenile utilization;*
- *Determine if relative juvenile abundance and distribution deviates from baseline conditions due to Project operations, and*
- *Determine if adult distribution deviates from baseline conditions due to project*

As with the objectives under section 3.3, these should be framed around parameters to be estimated. Plans should identify existing baseline condition data to allow for statistical comparison of baseline and post-project utilization.

4.4.1. Juvenile Salmon Methodologies

“Sampling will be conducted in years 2 and 5 of operations.”

Post project construction sampling needs further discussion to arrive at an acceptable sampling methodology, frequency, and duration.

In a discussion of sampling using minnow traps it is stated:

“Traps will be baited with a 16.4 cm³ mass of sterilized salmon eggs and will be fished for approximately 24 hours.”

The mass of salmon eggs is stated to be “16.4 cm³.” Since 16.4 cm is equal to about 6 ½ inches, is the plan proposing to utilize a 6 ½ inch cube of salmon eggs in each trap as bait?

Page 23

“Minnow trap data will address the issues of whether operations influence the relative abundance and distribution of juvenile salmonids with Reaches 1-5 and the side channels and distributaries of Grant Creek, as well as winter-time usage of the Reach 1 distributary and the Reach 2/3 side channels.”

The use of the Reach 1 distributary at the time of the agency site visit in 2013 was minimal despite streamflow in excess of 300cfs. There was only 1-3 inches of water in the Reach 1 distributary at that time. The applicant has mentioned possible mitigation which may occur in this distributary but has not included any proposals for this measure in the DLA or draft plans. It is impossible to address minnow trapping effectiveness in these areas until a mitigation proposal is prepared.

“Concurrent with April minnow trapping, snorkel surveys will be conducted in the side channels of Reach 2/3 and the Reach 1 distributary.”

Again it is not clear what the water depth will be during April since the reservoir will be refilling and the project would likely be operating at a lower production level. This is true in the main channel as well as side channels and the Reach 1 distributary. Snorkel survey success may be limited.

Page 23

4.4.2 Adult Salmon Methodologies

The same comments made for construction sampling are valid here. Post project construction sampling needs further discussion to arrive at an acceptable sampling methodology, frequency, and duration. See previous statements under **3.4.2.** as they relate here as well. Include the main channel, side channels, and distributary channels in these surveys.

To address sockeye populations:

“KHL proposes, in addition to conducting counts in Grant Creek, to monitor other fish runs to the Kenai River. Fish numbers may be available for other systems on the Kenai Peninsula, notably the Russian and Kasilof rivers.”

More information is needed on KHL’s proposal to conduct this monitoring. The Grant Creek sockeye run returns to the headwaters of the Kenai River system and is subjected to fisheries all along the length of the system. Other tributary systems may have different factors which affect the returns of sockeye. Timing of returns is critical to the sockeye arriving at a tributary, since they must pass Cook inlet commercial fisheries, personal use fisheries and sport fisheries to arrive at spawning grounds. Each listed watershed will have different factors which may preclude comparison to Grant Creek. The Kasilof River is a completely different river system with a very different run composition. Comparison of Grant Creek sockeye returns to returns to all of these systems would be very difficult due to variability in harvests and watershed conditions, such as those caused by recent wildfire activity at the Russian River, Kasilof River, and middle Kenai River. This proposal may be interesting to research, but it is unclear how it will inform on Grant Creek project effects?

Page 24

4.5 Project Schedule.

Post project construction sampling needs further discussion to arrive at an acceptable sampling methodology, frequency, and duration.

Page 24

5.1. Proposed Protection, Mitigation, and Enhancement

Possible PM&E measures have been mentioned in meetings but have not been discussed at length. In depth discussions on mitigation proposals need to happen. This section also lacks sufficient detail to evaluate a value to the Grant Creek system. PM&E Goals and Objectives may need modification once discussions are held.

The following comments are relative to the proposed PM&E measures listed in this section. At this time we have no endorsement of proposed PM&E measures.

“A suite of PM&E measures have been proposed for the Project. These measures include, but are not limited to the following:”

- *“Enhancement of Reach 2/3 Side Channels. KHL has proposed more consistent flows and winter-time inundation of these side channels as a result of Project operations. The proposed operational flows will increase aquatic habitat in these side channels.”*

Provide specific details or references to study results that demonstrate how estimated increases in side channel habitat are a result of proposed project operation.

“Additional Flow in the Reach 1 Distributary. This measure, proposed by KHL, would remove the upstream control, providing greater and more consistent flows in this distributary, increasing both rearing and spawning habitat.”

Need to provide an estimate of how flow will be increased due to removal of the hydraulic control, including timing, frequency and duration. Along with this information, more detail is needed on specifically how habitat will be increased as a result of these increases in flow. Develop a plan to monitor and maintain the hydraulic control and increases in *“Spawning Gravel Augmentation/Flushing Flows.”*

- *Spawning substrate is naturally limited within Grant Creek. This PM&E measure, proposed by KHL, would evaluate the need for gravel supplementation within the mainstem of Grant Creek, and/or periodic need for channel maintenance (i.e., flushing) flows to move upstream sediment.”*

This proposal is unclear. How will the applicant evaluate the need for gravel and how would this evaluation translate into a PM&E measure?

- *“Spawning Gravel Augmentation within the Reach 1 Distributary. To create spawning habitat within the Reach 1 distributary, gravel augmentation, in addition to enhanced flows due to the upstream control removal, will be implemented at this location.”*

A gravel augmentation plan is needed for this distributary with detailed information and appropriate maps. Specify material composition, sizes, augmentation depths, and distribution of gravel. See comments provided under 5.3.2.2.1. *Site Selection, Gravel Placement, and Schedule*, for determination of gravel origin, type, size, and distribution.

Page 25

5.2. Goals and Objectives

5.2.1. Goals

Specific goals state: “Maintain minimum instream flows of 5 to 10 cfs in Reach 5.”

We appreciate the applicant’s proposal for instream flow release. This proposal will be evaluated for adequacy and will be the subject of further discussion.

5.2.2. Objectives

“Determine if greater flows in the Reach 2/3 side channels during the winter increase juvenile salmonid numbers in these side channels;”

There has been no winter study of side channel use by juvenile salmonids completed to provide for a comparison between pre and post construction. The PHABSIM study indicated that there was no available habitat in side channels during the winter. Currently under winter flow conditions access to side channel habitat is limited. Increased flows in side channels due to project operation may attract fish into an environment which may be more prone to freeze out. Additional studies need to be made to identify project effects (both positive and negative) in these areas.

Page 26

5.3. PM&E Methodologies

Post project construction sampling needs further discussion to arrive at an acceptable sampling methodology, frequency, and duration.

Page 26

5.3.1. Juvenile Salmonid Methodologies

“Juvenile sampling methodologies will be consistent with the methods described in Section 3.4.1, that is, minnow trapping as well as snorkeling, will be used to gather data on juvenile salmonid distribution and numbers within the Reach 1 distributary and the Reach 2/3 side channels.”

How does the applicant propose to assess increases in utilization in these channel types? Appropriate metrics should be listed and appropriate statistical tests should be proposed.

Page 27

5.3.3.2.1 Site Selection, Gravel Placement, and Schedule

“In lieu of the Reach 4/5 recruitment station, gravel may also be placed manually at select locations within the Reach 1-4 mainstem; this alternative would also be developed in consultation with the stakeholders.”

“...all gravel used during the implementation of this PM&E measure will be native material mined during the construction of the tunnel”...

The applicant is encouraged to research and identify criteria for substrate size and depth. These criteria should relate to redd site selection and egg deposition depths. The applicant is also encouraged to identify and specify the use of criteria to assess the need for gravel augmentation. There is a huge difference between appropriate spawning substrate (gravels) and mined material from a blasted tunnel. Fractured rock does not make viable spawning substrate for salmonids. If a boring machine is used, the removed materials resemble powder, also which is not good spawning substrate.

“Gravel (25 –150 mm) will be placed in the stream or at recruitment stations, per Merz and Setka (2004).”

Merz and Setka (2004) and Merz et al. 2004¹, both described enhancement through gravel supplementation on the Mokelumne River at downstream sites below the Comanche Dam. This

¹ Merz, J.E., J.D. Setka, G.B. Pasternack, and J.M. Wheaton. 2004. Predicting benefits of spawning habitat rehabilitation to salmonid (*Oncorhynchus* spp.) fry production in a regulated California river. *Canadian J. Fish. Aquat. Sci.*, Volume 61, page 1433-1446. Published by NRC Research Press Web site at <http://cjfas.nrc.ca>. October 2004..

project placed more than 11,000 m³ of gravel at 12 spawning bed enhancement sites between 1991 and 2003. Merz et al. 2004 stated that this project: ... *“placed washed river rock in berms, staggered bar, riffle, or complex channel geometry configurations to improve spawning habitat.”* As is reflected in the Mokelumne River study report, the project used washed river gravel which was strategically placed to develop features within the study areas. Gravel was not simply dumped and allowed to wash downstream. Gravel 25mm to 150mm (1 inch to approximately 6.25 inches) is stated to be used. A more complete description of the gravel is necessary to identify composition size percentage. Little would be gained is 100% of gravels provided were 6 inch cobbles. This would fall within the proposed size range but would probably reduce spawning ability for most species spawning in Grant Creek.

“At the conclusion of the 5-year period, KHL in consultation with stakeholders, will make a determination on the need for gravel augmentation within the mainstem.”

If gravel augmentation is accepted as a PM&E measure by the agencies and FERC, it could be said that gravel augmentation is necessary because gravel recruitment in Grant Creek has been reduced or ceased altogether by project operations. It is not clear how KHL will define the *“need”* after five years. Gravel movement from lower Grant Creek would continue after the five years, therefore it would seem that some form of gravel augmentation would be necessary for the life of the project, perhaps on an intermittent basis. As reflected in Merz et al. 2004, the Mokelumne River spawning gravel augmentation project had been in operation for 12-13 years at the time of reporting. It is not clear if periodic maintenance flows will provide similar gravel recruitment when compared to pre-project gravel recruitment.

Page 28

5.3.2.2 Pebble Counts

The citation of Metz and Setka (2004) is incorrect. It is Merz and Setka (2004).

5.3.3.2.3 Adult Surveys

This section cites Sections 3.4.2. and 4.4.2. for identifying methods of conducting adult surveys. We have commented on those sections in this draft plan. We refer to those comments as being appropriate for this section.

5.4. Schedule

“It is important to note that additional collaboration with stakeholders is planned post-license issuance and during construction to fully develop an appropriate plan for any gravel supplementation efforts associated with Grant Creek.”

PM&E measures should be fully described and defined prior to issuance of the FERC license.

“Based upon the operational analysis conducted by KHL, the potential exists for channel maintenance type flows to occur via the natural outlet from Grant Lake during operation that would be sufficient for gravel recruitment from Reach 5. This may occur on a consistent enough periodic timeline to preclude the need for gravel supplementation in the mainstem of Grant Creek. This will need to be determined once operations commence.”

Description of this facility has been presented as a lake storage system which will be drawn down as much as 13 feet during the winter and spring to meet power production demand. Refill timing will depend on spring snow melt and rainfall events. **Reach 5 has been identified by the applicant as the source for gravel recruitment to lower Grant Creek.** This reach currently is subjected to the force of water from all flows out of Grant Lake. Reach 5 has been described as primarily a bedrock influenced pool and cascade reach flowing through a canyon section. As such, water forces are necessary to produce erosion of materials which make up the replacement gravels for downstream reaches. Under normal project operations, short term channel maintenance type flows would probably lack the duration necessary to maintain the erosion function needed to sustain gravel recruitment at pre-project levels. We will address channel maintenance flows in our Recommended 10(j) Terms and Conditions.

“Thus the need for continued collaboration with stakeholders to determine the appropriate need for and level of analysis related to the effectiveness of the measure.”

Regardless of any PM&E measures chosen, there will be a need for continued collaboration if adaptive management is to be attempted. That is why it is vitally important that all plans be developed completely and thoroughly to establish requirements and expectations for construction and post construction implementation of PM&E measures.

6. COMMUNICATIONS

“Every winter, KHL will convene a global meeting with all stakeholders and FERC to review all management plans and related monitoring efforts associated with construction and subsequent operation of the Project.”

We support the use of annual meeting to review and address management plans and monitoring efforts, when needed. We recommend adding language that provides this flexibility.

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Attachment E-3. Summary of Proposed PM&E Measures and Schedule for Implementation and Construction

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Summary of Proposed PM&E Measures and Schedule for Implementation and Construction

Proposed PM&E	Anticipated Timeframe
OVERALL PROJECT COMPLIANCE	
<ul style="list-style-type: none"> • Designate an Environmental Compliance Monitor (ECM) 	Within 1 year of license issuance
<ul style="list-style-type: none"> • Develop Annual Compliance Reports <ul style="list-style-type: none"> ○ Summary of compliance activities for the previous year ○ Annual stakeholder meeting presenting results 	Annually immediately upon license issuance Annually (as deemed appropriate)
<ul style="list-style-type: none"> • Develop and implement a Fire Prevention Plan (FPP) 	Develop: Within 1 year of license issuance Implement: Upon FERC approval of plan and commencement of construction
GEOLOGICAL AND SOIL RESOURCES	
<ul style="list-style-type: none"> • Develop and implement an Erosion and Sediment Control Plan (ESCP) that includes measures to minimize erosion and sediment deposition during construction 	Develop: Within 1 year of license issuance Implement: Upon FERC approval of plan and commencement of construction
<ul style="list-style-type: none"> • Develop and implement a Hazardous Materials Containment/Fuel Storage Plan that includes measures to contain all hazardous materials utilized during construction and operational activities 	Develop: Within 1 year of license issuance Implement: Upon FERC approval of plan and commencement of construction
<ul style="list-style-type: none"> • Develop and implement a Spill Prevention, Control and Containment Plan (SPCCP) that includes measures to minimize the potential for hazardous material spillage and methods for immediate, local containment should a spill occur 	Develop: Within 1 year of license issuance Implement: Upon FERC approval of plan and commencement of construction

Proposed PM&E	Anticipated Timeframe
<ul style="list-style-type: none"> • Restore areas to natural condition that have been utilized for temporary construction and infrastructural development 	<p>Within 1 year of construction completion</p>
WATER QUALITY AND QUANTITY	
<ul style="list-style-type: none"> • Implement an Operational Compliance Monitoring Plan (OCMP). Components of the plan include: <ul style="list-style-type: none"> ○ Continue monitoring and maintenance of existing Grant Creek stream gauge and confirm appropriate flow levels into the bypass reach ○ Monitor lake level and compare Grant Lake and Grant Creek water temperatures to confirm consistency 	<p>Ongoing for life of license</p> <p>Monitoring: Upon commencement of construction for life of license</p> <p>Comparison: Annually</p>
AQUATIC RESOURCES	
<ul style="list-style-type: none"> • Implement a Biotic Monitoring Plan. Components of the plan include: <ul style="list-style-type: none"> ○ Biotic monitoring during construction <ul style="list-style-type: none"> • Juvenile salmonid investigations • Adult salmonid investigations ○ Biotic monitoring during operations <ul style="list-style-type: none"> • Juvenile salmonid investigations • Adult salmonid investigations 	<p>Ongoing during year 1 of construction</p> <p>Ongoing during year 1 of construction</p> <p>During years 2 and 5 of operations</p> <p>During years 2 and 5 of operations</p>

Proposed PM&E	Anticipated Timeframe
<ul style="list-style-type: none"> ○ Biological monitoring for enhancement/mitigation measures <ul style="list-style-type: none"> ● Implement and maintain agreed upon bypass reach (Reach 5) flows during operation ● Enhance flows in “Reach 2/3” side channels ● Additional flow in “Reach 1” distributary <ul style="list-style-type: none"> ▪ Collaboratively develop plan ▪ Removal of upstream control at the head of the Reach 1 distributary ▪ Monitor habitat improvements ▪ Maintain habitat improvements ● Assessment of need for gravel augmentation <ul style="list-style-type: none"> ▪ Conduct pebble counts and bulk sampling in the Grant Creek mainstem and Reach 1 distributary ▪ Coordinate with stakeholders to determine need for gravel augmentation in Grant Creek mainstem ▪ Gravel augmentation, as deemed necessary in Grant Creek mainstem and/or Reach 1 distributary 	<p>Upon commencement of operations for life of license</p> <p>Upon commencement of operations for life of license</p> <p>Upon commencement of operations for life of license</p> <p>Within 6 months of license issuance</p> <p>During year 1 of construction</p> <p>During years 2 and 5 of operations</p> <p>Conditional (on average every 5 years)</p> <p>During years 1 of construction and years 5 and 10 of operations</p> <p>Year 10 of operations</p> <p>TBD (if needed)</p>

Proposed PM&E	Anticipated Timeframe
TERRESTRIAL RESOURCES	
<ul style="list-style-type: none"> • Implement a Vegetation Management Plan (VMP). Components of the plan include: <ul style="list-style-type: none"> ○ Invasive plant management and control ○ Revegetation ○ Vegetation maintenance ○ General sensitive plant species protection and monitoring ○ Pale poppy population management 	<p style="text-align: center;">First growing season after construction completion and year 5 post-construction</p> <p style="text-align: center;">Next growing season after construction completion</p> <p style="text-align: center;">Prior to construction and every 8 to 10 years during the license term</p> <p style="text-align: center;">Prior to ground disturbing activities on USFS lands associated with Project construction</p> <p style="text-align: center;">Years 1 and 5 after license issuance</p>

Proposed PM&E	Anticipated Timeframe
<ul style="list-style-type: none"> • Implement an Avian Protection Plan. Components of the plan include: <ul style="list-style-type: none"> ○ Migratory species <ul style="list-style-type: none"> • Risk assessment of activity and timeline • Plan of construction and operation timeline • Measures taken based on Project actions <ul style="list-style-type: none"> • Pre-vegetation removal surveys during nesting/breeding season • Measures undertaken for active bird nests • Powerlines and infrastructure design • Powerline and infrastructural monitoring methodology ○ Bald eagles <ul style="list-style-type: none"> • Risk assessment of activity and timeline • Plan of construction 	<p>One time prior to construction commencing</p> <p>Prior to each construction season commencing and as needed during operations</p> <p>Prior to each construction season and as needed during operations as it coincides with breeding/nesting season (May 1 – June 15)</p> <p>Immediately after the pre-vegetation surveys (preceding bullet) associated with construction if an active nest is documented</p> <p>During final design and construction phases of the Project</p> <p>Four times annually (seasonal) during years 1 and 5 of operations</p> <p>Prior to first year construction efforts commencing</p> <p>Prior to first year construction efforts commencing</p>

Proposed PM&E	Anticipated Timeframe
<ul style="list-style-type: none"> • Measures taken based on Project actions <ul style="list-style-type: none"> • Bald eagle monitoring methods • Vegetation removal associated with Project operation 	<p>Three times each construction season during the nesting period</p> <p>As needed during Project operations</p>
<ul style="list-style-type: none"> • RECREATION, LAND USE, AND AESTHETICS 	
<p>Iditarod National Historic Trail re-route</p> <ul style="list-style-type: none"> ○ Draft INHTRP and consult with stakeholders ○ Modify existing easements ○ Confirm transfer/ownership of existing easement to USFS ○ Confirm re-route specifics and finalize plan with the USFS • INHT construction through the Project area 	<p>Within 1 year of license issuance</p> <p>Within 2 years of license issuance</p> <p>Within 2 years of license issuance</p> <p>Within 2 years of license issuance</p> <p>By completion of year 2 of construction</p>
<ul style="list-style-type: none"> ○ CULTURAL RESOURCES 	
<ul style="list-style-type: none"> • Implement an Historic Properties Management Plan (HPMP). Components of the plan include: <ul style="list-style-type: none"> ○ Evaluation/revisions to existing HPMP ○ Develop a plan for construction of interpretive signs ○ Implement sign placement ○ Monitor and maintain signs • Monitor and maintain Solars Sawmill and Case Mine District sites 	<p>Within 1 year of license issuance and every 5 years during the license term</p> <p>Within 1 year of license issuance</p> <p>During year 1 of Project operations</p> <p>Once every 5 years upon commencement of operations</p> <p>Once every 5 years after license issuance</p>
SOCIOECONOMICS	
No measures proposed	

Attachment E-4. Final Biological Evaluation

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Grant Lake Hydroelectric Project (FERC No. 13212)

Biological Evaluation for Plants
Final

Kenai Hydro, LLC

April 2016

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Biological Evaluation for Plants

Final

Grant Lake Hydroelectric Project (FERC No. 13212)

1 INTRODUCTION

The United States Forest Service (USFS) policy requires that a review of programs and activities, through an effects analysis, be conducted to determine their potential effect on threatened and endangered species, species proposed for listing, and Regional Forester designated sensitive species. The purpose of this document is to present the analysis and determination of effects of the alternatives on federally listed species (endangered, threatened, and proposed) and USFS sensitive species (FSM 2670.31-2670.32).

For threatened and endangered species and species proposed for listing, the analysis and document are referred to as a Biological Assessment, or BA. No plants federally listed or proposed for listing by the U.S. Fish and Wildlife Service are known or suspected to occur in the Alaska Region; therefore, there is no further discussion of federally listed or proposed plants in this document.

For sensitive species the analysis and document are referred to as a Biological Evaluation or BE (FSM 2670.3). Preparation of a BE as part of the National Environmental Policy Act (NEPA) process ensures that sensitive species receive full consideration in the decision-making process.

1.1. Location

The proposed Grant Lake Hydroelectric Project (FERC No. 13212 [Project]) would be located near the community of Moose Pass, Alaska (population 219) in the Kenai Peninsula Borough, approximately 25 miles north of Seward, Alaska (population 2,693), and just east of the Seward Highway (State Route 9); this highway connects Anchorage (population 291,826) to Seward. The Alaska Railroad (ARRC) parallels the route of the Seward Highway, and is located adjacent to the Seward Highway in the Project area. Grant Lake is located in the mountainous terrain of the Kenai Mountain Range and has a normal water surface elevation of 703 feet North American Vertical Datum of 1988 (NAVD 88) and surface area of approximately 1,741 acres. A map showing the location of the Project is provided in Figure 1.

1.2. Project Description

The Grant Lake Project would consist of the Grant Lake/Grant Creek development, an intake structure in Grant Lake, a tunnel, a surge chamber, a penstock, a powerhouse, tailrace channel with fish exclusion barrier, access roads, a step-up transformer, a switchyard, and an overhead transmission line. The powerhouse would contain two Francis turbine generating units with a combined rated capacity of 5 megawatts (MW) with a maximum design flow of 385 cubic feet per second (cfs). The general proposed layout of the Project is shown in Figure 2.

1.2.1. Grant Creek Diversion

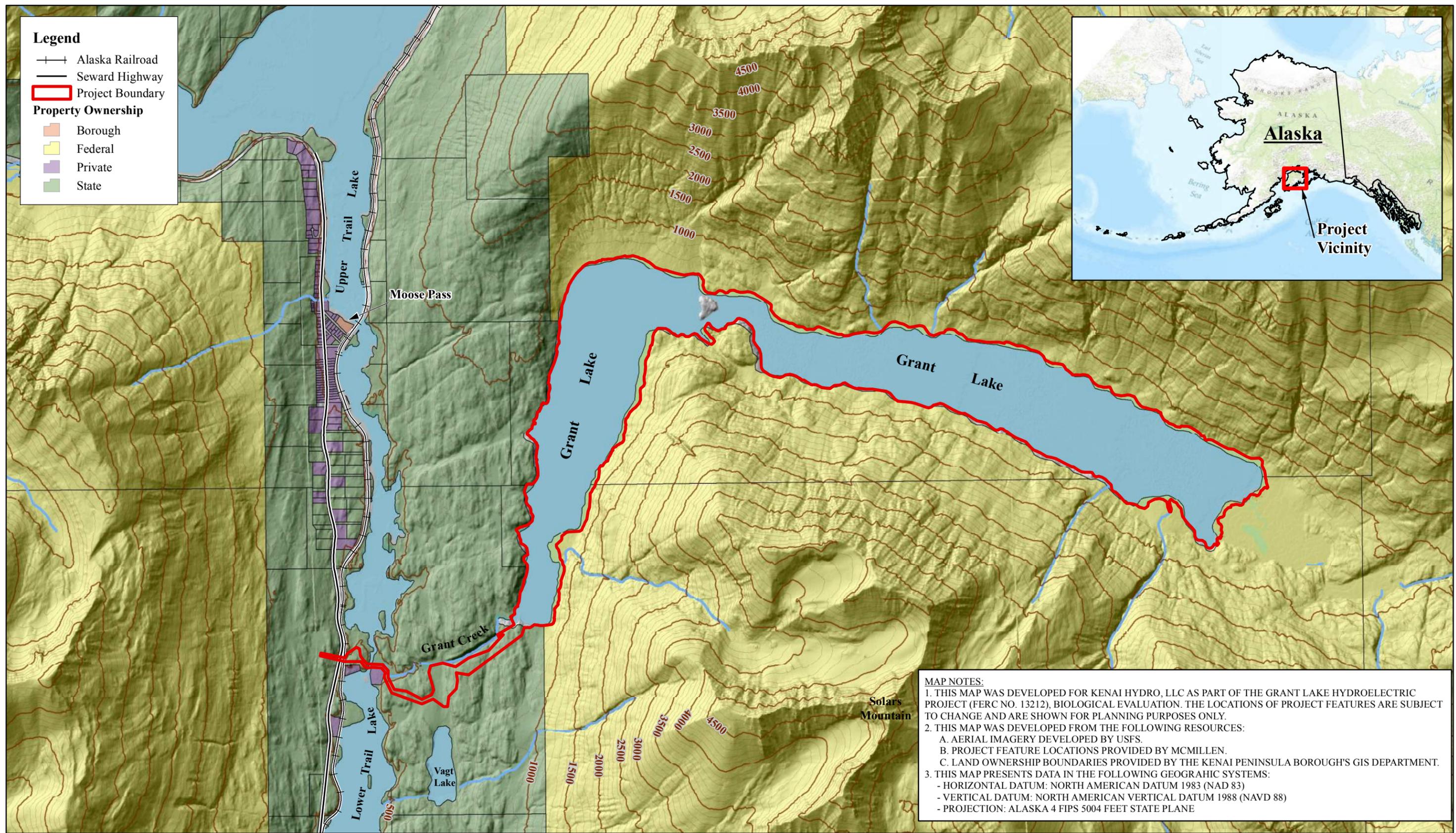
The proposed Project would consist of a reinforced concrete intake structure located east of the natural lake outlet adjacent to the south shore. No structural modifications would be made to the existing lake natural outlet. The Project would divert water up to a maximum of 395 cfs into the intake structure. Up to 385 cfs would flow to the powerhouse and up to 10 cfs would flow through the bypass pipe. When the lake level exceeds the natural outlet of 703 feet NAVD 88, a maximum of 395 cfs could be diverted into the intake structure. Flow in excess of 395 cfs would then pass over the natural outlet to Grant Creek.

1.2.2. Grant Lake Intake

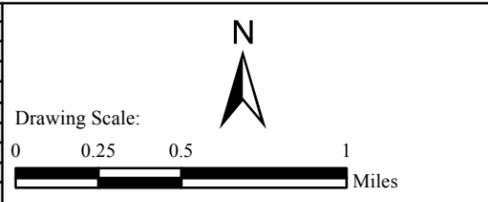
The Project water intake would be a concrete structure located approximately 500 feet east of the natural outlet of Grant Lake and adjacent to the south shore. The intake structure would consist of a reinforced concrete structure extending from approximately elevation 675 feet NAVD 88 up to a top deck elevation of 715 feet NAVD 88. The structure would have an outside dimension of 38 feet by 20 feet. The structure would include intake trashracks, selective withdrawal intake gates with wire rope hoist, and a roller gate located on the water conveyance intake. The intake would be divided into three bays, each fitted with an intake gate to provide flexibility for delivering the full flow range of 63 cfs to 395 cfs. The gate position within the water column would be set to deliver the required water temperature to Grant Creek below the powerhouse. The roller gate would be 11 feet tall by 11 feet wide and fitted with a wire rope hoist lift mechanism. Electrical power would be extended from the powerhouse to the intake to operate the intake and isolation gates. Pressure transducers would be installed to monitor the water level at the lake as well as within the intake tower. An access bridge 16 feet wide would be installed from the lake shore out to the intake structure.

The intake would allow for drawdown of Grant Lake to elevation 690 feet NAVD 88, thereby creating approximately 18,791 acre-feet of active storage for the Project between elevations 703 feet NAVD 88 and 690 feet NAVD 88. The intake would be designed to allow the Project to draw water near the surface at various levels of storage, if deemed necessary to meet downstream temperature requirements. The invert of the intake would be at elevation 675 feet NAVD 88 to provide for adequate submergence to the tunnel.

A bypass pipe would extend from the intake structure to the base of the existing waterfall in Grant Creek. The installed pipe would be 900 feet long and approximately 18 inches in diameter, allowing the minimum flow ranging from 5 to 10 cfs to be released. A control gate would be located within the intake structure to regulate and monitor the bypass flow releases.



REV	DATE	BY	DESCRIPTION



MCMILLEN, LLC

1401 SHORELINE DRIVE BOISE, ID 83702 OFFICE: 208.342.4214 FAX: 208.342.4216

Developed For:

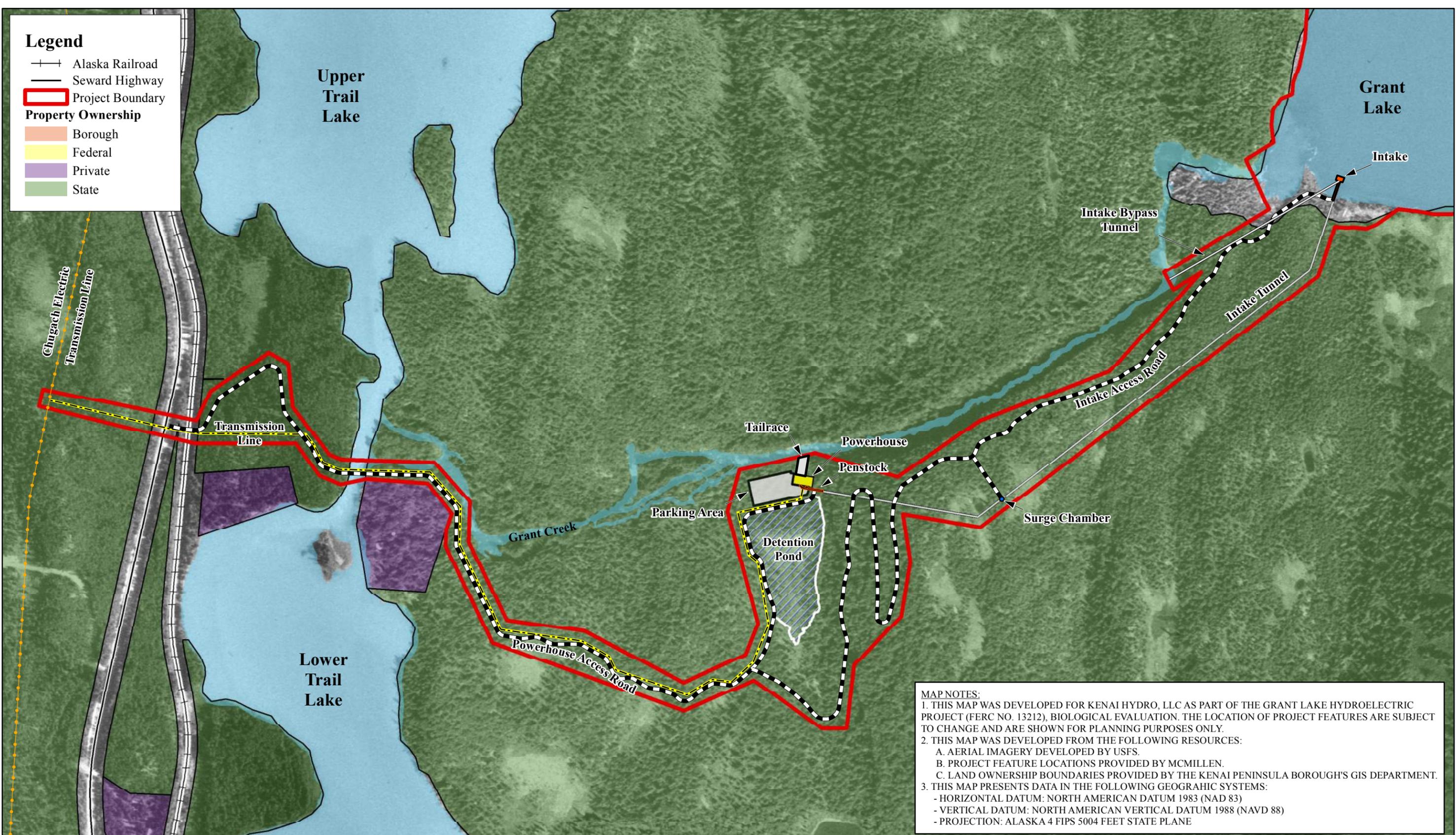
Homer Electric Association, Inc.
A Touchstone Energy Cooperative

GRANT LAKE HYDROELECTRIC PROJECT - FERC PROJECT NO.13212

BIOLOGICAL EVALUATION

Figure 1
Location Map of Project Vicinity

DESIGNED	Jake Woodbury	DRAWING
DRAWN	Jake Woodbury	
CHECKED	C. Warnock	
ISSUED DATE	3/4/2016	SCALE: 1:35,000



Legend

- +— Alaska Railroad
- Seward Highway
- ▭ Project Boundary

Property Ownership

- ▭ Borough
- ▭ Federal
- ▭ Private
- ▭ State

MAP NOTES:

1. THIS MAP WAS DEVELOPED FOR KENAI HYDRO, LLC AS PART OF THE GRANT LAKE HYDROELECTRIC PROJECT (FERC NO. 13212), BIOLOGICAL EVALUATION. THE LOCATION OF PROJECT FEATURES ARE SUBJECT TO CHANGE AND ARE SHOWN FOR PLANNING PURPOSES ONLY.
2. THIS MAP WAS DEVELOPED FROM THE FOLLOWING RESOURCES:
 - A. AERIAL IMAGERY DEVELOPED BY USFS.
 - B. PROJECT FEATURE LOCATIONS PROVIDED BY MCMILLEN.
 - C. LAND OWNERSHIP BOUNDARIES PROVIDED BY THE KENAI PENINSULA BOROUGH'S GIS DEPARTMENT.
3. THIS MAP PRESENTS DATA IN THE FOLLOWING GEOGRAPHIC SYSTEMS:
 - HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 (NAD 83)
 - VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88)
 - PROJECTION: ALASKA 4 FIPS 5004 FEET STATE PLANE

REV	DATE	BY	DESCRIPTION

Drawing Scale:

0 250 500 1,000 Feet

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Developed For:

Homer Electric Association, Inc.
A Touchstone Energy Cooperative

GRANT LAKE HYDROELECTRIC PROJECT - FERC PROJECT NO.13212

BIOLOGICAL EVALUATION

Figure 2
General Project Features And Facilities

DESIGNED	Jake Woodbury	DRAWING
DRAWN	Jake Woodbury	
CHECKED	C. Warnock	
ISSUED DATE	3/4/2016	SCALE: 1:5,500

1.2.3. Tunnel and Surge Chamber

The intake structure would connect to a tunnel extending to the Project powerhouse. The tunnel would be approximately 3,300 feet long with a 10-foot-horseshoe shape. Drill and shoot techniques would be used to construct the tunnel using an entrance portal at the powerhouse for access. The lower 900 feet of tunnel would be constructed at a 15 percent slope. This section of the tunnel would be concrete lined. The upper 2,400 feet of tunnel would be constructed at a 1 percent slope and would be unlined. This proposed arrangement provides a low pressure hydraulic conduit in the upper tunnel reaches suitable for an unlined tunnel. A surge chamber would be located at the transition between the two tunnel slopes. This chamber would be approximately 10 feet in diameter and would extend from the tunnel invert elevation of 675 feet NAVD 88 to the ground surface at approximately elevation 790 feet NAVD 88. The surge chamber would provide a non-mechanical relief for hydraulic transients that could occur if a load rejection occurred at the powerhouse. Rock anchors and shotcrete stabilization techniques would be used to stabilize the tunnel exposed rock surface where required. A rock trap would be located at the surge chamber location to collect dislodged rocks from the unlined tunnel section.

The surge chamber outlet at the existing ground elevation would be fitted with a pre-fabricated steel structure that would span the chamber. The steel frame structure would be covered with wire mesh, providing a fully screened structure capable of allowing air in for the surge chamber, while also excluding wildlife and the public from accessing the surge chamber. A removable roof structure would be located on the steel outlet, allowing access to remove material from the rock trap that would be located in the tunnel directly below the surge chamber. The surge chamber cover structure would be painted to blend into the natural forest environment. During operations, if/when a load rejection at the powerhouse occurs, the pressure wave and associated volume of water would be contained within the surge chamber. As the wave dissipated, the water level in the surge chamber would decrease until it matched the level in Grant Lake.

The tunnel would transition to a 6-foot-diameter steel penstock approximately 150 feet from the powerhouse. The transition section would consist of a welded concentric structure that transitioned from the 10-foot tunnel section to the 72-inch-diameter penstock. A steel liner would extend from the downstream tunnel portal approximately 300 feet into the tunnel. The liner would be installed within the exposed rock surface, with grout pumped behind the liner to provide an impermeable and structurally sound tunnel section. A similar steel tunnel liner section would be installed at the connection to the intake structure for a total distance of approximately 150 feet.

1.2.4. Penstock

A 72-inch-diameter steel penstock would extend 150 feet from the downstream tunnel portal to the powerhouse. The welded steel penstock would be supported on concrete pipe saddles along the penstock route. The penstock would bifurcate into two 48-inch-diameter pipes feeding each of the powerhouse turbines. The penstock, fitted with welded steel thrust rings, would be encased in concrete thrust blocks at the tunnel portal as well as at the powerhouse. These thrust blocks would be designed to resist the full hydraulic load associated with the Project operation. An interior and exterior coating system would be applied to the penstock, providing full

corrosion protection. An access manway would be provided on the exposed penstock section, allowing access for future inspection and maintenance.

1.2.5. Tailrace

The powerhouse draft tubes would connect to a tailrace channel located on the north side of the powerhouse structure. The draft tubes would extend from a low point elevation of approximately 509 feet NAVD 88 up to the tailrace channel invert elevation of 515 feet NAVD 88. The channel would continue to the south bank of Grant Creek. Each of the draft tubes would be gated, allowing the flow to be routed to the detention pond for spinning reserve operation. Isolation bulkheads would be provided, allowing dewatering of the draft tubes for inspection and maintenance of the turbine. The tailrace channel would be trapezoidal in shape with a bottom width of 43 feet, side slopes of 2H:1V, and a channel depth ranging from 13 feet at the powerhouse to 7 feet at the creek. A concrete structure would be constructed at the confluence of the channel and Grant Creek. A picket-style fish barrier would be placed on this concrete structure as well as provision for installation of stoplogs, allowing the tailrace channel to be dewatered for inspection and maintenance. The channel would be excavated from native material and lined with riprap to provide a long term stable section. A staff gage and pressure transducer would be placed in the channel to monitor the water level in the channel. A wildlife exclusion fence approximately 8 feet tall and constructed from steel posts with heavy gage woven wire would be installed at the tailrace channel. The fence would be located at the top of the bank on both sides of the tailrace channel. The fence would also cross the top of the tailrace barrier access deck, providing full exclusion of wildlife from the tailrace channel.

1.2.6. Tailrace Detention Pond

An off-stream detention pond would be created to provide a storage reservoir for flows generated during the rare instance when the units being used for spinning reserve were needed for the electrical transmission grid. To prevent a sudden increase in the water surface levels of Grant Creek as a result of the increased flows generated, the additional powerhouse flows would be diverted into the detention pond and then released slowly back into Grant Creek. The discharge associated with a spinning reserve event would be dispersed via the tailrace channel that flows into Grant Creek. The detention pond would be located immediately south of the powerhouse, and would be bordered by the access road. Storing additional powerhouse flows up to an elevation of 521 feet NAVD 88, the detention pond would have a capacity of approximately 15 acre-feet and a surface area of approximately 3.6 acres. The powerhouse would contain two generating units. The turbines would discharge into a splitter box located at the outlet of the turbine draft tubes. Isolation gates would be provided to route the turbine discharge to the detention pond when a unit was brought online to support a spinning reserve demand. Typically, when a turbine was brought online for spinning reserve, the turbine would operate for an average period of 15 to 20 minutes to meet the instantaneous demand. For example, assuming one turbine was allocated to spinning reserve, the turbine would divert the full 192.5 cfs of flow into the detention pond with a total of 173,250 cubic feet (cf) discharged during a 15-minute period. Once the spinning reserve demand was met, the unit would be brought offline and the detention pond flow released slowly back into the powerhouse tailrace.

1.2.7. Powerhouse

The powerhouse would be located on the south bank of Grant Creek immediately west of the downstream tunnel portal and adjacent to the detention pond. The powerhouse would lie at the top of the existing hill slope that occurs near the mouth of the Grant Creek canyon (Reach 5). This location was selected based on the presence of an existing rock outcrop that would provide an effective downstream portal location for the tunnel. The powerhouse would be located south of Grant Creek. A natural lower area is located immediately south of the proposed powerhouse site. The entire site is forested with areas of open meadow. The powerhouse concrete foundation would tie into the existing hillside with the majority of the powerhouse structure located on relatively flat ground. The powerhouse would consist of a concrete foundation and a pre-engineered metal building superstructure. The building would be approximately 100 feet long (east to west) and 50 feet wide (north to south). The penstock would tie into the powerhouse on the south side and the tailrace channel on the north side of the building. The building floor would be set at approximately elevation 523 feet NAVD 88 and the centerline of the turbine runner at elevation 526 feet NAVD 88. The draft tube floor would be set at elevation 509 feet NAVD 88 with an operating tailwater inside the draft tubes ranging from 518.0 feet to 519.3 feet NAVD 88.

Two horizontal Francis type turbine/generator units with a rated total capacity of 5,000 kilowatt (kW) would be housed in the powerhouse structure. The powerhouse flow would range from a maximum of 385 cfs to a minimum of 58 cfs with each turbine operating flow ranging from 192.5 cfs to 58 cfs. Associated mechanical and electrical equipment would include hydraulic power units, turbine isolation valves, penstock drain, utility water system, lube oil system, oil water separator, battery system, and heating, ventilating, and air conditioning (HVAC) system. A control room housing the motor control center (MCC), communication rack, fiber optic panels, computers, and related equipment would also be provided. The Project switchgear would be located within the powerhouse. A standby generator, transformer, and fused pad-mounted switch assembly would be mounted on an enclosed switchyard located on the south side of the powerhouse. Dewatering pumps would be provided to support dewatering of the turbine draft tubes. A 30-ton bridge crane would be provided for equipment maintenance. The crane would travel on rails mounted on the steel building support columns. An energy dissipation valve would extend off the penstock and provide bypass flows into the Project tailrace.

1.2.8. Transmission Line/Switchyard

An overhead 115-kV transmission line would extend from the powerhouse to the existing 115-kV transmission line located on the west side of the Seward Highway. In addition to overhead transmission structures, the facilities would include a switchyard at the powerhouse consisting of a 115-kV fused pad-mounted disconnect switch and a pad-mounted 115-kV GSU transformer. The transmission line would run from the powerhouse parallel to the access road where it would intersect Chugach Electric's transmission line. The interconnection would have a pole-mounted disconnect switch.

Wooden poles would be designed as tangent line structures on about 250-foot centers. Design of the line would also incorporate the latest raptor protection guidelines. Collision avoidance devices would be installed on the line at appropriate locations to protect migratory birds.

1.2.9. Appurtenant Facilities

The following pertinent mechanical and electrical equipment would be applicable to the Project:

- Intake selective withdrawal intake gate
- Intake trashrack system
- Intake roller gate used to isolate the tunnel and downstream generation facilities
- Control gate located on the bypass pipeline
- A 30-ton bridge crane in the powerhouse
- Pumps located in the powerhouse used to dewater the draft tubes
- Pressure transducers located throughout the Project used to monitor the water level in the reservoir, tunnel, and tailrace, as well as pressures in the tunnel and penstock
- Security cameras at the intake and powerhouse
- Sanitary waste holding tank or septic system at the powerhouse
- A power line extending from the powerhouse to the intake to supply electrical power to the gates and trashrack
- Temperature instrumentation at the intake structure and at various stream locations to monitor water temperature

This equipment, along with other identified miscellaneous mechanical and electrical equipment, would be developed during the final design and included in the construction documents.

1.2.10. Access Roads

The Project would require an access road to both the powerhouse located near the base of the Grant Creek canyon and to the intake at Grant Lake. The access road would be used to construct the Project and afterwards, to maintain the facilities. It is anticipated that the powerhouse would be visited approximately once a month and the intake visited approximately once a month beginning just after the ice melts and continuing until just before freeze up. The powerhouse access road would be maintained year around. The intake access road would not be maintained in winter.

The 24-foot wide access road would tie into the Seward Highway at approximately MP 26.9. The route would travel eastward to cross Trail Lakes at the downstream end of the narrows between Upper and Lower Trail lakes and then continue eastward to the powerhouse. This route would be approximately one mile long. It would cross the ARRC tracks near an existing railroad crossing for a private driveway. The road would cross the narrow channel connecting Upper and Lower Trail lakes with an approximately a 110-foot-long single lane bridge. This bridge is proposed as a clear span with the west abutment located on bedrock and the east abutment on fill. The proposed route would avoid cuts and travel along the base of some small hills on the south side of Grant Creek to the powerhouse. This proposed access road would have one 90-degree crossing of the proposed reroute of the commemorative Iditarod National Historic Trail (INHT) easement.

The intake access road would be approximately one mile long, beginning at the powerhouse. The road would ascend a 230-foot bluff to reach the top of the southern rim of the Grant Creek canyon. A series of road switchbacks would be required to maintain a road grade of less than 8 percent. The road would then generally follow the southern edge of the canyon until it descends to Grant Lake. A small parking area and turn-a-round area would be provided at the intake structure. A 16-foot wide bridge would extend from the bank out to the intake structure.

The road would be gravel with a 16-foot top width. Maximum grade would be 8 percent. Periodic turnouts would be provided to allow construction traffic to pass. Fifty-foot radius curves would be used to more closely contour around the small steep hills of bedrock to limit the extent of the excavation and the height of the embankments.

1.2.11. Project Operations

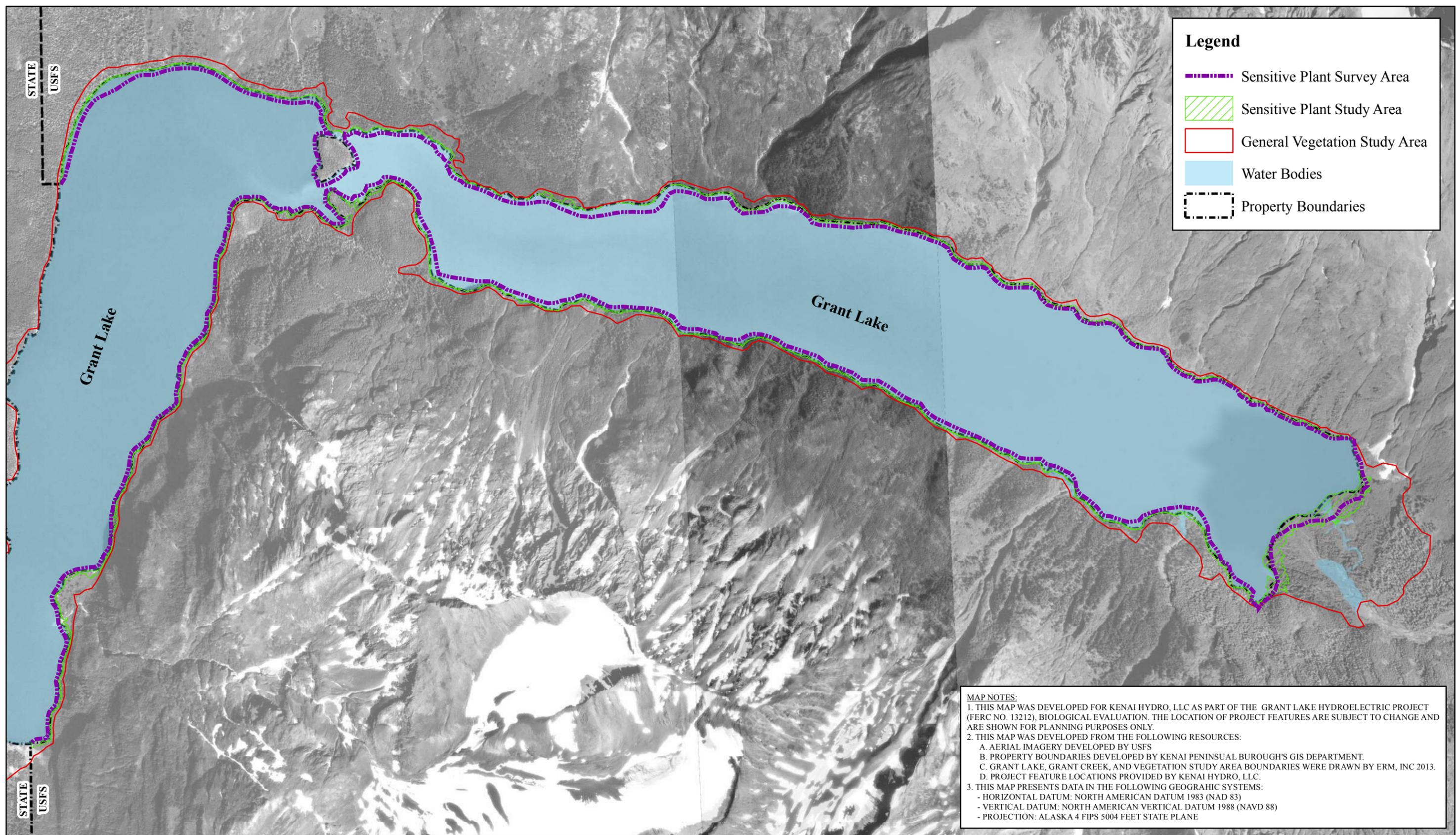
Once constructed, the Project would operate to generate power throughout the calendar year based on inflow, available storage, lake elevation, and minimum flow requirements in Grant Creek. The lake would operate from the natural Grant Lake outlet elevation of 703 feet NAVD 88 down to a minimum lake elevation of 690 feet NAVD 88. The lake would be drawn down in the winter months utilizing a combination of Grant Creek inflows and stored water to meet the instream flows in the bypass reach while also maintaining power production. Water flow predictions would be used to estimate snowpack and the corresponding runoff volume. The Project operation would then be tailored to maximize winter power production while also ensuring that the lake refilled to elevation 703 feet NAVD 88.

2 PROJECT AREA

The Project area extends from east of the Seward Highway and ARRC adjacent to Moose Pass, to just past the eastern shoreline of Grant Lake. From south to north, the Project area extends south along the highway to just south of Grant Creek and north to just beyond the north shoreline of Grant Lake (Figure 1). The proposed Project boundary includes 1,798.7 acres. The USFS manages a total of 1,741.3 acres (96.8 percent) of this total. USFS lands are part of the Chugach National Forest, which surrounds most of Grant Lake. The sensitive plant study area (study area) was limited to USFS lands within the Project area, and included 5 vertical feet above the Grant Lake normal maximum elevation of 703 feet NAVD 88 (Figure 3).

Much of the forest in the Project area is old growth. Evidence of past logging of some larger trees within the Project area was observed in the vicinity of the ARRC and the Seward Highway. Spruce snags are common throughout this forest, most likely killed by the massive spruce beetle outbreak on the Kenai Peninsula during the 1990s (Berg et al. 2006). Within the Project vicinity, few populations of invasive plants have been documented very far from highways, railroad right-of-ways (ROW), and other developments (USFS NRIS 2013). There are no existing hydroelectric projects in the Project vicinity.

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Legend

- Sensitive Plant Survey Area
- Sensitive Plant Study Area
- General Vegetation Study Area
- Water Bodies
- Property Boundaries

MAP NOTES:
 1. THIS MAP WAS DEVELOPED FOR KENAI HYDRO, LLC AS PART OF THE GRANT LAKE HYDROELECTRIC PROJECT (FERC NO. 13212), BIOLOGICAL EVALUATION. THE LOCATION OF PROJECT FEATURES ARE SUBJECT TO CHANGE AND ARE SHOWN FOR PLANNING PURPOSES ONLY.
 2. THIS MAP WAS DEVELOPED FROM THE FOLLOWING RESOURCES:
 A. AERIAL IMAGERY DEVELOPED BY USFS
 B. PROPERTY BOUNDARIES DEVELOPED BY KENAI PENINSULAR BOROUGH'S GIS DEPARTMENT.
 C. GRANT LAKE, GRANT CREEK, AND VEGETATION STUDY AREA BOUNDARIES WERE DRAWN BY ERM, INC 2013.
 D. PROJECT FEATURE LOCATIONS PROVIDED BY KENAI HYDRO, LLC.
 3. THIS MAP PRESENTS DATA IN THE FOLLOWING GEOGRAPHIC SYSTEMS:
 - HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 (NAD 83)
 - VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88)
 - PROJECTION: ALASKA 4 FIPS 5004 FEET STATE PLANE

REV	DATE	BY	DESCRIPTION

Drawing Scale:

0 0.125 0.25 0.5 Miles

McMILLEN, LLC

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Developed For:

Homer Electric Association, Inc.
A Touchstone Energy® Cooperative

GRANT LAKE HYDROELECTRIC PROJECT - FERC PROJECT NO.13212

BIOLOGICAL EVALUATION

Figure 3
Sensitive Plant Survey and Study Area, 2013

DESIGNED	Jake Woodbury	DRAWING
DRAWN	Jake Woodbury	
CHECKED	C. Warnock	
ISSUED DATE	4/7/2016	
SCALE: 1:19,000		

3 NO ACTION ALTERNATIVE

For an original license, as is the case with the proposed Grant Lake Project, the No Action alternative would be denial of the license. Under the No Action alternative, the Project would not be constructed and environmental and human resources in the Project area would not be affected.

4 SENSITIVE PLANTS

Seventeen vascular plants and one lichen are designated as sensitive in the Alaska Region (Appendix A). The following nine sensitive plants are known or suspected to occur on the Seward Ranger District of the Chugach National Forest:

Eschsoltz's little nightmare (*Aphragmus eschsoltzianus*) grows in alpine and subalpine heath meadows and wet, rocky, or mossy seeps (Goldstein et al. 2009). It is known to occur in the Seward Ranger District, but was not observed during field surveys conducted for the Project. The nearest known population to the Project area is the headwaters of Palmer Creek. The study area does not have alpine or subalpine habitats and is well below the alpine and subalpine zone; thus, potential habitat is not present in the study area.

Moosewort fern (*Botrychium tunux*) grows in well-drained sandy beaches and alpine sites (Goldstein et al. 2009). It is suspected to occur on the Chugach National Forest, but was not observed during field surveys conducted for the Project. The study area does not have well-drained sandy beaches and is well below the alpine zone; thus, potential habitat is not present within the study area.

Moonwort fern (*Botrychium yaaxudakeit*) grows in well-drained open meadows, upper beach meadows, and coastal dunes (Goldstein et al. 2009). It is suspected to occur on the Chugach National Forest, but was not observed during field surveys conducted for the Project. The study area does not have well-drained open meadows, upper beach meadows, or coastal dunes; thus, potential habitat is not present within the study area.

Sessileleaf scurvygrass (*Cochlearia sessilifolia*) grows on maritime beaches and is suspected to occur in the Seward Ranger District, but was not observed during field surveys conducted for the Project (Stensvold 2013). The study area does not include maritime beaches; thus, potential habitat is not present within the study area.

Spotted lady's slipper orchid (*Cypripedium guttatum*) grows in open forests, tall shrublands, and wet meadows (Goldstein et al. 2009). It is historically known to occur on the Chugach National Forest and is suspected to occur on the Seward Ranger District. The species was not observed during field surveys conducted for the Project. The study area does have open forests, tall shrublands, and wet meadows; thus, potential habitat is present within the study area.

Pale poppy (*Papaver alboroseum*) grows in open areas, areas with sandy, gravelly, well-drained soils; mesic to dry alpine; and recently deglaciated areas (Goldstein et al. 2009). A small population of 20 plants was located on USFS land during field surveys conducted for the Project.

Other habitat with similar sandy, gravelly well-drained soils was surveyed in the study area and no other populations were found.

Alaska rein orchid (*Piperia unalascensis*) grows in dry open sites, tall shrublands in riparian zones, mesic meadows, and dry forests at low elevation to subalpine elevations (Goldstein et al. 2009). It is suspected to occur on the Chugach National Forest but was not observed during field surveys conducted for the Project. The study area does have dry open sites, tall shrubs in riparian zones, mesic meadows, and dry forests; thus, potential habitat is present within the study area.

Unalaska mist-maid (*Romanzoffia unalascensis*) typically grows on gravelly stream sides, rock outcrop ledges, rock crevices, and beach terraces (Goldstein et al. 2009). It is known to occur on the Chugach National Forest and suspected to occur on the Seward Ranger District. This species was not observed during field surveys conducted for the proposed Project. The study area does have gravelly streambanks, rock outcrop ledges and crevices; thus, potential habitat is present within the study area.

Dune tansy (*Tanacetum bipinnatum ssp. huronense*) grows on upper beach meadows and is suspected to occur on the Seward Ranger District (Stensvold 2013). This species was not observed during field surveys conducted for the Project. The study area does not contain upper beach meadows; thus, potential habitat is not present within the study area.

5 PRE-FIELD REVIEW OF EXISTING INFORMATION

A pre-field review of existing information concerning the plants listed above was conducted for the study area. This review included the Regional Forester's Sensitive Species List, Alaska Natural Heritage Program (AKNHP) database records, Conservation Assessment for the Pale Poppy (*Papaver alboroseum*) (Charnon 2007), and consultation with the Chugach National Forest Botanist. The Project proposal, details, maps, and air photos were reviewed.

PLANTS KNOWN Previously documented sightings of sensitive plants in or near the Project area include:

Species:	Location:
Pale poppy (<i>Papaver alboroseum</i>)	Ptarmigan Lake area
Eschscholtz's little nightmare (<i>Aphragmus eschscholtzianus</i>)	Near Palmer's Creek headwaters
Spotted lady's slipper orchid (<i>Cypripedium guttatum</i>) (historic) (Date of records search 4/2/2013 by Linda Kelley)	Portage Valley

PLANTS SUSPECTED The following general habitats (or plant communities) occur in the study area: coniferous forest, mixed coniferous/deciduous forest, forest edge, tall shrublands, low shrublands, rocky areas, rock outcrops, cliffs, gravel, talus, seeps, wet areas, riparian areas, streambanks, waterfalls, lake margins, ponds, marshes, sphagnum bogs, fens, heath, dry meadows, moist-wet meadows, and human disturbance areas.

The sensitive plants listed below are suspected to occur in the study area since the area contains appropriate habitat and is within the known or suspected range of the plants.

Spotted lady's slipper orchid
Pale poppy
Alaska rein orchid
Unalaska mist-maid

6 FIELD SURVEY FOR SENSITIVE PLANTS

An intuitive controlled type rare plant survey was conducted in the study area (Appendix B). Figure 3 shows the exact route that the botanist travelled on the ground. Plant Survey Field Forms and R10 TES Plant Element Occurrence field forms, completed according to protocol for the Alaska Region, are in the planning file for this Project and are available in Appendix 1b of the Grant Lake Hydroelectric Project Terrestrial Resources Study Report (KHL 2014). The survey took place at the appropriate time of year to identify all sensitive plant species.

The following sensitive plants were located within areas likely to be affected by Project activities:

Pale Poppy (*Papaver alboroseum*)

Dates of survey: July 18 – July 23, 2013

Study area surveyed by: Kathryn Beck, botanist, of Beck Botanical Services for McMillen, LLC.

Photographs of *Papaver alboroseum* in the study area were taken and are included in Appendix C, Appendix 1b of the Grant Lake Hydroelectric Project Terrestrial Resources Study Report (KHL 2014), and are on file with Kathryn Beck, Beck Botanical Services at: calypso@openaccess.org.

7 DETERMINATION OF EFFECTS

The Project has the potential to have direct, indirect, and cumulative effects on Sensitive plant species. These types of effects are summarized in the following sections.

1. Direct Effects

Direct effects are those that would occur immediately or soon after the implementation of the action.

Direct effects of the Project may include the following:

- Seasonal drawdown of 13 feet below the maximum lake elevation (the lake level naturally drops 11 feet below its maximum elevation)
- Water level fluctuations

2. Indirect Effects

Indirect effects are caused by the action and are later in time or farther removed in distance, but still reasonably foreseeable (50 CFR 1508.8). Indirect effects of the Project may include the following:

- Introduction and spread of invasive plants

- Increased recreation levels may lead to additional trampling in the vicinity of the Sensitive plant location
- Light and moisture level changes may occur in pale poppy habitat

3. *Cumulative Impacts*

Under NEPA, “cumulative impact” is defined as an impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (50 CFR 1508.7).

4. *Risk Assessment and Determination*

Determination of risks to populations of sensitive plants takes into account size, density, vigor, habitat requirements, location of the population, and consequence of adverse effect on the species as a whole within its range and within the National Forest. A risk assessment considers two factors: Factor 1) the consequence of adverse (or beneficial) effects on the population, and Factor 2) the likelihood or probability that these effects will occur. Ratings for risk assessment, levels of consequence, and levels of likelihood are described in the Appendix D. The direct, indirect, and cumulative effects of the proposed Project are used to determine the level of consequence and level of likelihood.

The following four sensitive plants are known or suspected to occur on the Seward Ranger District of the Chugach National Forest and have potential habitat present in the study area. For all of the assessed species, the No Action alternative would have no effect on sensitive species as a result of the proposed Project.

Spotted lady’s slipper orchid (*Cypripedium guttatum*) is historically known to occur on the Chugach National Forest and is suspected to occur on the Seward Ranger District.. This plant was not observed during field surveys conducted for the Project, although potential habitat is present within the study area.

Direct and Indirect Effects

The Project would have no effects to known populations of spotted lady’s slipper orchid. Although potential habitat is present, this species has not been found on the Chugach National Forest or in the study area and was not located during field surveys conducted for this Project. Potential impacts in the study area resulting from Project implementation could affect potential habitat for this species and thus potentially affect undetected populations. Direct effects would not occur as a result of Grant Lake Reservoir water level fluctuations and drawdown because these would occur in the zone below the natural maximum lake elevation. Indirect effects are possible, including the introduction and spread of invasive plant species in the drawdown zone and an increase in recreation related impacts. Because this species may grow in a variety of habitats, some of the potential impacts that would result from Project implementation have the potential to disturb potential spotted lady’s slipper orchid habitat and undetected individuals.

Cumulative Effects

Cumulative effects to this species due to past, present, and reasonably foreseeable projects are

possible. Past actions may have impacted undetected individuals or habitat in the study area. Similarly, current or future projects that involve habitat disturbance could affect undetected individuals or habitat. There are no past or current projects (e.g., timber harvest activities, hydroelectric projects, road construction, etc.) in the Grant Lake area. In addition, there are no planned projects in the area; thus, no cumulative impacts are expected as a result of implementing the proposed action. The overall risk to this plant on the Chugach National Forest as a result of this Project viewed in conjunction with other past, present, and reasonably foreseeable projects is **low** due to possible adverse effects to habitat or unknown populations.

Risk Assessment and Determination

The consequence of adverse effects from the Project is **low** to **moderate**, because the Project would result in impacts to habitat, primarily as a result of potential invasive plant introduction and increases in the recreational use of the area. The likelihood of adverse effects of this Project are **low** because the species was not detected during surveys, is not known to occur in the study area, and a Vegetation Management Plan would be implemented during the license term to minimize, monitor, and control the impacts of invasive plants to the study area. The overall risk to this plant is **low**; therefore, this Project may adversely impact undetected individuals, but it is not likely to result in a loss of viability in the study area, nor cause a trend toward federal listing.

Alaska rein orchid (*Piperia unalascensis*) is suspected to occur on the Chugach National Forest but was not observed during field surveys conducted for the Project. Potential habitat is present within the study area.

Direct and Indirect Effects

The Project would have no effects on known populations of Alaska rein orchid. Although potential habitat is present, this species is not known to occur in Chugach National Forest or the study area and was not located during field surveys conducted for this Project. Potential impacts to the study area resulting from Project implementation could affect potential habitat for this species and thus potentially affect undetected populations. Direct effects would not occur as a result of Grant Lake water level fluctuations and drawdown because these would occur in the zone below the natural maximum lake elevation. Indirect effects are possible, including the introduction and spread of invasive plant species and an increase in recreation related impacts. Because this species may grow in a variety of habitats, some of the potential impacts that would result from Project implementation have the potential to disturb potential Alaska rein orchid habitat and undetected individuals.

Cumulative Effects

Cumulative effects to this species due to past, present, and reasonably foreseeable projects are possible. Past actions may have impacted undetected individuals or habitat in the study area. Similarly, current or future projects that involve habitat disturbance could affect undetected individuals or habitat. There are no past or current projects (e.g., timber harvest activities, hydroelectric projects, road construction, etc.) in the Grant Lake area. In addition, there are no planned projects in the area; thus, no cumulative impacts are expected as a result of implementing the proposed action. The overall risk to this plant on the Chugach National Forest as a result of this Project viewed in conjunction with other past, present, and reasonably foreseeable projects is **low** due to possible adverse effects to habitat or unknown populations.

Risk Assessment and Determination

The consequence of adverse effects from the Project is **low to moderate**, because the Project would result in impacts to habitat, primarily as a result of potential invasive plant introduction and increases in the recreational use of the area. The likelihood of adverse effects of this Project are **low** because the species was not detected during surveys, is not known to occur in the study area, and a Vegetation Management Plan would be implemented during the license term to minimize, monitor, and control the impacts of invasive plants to the study area. The overall risk to this plant is **low**; therefore, this Project may adversely impact undetected individuals, but it is not likely to result in a loss of viability in the study area, nor cause a trend toward federal listing.

Unalaska mist-maid (*Romanzoffia unalascensis*) is known to occur on the Chugach National Forest and suspected to occur on the Seward Ranger District. This species was not observed during field surveys conducted for the proposed Project. Potential habitat is present within the study area.

Direct and Indirect Effects

The Project would have no effects to known populations of Unalaska mist-maid. Although potential habitat is present, this species is not known to occur in Chugach National Forest or the study area, and was not located during field surveys conducted for this Project. Potential impacts to the study area resulting from Project implementation could affect potential habitat for this species and thus potentially affect undetected populations. Direct effects would not occur as a result of Grant Lake water level fluctuations and drawdown because these would occur in the zone below the natural maximum lake elevation. Indirect effects are possible, including the introduction and spread of invasive plant species in the drawdown zone and an increase in recreation related impacts. Because this species may grow in a variety of habitats, some of the potential impacts that would result from Project implementation have the potential to disturb potential Unalaska mist-maid habitat and undetected individuals.

Cumulative Effects

Cumulative effects to this species due to past, present, and reasonably foreseeable projects are possible. Past actions may have impacted undetected individuals or habitat in the study area. Similarly, current or future projects that involve habitat disturbance could affect undetected individuals or habitat. There are no past or current projects (e.g., timber harvest activities, hydroelectric projects, road construction, etc.) in the Grant Lake area. In addition, there are no planned projects in the area; thus, no cumulative impacts are expected as a result of implementing the proposed action. The overall risk to this plant on the Chugach National Forest as a result of this Project viewed in conjunction with other past, present, and reasonably foreseeable projects is **low** due to possible adverse effects to habitat or unknown populations.

Risk Assessment and Determination

The consequence of adverse effects from the Project is **low to moderate**, because the Project could potentially result in impacts to habitat, primarily as a result of potential invasive plant introduction and increases in the recreational use of the area. The likelihood of adverse effects of this Project are **low** because the species was not detected during surveys, is not known to occur in the study area, and a Vegetation Management Plan would be implemented (during

the license term) to minimize, monitor, and control the impacts of invasive plants to the study area. The overall risk to this plant is **low**; therefore, this Project may adversely impact undetected individuals, but it not likely to result in a loss of viability in the study area, nor cause a trend toward federal listing.

Pale Poppy (*Papaver alboroseum*) grows in open areas, areas with sandy, gravelly, well-drained soils; mesic to dry alpine areas; and recently deglaciated areas (Goldstein et al. 2009). A small pale poppy population was located on USFS land during field surveys conducted for the Project. Other habitat with similar sandy, gravelly, well-drained soils was surveyed in the study area, and no other populations were found. In the Grant Lake sensitive plant study area, 20 pale poppy plants were growing on a semi-stabilized, sparsely vegetated, south-facing creek outwash area near the Grant Lake shore, on a cobble, sand, and gravel substrate (Appendix C). The population measured approximately 10 feet by 45 feet in size. The plants are a minimum of 8 feet away from and between 1 and 3 feet higher (704 – 707 feet in elevation) than the natural maximum lake elevation level of 703 feet.

The Grant Lake pale poppy population is located in the Floodplain Forest and Scrub vegetation type. Vegetation present at the site was an early successional community with shrubs, forbs, and graminoids. The population and habitat appear to be increasingly shaded due to natural vegetative succession. Dense Sitka alder and willow shrubs and seedlings dominate the site. Approximately half of the pale poppy plants in the population were growing in the shade of Sitka alder branches. The more densely shaded pale poppy plants were smaller and had fewer capsules than plants that were in less shade. If natural vegetation succession in the vicinity of the Grant Lake pale poppy site continues without natural disturbance (e.g., an avalanche or flood event), it is likely that the already small population would decline naturally in numbers and eventually disappear due to the species' requirement for open, well-drained habitat.

There is a historic cabin, a campsite, and two campfire rings with evidence of recent use on the small gravel bar where the pale poppy population is located. There was no visible evidence of trampling of plants, although plants were as close as 5 feet away from one of the campfire rings. The only invasive plant species present in the vicinity of the pale poppy population was common dandelion (*Taraxacum officinale*). Horned dandelion (*Taraxacum ceratophorum*), a native plant species, was observed in similar habitat on the lakeshore and may be mixed with the common dandelion at the site.

Direct and Indirect Effects

A small population of pale poppy, a USFS designated sensitive plant, is located on the shore of the USFS-owned portion of Grant Lake. No proposed Project infrastructure would be located on USFS land on Grant Lake; thus, there would be no direct loss from the following proposed activities: vegetation clearing for Project components, damage by machinery, soil disturbance, altered natural grading, or fill material placement. The pale poppy population would not be directly affected by the construction or maintenance of Project facilities. The Grant Lake seasonal water level drawdown (between 690 and 703 feet in elevation) would not directly affect areas above the normal high water elevation (703 feet in elevation), and thus would not have direct impacts to pale poppy plants (elevation between 704 and 707 feet) due to inundation. Water level fluctuations are not likely to affect plants because fluctuations would be below the

normal high water elevation level.

Indirect effects to sensitive plants are possible due to a seasonal 13-foot drawdown of Grant Lake (the lake level naturally drops 11 feet below its maximum elevation level). Potential indirect effects to plants from the drawdown of Grant Lake include introduction and spread of invasive plant species, light level changes, and moisture level changes. Indirect effects may also occur as a result of an increase in recreation in the area as a result of easier access to Grant Lake.

An indirect impact of Grant Lake level drawdown and fluctuations is that invasive plant species may spread into the drawdown zone between 690 and 703 feet in elevation, and subsequently onto adjacent upland areas, including pale poppy habitat. Currently, the only invasive plant species present in the vicinity of the pale poppy population is common dandelion.

Changes to light levels in the vicinity of the pale poppy population as a result of the Project are unlikely because plants establishing in the 13-foot drawdown zone would likely be low in stature and thus would not shade the pale poppy population. It seems unlikely that the drawdown would change the rate of natural vegetation succession of the upland plant community in the habitat of the population.

While Grant Lake water level drop to 690 feet in elevation during the early part of the growing season may create an overall drying effect to the pale poppy substrate, pale poppy should not be negatively affected as it is an upland species that is able to grow in very dry habitats.

A historic cabin, a campsite, and two campfire rings with evidence of recent use are currently located in close proximity to the pale poppy population. There was no visible evidence of trampling of plants when the population was surveyed in 2013, although plants were located as close as 5 feet away from one of the campfire rings. An indirect impact of potential increased recreational use of Grant Lake may be an increased potential for trampling and possible scorching of some pale poppy plants. In addition, easier recreational access and increased use of Grant Lake may spread invasive species into pale poppy habitat.

Because pale poppy habitat is discontinuously present around the perimeter of Grant Lake, potential indirect impacts resulting from Project implementation, as described above, could have the potential to disturb pale poppy habitat and undetected individuals.

A Vegetation Management Plan, to be implemented during the license term, describes measures to assess whether the Project is having negative impacts on the pale poppy population on USFS land, and establishes a framework for adaptive management to modify Project infrastructure and/or operations for sensitive plant management. It also describes measures to help minimize the establishment and spread of invasive plants in the Project area generally, as well as in the vicinity of the pale poppy population.

Cumulative Effects

Cumulative effects to this species due to past, present, and reasonably foreseeable projects are possible. Past actions may have impacted undetected individuals or habitat in the study area. Similarly, current or future projects that involve habitat disturbance could affect undetected

individuals or habitat. There are no past or current projects (e.g., timber harvest activities, other hydroelectric projects, road construction, etc.) in the Grant Lake area. In addition, there are no planned projects in the area; thus, no cumulative impacts are expected as a result of implementing the proposed action. The overall risk to this plant on the Chugach National Forest as a result of this Project viewed in conjunction with other past, present, and reasonably foreseeable projects is **low** due to possible adverse effects to habitat or unknown populations.

Risk Assessment and Determination

The consequence of adverse impacts from the Project on pale poppy is **moderate**, due to the potential indirect effects on individuals and habitat, small population size, and the potential for effects to unidentified individuals.

The likelihood of adverse effects of this Project on pale poppy are **moderate**, because a Vegetation Management Plan would be implemented during the license term with the goal of preventing adverse effects on the sensitive plant population. The Plan would monitor the effects of increased recreation, and monitor, minimize, and control the impacts of invasive plants in the Project area and in the vicinity of the pale poppy population.

The overall risk to this plant as a result of the Project is **moderate** since effects may occur to this plant's habitat, individuals may be indirectly affected, and additional undetected individuals may be present in the study area.

In summary, because the Project might result in a significant increased risk of loss of viability to the pale poppy population due to indirect effects, it is concluded that the Project may **result in a loss of viability of pale poppy in the Project area but would not cause a trend toward federal listing.**

8 ADDITIONAL MANAGEMENT RECOMMENDATIONS

The most likely negative impacts to the pale poppy population in the study area are non-Project effects resulting from natural vegetation succession and small population size. If natural vegetation succession in the vicinity of the Grant Lake pale poppy habitat continues without some sort of natural disturbance (e.g., an avalanche or flood event), it is likely that the currently small population would decline in numbers and eventually be extirpated. It is possible that the pale poppy population would not persist regardless of whether the Project is built.

KHL has developed a Final Vegetation Management Plan (VMP; KHL 2016b). It includes best management practices (BMPs) for construction and operation of the Project, revegetation, and measures for invasive plant monitoring, minimization, and control. In addition, there are measures specifically designed to protect and mitigate potential negative impacts of the Project on the sensitive plant population. These measures would help minimize impacts from recreational use, and invasive plant introduction and spread in the Project area generally, as well as in the pale poppy population specifically. Collectively, the protective measures implemented in the VMP would lower the overall risk level to the pale poppy as a result of the Project to **low to moderate** and would change the determination to **may adversely impact individuals, but not likely to result in a loss of viability in the Planning Area, nor cause a trend toward**

federal listing. If the pale poppy population does decline in numbers, it is just as likely that the decrease is a result of natural vegetation succession making its habitat less suitable.

If any previously undiscovered sensitive plants were encountered at any time prior to or during implementation of this Project, the population would be protected and any disturbance in the area containing the population would be avoided until appropriate consultation with the district or forest botanist/ecologist could occur. The appropriate USFS personnel would be notified immediately to evaluate the population and recommend avoidance or mitigation measures.

9 MONITORING

Guidelines for monitoring the pale poppy population are included in the VMP (KHL 2016 Attachment E-7 of this Exhibit E).

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Appendix A. Alaska Region Sensitive Plants, February 2009.

Common Name	Scientific Name	Occurrence	
		CNF	TNF
Vascular Plant			
Eschscholtz's little nightmare	<i>Aphragmus eschscholtzianus</i>	Y	S
Moosewort fern	<i>Botrychium tunux</i>	S	Y
Spatulate moonwort fern	<i>Botrychium spathulatum</i>	S	Y
Moonwort, no common name	<i>Botrychium yaaxudakeit</i>	S	Y
Edible thistle	<i>Cirsium edule</i> var. <i>macounii</i>		Y
Sessileleaf scurvygrass	<i>Cochlearia sessilifolia</i>	S	
Spotted lady's slipper	<i>Cypripedium guttatum</i>	Y	
Mountain lady's slipper	<i>Cypripedium montanum</i>	S	Y
Large yellow lady's slipper	<i>Cypripedium parviflorum</i> var. <i>pubescens</i>	S	Y
Calder's loveage	<i>Ligusticum calderi</i>	S	Y
Pale poppy	<i>Papaver alboroseum</i>	Y	S
Alaska rein orchid	<i>Piperia unalascensis</i>	S	Y
Lesser round-leaved orchid	<i>Platanthera orbiculata</i>		Y
Kruckeberg's swordfern	<i>Polystichum kruckebergii</i>		Y
Unalaska mist-maid	<i>Romanzoffia unalascensis</i>	Y	Y
Henderson's checkermallow	<i>Sidalcea hendersonii</i>		Y
Dune tansy	<i>Tanacetum bipinnatum</i> subsp. <i>huronense</i>	S	Y
Lichen			
Lichen, no common name	<i>Lobaria amplissima</i>	S	Y

Appendix B. Survey Types.

Survey type	Description
Field Check	The survey area is given a quick “once over” but the surveyor does not walk completely through the project area. The entire area is not examined.
Cursory	A Cursory survey is appropriately used to confirm the presence of species of interest identified in previous surveys or in the pre-field analysis. By its nature, the cursory survey is rapid, and does not provide in-depth environmental information. The entire area is traversed at least once. For example, stand condition as seen in aerial photography can be verified by a cursory survey. Also, a cursory survey can be used to determine if a plant population that had been previously documented at a site remains present or intact.
General	The survey area is given a closer review by walking through the area and its perimeter or by walking more than once through the area. Most of the area is examined
Focused (Intuitive Controlled)	The Focused, or Intuitive Controlled, survey is the most commonly used and most efficient method of surveying for TES plants. During pre-field analysis, potential suitable habitat is identified for each species of interest and the survey effort is focused in those areas. This method requires adequate knowledge of suitable habitat in order to accurately select the areas of focused searching. When conducting intuitive controlled surveys, an area somewhat larger than the identified suitable habitat should be searched to validate current suitable habitat definitions.
Random	Random surveys employ an undirected, typically non-linear, traverse through a project area. They are employed either when there is inadequate natural history information about a species to discern its suitable habitat and the surveyor is simply searching for occurrences, or when a target species is very abundant within a search area and the surveyor is attempting to make estimates of population parameters such as intra-patch variations in density or the occurrence of predation or herbivory. However, a stratified random survey may be more effective in these latter cases.
Stratified Random	This survey is most often used within known population areas of target species, or when an area to be surveyed is of unknown habitat suitability and is relatively large. Stratified random surveys employ a series of randomly selected plots of equal size within a project area that are each thoroughly searched for target species. When conducting a stratified random survey, it is important to sample an adequate number of plots that are of sufficient size if statistical inference regarding the survey area is desired (discussion of sample designs, see Elzinga, C., <i>et al.</i> 1998).
Systematic	Typically used in limited areas where the likelihood of occurrence of a target species may be evenly distributed throughout the survey area. Systematic surveys are often employed either within focused search areas (e.g., stratified random and intuitive controlled methods), or when a proposed project is likely to produce significant habitat alterations for species that are especially sensitive to the proposed activities.

Appendix C. Photos of the Grant Lake Pale Poppy Population.



Photo 1. Blooming pale poppy plant.



Photo 2. Pale poppy habitat, Grant Lake.



Photo 3. Pale poppy plants in the shade of Sitka alder branches, Grant Lake.



Photo 4. Pale poppy plants (adjacent measuring tape) near existing fire ring, Grant Lake.

Appendix D. Criteria for Risk Assessment.

Factor 1. Consequence of Adverse Effect From a Particular Activity

- LOW:** None, or questionable adverse effect on habitat or population. No cumulative effects expected.
- MODERATE:** Possible adverse effects to habitat or to population. Cumulative effects possible.
- HIGH:** Obvious adverse effects on habitat or population. Cumulative effects probable.

Factor 2. Likelihood of Adverse Effect From a Particular Activity

- NONE:** Activity will not affect habitat or population (no further risk assessment needed).
- LOW:** Activity controllable by seasonal or spatial restrictions and not likely to affect habitat or populations.
- MODERATE:** Activity not completely controllable or intense administration of project needed to prevent adverse effects on habitat or population. Adverse effects may occur.
- HIGH:** Activity not controllable and adverse effects on habitat or populations likely to occur.

Attachment E-5. Final Operation Compliance and Monitoring Plan

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Grant Lake Hydroelectric Project (FERC No. 13212)

Operation Compliance Monitoring Plan

Final

Kenai Hydro, LLC

April 2016

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Acronyms and Abbreviations

ARRC	Alaska Railroad Corporation
BMPs	Best Management Practices
cf	cubic feet
cfs	cubic feet per second
°C	degrees Celsius
ECM	Environmental Compliance Monitor
FERC	Federal Energy Regulatory Commission
HVAC	heating, ventilating, and air conditioning
INHT	Iditarod National Historic Trail
KHL	Kenai Hydro, LLC
kV	kilovolt
kW	kilowatt
MCC	motor control center
MP	Milepost
MW	megawatt
NAVD 88	North American Vertical Datum of 1988
OCMP or Plan	Operation Compliance Monitoring Plan
Project	Grant Lake Hydroelectric Project
RM	river mile
USGS	United States Geological Survey

Operation and Compliance Monitoring Plan

Final

Grant Lake Hydroelectric Project (FERC No. 13212)

1 INTRODUCTION

This document provides Kenai Hydro, LLC's (KHL's) proposed Operation Compliance Monitoring Plan (OCMP or Plan) for the Grant Lake Hydroelectric Project (Project or Grant Lake Project), Federal Energy Regulatory Commission (FERC) No. 13212. Activities associated with the proposed construction and operation of the Project include diverting water from an intake structure at Grant Lake for power generation and creating a bypass reach (Reach 5) of approximately 0.5 miles. The diversion of Grant Lake water would also alter the pre-Project streamflow hydrograph, but the proposed Project is being designed to maintain the seasonal water temperature regime of Grant Creek downstream of the powerhouse.

This OCMP has been developed to establish how instream flows would be provided to the bypass reach. Secondly, the monitoring of flows and temperatures in Grant Creek below the powerhouse would ensure that the Project operated within defined parameters established to protect aquatic resources. The development of this document was a collaborative process in which KHL has established key monitoring and operational parameters based on agency responses to the aquatic and water resources study reports describing studies conducted in 2013 as part of the Project licensing process (KHL 2014a, 2014b, and 2014c).

1.1. Location

The proposed Grant Lake Hydroelectric Project would be located near the community of Moose Pass, Alaska (population 219) in the Kenai Peninsula Borough, approximately 25 miles north of Seward, Alaska (population 2,693), and just east of the Seward Highway (State Route 9); this highway connects Anchorage (population 291,826) to Seward. The Alaska Railroad (ARRC) parallels the route of the Seward Highway, and is located adjacent to the Seward Highway in the Project area. Grant Lake is located in the mountainous terrain of the Kenai Mountain Range and has a normal water surface elevation of 703 feet North American Vertical Datum of 1988 (NAVD 88) and surface area of approximately 1,741 acres. A map showing the location of the Project is provided in Figure 1.

1.2. Project Description

The Grant Lake Project would consist of the Grant Lake/Grant Creek development, an intake structure in Grant Lake, a tunnel, a surge chamber, a penstock, a powerhouse, tailrace channel with fish exclusion barrier, access roads, a step-up transformer, a switchyard, and an overhead transmission line. The powerhouse would contain two Francis turbine generating units with a combined rated capacity of 5 megawatts (MW) with a maximum design flow of 385 cubic feet per second (cfs). The general proposed layout of the Project is shown in Figure 2.

1.2.1. Grant Creek Diversion

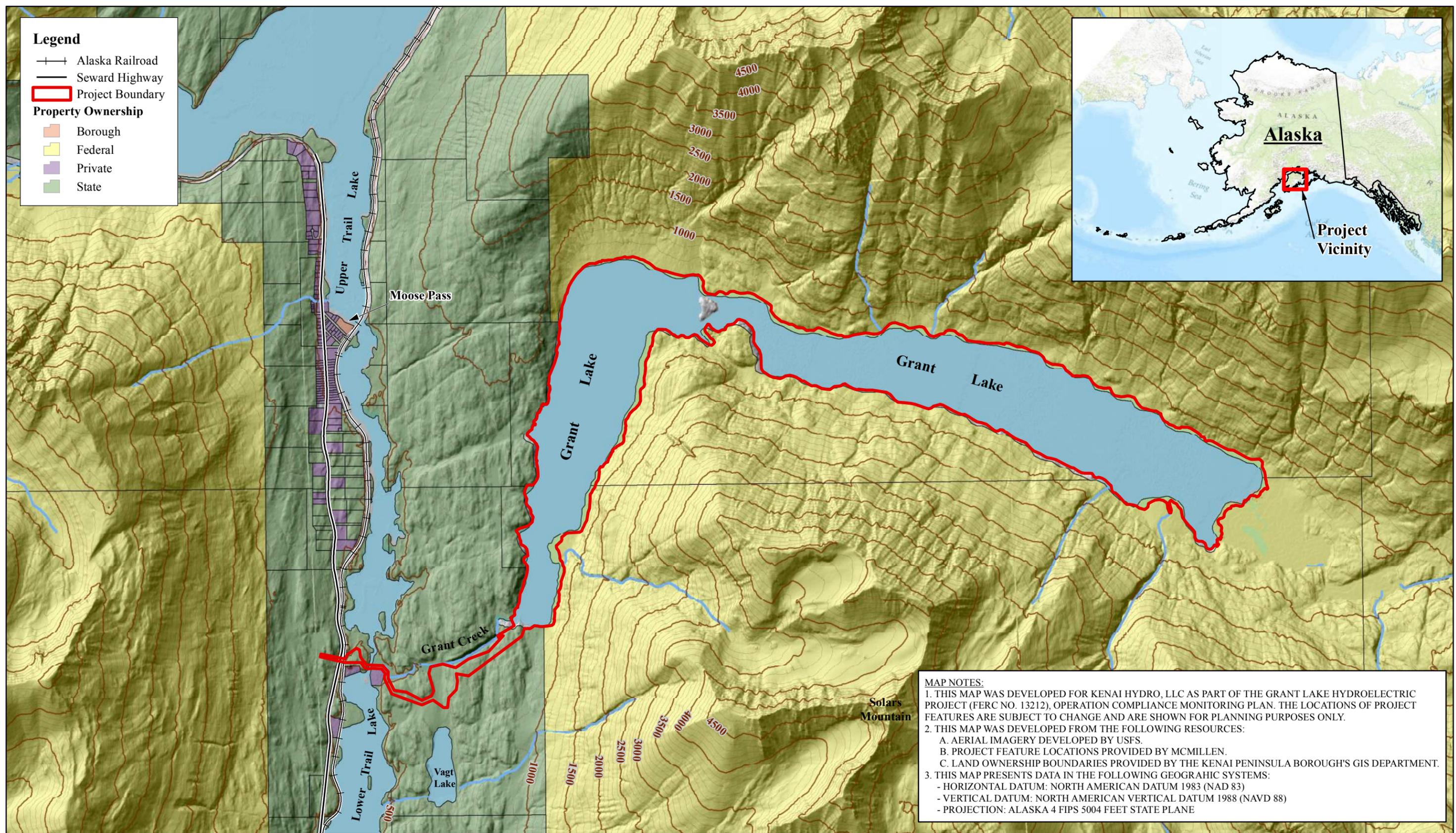
The proposed Project would consist of a reinforced concrete intake structure located east of the natural lake outlet adjacent to the south shore. No structural modifications would be made to the existing lake natural outlet. The Project would divert water up to a maximum of 395 cfs into the intake structure. Up to 385 cfs would flow to the powerhouse and up to 10 cfs would flow through the bypass pipe. When the lake level exceeds the natural outlet of 703 feet NAVD 88, a maximum of 395 cfs could be diverted into the intake structure. Flow in excess of 395 cfs would then pass over the natural outlet to Grant Creek.

1.2.2. Grant Lake Intake

The Project water intake would be a concrete structure located approximately 500 feet east of the natural outlet of Grant Lake and adjacent to the south shore. The intake structure would consist of a reinforced concrete structure extending from approximately elevation 675 feet NAVD 88 up to a top deck elevation of 715 feet NAVD 88. The structure would have an outside dimension of 38 feet by 20 feet. The structure would include intake trashracks, selective withdrawal intake gates with wire rope hoist, and a roller gate located on the water conveyance intake. The intake would be divided into three bays, each fitted with an intake gate to provide flexibility for delivering the full flow range of 63 cfs to 395 cfs. The gate position within the water column would be set to deliver the required water temperature to Grant Creek below the powerhouse. The roller gate would be 11 feet tall by 11 feet wide and fitted with a wire rope hoist lift mechanism. Electrical power would be extended from the powerhouse to the intake to operate the intake and isolation gates. Pressure transducers would be installed to monitor the water level at the lake as well as within the intake tower. An access bridge 16 feet wide would be installed from the lake shore out to the intake structure.

The intake would allow for drawdown of Grant Lake to elevation 690 feet NAVD 88, thereby creating approximately 18,791 acre-feet of active storage for the Project between elevations 703 feet NAVD 88 and 690 feet NAVD 88. The intake would be designed to allow the Project to draw water near the surface at various levels of storage, if deemed necessary to meet downstream temperature requirements. The invert of the intake would be at elevation 675 feet NAVD 88 to provide for adequate submergence to the tunnel.

A bypass pipe would extend from the intake structure to the base of the existing waterfall in Grant Creek. The installed pipe would be 900 feet long and approximately 18 inches in diameter, allowing the minimum flow ranging from 5 to 10 cfs to be released. A control gate would be located within the intake structure to regulate and monitor the bypass flow releases.



Legend

- +— Alaska Railroad
- Seward Highway
- ▭ Project Boundary

Property Ownership

- ▭ Borough
- ▭ Federal
- ▭ Private
- ▭ State



MAP NOTES:

1. THIS MAP WAS DEVELOPED FOR KENAI HYDRO, LLC AS PART OF THE GRANT LAKE HYDROELECTRIC PROJECT (FERC NO. 13212), OPERATION COMPLIANCE MONITORING PLAN. THE LOCATIONS OF PROJECT FEATURES ARE SUBJECT TO CHANGE AND ARE SHOWN FOR PLANNING PURPOSES ONLY.
2. THIS MAP WAS DEVELOPED FROM THE FOLLOWING RESOURCES:
 - A. AERIAL IMAGERY DEVELOPED BY USFS.
 - B. PROJECT FEATURE LOCATIONS PROVIDED BY MCMILLEN.
 - C. LAND OWNERSHIP BOUNDARIES PROVIDED BY THE KENAI PENINSULA BOROUGH'S GIS DEPARTMENT.
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 - VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88)
 - PROJECTION: ALASKA 4 FIPS 5004 FEET STATE PLANE

REV	DATE	BY	DESCRIPTION

Drawing Scale: 0 0.25 0.5 1 Miles

MCMILLEN, LLC

1401 SHORELINE DRIVE BOISE, ID 83702 OFFICE: 208.342.4214 FAX: 208.342.4216

Developed For:

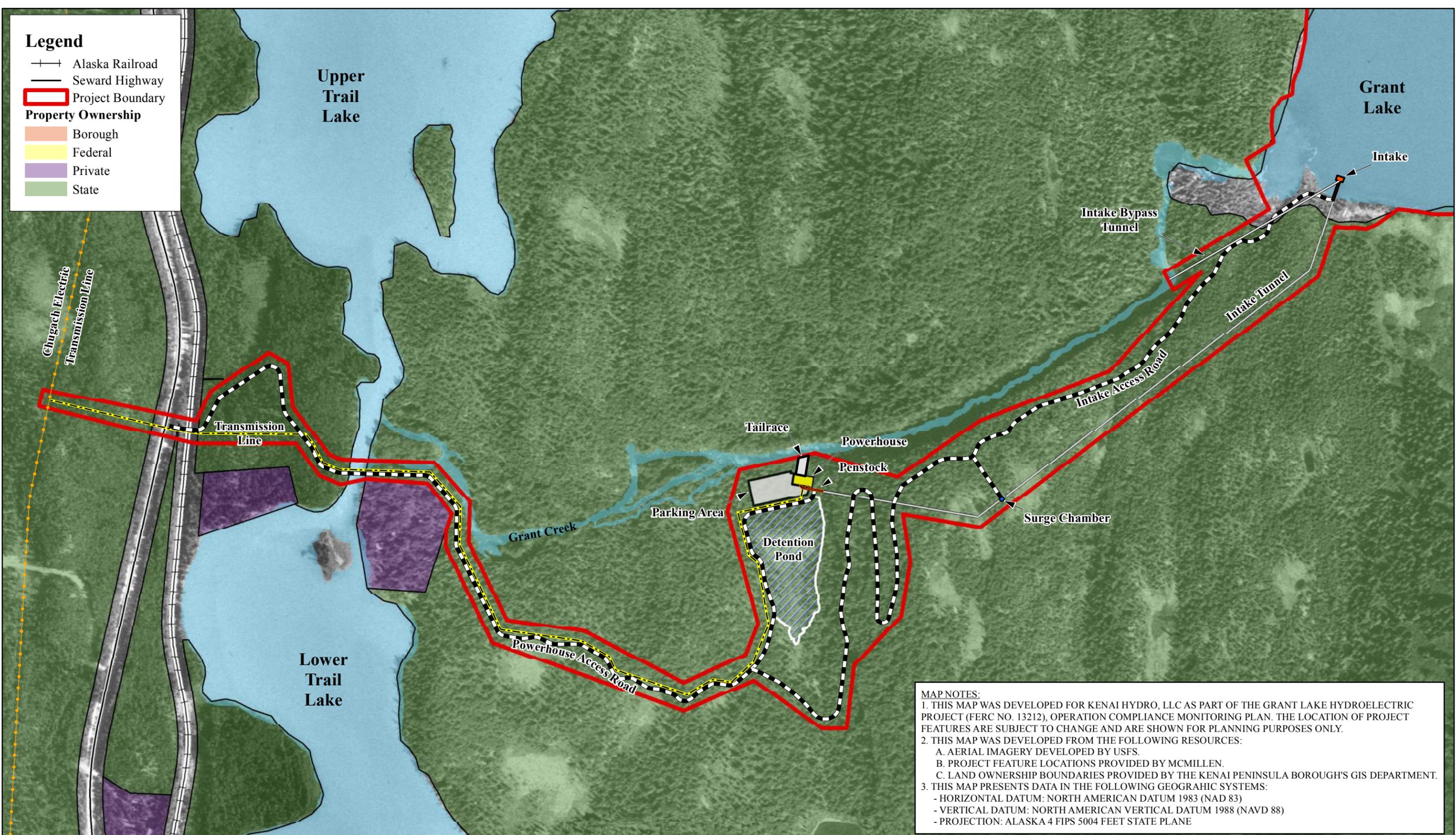
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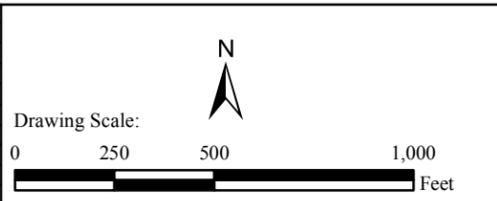
OPERATION COMPLIANCE MONITORING PLAN

Figure 1
Location Map of Project Vicinity

DESIGNED: Jake Woodbury	DRAWING
DRAWN: Jake Woodbury	
CHECKED: C. Warnock	
ISSUED DATE: 3/4/2016	SCALE: 1:35,000



REV	DATE	BY	DESCRIPTION



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OPERATION COMPLIANCE MONITORING PLAN

Figure 2
General Project Features And Facilities

DESIGNED	Jake Woodbury	DRAWING
DRAWN	Jake Woodbury	
CHECKED	C. Warnock	
ISSUED DATE	3/4/2016	
SCALE: 1:5,500		

1.2.3. Tunnel and Surge Chamber

The intake structure would connect to a tunnel extending to the Project powerhouse. The tunnel would be approximately 3,300 feet long with a 10-foot-horseshoe shape. Drill and shoot techniques would be used to construct the tunnel using an entrance portal at the powerhouse for access. The lower 900 feet of tunnel would be constructed at a 15 percent slope. This section of the tunnel would be concrete lined. The upper 2,400 feet of tunnel would be constructed at a 1 percent slope and would be unlined. This proposed arrangement provides a low pressure hydraulic conduit in the upper tunnel reaches suitable for an unlined tunnel. A surge chamber would be located at the transition between the two tunnel slopes. This chamber would be approximately 10 feet in diameter and would extend from the tunnel invert elevation of 675 feet NAVD 88 to the ground surface at approximately elevation 790 feet NAVD 88. The surge chamber would provide a non-mechanical relief for hydraulic transients that could occur if a load rejection occurred at the powerhouse. Rock anchors and shotcrete stabilization techniques would be used to stabilize the tunnel exposed rock surface where required. A rock trap would be located at the surge chamber location to collect dislodged rocks from the unlined tunnel section.

The surge chamber outlet at the existing ground elevation would be fitted with a pre-fabricated steel structure that would span the chamber. The steel frame structure would be covered with wire mesh, providing a fully screened structure capable of allowing air in for the surge chamber, while also excluding wildlife and the public from accessing the surge chamber. A removable roof structure would be located on the steel outlet, allowing access to remove material from the rock trap that would be located in the tunnel directly below the surge chamber. The surge chamber cover structure would be painted to blend into the natural forest environment. During operations, if/when a load rejection at the powerhouse occurs, the pressure wave and associated volume of water would be contained within the surge chamber. As the wave dissipated, the water level in the surge chamber would decrease until it matched the level in Grant Lake.

The tunnel would transition to a 6-foot-diameter steel penstock approximately 150 feet from the powerhouse. The transition section would consist of a welded concentric structure that transitioned from the 10-foot tunnel section to the 72-inch-diameter penstock. A steel liner would extend from the downstream tunnel portal approximately 300 feet into the tunnel. The liner would be installed within the exposed rock surface, with grout pumped behind the liner to provide an impermeable and structurally sound tunnel section. A similar steel tunnel liner section would be installed at the connection to the intake structure for a total distance of approximately 150 feet.

1.2.4. Penstock

A 72-inch-diameter steel penstock would extend 150 feet from the downstream tunnel portal to the powerhouse. The welded steel penstock would be supported on concrete pipe saddles along the penstock route. The penstock would bifurcate into two 48-inch-diameter pipes feeding each of the powerhouse turbines. The penstock, fitted with welded steel thrust rings, would be encased in concrete thrust blocks at the tunnel portal as well as at the powerhouse. These thrust blocks would be designed to resist the full hydraulic load associated with the Project operation. An interior and exterior coating system would be applied to the penstock, providing full

corrosion protection. An access manway would be provided on the exposed penstock section, allowing access for future inspection and maintenance.

1.2.5. Tailrace

The powerhouse draft tubes would connect to a tailrace channel located on the north side of the powerhouse structure. The draft tubes would extend from a low point elevation of approximately 509 feet NAVD 88 up to the tailrace channel invert elevation of 515 feet NAVD 88. The channel would continue to the south bank of Grant Creek. Each of the draft tubes would be gated, allowing the flow to be routed to the detention pond for spinning reserve operation. Isolation bulkheads would be provided, allowing dewatering of the draft tubes for inspection and maintenance of the turbine. The tailrace channel would be trapezoidal in shape with a bottom width of 43 feet, side slopes of 2H:1V, and a channel depth ranging from 13 feet at the powerhouse to 7 feet at the creek. A concrete structure would be constructed at the confluence of the channel and Grant Creek. A picket-style fish barrier would be placed on this concrete structure as well as provision for installation of stoplogs, allowing the tailrace channel to be dewatered for inspection and maintenance. The channel would be excavated from native material and lined with riprap to provide a long term stable section. A staff gage and pressure transducer would be placed in the channel to monitor the water level in the channel. A wildlife exclusion fence approximately 8 feet tall and constructed from steel posts with heavy gage woven wire would be installed at the tailrace channel. The fence would be located at the top of the bank on both sides of the tailrace channel. The fence would also cross the top of the tailrace barrier access deck, providing full exclusion of wildlife from the tailrace channel.

1.2.6. Tailrace Detention Pond

An off-stream detention pond would be created to provide a storage reservoir for flows generated during the rare instance when the units being used for spinning reserve were needed for the electrical transmission grid. To prevent a sudden increase in the water surface levels of Grant Creek as a result of the increased flows generated, the additional powerhouse flows would be diverted into the detention pond and then released slowly back into Grant Creek. The discharge associated with a spinning reserve event would be dispersed via the tailrace channel that flows into Grant Creek. The detention pond would be located immediately south of the powerhouse, and would be bordered by the access road. Storing additional powerhouse flows up to an elevation of 521 feet NAVD 88, the detention pond would have a capacity of approximately 15 acre-feet and a surface area of approximately 3.6 acres. The powerhouse would contain two generating units. The turbines would discharge into a splitter box located at the outlet of the turbine draft tubes. Isolation gates would be provided to route the turbine discharge to the detention pond when a unit was brought online to support a spinning reserve demand. Typically, when a turbine was brought online for spinning reserve, the turbine would operate for an average period of 15 to 20 minutes to meet the instantaneous demand. For example, assuming one turbine was allocated to spinning reserve, the turbine would divert the full 192.5 cfs of flow into the detention pond with a total of 173,250 cubic feet (cf) discharged during a 15-minute period. Once the spinning reserve demand was met, the unit would be brought offline and the detention pond flow released slowly back into the powerhouse tailrace.

1.2.7. Powerhouse

The powerhouse would be located on the south bank of Grant Creek immediately west of the downstream tunnel portal and adjacent to the detention pond. The powerhouse would lie at the top of the existing hill slope that occurs near the mouth of the Grant Creek canyon (Reach 5). This location was selected based on the presence of an existing rock outcrop that would provide an effective downstream portal location for the tunnel. The powerhouse would be located south of Grant Creek. A natural lower area is located immediately south of the proposed powerhouse site. The entire site is forested with areas of open meadow. The powerhouse concrete foundation would tie into the existing hillside with the majority of the powerhouse structure located on relatively flat ground. The powerhouse would consist of a concrete foundation and a pre-engineered metal building superstructure. The building would be approximately 100 feet long (east to west) and 50 feet wide (north to south). The penstock would tie into the powerhouse on the south side and the tailrace channel on the north side of the building. The building floor would be set at approximately elevation 523 feet NAVD 88 and the centerline of the turbine runner at elevation 526 feet NAVD 88. The draft tube floor would be set at elevation 509 feet NAVD 88 with an operating tailwater inside the draft tubes ranging from 518.0 feet to 519.3 feet NAVD 88.

Two horizontal Francis type turbine/generator units with a rated total capacity of 5,000 kilowatt (kW) would be housed in the powerhouse structure. The powerhouse flow would range from a maximum of 385 cfs to a minimum of 58 cfs with each turbine operating flow ranging from 192.5 cfs to 58 cfs. Associated mechanical and electrical equipment would include hydraulic power units, turbine isolation valves, penstock drain, utility water system, lube oil system, oil water separator, battery system, and heating, ventilating, and air conditioning (HVAC) system. A control room housing the motor control center (MCC), communication rack, fiber optic panels, computers, and related equipment would also be provided. The Project switchgear would be located within the powerhouse. A standby generator, transformer, and fused pad-mounted switch assembly would be mounted on an enclosed switchyard located on the south side of the powerhouse. Dewatering pumps would be provided to support dewatering of the turbine draft tubes. A 30-ton bridge crane would be provided for equipment maintenance. The crane would travel on rails mounted on the steel building support columns. An energy dissipation valve would extend off the penstock and provide bypass flows into the Project tailrace.

1.2.8. Transmission Line/Switchyard

An overhead 115-kV transmission line would extend from the powerhouse to the existing 115-kV transmission line located on the west side of the Seward Highway. In addition to overhead transmission structures, the facilities would include a switchyard at the powerhouse consisting of a 115-kV fused pad-mounted disconnect switch and a pad-mounted 115-kV GSU transformer. The transmission line would run from the powerhouse parallel to the access road where it would intersect Chugach Electric's transmission line. The interconnection would have a pole-mounted disconnect switch.

Wooden poles would be designed as tangent line structures on about 250-foot centers. Design of the line would also incorporate the latest raptor protection guidelines. Collision avoidance devices would be installed on the line at appropriate locations to protect migratory birds.

1.2.9. Appurtenant Facilities

The following pertinent mechanical and electrical equipment would be applicable to the Project:

- Intake selective withdrawal intake gate
- Intake trashrack system
- Intake roller gate used to isolate the tunnel and downstream generation facilities
- Control gate located on the bypass pipeline
- A 30-ton bridge crane in the powerhouse
- Pumps located in the powerhouse used to dewater the draft tubes
- Pressure transducers located throughout the Project used to monitor the water level in the reservoir, tunnel, and tailrace, as well as pressures in the tunnel and penstock
- Security cameras at the intake and powerhouse
- Sanitary waste holding tank or septic system at the powerhouse
- A power line extending from the powerhouse to the intake to supply electrical power to the gates and trashrack
- Temperature instrumentation at the intake structure and at various stream locations to monitor water temperature

This equipment, along with other identified miscellaneous mechanical and electrical equipment, would be developed during the final design and included in the construction documents.

1.2.10. Access Roads

The Project would require an access road to both the powerhouse located near the base of the Grant Creek canyon and to the intake at Grant Lake. The access road would be used to construct the Project and afterwards, to maintain the facilities. It is anticipated that the powerhouse would be visited approximately once a month and the intake visited approximately once a month beginning just after the ice melts and continuing until just before freeze up. The powerhouse access road would be maintained year around. The intake access road would not be maintained in winter.

The 24-foot wide access road would tie into the Seward Highway at approximately MP 26.9. The route would travel eastward to cross Trail Lakes at the downstream end of the narrows between Upper and Lower Trail lakes and then continue eastward to the powerhouse. This route would be approximately one mile long. It would cross the ARRC tracks near an existing railroad crossing for a private driveway. The road would cross the narrow channel connecting Upper and Lower Trail lakes with an approximately a 110-foot-long single lane bridge. This bridge is proposed as a clear span with the west abutment located on bedrock and the east abutment on fill. The proposed route would avoid cuts and travel along the base of some small hills on the south side of Grant Creek to the powerhouse. This proposed access road would have one 90-degree crossing of the proposed reroute of the commemorative Iditarod National Historic Trail (INHT) easement.

The intake access road would be approximately one mile long, beginning at the powerhouse. The road would ascend a 230-foot bluff to reach the top of the southern rim of the Grant Creek canyon. A series of road switchbacks would be required to maintain a road grade of less than 8 percent. The road would then generally follow the southern edge of the canyon until it descends to Grant Lake. A small parking area and turn-a-round area would be provided at the intake structure. A 16-foot wide bridge would extend from the bank out to the intake structure.

The road would be gravel with a 16-foot top width. Maximum grade would be 8 percent. Periodic turnouts would be provided to allow construction traffic to pass. Fifty-foot radius curves would be used to more closely contour around the small steep hills of bedrock to limit the extent of the excavation and the height of the embankments.

1.2.11. Project Operations

Once constructed, the Project would operate to generate power throughout the calendar year based on inflow, available storage, lake elevation, and minimum flow requirements in Grant Creek. The lake would operate from the natural Grant Lake outlet elevation of 703 feet NAVD 88 down to a minimum lake elevation of 690 feet NAVD 88. The lake would be drawn down in the winter months utilizing a combination of Grant Creek inflows and stored water to meet the instream flows in the bypass reach while also maintaining power production. Water flow predictions would be used to estimate snowpack and the corresponding runoff volume. The Project operation would then be tailored to maximize winter power production while also ensuring that the lake refilled to elevation 703 feet NAVD 88.

2 PROJECT OPERATIONAL AND MONITORING REQUIREMENTS

2.1. Background and Objectives

Following a series of natural resource studies conducted in 2013 and consultation with stakeholders, certain physical conditions (i.e., instream flows and water temperature) were discussed as critical to minimizing impacts to biological and water resources. Key study results as well as generic operational expectations were the following:

- Established and quantified the relationship between Grant Creek flow volumes and habitat so that Project operations shall not substantially diminish spawning and rearing activity for resident and anadromous fish species.
- Grant Lake temperatures at shallow depths of 0.5 meters and 1.5 meters most closely resemble water temperatures in Grant Creek. Project waters should be diverted from these depth strata so that the thermal regime of Grant Creek matches pre-Project conditions.

The objective of the OCMP is to identify comprehensive and adaptive operational scenarios that would provide recommended instream flow volumes and water temperature regimes for Grant Creek, to meet compliance with FERC License articles. The OCMP outlines the responsibilities of KHL to properly release, monitor, and report instream flows and water temperatures affected by the Project while addressing agency concerns. The OCMP also outlines the necessary

procedures to be taken during potential emergency situations, Project maintenance, and non-compliance events.

2.2. Proposed Project Operation

KHL proposes to utilize 18,790 acre-feet of net storage for power production. Waters diverted or spilled from Grant Lake would follow one of three outflow route options. Waters to be utilized for power production would be conveyed to the powerhouse via an intake, tunnel, and penstock along the southeastern bank of Grant Creek. The powerhouse shall return all water to the alluvial reach of Grant Creek where it shall flow downstream approximately 0.5 miles to its natural sequence of Trail Lake Narrows, Lower Trail Lake, Trail River, and Kenai Lake. The second flow route shall divert Grant Lake water to the base of the bedrock waterfall at the outlet of Grant Lake and serve as the primary source for bypass flow volumes in the bypass reach. After entering river mile (RM) 1.0 of the Grant Creek system, bypass flows would progress down the 0.5-mile bypass reach before converging with waters at the tailrace of the Grant Lake powerhouse. A third routing option occurs when lake storage is full and inflows to Grant Lake exceeded the plant capacity of 385 cfs and bypass flow requirements of 5–10 cfs (seasonally dependent). Under these conditions, water shall be spilled over the natural Grant Lake outlet and be conveyed the entire 1.0-mile length of the Grant Creek channel.

The Project proposes to annually vary reservoir levels by 13 feet. Typical full pool elevations and volumes of 703 feet NAVD 88 and 260,120 acre-feet would be maintained, while minimum lake levels would be decreased from natural conditions to an elevation of 690 feet NAVD 88 and 241,329 acre-feet.

Details of the annual reservoir level fluctuation for Grant Lake are summarized below:

- January 1-May 15: Lowering of reservoir levels (drafting) for power production and bypass flows. Outflow exceeds inflow.
- May 15-May 31: Maintain minimum reservoir level of 690 feet NAVD 88. Only inflow to Grant Lake available for power production and bypass flows.
- June 1-August 15: Raising of reservoir levels (filling). Inflows exceed outflow for power production and bypass flows.
- August 16-October 31: Maintain maximum reservoir level of 703 feet NAVD 88. Only inflow to Grant Lake available for power production and bypass flows.
- November 1-December 31: Lowering of reservoir levels (drafting) for power production and bypass flows. Outflow exceeds inflow.

2.3. Proposed Grant Lake Level Requirements

The Project does not intend nor have the infrastructure to raise lake elevations above 703 feet NAVD 88. The Project would be required to ensure that lake levels did not drop below the proposed minimum elevation of 690 feet NAVD 88. Seasonal reservoir elevations shall adhere to the general guidelines summarized in Section 2.2.

2.4. Proposed Grant Creek Instream Flow Requirements

KHL held a collaborative workshop in Anchorage, Alaska on July 8, 2014, during which the following instream flow regime for the bypass reach of Grant Creek (RM 0.5-1.0) was proposed.

Dates	Diversion Flow to Bypass Reach
January 1 – July 31	5 cfs
August 1 – September 7	10 cfs
September 8 – October 31	7 cfs
November 1 – December 31	5 cfs

Water used for power production would be returned to Grant Creek at the downstream end of the Canyon Reach (RM 0.5). For the tailrace reach (RM 0.0-0.5), peak flow events would be reduced in the summer while winter flows would be slightly elevated from pre-Project conditions. From approximately August 16 through October 31, inflow volumes would match outflows downstream of the powerhouse. Figure 3 displays the annual hydrograph of the proposed Project and pre-Project flow volumes. Although there would be no specific instream flow requirements for the tailrace reach, flows would be monitored to assess the deviation from pre-Project conditions.

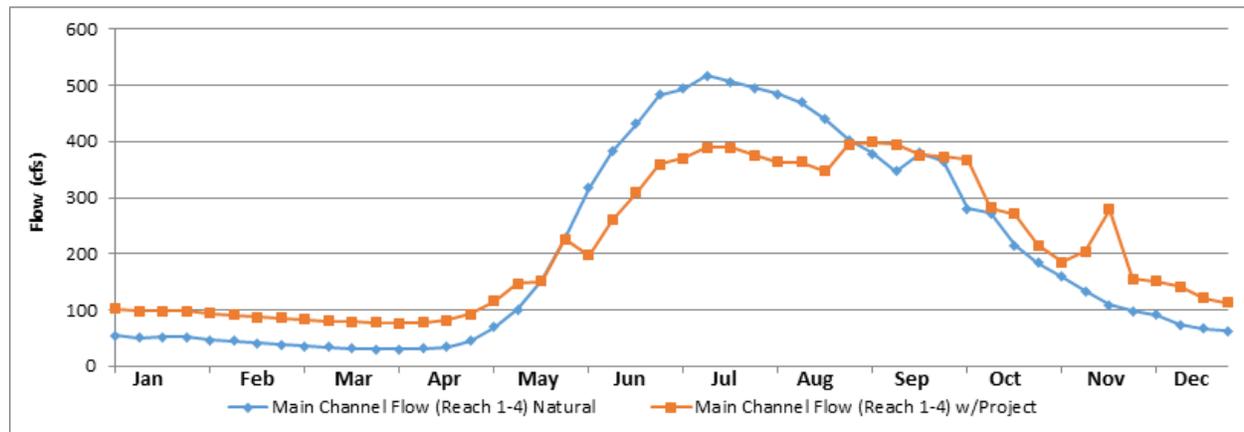


Figure 3. Grant Creek annual flow hydrographs tailrace reach - natural vs. proposed Project.

2.5. Proposed Grant Lake and Grant Creek Temperature Requirements

The correlation of Grant Creek stream temperatures with the shallow depths of Grant Lake are detailed in the Water Resources Study Report (KHL 2014c) and summarized in Table 1. Based on these data, the Project would divert waters from Grant Lake to the bypass reach or the powerhouse at either 0.5 m or 1.5 m below the water surface elevation of Grant Lake. KHL would monitor temperature at selected locations throughout the Project area to ensure that monthly lake and creek temperatures agreed within 1 degree Celsius (°C).

Table 1. 2009-2014 mean monthly temperatures at Grant Lake depths of 0.5 m and 1.5 m and Grant Creek.

Month	Average Temperature (°C)		
	Grant Lake 0.5 m	Grant Lake 1.5 m	Grant Creek
January	1.0	2.2	1.2
February	1.2	2.4	1.5
March	1.4	2.6	1.6
April	1.4	2.8	1.9
May	4.8	5.2	5.1
June	9.3	8.7	8.9
July	11.9	11.4	11.5
August	12.3	12.0	12.2
September	10.8	10.7	10.4
October	6.9	6.9	6.8
November	4.0	4.1	3.6
December	1.3	2.0	1.0

Notes:

1 Shaded cells indicate best correlation of lake and stream temperatures.

3 LAKE LEVEL FLOW AND TEMPERATURE MONITORING

The location of all proposed monitoring stations within the Project boundary are summarized in Figure 4. Additional details of each monitoring station are provided in the sections below.

3.1. Level and Temperature Monitoring – Grant Lake

At the Grant Lake intake structure, KHL would install appropriate instrumentation to monitor water surface elevations (Station RL-1). Utilizing this information, the real-time control system would calculate reservoir stage measurements. KHL would also install water temperature monitoring instrumentation to detect and record reservoir temperatures upstream of the intake structure as well as inside of the intake structure (Stations RT-1 and IT-1). The intake structure instrumentation information would be transmitted to the control system located in the powerhouse via a fiber optic link. The powerhouse would be linked to the KHL Dispatch Center via a telemetry system (e.g., landline, cellular, satellite) to transmit appropriate supervisory control and data acquisition signals.

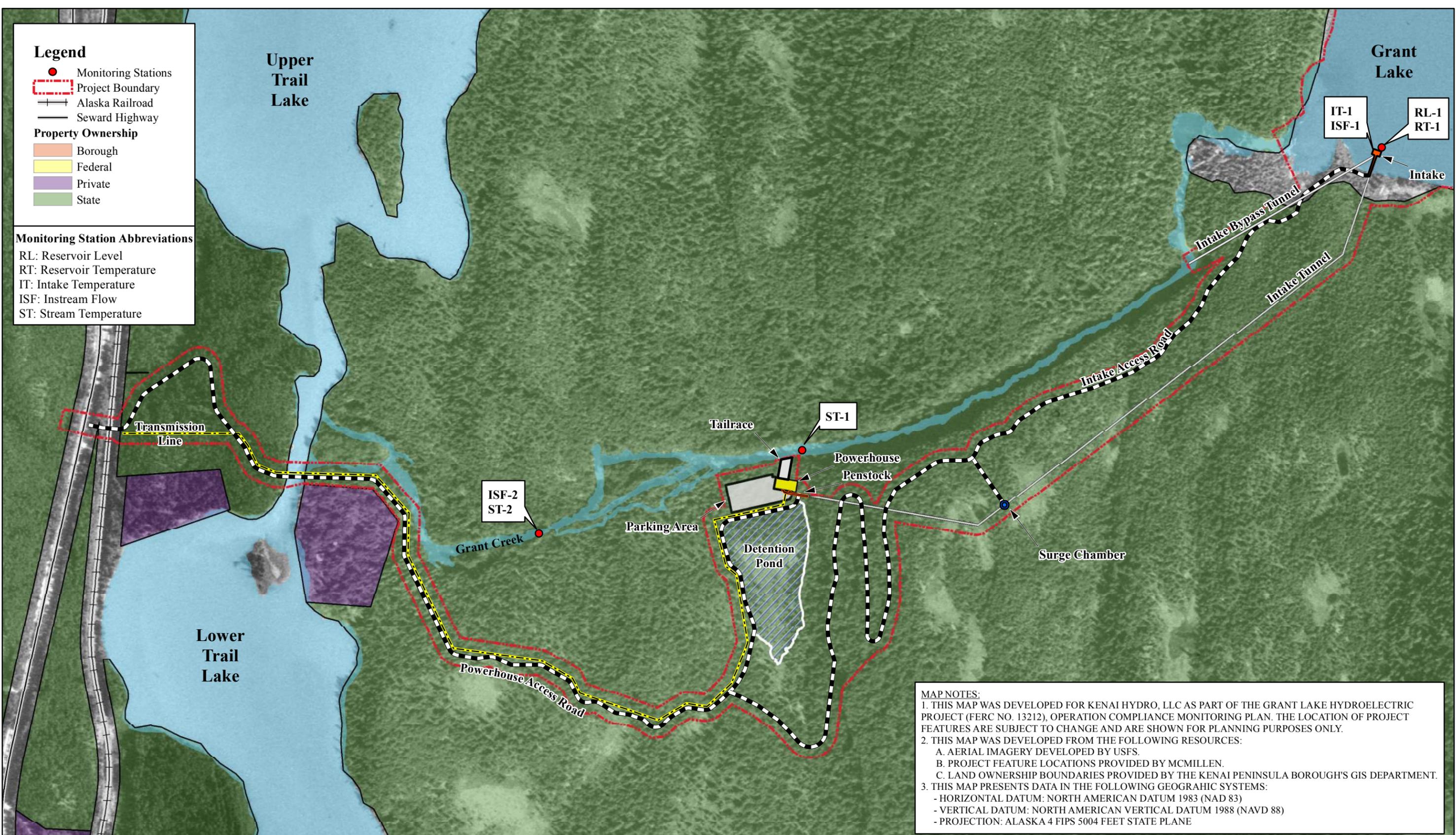
The control system would continuously monitor Grant Lake water temperatures. The water temperatures at this site would be used, in combination with temperature data from the lower bypass reach of Grant Creek (Station ST-1), to meet temperature criteria described in Section 2.5. Lake level and associated water temperature data would be collected for the duration of the licenses term. All data would be summarized and documented as part of the annual compliance report/meeting process described in Section 4. If deviations in temperature of more than 1 °C were documented, KHL would determine the reason, and if it was determined to be the result of infrastructural or operational considerations as opposed to anomalous natural conditions, the stakeholder group associated with the Annual Compliance Report would be consulted during the

annual process and modifications to the operational regime would be agreed upon to confirm that temperature conditions were adhered to.

3.2. Flow and Temperature Monitoring – Grant Creek Bypass Reach

Measurements of flow volumes at the bypass pipe would start at commencement of Project operations and would ensure compliance with the minimum required flow releases of 5–10 cfs (Station ISF-1). Diversion flows would be measured at the intake structure utilizing a telescoping weir to provide flow volumes to the bypass tunnel. The overflow weir would be an accurate flow measurement system that would also allow for adjustments in bypass flows to be instantaneously quantified.

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Legend

- Monitoring Stations
- ▭ Project Boundary
- +— Alaska Railroad
- Seward Highway

Property Ownership

- Borough
- Federal
- Private
- State

Monitoring Station Abbreviations

RL: Reservoir Level
 RT: Reservoir Temperature
 IT: Intake Temperature
 ISF: Instream Flow
 ST: Stream Temperature

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REV	DATE	BY	DESCRIPTION

N

Drawing Scale:

0 250 500 1,000

Feet

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Developed For:

HEA Homer Electric Association, Inc.
A Touchstone Energy Cooperative

GRANT LAKE HYDROELECTRIC PROJECT - FERC PROJECT NO.13212

OPERATION COMPLIANCE MONITORING PLAN

Figure 4

Proposed Lake Level, Streamflow, and Temperature Monitoring Stations in the Project Vicinity

DESIGNED	Jake Woodbury	DRAWING
DRAWN	Jake Woodbury	
CHECKED	C. Warnock	
ISSUED DATE	1/26/2016	
SCALE:	1:5,000	

Temperatures would be monitored at the downstream end of the bypass reach (Station ST-1). Measurements of Grant Creek water temperatures would be taken every hour to calculate mean daily temperature values. In addition to internal or local storage of data, the temperature instrumentation would be connected to the powerhouse control system. The water temperatures at ST-1 would serve as the location that establishes reference temperatures. All diverted water from Grant Lake would be adjusted to meet temperature criteria described in Section 2.5 – Proposed Grant Lake and Grant Creek Temperature Requirements. Instream flow and associated water temperature data would be collected for the duration of the license term. All data would be summarized and documented as part of the Annual Compliance Report process described in Section 4. If inconsistencies associated with KHL’s instream flow or water temperature requirements were documented, KHL would determine the reason and if it was determined to be the result of infrastructural or operational considerations as opposed to anomalous natural conditions, the stakeholder group associated with the Annual Compliance Report would be consulted during the annual process and modifications to the operational regime would be agreed upon to confirm that temperature conditions were adhered to.

3.3. Flow and Temperature Monitoring – Grant Creek Tailrace Reach Flow

As part of the 2013 licensing studies, KHL installed a United States Geological Survey (USGS)-approved stage recorder to monitor streamflows. The stream gage is at the same location as USGS Gage No. 15246000, which was operational from 1947 to 1958. The current stream gage was serviced and calibrated from April 4, 2013 to February 24, 2015, extending the period of record and establishing a reliable stage-discharge rating equation (KHL 2014c). The gage is equipped with a self-contained bubbler system utilizing an H-3553 pump transducer and an H-500XL data recorder manufactured by Design Analysis Associates, Inc. Once the powerhouse was built and the Project commissioned, this system would add a thermistor to the H-500XL data recorder and connect into the powerhouse control system. Measurements of Grant Creek stage and temperature in the tailrace reach would be collected every 15 minutes to summarize mean daily flow and temperature values. Photos of the existing stream ISF-2 stream gage are provided in Figure 5. The Grant Creek stream gage would be operated and maintained for the duration of the license term. All streamflow data would be summarized and documented as part of the Annual Compliance Report process described in Section 4.



Figure 5. Monitoring equipment at Station ISF-2.

3.4. Failsafe Provisions

Failsafe provisions would be provided in Project design and operation to ensure that flows were provided continuously to Grant Creek during maintenance periods and any emergency Project shutdowns.

1. **Bypass flow:** The instream flow release pipe would be continuously open to appropriately accommodate the required instream flow. An 18-inch-diameter pipeline would be installed using directional bore techniques from the new intake structure in the lake to the base of the falls. An overflow weir and control gate would be installed in the intake to allow controlled release of water from the reservoir to the base of the falls. The water would be pulled from the surface of the lake to maintain consistent temperature conditions at the base of the falls and within the bypass reach. The amount of flow released would be controlled through the overflow weir in the intake where accurate flow measurement could be accomplished. Section 4.6 (Aquatic Resources) of the Exhibit E for the Grant Lake Project Final License Application (KHL, 2016) goes into detail with respect to fish presence/periodicity and habitat availability in the bypass reach (Reach 5). Specifically, Section 4.6.3.2 defines the instream flow regime proposed by KHL to insure continued connectivity and utilization of the minimal habitat in this reach.
2. **Powerhouse:** An energy dissipation bypass valve would be provided at the powerhouse to allow flow discharge in the event that the powerhouse was not connected to the transmission grid or an outage was required for the turbine/generator equipment. The energy dissipation valves would discharge directly into the Project tailrace, providing flow to Grant Creek. The energy dissipation bypass valve would open automatically to maintain flows in Grant Creek as the turbine was brought offline during an emergency operating procedure. For normal startup and shutdown operation, the powerhouse bypass valve would be opened in step with the turbine shutdown to maintain the required flow regime in Grant Creek.

To support spinning reserve events, each turbine would discharge into its own splitter box. A series of gates would allow current operational flows to discharge to the Tailrace to maintain adequate flows in Grant Creek and excess spinning reserve flows to divert to the detention pond. The excess water in the detention pond would then be slowly drained into Grant Creek via the tailrace.

3.5. Schedule for Installing, Maintaining, and Collecting Flow and Temperature Instrumentation

All temperature and water level monitoring equipment would be installed during Project construction and would be operational before the Project operations commenced. Maintenance and calibration of all monitoring equipment would occur per manufacturers' specifications to ensure instrumentation accuracy and function. All monitoring stations would operate for the life of Project.

4 REPORTING AND COORDINATION

All Plan activities in a given year would be documented as part of an annual compliance reporting/meeting process as described in Exhibit E. Every winter, KHL would convene a global meeting with all stakeholders and FERC to review all management plans and related monitoring efforts associated with construction and subsequent operation of the Project. It is during these annual proceedings when results would be documented, identified issues would be discussed, and modifications to plans and/or additional measures would be adopted to ensure that minimal impact to the natural environment was occurring as a result of Project construction and operations. With respect to this Plan, primary topics discussed during the annual compliance reporting/meeting process would include the following:

- A summary of the actions that KHL implemented during the previous calendar year related to:
 - Grant Lake elevations and water temperature
 - Grant Creek bypass reach instream flows and water temperatures
 - Grant Creek tailrace reach streamflows and water temperatures
- A discussion of any substantial differences between the actions provided in this Plan and the actions that KHL implemented, including explanations for any substantial differences.
- Results of any surveying that occurred during the previous calendar year, conclusions that KHL draws from the monitoring results, and any change to this Plan that KHL proposes based on the monitoring results.
- Stakeholder input with respect to any necessary modifications to the existing Plan.

The draft Annual Compliance Report would be revised to incorporate stakeholder comments and update modified plans for the following year's natural resource implementation and compliance efforts. The Annual Compliance Report would be filed with FERC by April 1 of each year and copies would be made available to the stakeholders and FERC via the Internet.

All monitoring efforts during construction activities would be managed by KHL's on-site Environmental Compliance Monitor (ECM). This person would be responsible for ensuring that all procedural aspects of the natural resource and construction management plans as well as general Best Management Practices (BMPs) for construction efforts were being adhered to. This person would be the lead in confirming that all methods and associated data collection activities were occurring as scheduled and all associated data was appropriately entered and reported on. The ECM would be the primary, on-site contact for both confirmation of appropriate activities with respect to monitoring during construction and the conduit for communicating any issues that may be occurring to ensure timely resolution.

If water temperature monitoring results in documenting a monthly lake and creek temperatures difference in excess of 1 °C, requisite stakeholders will be immediately notified and collaborated with to determine appropriate actions for identifying the cause of the event and if Project related, to minimize the potential for future impact.

5 REFERENCES

- Hunter, M.A. 1992. Hydropower flow fluctuations and salmonids: a review of the biological effects, mechanical causes, and options for mitigation. State of Washington Department of Fisheries Technical Report No. 119. Olympia. 46 pp.
- KHL. 2014a. Grant Lake Hydroelectric Project (FERC No. 13212). Aquatic Resources Study – Grant Creek, Alaska. Fisheries Assessment Report. Prepared by BioAnalysts, Inc for Kenai Hydro, LLC. June 2014.
- KHL. 2014b. Grant Lake Hydroelectric Project (FERC No. 13212). Aquatic Resources Study – Grant Creek Aquatic Habitat Mapping and Instream Flow Study, Final Report. Prepared by McMillen LLC for Kenai Hydro, LLC. June 2014.
- KHL. 2014c. Grant Lake Hydroelectric Project (FERC No. 13212), Water Resources Study – Water Quality, Temperature and Hydrology, Final Report. Prepared by McMillen, LLC for Kenai Hydro, LLC. June 2014.

Attachment E-6. Final Biotic Monitoring Plan

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Grant Lake Hydroelectric Project (FERC No. 13212)

Biotic Monitoring Plan

Final

Kenai Hydro, LLC

April 2016

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Acronyms and Abbreviations

ADF&G	Alaska Department of Fish & Game
AEIDC	Arctic Environmental Information and Data Center
ARRC	Alaska Railroad Corporation
AUC	area-under-the-curve
AWC	Anadromous Water Catalog
BMPs	best management practices
cfs	cubic feet per second
cm ³	cubic centimeter
CPUE	catch-per-unit-effort
ECM	Environmental Compliance Monitor
FERC	Federal Energy Regulatory Commission
FLA	Final License Application
GIS	Geographic Information System
HVAC	heating, ventilating, and air conditioning
INHT	Iditarod National Historic Trail
KHI	Kenai Hydro, Inc.
KHL	Kenai Hydro, LLC
kV	kilovolt
kW	kilowatt
m ²	square-meter
MCC	motor control center
mm	millimeter
MP	Milepost
MW	megawatt
NAVD 88	North American Vertical Datum of 1988
OCMP	Operation Compliance Monitoring Plan
Plan	Biotic Monitoring Plan
POH	post-orbital hypural
PM&E	protection, mitigation, and enhancement
Project or Grant Lake Project	Grant Lake Hydroelectric Project
TWG	Technical Working Group
USGS	U.S. Geological Survey
WUA	weighted usable area

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Biotic Monitoring Plan

Final

Grant Lake Hydroelectric Project (FERC No. 13212)

1 INTRODUCTION

This document provides Kenai Hydro, LLC's (KHL's) proposed Biotic Monitoring Plan (Plan) for the Grant Lake Hydroelectric Project (Project or Grant Lake Project), Federal Energy Regulatory Commission (FERC) No. 13212. Activities associated with the proposed construction and operation of the Project include the construction of an intake structure in Grant Lake, a tunnel, a surge chamber, a penstock, a powerhouse, tailrace channel with fish exclusion barrier, access roads, a step-up transformer, a transmission line, and a switchyard. The activities and structures associated with this Project have the potential to impact aquatic resources.

This Plan includes background information on the Project, including baseline and advanced studies, and identifies potential impacts to fish and fish habitat that could be caused by the proposed Project. The Plan also provides biotic monitoring requirements for three components: 1) during Project construction; 2) during Project operation; and 3) enhancement and mitigation measures.

1.1. Location

The proposed Grant Lake Hydroelectric Project would be located near the community of Moose Pass, Alaska (population 219) in the Kenai Peninsula Borough, approximately 25 miles north of Seward, Alaska (population 2,693), and just east of the Seward Highway (State Route 9); this highway connects Anchorage (population 291,826) to Seward. The Alaska Railroad (ARRC) parallels the route of the Seward Highway, and is located adjacent to the Seward Highway in the Project area. Grant Lake is located in the mountainous terrain of the Kenai Mountain Range and has a normal water surface elevation of 703 feet North American Vertical Datum of 1988 (NAVD 88) and surface area of approximately 1,741 acres. A map showing the location of the Project is provided in Figure 1.

1.2. Project Description

The Grant Lake Project would consist of the Grant Lake/Grant Creek development, an intake structure in Grant Lake, a tunnel, a surge chamber, a penstock, a powerhouse, tailrace channel with fish exclusion barrier, access roads, a step-up transformer, a switchyard, and an overhead transmission line. The powerhouse would contain two Francis turbine generating units with a combined rated capacity of 5 megawatts (MW) with a maximum design flow of 385 cubic feet per second (cfs). The general proposed layout of the Project is shown in Figure 2.

1.2.1. Grant Creek Diversion

The proposed Project would consist of a reinforced concrete intake structure located east of the natural lake outlet adjacent to the south shore. No structural modifications would be made to the existing lake natural outlet. The Project would divert water up to a maximum of 395 cfs into the intake structure. Up to 385 cfs would flow to the powerhouse and up to 10 cfs would flow through the bypass pipe. When the lake level exceeds the natural outlet of 703 feet NAVD 88, a maximum of 395 cfs could be diverted into the intake structure. Flow in excess of 395 cfs would then pass over the natural outlet to Grant Creek.

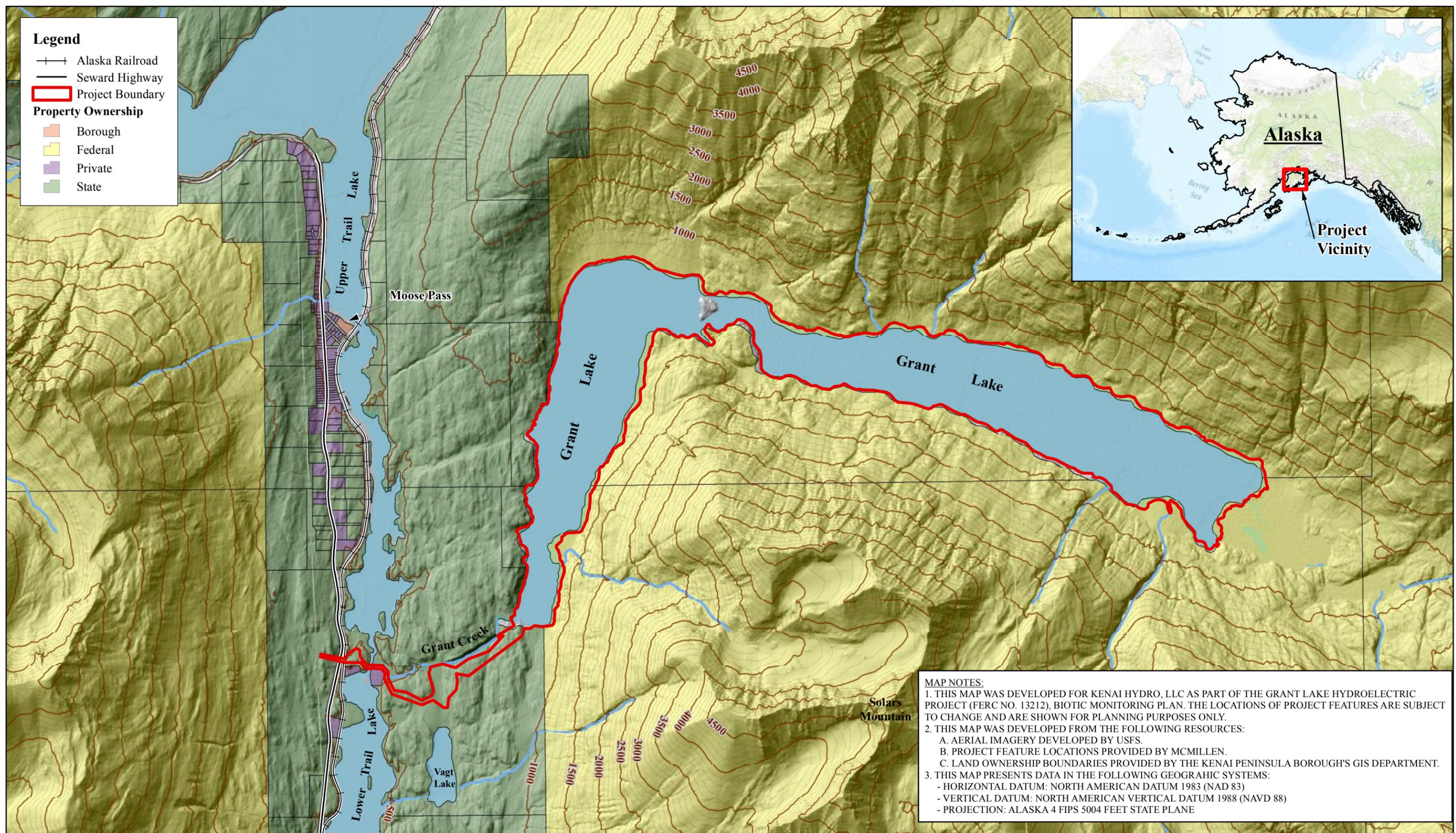
1.2.2. Grant Lake Intake

The Project water intake would be a concrete structure located approximately 500 feet east of the natural outlet of Grant Lake and adjacent to the south shore. The intake structure would consist of a reinforced concrete structure extending from approximately elevation 675 feet NAVD 88 up to a top deck elevation of 715 feet NAVD 88. The structure would have an outside dimension of 38 feet by 20 feet. The structure would include intake trashracks, selective withdrawal intake gates with wire rope hoist, and a roller gate located on the water conveyance intake. The intake would be divided into three bays, each fitted with an intake gate to provide flexibility for delivering the full flow range of 63 cfs to 395 cfs. The gate position within the water column would be set to deliver the required water temperature to Grant Creek below the powerhouse. The roller gate would be 11 feet tall by 11 feet wide and fitted with a wire rope hoist lift mechanism. Electrical power would be extended from the powerhouse to the intake to operate the intake and isolation gates. Pressure transducers would be installed to monitor the water level at the lake as well as within the intake tower. An access bridge 16 feet wide would be installed from the lake shore out to the intake structure.

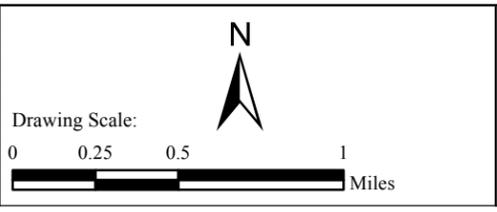
The intake would allow for drawdown of Grant Lake to elevation 690 feet NAVD 88, thereby creating approximately 18,791 acre-feet of active storage for the Project between elevations 703 feet NAVD 88 and 690 feet NAVD 88. The intake will be designed to allow the Project to draw water near the surface at various levels of storage, if deemed necessary to meet downstream temperature requirements. The invert of the intake would be at elevation 675 feet NAVD 88 to provide for adequate submergence to the tunnel.

A bypass pipe would extend from the intake structure to the base of the existing waterfall in Grant Creek. The installed pipe would be 900 feet long and approximately 18 inches in diameter, allowing the minimum flow ranging from 5 to 10 cfs to be released. A control gate would be located within the intake structure to regulate and monitor the bypass flow releases.

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REV	DATE	BY	DESCRIPTION



MCMILLEN, LLC

1401 SHORELINE DRIVE BOISE, ID 83702 OFFICE: 208.342.4214 FAX: 208.342.4216

Developed For:

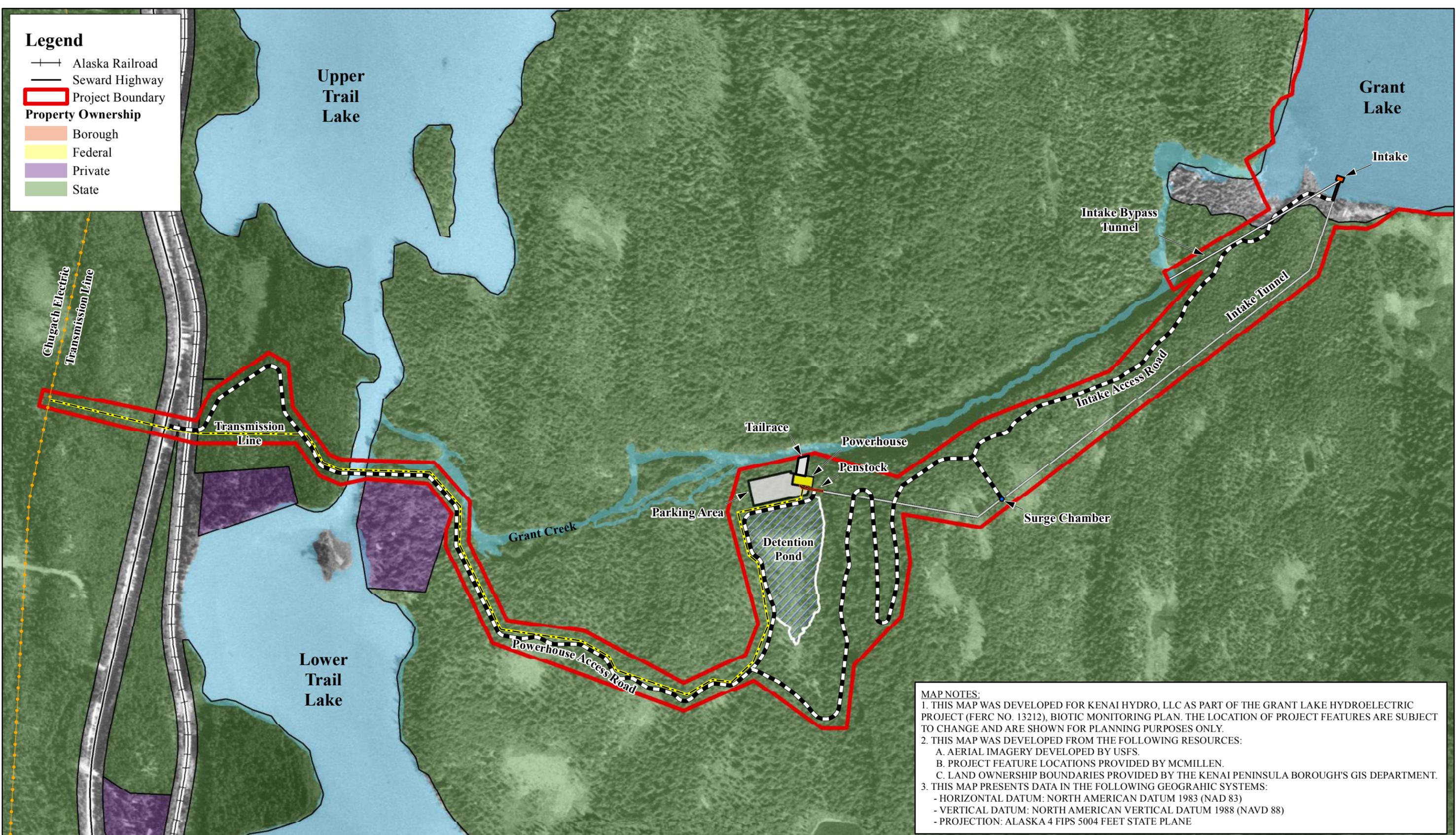
Homer Electric Association, Inc.
A Touchstone Energy Cooperative

GRANT LAKE HYDROELECTRIC PROJECT - FERC PROJECT NO.13212

BIOTIC MONITORING PLAN

Figure 1
Location Map of Project Vicinity

DESIGNED	Jake Woodbury	DRAWING
DRAWN	Jake Woodbury	
CHECKED	C. Warnock	
ISSUED DATE	3/4/2016	SCALE: 1:35,000



Legend

- +— Alaska Railroad
- Seward Highway
- ▭ Project Boundary

Property Ownership

- ▭ Borough
- ▭ Federal
- ▭ Private
- ▭ State

MAP NOTES:

1. THIS MAP WAS DEVELOPED FOR KENAI HYDRO, LLC AS PART OF THE GRANT LAKE HYDROELECTRIC PROJECT (FERC NO. 13212), BIOTIC MONITORING PLAN. THE LOCATION OF PROJECT FEATURES ARE SUBJECT TO CHANGE AND ARE SHOWN FOR PLANNING PURPOSES ONLY.
2. THIS MAP WAS DEVELOPED FROM THE FOLLOWING RESOURCES:
 - A. AERIAL IMAGERY DEVELOPED BY USFS.
 - B. PROJECT FEATURE LOCATIONS PROVIDED BY MCMILLEN.
 - C. LAND OWNERSHIP BOUNDARIES PROVIDED BY THE KENAI PENINSULA BOROUGH'S GIS DEPARTMENT.
3. THIS MAP PRESENTS DATA IN THE FOLLOWING GEOGRAPHIC SYSTEMS:
 - HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 (NAD 83)
 - VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88)
 - PROJECTION: ALASKA 4 FIPS 5004 FEET STATE PLANE

REV	DATE	BY	DESCRIPTION

Drawing Scale:

0 250 500 1,000 Feet

N

MCMILLEN, LLC

1401 SHORELINE DRIVE
BOISE, ID 83702

OFFICE: 208.342.4214
FAX: 208.342.4216

Developed For:

HEA Homer Electric Association, Inc.
A Touchstone Energy Cooperative

GRANT LAKE HYDROELECTRIC PROJECT - FERC PROJECT NO.13212

BIOTIC MONITORING PLAN

Figure 2
General Project Features And Facilities

DESIGNED	Jake Woodbury	DRAWING
DRAWN	Jake Woodbury	
CHECKED	C. Warnock	
ISSUED DATE	3/4/2016	SCALE: 1:5,500

1.2.3. Tunnel and Surge Chamber

The intake structure would connect to a tunnel extending to the Project powerhouse. The tunnel would be approximately 3,300 feet long with a 10-foot-horseshoe shape. Drill and shoot techniques would be used to construct the tunnel using an entrance portal at the powerhouse for access. The lower 900 feet of tunnel would be constructed at a 15 percent slope. This section of the tunnel would be concrete lined. The upper 2,400 feet of tunnel would be constructed at a 1 percent slope and would be unlined. This proposed arrangement provides a low pressure hydraulic conduit in the upper tunnel reaches suitable for an unlined tunnel. A surge chamber would be located at the transition between the two tunnel slopes. This chamber would be approximately 10 feet in diameter and would extend from the tunnel invert elevation of 675 feet NAVD 88 to the ground surface at approximately elevation 790 feet NAVD 88. The surge chamber would provide a non-mechanical relief for hydraulic transients that could occur if a load rejection occurred at the powerhouse. Rock anchors and shotcrete stabilization techniques would be used to stabilize the tunnel exposed rock surface where required. A rock trap would be located at the surge chamber location to collect dislodged rocks from the unlined tunnel section.

The surge chamber outlet at the existing ground elevation would be fitted with a pre-fabricated steel structure that would span the chamber. The steel frame structure would be covered with wire mesh, providing a fully screened structure capable of allowing air in for the surge chamber, while also excluding wildlife and the public from accessing the surge chamber. A removable roof structure would be located on the steel outlet, allowing access to remove material from the rock trap that would be located in the tunnel directly below the surge chamber. The surge chamber cover structure would be painted to blend into the natural forest environment. During operations, if/when a load rejection at the powerhouse occurs, the pressure wave and associated volume of water would be contained within the surge chamber. As the wave dissipated, the water level in the surge chamber would decrease until it matched the level in Grant Lake.

The tunnel would transition to a 6-foot-diameter steel penstock approximately 150 feet from the powerhouse. The transition section would consist of a welded steel concentric structure that transitioned from the 10-foot tunnel section to the 72-inch-diameter penstock. A steel liner would extend from the downstream tunnel portal approximately 300 feet into the tunnel. The liner would be installed within the exposed rock surface, with grout pumped behind the liner to provide an impermeable and structurally sound tunnel section. A similar steel tunnel liner section would be installed at the connection to the intake structure for a total distance of approximately 150 feet.

1.2.4. Penstock

A 72-inch-diameter steel penstock would extend 150 feet from the downstream tunnel portal to the powerhouse. The welded steel penstock would be supported on concrete pipe saddles along the penstock route. The penstock would bifurcate into two 48-inch-diameter pipes feeding each of the powerhouse turbines. The penstock, fitted with welded steel thrust rings, would be encased in concrete thrust blocks at the tunnel portal as well as at the powerhouse. These thrust blocks would be designed to resist the full hydraulic load associated with the Project operation. An interior and exterior coating system would be applied to the penstock, providing full

corrosion protection. An access manway would be provided on the exposed penstock section, allowing access for future inspection and maintenance.

1.2.5. Tailrace

The powerhouse draft tubes would connect to a tailrace channel located on the north side of the powerhouse structure. The draft tubes would extend from a low point elevation of approximately 509 feet NAVD 88 up to the tailrace channel invert elevation of 515 feet NAVD 88. The channel would continue to the south bank of Grant Creek. Each of the draft tubes would be gated, allowing the flow to be routed to the detention pond for spinning reserve operation. Isolation bulkheads would be provided, allowing dewatering of the draft tubes for inspection and maintenance of the turbine. The tailrace channel would be trapezoidal in shape with a bottom width of 43 feet, side slopes of 2H:1V, and a channel depth ranging from 13 feet at the powerhouse to 7 feet at the creek. A concrete structure would be constructed at the confluence of the channel and Grant Creek. A picket-style fish barrier would be placed on this concrete structure as well as provision for installation of stoplogs, allowing the tailrace channel to be dewatered for inspection and maintenance. The channel would be excavated from native material and lined with riprap to provide a long term stable section. A staff gage and pressure transducer would be placed in the channel to monitor the water level in the channel. A wildlife exclusion fence approximately 8 feet tall and constructed from steel posts with heavy gage woven wire would be installed at the tailrace channel. The fence would be located at the top of the bank on both sides of the tailrace channel. The fence would also cross the top of the tailrace barrier access deck, providing full exclusion of wildlife from the tailrace channel.

1.2.6. Tailrace Detention Pond

An off-stream detention pond would be created to provide a storage reservoir for flows generated during the rare instance when the units being used for spinning reserve were needed for the electrical transmission grid. To prevent a sudden increase in the water surface levels of Grant Creek as a result of the increased flows generated, the additional powerhouse flows would be diverted into the detention pond and then released slowly back into Grant Creek. The discharge associated with a spinning reserve event would be dispersed via the tailrace channel that flows into Grant Creek. The detention pond would be located immediately south of the powerhouse, and would be bordered by the access road. Storing additional powerhouse flows up to an elevation of 521 feet NAVD 88, the detention pond would have a capacity of approximately 15 acre-feet and a surface area of approximately 3.6 acres. The powerhouse would contain two generating units. The turbines would discharge into a splitter box located at the outlet of the turbine draft tubes. Isolation gates would be provided to route the turbine discharge to the detention pond when a unit was brought online to support a spinning reserve demand. Typically, when a turbine was brought online for spinning reserve, the turbine would operate for an average period of 15 to 20 minutes to meet the instantaneous demand. For example, assuming one turbine was allocated to spinning reserve, the turbine would divert the full 192.5 cfs of flow into the detention pond with a total of 173,250 cubic feet (cf) discharged during a 15-minute period. Once the spinning reserve demand was met, the unit would be brought offline and the detention pond flow released slowly back into the powerhouse tailrace.

1.2.7. Powerhouse

The powerhouse would be located on the south bank of Grant Creek immediately west of the downstream tunnel portal and adjacent to the detention pond. The powerhouse would lie at the top of the existing hill slope that occurs near the mouth of the Grant Creek canyon (Reach 5). This location was selected based on the presence of an existing rock outcrop that would provide an effective downstream portal location for the tunnel. The powerhouse would be located south of Grant Creek. A natural lower area is located immediately south of the proposed powerhouse site. The entire site is forested with areas of open meadow. The powerhouse concrete foundation would tie into the existing hillside with the majority of the powerhouse structure located on relatively flat ground. The powerhouse would consist of a concrete foundation and a pre-engineered metal building superstructure. The building would be approximately 100 feet long (east to west) and 50 feet wide (north to south). The penstock would tie into the powerhouse on the south side and the tailrace channel on the north side of the building. The building floor would be set at approximately elevation 523 feet NAVD 88 and the centerline of the turbine runner at elevation 526 feet NAVD 88. The draft tube floor would be set at elevation 509 feet NAVD 88 with an operating tailwater inside the draft tubes ranging from 518.0 feet to 519.3 feet NAVD 88.

Two horizontal Francis type turbine/generator units with a rated total capacity of 5,000 kilowatt (kW) would be housed in the powerhouse structure. The powerhouse flow would range from a maximum of 385 cfs to a minimum of 58 cfs with each turbine operating flow ranging from 192.5 cfs to 58 cfs. Associated mechanical and electrical equipment would include hydraulic power units, turbine isolation valves, penstock drain, utility water system, lube oil system, oil water separator, battery system, and heating, ventilating, and air conditioning (HVAC) system. A control room housing the motor control center (MCC), communication rack, fiber optic panels, computers, and related equipment would also be provided. The Project switchgear would be located within the powerhouse. A standby generator, transformer, and fused pad-mounted switch assembly would be mounted on an enclosed switchyard located on the south side of the powerhouse. Dewatering pumps would be provided to support dewatering of the turbine draft tubes. A 30-ton bridge crane would be provided for equipment maintenance. The crane would travel on rails mounted on the steel building support columns. An energy dissipation valve would extend off the penstock and provide bypass flows into the Project tailrace.

1.2.8. Transmission Line/Switchyard

An overhead 115-kV transmission line would extend from the powerhouse to the existing 115-kV transmission line located on the west side of the Seward Highway. In addition to overhead transmission structures, the facilities would include a switchyard at the powerhouse consisting of a 115-kV fused pad-mounted disconnect switch and a pad-mounted 115-kV GSU transformer. The transmission line would run from the powerhouse parallel to the access road where it would intersect Chugach Electric's transmission line. The interconnection would have a pole-mounted disconnect switch.

Wooden poles would be designed as tangent line structures on about 250-foot centers. Design of the line would also incorporate the latest raptor protection guidelines. Collision avoidance devices would be installed on the line at appropriate locations to protect migratory birds.

1.2.9. Appurtenant Facilities

The following pertinent mechanical and electrical equipment would be applicable to the Project:

- Intake selective withdrawal intake gate
- Intake trashrack system
- Intake roller gate used to isolate the tunnel and downstream generation facilities
- Control gate located on the bypass pipeline
- A 30-ton bridge crane in the powerhouse
- Pumps located in the powerhouse used to dewater the draft tubes
- Pressure transducers located throughout the Project used to monitor the water level in the reservoir, tunnel, and tailrace, as well as pressures in the tunnel and penstock
- Security cameras at the intake and powerhouse
- Sanitary waste holding tank or septic system at the powerhouse
- A power line extending from the powerhouse to the intake to supply electrical power to the gates and trashrack
- Temperature instrumentation at the intake structure and at various stream locations to monitor water temperature

This equipment, along with other identified miscellaneous mechanical and electrical equipment, would be developed during the final design and included in the construction documents.

1.2.10. Access Roads

The Project would require an access road to both the powerhouse located near the base of the Grant Creek canyon and to the intake at Grant Lake. The access road would be used to construct the Project and afterwards, to maintain the facilities. It is anticipated that the powerhouse would be visited approximately once a month and the intake visited approximately once a month beginning just after the ice melts and continuing until just before freeze up. The powerhouse access road would be maintained year around. The intake access road would not be maintained in winter.

The 24-foot wide access road would tie into the Seward Highway at approximately MP 26.9. The route would travel eastward to cross Trail Lakes at the downstream end of the narrows between Upper and Lower Trail lakes and then continue eastward to the powerhouse. This route would be approximately one mile long. It would cross the ARRC tracks near an existing railroad crossing for a private driveway. The road would cross the narrow channel connecting Upper and Lower Trail lakes with an approximately a 110-foot-long single lane bridge. This bridge is proposed as a clear span with the west abutment located on bedrock and the east abutment on fill. The proposed route would avoid cuts and travel along the base of some small hills on the south side of Grant Creek to the powerhouse. This proposed access road would have one 90-degree crossing of the proposed reroute of the commemorative Iditarod National Historic Trail (INHT) easement.

The intake access road would be approximately one mile long, beginning at the powerhouse. The road would ascend a 230-foot bluff to reach the top of the southern rim of the Grant Creek canyon. A series of road switchbacks would be required to maintain a road grade of less than 8 percent. The road would then generally follow the southern edge of the canyon until it descends to Grant Lake. A small parking area and turn-a-round area would be provided at the intake structure. A 16-foot wide bridge would extend from the bank out to the intake structure.

The road would be gravel with a 16-foot top width. Maximum grade would be 8 percent. Periodic turnouts would be provided to allow construction traffic to pass. Fifty-foot radius curves would be used to more closely contour around the small steep hills of bedrock to limit the extent of the excavation and the height of the embankments.

1.2.11. Project Operations

Once constructed, the Project would operate to generate power throughout the calendar year based on inflow, available storage, lake elevation, and minimum flow requirements in Grant Creek. The lake would operate from the natural Grant Lake outlet elevation of 703 feet NAVD 88 down to a minimum lake elevation of 690 feet NAVD 88. The lake would be drawn down in the winter months utilizing a combination of Grant Creek inflows and stored water to meet the instream flows in the bypass reach while also maintaining power production. Water flow predictions would be used to estimate snowpack and the corresponding runoff volume. The Project operation would then be tailored to maximize winter power production while also ensuring that the lake refilled to elevation 703 feet NAVD 88.

2 INFORMATION AND DATA

2.1. Historical Fisheries Information and Data

Historically, Grant Creek has been the subject of fisheries research of varying degrees of intensity. Periodic minnow trapping on Grant Creek from July 1959 through January 1961 captured juvenile Chinook salmon, coho salmon, Dolly Varden, and sculpin (extent of sampling area unknown; USFWS 1961). Minnow trapping and electrofishing in the lower reaches of Grant Creek for week-long periods in October 1981 and March, May, June, and August 1982 yielded higher catches of trout, salmon, and Dolly Varden in the fall and summer than in winter and spring (Arctic Environmental Information and Data Center [AEIDC] 1983). Catches of Dolly Varden were generally most abundant in the minnow traps, followed by juvenile Chinook, juvenile rainbow trout, and juvenile coho. Juvenile Chinook were the most commonly caught fish during electrofishing surveys (Ebasco 1984).

Ebasco (1984) estimated that Grant Creek supported 250 Chinook and 1,650 sockeye spawners. The stream was also estimated to support 209 8-inch “trout” (including Dolly Varden and rainbow trout; Ebasco 1984). Spawning coho were not observed, but had been recorded as being present at unknown levels in the stream by the Anadromous Waters Catalog (AWC) published by the Alaska Department of Fish & Game (ADF&G; Johnson and Klein 2009). Maximum counts from intermittent stream surveys by the ADF&G were 76 Chinook (1963) and 324 (1952) sockeye salmon.

In 2009, KHL conducted a baseline aquatic resources study program to assist in the development of study plans associated with the FERC licensing effort. Based on these results, and after collaboration with stakeholders, KHL developed an initial set of study plans and embarked upon a 2010 natural resources study season to implement these initial studies. However, after further stakeholder collaboration, the program was discontinued in July 2010 in order to further revise the study plans and make them more quantitative in nature. The results of the baseline aquatics study, and the initial aquatics study plan work conducted in early 2010, are described below.

Grant Creek, for the purpose of research, was partitioned into six reaches (Figure 3), with the lower half of Grant Creek comprised of four reaches (Reaches 1–4), each approximately 0.125 miles in length. Reaches 5 and 6 are within a confined canyon, with Reach 5 commonly referred to as the “canyon reach”. Reaches 5 and 6 consist primarily of plunge pool and cascade habitat of high gradient. Reach 5, the bypass reach, terminates at the upstream boundary with Reach 6 at the base of a series of impassable waterfalls that preclude upstream passage of both anadromous and resident fish species, and is approximately 0.5 miles in length. Reach 6 extends from the base of the downstream waterfall to the lake outlet; the only fish species observed in Reach 6 include sculpin (*Cottidae spp.*) and threespine stickleback (*Gasterosteus aculeatus*), which is consistent with the fish community observed within Grant Lake (KHL 2010). Since the waterfalls pose a barrier to upstream migration of fish (Johnson and Klein 2009; KHL 2010), Reach 6 and Grant Lake were not included in the 2013 research efforts.

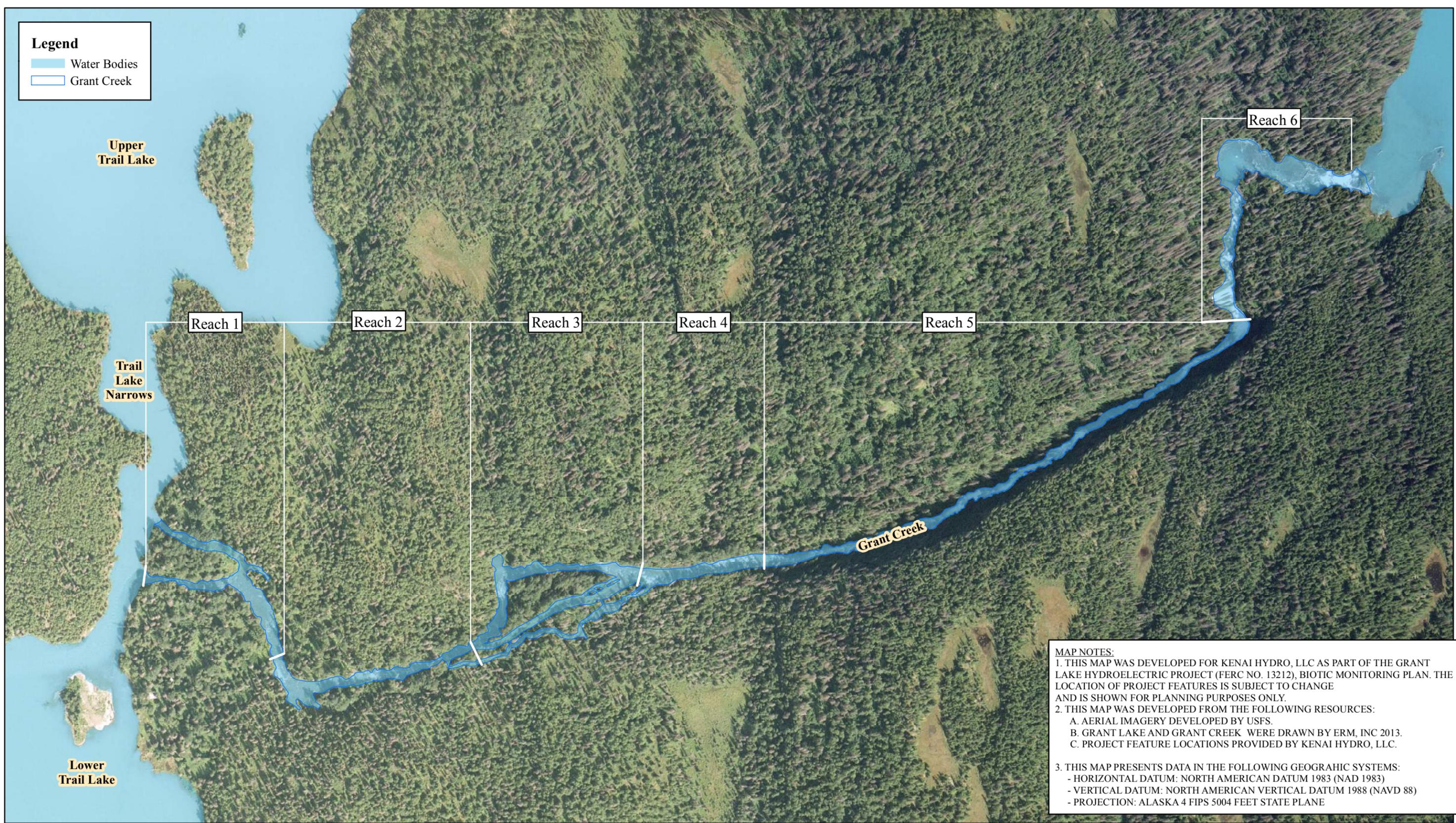
Relative abundance of adult rainbow trout and Dolly Varden was determined by calculation of angling catch-per-unit-effort (CPUE; KHL 2010). Rainbow trout ($n = 68$) were found to be more abundant than Dolly Varden ($n = 9$) and were caught throughout the creek (excluding Reach 6, as it was not sampled in 2009), although their relative abundance was higher in Reaches 3 through 5 than in Reaches 1 and 2. Dolly Varden were captured in Reaches 1, 2, and 3; their relative abundance was highest in Reach 1. Capture success was too low to allow population estimates with mark-recapture techniques. Adult rainbow trout were observed in the upper portions of the canyon reach.

This study was also aimed at determining the timing of resident fish spawning; however, it appeared that spawning, if present, occurred before or after the 2009 study period, since little evidence of spawning resident fish was observed (KHL 2010). Rainbow trout angling studies were continued in the spring and early summer of 2010 to confirm the presence of spawning and determine fish numbers. The progression of reproductive condition and the presence of adult rainbow trout in spawning condition confirmed that spawning did occur in Grant Creek in 2010.

Abundance and run timing of spawning anadromous fish were estimated through data collected during visual surveys (KHL 2010). Both adult sockeye and Chinook salmon were seen in the lower five reaches. Chinook salmon first entered Grant Creek around the beginning of August. Sockeye salmon did not arrive until the end of August. Escapement of Chinook salmon was estimated to be 231 fish, and escapement of sockeye salmon was estimated at 6,293; these estimates were based on the area-under-the-curve (AUC) methodology (Bue et al. 1998). Two critical components necessary to calculate abundance using the AUC methodology (stream life

and observer efficiency), however, were based on professional judgment rather than on empirical data, potentially biasing estimates.

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Legend

- Water Bodies
- Grant Creek

Upper Trail Lake

Trail Lake Narrows

Lower Trail Lake

Reach 1

Reach 2

Reach 3

Reach 4

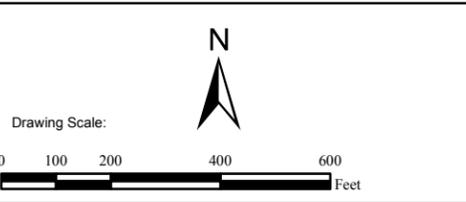
Reach 5

Reach 6

Grant Creek

MAP NOTES:
 1. THIS MAP WAS DEVELOPED FOR KENAI HYDRO, LLC AS PART OF THE GRANT LAKE HYDROELECTRIC PROJECT (FERC NO. 13212), BIOTIC MONITORING PLAN. THE LOCATION OF PROJECT FEATURES IS SUBJECT TO CHANGE AND IS SHOWN FOR PLANNING PURPOSES ONLY.
 2. THIS MAP WAS DEVELOPED FROM THE FOLLOWING RESOURCES:
 A. AERIAL IMAGERY DEVELOPED BY USFS.
 B. GRANT LAKE AND GRANT CREEK WERE DRAWN BY ERM, INC 2013.
 C. PROJECT FEATURE LOCATIONS PROVIDED BY KENAI HYDRO, LLC.
 3. THIS MAP PRESENTS DATA IN THE FOLLOWING GEOGRAPHIC SYSTEMS:
 - HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 (NAD 1983)
 - VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88)
 - PROJECTION: ALASKA 4 FIPS 5004 FEET STATE PLANE

REV	DATE	BY	DESCRIPTION



McMILLEN, LLC
 1401 SHORELINE DRIVE BOISE, ID 83702
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Developed For:
HEA Homer Electric Association, Inc.
 A Touchstone Energy® Cooperative

GRANT LAKE HYDROELECTRIC PROJECT - FERC PROJECT NO. 13212
BIOTIC MONITORING PLAN
Figure 3
Grant Creek Reaches

DESIGNED <u>J. Woodbury</u>	DRAWING
DRAWN <u>J. Woodbury</u>	
CHECKED <u>C. Warnock</u>	
ISSUED DATE <u>12/17/2015</u>	
SCALE: 1:4,000	

2.2. Summary of the 2013 Fisheries Research

After additional collaboration with stakeholders and significant, quantitative modifications to the methodology, the revised and comprehensive Aquatic Resources Study Plan was implemented in 2013 (KHL 2014a). The objectives of the study were to describe the run timing, abundance, distribution, and spawning locations of adult anadromous salmonids. Additional information was also collected to describe the abundance and distribution (both spawning and feeding) of adult rainbow trout and Dolly Varden. Information was also collected to estimate the abundance and distribution of juvenile fish and to describe fish use of the Trail Lake Narrows downstream of the Grant Creek confluence.

The key species of adult salmon returning to Grant Creek included pink, Chinook, sockeye, and coho salmon. Sockeye salmon were the dominant run entering Grant Creek with 1,117 fish counted above the weir; in addition, there were 10 pink, 23 Chinook, and 237 coho salmon.

The run timing of adult salmon into Grant Creek occurred from the end of July and extended over a 13-week period to near the end of October. Pink salmon passed the weir on Grant Creek first, followed by Chinook, then sockeye, and finally coho.

The salmon spawning period in Grant Creek also extended over 13 weeks from the first week of August to the end of October. Pink salmon began spawning in early August, Chinook in mid-August, sockeye at the end of August, and coho began spawning the first week of October and were finished at the end of the month. The sensitive time period for adult salmon, based on spawning, was from the first week of August to the end of October.

The majority (95 percent) of critical spawning habitat was concentrated within Reaches 1–3 of Grant Creek. Spawning activity in Reach 4 was fairly low at 4 percent, and spawning in Reach 5 was about 1 percent of the total observed. The higher gradient habitat (cascades) of Reach 5 reduces the availability of suitable substrates and velocities for spawning salmon.

Rainbow trout and Dolly Varden were identified as key resident species migrating into Grant Creek. The period of migration for rainbow trout lasted 6 weeks, from the end of May to the end of June. The migration period for Dolly Varden lasted 4 weeks, from mid-August to mid-September. During the 2013 study period, no redds were observed for either rainbow trout or Dolly Varden; high flows and poor water clarity hampered survey efforts. While no redds were detected, recently-emerged fry were observed, confirming that both species spawn within Grant Creek; to what extent, however, is unknown. Radio telemetry detections of tagged rainbow trout suggest that it is possible that rainbow trout spawned in Reach 3; however, it should be noted that observations of radio-tagged rainbow in Reach 3 may well have been due to tagged fish taking advantage of feeding opportunities at those locations. The majority of radio-tagged fish resided in Reaches 1 and 3 during the study period, suggesting that spawning and feeding locations are most likely in these reaches.

There was a total of 4,798 Chinook, 3,165 coho, and 46,431 Dolly Varden juveniles estimated to have migrated out of Grant Creek in 2013. These estimates represent Reaches 1–5 upstream of the lower incline plane trap and only include parr-sized fish. For juvenile Chinook, emigration

from Grant Creek peaked in mid-to-late August and again in September. A smaller peak occurred in May as age-1 juvenile fish emigrated from Grant Creek. Juvenile emigration for coho also peaked in mid-to-late August and in mid-to-late July. Juvenile emigration for Dolly Varden peaked in July and again in late August–early September. A comprehensive anadromous species periodicity table was developed utilizing both the historical data discussed in Section 2.1 and the data collected during the scoping studies (Table 1).

Reach 5 of Grant Creek provides some juvenile rearing habitat but it is low in comparison to that of Reaches 1–4. The predominance of higher-gradient cascade habitat in Reach 5 (average gradient of 6.4 percent) reduces the amount of juvenile habitat. Reaches 1–4 provide the majority of juvenile rearing habitat in Grant Creek. Minnow trapping from April through October captured 3,468 fish. Relative abundance of fish caught in minnow traps, expressed as both CPUE and proportion of total catch, was highest in Reach 3, followed by Reach 1, Reach 2, and then Reach 4. Reach 3 contained the greatest diversity of habitats, with pools and riffles represented in many areas (side channels, backwater areas, and mainstem).

Adult salmon, rainbow trout, and Dolly Varden occur in the Trail Lakes Narrows area. The Trail Lake Narrows area is an upstream migration corridor for fish destined to spawn in Grant Creek and all other tributaries of Upper Trail Lake. Likewise, this area is also a downstream migration corridor for salmonid production upstream. Dolly Varden and rainbow trout probably reside in the area, taking advantage of juvenile salmon that migrate through or reside in this area. This area may also provide spawning and resting areas for adult salmon. Redds in suitable spawning gravels and sockeye carcasses were found that had not been sampled. Chinook and coho salmon may spawn in this area as well.

Table 1. Grant Creek salmonid species and life history periodicity.

Biology	Stage	Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Spawning	Chinook												
Coho														
Sockeye														
Incubating	Chinook													
	Coho													
	Sockeye													
Juveniles	Chinook													
	Coho													
	Sockeye													
Fry	Chinook													
	Coho													
	Sockeye													

2.3. Summary of Projected Project Impacts

As part of the assessment of potential Project impacts to fish and fish habitat, KHL conducted aquatic habitat mapping and instream flow studies on Grant Creek. Previous instream flow studies had been conducted in Grant Creek; an instream flow study was completed in 1987 as

part of a preliminary licensing effort prepared by Kenai Hydro, Inc. (KHI; not related to the current Kenai Hydro, LLC; EnviroSphere 1987, KHI 1987a, and KHI 1987b).

As mentioned above, KHL initiated consultation for a collaborative process for a study of “instream flow” effects in Grant Creek in 2009 (KHL 2010). The primary goal of the 2009 instream flow study program was to establish a Technical Working Group (TWG) consisting of state and federal resource agency staff, KHL staff, and interested members of the local community. Once established, the TWG met three times during the 2009 study season to review the results of the 2009 aquatic baseline study efforts, discuss and agree upon an acceptable instream flow evaluation method, and request additional information to support that selection (KHL 2010). A technical memorandum was drafted and shared with the instream flow TWG participants in 2009, detailing the results of the previous instream flow study efforts (HDR 2009). Physical stream data required for instream flow modeling, per the proposed approach, were collected at 18 transects during low- and mid-flow conditions in 2010. The studies were continued in 2010, but the program was discontinued in July 2010 after further stakeholder collaboration in order to revise the study plans and make them more quantitative in nature. When the aquatic habitat mapping and instream flow studies were re-initiated in 2013, these data were used where applicable.

In the 2013 investigations, habitat was mapped throughout the lower five reaches of Grant Creek, while the instream flow study concentrated on the lower four reaches of Grant Creek, including the side channels and the distributary in Reach 1. Grant Creek habitat (as measured by Weighted Usable Area) for 15 stages (based on species and life history) was modeled for flows ranging from 5 – 1,000 cfs. Modeled species and life history stages were for Chinook salmon (spawning, fry and juvenile rearing), Coho salmon (spawning, fry and juvenile rearing), sockeye salmon (spawning), rainbow trout (spawning, fry, juvenile and adult rearing), and Dolly Varden (spawning, fry, juvenile and adult rearing).

In order to give a better long-term representation of the Grant Creek streamflows, a record extension was developed. A correlation between the Grant Creek U.S. Geological Survey (USGS) gage (station 15246000) and the Kenai River at Cooper Landing USGS gage (station 15258000) provided a means to extend the streamflow record at the Grant Creek gage location. With that data extension, KHL developed a 66-year composite record of Grant Creek hydrology, both with and without the Project. In general, Grant Creek flows from January through mid-May and the November through December period are proposed to be higher with-Project than they are currently pre-Project. Flows during the summer would be reduced, while the late spring and fall flows would be the same.

At the request of the Instream Flow Subgroup, KHL conducted further analyses to evaluate the effects of the Project flows on eggs deposited by resident and anadromous salmonids in suitable Grant Creek spawning habitat (effective spawning analysis), as well as habitat for all species and life history stages (habitat duration analysis).

KHL conducted the effective spawning analysis for the five species mentioned above, for all transects where spawning habitat existed. With the proposed increased flows in November through mid-May, incubating salmonid eggs would be afforded higher rates of protection with

the Project in place than under the pre-Project regime. As a result, incubation would not be adversely affected by the Project.

As part of the habitat duration analysis, KHL modeled habitat for each species and life history stage for the five target species (Chinook, coho, and sockeye salmon, rainbow trout, and Dolly Varden) for the 66-year composite record. The findings of that analysis are summarized below in Table 2.

Table 2. Results of the Grant Creek habitat time series analysis (KHL 2014b), which depicts the post-Project weighted usable area (WUA) relative to the pre-Project conditions for anadromous and resident salmonids by life stage.

Species	Spawning (%)	Fry Rearing (%)	Juvenile Rearing (%)	Adult Rearing (%)
Chinook	99.5	96.9	100.2	---
Coho	100.0	99.0	99.2	---
Sockeye	99.0	---	---	---
Dolly Varden	100.3	98.9	102.9	96.5
Rainbow Trout	98.7	101.4	99.3	94.2

Overall, with-Project WUA is nearly identical to pre-Project WUA, at 99.8 percent. The lowest with-Project WUA is for Dolly Varden and rainbow trout adult rearing. Adult rearing periodicity for these species extends from mid-May to the end of November. Project flows are reduced during the summer (June – August), which is the reason for lower adult rearing with-Project WUA during this period. It is important to note that this analysis does not take into consideration potential mitigation and enhancement measures for the Project. Section 4 discusses the proposed aquatic mitigation and enhancement measures and associated analyses in detail that would provide additional increases to WUA beyond the existing condition described above.

In addition, increased winter flows would also provide more rearing habitat in the Reach 2/3 side channels. These side channels, as well as the Reach 1 distributary, provide a large percentage of the rearing habitat in lower Grant Creek. Monitoring would be conducted to evaluate the increased rearing potential in these areas.

Within Reaches 1 – 4, higher and more stable flows during the fall, winter, and spring periods would be beneficial during incubation and juvenile rearing. Furthermore, decreased summer flows would maintain habitat and help prevent stranding and potential egg desiccation as flows decreased, and operational changes would allow for high quality side channels to be more consistently wetted.

Within Reach 5, potential negative Project impacts include reduced flows, with concomitant reductions in resident and anadromous spawning habitat, a reduction in sediment mobilization recruited from Reach 5, and reduced resident adult rearing habitat during the summer months. Potential positive impacts from the Project in Reach 5 include better maintenance of juvenile rearing habitat along with the likelihood of increased juvenile rearing habitat availability.

Within Reach 6, potential negative impacts include reduced flows. Given its location immediately below the Grant Lake outlet, there would be little reduction in sediment mobilization, since the lake acts as a sediment sink. The only fish found in Reach 6 and Grant Lake are sculpins and threespine stickleback. Given that there are no resident or anadromous salmonids found in Reach 6, these reductions in flows would not impact salmonids in this reach.

Sampling during 1981–1982 found no fish in any of the tributaries to Grant Lake (AEIDC 1983). Sculpin and threespine stickleback were the only fish found to inhabit Grant Lake. A series of impassable falls below Grant Lake’s outlet (Reach 5/6 break) prevents colonization of the lake by salmonids via Grant Creek (Ebasco 1984). Because of these impassable falls, no anadromous fish species occur in Grant Lake and its tributaries (USFWS 1961, AEIDC 1983, Ebasco 1984), and Grant Lake is not included in the Anadromous Waters Catalog (AWC) published by ADF&G (Johnson and Klein 2009).

3 BIOTIC MONITORING DURING CONSTRUCTION

The comprehensive studies conducted during the licensing process highlight sensitive areas utilized by both adult and juvenile salmonids. That research also provides a solid baseline of information on the current status of fish populations within Grant Creek. Coupled with this knowledge, KHL will conduct additional monitoring of Grant Creek aquatic resources during the construction phase of the Project to ensure that construction activities do not result in deleterious impacts to Grant Creek fish habitat or fish populations. Biotic monitoring during construction will focus on Chinook, sockeye, and coho populations and provide information on an annual basis to assist in assessing whether changes have occurred to fish communities in Grant Creek.

3.1. Potential Project-related Impacts on Fish During Construction

Construction activities include tunnel blasting, construction of roads, and the construction of the Project infrastructure discussed in Section 1.2. Potential construction-related effects of the Grant Lake Project include:

- 1) Habitat alteration by sedimentation or erosion during construction of the Project infrastructure (i.e., penstock, powerhouse, tailrace, detention pond and roads); and
- 2) Accidental release of contaminants into Grant Creek during the construction of the facilities.

As a result of the potential alterations highlighted above, there may be impacts to the fish community within Grant Creek, which could include:

- Potential displacement of juvenile salmonids from critical rearing habitat; and
- Potential displacement of spawning adults due to construction activities.

3.2. Goals

A series of biotic monitoring measures are proposed in order to identify changes, if any, to the presence/absence of fish populations in Grant Creek during construction activities related to building the Project infrastructure. Fish monitoring would be used to determine continued use of Grant Creek through fisheries investigations outlined below.

3.3. Objectives

The objectives include:

- Estimate if construction activities displace juvenile salmonids from critical rearing habitat; and
- Estimate if construction actions disrupt the distribution of adult salmonids in Grant Creek.

A series of best management practices (BMPs) and construction associated plans would be developed in advance of any construction activities to ensure that environmental impacts are avoided to the extent practicable. The BMPs for the Project would be developed in coordination and consultation with the resource agencies. These plans may include an Erosion and Sediment Control Plan (ESCP) to protect water quality, and development of the following plans: a Storm Water Pollution Prevention Plan, a Construction Water Quality Monitoring Plan, and a Blasting Plan. These plans will account for water quality conditions, among other variables. In addition, an Environmental Compliance Monitor (ECM) would be on-site daily during all construction activities. This individual would be responsible for assessing water quality conditions during construction and notifying appropriate parties, as required by the FERC license

3.4. Fisheries Research Methodologies

Monitoring activities would be broken down into two primary components: the sampling of juvenile salmonids, and the sampling of adult salmonids.

3.4.1. Juvenile Salmonid Investigations

In order to evaluate if construction activities displace or alter the distribution of juvenile salmonids from critical habitats, KHL proposes the following investigation:

Minnow traps would be deployed twice during year 1 of construction (likely in early June and early August), with typically 10 traps deployed per reach; sampling would include the mainstem, the distributary in Reach 1, and the side channels in Reach 2/3. The exception may be within Reach 5 due to limited access; however, the lower third of Reach 5 would be sampled with 5 to 6 traps if possible, and efforts would be made to sample upper Reach 5 downstream of the lower most waterfall (dependent upon flows that may limit access due to safety). Within each reach, an effort would be made to sample all habitat types during the sample period. Traps would be baited with a 16.4 cubic centimeter (cm³) mass of sterilized salmon eggs and would be fished for approximately 24 hours. Captured fish would be anesthetized in a solution of clove oil (6 drops per 3.8 liters of water), and all salmonid juveniles would be enumerated by species, and would

then be weighed and measured (fork length) to the nearest 0.1 gram and millimeter, respectively. Fish would then be recovered in fresh river water and released near the area of capture. Catch for each trap would be converted into CPUE (number of fish per hour) by species, which would be compared to data collected during the 2009 and 2013 studies. Data would be compiled by species, month, reach, and channel type (i.e., mainstem, backwater, or side-channels).

Per the more comprehensive description in the FLA, Reach 6 of Grant Creek is above a complete upstream fish passage barrier and connects directly with the outlet of Grant Lake. As such and given the lack of fisheries resources in Grant Lake, no monitoring during construction or operations would take place in Reach 6.

3.4.2. Adult Salmonid Investigations

Adult sampling would consist of three primary components: visual, redd, and carcass surveys. All three surveys would be conducted three times for each species during year 1 of Project construction, and would be conducted on separate days within the sample week. Sample timing would be based on 2013 data, and would be conducted to coincide with the documented peak run-timing for each species.

Visual and redd surveys would be conducted as in 2013. Biologists would hike upstream along each bank of Grant Creek wearing polarized sunglasses to reduce glare, and would document adult fish and redds (by species). Visual observations would be documented on maps, which would later be cataloged into a Geographic Information System (GIS) database. As in 2013, the biologists would utilize hand-held radios to coordinate observations to maximize efficiency and to reduce the potential for double counting.

Carcass surveys would be dedicated to the search and collection of spawned out salmon; however, any carcasses found during other surveys would be sampled as opportunity presented itself. All recovered salmon carcasses would be identified as to species and sex, and length (post-orbital hypural [POH]) would be recorded to the nearest centimeter. Additionally, all females would be inspected as to spawning success (i.e., pre-spawn mortality, completely spawned, the number of remaining eggs).

Visual and redd surveys would provide information as to the presence/absence of adult fish and redds relative to historical peaks, which can be compared to 2013 data; carcass surveys would provide an indication of spawning success relative to 2013 observations.

3.5. Schedule

Construction of the Project is expected to take two years to complete. The first summer construction period would be used to install Project roads (e.g., the access bridge across the Trail Lake Narrows and the access road to the powerhouse and intake sites). During the winter period, the tunnel would be developed, and the second summer construction period would be used to complete the remaining structures. This Plan would coincide with construction activities; that is, juvenile and adult sampling would occur during the first year of construction.

One juvenile minnow trapping survey would occur in early June, and the other would take place in early August. Actual dates of minnow trapping would vary due to a variety of factors, weather and streamflow conditions being the most likely variables.

Adult surveys, including visual, redd, and carcass surveys, would coincide with existing data documenting peak run timing for anadromous species in Grant Creek. Three surveys per species would occur; it is anticipated that surveys for sockeye would occur in late August/early September, late August/early September for Chinook, and early to mid-October for coho, and there is potential for overlap of surveys depending on species presence.

3.6. Dissemination of Information and the Consultation Process

Given variations from one year to the next regarding the abundance of anadromous salmonids due to natural and anthropogenic factors, and the subsequent variation in abundance of their progeny, a statistical comparison of relative abundance from one year to the next would not provide an insight as to whether construction activities impose deleterious impacts to adult and juvenile salmonids. Instead, the continued use (presence) within areas where both juvenile and adult salmon have been observed historically would be more meaningful. As such, while minnow trapping CPUE for juveniles and visual and redd counts for adults would be documented and distributed to stakeholders, the presence or absence within historical areas of use for the different life stages would be scrutinized to assess if construction activities were negatively impacting juvenile and adult salmonids.

Following the completion of each monitoring year, KHL would provide stakeholders with a summary of findings via the Annual Compliance reporting process described in more detail in Section 6 of this document. Data would be presented in a similar format as reported during the 2009 and 2013 investigations, and would establish presence or absence within historical areas of use for the various life stages. Should any stakeholder representative believe that the disseminated information indicated that construction activities were imposing deleterious impacts to any life stage of Grant Creek salmonids, that representative could call for a meeting of stakeholders (via conference call or in-person). Discussions within that forum would determine if impacts did indeed exist, potential responsible factors, and what, if any actions were necessary to remedy the impacts.

In addition to the Annual Compliance reporting process, any obvious, immediate, and detrimentally impactful observations made by biologists or the ECM during monitoring efforts would result in collaboration with KHL and potential for the halting of construction activities until the appropriate state and federal agency representatives could be notified and a determination could be collaboratively developed as to the appropriate modifications to be made to alleviate the issue.

4 BIOTIC MONITORING DURING PROJECT OPERATION

As summarized in Section 2.3, it is anticipated that operation of the Project would have minimal impact on the weighted usable area (WUA) for all life stages of all salmonids utilizing Grant Creek (Reaches 1–5). Similarly, the loss of spawning habitat is anticipated to be minimal.

These projections, however, are based on model simulations, and as such, must be verified through monitoring and empirical data. Biotic monitoring during operations would focus on Chinook, sockeye, and coho populations and provide information to assist in assessing whether changes have occurred to fish communities in Grant Creek.

4.1. Potential Project-related Effects on Fish from Project Operations

Once constructed, the expectation is that the operation of the Project would result in:

- 1) Decreased flows in Reaches 5 and 6 throughout the year;
- 2) Decreased sediment recruitment from Reach 5 due to these decreased flows;
- 3) Increased winter flows;
- 4) Decreased summer flows; and
- 5) Potential water temperature changes (addressed in the Operation Compliance Monitoring Plan, [KHL 2016 Attachment E-5 of this Exhibit E]).

Based on the anticipated alterations to Grant Creek due to operation of the Project, a number of potential biological responses may occur, which include the following:

- Decreased fish utilization in Reach 5 (both juvenile and adult salmonids) due to decreased year-round flows. There are no salmonids in Reach 6, however, so decreased flows in Reach 6 would not impact fish.
- Potential increase in juvenile rearing habitat availability in Reach 5.
- Potential alteration in spawning locations, or an overall decrease in spawning within Grant Creek due to the long-term decline in suitable spawning substrates.
- Increased rearing habitat within the Reach 2/3 side channels due to increased winter flows.
- Decreased summer rearing habitat for adult resident fish within the mainstem sections of Reaches 1–4.

4.2. Goals

This section of the Plan would be developed to identify changes, if any, to the presence/absence of fish populations in Grant Creek during Project operations. Fish monitoring would be used to determine continued use of Grant Creek through fisheries investigations outlined below.

4.3. Objectives

The objectives include:

- Determine if greater flows in the Reach 2/3 side channels during the winter result in juvenile rearing during this timeframe and at these locations;
- Determine if mitigation efforts in the Reach 1 distributary result in increased juvenile utilization;

- Determine if relative juvenile abundance and distribution deviates from baseline conditions due to Project operations; and
- Determine if adult distribution deviates from baseline conditions due to Project operations.

4.4. Fisheries Research Methodologies

Post-construction monitoring would consist of both juvenile and adult monitoring components. For juveniles, minnow trapping and winter-time snorkeling would be used. For adults, visual, redd, and carcass surveys would be used.

4.4.1. Juvenile Salmonid Methodologies

The minnow trapping methodology utilized for the construction phase would be replicated for the operations phase. Specifically, minnow traps would be deployed during the months of July through October, and in April (winter water temperature conditions). Supplemental sampling during the months of August through October would coincide with periodic sampling of adults, and could be accomplished concurrently to streamline sampling activities. Data collected would provide information on juvenile distribution and relative abundance that could be compared to 2013 baseline information (CPUE). Sampling would be conducted in years 2 and 5 of operations.

Typically, 10 traps per reach would be deployed and would include the mainstem, the distributary in Reach 1, and the side channels in Reach 2/3. The intent would be to sample as much of Reach 5 as possible, including the upper section downstream of the lower most waterfall; as a result of reduced flows within Reach 5 year-round, access to Reach 5 should be greatly improved, allowing greater sampling opportunities.

Within each reach, an effort would be made to sample all habitat types during the sample period. Traps would be baited with a 16.4 cm³ mass of sterilized salmon eggs and would be fished for approximately 24 hours. Captured fish would be anesthetized in a solution of clove oil (6 drops per 3.8 liters of water), and all salmonid juveniles would be enumerated by species, and would then be weighed and measured (fork length) to the nearest 0.1 gram and millimeter, respectively. Fish would then be recovered in fresh river water and released near the area of capture. Catch for each trap would be converted into CPUE by species, which would be compared to data collected during the 2009 and 2013 studies, as well as additional data collected as part of the Plan. Data would be compiled by species, month, reach, and channel type (i.e., mainstem, backwater, or side-channels). Minnow trap data would address the issues of whether operations influence the relative abundance and distribution of juvenile salmonids within Reaches 1–5 and the side channels and distributaries of Grant Creek, as well as winter-time usage of the Reach 1 distributary and the Reach 2/3 side channels.

Concurrent with April minnow trapping, snorkel surveys would be conducted in the side channels of Reach 2/3 and the Reach 1 distributary. Given the cold water temperatures during April that mimic winter conditions, and based upon 2013 surveys, KHL's observations indicate that minnow trapping is less effective due to the lethargy of juveniles in these conditions. All salmonids observed would be categorized by species and length (an estimate of total length

partitioned into 20-millimeter [mm] bins), and an estimate of fish density (number of fish per 100 square-meters [m²]) would be calculated for habitat and channel types. Snorkel results would address the issue of whether increased winter flows provide new winter rearing habitat in the Reach 1 distributary and the Reach 2/3 side channels, and if so, to what extent.

4.4.2. Adult Salmonid Methodologies

Sampling methods described in Section 3 for the construction phase of monitoring would also be employed for the Project operation period. Adult sampling would consist of three primary components: visual, redd, and carcass surveys. All three surveys would be conducted twice per species throughout the spawning period, coinciding with peak run timing per existing data. The surveys would be spaced a week apart. Surveys would occur in years 2 and 5 of operations.

For visual and redd surveys, biologists would hike upstream along each bank of Grant Creek wearing polarized sunglasses to reduce glare, and would document adult fish and redds (by species). Observations would be documented on maps, which would later be cataloged into a GIS database. As in 2013, the biologists would utilize hand-held radios to coordinate observations to maximize efficiency and to reduce the potential for double counting. Carcass surveys would be conducted in conjunction with the visual and redd counts.

All recovered salmon carcasses would be identified as to species and sex, and length (mid-eye to fork; POH) would be recorded to the nearest centimeter. Additionally, all females would be inspected as to spawning success (i.e., pre-spawn mortality, completely spawned, the number of remaining eggs).

Visual and redd surveys would provide information as to the relative distribution of adult fish and redds (by reach), which could be compared to 2009 and 2013 data. The collection of salmon carcasses and an assessment of pre-spawning mortality (compared to 2013) would provide a sense of overall spawning success.

Sockeye populations are known to vary from year to year; as such, natural variation is anticipated to occur between years. KHL proposes, in addition to conducting counts in Grant Creek, to monitor other fish runs to the Kenai River. Fish numbers may be available for other systems on the Kenai Peninsula, notably the Russian River. By looking at fish abundance in other systems in the Kenai, Grant Creek adult numbers could be indexed to determine if the trends found in Grant Creek were similar to those in other rivers, or if potential perturbations could be the cause of variance in Grant Creek populations.

One such source is ADF&G for numbers and timing of sockeye to the Kenai River:

<https://www.adfg.alaska.gov/sf/FishCounts/index.cfm?ADFG=main.displayResults&COUNTLOCATIONID=40&SpeciesID=420>

Adult salmonid numbers would be indexed to the Kenai River and reference streams, where available. These analyses would be used to monitor trends in overall Kenai River salmon populations to determine if any changes in Grant Creek populations may be due to overall natural variation and cycles of fish on the Kenai River, or if Project operations could be a factor

influencing these populations. The intent of monitoring other fish runs on the Kenai River is to provide information on the overall Kenai system and offer additional insight into whether the system as a whole is experiencing relatively high, average, or depressed runs of the species of interest. This information would be valuable during years when runs were lower than normal in Grant Creek and KHL needed to determine whether depressed numbers were the result of Project effects occurring in the Kenai system as a whole.

4.5. Schedule

A suite of monitoring activities would take place in years 2 and 5 following construction of the Project; specifically, juvenile minnow trapping and adult visual, redd, and carcass surveys, along with snorkel surveys.

As discussed above, minnow trapping would be conducted during the months of July through October, and in April, with one sample event per month lasting approximately three days. Snorkel surveys would also be conducted in April, and would coincide with minnow trapping activities.

Adult surveys (i.e., visual, redd, and carcass) would be conducted during years 2 and 5 of operations and coincide with the peak run timing window for each anadromous species. Three surveys per species would be conducted per year spaced a week apart. It is anticipated that surveys for sockeye would occur in late August/early September, late August/early September for Chinook, and mid to late October for coho, and there is potential for overlap of surveys depending on species presence.

The schedule for meetings with the stakeholders is provided in Section 6.

4.6. Dissemination of Information and the Consultation Process

Given variations from one year to the next regarding the abundance of anadromous salmonids due to natural and anthropogenic factors, and the subsequent variation in abundance of their progeny, a statistical comparison of relative abundance from one year to the next would not provide an insight as to whether construction activities impose deleterious impacts to adult and juvenile salmonids. Instead, the continued use (presence) within areas where both juvenile and adult salmon have been observed historically would be more meaningful. As such, while minnow trapping CPUE for juveniles and visual and redd counts for adults would be documented, the presence or absence within historical areas of use for the different life stages would be scrutinized to assess if operation of the Project negatively impacted juvenile and adult salmonids.

Following completion of each monitoring year, KHL would provide stakeholders with a summary of findings via the Annual Compliance reporting process described in more detail in Section 6 of this document. Data would be presented in a similar format as reported during the 2009 and 2013 investigations, and would establish presence or absence within historical areas of use for the various life stages. Should any stakeholder representative believe that the disseminated information indicated that operational activities were imposing deleterious impacts to any life stage of Grant Creek salmonids, that representative could call for an emergency

session of stakeholders (via conference call or meeting). Discussions within that forum would determine if impacts did indeed exist, potential responsible factors, and what, if any actions were necessary to remedy the impacts.

In addition to the Annual Compliance reporting process, any obvious, immediate, and detrimentally impactful observations made by or communicated to relevant KHL operations personnel by biologists during monitoring efforts would result in the immediate notification of appropriate state and federal agency representatives so that an appropriate modification could be collaboratively developed to alleviate the issue.

5 BIOLOGICAL MONITORING FOR ENHANCEMENT/MITIGATION MEASURES

In addition to monitoring construction activities and Project operations, KHL would evaluate the effectiveness of proposed protection, mitigation, and enhancement (PM&E) measures listed below. This section provides goals, objectives, and methodologies for evaluating these measures relative to existing populations of Chinook, sockeye, and coho populations.

5.1. Proposed Protection, Mitigation, and Enhancement

A suite of PM&E measures has been proposed for the Project. These measures include, but are not limited to the following:

- Enhancement of Reach 2/3 Side Channels. KHL has proposed more consistent flows and wintertime inundation of these side channels as a result of Project operations. The proposed operational flows would increase aquatic habitat in these side channels. Please refer to the Final License Application (FLA) for further details. Habitat time series analysis indicates increases in WUA for juvenile and fry life stages during the winter – early spring period due to the increase in Project flows.
- Additional Flow in the Reach 1 Distributary. This measure, proposed by KHL, would remove the upstream control, providing greater and more consistent flows in this distributary, increasing both rearing and spawning habitat. Currently, the primary control at the upstream end of the distributary consists of a primary entrenched log that has gathered additional pieces over time. This log complex would be removed, and if necessary to facilitate sufficient and consistent flows, substrate below the log complex could be excavated as well. Please refer to the FLA for further details. Average WUA for all species and life stages increased by over 200% from 2 cfs (average flow in the distributary when Grant Creek flows were approximately 200 cfs), to 20 cfs. The largest incremental increases in WUA occurred from distributary flows ranging from 12 – 20 cfs. Further detail related to improvements to WUA associated with additional flow in the Reach 1 distributary is included in the FLA.
- Spawning Gravel Augmentation/Flushing Flows. Spawning substrate is naturally limited within Grant Creek. This PM&E measure, proposed by KHL, would assess the distribution and abundance of gravel in the mainstem and Reach 1 distributary relative to pre-Project conditions and evaluate the need for gravel supplementation within the

mainstem and distributary of Grant Creek, and/or periodic need for channel maintenance (i.e., flushing) flows to move upstream sediment.

5.2. Goals and Objectives

5.2.1. Goals

This component of the Plan is intended to evaluate the efficacy of PM&E measures proposed to enhance fish populations and habitat within Grant Creek. Fish and aquatic habitat monitoring, as described below, would be used to monitor changes to enhance or mitigate resources. Specific goals include:

- Increase rearing habitat for juvenile salmonids in the Reach 1 distributary and Reach 2/3 side channels;
- Increase spawning habitat for adult salmonids in the Reach 1 distributary and Reach 2/3 side channels;
- Evaluate impacts on suitable spawning substrate in the Grant Creek mainstem associated with Project operations; and
- Maintain minimum instream flows of 5 to 10 cfs in Reach 5.

5.2.2. Objectives

The objectives include:

- Determine if greater flows in the Reach 2/3 side channels during the winter increase juvenile salmonid numbers in these side channels;
- Determine if increased flows in the Reach 1 distributary (throughout the year) result in increased juvenile and adult utilization; and
- Determine if Project operation is negatively impacting gravel recruitment relative to natural conditions in Grant Creek.

5.3. PM&E Methodologies

PM&E monitoring would consist of juvenile and adult salmonid monitoring as well as aquatic habitat monitoring in reaches where mitigation or enhancement measures would take place. For juveniles, snorkel surveys and minnow trapping would be used in the Reach 1 distributary and the Reach 2/3 side channels. For adults, visual surveys of spawners, redds, and carcasses would be conducted at those locations as well. KHL would assess the current condition of salmonid spawning gravels within Grant Creek (excluding Reaches 5 and 6) to assess the need for gravel augmentation.

5.3.1. Juvenile Salmonid Methodologies

Juvenile sampling methodologies would be consistent with the methods described in Section 3.4.1; that is, minnow trapping as well as snorkeling would be used to gather data on juvenile

salmonid distribution and numbers within the Reach 1 distributary and the Reach 2/3 side channels. Minnow trapping would occur synonymous with surveys described above in Section 3.4.1. Ten minnow traps per reach would be baited with a mass of sterilized salmon eggs and would be fished for a 24-hour period in the distributary in Reach 1 and the side channels in Reach 2/3. A single minnow trapping survey would occur in April, with sampling to occur in all habitat types found within these reaches during the sampling period, and catch for each trap would be converted into CPUE. Snorkel surveys would be conducted concurrently to best streamline sample activities.

Estimates of CPUE, with PM&E measures in place, would be used to determine if juvenile salmonid populations utilize new winter habitats developed in the Reach 2/3 side channels and within the Reach 1 distributary due to the implementation of mitigation and enhancement measures.

The PM&E juvenile salmonid surveys would be conducted as part of the juvenile surveys described in Sections 3.4.1 (construction) and 4.4.1 (operations). The surveys conducted during construction would provide information related to pre-disturbance, baseline conditions. Once PM&E measures were implemented, surveys would be conducted during years 2 and 5 of operations. To the extent possible given conditions during individual surveys, KHL would make every effort to duplicate surveying locations during construction and operations monitoring efforts.

5.3.2. Adult Salmonid Methodologies

Stream surveys (including redd, visual, and carcass surveys) would be conducted and would coincide with the peak run timing window for each anadromous species. Three surveys per species would be conducted during years 2 and 5 of operations, and would be spaced a week apart. It is anticipated that surveys for sockeye would occur in late August/early September, late August/early September for Chinook, and mid to late October for coho, and there is potential for overlap of surveys depending on species presence.

Methods would be the same as described in Sections 3.4.2 and 4.4.2. Baseline information for adult salmonid presence would be compared to data from the 2013 surveys.

5.3.3. Gravel Supplementation/Channel Maintenance Methodologies

Grant Creek is a naturally sediment transport-limited fluvial environment. The major source of sediment in the spawning reaches is recruited from rock-fall occurring episodically within Reach 5. The biologically-significant transport of sediment from Reach 5 likely occurs during the higher seasonal storm flow events. As a result, salmonid spawning is opportunistic, and occurs where suitable substrates are found, with less emphasis on appropriate water depths and velocities. Because of these natural limitations, KHL is proposing to assess the need for supplemental gravel supplementation and/or channel maintenance flows as appropriate and based on a detrimentally impactful deviation from pre-Project conditions, in consultation with the stakeholders.

5.3.3.1. Study Area and Methods

The study area is Lower Grant Creek from the Reach 4/5 break downstream to its confluence with the Trail Lakes Narrows (Figure 3).

5.3.3.2. Site Selection, Gravel Placement, and Schedule

KHL proposes to assess the need for mainstem gravel augmentation in consultation with stakeholders. The need for augmentation and associated gravel placement would be developed in consultation with the stakeholders if the assessment deems additional gravel to be necessary. In addition to the possible mainstem augmentation, suitable spawning substrate may be manually distributed within the Reach 1 distributary; also dependent on consultation with stakeholders after the assessment has been conducted.

5.3.3.2.1. Grant Creek Mainstem

Grant Creek is a naturally limited sediment transport system relying primarily on anomalously high flows and episodic events such as glacial activity, earthquakes, landslides, etc. for much of its sediment deposition. Given this, combined with the fact that Grant Lake acts as a natural sink for sediment deposited upstream of the lake, it is not anticipated that the Project would have any limiting and/or detrimental impact to sediment deposition and transport in Grant Creek. That said, KHL proposes to assess, via adaptive management measures, if a substantive reduction in sediment recruitment and transport is occurring during Project operations. Regardless of the assessment of need for gravel augmentation described below, KHL is proposing to provide periodic “flushing flows” to promote sediment recruitment and transport down Grant Creek (see below).

Sediment augmentation/supplementation would be a habitat enhancement measure that could improve the habitat quality over the existing conditions, or could be adopted as a mitigation strategy if the flushing flow mitigation strategy (below) was inadequate. To evaluate the effects of PM&E and proposed mitigation and/or enhancement measures, baseline conditions would be utilized and subsequent surveys taken for comparative analysis.

Flushing Flows

Recruitment of sediment in Grant Creek can result when very high flows “flush” sediment from the canyon reach and deposit sediment in the lower reaches. The “flushing flow” PM&E was developed as a mitigation strategy to promote additional flow variability that would 1) mobilize instream sediment and promote bedform creation, and 2) provide transport of sediment from the canyon reach and subsequent deposition in the lower reaches. Flushing flows would provide diversion of flows through the canyon when lake elevations and climatic conditions allowed.

In the event of a full pool on Grant Lake and the Project operating at maximum capacity, KHL would have no additional management control over the lake; thus, any additional water would “naturally” flow out of the Grant Lake outlet and through the canyon reach (Reach 5) of Grant Creek. Utilizing the 66-year hydrologic record generated for Grant Creek from Kenai River data, the Project model indicates that 12 flow events of 800 cfs or greater would have occurred

during this timeframe. Per consultation with ADF&G, an estimate of 800 cfs was calculated for a channel maintenance flow by multiplying bankfull flow (~1,000 cfs) times 80%, to obtain a conservative estimate based on the effective discharge concept (ADF&G 2016).

It is important to note that KHL has developed its rule curve and associated operational plan to balance and optimize (to the extent possible) both aquatic natural resource considerations and overall generation. As such, any hydrologic events in excess of Project capacity would result in flushing flows of various magnitudes. With the understanding that episodic events (earthquakes, slides, glaciers, etc.) have been documented as being necessary to move significant amounts of substrate into the lower reaches of Grant Creek from Reach 5, KHL believes these flushing events with the Project in place would facilitate similar results from a sediment deposition perspective as those that were occurring prior to Project development, and likely preclude the need for additional gravel supplementation in the mainstem of Grant Creek. If however, during the sediment sampling efforts described below, it was determined that sediment transport was further limited than the current natural condition, KHL would meet with stakeholders per the Annual Compliance Reporting process (Section 6) to discuss the extent of the discrepancy and determine if and when additional sediment augmentation in the mainstem was needed. Additionally, KHL would continue to operate its Grant Creek stream gauge and an evaluation of peak flow magnitude and frequency would be conducted and discussed annually with stakeholders during the Annual Compliance Reporting process.

Adaptive Management Gravel Augmentation Assessment

The 2013 sediment sampling data for the mainstem of Grant Creek would be used as a supplemental portion of the overall baseline. While pebble counts at the surface are one of the methods that would be utilized, KHL additionally proposes that subsurface (bulk sampling) also be conducted in order to evaluate changes to sediment beneath the armored layer where winnowing of fines is anticipated from Project operations. A threshold would be identified if /when adaptive management was needed. KHL recommends establishing one year of baseline data (during construction) and then additional surveys in years 5 and 10 of operations. If no significant changes were identified within the first 10 years of operations, then the frequency and need for additional monitoring would be discussed with stakeholders. A proposed sampling analysis is provided below.

Surface Sampling Methods

Surface sampling, also referred to as Wolman or frequency-by-numbers, would be conducted to characterize surface substrate size at various bedforms often utilized for spawning. Subsurface sampling methods would utilize a random point sampling method to collect and measure surface sediment B-axis dimensions. Measurements could be made using a Wolman template. Sample sizes should be a minimum of a 100-stone count in areas of probable spawning. The grid spacing and measurement area would be determined by field conditions such that the sample area was isotropic in the horizontal directions.

Subsurface Bulk Sampling Methods

Subsurface bulk sampling, also referred to as frequency-by-weight, would be conducted to characterize subsurface substrate size at anticipated spawning areas. Subsurface methods would utilize field and laboratory sieving techniques at selected sampling sites in Reaches 1–4 downstream of the canyon to characterize subsurface conditions in areas in or proximate to historic or anticipated spawning. The location and quantity of sampling sites would be based upon professional judgment and the sampling sites spatially referenced for future monitoring.

Subsurface bulk sample locations would capture representative channel bed form (e.g., point or lateral bars, riffle, etc.) immediately above the wetted channel margin at a low flow condition. The surface armoring would be removed at sample locations to the depth of at least one stone depth of the maximum surface stone diameter. Sieving many subsamples of a large sample volume would likely be needed to reduce bias and account for the large grain size observed at Grant Creek (Church et al. 1987). The largest grain size present in the sample is used as a basis for the sample volume following the reasoning that the largest particles will be the fewest in number and, therefore, least well represented. Because of the large grain sizes present at the site, it is infeasible to remove the full sample for laboratory measurement; therefore, field sieving methods would be used. The subsurface material would be field sieved and weighed on site using the 2 percent criterion of Church et al. (1987). Previous bulk sampling demonstrated that the stone exceeds 90 mm, which yields individual sediment sample weights in excess of 450 pounds (200 kilograms). Sediment passing the 45-mm screen would be sieved at a lab.

Recommended Threshold for Adaptive Management Action

Sediment size characteristics can vary with season and watershed events; therefore, KHL anticipates a range of fluctuation with sampling results. The objective of this monitoring program is to identify and isolate potential effects from the proposed operations as they occur within the background range of variation. KHL proposes to supplement the baseline data set from 2013 with an additional baseline data year (during construction) and additional surveys during years 5 and 10 of operations.

In the event that the surveys indicated that an adversely impactful reduction of target spawning sediment has occurred, KHL would discuss the issue with stakeholders during the next Annual Compliance Reporting period (see Section 6) and collaboratively develop an acceptable approach for supplementing gravel or utilizing the aforementioned flushing flows into Grant Creek to ensure continued recruitment and transport of sediment. If necessary, further collaborative discussion with stakeholders would dictate the location, amount, and frequency of augmentation.

5.3.3.2.2. Reach 1 Distributary

The Reach 1 distributary would be assessed for the need of gravel augmentation in a similar fashion to the methods described in Section 5.3.3.2.1 for the mainstem of Grant Creek. KHL would evaluate flow rates, velocities, and water surface elevations within the Reach 1 distributary

for one year following completion of Reach 1 modifications and initiation of operations in order to develop an understanding of the hydraulic conditions in the distributary channel. The flows in the Reach 1 distributary would be less than flows in the mainstem of Grant Creek, and therefore, sediment size range would tend to be smaller. Monitoring of the sediment conditions following the same or similar sediment monitoring methodologies established for the mainstem as well as monitoring habitat usage would be conducted to determine the benefits and/or need for any gravel augmentation in the distributary in the future. Baseline data concurrent with the mainstem efforts would be collected during construction. Additional surveys described in Section 5.3.3.2.1 would be conducted in years 5 and 10 of operations. If per the results, sediment presence and recruitment was deemed to be adversely limiting, consultation with stakeholders would take place to determine the need and/or appropriate approach to augment appropriate gravel. If no significant changes were identified within the first 10 years of operations, then the frequency and need for additional monitoring would be discussed with stakeholders.

An ADF&G Fish Habitat Permit would be required for the channel modifications in the Reach 1 distributary. Specific details related to channel modifications would be finalized during the permitting process in collaboration with pertinent agency and permitting personnel.

5.4. Schedule

The assessment of current sediment conditions within the mainstem and the Reach 1 distributary of Grant Creek (Reaches 1–4) would be based upon comparisons between baseline and annual post-operation monitoring and biological observation. Formal monitoring reports and adaptive management recommendations would be provided during years 5 and 10, post-construction. At the conclusion of the 10-year period, KHL, in consultation with stakeholders, would evaluate the monitoring findings and collaboratively make a determination for the rate of future monitoring and the need for gravel augmentation within the mainstem and/or the Reach 1 distributary.

It is important to note that additional collaboration with stakeholders is planned post-license issuance and during construction. At present, KHL anticipates an adaptive management approach. Based upon the operational analysis conducted by KHL, the potential exists for channel maintenance type flows to occur via the natural outlet from Grant Lake during operation that would be sufficient for gravel recruitment from Reach 5. This may occur on a consistent enough periodic timeline to preclude any potential need for gravel supplementation in the mainstem and Reach 1 distributary of Grant Creek even if sediment analysis over the first 10 years of operations determined that the Project was limiting distribution. This would need to be determined once operations commenced, thus the need for continued collaboration with stakeholders to determine the appropriate need for and level of analysis related to the effectiveness of the measure.

6 COMMUNICATIONS

Provisions in this Plan would be formally adopted and implemented by KHL upon FERC approval of the Plan and after issuance of the FERC license. Requisite stakeholders would be consulted well in advance of construction efforts being implemented to assure a comprehensive

and collaborative planning effort for those measures (described above) associated with construction.

All Plan activities in a given year would be documented as part of an annual compliance reporting/meeting process. Every winter (when needed), KHL would convene a global meeting with all stakeholders and FERC to review all management plans and related monitoring efforts associated with construction and subsequent operation of the Project. It is during these annual proceedings when results would be documented, identified issues would be discussed, and modifications to plans and/or additional measures would be adopted to ensure that minimal impact to the natural environment was occurring as a result of Project construction and operations. With respect to this Plan, primary topics discussed during the annual compliance reporting/meeting process would include the following:

- A summary of the actions that KHL implemented during the previous calendar year related to:
 - Juvenile fish species assessments
 - Adult fish species assessments
 - Monitoring of PM&E measures
- A discussion of any substantial differences between the actions provided in this Plan (and subsequent agreements) and the actions that KHL implemented, including explanations for any substantial differences.
- Results of any surveying that occurred during the previous calendar year, conclusions that KHL draws from the monitoring results, and any change to this Plan that KHL proposes based on the monitoring results.
- Stakeholder input with respect to any necessary modifications to the existing plan.
- Per Section 5.4 and at the appropriate time, ongoing collaboration associated with the need for gravel supplementation in Grant Creek.

Ultimately, the draft Annual Compliance Report would be revised to incorporate stakeholder comments and update modified plans for the following year's natural resource implementation and compliance efforts. The Annual Compliance Report would be filed with FERC by April 1 of each year and copies made available to the stakeholders and FERC via the Internet.

Additionally, all monitoring efforts during construction activities would be managed by KHL's on-site ECM. This person would be responsible for assuring that all procedural aspects of the natural resource and construction management plans as well as general BMPs for construction efforts were being adhered to. This person would be the lead in confirming that all methods and associated data collection activities were occurring as scheduled and all associated data was appropriately entered and reported on. The ECM would be the primary, on-site contact for both confirmation of appropriate activities with respect to monitoring during construction and the conduit for communicating any issues that were occurring to ensure timely resolution.

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Attachment E-7. Final Vegetation Management Plan

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Grant Lake Hydroelectric Project (FERC No. 13212)

Vegetation Management Plan

Final

Kenai Hydro, LLC

April 2016

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Acronyms and Abbreviations

ADNR	Alaska Department of Natural Resources
AKEPIC	Alaska Exotic Plant Information Clearinghouse
ARRC	Alaska Railroad Corporation
BMP	Best Management Practices
cfs	cubic feet per second
ECM	Environmental Compliance Monitor
FERC	Federal Energy Regulatory Commission
FLA	Final License Application
GIS	geographic information system
GPS	global positioning system
HVAC	heating, ventilating, and air conditioning
IEEE	Institute of Electrical and Electronics Engineers
INHT	Iditarod National Historic Trail
KHL	Kenai Hydro, LLC
kV	kilovolt
kW	kilowatt
MCC	motor control center
MP	Milepost
MW	megawatt
NAVD 88	North American Vertical Datum of 1988
NRIS	National Register Information System
Project or Grant Lake Project	Grant Lake Hydroelectric Project
ROW	right-of-way
RUS	Rural Utilities Service
USFS	United States Department of Agriculture Forest Service
VMP or Plan	Vegetation Management Plan

Vegetation Management Plan

Final

Grant Lake Hydroelectric Project (FERC No. 13212)

1 INTRODUCTION

This document provides Kenai Hydro, LLC's (KHL's) proposed Vegetation Management Plan (VMP or Plan) for the Grant Lake Hydroelectric Project (Project or Grant Lake Project), Federal Energy Regulatory Commission (FERC) No. 13212. Activities associated with the proposed construction and operation of the Project include the construction of an intake structure in Grant Lake, a tunnel, a surge shaft, a penstock, a powerhouse, tailrace channel with fish exclusion barrier, access roads, a step-up transformer, a transmission line, and a switchyard. The activities and structures associated with this Project have the potential to impact sensitive plant species and to introduce invasive plants. The VMP covers all lands within the FERC Project boundary, and those lands adjacent to the FERC Project boundary that would either be affected by Project operations or have the potential to be affected by Project operations. KHL is responsible for implementing the VMP. The specific actions that KHL shall implement in this VMP were identified and developed based on the results of the Terrestrial Resource Study conducted by KHL for the licensing of the Project. KHL documented the results of this study in the *Terrestrial Resources Study – Grant Lake Terrestrial Resources Study, Final Report* (KHL 2014).

1.1. Location

The proposed Grant Lake Hydroelectric Project would be located near the community of Moose Pass, Alaska (population 219) in the Kenai Peninsula Borough, approximately 25 miles north of Seward, Alaska (population 2,693), and just east of the Seward Highway (State Route 9); this highway connects Anchorage (population 291,826) to Seward. The Alaska Railroad (ARRC) parallels the route of the Seward Highway, and is located adjacent to the Seward Highway in the Project area. Grant Lake is located in the mountainous terrain of the Kenai Mountain Range and has a normal water surface elevation of 703 feet North American Vertical Datum of 1988 (NAVD 88) and surface area of approximately 1,741 acres. A map showing the location of the Project is provided in Figure 1.

1.2. Project Description

The Grant Lake Project would consist of the Grant Lake/Grant Creek development, an intake structure in Grant Lake, a tunnel, a surge chamber, a penstock, a powerhouse, tailrace channel with fish exclusion barrier, access roads, a step-up transformer, a switchyard, and an overhead transmission line. The powerhouse would contain two Francis turbine generating units with a combined rated capacity of 5 megawatts (MW) with a maximum design flow of 385 cubic feet per second (cfs). The general proposed layout of the Project is shown in Figure 2.

1.2.1. Grant Creek Diversion

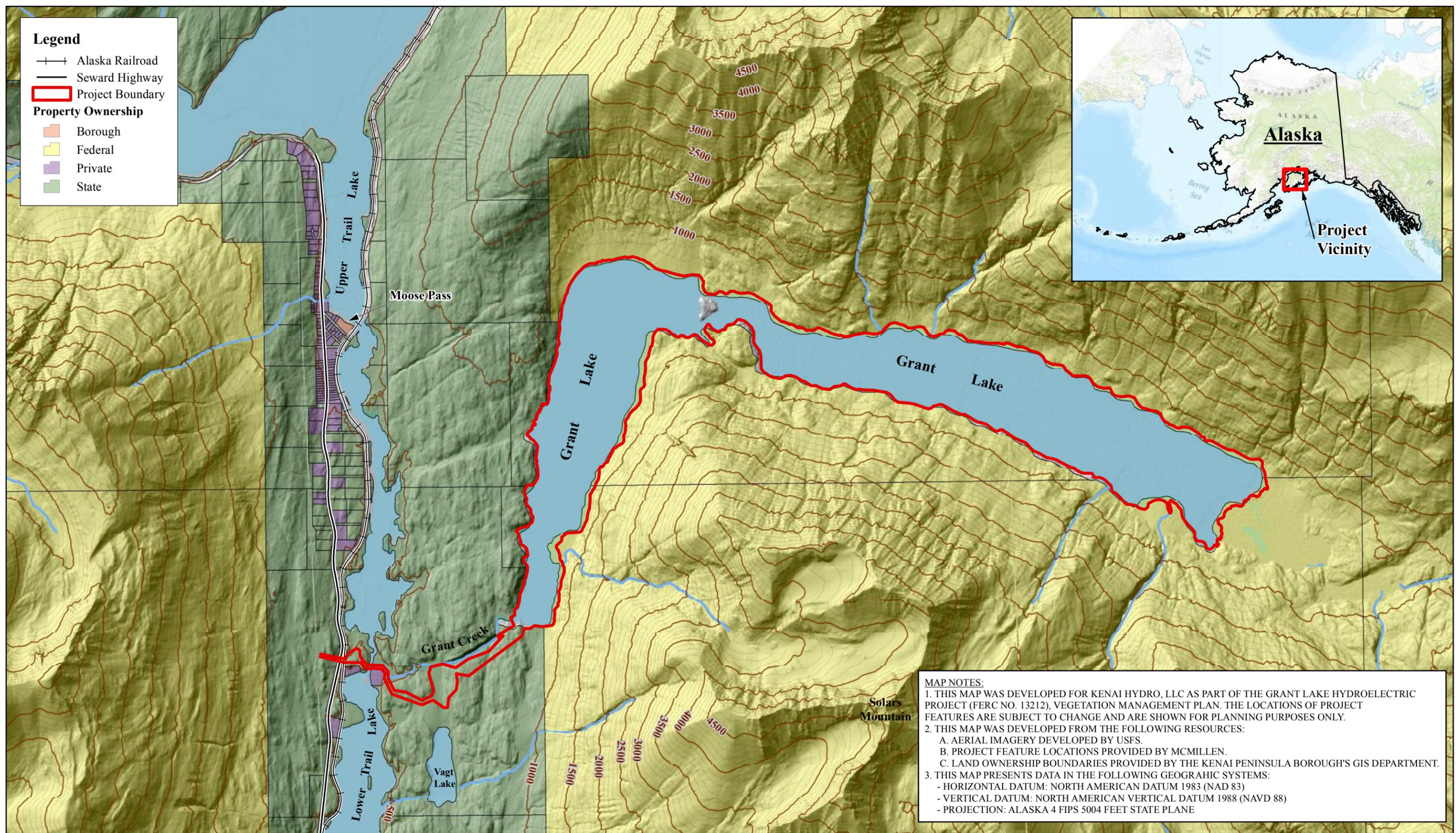
The proposed Project would consist of a reinforced concrete intake structure located east of the natural lake outlet adjacent to the south shore. No structural modifications would be made to the existing lake natural outlet. The Project would divert water up to a maximum of 395 cfs into the intake structure. Up to 385 cfs would flow to the powerhouse and up to 10 cfs would flow through the bypass pipe. When the lake level exceeds the natural outlet of 703 feet NAVD 88, a maximum of 395 cfs could be diverted into the intake structure. Flow in excess of 395 cfs would then pass over the natural outlet to Grant Creek.

1.2.2. Grant Lake Intake

The Project water intake would be a concrete structure located approximately 500 feet east of the natural outlet of Grant Lake and adjacent to the south shore. The intake structure would consist of a reinforced concrete structure extending from approximately elevation 675 feet NAVD 88 up to a top deck elevation of 715 feet NAVD 88. The structure would have an outside dimension of 38 feet by 20 feet. The structure would include intake trashracks, selective withdrawal intake gates with wire rope hoist, and a roller gate located on the water conveyance intake. The intake would be divided into three bays, each fitted with an intake gate to provide flexibility for delivering the full flow range of 63 cfs to 395 cfs. The gate position within the water column would be set to deliver the required water temperature to Grant Creek below the powerhouse. The roller gate would be 11 feet tall by 11 feet wide and fitted with a wire rope hoist lift mechanism. Electrical power would be extended from the powerhouse to the intake to operate the intake and isolation gates. Pressure transducers would be installed to monitor the water level at the lake as well as within the intake tower. An access bridge 16 feet wide would be installed from the lake shore out to the intake structure.

The intake would allow for drawdown of Grant Lake to elevation 690 feet NAVD 88, thereby creating approximately 18,791 acre-feet of active storage for the Project between elevations 703 feet NAVD 88 and 690 feet NAVD 88. The intake would be designed to allow the Project to draw water near the surface at various levels of storage, if deemed necessary to meet downstream temperature requirements. The invert of the intake would be at elevation 675 feet NAVD 88 to provide for adequate submergence to the tunnel.

A bypass pipe would extend from the intake structure to the base of the existing waterfall in Grant Creek. The installed pipe would be 900 feet long and approximately 18 inches in diameter, allowing the minimum flow ranging from 5 to 10 cfs to be released. A control gate would be located within the intake structure to regulate and monitor the bypass flow releases.



Legend

- +— Alaska Railroad
- Seward Highway
- ▭ Project Boundary

Property Ownership

- ▭ Borough
- ▭ Federal
- ▭ Private
- ▭ State



MAP NOTES:

1. THIS MAP WAS DEVELOPED FOR KENAI HYDRO, LLC AS PART OF THE GRANT LAKE HYDROELECTRIC PROJECT (FERC NO. 13212), VEGETATION MANAGEMENT PLAN. THE LOCATIONS OF PROJECT FEATURES ARE SUBJECT TO CHANGE AND ARE SHOWN FOR PLANNING PURPOSES ONLY.
2. THIS MAP WAS DEVELOPED FROM THE FOLLOWING RESOURCES:
 - A. AERIAL IMAGERY DEVELOPED BY USFS.
 - B. PROJECT FEATURE LOCATIONS PROVIDED BY MCMILLEN.
 - C. LAND OWNERSHIP BOUNDARIES PROVIDED BY THE KENAI PENINSULA BOROUGH'S GIS DEPARTMENT.
3. THIS MAP PRESENTS DATA IN THE FOLLOWING GEOGRAPHIC SYSTEMS:
 - HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 (NAD 83)
 - VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88)
 - PROJECTION: ALASKA 4 FIPS 5004 FEET STATE PLANE

REV	DATE	BY	DESCRIPTION

Drawing Scale: 0 0.25 0.5 1 Miles

MCMILLEN, LLC

1401 SHORELINE DRIVE BOISE, ID 83702 OFFICE: 208.342.4214 FAX: 208.342.4216

Developed For:

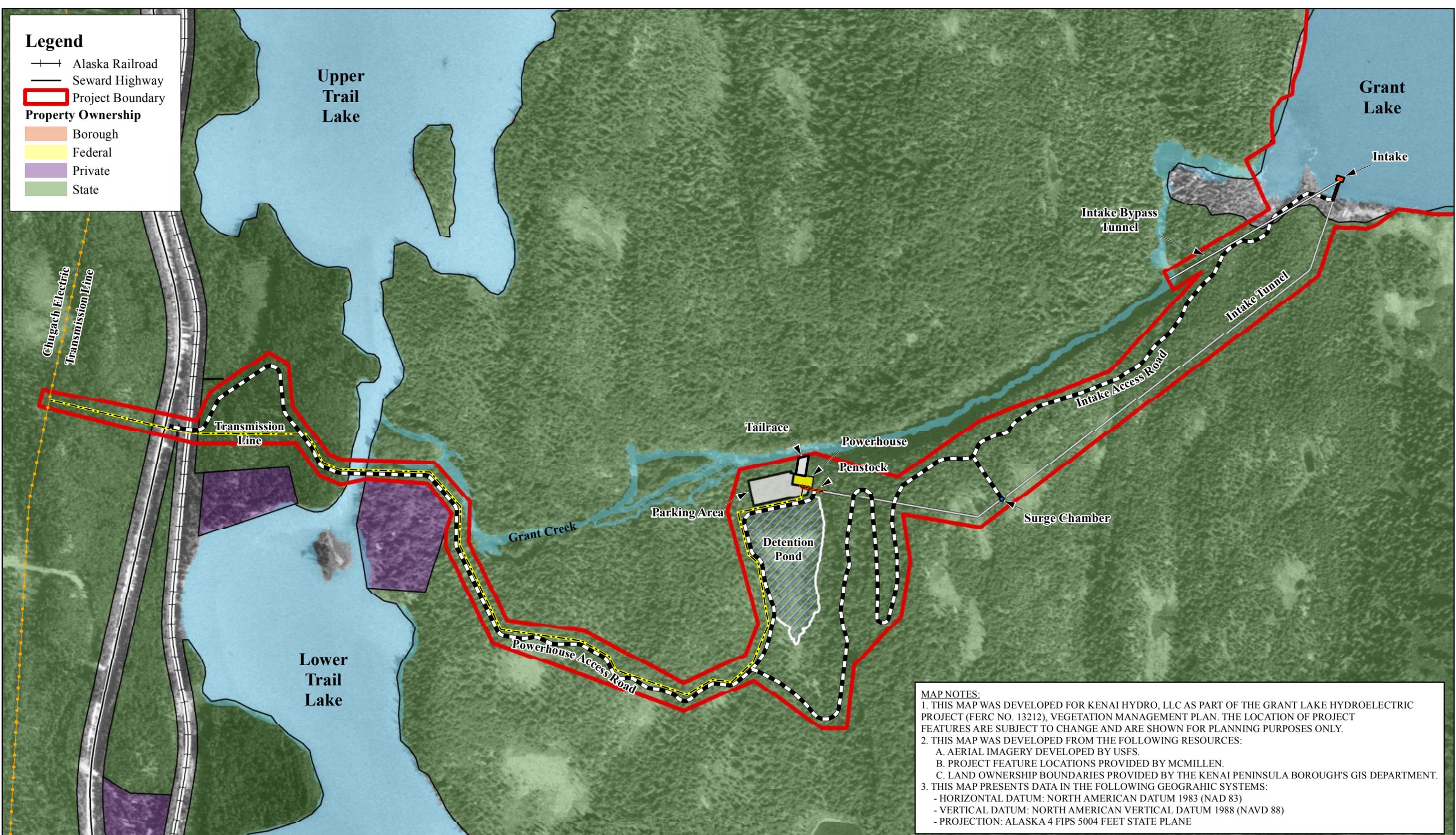
Homer Electric Association, Inc.
A Touchstone Energy® Cooperative

GRANT LAKE HYDROELECTRIC PROJECT - FERC PROJECT NO.13212

VEGETATION MANAGEMENT PLAN

Figure 1
Location Map of Project Vicinity

DESIGNED: Jake Woodbury	DRAWING
DRAWN: Jake Woodbury	
CHECKED: C. Warnock	
ISSUED DATE: 3/4/2016	SCALE: 1:35,000



Legend

- +— Alaska Railroad
- Seward Highway
- ▭ Project Boundary

Property Ownership

- ▭ Borough
- ▭ Federal
- ▭ Private
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REV	DATE	BY	DESCRIPTION

Drawing Scale:

0 250 500 1,000 Feet

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Developed For:

Homer Electric Association, Inc.
A Touchstone Energy® Cooperative

GRANT LAKE HYDROELECTRIC PROJECT - FERC PROJECT NO.13212

VEGETATION MANAGEMENT PLAN

Figure 2
General Project Features And Facilities

DESIGNED	Jake Woodbury	DRAWING
DRAWN	Jake Woodbury	
CHECKED	C. Warnock	
ISSUED DATE	3/4/2016	
SCALE: 1:5,500		

1.2.3. Tunnel and Surge Chamber

The intake structure would connect to a tunnel extending to the Project powerhouse. The tunnel would be approximately 3,300 feet long with a 10-foot-horseshoe shape. Drill and shoot techniques would be used to construct the tunnel using an entrance portal at the powerhouse for access. The lower 900 feet of tunnel would be constructed at a 15 percent slope. This section of the tunnel would be concrete lined. The upper 2,400 feet of tunnel would be constructed at a 1 percent slope and would be unlined. This proposed arrangement provides a low pressure hydraulic conduit in the upper tunnel reaches suitable for an unlined tunnel. A surge chamber would be located at the transition between the two tunnel slopes. This chamber would be approximately 10 feet in diameter and would extend from the tunnel invert elevation of 675 feet NAVD 88 to the ground surface at approximately elevation 790 feet NAVD 88. The surge chamber would provide a non-mechanical relief for hydraulic transients that could occur if a load rejection occurred at the powerhouse. Rock anchors and shotcrete stabilization techniques would be used to stabilize the tunnel exposed rock surface where required. A rock trap would be located at the surge chamber location to collect dislodged rocks from the unlined tunnel section.

The surge chamber outlet at the existing ground elevation would be fitted with a pre-fabricated steel structure that would span the chamber. The steel frame structure would be covered with wire mesh, providing a fully screened structure capable of allowing air in for the surge chamber, while also excluding wildlife and the public from accessing the surge chamber. A removable roof structure would be located on the steel outlet, allowing access to remove material from the rock trap that would be located in the tunnel directly below the surge chamber. The surge chamber cover structure would be painted to blend into the natural forest environment. During operations, if/when a load rejection at the powerhouse occurs, the pressure wave and associated volume of water would be contained within the surge chamber. As the wave dissipated, the water level in the surge chamber would decrease until it matched the level in Grant Lake.

The tunnel would transition to a 6-foot-diameter steel penstock approximately 150 feet from the powerhouse. The transition section would consist of a welded concentric structure that transitioned from the 10-foot tunnel section to the 72-inch-diameter penstock. A steel liner would extend from the downstream tunnel portal approximately 300 feet into the tunnel. The liner would be installed within the exposed rock surface, with grout pumped behind the liner to provide an impermeable and structurally sound tunnel section. A similar steel tunnel liner section would be installed at the connection to the intake structure for a total distance of approximately 150 feet.

1.2.4. Penstock

A 72-inch-diameter steel penstock would extend 150 feet from the downstream tunnel portal to the powerhouse. The welded steel penstock would be supported on concrete pipe saddles along the penstock route. The penstock would bifurcate into two 48-inch-diameter pipes feeding each of the powerhouse turbines. The penstock, fitted with welded steel thrust rings, would be encased in concrete thrust blocks at the tunnel portal as well as at the powerhouse. These thrust blocks would be designed to resist the full hydraulic load associated with the Project operation. An interior and exterior coating system would be applied to the penstock, providing full

corrosion protection. An access manway would be provided on the exposed penstock section, allowing access for future inspection and maintenance.

1.2.5. Tailrace

The powerhouse draft tubes would connect to a tailrace channel located on the north side of the powerhouse structure. The draft tubes would extend from a low point elevation of approximately 509 feet NAVD 88 up to the tailrace channel invert elevation of 515 feet NAVD 88. The channel would continue to the south bank of Grant Creek. Each of the draft tubes would be gated, allowing the flow to be routed to the detention pond for spinning reserve operation. Isolation bulkheads would be provided, allowing dewatering of the draft tubes for inspection and maintenance of the turbine. The tailrace channel would be trapezoidal in shape with a bottom width of 43 feet, side slopes of 2H:1V, and a channel depth ranging from 13 feet at the powerhouse to 7 feet at the creek. A concrete structure would be constructed at the confluence of the channel and Grant Creek. A picket-style fish barrier would be placed on this concrete structure as well as provision for installation of stoplogs, allowing the tailrace channel to be dewatered for inspection and maintenance. The channel would be excavated from native material and lined with riprap to provide a long term stable section. A staff gage and pressure transducer would be placed in the channel to monitor the water level in the channel. A wildlife exclusion fence approximately 8 feet tall and constructed from steel posts with heavy gage woven wire would be installed at the tailrace channel. The fence would be located at the top of the bank on both sides of the tailrace channel. The fence would also cross the top of the tailrace barrier access deck, providing full exclusion of wildlife from the tailrace channel.

1.2.6. Tailrace Detention Pond

An off-stream detention pond would be created to provide a storage reservoir for flows generated during the rare instance when the units being used for spinning reserve were needed for the electrical transmission grid. To prevent a sudden increase in the water surface levels of Grant Creek as a result of the increased flows generated, the additional powerhouse flows would be diverted into the detention pond and then released slowly back into Grant Creek. The discharge associated with a spinning reserve event would be dispersed via the tailrace channel that flows into Grant Creek. The detention pond would be located immediately south of the powerhouse, and would be bordered by the access road. Storing additional powerhouse flows up to an elevation of 521 feet NAVD 88, the detention pond would have a capacity of approximately 15 acre-feet and a surface area of approximately 3.6 acres. The powerhouse would contain two generating units. The turbines would discharge into a splitter box located at the outlet of the turbine draft tubes. Isolation gates would be provided to route the turbine discharge to the detention pond when a unit was brought online to support a spinning reserve demand. Typically, when a turbine was brought online for spinning reserve, the turbine would operate for an average period of 15 to 20 minutes to meet the instantaneous demand. For example, assuming one turbine was allocated to spinning reserve, the turbine would divert the full 192.5 cfs of flow into the detention pond with a total of 173,250 cubic feet (cf) discharged during a 15-minute period. Once the spinning reserve demand was met, the unit would be brought offline and the detention pond flow released slowly back into the powerhouse tailrace.

1.2.7. Powerhouse

The powerhouse would be located on the south bank of Grant Creek immediately west of the downstream tunnel portal and adjacent to the detention pond. The powerhouse would lie at the top of the existing hill slope that occurs near the mouth of the Grant Creek canyon (Reach 5). This location was selected based on the presence of an existing rock outcrop that would provide an effective downstream portal location for the tunnel. The powerhouse would be located south of Grant Creek. A natural lower area is located immediately south of the proposed powerhouse site. The entire site is forested with areas of open meadow. The powerhouse concrete foundation would tie into the existing hillside with the majority of the powerhouse structure located on relatively flat ground. The powerhouse would consist of a concrete foundation and a pre-engineered metal building superstructure. The building would be approximately 100 feet long (east to west) and 50 feet wide (north to south). The penstock would tie into the powerhouse on the south side and the tailrace channel on the north side of the building. The building floor would be set at approximately elevation 523 feet NAVD 88 and the centerline of the turbine runner at elevation 526 feet NAVD 88. The draft tube floor would be set at elevation 509 feet NAVD 88 with an operating tailwater inside the draft tubes ranging from 518.0 feet to 519.3 feet NAVD 88.

Two horizontal Francis type turbine/generator units with a rated total capacity of 5,000 kilowatt (kW) would be housed in the powerhouse structure. The powerhouse flow would range from a maximum of 385 cfs to a minimum of 58 cfs with each turbine operating flow ranging from 192.5 cfs to 58 cfs. Associated mechanical and electrical equipment would include hydraulic power units, turbine isolation valves, penstock drain, utility water system, lube oil system, oil water separator, battery system, and heating, ventilating, and air conditioning (HVAC) system. A control room housing the motor control center (MCC), communication rack, fiber optic panels, computers, and related equipment would also be provided. The Project switchgear would be located within the powerhouse. A standby generator, transformer, and fused pad-mounted switch assembly would be mounted on an enclosed switchyard located on the south side of the powerhouse. Dewatering pumps would be provided to support dewatering of the turbine draft tubes. A 30-ton bridge crane would be provided for equipment maintenance. The crane would travel on rails mounted on the steel building support columns. An energy dissipation valve would extend off the penstock and provide bypass flows into the Project tailrace.

1.2.8. Transmission Line/Switchyard

An overhead 115-kV transmission line would extend from the powerhouse to the existing 115-kV transmission line located on the west side of the Seward Highway. In addition to overhead transmission structures, the facilities would include a switchyard at the powerhouse consisting of a 115-kV fused pad-mounted disconnect switch and a pad-mounted 115-kV GSU transformer. The transmission line would run from the powerhouse parallel to the access road where it would intersect Chugach Electric's transmission line. The interconnection would have a pole-mounted disconnect switch.

Wooden poles would be designed as tangent line structures on about 250-foot centers. Design of the line would also incorporate the latest raptor protection guidelines. Collision avoidance devices would be installed on the line at appropriate locations to protect migratory birds.

1.2.9. Appurtenant Facilities

The following pertinent mechanical and electrical equipment would be applicable to the Project:

- Intake selective withdrawal intake gate
- Intake trashrack system
- Intake roller gate used to isolate the tunnel and downstream generation facilities
- Control gate located on the bypass pipeline
- A 30-ton bridge crane in the powerhouse
- Pumps located in the powerhouse used to dewater the draft tubes
- Pressure transducers located throughout the Project used to monitor the water level in the reservoir, tunnel, and tailrace, as well as pressures in the tunnel and penstock
- Security cameras at the intake and powerhouse
- Sanitary waste holding tank or septic system at the powerhouse
- A power line extending from the powerhouse to the intake to supply electrical power to the gates and trashrack
- Temperature instrumentation at the intake structure and at various stream locations to monitor water temperature

This equipment, along with other identified miscellaneous mechanical and electrical equipment, would be developed during the final design and included in the construction documents.

1.2.10. Access Roads

The Project would require an access road to both the powerhouse located near the base of the Grant Creek canyon and to the intake at Grant Lake. The access road would be used to construct the Project and afterwards, to maintain the facilities. It is anticipated that the powerhouse would be visited approximately once a month and the intake visited approximately once a month beginning just after the ice melts and continuing until just before freeze up. The powerhouse access road would be maintained year around. The intake access road would not be maintained in winter.

The 24-foot wide access road would tie into the Seward Highway at approximately MP 26.9. The route would travel eastward to cross Trail Lakes at the downstream end of the narrows between Upper and Lower Trail lakes and then continue eastward to the powerhouse. This route would be approximately one mile long. It would cross the ARRC tracks near an existing railroad crossing for a private driveway. The road would cross the narrow channel connecting Upper and Lower Trail lakes with an approximately a 110-foot-long single lane bridge. This bridge is proposed as a clear span with the west abutment located on bedrock and the east abutment on fill. The proposed route would avoid cuts and travel along the base of some small hills on the south side of Grant Creek to the powerhouse. This proposed access road would have one 90-degree crossing of the proposed reroute of the commemorative Iditarod National Historic Trail (INHT) easement.

The intake access road would be approximately one mile long, beginning at the powerhouse. The road would ascend a 230-foot bluff to reach the top of the southern rim of the Grant Creek canyon. A series of road switchbacks would be required to maintain a road grade of less than 8 percent. The road would then generally follow the southern edge of the canyon until it descends to Grant Lake. A small parking area and turn-a-round area would be provided at the intake structure. A 16-foot wide bridge would extend from the bank out to the intake structure.

The road would be gravel with a 16-foot top width. Maximum grade would be 8 percent. Periodic turnouts would be provided to allow construction traffic to pass. Fifty-foot radius curves would be used to more closely contour around the small steep hills of bedrock to limit the extent of the excavation and the height of the embankments.

1.2.11. Project Operations

Once constructed, the Project would operate to generate power throughout the calendar year based on inflow, available storage, lake elevation, and minimum flow requirements in Grant Creek. The lake would operate from the natural Grant Lake outlet elevation of 703 feet NAVD 88 down to a minimum lake elevation of 690 feet NAVD 88. The lake would be drawn down in the winter months utilizing a combination of Grant Creek inflows and stored water to meet the instream flows in the bypass reach while also maintaining power production. Water flow predictions would be used to estimate snowpack and the corresponding runoff volume. The Project operation would then be tailored to maximize winter power production while also ensuring that the lake refilled to elevation 703 feet NAVD 88.

1.3. Purpose

Project construction would create both temporary and permanent changes to upland vegetation communities in the Project area (KHL 2014). The VMP was developed to help minimize the negative impacts that Project construction and operation activities would have on natural vegetation, wetlands, and downstream aquatic resources. It includes provisions for invasive plant prevention and control, U.S. Department of Agriculture Forest Service (USFS) sensitive species protection, guidelines for the revegetation of disturbed areas, vegetation monitoring guidelines, and contingency measures.

The VMP applies to lands affected by the Project, including:

- Lands within the Project boundary;
- Lands influenced by ground-disturbing activities conducted as part of Project construction, operations, or license compliance;
- Lands influenced by Project-related erosion or invasive plant infestations; and
- Lands influenced by habitat improvements conducted as part of Project operations or license compliance activities (including invasive plant prevention and control).

2 BACKGROUND AND OBJECTIVES

The VMP has been prepared to conform to recommended Best Management Practices (BMPs), and Alaska Department of Natural Resources (ADNR) and Chugach National Forest guidelines for preventing the introduction and spread of invasive plant species (USFS 2002; USFS 2005a), and to protect sensitive plant species in accordance with USFS Region 10 guidelines (USFS 2002). Thus, the VMP includes the provisions for invasive plant prevention and control, sensitive plant species protection, revegetation of disturbed areas, vegetation monitoring, and contingency measures. The VMP was created using baseline vegetation data (KHL 2014) and Project design specifications as described in the Final License Application (FLA; KHL 2016). The VMP provides KHL with appropriate actions to minimize negative impacts to vegetation in the Project area, negative impacts to sensitive plants, and the introduction and spread of invasive plant species. It promotes revegetation of disturbed areas by native plant species and includes methods for controlling invasive plants that may become established in disturbed areas associated with the Project.

2.1. Objectives

The objectives of the VMP are to provide guidelines for the:

- Prevention, containment, and control of invasive plants on lands disturbed by Project construction and operations;
- Revegetation of lands affected by Project construction and operations; and
- Protection of USFS sensitive plant species and their habitats on Project-affected USFS lands.

2.2. Existing Conditions

This section summarizes the findings of the invasive plant survey and the sensitive plant survey that were conducted in the Project area in 2013 (KHL 2014).

2.2.1. Invasive Plant Species

A survey of invasive plants occurred in areas potentially affected by the Project in 2013 (KHL 2014). Areas of particular focus included roadsides, motorized vehicle travel routes, existing trails, lake and stream access points, developed and social recreation sites, and other human use areas. Four invasive plant species were found in the invasive plant study area during the 2013 survey (Table 1). In addition, a small population of timothy (*Phleum pratense*) was observed in the study area in the Seward Highway right-of-way (ROW) in 2014 (KHL 2016). Alaska Exotic Plants Information Clearinghouse (AKEPIC) field data sheets documenting invasive plants in the study area are located in Appendix 1. Overall, relatively few infestations of invasive species were documented in the invasive plant study area. A number of other invasive species are known to exist near the Project area (USFS NRIS 2013).

Once the Project begins operating, it is possible that invasive plants could invade the expanse of bare ground exposed by the seasonal 13-foot drawdown of Grant Lake. The vegetation of reservoir drawdown zones often differs substantially from that of areas that are not periodically

inundated. Invasive plants often dominate reservoir drawdown zones. Invasive plants in the drawdown zone would likely spread to adjacent upland areas. It is anticipated that concerted efforts to prevent invasive plant establishment and spread in the Grant Lake drawdown zone would be necessary.

Table 1. Invasive plant populations in the Grant Lake Project area (KHL 2014).

Scientific Name	Common Name	General Location in the Project area
<i>Taraxacum officinale</i>	common dandelion	Small scattered populations in the ARRC ROW, Seward Highway ROW, the Grant Lake Trail near Grant Lake, and around Grant Lake.
<i>Trifolium repens</i>	white clover	Small population in the Seward Highway ROW.
<i>Poa pratensis</i>	Kentucky bluegrass	Along the Grant Lake Trail near Grant Lake.
<i>Poa annua</i>	annual bluegrass	Along the Grant Lake Trail near Grant Lake.
<i>Phleum pratense</i>	timothy	Small population in the Seward Highway ROW.

2.2.2. Sensitive Plant Species

Although there are no planned Project components on USFS land, field surveys for sensitive plants occurred on USFS-owned portions of the Grant Lake shoreline, as this area would be affected by Project operations (KHL 2014). Sensitive plants are plant species formally identified by Region 10 of the USFS (Goldstein et al. 2009). A primary goal of the VMP is to avoid negative Project-related impacts to USFS sensitive plant populations within the Project area.

In the Grant Lake Project area, a small population of the USFS sensitive species pale poppy (*Papaver alboroseum*) was documented on a semi-stabilized, sparsely vegetated, south-facing creek outwash area near the Grant Lake shore, on a cobble, sand, and gravel substrate. A USFS sighting form for the population is presented in Appendix 2. A map of the population is presented in Appendix 3. The population measured approximately 10 feet by 45 feet in size and had 20 plants. The plants are a minimum of 8 feet away from and between 1 and 3 feet higher (704 – 707 feet NAVD 88) than the natural maximum lake elevation level of 703 feet NAVD 88. Pale poppy typically grows in open areas, areas with sandy, gravelly, well-drained soils; mesic to dry alpine areas; and recently deglaciated areas (Goldstein et al. 2009). Additional information about the pale poppy may be found in “Conservation Assessment for the Pale Poppy (*Papaver alboroseum*)” (Charnon 2007).

The Grant Lake pale poppy population is located in the Floodplain Forest and Scrub vegetation type. Vegetation present at the site is an early successional community with shrubs, forbs, and graminoids. The population and habitat appear to be increasingly shaded due to natural vegetative succession. Dense Sitka alder and willow shrubs and seedlings dominate the site. Approximately half of the pale poppy plants in the population were growing in the shade of Sitka alder branches. The more densely shaded pale poppy plants were smaller and had fewer fruiting capsules than plants that were in less shade. If natural vegetation succession in the vicinity of the Grant Lake pale poppy site continues without natural disturbance (e.g., an avalanche or flood

event), it is likely that the already small population would naturally decline in numbers and eventually disappear due to the species' requirement for open, well-drained habitat.

There is an historic cabin, a campsite, and two campfire rings with evidence of recent use on the small gravel bar where the pale poppy population is located. There was no visible evidence of damage to plants when surveyed in 2013, although plants were as close as 5 feet away from one of the campfire rings. The only invasive plant species present in the vicinity of the pale poppy population was common dandelion (*Taraxacum officinale*). Horned dandelion (*Taraxacum ceratophorum*), a native plant species, was observed in similar habitat on the lakeshore and may be mixed with the common dandelion at the site.

While no direct effects to the pale poppy population as a result of Project construction are anticipated, indirect effects to plants and their habitat are possible due to a seasonal 13-foot drawdown of Grant Lake. Potential indirect effects to plants from the drawdown of the lake include introduction and spread of invasive plant species in both upland areas in the vicinity of the population and below the natural high water level in the drawdown zone between 690 and 703 feet NAVD 88. The lake level naturally fluctuates 11 feet below its maximum elevation level of 703 feet NAVD 88 to approximately 692 feet NAVD 88. It is important to note that the additional two feet of operational range from 692 feet NAVD 88 – 690 feet NAVD 88 is the only range of anticipated modification to the natural lake level fluctuation currently occurring.

3 PLAN IMPLEMENTATION

This section describes vegetation management measures to be implemented in the Grant Lake Project area with regard to the following:

- Invasive Plant Management and Control
- Revegetation and Vegetation Maintenance
- Sensitive Plant Species Protection and Monitoring

These measures would be implemented before, during, and after the construction phase of the Project, or during Project operations.

Vegetation management measures applied during Project construction and operation would be managed by KHL's on-site Environmental Compliance Monitor (ECM). The ECM would be responsible for ensuring that all procedural aspects of the natural resource and construction management plans, as well as general BMPs for construction efforts were adhered to.

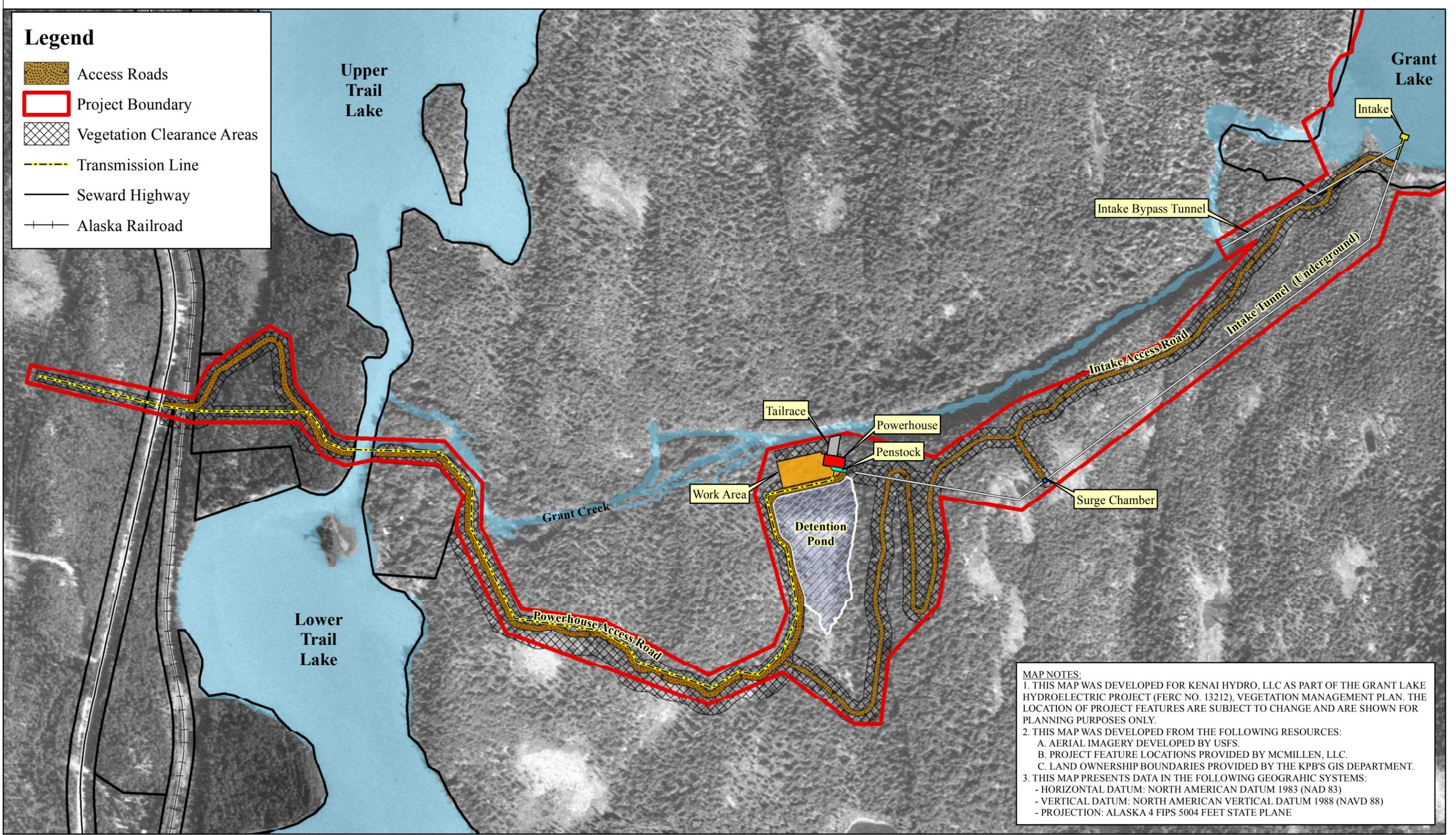
3.1. Invasive Plant Management and Control

The following general measures and BMPs regarding invasive plant management and control would be employed during construction and operation of the Project to prevent the establishment and spread of invasive plant species:

- Prior to construction, provide training and information to Project personnel (employees and contractors) about the goals and methods of invasive plant prevention and management. Include identification of common invasive plant species in training.

- Prior to construction, clearly mark vegetation clearing limits in the field along access roads, the transmission line, and adjacent Project structures. Vegetation clearing limits are shown in Figure 3.
- To reduce risk of spreading invasive plants, begin Project operations in uninfested areas before operating in infested areas.
- Require the use of weed-free construction materials (rock, gravel, fill material, mulch, straw, etc.).
- Prior to construction, treat known invasive plant infestations in the Project area to minimize seed source in construction areas. AKEPIC Field Data Sheets documenting known invasive species infestations are included in Appendix 1.
- During construction, restrict ground-disturbing activities and fill footprint to as small an area as possible within the Project boundary and designated roads.
- Limit the amount and length of time that bare ground is exposed by mulching bare areas and minimizing ground disturbance. Bare ground provides a favorable substrate for invasive plants to become established. Invasive plant seeds are most numerous in late summer and can remain viable in the soil for many years.
- Locate and use Project staging areas that are free of invasive plants. Avoid or minimize all types of travel through areas infested with invasive plants, or restrict to those periods when spread of seed or propagules are least likely.
- Clean construction equipment prior to use in order to avoid the introduction of new invasive plants into the Project area. Clean especially vehicle tires, vehicle undercarriage areas, shovels, and buckets.
- Employ measures to limit erosion during construction in the Project area (consistent with an Erosion and Sediment Control Plan to be developed post-licensing).

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Legend

- Access Roads
- Project Boundary
- Vegetation Clearance Areas
- Transmission Line
- Seward Highway
- Alaska Railroad

MAP NOTES:

1. THIS MAP WAS DEVELOPED FOR KENAI HYDRO, LLC AS PART OF THE GRANT LAKE HYDROELECTRIC PROJECT (FERC NO. 13212), VEGETATION MANAGEMENT PLAN. THE LOCATION OF PROJECT FEATURES ARE SUBJECT TO CHANGE AND ARE SHOWN FOR PLANNING PURPOSES ONLY.
2. THIS MAP WAS DEVELOPED FROM THE FOLLOWING RESOURCES:
 - A. AERIAL IMAGERY DEVELOPED BY USFS.
 - B. PROJECT FEATURE LOCATIONS PROVIDED BY MCMILLEN, LLC.
 - C. LAND OWNERSHIP BOUNDARIES PROVIDED BY THE KPB'S GIS DEPARTMENT.
3. THIS MAP PRESENTS DATA IN THE FOLLOWING GEOGRAPHIC SYSTEMS:
 - HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 (NAD 83)
 - VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88)
 - PROJECTION: ALASKA 4 FIPS 5004 FEET STATE PLANE

REV	DATE	BY	DESCRIPTION

N

Drawing Scale:
0 250 500 1,000
Feet

MCMILLEN, LLC

1401 SHORELINE DRIVE BOISE, ID 83702 OFFICE: 208.342.4214 FAX: 208.342.4218

Developed For:

Homer Electric Association, Inc.
A Touchstone Energy® Cooperative

GRANT LAKE HYDROELECTRIC PROJECT - FERC PROJECT NO.13212

VEGETATION MANAGEMENT PLAN

Figure 3
General Project Features, Facilities, Adjacent Cleared Areas, and Right of Ways

DESIGNED	Jake Woodbury	DRAWING
DRAWN	Jake Woodbury	
CHECKED	K. Beck	
ISSUED DATE	3/4/2016	
SCALE: 1:4,700		

Surveys for and treatment of invasive plant infestations would be conducted during the first growing season after construction completion and year 5 post-construction. The survey would include areas in the vicinity of Project-related disturbance (including construction areas, access roads, ROWs, facilities, and the Grant Lake shoreline). The survey would document invasive plants included on the current AKEPIC invasive plant list (available on the AKEPIC website). The AKEPIC website has comprehensive information about invasive plant species in Alaska.

- Invasive plant surveys would be done by a qualified botanist or someone trained in invasive plant identification.
- In addition to documenting invasive plant infestations, bare areas in need of revegetation would be documented during surveys.
- Any invasive plant infestations would be documented with AKEPIC Field Data Sheets and global positioning system (GPS). Forms would be submitted to AKEPIC for inclusion in its state-wide database. The AKEPIC User's Manual, including a blank AKEPIC Field Data Sheet, is available to download from the AKEPIC website (http://aknhp.uaa.alaska.edu/wp-content/uploads/2012/03/AKEPIC_User_Manual_022312.pdf).
- General information to be recorded includes species, location, size of infestation, size of bare area, habitat information of adjacent area (vegetation type, dominant native species), etc.
- Surveys would occur during the growing season (June – August) to optimize plant identification.
- Invasive plant locations, bare area locations in need of revegetation, and associated information would be maintained in a geographic information system (GIS) database.
- Subsequent general surveys for invasive plant species would be conducted every 10 years for the term of the license.
- The time period between invasive plant surveys may be adjusted depending on the rate at which invasive plants become established and spread in the Project area. Any proposed modifications to the invasive plant survey schedule would be reviewed and ultimately approved by the USFS and ADNR prior to implementation.

Once invasive plant infestations were documented, appropriate invasive plant treatments would be conducted to reduce or eliminate their negative impacts.

- Invasive plant infestations associated with Project construction and operations would be monitored and treated in consultation with the ADNR, the USFS, and their respective invasive plant management plans.
- Invasive plant control would be achieved with a combination of manual, mechanical, cultural, biological, and chemical treatments. Damage to non-target species would be avoided to the extent possible.
- For mechanical treatments, the entire plant, including roots, would be removed.
- Control of invasive plants would occur at different times of the year depending on the methods used and the species being controlled.
- If possible, infestations would be treated early in the growing season before invasive plants produced that season's seed.

- After invasive plants were removed, natural revegetation would be used where site conditions were favorable toward achieving revegetation objectives and a seed source was present.
- When natural revegetation conditions were not favorable, native plant species would be used for revegetation/restoration projects.
- The more aggressive invasive plants should be prioritized for control. Invasiveness Ranks are defined and given for many common invasive plants here: <http://aknhp.uaa.alaska.edu/botany/akepic/non-native-plant-species-list/#content>
- Horned dandelion (*Taraxacum ceratophorum*), a native plant species, is very similar in appearance to common dandelion (*T. officinale*). The two species may grow together on the Grant Lake shore. Care should be taken that horned dandelion not be controlled.

Standards for invasive plant control success would be determined in consultation with the ADNR and the USFS after FERC license issuance.

- Treated areas would be monitored to evaluate the effectiveness of control.
- It may take several treatments to eliminate larger invasive plant infestations.
- Monitoring of documented infestation sites would continue for 5 years after identification and treatment was completed to ensure treatments were effective.

Reporting related to invasive plants would be incorporated into the Annual Compliance Report. Based upon the surveys conducted and associated results, if detrimental populations of invasive species were documented and their spread inside the Project area was deemed to be a result of Project construction or operations, KHL would modify the VMP for the minimization of invasive plant species from priority Project areas. In this eventuality, the proposed modifications would be reviewed and ultimately approved by the ADNR, the USFS prior to filing with FERC. These discussions would take place as part of the annual compliance reporting/meeting process further detailed in Section 4.

3.2. Revegetation and Vegetation Maintenance

3.2.1. Revegetation

KHL proposes to revegetate areas disturbed by Project construction and operations. These areas include areas adjacent Project features, laydown areas for equipment and construction materials, as well as temporary vehicle use and parking areas. Revegetation efforts would restore areas to their previous upland vegetation type. Upland vegetation types in the Project area were surveyed and mapped as a part of vegetation studies of the Grant Lake Project area (KHL 2014). Project construction activities are planned in the following three vegetation types:

- Coniferous Forest
- Coniferous-Deciduous Forest
- Floodplain Forest and Scrub

A survey for areas in need of revegetation would occur during the next growing season after construction completion. These areas would be documented in a manner similar to invasive plant

infestations, described in Section 3.1. The following measures and BMPs regarding revegetation would be employed during construction and operation of the Project:

- Only weed-free materials (rock, mulch, straw, plant materials, native seed mixes) would be used for revegetation.
- During construction, native shrubs, forbs, soils, and vegetation mats would be salvaged from areas where plants were destroyed, for later use in revegetation. As much soil as reasonably possible would be kept with salvaged plant roots.
- Natural revegetation would be promoted when local seed source and site conditions were favorable for achieving revegetation objectives.
- When conditions were not favorable for natural revegetation, native plant sources would be used for revegetation stock.
- Preference would be given to using plant materials for revegetation from the local region to maximize adaptation to the Project area, and to maintain local genetic composition.
- KHL would comply with the state and/or federal land manager's methods for assessing the success of revegetation efforts.

3.2.2. Vegetation Maintenance

While vegetation communities in some areas would eventually be restored to their pre-construction structure, vegetation along access road ROWs, the transmission line corridor, and in cleared areas around Project features would be regularly maintained to manage the height of trees and tall shrubs. This regular maintenance would follow applicable guidelines established in the Invasive Plant and Revegetation sections of this document. Measures and guidelines for managed vegetation areas include the following:

- During the license period, vegetation adjacent to buildings and in ROWs along access roads and the transmission line would be cleared periodically to maintain clearances specified by Rural Utilities Service (RUS) and Institute of Electrical and Electronics Engineers (IEEE) standards. The frequency of maintenance may need to be adjusted depending on how rapidly or slowly trees and other tall vegetation grows. It is anticipated that this would occur every 8 to 10 years.
- Invasive plant infestations would be mapped and controlled in managed vegetation areas. Refer to invasive plant control guidelines in Section 3.1.
- Bare ground areas in managed vegetation areas would be mapped and revegetated. Refer to revegetation guidelines in Section 3.2.1.

Reporting related to revegetation efforts and associated confirmation surveys would be incorporated into the relevant year's Annual Compliance Report. As detailed above, if initial revegetation efforts were unsuccessful in certain areas, KHL would assess the reasons and modify the revegetation approach for successful revegetation of those areas. Any modifications to the VMP would be reviewed and ultimately approved by the ADNR, USFS, and other stakeholders prior to filing with FERC. These discussions would take place as part of the annual compliance reporting/meeting process further detailed in Section 4.

3.3. Sensitive Plant Species Protection and Monitoring

3.3.1. General Measures

The following measures apply to sensitive plant occurrences on USFS lands in the Project area:

- If any previously undiscovered sensitive plants were encountered on USFS land at any time prior to or during implementation of the Project, the USFS would be notified and an appropriate course of action determined to avoid or mitigate disturbance.
- During the Project license period, a site-specific sensitive plant survey would be conducted prior to any new Project-related ground-disturbing activities occurring on USFS land. The survey would be done in consultation with the USFS and would be consistent with current USFS sensitive plant survey protocols (Stensvold 2002; USFS 2005b). USFS 2008 details how to document sensitive plant populations. A blank USFS sighting form (R10 TES Plant Element Occurrence Field Form) is included in Appendix 4.
- The target R10 sensitive species list would be reviewed and updated prior to sensitive plant surveys. The list was last updated in February 2009.
- A GIS database with records of sensitive plant occurrences and invasive plant infestations would be queried as part of the evaluation process for any new ground-disturbing activities.

3.3.2. Pale Poppy Population Management

Monitoring of the pale poppy population located on the north shore of Grant Lake would be conducted during years 1 and 5 after license issuance to assess operational activities' impact (if any) on the population or its habitat. The pale poppy sighting form is presented in Appendix 2. General USFS guidelines for (re)surveying sensitive plant occurrences would be followed (USFS 2008):

- Information collected would include number of plants, population dimensions, elevation of plants relative to the natural maximum lake elevation (703 feet NAVD 88), presence and abundance of invasive plant species, and the presence of any other disturbances or threats.
- Location and boundaries would be documented with a GPS unit.
- Representative photographs would be taken.
- Monitoring information would be updated and maintained in a GIS database.
- Surveys would be conducted by a qualified botanist.

Given that the operational regime for the Project involves no increase in the natural, maximum lake elevation (703 feet NAVD 88), it is possible that Project operations would have no negative impacts on the natural condition of the population. It is more likely that natural succession of other plant species would negatively impact the pale poppy over time. Given proposed operational parameters this impact would not be deemed to be associated with the Project. If this was the case, or if Project operations were documented to increase the number of plants associated with that particular community, no further surveys would be conducted. If however,

Project operations were documented to negatively impact the population or its habitat, mitigation efforts would be implemented, including the following:

- Invasive plants found in the vicinity of the pale poppy population would require timely control. They could be controlled at the same time as invasive plants in other areas around Grant Lake. Control efforts would be determined in consultation with the USFS.

Reporting related to sensitive species monitoring would be incorporated into the Annual Compliance Report. If the pale poppy population was decreasing in numbers or if its habitat was being degraded as a result of Project operations or invasive plant infestation, KHL would develop a site-specific plan to address either avoiding future degradation of the population or identifying mitigation actions that limited the overall impact of the potential loss of that population. In this eventuality, the proposed modifications would be reviewed and ultimately approved by the USFS and other stakeholders prior to filing with FERC. These discussions would take place as part of the annual compliance reporting/meeting process further detailed in Section 4.

4 COORDINATION AND REPORTING

Provisions in the VMP would be formally adopted and implemented by KHL upon FERC approval of the VMP and after issuance of the FERC license. The USFS would be consulted regarding USFS-listed sensitive plant management, and regarding invasive plant prevention and control measures on USFS lands. The ADNR would be consulted regarding invasive plant prevention and control measures on ADNR lands.

A GIS database would be maintained and updated after each survey, and would include records of all known sensitive species occurrences and all known invasive plant infestations in the Project area. In addition to records of occurrences documented during survey efforts, any relevant data supplied by the ADNR or USFS would be included. As more sensitive plants or invasive plants were identified in the Project area, these would be added to the database. The database would be queried as part of the evaluation process for new ground-disturbing or other activities.

All Plan-related activities in a given year would be documented as part of an annual compliance reporting/meeting process. Every winter, KHL would convene a global meeting with all stakeholders to review all management plans and related monitoring efforts associated with construction and subsequent operation of the Project. During these annual proceedings, results would be documented, identified issues would be discussed, and modifications to plans and/or additional measures would be adopted to ensure that minimal impact to the natural environment occurred as a result of Project construction and operations. With respect to the VMP, primary topics discussed during the annual compliance reporting/meeting process would include the following:

- A summary of the actions that KHL implemented during the previous calendar year related to:
 - Invasive species

- Revegetation efforts
- Sensitive species
- A discussion of any substantial differences between the actions provided in the VMP and the actions that KHL implemented, including explanations for any substantial differences.
- Results of any surveying and monitoring that occurred during the previous calendar year, conclusions that KHL draws from the results, and any change to the VMP that KHL proposes based on the results.
- Stakeholder input with respect to any proposed modifications to the existing VMP.

Ultimately, the draft Annual Compliance Report would be revised to incorporate stakeholder comments and update modified plans for the following year's natural resource implementation and compliance efforts. The Annual Compliance Report would be filed with FERC by April 1 of each year and copies made available to the stakeholders and FERC via the Internet.

Additionally, all monitoring efforts during construction activities would be managed by KHL's on-site ECM. This person would be responsible for ensuring that all procedural aspects of the natural resource and construction management plans as well as general BMPs for construction efforts were adhered to. This person would be the lead in confirming that all methods and associated data collection activities were occurring as scheduled and all associated data was appropriately entered and reported on. The ECM would be the primary, on-site contact for both confirmation of appropriate activities with respect to monitoring during construction and the conduit for communicating any issues that may be occurring to ensure timely resolution.

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Appendix 1: AKEPIC Field Data Sheets, 2013

****Required Field**

**Survey Date: 07/22/2013 **Observers: Beck, Kathryn A.
 mm / dd / yyyy Last Name, First Name Initial. (e.g.: Smith, J.; Williams, R.)

Observers Affiliation (circle one):
 AACD_IPC AKNHP ARS BLM CES CWMA DOD DOWL HDR NPS PMC SCS TECI UAF USFS USFWS USGS Other

A. Site Information

** Site Code: AK State Land, Grant Lake Project
 Visit Type (circle one): Reconnaissance Monitoring Research Control
 Is this a Revisit (circle one): Yes No
 ** Study Type (circle one): Exhaustive species inventory Highest priority species Single species study
 ** Area Surveyed: ± 200 (acres)
 (Note: 1/10 acre = 37 ft radius, 1/2 acre = 83 ft radius, 1 acre = 118 ft radius)
 Site Vegetation Community Description (level IV Viereck et al. 1992): III. G. 1
 Disturbance Type (see instructions below): Fill Importation (Road) Railroad) River Action

B. Location Information

** Latitude: 60.4521631 (Decimal Degrees, NAD83)
 ** Longitude: -149.3681377 (Decimal Degrees, NAD83)
 Elevation: ± 440 (ft)
 ** Collection Method (circle one): GPS Topographic Map Aerial Photo
 ** GPS precision: 0-30 (ft; 0-5, 0-30, 0-100, 0-1000, 1000+)
 Topographic Map Source: _____ Scale: _____ Date: _____
 Quad name: _____ Quad number: _____ (i.e. A-1, B-2, C-3, D-4)
 Notes (location): TADF + TRRE3 located on Servant Hwy ROW + AK RR ROW, within Grant Lake Study Area.

C. Survey Information

** Plant Species Code (see below)	** Infested Area (acres) (see below)	** Canopy Cover (% cover) (see below)	Disturbance Age (yrs.)	Stem Count (see below)	** Herbarium (see below)	Control Action (see below)	Aggressiveness (see below)
TADF	0.1	< 1%	ongoing	51-150	—	Multiple	Medium
TRRE3	0.01	< 10%	ongoing	1-5*	—	Multiple	Medium

D. Notes (species): The TADF + TRRE3 plants along Servant Hwy + Alaska RR ROW are likely known metapopulations. There were also several TADF plants at the mouth of Grant Creek where it enters Trail Lake Narrows.
* 1-5 rhizomatous patches.

**Survey Date: 07/19/2013 **Observers: Beck Kathryn A.
 mm / dd / yyyy Last Name, First Name Initial. (e.g.: Smith, J.; Williams, R.)

****Required Field**

Observers Affiliation (circle one):

AACD_IPC AKNHP ARS BLM CES CWMA DOD DOWL HDR NPS PMC SCS TECI UAF USFS USFWS USGS Other

A. Site Information

** Site Code: CHNE 2013
 Visit Type (circle one): Reconnaissance Monitoring Research Control
 Is this a Revisit (circle one): Yes No
 ** Study Type (circle one): Exhaustive species inventory Highest priority species Single species study
 ** Area Surveyed: ±200 (acres)
 (Note: 1/10 acre = 37 ft radius, 1/2 acre = 83 ft radius, 1 acre = 118 ft radius)
 Site Vegetation Community Description (level IV Viereck et al. 1992): III.Gr.1
 Disturbance Type (see instructions below): Lake Action / Trail / Landslide / Avalanche

B. Location Information

** Latitude: 60.492915 (Decimal Degrees, NAD83)
 ** Longitude: -149.3139534 (Decimal Degrees, NAD83)
 Elevation: 700' to 705 (ft)
 ** Collection Method (circle one): GPS Topographic Map Aerial Photo
 ** GPS precision: 0-30 (ft; 0-5, 0-30, 0-100, 0-1000, 1000+)
 Topographic Map Source: _____ Scale: _____ Date: _____
 Quad name: _____ Quad number: _____ (i.e. A-1, B-2, C-3, D-4)
 Notes (location): The *Poa annua*, *Poa pratensis* and *Taraxacum* were found at this point. *Taraxacum officinale* was located at other scattered locations around lakeshore. This point is where the Grant Lake Trail enters the study area on the west end of the north shore of Grant Lake on USFS land.

C. Survey Information

** Plant Species Code (see below)	** Infested Area (acres) (see below)	** Canopy Cover (% cover) (see below)	Disturbance Age (yrs.)	Stem Count (see below)	** Herbarium (see below)	Control Action (see below)	Aggressiveness (see below)
TAOF	0.1 ^{on the} lakeshore	1%		151-500	Not collected	Multiple	Low to med
POAN	0.01	5%		50-150	Not collected	Multiple	Low
POPR	0.01	1%		26-50	Not collected	Multiple	Low

D. Notes (species): I located *Taraxacum ceratophorum*, a native species similar in appearance to *Taraxacum officinale* mixed in with *T. officinale* on the Grant Lake shore. The locations of *Taraxacum* along the Grant Lake shore are likely mixed populations. Wave action and ice scouring create natural disturbance effect along the shore.

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Appendix 2: USFS Sensitive Plants Field Form for Grant Lake Pale Poppy, 2013

NOTE: Because of the potentially sensitive nature of information regarding sensitive plant species, the information contained in Appendix 2 is not being distributed to the general public. This information has been filed with FERC with a Privileged designation. It may be obtained by request to Kenai Hydro, LLC or FERC, subject to confidentiality provisions.

Appendix 3: Sensitive Plant Population Map, 2013

NOTE: Because of the potentially sensitive nature of information regarding sensitive plant species, the information contained in Appendix 3 is not being distributed to the general public. This information has been filed with FERC with a Privileged designation. It may be obtained by request to Kenai Hydro, LLC or FERC, subject to confidentiality provisions.

Appendix 4: USFS Sensitive Plants Field Form

R10 TES PLANT ELEMENT OCCURRENCE - FIELD FORM - USDA FOREST SERVICE 12/08

⊗ = required field, ⊕* = conditionally required field, ⊕ = required field Alaska Region

General Information

1) SITE ID: ⊗		2) DATE: ⊗		3) SITE NAME:	
4) NRCS PLANT CODE: ⊗					
5) SCIENTIFIC NAME: ⊗					
6) RECORD SOURCE: ⊗		7) SURVEY ID: ⊕*		8) Survey Name:	
9) EXAMINER(S)- LAST: ⊗			FIRST: ⊗		MIDDLE INITIAL:
LAST:			FIRST:		MIDDLE INITIAL:
10) OWNERSHIP: ⊗		11) Loc. Uncert: ⊗		12) Uncert. Dist: ⊕*	
13) E.O. #		14) STATE: ⊕*		15) COUNTY: ⊕*	
16) REGION: ⊕*		17) FOREST: ⊕*		18) DISTRICT: ⊕*	
19) Area (Est):			20) Area UOM: ⊕*		
21) Canopy Cover Method ⊕* (circle one): COVER PERCENT; DAUBEN; NRMCOV					

Element Occurrence Data

22) EO Canopy Cover: ⊕%Cov: or Cover Class Code:		23) Lifeform:	
24) Number of subpopulations:		25) Plant Found (Revisit): Yes or No	
26) Plant Count: ⊕		27) Count Type: ⊕Genets/Ramets/Undetermined	
28) Count: ⊕Actual or Estimate		29) Revisit needed - Yes or No	
30) Revisit Date:		31) Revisit Justification:	
32) Phenology by % ⊕ (Sum to 100%): Vegetative Flower/Bud Fruit/Dispersed Seedlings/ Juvenile		33) Population Comments: (e.g., distribution, vigor, density, phenology, dispersal)	
34) Evidence of disease, competition, predation, collection, trampling, or herbivory: Yes ___ or No ___		35) Evidence Comments:	
36) Pollinator observed - Yes or No		37) Pollinator type(s):	
38) Pollinator comments:			

Site Morphometry

39) Percent Slope: ⊕		40) Slope position: ⊕	
41) Aspect: ⊕ azimuth: or cardinal:			
42) Elev.: Ave: Min: Max:		43) Elev UOM: ⊕*	

Soil Characteristics and Light Conditions

44) Substrate on which EO occurs:		
45) Parent Material:		46) Soil Moisture:
47) Soil Texture:		48) Soil Type:
49) Light Exposure: ⊕		

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Attachment E-8. Final Avian Protection Plan

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Grant Lake Hydroelectric Project (FERC No. 13212)

***Avian Protection Plan
Final***

Kenai Hydro, LLC

April 2016

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Acronyms and Abbreviations

ADF&G	Alaska Department of Fish & Game
APLIC	Avian Powerline Interaction Committee
APP	Avian Protection Plan
ARRC	Alaska Railroad Corporation
BGEPA	Bald and Golden Eagle Protection Act
cfs	cubic feet per second
ECM	Environmental Compliance Manager
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
FLA	Final License Application
GPS	global positioning system
HVAC	heating, ventilating, and air conditioning
INHT	Iditarod National Historic Trail
KHL	Kenai Hydro, LLC
kV	kilovolt
kW	kilowatt
MBTA	Migratory Bird Treaty Act
MCC	motor control center
MOU	Memorandum of Understanding
MW	megawatt
NAVD 88	North American Vertical Datum of 1988
Project	Grant Lake Hydroelectric Project
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

Avian Protection Plan Final

Grant Lake Hydroelectric Project (FERC No. 13212)

1 INTRODUCTION

This document provides Kenai Hydro, LLC's (KHL's) proposed Avian Protection Plan (APP) for the Grant Lake Hydroelectric Project (Project), Federal Energy Regulatory Commission (FERC) No. 13212. The Project has developed the guidelines in this APP to support avian conservation during construction and operations of the Project, including avoidance and minimization of disturbance to avian species. The principles presented in these voluntary guidelines are intended to allow KHL to tailor the APP to the Project-specific construction and operations as well as to further the conservation of avian species in the Project area.

Implementing the principles contained in these APP guidelines will greatly reduce avian risk as well as KHL's risk of not complying with both the Migratory Bird Treaty Act (MBTA) and the Bald Eagle Protection Act (BGEPA). By following the guidelines within this APP, specific avian issues can be addressed through voluntary compliance.

Activities associated with the proposed construction and operation of the Project include the construction of a powerhouse, access road, tailrace channel, switchyard connection, penstock and tunnel, temporary construction access routes and staging areas, diversion structure, and transmission line. The activities and structures associated with this Project have the potential to impact the bird populations within the area.

1.1. Location

The proposed Grant Lake Hydroelectric Project would be located near the community of Moose Pass, Alaska (population 219) in the Kenai Peninsula Borough, approximately 25 miles north of Seward, Alaska (population 2,693), and just east of the Seward Highway (State Route 9); this highway connects Anchorage (population 291,826) to Seward. The Alaska Railroad (ARRC) parallels the route of the Seward Highway, and is located adjacent to the Seward Highway in the Project area. Grant Lake is located in the mountainous terrain of the Kenai Mountain Range and has a normal water surface elevation of 703 feet North American Vertical Datum of 1988 (NAVD 88) and surface area of approximately 1,741 acres. A map showing the location of the Project is provided in Figure 1.

1.2. Project Description

The Grant Lake Project would consist of the Grant Lake/Grant Creek development, an intake structure in Grant Lake, a tunnel, a surge chamber, a penstock, a powerhouse, tailrace channel with fish exclusion barrier, access roads, a step-up transformer, a switchyard, and an overhead transmission line. The powerhouse would contain two Francis turbine generating units with a combined rated capacity of 5 megawatts (MW) with a maximum design flow of 385 cubic feet per second (cfs). The general proposed layout of the Project is shown in Figure 2.

1.2.1. Grant Creek Diversion

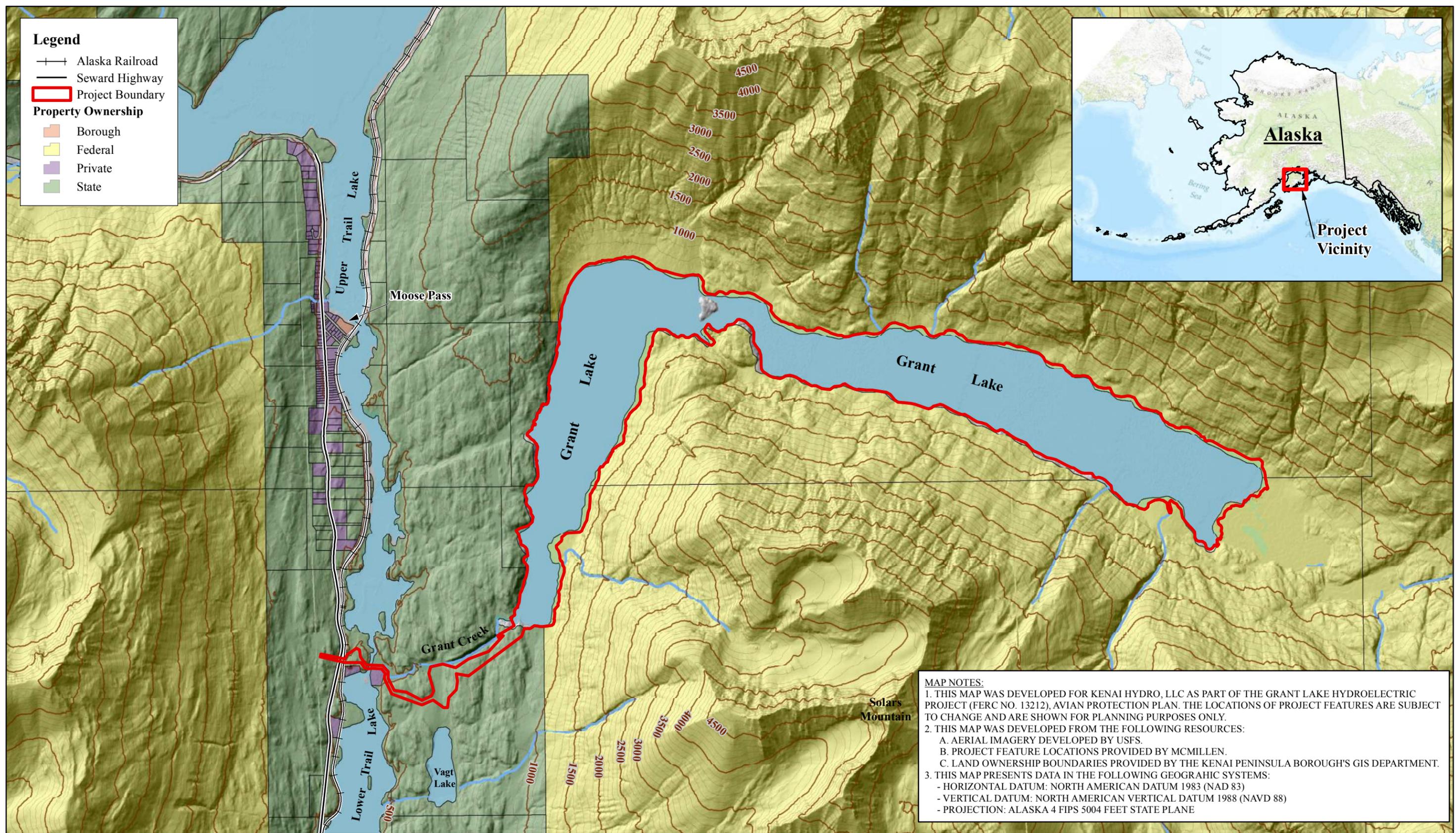
The proposed Project would consist of a reinforced concrete intake structure located east of the natural lake outlet adjacent to the south shore. No structural modifications would be made to the existing lake natural outlet. The Project would divert water up to a maximum of 395 cfs into the intake structure. Up to 385 cfs would flow to the powerhouse and up to 10 cfs would flow through the bypass pipe. When the lake level exceeds the natural outlet of 703 feet NAVD 88, a maximum of 395 cfs could be diverted into the intake structure. Flow in excess of 395 cfs would then pass over the natural outlet to Grant Creek.

1.2.2. Grant Lake Intake

The Project water intake would be a concrete structure located approximately 500 feet east of the natural outlet of Grant Lake and adjacent to the south shore. The intake structure would consist of a reinforced concrete structure extending from approximately elevation 675 feet NAVD 88 up to a top deck elevation of 715 feet NAVD 88. The structure would have an outside dimension of 38 feet by 20 feet. The structure would include intake trashracks, selective withdrawal intake gates with wire rope hoist, and a roller gate located on the water conveyance intake. The intake would be divided into three bays, each fitted with an intake gate to provide flexibility for delivering the full flow range of 63 cfs to 395 cfs. The gate position within the water column would be set to deliver the required water temperature to Grant Creek below the powerhouse. The roller gate would be 11 feet tall by 11 feet wide and fitted with a wire rope hoist lift mechanism. Electrical power would be extended from the powerhouse to the intake to operate the intake and isolation gates. Pressure transducers would be installed to monitor the water level at the lake as well as within the intake tower. An access bridge 16 feet wide would be installed from the lake shore out to the intake structure.

The intake would allow for drawdown of Grant Lake to elevation 690 feet NAVD 88, thereby creating approximately 18,791 acre-feet of active storage for the Project between elevations 703 feet NAVD 88 and 690 feet NAVD 88. The intake would be designed to allow the Project to draw water near the surface at various levels of storage, if deemed necessary to meet downstream temperature requirements. The invert of the intake would be at elevation 675 feet NAVD 88 to provide for adequate submergence to the tunnel.

A bypass pipe would extend from the intake structure to the base of the existing waterfall in Grant Creek. The installed pipe would be 900 feet long and approximately 18 inches in diameter, allowing the minimum flow ranging from 5 to 10 cfs to be released. A control gate would be located within the intake structure to regulate and monitor the bypass flow releases.



Legend

- +— Alaska Railroad
- Seward Highway
- ▭ Project Boundary

Property Ownership

- ▭ Borough
- ▭ Federal
- ▭ Private
- ▭ State



MAP NOTES:

- THIS MAP WAS DEVELOPED FOR KENAI HYDRO, LLC AS PART OF THE GRANT LAKE HYDROELECTRIC PROJECT (FERC NO. 13212), AVIAN PROTECTION PLAN. THE LOCATIONS OF PROJECT FEATURES ARE SUBJECT TO CHANGE AND ARE SHOWN FOR PLANNING PURPOSES ONLY.
- THIS MAP WAS DEVELOPED FROM THE FOLLOWING RESOURCES:
 - AERIAL IMAGERY DEVELOPED BY USFS.
 - PROJECT FEATURE LOCATIONS PROVIDED BY MCMILLEN.
 - LAND OWNERSHIP BOUNDARIES PROVIDED BY THE KENAI PENINSULA BOROUGH'S GIS DEPARTMENT.
- THIS MAP PRESENTS DATA IN THE FOLLOWING GEOGRAPHIC SYSTEMS:
 - HORIZONTAL DATUM: NORTH AMERICAN DATUM 1983 (NAD 83)
 - VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88)
 - PROJECTION: ALASKA 4 FIPS 5004 FEET STATE PLANE

REV	DATE	BY	DESCRIPTION

Drawing Scale: 0 0.25 0.5 1 Miles

MCMILLEN, LLC

1401 SHORELINE DRIVE BOISE, ID 83702 OFFICE: 208.342.4214 FAX: 208.342.4216

Developed For:

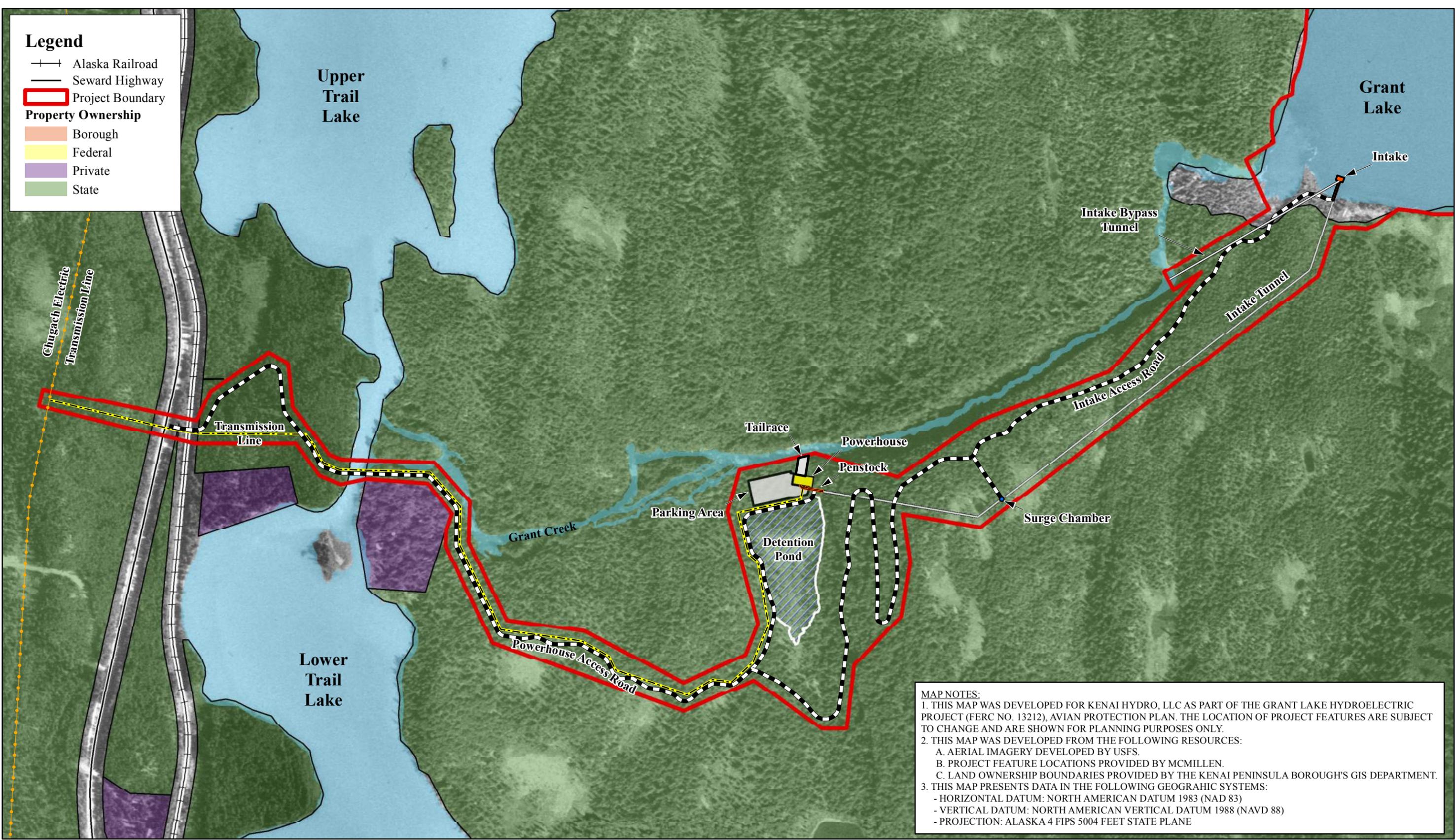
Homer Electric Association, Inc.
A Touchstone Energy Cooperative

GRANT LAKE HYDROELECTRIC PROJECT - FERC PROJECT NO.13212

AVIAN PROTECTION PLAN

Figure 1
Location Map of Project Vicinity

DESIGNED: Jake Woodbury	DRAWING
DRAWN: Jake Woodbury	
CHECKED: C. Warnock	
ISSUED DATE: 3/4/2016	SCALE: 1:35,000



- Legend**
- +— Alaska Railroad
 - Seward Highway
 - ▭ Project Boundary
- Property Ownership**
- ▭ Borough
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REV	DATE	BY	DESCRIPTION

N

Drawing Scale:

0 250 500 1,000

Feet

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Developed For:

HEA Homer Electric Association, Inc.

A Touchstone Energy® Cooperative

GRANT LAKE HYDROELECTRIC PROJECT - FERC PROJECT NO.13212

AVIAN PROTECTION PLAN

Figure 2

General Project Features And Facilities

DESIGNED	Jake Woodbury	DRAWING
DRAWN	Jake Woodbury	
CHECKED	C. Warnock	
ISSUED DATE	3/4/2016	
		SCALE: 1:5,500

1.2.3. Tunnel and Surge Chamber

The intake structure would connect to a tunnel extending to the Project powerhouse. The tunnel would be approximately 3,300 feet long with a 10-foot-horseshoe shape. Drill and shoot techniques would be used to construct the tunnel using an entrance portal at the powerhouse for access. The lower 900 feet of tunnel would be constructed at a 15 percent slope. This section of the tunnel would be concrete lined. The upper 2,400 feet of tunnel would be constructed at a 1 percent slope and would be unlined. This proposed arrangement provides a low pressure hydraulic conduit in the upper tunnel reaches suitable for an unlined tunnel. A surge chamber would be located at the transition between the two tunnel slopes. This chamber would be approximately 10 feet in diameter and would extend from the tunnel invert elevation of 675 feet NAVD 88 to the ground surface at approximately elevation 790 feet NAVD 88. The surge chamber would provide a non-mechanical relief for hydraulic transients that could occur if a load rejection occurred at the powerhouse. Rock anchors and shotcrete stabilization techniques would be used to stabilize the tunnel exposed rock surface where required. A rock trap would be located at the surge chamber location to collect dislodged rocks from the unlined tunnel section.

The surge chamber outlet at the existing ground elevation would be fitted with a pre-fabricated steel structure that would span the chamber. The steel frame structure would be covered with wire mesh, providing a fully screened structure capable of allowing air in for the surge chamber, while also excluding wildlife and the public from accessing the surge chamber. A removable roof structure would be located on the steel outlet, allowing access to remove material from the rock trap that would be located in the tunnel directly below the surge chamber. The surge chamber cover structure would be painted to blend into the natural forest environment. During operations, if/when a load rejection at the powerhouse occurs, the pressure wave and associated volume of water would be contained within the surge chamber. As the wave dissipated, the water level in the surge chamber would decrease until it matched the level in Grant Lake.

The tunnel would transition to a 6-foot-diameter steel penstock approximately 150 feet from the powerhouse. The transition section would consist of a welded concentric structure that transitioned from the 10-foot tunnel section to the 72-inch-diameter penstock. A steel liner would extend from the downstream tunnel portal approximately 300 feet into the tunnel. The liner would be installed within the exposed rock surface, with grout pumped behind the liner to provide an impermeable and structurally sound tunnel section. A similar steel tunnel liner section would be installed at the connection to the intake structure for a total distance of approximately 150 feet.

1.2.4. Penstock

A 72-inch-diameter steel penstock would extend 150 feet from the downstream tunnel portal to the powerhouse. The welded steel penstock would be supported on concrete pipe saddles along the penstock route. The penstock would bifurcate into two 48-inch-diameter pipes feeding each of the powerhouse turbines. The penstock, fitted with welded steel thrust rings, would be encased in concrete thrust blocks at the tunnel portal as well as at the powerhouse. These thrust blocks would be designed to resist the full hydraulic load associated with the Project operation. An interior and exterior coating system would be applied to the penstock, providing full

corrosion protection. An access manway would be provided on the exposed penstock section, allowing access for future inspection and maintenance.

1.2.5. Tailrace

The powerhouse draft tubes would connect to a tailrace channel located on the north side of the powerhouse structure. The draft tubes would extend from a low point elevation of approximately 509 feet NAVD 88 up to the tailrace channel invert elevation of 515 feet NAVD 88. The channel would continue to the south bank of Grant Creek. Each of the draft tubes would be gated, allowing the flow to be routed to the detention pond for spinning reserve operation. Isolation bulkheads would be provided, allowing dewatering of the draft tubes for inspection and maintenance of the turbine. The tailrace channel would be trapezoidal in shape with a bottom width of 43 feet, side slopes of 2H:1V, and a channel depth ranging from 13 feet at the powerhouse to 7 feet at the creek. A concrete structure would be constructed at the confluence of the channel and Grant Creek. A picket-style fish barrier would be placed on this concrete structure as well as provision for installation of stoplogs, allowing the tailrace channel to be dewatered for inspection and maintenance. The channel would be excavated from native material and lined with riprap to provide a long term stable section. A staff gage and pressure transducer would be placed in the channel to monitor the water level in the channel. A wildlife exclusion fence approximately 8 feet tall and constructed from steel posts with heavy gage woven wire would be installed at the tailrace channel. The fence would be located at the top of the bank on both sides of the tailrace channel. The fence would also cross the top of the tailrace barrier access deck, providing full exclusion of wildlife from the tailrace channel.

1.2.6. Tailrace Detention Pond

An off-stream detention pond would be created to provide a storage reservoir for flows generated during the rare instance when the units being used for spinning reserve were needed for the electrical transmission grid. To prevent a sudden increase in the water surface levels of Grant Creek as a result of the increased flows generated, the additional powerhouse flows would be diverted into the detention pond and then released slowly back into Grant Creek. The discharge associated with a spinning reserve event would be dispersed via the tailrace channel that flows into Grant Creek. The detention pond would be located immediately south of the powerhouse, and would be bordered by the access road. Storing additional powerhouse flows up to an elevation of 521 feet NAVD 88, the detention pond would have a capacity of approximately 15 acre-feet and a surface area of approximately 3.6 acres. The powerhouse would contain two generating units. The turbines would discharge into a splitter box located at the outlet of the turbine draft tubes. Isolation gates would be provided to route the turbine discharge to the detention pond when a unit was brought online to support a spinning reserve demand. Typically, when a turbine was brought online for spinning reserve, the turbine would operate for an average period of 15 to 20 minutes to meet the instantaneous demand. For example, assuming one turbine was allocated to spinning reserve, the turbine would divert the full 192.5 cfs of flow into the detention pond with a total of 173,250 cubic feet (cf) discharged during a 15-minute period. Once the spinning reserve demand was met, the unit would be brought offline and the detention pond flow released slowly back into the powerhouse tailrace.

1.2.7. Powerhouse

The powerhouse would be located on the south bank of Grant Creek immediately west of the downstream tunnel portal and adjacent to the detention pond. The powerhouse would lie at the top of the existing hill slope that occurs near the mouth of the Grant Creek canyon (Reach 5). This location was selected based on the presence of an existing rock outcrop that would provide an effective downstream portal location for the tunnel. The powerhouse would be located south of Grant Creek. A natural lower area is located immediately south of the proposed powerhouse site. The entire site is forested with areas of open meadow. The powerhouse concrete foundation would tie into the existing hillside with the majority of the powerhouse structure located on relatively flat ground. The powerhouse would consist of a concrete foundation and a pre-engineered metal building superstructure. The building would be approximately 100 feet long (east to west) and 50 feet wide (north to south). The penstock would tie into the powerhouse on the south side and the tailrace channel on the north side of the building. The building floor would be set at approximately elevation 523 feet NAVD 88 and the centerline of the turbine runner at elevation 526 feet NAVD 88. The draft tube floor would be set at elevation 509 feet NAVD 88 with an operating tailwater inside the draft tubes ranging from 518.0 feet to 519.3 feet NAVD 88.

Two horizontal Francis type turbine/generator units with a rated total capacity of 5,000 kilowatt (kW) would be housed in the powerhouse structure. The powerhouse flow would range from a maximum of 385 cfs to a minimum of 58 cfs with each turbine operating flow ranging from 192.5 cfs to 58 cfs. Associated mechanical and electrical equipment would include hydraulic power units, turbine isolation valves, penstock drain, utility water system, lube oil system, oil water separator, battery system, and heating, ventilating, and air conditioning (HVAC) system. A control room housing the motor control center (MCC), communication rack, fiber optic panels, computers, and related equipment would also be provided. The Project switchgear would be located within the powerhouse. A standby generator, transformer, and fused pad-mounted switch assembly would be mounted on an enclosed switchyard located on the south side of the powerhouse. Dewatering pumps would be provided to support dewatering of the turbine draft tubes. A 30-ton bridge crane would be provided for equipment maintenance. The crane would travel on rails mounted on the steel building support columns. An energy dissipation valve would extend off the penstock and provide bypass flows into the Project tailrace.

1.2.8. Transmission Line/Switchyard

An overhead 115-kV transmission line would extend from the powerhouse to the existing 115-kV transmission line located on the west side of the Seward Highway. In addition to overhead transmission structures, the facilities would include a switchyard at the powerhouse consisting of a 115-kV fused pad-mounted disconnect switch and a pad-mounted 115-kV GSU transformer. The transmission line would run from the powerhouse parallel to the access road where it would intersect Chugach Electric's transmission line. The interconnection would have a pole-mounted disconnect switch.

Wooden poles would be designed as tangent line structures on about 250-foot centers. Design of the line would also incorporate the latest raptor protection guidelines. Collision avoidance devices would be installed on the line at appropriate locations to protect migratory birds.

1.2.9. Appurtenant Facilities

The following pertinent mechanical and electrical equipment would be applicable to the Project:

- Intake selective withdrawal intake gate
- Intake trashrack system
- Intake roller gate used to isolate the tunnel and downstream generation facilities
- Control gate located on the bypass pipeline
- A 30-ton bridge crane in the powerhouse
- Pumps located in the powerhouse used to dewater the draft tubes
- Pressure transducers located throughout the Project used to monitor the water level in the reservoir, tunnel, and tailrace, as well as pressures in the tunnel and penstock
- Security cameras at the intake and powerhouse
- Sanitary waste holding tank or septic system at the powerhouse
- A power line extending from the powerhouse to the intake to supply electrical power to the gates and trashrack
- Temperature instrumentation at the intake structure and at various stream locations to monitor water temperature

This equipment, along with other identified miscellaneous mechanical and electrical equipment, would be developed during the final design and included in the construction documents.

1.2.10. Access Roads

The Project would require an access road to both the powerhouse located near the base of the Grant Creek canyon and to the intake at Grant Lake. The access road would be used to construct the Project and afterwards, to maintain the facilities. It is anticipated that the powerhouse would be visited approximately once a month and the intake visited approximately once a month beginning just after the ice melts and continuing until just before freeze up. The powerhouse access road would be maintained year around. The intake access road would not be maintained in winter.

The 24-foot wide access road would tie into the Seward Highway at approximately MP 26.9. The route would travel eastward to cross Trail Lakes at the downstream end of the narrows between Upper and Lower Trail lakes and then continue eastward to the powerhouse. This route would be approximately one mile long. It would cross the ARRC tracks near an existing railroad crossing for a private driveway. The road would cross the narrow channel connecting Upper and Lower Trail lakes with an approximately a 110-foot-long single lane bridge. This bridge is proposed as a clear span with the west abutment located on bedrock and the east abutment on fill. The proposed route would avoid cuts and travel along the base of some small hills on the south side of Grant Creek to the powerhouse. This proposed access road would have one 90-degree crossing of the proposed reroute of the commemorative Iditarod National Historic Trail (INHT) easement.

The intake access road would be approximately one mile long, beginning at the powerhouse. The road would ascend a 230-foot bluff to reach the top of the southern rim of the Grant Creek canyon. A series of road switchbacks would be required to maintain a road grade of less than 8 percent. The road would then generally follow the southern edge of the canyon until it descends to Grant Lake. A small parking area and turn-a-round area would be provided at the intake structure. A 16-foot wide bridge would extend from the bank out to the intake structure.

The road would be gravel with a 16-foot top width. Maximum grade would be 8 percent. Periodic turnouts would be provided to allow construction traffic to pass. Fifty-foot radius curves would be used to more closely contour around the small steep hills of bedrock to limit the extent of the excavation and the height of the embankments.

1.2.11. Project Operations

Once constructed, the Project would operate to generate power throughout the calendar year based on inflow, available storage, lake elevation, and minimum flow requirements in Grant Creek. The lake would operate from the natural Grant Lake outlet elevation of 703 feet NAVD 88 down to a minimum lake elevation of 690 feet NAVD 88. The lake would be drawn down in the winter months utilizing a combination of Grant Creek inflows and stored water to meet the instream flows in the bypass reach while also maintaining power production. Water flow predictions would be used to estimate snowpack and the corresponding runoff volume. The Project operation would then be tailored to maximize winter power production while also ensuring that the lake refilled to elevation 703 feet NAVD 88.

2 REGULATIONS PROTECTING AVIAN SPECIES

This section describes the applicable regulations pertinent to the development of this APP. Native birds in the United States are protected primarily under three main pieces of legislation: the Endangered Species Act (ESA), the Migratory Bird Treaty Act (MBTA), and the Bald and Golden Eagle Protection Act (BGEPA). Additional protections are provided to migratory birds by FERC through a memorandum of understanding (MOU) with the U.S. Fish and Wildlife Service (USFWS) (FERC and USFWS 2011). The USFWS is, in part, responsible for the protection of wildlife including avian species. The USFWS mission, in part, is “to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit [of] the American people.” The U.S. Forest Service (USFS) identified a list of sensitive avian species requiring protection measures for projects located on the Chugach National Forest. Furthermore, Audubon publishes an Avian Species of Special Interest list for Alaska which state and federal agencies typically reference as part of the review process to assess project impacts on avian species.

2.1. Endangered Species Act

The purpose of the ESA is “to provide a means whereby the ecosystems upon which endangered and threatened species depend may be conserved, and to provide a program for the conservation of these species.” Section 9 of the ESA prohibits “take” of threatened or endangered species, which includes killing, injuring, or harming a listed species or its habitat. Any activity that may

result in the “incidental take” of a threatened or endangered species requires permits issued from the USFWS under Sections 7 or 10 of the ESA. There are no documented threatened or endangered avian species or critical habitats in the Project area.

2.2. Migratory Bird Treaty Act

Most avian species in Alaska are protected wildlife under the MBTA. Under MBTA (16 U.S.C. 703), it is illegal for anyone to "take" migratory birds, their eggs, feathers, or nests. "Take" includes by any means or in any manner, any attempt at hunting, pursuing, wounding, killing, possessing, or transporting any migratory bird, nest, egg, or part thereof. The MBTA does not distinguish between intentional and unintentional take. In Alaska, all native birds except grouse and ptarmigan (protected by the State of Alaska) are protected under the MBTA. The Alaska Department of Fish & Game's (ADF&G) legal framework to manage these upland game bird species is derived from Article VIII of the Alaska Constitution and implementing statutes. Alaska Statute Title 16 is the primary statute governing the State's management of fish and wildlife.

2.3. Bald and Golden Eagle Protection Act

The BGEPA is the primary law protecting eagles. BGEPA prohibits “take” of eagles without a permit (16 USC 668-668c). BGEPA defines “take” to include “pursue, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb,” and prohibits take of individuals and their parts, nests, or eggs. The USFWS expanded this definition by regulation to include the term “destroy” to ensure that “take” includes destruction of eagle nests. The term “disturb” is further defined by regulation as “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause,....injury to an eagle, a decrease in productivity, or nest abandonment” (50 CFR 22.3).

2.4. Chugach National Forest Sensitive Species and Species of Special Interest

Six bird species found in the Project area are listed by the USFS as sensitive species or species of special interest (osprey, Northern goshawk, bald eagle, Townsend's warbler, marbled murrelet, and trumpeter swan). Additionally, eight more bird species are considered high-priority species (Red-Listed Species) for conservation in Alaska by the Audubon Alaska's Watchlist (red-throated loon, varied thrush, olive-sided flycatcher, Kittlitz's murrelet, solitary sandpiper, lesser yellowlegs, wandering tattler, and blackpoll warbler). Although neither federally listed nor a candidate for threatened or endangered status, these species are of increasing concern because of low and/or declining populations or other population threats. These species of conservation concern have either been documented or are likely to occur in terrestrial and freshwater habitats in the Project area during the breeding, migration, and/or wintering seasons. The Project would not affect any habitats designated as high-value or essential for these bird species.

3 AVIAN SPECIES AT GRANT LAKE

Wildlife studies, including avian studies (waterfowl, raptors, and breeding landbirds) were performed in support of KHL's licensing of the Project. The Grant Lake Terrestrial Resource Study Report details all avian investigations conducted and their associated findings (KHL 2014). A summary of avian study results is presented below.

3.1. Waterfowl

Field efforts were conducted to evaluate waterbirds in the Project area. Trumpeter swans were observed on March 3, 2013, on the east side of Lower Trail Lake. Winter surveys detected trumpeter swans in the open water portion at the south end of Grant Lake (December 4, 2013) and on the east side of Lower Trail Lake (March 27, 2014). Trumpeter swans feed primarily on submerged vegetation. Grant Lake and the narrows have potential to provide foraging habitat for this species in the winter. Their presence in these areas indicates that the swans are benefiting from the open water habitat in some way.

3.2. Bald Eagles and other Raptor Species

Field efforts were conducted to evaluate presence of Northern goshawks in the Project area. One adult female Northern goshawk was detected during the 2-year sampling period in 2013–2014. The habitat in which it was detected has been described in the Terrestrial Resources Study Report (KHL 2014).

Incidental observations of other raptors during field efforts included the following:

- A bald eagle nest in a large cottonwood along Grant Creek was recorded with a pair of adults in attendance; the adults appeared to be in the process of incubating eggs as assessed by behavior on May 22, 2013. This nest site has been documented in previous years (2010 and 2012). The pair was re-sighted on June 14–17, 2013 and again appeared to be incubating eggs. During the field effort (July 8–9, 2013), the pair was once again sighted in the nest and appeared to have at least one hatched young as assessed from observed feeding behavior.
- An immature bald eagle was observed on July 19, 2013, attempting to capture a duckling.
- An adult bald eagle was observed flying over Lower Trail Lake on June 25, 2014.
- A pair of adult bald eagles were observed perched along Lower Trail Lake on July 10, 2014.
- A pair of merlin were detected on May 21, 2013, on the small island just south of the Trail Lake narrows. The merlin did not appear to be incubating at that time; however, they did appear to have established a breeding territory based on assessed behavior. The pair was detected again during subsequent field visits at the same location; however, no effort was made to locate a nest due to high water near the suspected location of the nest.
- A merlin was detected on June 25, 2014, in the vicinity of the small island just south of the Trail Lake narrows, and again on July 9 and 10, 2014.
- An adult male osprey (based on plumage) was detected flying over the Trail Lake narrows during the June 14–17, 2013 field visit.

3.3. Breeding Landbird Species

Surveys for breeding landbirds and shorebirds in the Project area were conducted to collect baseline information on the occurrence, and habitat use of breeding landbird and shorebird species in the Project area. Point-count data were used with the habitat map for qualitative habitat-association analyses. More than 65 bird species (excluding waterfowl and raptors) were

recorded during surveys or as incidentals during field efforts for the Grant Lake Project. No threatened or endangered species were observed, but six bird species of concern were recorded during the field efforts: Townsend's warbler, varied thrush, olive-sided flycatcher, solitary sandpiper, lesser yellowlegs, and wandering tattler.

4 PROJECT IMPACTS

4.1. Impacts Common to all Species

Removal or loss of vegetation affects avian species directly by loss of old growth trees for nesting, foraging, and cover habitat. Nests and habitat are lost every year to natural events that include high winds, flooding, and fire. The loss of the vegetative habitat from the previous season can be a limiting factor in successful breeding, but this is not predicted to impact avian species populations on the Kenai. The direct removal of any active nest structure is prohibited. The USFWS (2005) has published recommendations for time periods to avoid vegetation clearing. These recommendations are provided to help avoid vegetation removal and "take" as defined by the MBTA during the breeding season.

Direct mortality may increase with the placement of power lines along the access route. Avian species unaccustomed to these lines may be impacted by flying into the line or injury by electrocution. Collision and nesting deterrent methods would be incorporated during the Project design phase to avoid or minimize impacts of overhead power lines.

4.2. Impacts Specific to Waterfowl Species

Changes in lake and creek outflow levels during the winter may indirectly impact (positively or negatively) waterfowl and waterbirds like trumpeter swans and diving ducks by altering open water habitat at the outlet of Grant Lake and the "mouth" of Grant Creek at the narrows. Waterfowl that overwinter in the region and spend time on waterbodies in this area of the Kenai Peninsula are currently subject to the natural freeze-up / thaw processes during the winter. The possible Project-related alterations to open water habitat are not predicted to impact the overall waterfowl population of the Kenai Peninsula.

4.3. Impacts Specific to Bald Eagles

The following bald eagle ecology information is taken from the National Bald Eagle Management Guidelines (USFWS 2007).

4.3.1. Feeding and Nesting Habitat

Bald eagles are opportunistic feeders. Although fish comprise much of their diet, they also prey on waterfowl, shorebirds/colonial waterbirds, small mammals, turtles, and carrion. Eagles are visual hunters and typically locate their prey from a conspicuous perch, or soaring flight, then swoop down and strike. Wintering bald eagles often congregate in large numbers along streams to feed on spawning salmon or other fish species, and often gather in large numbers in areas below reservoirs, especially hydropower dams, where fish are abundant. Wintering eagles will take birds from rafts of ducks at reservoirs and rivers, and congregate on melting ice shelves to

scavenge dead fish from the current or the soft melting ice. Bald eagles will also feed on carcasses along roads, in landfills, and at feedlots.

During the breeding season, adults carry prey to the nest to feed the young. Adults feed their chicks by tearing off pieces of food and holding it to the beaks of the eaglets. After fledging, immature eagles are slow to develop hunting skills, and must learn to locate reliable food sources and master feeding techniques. Young eagles will congregate together, often feeding upon easily acquired food such as carrion and fish found in abundance at the mouths of streams and shallow bays and at landfills.

Bald eagles generally nest near coastlines, rivers, large lakes, or streams that support an adequate food supply. They often nest in mature or old growth trees; snags (dead trees); cliffs; rock promontories; rarely on the ground; and with increasing frequency on human-constructed structures including power poles and communication towers. In forested areas, bald eagles often select the tallest trees with limbs strong enough to support a nest that can weigh more than 1,000 pounds. Nest sites typically include at least one perch with a clear view of the water where the eagles usually forage. Shoreline trees or snags located in reservoirs provide the visibility and accessibility needed to locate aquatic prey. Eagle nests are constructed with large sticks, and may be lined with moss, grass, plant stalks, lichens, seaweed, or sod. Nests are usually about 4–6 feet in diameter and 3 feet deep, although larger nests exist.

4.3.2. Nesting Timeline and Sensitivity

Nesting activity begins several months before egg-laying. Egg-laying dates are as early as April in Alaska. Incubation typically lasts 33–35 days, but can be as long as 40 days. Eaglets make their first unsteady flights about 10 to 12 weeks after hatching and fledge (leave their nests) within a few days after that first flight. However, young birds usually remain in the vicinity of the nest for several weeks after fledging because they are almost completely dependent on their parents for food until they disperse from the nesting territory approximately 6 weeks later.

During the breeding season, bald eagles are sensitive to a variety of human activities. However, not all bald eagle pairs react to human activities in the same way. Some pairs nest successfully just dozens of yards from human activity, while others abandon nest sites in response to activities much farther away. This variability may be related to a number of factors, including visibility, duration, noise levels, extent of the area affected by the activity, prior experiences with humans, and tolerance of the individual nesting pair. The relative sensitivity of bald eagles during various stages of the breeding season is outlined in Table 1.

Table 1. Nesting bald eagle sensitivity to human activities.

Phase	Activity	Timeline	Sensitivity to Human Activity	Comments
I	Courtship and Nest Building	February – mid-May	Most Sensitive period; likely to respond negatively	Most critical time period. Disturbance is manifested in nest abandonment. Bald eagles in newly established territories are more prone to abandon nest sites.
II	Egg Laying	April – mid-June	Very sensitive	Human activity of even limited duration

Phase	Activity	Timeline	Sensitivity to Human Activity	Comments
			period	may cause nest desertion and abandonment of territory for the breeding season.
III	Incubation and early nestling period (up to 4 weeks)	April – mid-June	Very sensitive period	Adults are less likely to abandon the nest near and after hatching. However, flushed adults leave eggs and young unattended; eggs are susceptible to cooling, loss of moisture, overheating, and predation; young are vulnerable to elements.
IV	Nestling period, 4 to 8 weeks	Early May – mid-September	Moderately sensitive period	Likelihood of nest abandonment and vulnerability of the nestlings to elements somewhat decreases. However, nestlings may miss feedings, affecting their survival.
V	Nestlings 8 weeks through fledgling	August – mid-October	Very sensitive period	Gaining flight capability, nestlings 8 weeks and older may flush from the nest prematurely due to disruption and die.

If agitated by human activities, eagles may inadequately construct or repair their nest, may expend energy defending the nest rather than tending to their young, or may abandon the nest altogether. Activities that cause prolonged absences of adults from their nests can jeopardize eggs or young. Depending on weather conditions, eggs may overheat or cool too much and fail to hatch. Unattended eggs and nestlings are subject to predation. Young nestlings are particularly vulnerable because they rely on their parents to provide warmth or shade, without which they may die as a result of hypothermia or heat stress. If food delivery schedules are interrupted, the young may not develop healthy plumage, which can affect their survival. In addition, adults startled while incubating or brooding young may damage eggs or injure their young as they abruptly leave the nest.

Older nestlings no longer require constant attention from the adults, but they may be startled by loud or intrusive human activities and prematurely jump from the nest before they are able to fly or care for themselves. Once fledged, juveniles range up to 0.25 mile from the nest site, often to a site with minimal human activity. During this period, until about 6 weeks after departure from the nest, the juveniles still depend on the adults to feed them.

Disruption, destruction, or obstruction of roosting and foraging areas can also negatively affect bald eagles. Disruptive activities in or near eagle foraging areas can interfere with feeding, reducing chances of survival. Interference with feeding can also result in reduced productivity (number of young successfully fledged).

5 AVIAN PROTECTION MEASURES

KHL is committed to working cooperatively toward the protection of migratory birds while maintaining its goal of developing the Project. KHL will comply with the regulatory requirements intended to protect avian species.

KHL has developed the guidelines in this APP to support avian conservation during construction and operations of the Project. Protection measures are detailed below separately for measures related to general migratory bird species, as part of the MBTA, and measures related to bald eagles as part of the BGEPA. The principles presented in these voluntary guidelines are intended to allow KHL to tailor this APP to allow for construction and operation of the Project in a responsible fashion while furthering the conservation of avian species. Implementing the principles contained in these APP guidelines will greatly reduce avian risk as well as KHL's risk of not complying with both the MBTA and BGEPA.

KHL plans on limiting avian mortality by 1) avoiding disturbance during the breeding season; 2) designing the power lines per current avian protection standards; and 3) establishing vegetation removal timelines.

KHL would implement the following measures during the construction and operations phases of the Project to minimize impacts to birds. The following voluntary measures would be incorporated into the development and maintenance phases of the Project and are intended to mitigate for avian "take" as defined by MBTA and BGEPA. These measures are described in more detail in Sections 5.1 and 5.2.

The protection measures for avian species consist of:

- Risk assessment of activity and timeline
- Plan of construction and operation timeline
- Measures taken based on Project actions
- Reporting

5.1. Mitigating for MBTA "Take" of Migratory Birds

5.1.1. Risk Assessment of Activity and Timeline

If vegetation removal during construction and / or operations could not be completely restricted during the USFWS recommended timeline (May 1 – July 15), a risk assessment would be undertaken to delineate the time periods in which vegetation removal would cause the least impact to breeding birds, for example, removing vegetation prior to egg laying. The assessment may include input and recommendations from knowledgeable area biologists. Once completed, an assessment memo would be developed and distributed to requisite stakeholders for review and comment. Once final, this assessment would be the directive for vegetation removal during this construction window.

5.1.2. Plan of Construction and Operation Timeline

Removal of vegetation during the breeding season directly impacts forest nesting and foraging raptor species including Northern goshawks and sharp-shinned hawks as well as many nesting

songbirds, all of which are protected under MBTA. Destruction of active nests, and loss of adults, young, and / or eggs is considered a “take” under the MBTA. To the extent practicable, KHL would minimize vegetation removal during the breeding / nesting season between May 1 and July 15. Where curtailment of construction activities was not practicable, KHL would implement the following measures to minimize potential “take” as defined by MBTA:

- 1) Nest surveys would be conducted prior to any vegetation removal in the May 1 through July 15 timeframe (further described in Section 5.1.3.1). The surveys would be conducted by either a qualified biologist or the Environmental Compliance Monitor (ECM) (see Section 6) who has been appropriately trained in the requisite survey techniques.
- 2) The ECM would be onsite during all vegetation removal activities, and per measure #1, would be appropriately trained in terrestrial survey and impact assessment techniques. Construction and vegetation removal would be temporarily suspended if the ECM identified construction activities that may result in a “take”.
- 3) The ECM would immediately notify requisite stakeholders and in consultation, determine the best course of action to eliminate or minimize the potential for a “take”.
- 4) Construction activities would not resume until the agreed upon action(s) had been implemented.

5.1.3. Measures Taken Based on Project Actions

Mitigation actions and associated measures are described below for construction activities and Project operations.

5.1.3.1. Pre-vegetation Removal Surveys During Nesting / Breeding Season

Most avian species in Alaska are protected wildlife under the MBTA. Species will nest on the ground and in trees and shrubs. Nest detection is very difficult as birds are secretive in nature and many of the structures themselves are inconspicuous. Protocols have been developed for surveying prior to vegetation removal related to construction and maintenance activities and during the nesting / breeding season; however, these methods are not 100 percent effective at identifying all nest locations.

Prior to vegetation removal and during the nesting season associated with construction and maintenance, all relevant areas would be surveyed and buffers would be put in place to protect occupied nests. These surveys would be conducted in conjunction with the pre-construction invasive plant delineations outlined in the Grant Lake Vegetation Management Plan (KHL 2016, Attachment E-7 of the Final License Application [FLA]). Monitoring would occur within the Project footprint and a 100-foot buffer around all Project infrastructure and construction areas to be cleared of vegetation during the specific construction season.

Pre-vegetation Removal Survey Methods

For vegetation removal activities during construction and operation that occurred during the nesting season (May 1 – July 15), an approved Biologist would survey the anticipated construction work areas including a 100-foot buffer. Surveys would be conducted within the 3-day window prior to any vegetation removal activity taking place.

Prior to these surveys, a comprehensive list of bird species having potential to nest in the area would be reviewed. Review of the specific and preferred habitats where nesting has or is generally expected to occur would also be conducted. Potential habitats would be categorized by the following nesting habitats: grassland (ground nesting), shrubland, tree, and structure (cavity) prior to the surveys taking place.

Surveys would consist of walking transects as well as a sit and scope (survey station) component that would be spaced accordingly to allow complete visual coverage of all habitats including open fields, barren areas, manmade structures (e.g., bridges), riparian corridors, wooded areas and brush-dominated ground cover within, and adjacent to, the Project area that could support nesting birds. Appropriate spacing would ultimately be determined by the biologist in the field, but the following guidelines would be implemented to ensure adequate coverage of habitats:

- 100–300 feet for open grasslands
- 25–50 feet for areas with dense brush or shrubs
- < 25 feet as needed for a dense stand of trees or very dense vegetation

The Biologist would spend 5 minutes at each survey station recording all birds seen and heard, including flyovers (flyovers would be noted as such).

When breeding or nesting activities were suspected or observed, the surveyor would spend additional time watching the activity (with the aid of binoculars when appropriate) to determine the status of the observed activity. The following behaviors are indicators that an active nest may be present:

- Carrying material to build nests within the survey area
- Copulation
- Carrying food or feeding young
- Carrying fecal sacks away from nest
- Mate-feeding; repeated “bee-line” flying to likely nest site
- Observation of nest
- Observation of chicks
- Females giving call or chirp notes alerting their mate that they are off the nest
- Auditory evidence of chicks

When conducting walking transects between survey stations, an “active nest search” component would be implemented and would consist of a thorough walk-through documented search of all vegetation including trees, shrubs, grasslands, downed trees, as well as standing snags for active nests in the proposed disturbance area. This would also include actively searching for low-level, ground, cavity, and tree nests in the vegetation proposed for disturbance. For example, cavity nesting “active nest searches” would include searching/inspecting all relevant local features: structures, suitable tree holes, and cavities may require an extension pole with mirror to make a determination. If a nest was discovered, a determination would be made as to whether it is actively being used. If there was inconclusive evidence to determine whether the nest was being actively utilized, it may be necessary to conduct additional surveys. Up to three additional

survey events of the nest itself, up to 2 hours each, would be conducted to document the presence of any nesting activity.

The location of any confirmed active nest of a protected species would be included in the daily survey log and then flagged in the field. The survey log(s) and a map illustrating the location of the nest would be submitted to Project staff for review. Daily survey logs would include the following:

- Observer
- Date of survey
- Survey start and end times
- Species observed
- Weather conditions
- Description of nests observed
- Description of survey location
- Description of vegetative habitat(s)
- Map of survey station locations and active nest search routes
- Description of the developmental stage of juvenile birds observed and the anticipated fledge date

Frequency and timing of nest surveys prior to vegetation removal:

- Surveys would be conducted between May 1 and July 15.
- A survey would be conducted in any area where construction or maintenance during operations required vegetation removal in order to determine the presence of active nests.

The requirements of the pre-vegetation removal survey protocol consist of the following:

- Survey shall be conducted no more than 3 days prior to vegetation clearing.
- Survey areas would be defined by the construction/operation schedule and would be conducted prior to any vegetation or tree removal activities that could result in take of migratory birds or raptors during the nesting season.
- Each survey would :
 - Occur within 4 hours before sunset and into the evening for a minimum of one-half hour for owls.
 - If a nest was located within the survey area and not conclusively determined to be active during the initial survey, up to three additional 2-hour surveys would occur to determine whether it was active. This additional time would determine the need to establish an environmental sensitive area.
- Observation routes (or stations) would be placed in the best possible locations to hear or see bird activity.
- The survey would observe breeding behavior and activity of all protected bird species.

5.1.3.2. *Measures Undertaken for Active Bird Nests*

If an active nest was observed during the pre-vegetation removal surveys, the following steps would be implemented:

- If a bird was observed nesting within 100 feet (non-raptor) or 1,320 feet (raptor species) of the planned vegetation clearing site, the ECM would collaboratively prepare a Nest Protection Plan with the USFWS that would document the specific methodology for safeguarding the individual nest. Ultimately, the plan will require USFWS approval in an expedited fashion (within 1 week) to facilitate continuation of vegetation removal efforts related to construction and/or maintenance in the specified area.
- During the development of the plan, the nesting area and buffer area would be avoided from a Project development perspective. An environmentally sensitive area would be implemented immediately for the nesting site. The environmentally sensitive area would include the active nesting site and an additional buffer of 100 feet for non-raptor species, unless otherwise determined by the USFWS that this buffer can be decreased or increased to adequately protect the active nest. The adequacy of buffer widths varies with species discovered and circumstances of the construction area.
- The environmentally sensitive area would not be entered until:
 - USFWS has agreed to the Nest Protection Plan;
 - The ECM has determined that the juvenile birds have fully fledged and left the area; or
 - The nest has failed and the area has been resurveyed to verify the absence of bird species involved in any process of the breeding cycle.
- Avoidance and minimization measures may be adjusted only after consultation with USFWS (for all protected species).
- The ECM would monitor all environmentally sensitive areas to ensure proper buffer area inclusion.
- The ECM would survey the environmentally sensitive areas weekly to ensure the integrity and their effectiveness in keeping people, vehicles, or equipment out of the sensitive area.
- Indications of significant disturbance to nesting birds that fall within the environmentally sensitive areas may generate further consultation with the USFWS. On a case-by-case basis, the adequacy of buffer widths would be addressed with input from the ECM. Buffer widths may be adjusted following consultation with the USFWS (for threatened or endangered species).
- If buffers were not practicable, KHL would consult with USFWS for the best course of action. Actions may include the submission of an application for permitted take, 50 CFR 21 (Form 3-200-81).

5.1.3.3. *Power Lines and Infrastructure Design*

Mortality to forest raptors may increase with the placement of power lines along the access route. Birds, especially resident species, unaccustomed to these lines may be impacted by flying into the line or through electrocution. Collision and nesting deterrent methods would be incorporated during the Project design phase to minimize the impacts of overhead power lines. KHL's final power line design would incorporate the applicable recommendations from the following construction guidelines:

(1) Avian Power Line Interaction Committee (APLIC). 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and Sacramento, CA; and

(2) Avian Power Line Interaction Committee (APLIC). 2012. Reducing Avian Collisions with Power Lines. The State of the Art in 2012. Edison Electric Institute and APLIC. Washington, D.C.

Prior to construction efforts commencing, KHL would submit stamped and signed final engineering plans to the stakeholders and FERC for review and approval. These final engineering plans would detail applicable measures adopted from the abovementioned construction guidelines.

5.1.4. **Powerline and Infrastructural Monitoring Methodology**

Once the Project was constructed, line-transect surveys would be utilized to monitor impacts if any. Surveys would consist of walking the entire length of the power line and would be conducted four times annually during years 1 and 5 of operations, to determine seasonality of impacts if any. The list of potential species present in the area from the construction surveys would be utilized for this work as well.

Surveys would consist of walking transects and identifying dead or injured birds along the route, as well as nests or attempts at nesting. No structures, carcasses, or injured birds would be removed or handled unless permitted by USFWS. Information on any structures, or dead or injured birds detected during the surveys would include the following:

- Observer
- Date of survey
- Survey start and end times
- Species observed / Photo
- Weather conditions
- Description of dead or injured bird
- Description of structure
- Description of survey location
- Description of vegetative habitat(s)
- Description of the developmental stage of bird observed: adult, juvenile, or fledgling

If monitoring resulted in documented cases of avian mortality, requisite stakeholders would be immediately notified and collaborated with to determine appropriate actions for identifying the cause of the mortality, and if Project related, to minimize the potential for future impact.

Frequency and timing of power line surveys:

- Surveys would be conducted 4 times a year during years 1 and 5 of operations, once each quarter.

The information collected would be utilized to identify mortality effects (if any). If necessary based upon results, adaptive management measures may be developed through consultation with stakeholders to further minimize/avoid additional mortality in future years.

5.1.5. Reporting

5.1.5.1. Pre-Vegetation Removal Surveys

Nesting bird and nest protection survey reports associated with vegetation removal during the nesting season (May 1 – July 15) would be submitted to USFWS as part of the Annual Compliance Report process (see Section 6) during survey years. KHL would provide a copy of all field data including the survey maps, field notes, and observation forms used during pre-vegetation removal surveys. In areas where nests were determined to be active, a Nest Protection Plan would be developed in consultation with the USFWS. Nest protection plans would be submitted to USFWS for final review and subsequent expedited approval and filed with FERC.

5.1.5.2. Power Lines and Infrastructure

Power line and infrastructure survey reporting would be incorporated into the Annual Compliance Report (see Section 6) and reviewed annually (during survey years) with all stakeholders to document compliance and discuss results.

Documentation related to the powerline and infrastructure surveys would include the following:

- A list of dates during which monitoring activities were conducted.
- Surveyors name(s), survey/monitoring date and time period, and areas surveyed/monitored.
- A summary of activity in the survey/monitoring area.
- A summary of all bird avoidance and impact minimization measures implemented at the site(s), if applicable.
- The location and status of observed nests, as well as activities that indicate possible or probable nesting.
- An account of any disturbance or incidental take of threatened/endangered species/species of special concern during construction (take applies to threatened/endangered species only).
- A list of potential compliance issues and the resolution or status of each issue.

5.2. Mitigating for BGEPA “Take” of Bald Eagles

5.2.1. Risk Assessment of Activity and Timeline

A risk assessment would be conducted to determine the impacts of construction to bald eagles during breeding and nesting season and non-breeding season. An aerial survey prior to construction would provide information on the presence of bald eagle nests within the Project boundary. If nests were detected, then KHL would adopt the following measures during construction activities:

- Buffers would be established around identified nests. Distance of buffer boundaries would be determined upon visual range from the construction activities, as presented in Table 2. Once identified, buffer boundary polygons would be provided to construction surveyors and equipment operators for use during vegetation removal and construction.
- If buffers were not practicable, KHL would consult with USFWS for the best course of action. Actions may include the submission of an application for permitted take, 50 CFR 22.26 (Form 3-200-71).

Table 2. Activity buffer distances from bald eagle nest based on visibility.

	If there is no similar activity within 1 mile of the nest	If there is similar activity closer than 1 mile from the nest
If the activity will be visible from the nest	660 feet. Landscape buffers are recommended.	660 feet, or as close as existing tolerated activity of similar scope. Landscape buffers are recommended.
If the activity will not be visible from the nest	330 feet. Clearing, external construction, and landscaping between 330 feet and 660 feet should be done outside breeding season (~March – August).	330 feet, or as close as existing tolerated activity of similar scope. Clearing, external construction and landscaping within 660 feet should be done outside breeding season (~March – August).

5.2.2. Plan of Construction

Disturbance to bald eagles and/or the removal of their nests are prohibited without a permit. Bald eagle mortality due to inadequately designed power lines is considered a “take” and is a violation of BGEPA. KHL would conduct an aerial nest survey in advance of construction commencement in order to place an appropriate buffer boundary around each nest to limit disturbance. This plan would minimize potential “take” as defined by BGEPA. If placement of an appropriate buffer zone was not possible, KHL would consult with USFWS for the best course of action, which may include the submission of an application for permitted take.

5.2.3. Measures Taken Based on Project Actions

Bald eagles and their nests are protected under BGEPA. Nest structures are very large and detection can be obtained utilizing aerial surveys. Once detected, permitted (if needed), and/or associated buffer boundaries have been established, protocols would be developed for

monitoring during construction. Mitigation actions and associated measures are described below for construction if nests have been detected during the aerial survey.

Bald Eagle Monitoring Methods

Any bald eagle nests detected via aerial surveys would be monitored during the construction phase of the Project. Nests would be monitored three times during the nesting season (incubation, brooding, and fledging consistent with the timing identified in Table 1) to determine the fate of the nest and nestlings. Nests would be monitored from viewing points on the ground using binoculars or a spotting scope. The observer would note the condition of the nest and document signs of activity (e.g., one or both adult birds present, nestling or fledgling observed in the nest or in the nest area, fresh greenery in nest, down on perimeter of nest or in branches adjacent to nest). In addition, behavioral observations that may be used to help determine nest status would be noted (adult in incubating posture on nest, aggressiveness of adults to observer(s), etc.).

If there was enough activity to conclusively determine a nest was active, the observer would document the nest as such. The nest tree would not be climbed to assess number of eggs laid, number of young hatched, number of young depredated, etc.

Nest monitoring would consist of observations at the nest site and would include the following:

- Observer
- Survey / nest identification
- Date of survey
- Survey start and end times
- Global positioning system (GPS) location of observation point(s)
- Description of distance and bearing to nest from each GPS point
- Weather conditions
- Description of structure
- Description of survey location
- Presence of adults
- Behaviors observed
- Description of vegetative habitat(s)
- Description of the developmental stage of bird observed: adult, juvenile, or fledgling

5.2.3.1. *Vegetation Removal Associated with Project Operation*

Prior to large-scale vegetation removal associated with Project maintenance, KHL would evaluate the locations of the activity related to any nearby nests and consult with the USFWS with respect to permitted take, if necessary.

5.2.4. Reporting

A final report on activities and condition of any nests during construction and/or maintenance activities would be provided to the USFWS at the completion of the construction phase of the

Project and during any year of operations that large-scale, maintenance-related vegetation clearing occurred.

With respect to this resource area, documentation would include the following:

- A list of dates during which monitoring activities were conducted.
- Surveyors name(s), survey/monitoring date and time period, and areas surveyed/monitored.
- A summary of construction / maintenance activity in the survey/monitoring area.
- A summary of all eagle avoidance and impact minimization measures implemented at the site(s), if applicable.
- The location and status of observed nests.
- An account of any disturbance or incidental take during construction / maintenance activities.
- A list of potential compliance issues and the resolution or status of each issue.

6 COORDINATION AND REPORTING

Provisions in this APP would be formally adopted and implemented by KHL upon FERC issuance of the operating license, and commencement of Project construction. Requisite stakeholders would be consulted well in advance of construction efforts being implemented to ensure a comprehensive and collaborative planning effort for those measures (described above) associated with construction.

All APP activities in a given year would be documented as part of an annual compliance reporting/meeting process. Every winter, KHL would convene a global meeting with all stakeholders and FERC to review all management plans and related monitoring efforts associated with construction and subsequent operation of the Project. It is during these annual proceedings when results would be documented, identified issues would be discussed, and modifications to plans and/or additional measures would be adopted to ensure that minimal impact to the natural environment was occurring as a result of Project construction and operations. With respect to the APP, primary topics discussed during the annual compliance reporting/meeting process would include the following:

- A summary of the actions that KHL implemented during the previous calendar year.
- A discussion of any substantial differences between the actions provided in the APP (and subsequent agreements) and the actions that KHL implemented, including explanations for any substantial differences.
- Results of any surveying that occurred during the previous calendar year, conclusions that KHL draws from the monitoring results, and any change to the APP that KHL proposes based on the monitoring results.
- Stakeholder input with respect to any necessary modifications to the existing APP.

Ultimately, the draft Annual Compliance Report would be revised to incorporate stakeholder comments and update modified plans for the following year's natural resource implementation

and compliance efforts. The Annual Compliance Report would be filed with FERC by April 1 of each year and copies would be made available to the stakeholders and FERC via the Internet.

Additionally, all monitoring efforts during construction activities would be managed by KHL's onsite ECM. This person would be responsible for ensuring that all procedural aspects of the natural resource and construction management plans as well as general Best Management Practices for construction efforts were being adhered to. This person would be the lead in confirming that all methods and associated data collection activities were occurring as scheduled and all associated data was entered and reported appropriately. The ECM would be the primary, onsite contact for both confirmation of appropriate activities with respect to monitoring during construction and the conduit for communicating any issues that may be occurring to ensure timely resolution.

7 REFERENCES

Avian Power Line Interaction Committee (APLIC). 2006. Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. Washington, D.C. and Sacramento, CA

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KHL (Kenai Hydro LLC). 2014. Grant Lake Hydroelectric Project (FERC No. 13212). Terrestrial Resources, Final Report. Prepared by McMillen LLC for Kenai Hydro, LLC. June 2014.

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USFWS. 2007. National Bald Eagle Management Guidelines. 25p. Ebasco (Ebasco Services, Inc.). 1984. Grant Lake Hydroelectric Project Detailed Feasibility Analysis. Volume 2. Environmental Report. Rep. from Ebasco Services Incorporated, Bellevue, Washington.

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Attachment E-9. Final Historic Properties Management Plan

NOTE: Because of the potentially sensitive nature of information regarding sites containing cultural resources, the information contained in the HPMP is not being distributed to the general public. This information has been filed with FERC with a Privileged designation in Volume 2 of the Final License Application. It may be obtained by request to Kenai Hydro, LLC or FERC, subject to confidentiality provisions.