

PART I. FACILITY DESCRIPTION

<i>Information</i>	<i>Variable Description</i>	<i>Response (and reference to further details)</i>
Name of the Facility	Facility name (use FERC project name if applicable)	Goat Lake Hydroelectric Project (GLH)
Location	River name (USGS proper name)	Goat Lake; see Appendix A for map
	River basin	Skagway River
	County, state, and nearest town	Borough of Skagway, Alaska; Skagway, Alaska
Facility Contacts	Names and affiliation only (NOTE: ALSO COMPLETE FACILITY CONTACTS FORM in Part IV with mailing address, phone number(s) and e-mail addresses)	
	• Owner	Alaska Power & Telephone Company; parent company of GLH, Inc.
	• Operating affiliate	GLH, Inc.
	• Representative in LIHI certification	Glen Martin, Compliance Manager; glen.m@aptalaska.com ; 360-385-1733 x122
Regulatory Status	FERC Project Number and FERC license type, plus issuance and expiration dates*	P-11077; 50 year license; Issued 07/15/1996; Expires 07/01/2046; see Appendix B for the original license
	Water Quality Certificate with state agency name and issuance date*	State of Alaska, Department of Environmental Conservation issued a waiver on 10/03/1994
	Other documents describing facility authorization, design, and operation (e.g., Corps' Water Control Manuals)	ADNR-Water Permit: LAS 19193 & LAS 22488 USFS Special Use Permit:
Characteristics of the Power Plant	Date of construction	1996-1997
	Total name-plate capacity	4.0 MW
	Average annual generation	12,000 MWh
	Number, type, and size of turbines, including maximum and minimum hydraulic capacity of each unit	One horizontal twin-jet Pelton turbine; 6000 HP total; total hydraulic capacity: 32 cfs
	Modes of operation (peaking, run-of-river, seasonal storage, etc.)	Sometimes block-loaded, but mostly load-following; depending upon the inflow to the lake and how full the lake is.
	Dates and types of major equipment upgrades	None
	Dates, purpose, and type of any recent operational changes	None
	Plans, authorization, and regulatory activities for any facility upgrades	None
Characteristics of the Dam or Diversion	Date of construction	No dam; lake siphon
	Dam height	N/A
	Spillway elevation and hydraulic capacity	N/A

GOAT LAKE HYDROELECTRIC PROJECT – LIHI RECERTIFICATION APPLICATION

Information	Variable Description	Response (and reference to further details)
	Tailwater elevation	748 feet above MSL
	Length and type of all penstocks and water conveyance structures between reservoir and powerhouse	6,578-foot-long; HDPE and steel; 704 feet 30-inch HDPE 959 feet 28-inch HDPE 4,915 feet 24-inch HDPE
	Dates and types of major, generation-related infrastructure improvements	None
Characteristics of Reservoir and Watershed	Gross volume and surface area at full pool	Surface area: 204 acres; Gross volume: 5,460 ac. ft.; maximum 40-foot drawdown
	Maximum water surface elevation (ft. MSL)	2,925 feet MSL
	Maximum and minimum volume and water surface elevations for designated power pool, if available	Maximum surface elevation: 2,925 ft. MSL Maximum volume: 5,460 ac. ft. Minimum surface elevation: 2,885 ft. MSL Minimum volume: unknown
	Upstream dams by name, ownership and river mile	No dams above or below project; project uses an alpine lake
	Operating agreements with upstream or downstream reservoirs that affect water availability, if any, and facility operation	There are no up or downstream reservoirs from this project
	Area inside FERC project boundary, where appropriate	273 acres
Hydrologic Setting	Average annual flow at the dam	No dam; from lake outlet, water years 1964-1986, 11.3 cfs; water years 1991-1994, 13.8 cfs = 12.6 cfs
	Average monthly flows	<u>Water years 1964-1986</u> (cfs): Jan. 0.9; Feb. 0.7; Mar. 0.7; Apr. 1.5; May 9.9; June 29.9; July 35.2; Aug. 26.1; Sept. 16.2; Oct. 9.4; Nov. 3.4; Dec. 1.1 <u>Water years 1991-1994</u> (cfs): Jan. 2.1; Feb. 2.1; Mar. 2.1; Apr. 1.9; May 15.7; June 42.9; July 36.8; Aug. 26.8; Sept. 19.2; Oct. 10.9; Nov. 2.0; Dec. 2.8
	Location and name of relevant stream gauging stations above and below the facility	There is no relevant stream gauging station above or below the project. No instream flow for aquatic species is required of this project. The only instream flow requirement is to maintain 8.5 cfs in a cascading stream for tourism from June through September each year, which is recorded at the railroad crossing just above the main falls.
	Watershed area at the dam	From the lake outlet, the watershed is 4.2 sq. mi.
Designated Zones of Effect	Upstream and downstream locations by river mile	Please see Appendix D for diagram of Zones of Effect
	Type of waterbody	Alpine Lake
	Delimiting structures	None

GOAT LAKE HYDROELECTRIC PROJECT – LIHI RECERTIFICATION APPLICATION

Information	Variable Description	Response (and reference to further details)
	Designated uses by state water quality agency	<i>"Changes in the Natural State of Water are to be made in the manner and only for the purposes stated in this permit. This permit is subject to the Pertinent Statutory provisions in AS 46.15, Administrative Regulations in 11 MC 93..."¹</i>
<i>Photographs of the Facility</i>	Photographs of key features of the facility and each of the designated zones of effect	Please see Appendix E

* Hyperlinks to facility FERC records on FERC e-library website are preferred whenever possible.

¹ See the enclosed ADNR water permit LAS 19193.

PART II. STANDARDS MATRICES (*Shading indicates that some standards are not available for some criteria.*)

Zone of Effects (ZoE)

Facility Name: Goat Lake Hydro

Zone of Effect: 1 of 3 (Reservoir)

Criterion		Alternative Standards Applied				
		1	2	3	4	Plus
A-1	Ecological Flow Regimes		X			
B-1	Water Quality	X				
C-1	Upstream Fish Passage	X				
D-1	Downstream Fish Passage	X				
E-1	Watershed and Shoreline Protection	X				
F-1	Threatened and Endangered Species Protection	X				
G-1	Cultural and Historic Resources Protection	X				
H-1	Recreational Resources	X				

Facility Name: Goat Lake Hydro

Zone of Effect: 2 of 3 (Bypass Reach)

Criterion		Alternative Standards Applied				
		1	2	3	4	Plus
A-2	Ecological Flow Regimes		X			
B-2	Water Quality	X				
C-2	Upstream Fish Passage	X				
D-2	Downstream Fish Passage	X				
E-2	Watershed and Shoreline Protection	X				
F-2	Threatened and Endangered Species Protection	X				
G-2	Cultural and Historic Resources Protection	X				
H-2	Recreational Resources	X				

Facility Name: Goat Lake Hydro

Zone of Effect: 3 of 3 (Powerhouse)

Criterion		Alternative Standards Applied				
		1	2	3	4	Plus
A-3	Ecological Flow Regimes		X			
B-3	Water Quality		X			
C-3	Upstream Fish Passage	X				
D-3	Downstream Fish Passage	X				
E-3	Watershed and Shoreline Protection	X				
F-3	Threatened and Endangered Species Protection	X				

G-3	Cultural and Historic Resources Protection	X				
H-3	Recreational Resources	X				

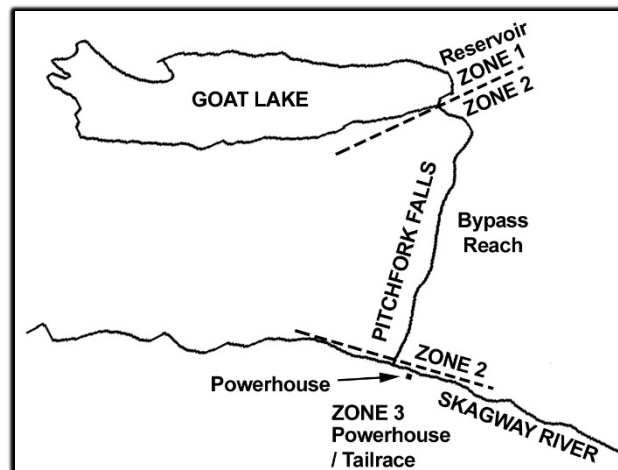


Figure 1: Zones of Effect

Reservoir Area Description

The Goat Lake Hydroelectric Project is located approximately 6.5 miles northeast of Skagway, Alaska. The alpine lake is situated in a perched cirque valley at El 2925. The lake lies east and south of the Skagway River. The drainage basin for Goat Lake and Pitchfork Falls Creek includes 4.2 square miles. The lake is approximately 6,900 feet long and 1,300 feet wide with a depth of over 270 feet. The lake is fed by a glacier at its south end, snow melt, and precipitation. The glacier covers about 1.7 square miles, contributing approximately 80-85% of its runoff to the lake. The glacier terminates near the south end of the lake in a coarse rubble moraine, consisting principally of large angular granitic blocks. The lake outlet, located about 300 feet north of the end of the moraine, flows through a bedrock notch and contributes the major portion of the water flow in Pitchfork Falls. After the falls this same water then joins the Skagway River.

The Goat Lake Hydroelectric Project is a storage project with a 4.0 MW capacity that is sometimes block loaded and sometimes load following that started operations in December 1997. The lake is used as a reservoir without any dam. The lake continues to have an uncontrolled spillway using the original outlet. A siphon intake extends into the lake a horizontal distance of 369-feet to obtain 185-feet of submergence, or an elevation of 2740, potentially drawing the lake down to the approximate elevation 2885 at peak use, during the winter. The intake, consisting of a ‘v’ shaped wedgewire screen assembly, is connected to the siphon pump by a 30 inch-diameter high density polyethylene chloride (HDPE) penstock which changes to a 28-inch-diameter steel penstock approximately 82-feet before the siphon house. The siphon pump connects with a valve house via a 704-foot-long, 30-inch-diameter HDPE penstock. A catchbasin located at approximately 2,885-feet above mean sea level (msl) catches runoff from the glacier moraine that bypasses the lake. The catchbasin is connected to a pumpback house via an 18-inch-diameter HDPE penstock. The pumpback house draws water from the catchbasin and pumps the water back to the lake via a 16-inch-diameter, 640-foot-long HDPE penstock by using four pumps of various horsepower (HP). The valve house also has a 16-inch bypass flow pipe for

when additional water is needed in Pitchfork Falls Creek at certain times of the year. A minimum of 8.5 cfs is required for visual concerns from May 15 – September 30 for 12 hours each day. This is operated via a SCADA system that measures flows and releases or stops releases when required.

The lake was stocked with grayling in 1994 by the Alaska Department of Fish & Game, the same year we filed a license application to the Federal Energy Regulatory Commission. After conducting a population and habitat surveys from 2001-2007, the grayling were found to have access to the main spawning stream regardless of the lake elevation at the spawning period in June and July. Further studies were discontinued per agency approval.

PART III. ZoE #1 – SUPPORTING INFORMATION – RESERVOIR

ZoE #1

Facility Name: Goat Lake Hydro

Zone of Effect: 1 of 3 (Reservoir)

Criterion		<i>Alternative Standards Applied</i>				
		<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>Plus</i>
A-1	Ecological Flow Regimes		X			
B-1	Water Quality	X				
C-1	Upstream Fish Passage	X				
D-1	Downstream Fish Passage	X				
E-1	Watershed and Shoreline Protection	X				
F-1	Threatened and Endangered Species Protection	X				
G-1	Cultural and Historic Resources Protection	X				
H-1	Recreational Resources	X				

III.A-1.2. ECOLOGICAL FLOW REGIMES in ZoE #1

STANDARD A-2. Agency Recommendation: No ecological flow regime was required for this project because any loss of a small amount of aquatic biota below the project reservoir would not have a significant impact on aquatic biota in the downstream reach.

A-1	2	<p><u>Agency Recommendation (see Appendix A for definitions):</u></p> <ul style="list-style-type: none"> Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent). Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement. Explain how the recommendation relates to agency management goals and objectives for fish and wildlife. Explain how the recommendation provides fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow
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		variations).
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The outflow from Goat Lake (reservoir) flows in a stream named Pitchfork Falls due to its braided nature down at its confluence with the Skagway River. This stream is a little over 6,000 feet in length, but cascades over bedrock for a drop in elevation of 2100 feet to the river. The average slope is 30% with many falls in the stream. No fish utilize this stream and only a small amount of this stream provides suitable habitat for aquatic biota; the only pool is a small, shallow pond just below the lake outlet and there are no pools or riffles in the rest of the stream, just cascades and falls (see the below photo). Also, during the winter (Nov. – May) this stream and the pond are frozen solid and covered by 10+ feet of snow.

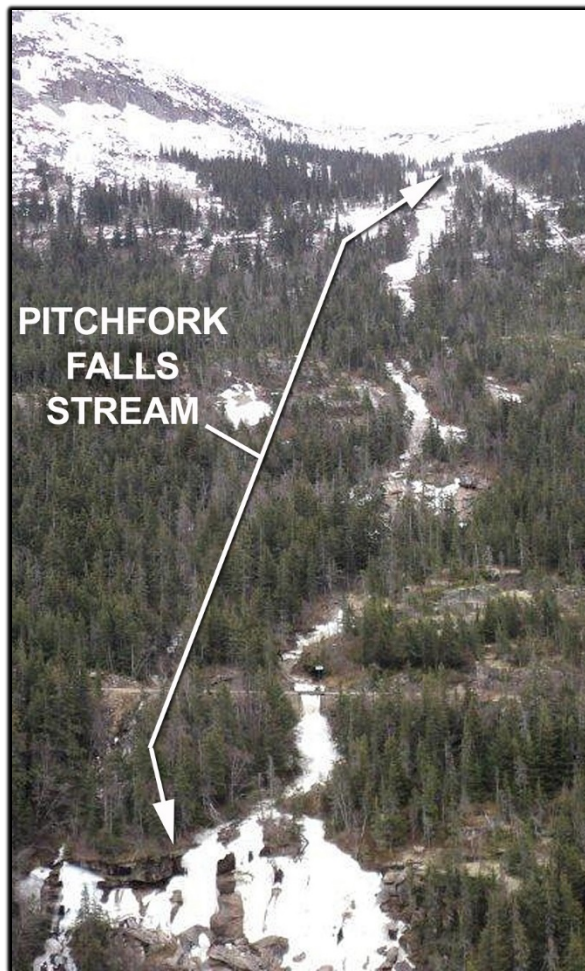


Figure 2: Frozen Pitchfork Falls; note the steep slope

The Skagway River has an anadromous barrier 3 miles downstream from the projects tailrace. Based on a fish survey of the Skagway River by ADF&G, no fish are present in the Skagway River above the anadromous barrier.

For the above reasons, this project has no required ecological flow regime because any change in the bypass reach flow and its impacts on aquatic biota were considered insignificant. Therefore, this project is considered to have De Minimis effects on this watershed's ecological flows.

The project does provide flow to Pitchfork Falls during June 1 – September 30 for tourists who can view the falls from the Klondike Highway, but this is not an ecological flow, this is a visual flow requirement.

III.B-1.1. WATER QUALITY in ZoE #1

The licensee obtained a waiver to Section 401 Certification on October 3, 1994, from the Alaska Department of Environmental Conservation (DEC); see Appendix E. On January 30, 2012, the

DEC again waived certification for this hydroelectric project and stated, “*For any FERC permitting renewal of your project DEC would waive 401 certification of your project.*”

Criterion	Standard	Instructions
B-1	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> • Explain rationale for why facility does not alter water quality characteristics below, around, and above the facility.

On November 20, 1991, DEC requested that AP&T investigate a number of water quality issues related to the development of this project. Below is a statement from the FERC Environmental Assessment prior to licensing this project:

“Water quality in the proposed project area complies with applicable state standards. AP&T conducted water quality studies during August 1992, March and July 1994, and January and March 1995. Water samples for the study were collected from the surface of Goat Lake, 25 feet below the lake surface, and from the Skagway River above and below the outlet of Pitchfork Falls.”

“Dissolved oxygen levels ranged from 7.1 milligrams per liter (mg/l) to 12.2 mg/l in Goat Lake and from 8.2 mg/l to 9.8 mg/l in the Skagway River. Turbidity levels ranged from 1.49 nephelometric turbidity units (NTU's) to 9.11 NTU's in Goat Lake and from 0.47 NTU's to 44.2 NTU's in the Skagway River. The pH levels ranged from 6.8 to 7.25 in Goat Lake and from 7.11 to 7.51 in the Skagway River. Conductivity levels ranged from 35 microsiemens per centimeter (µS/cm) to 54.6 µS/cm in Goat Lake and from 23 µS/cm to 64.2 µS/cm in the Skagway River.

“Temperature profiles were developed for Goat Lake in August 1992, July 1994, and March 1995. The temperatures in Goat Lake ranged from 0.0o Celsius (C) to 5.5oC with no significant thermal stratification in any single profile.”²

The Project does not alter water quality characteristics below, around, and above the facility because:

- The reservoir is an alpine lake, so there is no impacting water quality above the lake.
- Hydrologically, the lake fills each summer and spills out of its natural outflow channel starting in July or August. The water has glacial flour and is therefore naturally cloudy; as is the Skagway River.
- The intake is a wedge wire screened device (see Appendix E) that is placed at El. 2,740 MSL on the lake bed. The lake is licensed to be drawn down to 2,885 feet MSL. The lake surface is naturally at 2,925 feet MSL. With the intake 145-185 feet below the surface of the lake there could be colder water discharged at the tailrace during the summer and warmer in the winter than exists in the river. However, with no fish to impact at the project tailrace confluence with the Skagway River, this is not an issue. During the summer the Skagway River has over 1,000 cfs compared to the maximum output of 32 cfs by the project. During the winter, the river can have as little as 20 cfs, making the projects 32 cfs more significant. However, there are no fish in the river until several miles downstream, which allows for water temperatures to moderate to natural

² May 22, 1996, FERC issued Final EA.

ambient temps found above the project tailrace. During the winter, aquatic biota is naturally reduced in the river, making any changes, such as warmer water and increased DO, less of an impact; although these would be positive impacts for aquatic biota during the winter months.

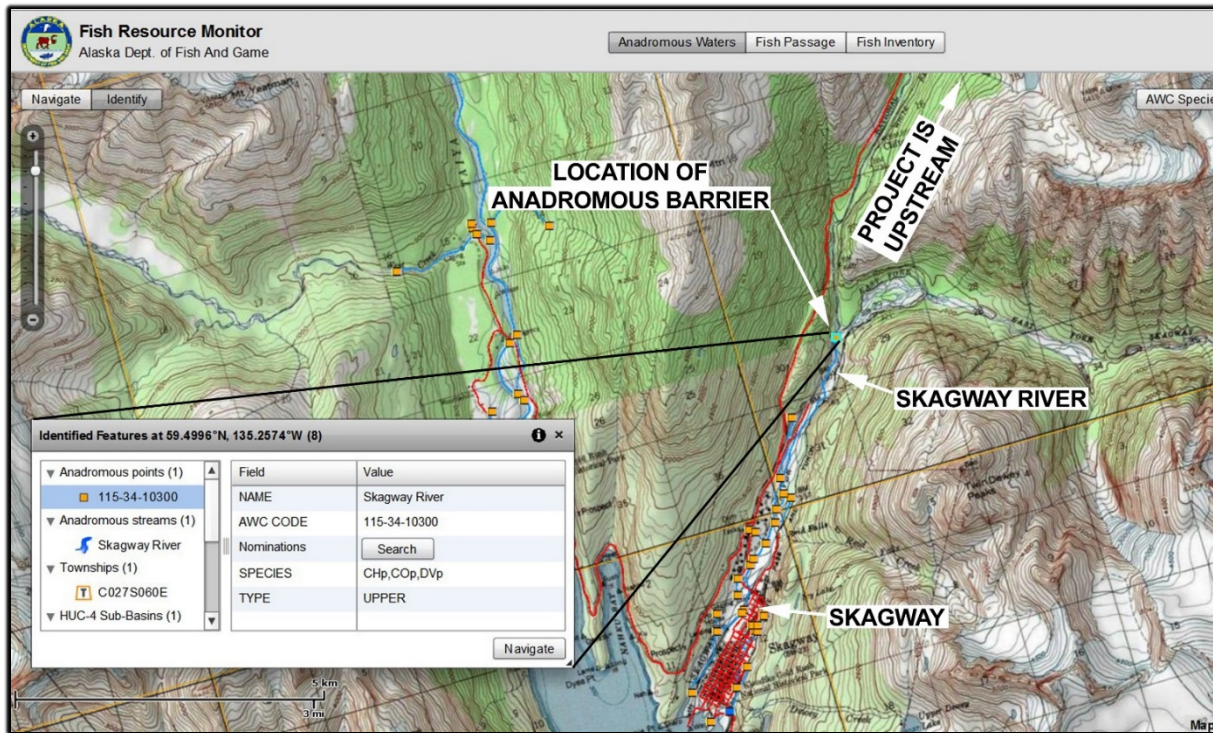


Figure 3: Location of Anadromous Barrier on Skagway River

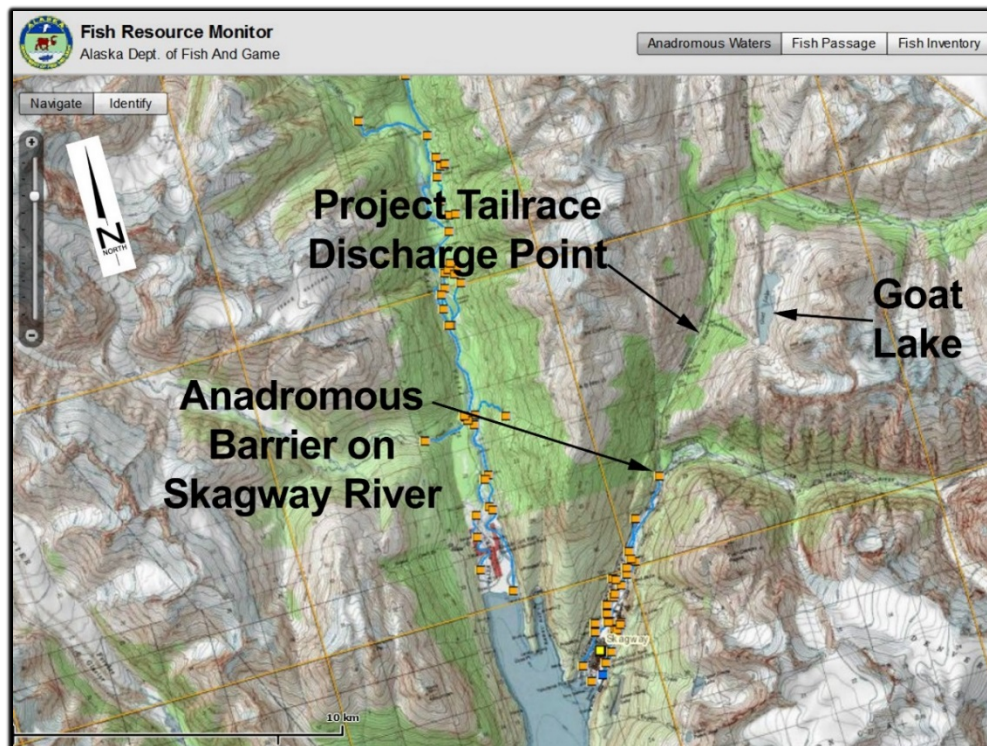


Figure 4: Location of Anadromous Barrier to Project Tailrace; 3 mile separation

- During the winter months the DO is more evenly mixed and even with the lake being drawn down to near its maximum level the DO in the water remains mixed, as shown in Figure 6.
- Although the State has chosen to waive 401 water quality certification, they have been involved in the FERC licensing of Goat Lake and in 1994 sent AP&T a letter which states, “I have reviewed the water quality data from Goat Lake which you forwarded me...I do not see any parameters of concern.”

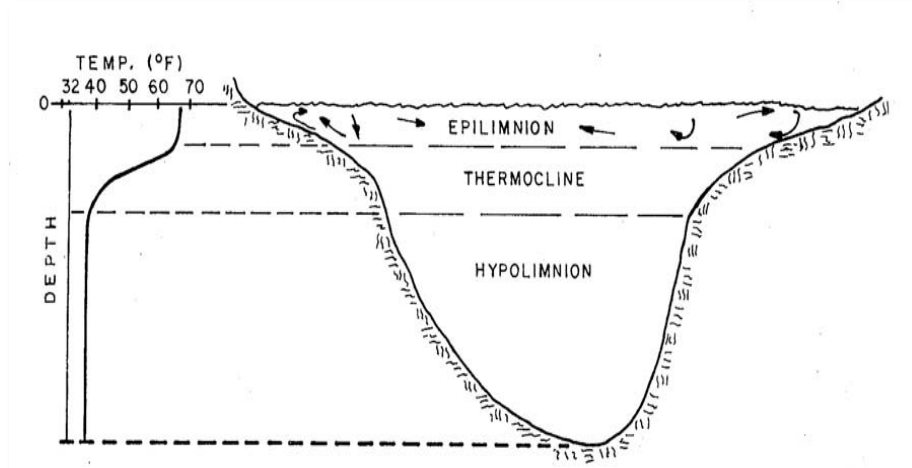


Figure 5: Summer DO levels are stratified if the water is deep enough³

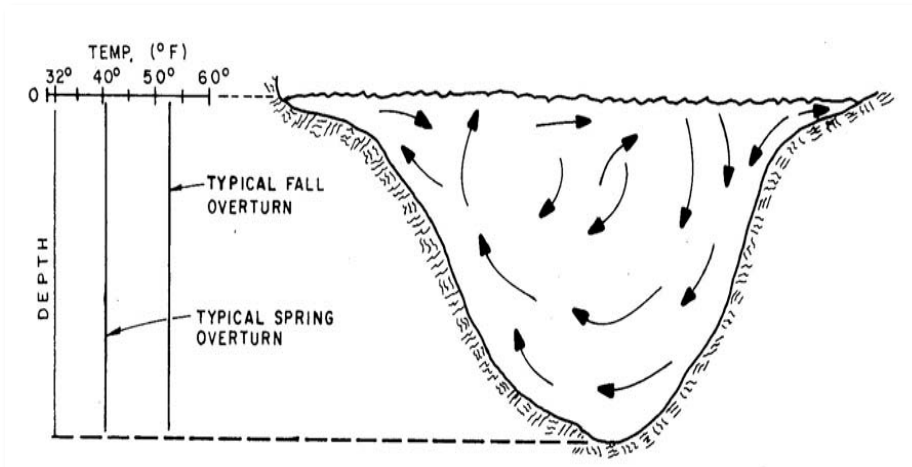


Figure 6: Spring, Fall, and Winter mixing of the lake/reservoir DO⁴

- Because of the intake depth a vortex in the lake is not created that would increase dissolved gases.

³ Bevelhimer, M.S., Coutant, C.C., Environmental Sciences Division, Oak Ridge National Laboratory, Assessment of Dissolved Oxygen Mitigation at Hydropower Dams using an Integrated Hydrodynamic/Water Quality/Fish Growth Model, ORNL/TM-2005/188, March 2006.

⁴ Ibid.

- Because there is a vent in the penstock at its crown, this prevents the buildup of gases under pressure from the vacuum created for siphoning water out of the lake.
- Also, the tailrace at the powerhouse with its rock lined 80-100 foot long channel helps to aerate the discharge so that there is no significant change in dissolved oxygen levels between the lake and river.
- Because Goat Lake is surrounded by approximately 90% bedrock and talus, including the glacial moraine, the one primary inlet streams offers the only location for sedimentation. With a bedrock and talus shoreline and subsurface, there is little opportunity for erosion to occur during the annual drawdowns.
- Because the Skagway River, at the Pitchfork Falls confluence, is estimated to have a drainage area of 90 sq. miles, and the fact that the anadromous barrier for the river is approximately 3 miles downstream of this confluence, temperatures of water from the lake intermixing with river flow has very little to no impacts to aquatic life. With the river having up to 1,000+ cfs and the project limited to a peak of 32 cfs, the ability of the project to impact river water temperatures is minimal.
- Pre-construction water quality studies found the limnological parameters in Goat Lake to be indicative of a highly oligotrophic lake very poor in nutrients. The analytical results for organic and biological parameters for all stations in both Goat Lake and the Skagway River are very low, generally at or near the level of analytical detection.

In a March 2007 review for certification by the LIHI, there was the following quote, *“Both state and federal resource agency staffers we spoke with generally felt the water quality met state water quality standards. One agency staffer described the water quality as “Fantastic, it’s pristine, the kind of water quality others dream of!”*

Based on the above information, the impacts of this project on water quality has De Minimis effect.

III.C-1.1. UPSTREAM FISH PASSAGE in ZoE #1

C-1	1	<u>Not Applicable/De Minimis Effect:</u> <ul style="list-style-type: none"> • The facility does not create a barrier to downstream passage.
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N/A; no anadromous fish in reservoir nor above reservoir.

III.D-1.1. DOWNSTREAM FISH PASSAGE in ZoE #1

D-1	1	<u>Not Applicable/De Minimis Effect:</u> <ul style="list-style-type: none"> • The facility does not create a barrier to downstream passage.
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The grayling in Goat Lake, first stocked in 1994, can leave the lake when it spills each summer. However, they do not survive passage down to the Skagway River, a 2,100 foot drop in approximately 1 mile via cascades and falls.

In April 1994, AP&T and the ADFG conducted a fish survey in the Skagway River upstream and downstream of the Pitchfork Falls outlet. During the survey, no fish were captured or observed. The survey report showed that existing habitat conditions are extremely poor because of the high gradient and lack of overwintering and rearing habitats. The survey results indicate that this section of the Skagway River does not support any significant fish populations (Alaska Power and Telephone Company 1995b).



Figure 7: Wedge-Wire Screen Intake

For the above reasons, downstream fish passage is Not Applicable.

III.E-1.1. WATERSHED and SHORELINE PROTECTION in ZoE #1

<i>E-1</i>	<i>1</i>	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> <i>If there are no lands with significant ecological value associated with the facility, document and justify this (e.g., describe the land use and land cover within the project boundary).</i> <i>Document that there have been no Shoreline Management Plans or similar protection requirements for the facility.</i>
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This project has no shoreline management plan because of the steep terrain to reach the site. The U.S. Forest Service, the land manager around Goat Lake, did not want to encourage recreation at this location and preferred that we construct the project without roads; which we did with an overhead tram and heavy helicopters. Except for the lakes outlet, the surround landscape for the most part maintains its wildland character.

For the above reasons, this project has no shoreline protection plan because it is Not Applicable.

III.F-1.1. THREATENED and ENDANGERED SPECIES in ZoE #1

<i>F-1</i>	<i>1</i>	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> • Document that there are no listed species in the facility area or affected riverine zones downstream of the facility. • If listed species are known to have existed in the facility area in the past but are not currently present, explain why the facility was not the cause of the extirpation of such species. • If the facility is making significant efforts to reintroduce an extirpated species, describe the actions that are being taken.
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No threatened or endangered species were observed at Goat Lake or at any other location within or adjacent to the project boundary other than on small colony of goose-grass sedge found at 4,000 feet MSL, well outside the projects impact area.⁵

There are no listed species in the project vicinity and there were none when the project was first constructed. However, the following are T&E listed species found in Alaska.

USFWS Listed Species

Below is a list of Threatened and Endangered species⁶ from the USFWS Alaska website.

Status Species/Listing Name

E	Albatross, short-tailed Wherever found (<i>Phoebastria (=Diomedea) albatrus</i>)
T	Bear, polar Wherever found (<i>Ursus maritimus</i>)
T	Bison, wood Wherever found (<i>Bison bison athabascaae</i>)
T	Eider, spectacled Wherever found (<i>Somateria fischeri</i>)
T	Eider, Steller's AK breeding pop. (<i>Polysticta stelleri</i>)
T	Otter, Northern Sea Southwest Alaska DPS (<i>Enhydra lutris kenyoni</i>)
E	Sea lion, Steller Western DPS (<i>Eumetopias jubatus</i>)
E	whale, beluga Cook Inlet DPS (<i>Delphinapterus leucas</i>)
E	Whale, blue Wherever found (<i>Balaenoptera musculus</i>)
E	Whale, bowhead Wherever found (<i>Balaena mysticetus</i>)
E	Whale, sperm Wherever found (<i>Physeter catodon (=macrocephalus)</i>)

Albatross

The Albatross is a large seabird that travels throughout the North Pacific Ocean, but breeds in the Japanese archipelago. This seabird is unlikely to be found in the Goat Lake area, but if it were it would be passing through. Because this project does not impact the marine foods the Albatross

⁵ FERC Final EA, May 22, 1996, p. 42.

⁶ Downloaded from USFWS website on October 28, 2016.

prefers and breeding takes place in the Japan archipelago, this project has no significant impacts on their sustainability.

Polar Bear

The Polar bears main habitat is above the Arctic Circle along shorelines to be near its main food source, the ringed seal. Due to the Polar bears range being far away from the Goat Lake area, this project has no significant impacts on their sustainability.

Wood Bison

Wood bison have been reintroduced to West-Central Alaska from Canada, but have no home range near the Goat Lake area. Due to the Wood bison's home range being so distant from the project area, this project has no significant impacts on their sustainability.

Spectacled Eider

The Spectacled Eider is a sea duck that breeds in wet tundra regions. They nest along Arctic coasts of Alaska and Russia and on the Yukon-Kuskokwim Delta in Alaska. In the winter, the entire global population of spectacled eiders congregates in gaps in the sea ice (called polynyas) in the Bering Sea between St. Lawrence and St. Matthew Islands. They use these gaps in the ice to dive down and collect mollusks and other crustaceans from the sea floor. The Goat Lake area is not likely to have Spectacled Eider present, though they could pass through the area. This project has no significant impacts on the Spectacled Eiders sustainability.

Steller's Eider

The Steller's eider is a sea duck whose breeding range is the arctic coastal plain of northern Alaska and Russia. Almost all Steller's eiders nest in northeastern Siberia with less than 1% of the population breeding in North America. The Steller's eiders range is primarily a significant distance from the Goat Lake area; except potentially for that 1% migrating to North America. This project would have no significant impacts on the sustainability of this species.

Northern Sea Otter

The northern sea otter subspecies (*E. lutris kenyoni*), is found in the Aleutian Islands, Southern Alaska, British Columbia, and Washington. Within Alaska, there are 3 stocks. The Southeast stock can be found in the coastal waters of Southeast Alaska. The Southcentral population spans from west of Glacier Bay to the eastern edge of Cook Inlet. The Southwest population stretches from the western edge of Cook Inlet out the Aleutian islands. This species may be present along the coast approximately 7 miles away. However, this project is unlikely to have an impact on its marine habitat, including its preferred foods of invertebrates and fish because the project does not significantly impact water quality or fish.

Stellar Sea Lion

Stellar sea lions are present from California up through the Alaska coast to Asia. The closest rookeries to Goat Lake are hundreds of miles distant on the Alaska outer coast. Stellar sea lions primary foods are of limited nature in Taiya Inlet, the marine waters below the Goat Lake project. Because this project has an insignificant impact fish resources and Stellar sea lion critical habitat is hundreds of miles distant, this project has De Minimis effect on this species.

Whales

The Cook Inlet beluga, Sperm, Bowhead, and Blue whales may use the coastal waters of Alaska. However, this project has no significant impacts to fish species found in marine waters and is unlikely to have any significant impacts to the whale sustainability.

NMFS Listed Species

Below is a list of Threatened and Endangered species⁷ from the NMFS Alaska website. Only species not already listed in the above USFWS list are included here.

Status Species/Listing Name

E & T	Fish, Snake, Willamette, and Columbia Rivers (<i>Oncorhynchus tshawytscha</i> ; <i>Oncorhynchus kisutch</i> ; <i>Oncorhynchus keta</i> ; <i>Oncorhynchus mykiss</i>)
C	Seal, harbor seals in Iliamna Lake (<i>Phoca vitulina</i>)
T	Seal, Ringed (<i>Phoca hispida</i>)
T	Seal, Bearded (<i>Erignathus barbatus</i>)
E	Sea Turtle, leatherback (<i>Dermochelys coriacea</i>)
T	Sea Turtle, green (<i>Chelonia mydas</i>)
T	Sea Turtle, loggerhead (<i>Caretta caretta</i>)
T	Sea Turtle, olive ridley (<i>Lepidochelys olivacea</i>)
E	Whale, humpback (<i>Magaptera novaeangliae</i>)
E	Whale, fin (<i>Balaenoptera physalus</i>)
E	Whale, northern pacific right (<i>Eubalaena japonica</i>)
E	Whale, sei (<i>Balaenoptera borealis</i>)
E	Whale, western pacific gray (<i>Eschrichtius robustus</i>)
C	Abalone, pinto (<i>Haliotis kamtschatkana</i>)

Fish

Salmon species from the Columbia, Willamette, and Snake rivers that are listed by the NMFS as endangered and threatened are not likely to be significantly impacted by this project because this project has no significant impacts to fish species. Due to the characteristics described previously regarding ecological flow regimes and water quality, this project has De Minimis effect on fish species.

Bearded and Ringed Seals

Bearded and Ringed seals do not have habitat near the Goat Lake area, preferring the Bering Sea and Arctic Ocean. In addition, this project has no significant impacts to fish species and therefore has De Minimis effect on these species.

Harbor Seals in Iliamna Lake

⁷ Downloaded from NMFS website on October 29, 2016.

The Iliamna Lake is located approximately 700 miles away from the Goat Lake area. Harbor seals, in general, are present in marine waters in Taiya Inlet, a minimum of 7 miles below the project area. Because this project has no significant impact on fish species, the project has De Minimis effect on this species.

Sea Turtles

Sea turtle habitat for the leatherback, green, loggerhead and olive ridley are at minimum 200 miles from the project area. Because this project has no significant impact on aquatic species, there are De Minimis effects to these species.

Whales

The Humpback, Fin, Northern Pacific Right, Sei, and Western North Pacific Gray whales may use the coastal waters of Alaska. However, this project has no significant impacts to whales marine habitat or to fish species found in marine waters and is therefore unlikely to have any significant impacts to the whale sustainability.

Abalone

The pinto abalone lives in marine waters below low-low tide. Because this project has no significant impacts to water quality in the Skagway River, impacts to pinto abalone by this project has De Minimis effect.

Final EA T&E Assessment

According to the Final Environmental Assessment (p. 40-42) and the License issued by FERC (p. 3) there are no listed species in the facility area, including riverine zones downstream of the facility. The Skagway River has an anadromous barrier approximately 3 miles downstream of the projects tailrace, preventing the following species that utilize the anadromous reach from moving up to the project: Chum, Coho, King, Dolly Varden, and Eulachon. No species of fish are above the anadromous reach.

Avian Species

Article 403. The licensee shall design and construct the transmission line according to the guidelines in "Suggested Practices for Raptor Protection on Power Lines--the State of the Art in 1981," by the Raptor Research Foundation, Inc. The licensee used these guidelines to construct the transmission line.

For the above reason, this project is De Minimis effect.

III.G-1.1. CULTURAL and HISTORIC RESOURCES in ZoE #1

G-1	1	<u>Not Applicable/De Minimis Effect:</u> <ul style="list-style-type: none"> <i>There are no cultural or historic resources present on facility lands that can be potentially threatened by construction or operations, or have been negatively affected.</i>
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AP&T conducted a cultural resources survey of the project area (Campbell 1994). The survey identified the following cultural resources in the project area: (1) contributing elements of the

Historic Landmark, that specifically include the WP&YR RR, a historic tourist trail and viewpoint of Pitchfork Falls, the historic Brackett Wagon Road, and a historic telegraph or telephone line dating from World War II and possibly earlier; and (2) the historic Canadian Oil pipeline dating from World War II. No other cultural resources were located.

FERC determined that with the MOA for the project, No Adverse Impacts would occur to cultural or historic resources.⁸

To avoid impacting all the historic resources along the WP&YR RR, which included the railroad, telegraph, and Canadian oil pipeline, a culvert was placed under the railroad bed to pass the penstock through. To avoid the Brackett Wagon Road along the Skagway River, the powerhouse was moved to the west side of the river on a bedrock knoll and the penstock was bridged across the river from another bedrock ridge. This avoided disturbing ground along the Skagway River that the historic road passes through. The afore mentioned historic tourist trail and viewpoint of Pitchfork Falls are away from project features such that they are not visible and were not impacted.

This project was redesigned to avoid impacting historical resources in the project area and continues to operate without impacting those resources.

For the above reasons, this project has a De Minimis effect.

III.H-1.1. RECREATIONAL RESOURCES in ZoE #1

<i>H-1</i>	<i>1</i>	<u><i>Not Applicable/De Minimis Effect:</i></u> <ul style="list-style-type: none"> <i>...does not otherwise impact recreational opportunities in the vicinity of the facility.</i>
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“There are no developed facilities in the Goat Lake basin. The FS manages the area to retain its roadless and wildland character. Major recreational facilities would not be developed. The developed recreational facilities that exist outside of the basin consist of FS cabins, dispersed campsites, and picnic areas. The National Park Service operates the Klondike Gold Rush National Historical Park that includes a visitor center in Skagway and a campground in Dyea.”

“Because of the difficulty in accessing the Goat Lake basin, very little recreational use occurs in the vicinity of the lake. Major recreational activities in the project vicinity are dispersed activities such as hiking, fishing, and sightseeing.”⁹

For the above reasons, this project has De Minimis effect.

⁸ Ibid, p. 49.

⁹ FERC Final EA, May 22, 1996, p. 50.

ZONE 2 – BYPASS REACH

PART III. ZoE #2 – SUPPORTING INFORMATION – BYPASS REACH

ZoE #2

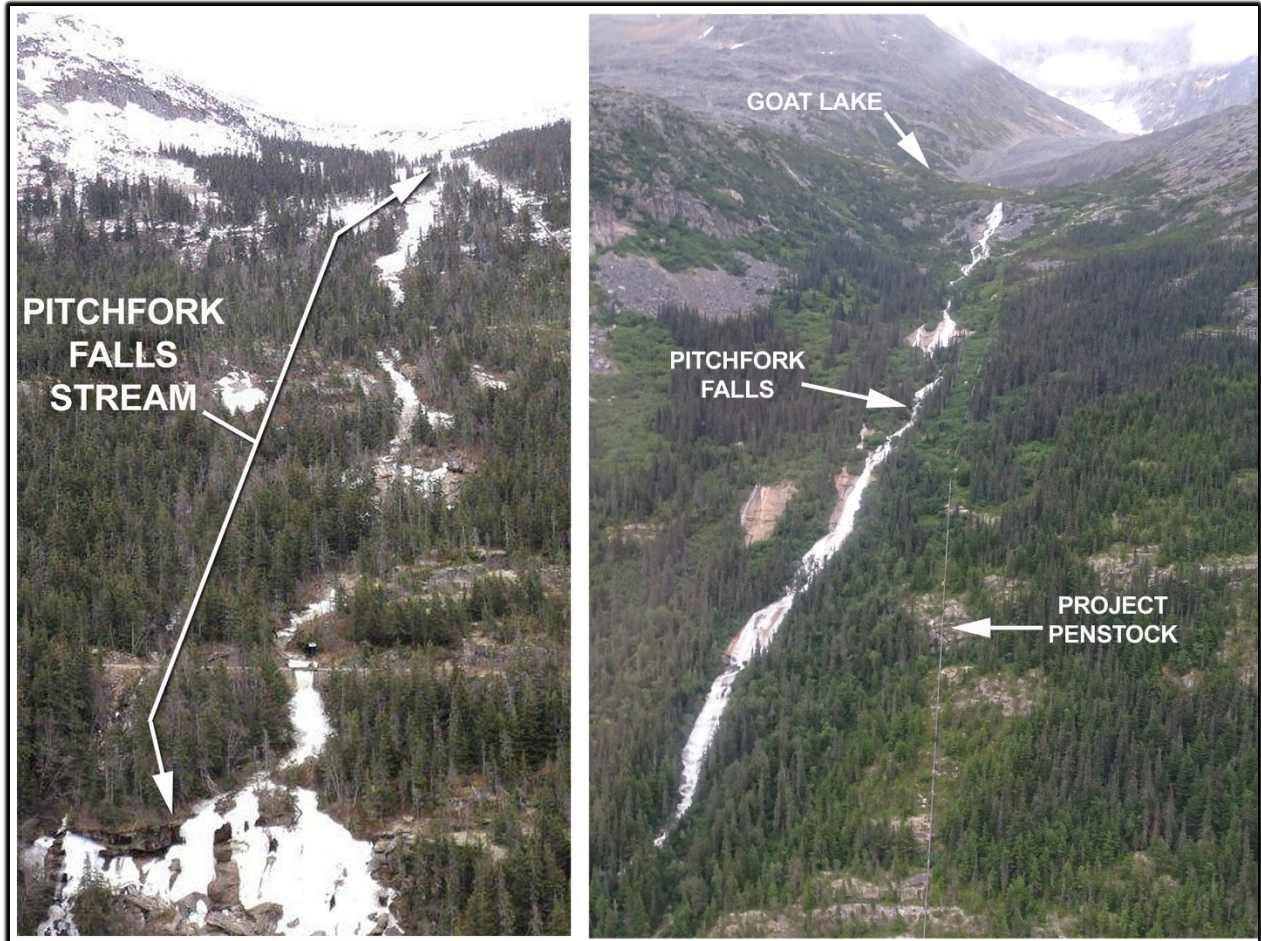


Figure 8: Zone 2 - Bypass Reach; Stream frozen in left photo, flowing in right photo

Facility Name: Goat Lake Hydro Zone of Effect: 2 of 3 (Bypass Reach)

Criterion		Alternative Standards Applied				
		1	2	3	4	Plus
A-2	Ecological Flow Regimes		X			
B-2	Water Quality	X				
C-2	Upstream Fish Passage	X				
D-2	Downstream Fish Passage	X				
E-2	Watershed and Shoreline Protection	X				
F-2	Threatened and Endangered Species Protection	X				
G-2	Cultural and Historic Resources Protection	X				

H-2	Recreational Resources	X				
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Shading indicates that some standards are not available for some criteria.

III.A-2.2. ECOLOGICAL FLOW REGIMES in ZoE #2

STANDARD A-2. Agency Recommendation: No ecological flow regime was required for this project because any loss of a small amount of aquatic biota in the bypass reach would not have a significant impact on aquatic biota in the Skagway River.

A-2	2	<u>Agency Recommendation (see Appendix A for definitions):</u> <ul style="list-style-type: none"> Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent). Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement.
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The ‘bypass reach’ includes the outflow from Goat Lake which is a stream named Pitchfork Falls. Pitchfork Falls is a cascading stream that is 6,200 feet long and drops approximately 2,100 feet in elevation through a series of cascades and falls over bedrock. Near its base it forms a picturesque braided fall that cascades into the Skagway River. Tourist pull off the Klondike Highway on the opposite side of the river to view these falls.

The average slope is 30% with many falls in the stream. No fish utilize this stream and only a small amount of this stream provides suitable habitat for aquatic biota; the only pool is a small, shallow pond just below the lake outlet and there are no pools or riffles in the rest of the stream, just cascades and falls. Also, during the winter (Nov. – May) this stream and the pond are frozen solid and covered by 10+ feet of snow.

For the above reasons, this project has no required ecological flow regime because any change in the bypass reach flow and its impacts on aquatic biota were considered insignificant. Therefore, this project is considered to have De Minimis effects on this watersheds ecological flows.

The project does provide 8.5 cfs flow to Pitchfork Falls during June 1 – September 30 for tourists who can view the falls from the Klondike Highway, but this is not an ecological flow, this is a visual flow requirement. This is provided with a bypass valve off the penstock up near the lake unless the gauge down by the Skagway River shows there is more flow than this and the lake is also spilling, in which case the bypass flow can be backed off. Though this is all automated, the system is also monitored through a SCADA system.

III.B-2.1. WATER QUALITY in ZoE #2

B-2	1	<u>Not Applicable / De Minimis Effect:</u> <ul style="list-style-type: none"> Explain rationale for why facility does not alter water quality characteristics below, around, and above the facility.
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Water quality testing occurred in 1992, 1994, and 1995 (please see **III.B-1.1. WATER QUALITY in ZoE #1** above) prior to the FERC license being issued. The water quality is not substantially changed because it is either released from just below the lake from which it is drawn into the stream from the penstock or spills directly from the lake outlet into the stream. Therefore, water quality remains the same. Water quantity is allowed to be regulated in the bypass reach because the agencies determined there is no significant aquatic biota present. Due to the steep, cascading stream with numerous falls, fish do not live in or pass up or down this stream. Flow is at minimum 8.5 cfs during summer daylight hours for tourism, but is allowed to be turned off, if being bypassed, at night. If the lake is spilling, that will occur 24/7.

III.C-2.1. UPSTREAM FISH PASSAGE in ZoE #2

C-2	1	<p><u>Not Applicable/De Minimis Effect:</u></p> <ul style="list-style-type: none"> <i>The facility does not create a barrier to upstream passage, but the stream itself is naturally impassable to upstream movement beginning at Pitchfork Falls confluence with the Skagway River.</i>
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As can be seen in the Figure below, the falls at the bypass reaches confluence with the Skagway River does not allow for fish passage. The rest of the bypass reach is also very steep with cascades and falls. In addition, there is an anadromous barrier in the Skagway River, 3 miles downstream from the projects tailrace discharge. There are no fish in the river above this anadromous barrier.



Figure 9: Pitchfork Falls at its confluence with the Skagway River; the river is just below bottom edge of photo

III.D-2.1. DOWNSTREAM FISH PASSAGE in ZoE #2

D-2	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> • Explain why the facility does not impose a barrier to downstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g., entrainment into hydropower turbines).
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Goat Lake spills every summer, however, any grayling that leave the lake and head down Pitchfork Falls do not survive the 2,100 foot drop over falls and cascades. In addition, Pitchfork Falls freezes solid during the winter months, and provides no refuge such as a deep pond to over winter in. These fish were first stocked in 1994 and none have been found below in the stream to the Skagway River or in the Skagway River. No fish are in the Skagway River at or above the project discharge point. The intent of ADFG’s stocking Goat Lake was to provide a fly-in fishery (which has not materialized due to lack of interest) not to provide fish downstream. This project does not obstruct downstream fish passage.

III.E-2.1. WATERSHED AND SHORELINE PROTECTION in ZoE #2

E-2	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> • If there are no lands with significant ecological value associated with the facility, document and justify this (e.g., describe the land use and land cover within the project boundary). • Document that there have been no Shoreline Management Plans or similar protection requirements for the facility.
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Neither the USFS nor DNR have a Shoreline Management Plan for this area. The project lands also do not have a significant ecological value such that the project is required to do anything special for flora or fauna since this part of the project primarily only has the penstock passing through it. Using a combination of burial and elevation on steel supports, the penstock allows wildlife to go over or under to minimize impacts to their movement.

The land cover within the project boundary ranges from alpine to forest. The penstock route was revegetated with conifers and has naturally revegetated with mostly willow along the route. Original efforts to revegetate the penstock route were to reduce the visual impact caused by condensation on the penstock, which created a sheen. Camouflaged netting was also used on segments of the penstock. However, there has been no ecological value requiring maintenance or protection by the USFS. The state also has not identified this sort of value needing protection or enhancement. Therefore, this project has De Minimis effect on the watershed and shoreline protection.

III.F-2.1. THREATENED AND ENDANGERED SPECIES PROTECTION in ZoE #2

F-2	1	<u>Not Applicable / De Minimis Effect:</u> <ul style="list-style-type: none"> Document that there are no listed species in the facility area or affected riverine zones downstream of the facility.
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There are no listed species in the project vicinity and there were none when the project was first constructed. Please see the above section **III.F-1.1. THREATENED and ENDANGERED SPECIES in ZoE #1** with a full discussion on T&E species for the project area.

III.G-2.1. CULTURAL AND HISTORIC RESOURCES PROTECTION in ZoE #2

G-2	1	<u>Not Applicable / De Minimis Effect:</u> <ul style="list-style-type: none"> Document that there are no cultural or historic resources located on facility lands that can be affected by construction or operations of the facility. Document that the facility construction and operation have not in the past adversely affected any cultural or historic resources that are present on facility lands.
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Please see the discussion in section **III.G-1.1. CULTURAL and HISTORIC RESOURCES in ZoE #1** regarding cultural and historic resources.

III.H-2.1. RECREATIONAL RESOURCES in ZoE #2

H-2	1	<u>Not Applicable / De Minimis Effect:</u> <ul style="list-style-type: none"> Document that the facility does not occupy lands or waters to which public access can be granted and that the facility does not otherwise impact recreational opportunities in the facility area.
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Please see section **III.H-1.1. RECREATIONAL RESOURCES in ZoE #1** for comments on Recreational Resources.

ZONE 3 – POWERHOUSE

PART III. ZoE #3 – SUPPORTING INFORMATION – POWERHOUSE

ZoE #3

Facility Name: Goat Lake Hydro Zone of Effect: 3 of 3 (Powerhouse)

Criterion		Alternative Standards Applied				
		1	2	3	4	Plus
A-3	Ecological Flow Regimes		X			
B-3	Water Quality		X			
C-3	Upstream Fish Passage	X				
D-3	Downstream Fish Passage	X				
E-3	Watershed and Shoreline Protection	X				
F-3	Threatened and Endangered Species Protection	X				
G-3	Cultural and Historic Resources Protection	X				
H-3	Recreational Resources	X				

Shading indicates that some standards are not available for some criteria.

PART III. ZoE #3 – SUPPORTING INFORMATION – POWERHOUSE

III.A-3.2. ECOLOGICAL FLOW REGIMES in ZoE #3



Figure 10: Zone 3 - Powerhouse

STANDARD A-3. Agency Recommendation: No ecological flow regime was required for this project because any loss of a small amount of aquatic biota in the bypass reach would not have a significant impact on aquatic biota in the Skagway River.

A-3	2	<p><u>Agency Recommendation (see Appendix A for definitions):</u></p> <ul style="list-style-type: none"> • Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally stringent). • Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement. • Explain how the recommendation relates to agency management goals and objectives for fish and wildlife. • Explain how the recommendation provides fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow variations).
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The resource agencies and FERC did not require an ecological flow regime for this project for the following reasons:

- The Skagway River has much larger flow volumes than the projects maximum capacity.
 - Skagway River: 90 square miles of drainage above project tailrace;
Maximum flows of over 1,000 cfs during the summer,
Minimum flows down to 20 cfs during the winter
 - Goat Lake outlet: 4.2 square miles of drainage from lake outlet;
Maximum flow of 32 cfs (hydraulic capacity)
- No fish exist in the area of the project discharge.
 - The 80-100 foot long riprapped project tailrace discharges into the Skagway River, 3 miles above an anadromous barrier;
 - There are no catadromous, or potamodromous fish above the anadromous barrier in the river; no fish were found during a river fish presence survey in 2002. Grayling that are washed out of Goat Lake do not survive the 2100 foot drop to the river.
- Dissolved oxygen is not an issue because there are no fish within several miles of the projects discharge point into the Skagway River. And, when the DO may be at its lowest, which would be during the summer, the 32 cfs from the project is mixing with flows of 1,000 cfs in the Skagway River, minimizing any potential impact to fish below the anadromous barrier in the river or to any aquatic biota within the river. Due to the distance of 3 miles to the anadromous barrier, DO levels are able to moderate as they combine with the river flow that passes through rapids and cascades before reaching the anadromous reach; below the barrier are Chum, Coho, King, Dolly Varden, and Eulachon; but primarily Chum, Coho and Dolly Varden up to the anadromous barrier.
- The Skagway River routinely ices over each winter, however there is an ice-free area at the project tailrace that extends down river about 100 feet before the ice covers the river again. This may provide habitat for aquatic biota due to slightly warmer water during the winter months.

The greatest potential impact to aquatic biota due to the projects discharge from the tailrace is winter DO levels, when at times the projects outflow may exceed the rivers flow (see DO

discussion in Zone 1 Ecological Flow Regimes). However, it is at this time that the DO levels may actually be higher than the rivers, so that the effect is improved habitat. The project discharge in the winter months may also be slightly warmer than the rivers (because as noted above there is a 100 foot by 60 foot area of clear water). While these may improve habitat for aquatic biota in the area of the tailrace, there may not be much present in the winter and there are no fish in the river above the anadromous barrier 3 miles downstream.

Because the projects discharge into the Skagway River does not have a significant impact on aquatic biota, this project has De Minimis effects to the natural ecological flows.



Figure 11: Skagway River is a high energy stream

III.B-3.2. WATER QUALITY in ZoE #3

B-3	2	<u>Agency Recommendation:</u> <ul style="list-style-type: none"> • Provide a copy of the most recent Water Quality Certificate, including the date of issuance.
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According to the FERC EA issued on May 22, 1996, the “*Water quality in the proposed project area complies with applicable state standards. AP&T conducted water quality studies during*

August 1992, March and July 1994, and January and March 1995. Water samples for the study were collected from ...the Skagway River above and below the outlet of Pitchfork Falls.”

“Dissolved oxygen levels ranged from 7.1 milligrams per liter (mg/l) to 12.2 mg/l in Goat Lake and from 8.2 mg/l to 9.8 mg/l in the Skagway River. Turbidity levels ranged from 1.49 nephelometric turbidity units (NTU's) to 9.11 NTU's in Goat Lake and from 0.47 NTU's to 44.2 NTU's in the Skagway River. The pH levels ranged from 6.8 to 7.25 in Goat Lake and from 7.11 to 7.51 in the Skagway River. Conductivity levels ranged from 35 microsiemens per centimeter (µS/cm) to 54.6 µS/cm in Goat Lake and from 23 µS/cm to 64.2 µS/cm in the Skagway River.”¹⁰

The above water quality information comparing Goat Lake with the Skagway River shows they do not diverge significantly from each other as they are both glacially fed waterbodies. As mentioned above in Ecological Flow Regimes, the project discharge into the Skagway River has not been significantly changed and has minimal effects to temperature and DO on aquatic biota.

No water quality certification was issued by the ADEC because they waived this requirement due to it being a FERC project and that the USACOE was involved.

III.C-3.1. UPSTREAM FISH PASSAGE in ZoE #3

Criterion	Standard	Instructions
C-3	1	<u>Not Applicable / De Minimis Effect:</u> <ul style="list-style-type: none"> • Explain rationale for why facility does not impact upstream fish passage.

An anadromous barrier in the Skagway River approximately 3 miles downstream of the project tailrace prevents upstream passage, not the project.

III.D-3.1. DOWNSTREAM FISH PASSAGE in ZoE #3

D-3	1	<u>Not Applicable / De Minimis Effect:</u> <ul style="list-style-type: none"> • Explain why the facility does not impose a barrier to downstream fish passage in the designated zone.
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Because there are no fish above the projects tailrace confluence with the Skagway River, the project does not hinder downstream movement of fish. The only fish in the river are 3 miles downstream below an anadromous barrier. This project does not obstruct downstream fish passage.

¹⁰ FERC Environmental Assessment, May 22, 1996, Pages 23-24.

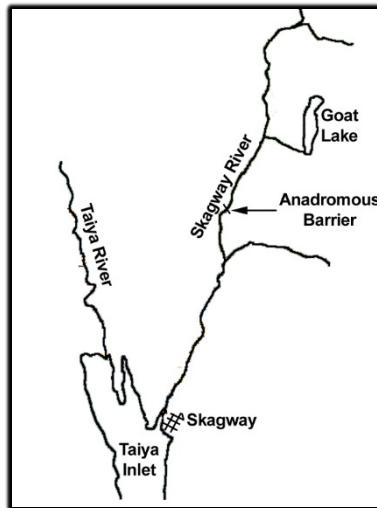


Figure 12: Waterbodies in project area

III.E-3.1. WATERSHED and SHORELINE PROTECTION in ZoE #3

E-3	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> • <i>If there are no lands with significant ecological value associated with the facility, document and justify this (e.g., describe the land use and land cover within the project boundary).</i> • <i>Document that there have been no Shoreline Management Plans or similar protection requirements for the facility.</i>
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The land on the east side of the Skagway River is managed by the U.S. Forest Service (USFS) as part of the Tongass National Forest. The west side of the Skagway River where the powerhouse is located is State of Alaska land managed by the Department of Natural Resources (DNR). The USFS and National Park Service (NPS) wanted to protect the shoreline on the east side of the Skagway River due to a linear historic artifact named the “Brackett Wagon Road” from the Klondike Gold Rush era. This was accomplished by moving the powerhouse to the west side of the river and bridging the east side with an elevated penstock to avoid impacts. No further shoreline protection in Zone 3 was required once construction was completed.

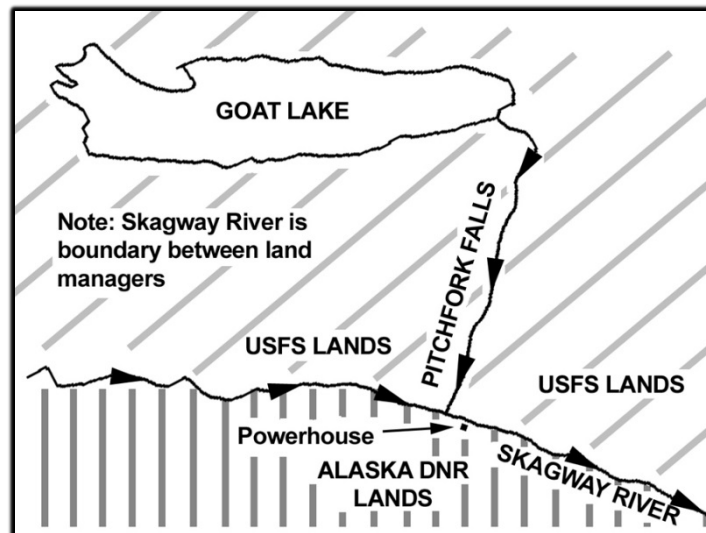


Figure 13: Land Managers for the Project

Neither the USFS nor DNR have a Shoreline Management Plan for this area. The project lands also do not have a significant ecological value such that the project is required to do anything special for flora or fauna. Because of how the project was constructed, i.e. elevated penstock, maintaining as much vegetation as possible and no road construction in the Tongass National Forest, the project has been able minimize potential effects and be considered as having De Minimis effect.

III.F-3.1. THREATENED and ENDANGERED SPECIES in ZoE #3

F-3	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> Document that there are no listed species in the facility area or affected riverine zones downstream of the facility.
-----	---	---

There are no listed species in the project vicinity and there were none when the project was first constructed. Please see the above section **III.F-1.1. THREATENED and ENDANGERED SPECIES in ZoE #1** with a full discussion on T&E species.

Avian Species

Article 403. The licensee shall design and construct the transmission line according to the guidelines in "Suggested Practices for Raptor Protection on Power Lines--the State of the Art in 1981," by the Raptor Research Foundation, Inc. The licensee used these guidelines to construct the transmission line in Zone 3 to protect avian species protected by the Migratory Bird Treaty Act.

III.G-3.1. CULTURAL and HISTORIC RESOURCES in ZoE #3

G-3	1	<u>Not Applicable / De Minimis Effect:</u> <ul style="list-style-type: none"> • Document that there are no cultural or historic resources located on facility lands that can be affected by construction or operations of the facility. • Document that the facility construction and operation have not in the past adversely affected any cultural or historic resources that are present on facility lands.
-----	---	--

AP&T conducted a cultural resources survey of the project area (Campbell 1994). The survey identified the following historical resources in the project area (related to the Klondike Gold Rush of 1898-1899): (1) contributing elements of the Historic Landmark, that specifically include the WP&YR RR, a historic tourist trail and viewpoint of Pitchfork Falls, the historic Brackett Wagon Road, and a historic telegraph or telephone line dating from World War II and possibly earlier; and (2) the historic Canadian Oil pipeline dating from World War II. No other cultural or historical resources were located.

FERC determined that with the MOA for the project, No Adverse Impacts would occur to cultural or historic resources.¹¹

To avoid impacting all the historic resources along the WP&YR RR, which included the railroad, telegraph, and Canadian oil pipeline, a culvert was placed under the railroad bed to pass the penstock through. To avoid the Brackett Wagon Road along the Skagway River, the powerhouse was moved to the west side of the river on a bedrock knoll and the penstock was bridged across the river from another bedrock ridge. This avoided disturbing ground along the Skagway River that the historic road passes through. The afore mentioned historic tourist trail and viewpoint of Pitchfork Falls are away from project features such that they are not visible and were not impacted.

This project was redesigned to avoid impacting historical resources in the project area and continues to operate without impacting those resources.

For the above reasons, this project has a De Minimis effect.

III.H-3.1. RECREATIONAL RESOURCES in ZoE #3

H-3	1	<u>Not Applicable / De Minimis Effect:</u> <ul style="list-style-type: none"> • Document that the facility does not occupy lands or waters to which public access can be granted and that the facility does not otherwise impact recreational opportunities in the facility area.
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The U.S. Forest Service, Tongass National Forest, does not want developed recreation in the project area because they have designated the area as a location for primitive recreation. For

¹¹ Ibid, p. 49.

these reasons the licensee was discouraged from putting in road access and any recreational facilities at the lake.

REFERENCES

Bevelhimer, M.S., Coutant, C.C., Environmental Sciences Division, Oak Ridge National Laboratory, *Assessment of Dissolved Oxygen Mitigation at Hydropower Dams using an Integrated Hydrodynamic/Water Quality/Fish Growth Model*, ORNL/TM-2005/188, March 2006.

<http://info.ornl.gov/sites/publications/files/Pub3612.pdf>

http://www.polarbearsinternational.org/about-polar-bears?gclid=CL6rvNOM_s8CFc9gfgod0lgPbQ

<http://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=B08Z>

<http://ecos.fws.gov/ecp0/profile/speciesProfile?spcode=A00R#crithab>

<http://www.adfg.alaska.gov/index.cfm?adfg=woodbison.main>

<http://www.adfg.alaska.gov/index.cfm?adfg=spectacledeider.main>

<http://www.adfg.alaska.gov/index.cfm?adfg=seaotter.main>

<http://www.adfg.alaska.gov/index.cfm?adfg=stellersealion.main>

<http://www.fisheries.noaa.gov/pr/species/mammals/sealions/steller-sea-lion.html>

PART IV. CONTACTS FORM

All applications for LIHI Certification must include complete contact information to be reviewed.

Project Name: Goat Lake Hydro **FERC Project No.** 11077 **LIHI Cert. No.** 26

Project Owner/Operator:

Name and Title Goat Lake Hydro, Inc.

Company Parent Company – Alaska Power & Telephone Company

Phone 360-385-1733 x122

Email address glen.m@aptalaska.com

Mailing Address P.O. Box 3222, Port Townsend, WA 98368

Consulting firm that manages LIHI program participation (if applicable):

Name and Title N/A

Company _____

Phone _____

Email address _____

Mailing Address _____

Party responsible for compliance with LIHI program requirements:

Name and Title Robert S. Grimm, CEO

Phone 360-385-1733 x120

Email address bob.g@aptalaska.com

Mailing Address P.O. Box 3222, Port Townsend, WA 98368

Party responsible for accounts payable:

Name and Title Christine Overly, Senior Accountant

Phone 360-385-1733 x137

Email address christine.o@aptalaska.com

Mailing Address P.O. Box 3222, Port Townsend, WA 98368



Project Owner/Authorized Representative Signature

July 7, 2016

Date

PART V. SWORN STATEMENT

SWORN STATEMENT

As an Authorized Representative of Alaska Power & Telephone Company, the Undersigned attests that the material presented in the application is true and complete.

The Undersigned acknowledges that the primary goal of the Low Impact Hydropower Institute's Certification Program is public benefit, and that the LIHI Governing Board and its agents are not responsible for financial or other private consequences of its certification decisions.

The undersigned further acknowledges that if certification of the applying facility is issued, the LIHI Certification Mark License Agreement must be executed prior to marketing the electricity product as LIHI Certified.

The undersigned Applicant further agrees to hold the Low Impact Hydropower Institute, the Governing Board and its agents harmless for any decision rendered on this or other applications, from any consequences of disclosing or publishing any submitted certification application materials to the public, or on any other action pursuant to the Low Impact Hydropower Institute's Certification Program.

Company Name: Alaska Power & Telephone Company

Authorize Representative Name: Robert S. Grimm Title CEO

State of Washington)

County of Jefferson)

On this, the 7th day of July, 2016, before me a notary public, the undersigned officer, personally appeared Robert S. Grimm, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he executed the same for the purposes therein contained. In witness hereof, I hereunto set my hand and official seal.



Notary Public Signature: Glen D. Martin

Printed Name: Glen D. Martin

My appointment expires: 2-10-20

Low Impact Certification and Certification Mark License Agreement

This Low Impact Certification and Certification Mark License Agreement and all attached Schedules and Exhibits, each of which is expressly incorporated herein by this reference, as each may be amended, modified or supplemented from time to time (collectively the “**Agreement**”) is entered into as of the date of the last signature below (the “**Effective Date**”), by and between Low Impact Hydropower Institute, a California non-profit corporation with an address of PO Box 194, Harrington Park, New Jersey 07640 USA (“**LIHI**”), and Alaska Power & Telephone, a public utility with an office located at Port Townsend, WA together with its affiliates identified in **Exhibit “A”** (“Licensee Affiliates”) (collectively Licensee and Licensee Affiliates shall be referred to as the “**Licensee**”). LIHI, Licensee and Licensee Affiliates may individually be referred to as a “**Party**”, and collectively Licensee, Licensee Affiliates and LIHI shall be referred to as the “**Parties**”.

WHEREAS, LIHI is a non-profit 501(c)(3) organization dedicated to reducing the impacts of hydropower generation through the operation of a program that offers certification of hydroelectric facilities that have avoided or reduced their environmental impacts (the “**Certification Program**”) pursuant to and in accordance with the criteria established by LIHI which encourages a range of benefits associated with healthy rivers and enables low impact projects to market electricity products in renewable energy markets.

WHEREAS, the Certification Program rules are described in the LIHI Certification Handbook (the “**Handbook**”) a current copy of which the Handbook is posted at www.lowimpacthydro.org, and the certification use requirements are provided in the LIHI Marketing Guidelines (the “**Marketing Guidelines**”) which are posted at www.lowimpacthydro.org/marketing-guidelines. Both the Handbook and the Marketing Guidelines are updated periodically by LIHI.

WHEREAS, Licensee applied for certification of Licensee’s hydropower facility(s) pursuant to the Certification Program and LIHI has certified such hydroelectric facilities (the “**Certified Project(s)**”) and has issued a certificate, or certificates associated therewith, a copy of each certificate is identified in the attached schedule in **Exhibit “B”** in numeric order (the “**Certificate(s)**”).

WHEREAS, Licensee desires to publically identify the Certified Project(s) as “**LIHI Certified**”.

WHEREAS, LIHI has created the Certification Mark shown in **Exhibit “C”** that when used in conjunction with a hydropower project symbolizes that the hydropower project has met the qualifications and requirements of, and have been certified through, LIHI’s Certification Program and is “LIHI Certified.”

WHEREAS, LIHI has applied to register the Certification Mark with the United States Patent and Trademark Office under U.S. Application Serial No. _____.

NOW THEREFORE for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the LIHI and Licensee agree as follows:

1. Incorporation of Recitals.

The WHEREAS recitals and definitions set forth above in this Agreement are incorporated herein as terms and conditions to this Agreement.

2. License.

(a) LIHI grants Licensee a limited, non-exclusive, non-transferable, personal license (the “**License**”), with no right to sublicense, to use and display the Certification Mark in connection with the Licensee’s promotional and advertising material relating to the Certified Project(s), including for the marketing of the

electricity and other products associated with the electrical generation of the Certified Project(s), during the Term of this Agreement and any renewals thereof.

(b) Each Certified Project(s) is listed separately in the Exhibit B schedules attached hereto. Each schedule shall provide the effective date and expiration date of the certification and any project-specific conditions imposed as a requirement of certification. Should LIHI certification be withdrawn for any specified Certified Project(s) listed in the attached Exhibit B schedules for any reason, including revocation of certification by LIHI according to the terms of the LIHI Certification Program or by the Licensee for any reason, that withdrawal shall not impact other Certified Project(s) in the remaining Exhibit B Schedules.

(c) Licensee's use of the Certification Mark shall comply with all Certification Program rules as provided for in the Handbook and the Marketing Guidelines, as may be amended, modified or restated from time to time in accordance with this Agreement.

(d) Licensee's public use of the Certification Mark is limited to advertising, promotion and informational materials for the Certified Project(s) and for the marketing of the electricity and other products associated with the electrical generation of the Certified Project(s) (collectively, the "**Materials**"). For all Materials on which the Licensee intends to make use of the Certification Mark, Licensee will provide LIHI a representative example of the Certification Mark's use (e.g. a screen shot, photograph, or other image displaying the Certification Mark, any packaging, advertising or other material or item that may be publically distributed) for LIHI's prior written approval, provided that such approval may not be arbitrarily conditioned or withheld. If Licensee subsequently changes the approved Materials in any manner, said modified Materials must obtain LIHI's prior approval. LIHI shall approve of submitted Materials in the following manner: Should LIHI fail to respond to the Licensee within 15 days from the date the Licensee submits such example Material to LIHI, LIHI shall be deemed to have approved of such Material and Licensee may use such Material; provided, however, that if changes are made to the Materials, or if LIHI makes changes to the Certification Program or Certification Mark, LIHI reserves the right to subsequently require the discontinuation of use of Materials, and mandate that modifications be made to the Materials to bring them into compliance. Licensee shall promptly provide Materials for inspection upon LIHI's request at no cost to LIHI. Licensee shall display and distribute such Materials in accordance with all applicable laws, rules and regulations, and Licensee shall be solely responsible for any and all compliance with said applicable laws.

(e) Licensee grants LIHI a royalty free, limited, non-exclusive right to use the Materials approved by LIHI, including but not limited to any photos, artwork, images or other materials bearing Licensee's name, trademarks, other designations, or copyrighted works in connection with the marketing, promotion and advertising of the LIHI Certification Program.

3. Compliance.

Licensee shall maintain the quality of the Certified Project(s) throughout the Term and fulfill Licensee's compliance obligations set forth in the Handbook and Marketing Guidelines, both of which are posted at www.lowimpacthydro.org, incorporated as a part of this Agreement by reference, and are periodically updated from time to time by LIHI. Compliance includes without limitation, the timely submission of Materials for approval, the payment of fees (see Section 5), filing of the required annual statement (see Section 5.2.3 of the Handbook), adherence to any project-specific conditions and self-reporting of potential non-compliance. LIHI shall have the right to make any necessary inquiries, request information from Licensee, and inspect the Certified Project(s) in the event of an alleged violation or change in conditions relevant to the certification of the Certified Project(s) to assess the level of consistency and quality of the Certified Project(s). If LIHI determines that there has been a material violation of Licensee's compliance obligations or a material misrepresentation of fact in any submission by Licensee to LIHI and such violation or material misrepresentation is not corrected within thirty (30) days after Licensee receives written notice,

LIHI shall have the right to revoke the certification for the application Certified Project(s), but said revocation applies only to the Certified Project(s) affected and no others, or to take other action in accordance with the Handbook.

4. Ownership of Certification Mark and Intellectual Property.

(a) Licensee acknowledges that LIHI is the sole and exclusive owner of the Certification Mark and all intellectual property rights therein worldwide. Except for the license granted herein, LIHI grants Licensee no other express or implied licenses to the Certification Mark. Licensee acknowledges the validity of the Certification Mark, and shall take no action that may interfere with, challenge or diminish LIHI's intellectual property rights in the Certification Mark. Licensee shall not use the Certification Mark in any manner that disparages or reflects adversely on LIHI or negatively affects LIHI's reputation or goodwill. Licensee acknowledges that its utilization of the Certification Mark shall not establish in Licensee any right, title or interest in the Certification Mark, and to the extent such right, title or interest is implied by law, Licensee agrees to promptly assign such right, title or interest to LIHI at no additional cost to LIHI other than the cost of preparing and recording such assignment. LIHI reserves all rights in the Certification Mark not explicitly granted to Licensee under this Agreement.

(b) Licensee shall not apply for trademark protection or internet domain name registration of the Certification Mark, or any mark confusingly similar thereto, anywhere in the world.

(c) Licensee shall use the Certification Mark in a manner that creates a separate and distinct impression from any other mark or name that may be used by Licensee. Licensee shall not adopt any trade name, trademark, service mark, certification mark, or designation that incorporates the Certification Mark, or that is confusingly similar to the Certification Mark.

(d) Licensee agrees not to breach or infringe upon any intellectual or proprietary right owned by LIHI and agrees to notify LIHI in writing if Licensee becomes aware of any infringement, imitation, or counterfeiting of the Certification Mark, including any of such conduct by Licensee's directors, officers, employees, representatives, subcontractors, Licensee's Affiliates and its directors, officers, employees, representatives, or subcontractors. Such notice shall include all details available regarding such violations.

5. Fees.

As consideration for the license granted herein, and renewal of this Agreement, as well as to maintain certification of all Certified Projects and/or to apply for certification of additional hydroelectric projects, Licensee shall pay fees in accordance with the Appendix of Fees, set forth in Exhibit D. LIHI, in its sole and reasonable discretion, reserves the right to alter the Appendix of Fees upon notice to Licensee at least ninety (90) days before the effective date of the altered Appendix of Fees which shall always be on the upcoming anniversary date of the execution of this Agreement. After receipt of said notice, Licensee shall have ten (10) days to accept said altered Appendix of Fees, and payment by Licensee of the altered fees in the Appendix of Fees shall also be deemed acceptance of said alteration. If Licensee refuses to accept or pay the altered fees in the Appendix of Fees, LIHI shall have the right to terminate this Agreement.

6. Nature of Relationship.

This Agreement shall not be construed or interpreted to create a partnership or joint venture between the parties and no party will have the authority to bind the others. Nothing contained in this Agreement will be construed as creating a third-party beneficiary relationship amongst the parties. Licensee shall not use the Certification Mark in a manner that may be construed as creating an agency, partnership, or other form of joint enterprise between the Parties.

7. Representations and Warranties.

(a) **Mutual Representations and Warranties:** Each Party represents and warrants to the other, as of the Effective Date, that (i) such Party is duly organized and validly existing, and in good standing under the laws of the jurisdiction of its organization or formation; (ii) such Party has, and at all times during the Term will have, all necessary power and authority execute, deliver and perform its obligations under this Agreement; (iii) the execution, delivery, and performance of this Agreement by it has been duly authorized by all necessary action and does not violate any of the terms or conditions of its governing documents, or any contract to which it is a party, or any law, rule, regulation, order, judgment or other legal or regulatory determination applicable to it; and (iv) the individual(s) affixing a signature to this Agreement on its behalf has been duly authorized to execute this Agreement on behalf of the Party he or she represents, and that by signing this Agreement, a legally valid and binding obligation of each Party has been created, enforceable against it in accordance with its terms; subject to any bankruptcy, insolvency, reorganization and other laws affecting creditors' rights generally, and with regard to equitable remedies, the discretion of the court before which proceedings to obtain the same may be pending.

(b) **LIHI Representations and Warranties:** LIHI represents and warrants that it (i) has or will have all trademark, copyright, and other intellectual property rights to the Certification Mark necessary to authorize the Licensee to use the Certification Mark as provided in this Agreement; and (ii) to the best of LIHI's knowledge, LIHI's use of the Certification Mark has not and will not interfere with, infringe upon, misappropriate or otherwise contravene any intellectual property rights of third parties, and LIHI has not received any notice or other communication (whether written or oral) regarding any actual, alleged or potential such interference, infringement, misappropriation or contravention.

EXCEPT AS EXPRESSLY SET FORTH IN THIS AGREEMENT, LIHI EXPRESSLY DISCLAIMS ANY OTHER REPRESENTATIONS OR WARRANTIES, WHETHER WRITTEN OR ORAL, AND WHETHER EXPRESS OR IMPLIED. LIHI MAKES NO REPRESENTATIONS OR WARRANTIES REGARDING THE DIRECT OR INDIRECT FINANCIAL OR OTHER BENEFITS TO THE LICENSEE OR LICENSEE'S AFFILIATES, RESULTING FROM LICENSEE'S OR LICENSEE'S AFFILIATES USE OF THE CERTIFICATION MARK.

8. Confidentiality.

(a) "Confidential Information" means all oral and written information exchanged between the Parties with respect to the terms of this Agreement. Subject to 8(c), the following information does not constitute Confidential Information for purposes of this Agreement: (a) information that is or becomes generally available to the public other than as a result of a disclosure by either Party in violation of this Agreement; (b) information that was already known by either Party on a non-confidential basis prior to this Agreement; (c) information that becomes available to either Party on a non-confidential basis from a source other than the other Party if such source was not subject to any prohibition against disclosing the information to such Party; and (d) provided that the Party notifies the other Parties prior to any disclosure, and maintains the confidential nature of the Confidential Information and requires that the recipient of any Confidential Information agree to keep confidential the Confidential Information as provided herein, information a Party is required to disclose in connection with any administrative or regulatory approval or filing process in connection with the conduct of its business.

(b) Materials provided to LIHI as part of a pre-application consultation with the Executive Director or during the Intake Review phase will be kept confidential, unless and until a complete certification application is submitted and public notice is made. Except in rare circumstances when the parties expressly agree in writing otherwise, all information submitted to LIHI and pertaining to Licensee's certification application provided to LIHI or its Executive Director will be available for public review and public access, and shall not be deemed Confidential Information.

(c) Except as provided in this Section 8(c), neither Party shall publish, disclose, or otherwise divulge Confidential Information to any person at any time during or after the Term, without the other Party's prior express written consent. Each Party shall permit knowledge of and access to Confidential Information only to those of its directors, officers, affiliates, attorneys, accountants, representatives, agents and employees who have a need to know related to the implementation of this Agreement.

(d) **Required Disclosure.** If required by any law, statute, ordinance, decision, order or regulation passed, adopted, issued or promulgated by a court, governmental agency or authority having jurisdiction over a Party, that Party may release Confidential Information, or a portion thereof, to the court, governmental agency or authority, as required by the applicable law, statute, ordinance, decision, order or regulation, and a Party may disclose Confidential Information to accountants in connection with audits, provided that such Party has notified the other Party of the required disclosure and requested such court, governmental agency, authority or accountant to treat such information in a confidential manner and to prevent such information from being disclosed or otherwise becoming part of the public domain.

(e) **Survival.** This Section 8 shall survive for a period of two (2) years following the expiration of the Term or termination of this Agreement.

9. Indemnification.

(a) Subject to Section 10, Licensee shall indemnify, defend and hold LIHI and its officers, agents, and employees, harmless from and against any and all claims, causes of action, damages, obligations, liabilities, expenses (including reasonable attorney's fees) or costs, to the extent incurred by LIHI, which arise directly or indirectly out of Licensee's use of the Certification Mark other than as permitted under this Agreement or from Licensee's breach or failure to comply with the terms of this Agreement.

(b) Subject to Section 10, LIHI shall indemnify, defend and hold harmless Licensee and its officers, directors, agents, and employees from and against any and all claims, causes of action, damages, obligations, liabilities, expenses (including reasonable attorney's fees) or costs that arise out of or are attributable to any actual or alleged infringement of any third party intellectual property rights, in connection with the Licensee's use of the Certification Mark in accordance with this Agreement.

10. Limitation of Liability.

EXCEPT AS EXPRESSLY PROVIDED FOR HEREIN, NEITHER PARTY SHALL BE LIABLE TO THE OTHER FOR SPECIAL, INCIDENTAL, PUNITIVE, EXEMPLARY, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER BY STATUTE, IN TORT, CONTRACT OR OTHERWISE, RESULTING OR ARISING UNDER THIS AGREEMENT, EVEN IF SUCH PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

11. Term and Termination.

(a) The Agreement and the licenses granted herein shall commence on the Effective Date and will continue for as long as Licensee maintains any Certified Project(s) in compliance with the obligations set forth in this Agreement, unless terminated earlier as provided in this Section 11.

(b) The Licensee may, at its option, terminate this Agreement or any part thereof upon thirty (30) days written notice to LIHI.

(c) LIHI may, by written notice to the Licensee, terminate this Agreement, in whole or in part, if Licensee (i) uses any unapproved Materials in violation of this Agreement and such violation is not corrected within thirty (30) days after Licensee receives written notice, (ii) misuses the Certification Mark on any Materials, including in a manner that has not been approved by LIHI and such misuse is not corrected within thirty (30) days after Licensee receives written notice, or (iii) displays or distributes Materials

bearing the Certification Mark in violation of any applicable law, rule or regulation and such violation is not corrected within thirty (30) days after Licensee receives written notice. For purposes of clarity, any circumstance listed in (i) through (iii) that arises out of or is attributable to any misuse or violation by Licensee's Affiliate, LIHI may terminate this Agreement as it applies to said Licensee Affiliate, but shall not terminate this Agreement as it related to Licensee or any remaining Licensee Affiliates.

(d) Either Party may terminate this Agreement for any of the following reasons (each an "**Event of Default**") upon written notice to the other Party, (i) if a Party materially breaches any or all of its obligations as described in this Agreement and such breach is not cured within thirty (30) days of written notice of such breach from the other Party; (ii) if any representation or warranty made by that Party in this Agreement proves to have been misleading or false in any material respect when made; or (iii) if a Party, (a) makes an assignment or any general arrangement for the benefit of its creditors, (b) files a petition or otherwise commences, authorizes or acquiesces in the commencement of a proceeding or cause under any bankruptcy or similar law for the protection of creditors, or has such a petition filed against it, (c) otherwise becomes bankrupt or insolvent (however evidenced), or (d) becomes unable to pay its debts as they fall due (any circumstance described in (a) through (d) will be defined as "Bankrupt").

(e) Upon termination of this Agreement by reason of an Event of Default or otherwise by Licensee or Licensee's Affiliate, the rights granted herein will terminate immediately and Licensee and/or Licensee Affiliates shall immediately cease and desist from any and all use of the Certification Mark. Absolutely no Materials containing the Certification Mark shall be created, distributed or otherwise made available to third parties after the termination of this Agreement.

(f) In the event of any breach of this Agreement by Licensee, Licensee acknowledges and agrees that any unauthorized use of the Certification Mark or other marks confusingly similar to the Certification Mark will result in irreparable harm to LIHI, and LIHI shall be entitled to seek and obtain immediate injunctive relief, without the posting of any bond. In an Event of Default by LIHI, Licensee's remedy shall be limited to immediate termination of the Agreement without any further obligation to pay fees owed to LIHI that accrue after the date of the Event of Default, but Licensee shall cease any and all use of the Certification Mark after said termination.

12. Assignment.

Licensee may not assign this Agreement without LIHI's prior written consent, which shall not be unreasonably withheld, conditioned or delayed. In the event of a permitted assignment, this Agreement and all of its terms shall be binding upon and inure to the benefit of any assignee, and said assignee shall execute this Agreement and assume any all obligations herein.

13. Notices.

All notices which either Party may give to the other under or in connection with this Agreement shall be in writing and shall be sent by any of the following methods: hand delivery; reputable overnight courier; certified mail, return receipt requested, facsimile transmission, or e-mail. The communications shall be sent to the following addresses, and shall be effective on the business day when received; provided that any communication received after the close of business on a business day shall be deemed to have been received on the next following business day:

If to Licensee:

Name	Robert S. Grimm, CEO
Address	P.O. Box 3222, Port Townsend, WA 98368
Telephone	(360) 385-1733 x120
Email	bob.g@aptalaska.com

If to LIHI:
Name
Address
Telephone
Email

14. Amendment/Binding Effect.

This Agreement may not be amended, changed, modified, or altered unless such amendment, change, modification, or alteration is in writing and signed by both of the Parties to this Agreement. This Agreement shall inure to the benefit of and shall be binding upon the Parties and their respective successors and permitted assigns. LIHI shall notify Licensee, in writing, concerning any modification of the Certification Mark, and said modified Certification Mark shall be deemed the mark licensed herein and said notification shall serve to amend Exhibit "C" effective upon receipt of such notice. Licensee shall have no less than sixty (60) days to take appropriate actions to comply with Exhibit "C" as amended. Amendments to the Handbook and the Marketing Guidelines shall be communicated to the Licensee in writing at least 60 days prior to going into effect, and Licensee shall be required to take appropriate action to comply with such amendments within 60 days of their effective date, however if LIHI amends the Certification Program criteria, each Certified Project is not required to meet changes in criteria until such time as the Certified Project is eligible for renewal of certification.

15. Severability.

If any article, section, phrase or portion of this Agreement is, for any reason, held or adjudged to be invalid, illegal or unenforceable by any court of competent jurisdiction, such article, section, phrase, or portion so adjudged will be deemed separate, severable and independent and the remainder of this Agreement shall remain in full force and effect and shall not be invalidated or rendered illegal or unenforceable or otherwise affected by such adjudication, provided that the basic purpose of this Agreement and the benefits to the Parties are not substantially impaired.

16. Entire Agreement.

This Agreement completely and fully supersedes all other understandings or agreements, both written and oral, including any term sheet or confirmation, between the Parties relating to the subject matter hereof.

17. Waiver.

No delay or omission by a Party in the exercise of any right under this Agreement shall be taken, construed or considered as a waiver or relinquishment thereof, and any such right may be exercised from time to time and as often as may be deemed expedient. If any of the terms and conditions hereof are breached and thereafter waived by a Party, such waiver shall be limited to the particular breach so waived and is not deemed to waive any other breach hereunder.

18. Governing Law.

This Agreement and the rights and duties of the Parties hereunder shall be governed by and shall be construed, enforced and performed in accordance with the laws of the State of New York, without regard to principles of conflicts of law. **THE PARTIES EACH HEREBY IRREVOCABLY WAIVE ALL RIGHT TO TRIAL BY JURY IN ANY ACTION, PROCEEDING OR COUNTERCLAIM ARISING OUT OF OR RELATING HERETO, ANY PRODUCT OR THE TRANSACTIONS CONTEMPLATED HEREBY. EACH PARTY FURTHER WAIVES ANY RIGHT TO CONSOLIDATE ANY ACTION IN WHICH A JURY TRIAL HAS BEEN WAIVED WITH ANY OTHER ACTION IN WHICH A JURY TRIAL CANNOT BE OR HAS NOT BEEN WAIVED.**

19. Further Assurances.

Each of the Parties shall promptly execute and deliver all such deeds, documents, instruments and assurances and do or cause to be done all such acts and things as are necessary or advisable to fully perform and carry out the provisions and intent of this Agreement.

20. Counterparts.

This Agreement may be executed in several counterparts, each of which is an original and all of which constitute one and the same instrument.

21. Headings.

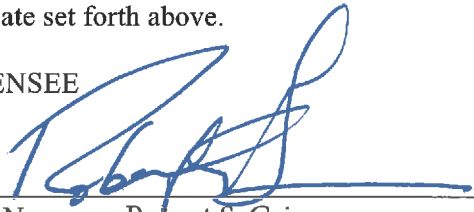
The Section titles in this Agreement are only for purposes of convenience and do not form a part of this Agreement and will not be taken to qualify, explain or affect any provision thereof.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed by their duly authorized representatives to be effective as of the Effective Date set forth above.

LICENSOR

By: _____
Print Name: _____
Title: _____
Date: _____

LICENSEE

By:  _____
Print Name: Robert S. Grimm
Title: CEO
Date: July 7, 2016

LICENSEE AFFILIATE

By: _____
Print Name: _____
Title: _____
Date: _____

By: _____
Print Name: _____
Title: _____
Date: _____

EXHIBIT A

LICENSEE AFFILIATES

EXHIBIT B

SCHEDULE OF CERTIFIED PROJECT(S)

(in successive numeric order for each Certified Facility)

EXHIBIT C

CERTIFICATION MARK



EXHIBIT D

APPENDIX OF FEES
FOR THE LIHI CERTIFICATION PROGRAM

LIHI CERTIFICATION PROGRAM FEE SCHEDULE

The LIHI Certification Program Fees are designed to cover the cost of operating the Low Impact Hydropower Institute, including processing applications and maintaining active certifications. This Fee Schedule explains each component of the LIHI Program Fees in detail. LIHI, in its sole and reasonable discretion, reserves the right to alter the program fee policy as needed with reasonable notice to certificate holders. Adjustments to LIHI Fees may be available under certain circumstances. Please contact the Institute for details.

1 Application Review Fees

LIHI Application Review Fees (ARFs) include Intake Review fees, Certification Review fees, and Recertification Review fees. Program fees are designed to cover LIHI's cost associated with reviewing applications for certification at all stages in the process, and to fund the operations of the Institute.

1.1 Intake Review Fee

The Intake Review Fee (IRF) is a fixed fee charged to all potential projects, regardless of installed capacity or circumstances. Before submitting payment of this fee to LIHI, it is strongly recommended that interested applicants contact LIHI for free pre-application consulting (See 4.2.1). An invoice for the IRF will be issued by LIHI staff only when a prospective applicant notifies LIHI that they wish to initiate the intake application.

The Intake Review Fee is a fixed fee of \$950.00, which covers the cost to review the draft application submitted in the intake phase. An applicant must pay a separate IRF for each facility even if multiple facilities (with multiple FERC licenses where applicable) located in the same watershed are operationally or hydrologically connected. A full explanation of the intake review process can be found in Section 4.2.2 of this LIHI Handbook. The IRF must be received before LIHI can begin to review intake application materials.

1.2 Certification Application Review Fee

All applicants must pay a Certification Application Review Fee to process a certification application. Certification application review fees are individually tailored based on the information gathered in the Intake Review phase. As stated in Sections 4.2.2 and 4.2.3, all applicants that submit an intake application will be provided with a summary of the intake review findings (via intake review transmittal), which includes a recommendation on how to proceed to the next phase and an estimate for the non-refundable ARF required to process the complete certification application. The fee estimate covers review costs such as the cost of hiring an independent reviewer and LIHI staff time and other overhead costs. LIHI reserves the right to charge additional fees in circumstances where a review is more complex than initially estimated. If, during the course of the application review, LIHI staff determine that unanticipated complexities in the review process impose additional cost to the Institute or the application review takes more than twelve (12) months, a supplementary ARF may be charged prior to the issuance of a certificate at the discretion of the Executive Director and in consultation with the applicant.

Additional Information to Note:

Fee supplement for consolidated application seeking certification for multiple facilities:

At the request of the applicant and at the discretion of the Executive Director, a consolidated, single application may be submitted by an applicant that owns or operates multiple facilities in a watershed that are operationally or hydrologically connected. The fee supplement for a consolidated application will be determined at the sole discretion of the Executive Director.

Application Fee Premium for a “Pre-Operational” facility:

An application for the certification of a facility that is pre-operational shall include a premium comprised of an additional twenty-five percent (25%) of the ARF charged.

Reduced Fee for Not Applicable/ De Minimis Effect facilities:

For facilities including generation installed in conduits or in other situations where a facility can pass all of the Not Applicable / De Minimis Effect standard for each criterion, a reduced fee applies.

2 Certification Annual Maintenance Fees

LIHI Certification Maintenance Fees include Annual Certificate Fees, Active Condition Fees, and any other supplemental fees LIHI may impose to maintain an active certificate.

The Annual Certificate Fee is based on a \$/MWh rate structure that varies according to regional renewable market averages. There is a tiered minimum Annual Fee, or floor, for projects with low installed capacity (less than or greater than 5MW; see Appendix C). There is also a maximum Annual Fee, or cap, for large facilities. Condition Fees are fees charged on an annual basis to certificate holders with active facility-specific conditions that require LIHI staff time to process (see C.2.2).

2.1 Annual Certificate Fees

For the full term of the certification, each Certificate Facility shall pay to LIHI on an annual basis an Annual Certificate Fee for each year of certification, subject to the following provisions:

Implementation Schedule: The Annual Certificate Fee term will be defined as beginning on the effective date of the certification for the subsequent twelve (12 months), with the first annual certificate fee due on the first anniversary of the certificate effective date. Each subsequent annual certificate fee will be due on the subsequent anniversaries of the effective date. If the certification decision is issued more than twelve (12) months past the effective date, the annual certificate fee will accrue and will be charged in full at the time the certification decision is issued, to be paid within thirty (30) days of the issuance of the certification documents. Annual certificate fees will be imposed every year, including the year in which a certified project is undergoing an application for re-certification.

Annual Certificate Fee Amount and Rate: The Annual Certificate Fee amount for each certificate shall be the product of the total average annual generation (AAG) of the certified facility as provided by the

Applicant in their LIHI Certification Application¹ and the applicable Annual Certificate Fee Rate(s), according to the market-participation of the facility generation output as follows:

Verified Market Participant (VMP): The VMP rate applies to LIHI certified generation that is publicly listed as eligible for a state Renewable Portfolio Standard (RPS) program, a Renewable Energy Standard (RES) program, an Alternative Energy Portfolio Standard (AEPS), a voluntary Green Energy program such as Green-e, or any other policy which utilizes the LIHI certification standard as a requirement and/or option for eligibility. If a certified facility has only a portion of their generation certified in a verified market, only that portion will be charged at the VMP rate, and the balance will be charged at the published Base Fee rate (see below). The VMP \$/MWh rate is published at www.lowimpacthydro.org/fees.

Base Rate: All generation that is not VMG, as defined above, shall be assessed at the base rate as published by the Institute in the LIHI Rate Schedule at www.lowimpacthydro.org/fees.

Publication of LIHI Rate Schedule and Changes to Annual Certificate Fee Rate: The LIHI Rate Schedule will be published at www.lowimpacthydro.org/fees. LIHI reserves the right to alter the definitions and rates for the Verified Market Participant categories with reasonable notice to certificate holders.

Annual Certificate Fee Minimum and Maximum Amounts: Regardless of the calculated Annual Certificate Fee amount using the dollar per MWh rate, no certificate holder shall pay less than \$1,000 per year if the installed generation capacity of the LIHI certified facility is less than 4.99 MW, no less than \$1,500 per year if the installed capacity of the generation facility is between 5 MW and 9.99 MW, and no more than \$30,000 per year for a LIHI certified facility of any size.

2.2 Active Condition Fee

On each anniversary of a certificate effective date, a non-refundable fee may be charged relative to each facility-specific conditions that is required for certification. This fee may range from \$0 to \$1,000.00 per condition item depending on the complexity of the condition, and will be determined at the sole discretion of the Institute. Not all conditions will incur a fee, and the fee amounts may vary from year-to-year during the term of a certificate, as conditions are satisfied, modified or added to certifications. Condition fee amounts are established in proportion to the time required by LIHI staff to monitor compliance.

3 Recertification Application Review Fee

All applicants must pay a Recertification Review Fee (RRF) to process an application to renew a certification. A certified facility may apply for renewal/recertification by completing and submitting a recertification application package according to the process described in Section 6.

Recertification Review Fee Phases. The RRF is intended to cover the cost of the review of an Applicant's

¹ The AAG amount may be adjusted according to actual generation documented by a Certificate Holder in Annual Compliance statements that result from newly added generation capacity, efficiency gains, a reduction in generation capacity from equipment brought offline or any other material change that impacts generation output.

Recertification Application Package for Phase 1 of the recertification review process. The Phase 1 RRF is a fixed amount of \$2,000. If the result of a Phase 1 recertification review results in an escalation to a Phase 2 review then additional review fees will likely be required. If the Phase 1 recertification review results in the issuance of a new certification term, there will be no additional fee charged. The RRF may also be increased in consultation with the Applicant by an amount determined appropriate by the Executive Director if a period of more than twelve months has passed since the recertification application was first posted for public notice and the review is not yet complete.

4 Reduced Fees for Very-Low Impact Facilities

Some types of hydropower facilities, such as those constructed on water conduits and that do not discharge back into natural river systems, may qualify for the NA/DME standards for all criteria. In those cases, substantially reduced application and annual maintenance fees may apply. Consult with LIHI staff to determine whether your application qualifies.

5 Refund Policy

All LIHI Fees, including both Application Review Fees and Certification Maintenance Fees are non-refundable. Should an applicant choose to withdraw or place an application on hold at any point during the review process, LIHI is under no obligation to return or refund fee amounts already collected. Should a certificate holder decide to withdraw a certified facility from the program (see Section 4.5.4), LIHI will discontinue all annual maintenance billing for the years after the year of withdrawal. Additional fees may apply if and when an applicant chooses to revive a project application that was submitted previously but was not certified and was withdrawn or placed on hold by the applicant.