

Tyee Lake Hydro Project (P-3015)

Joint Agency and Public
Meeting

July 29, 2026

Agenda

- Meeting purpose
- Introductions
- Tyee Lake Project overview
- FERC relicensing process and proposed action
- Overview of existing information
- Proposed studies
- Schedule, next Steps



Meeting Purpose

- Provide a Project overview
- Discuss FERC relicensing process
 - Traditional Licensing Process (TLP)
- Provide overview of existing information
 - Preliminary Application Document (PAD)
 - Proposed Action
- Discuss proposed studies to fill information gaps
- Solicit agency and stakeholder input

A stylized map of Southeast Alaska, showing the coastline and major islands. The land is colored in shades of green, and the water is light blue. The map is positioned on the left side of the slide.

Meeting Protocol

- **Sign-in (Sheet or Teams Chat)**
 - Name, organization and contact information
- **Meeting is recorded**
 - Recording will be made available
- **When you speak, please state name and affiliation**
- **Please do not put phone line on hold**



Introductions



SEAPA Service Area and Generation System



SEAPA's Service Area and Generation System

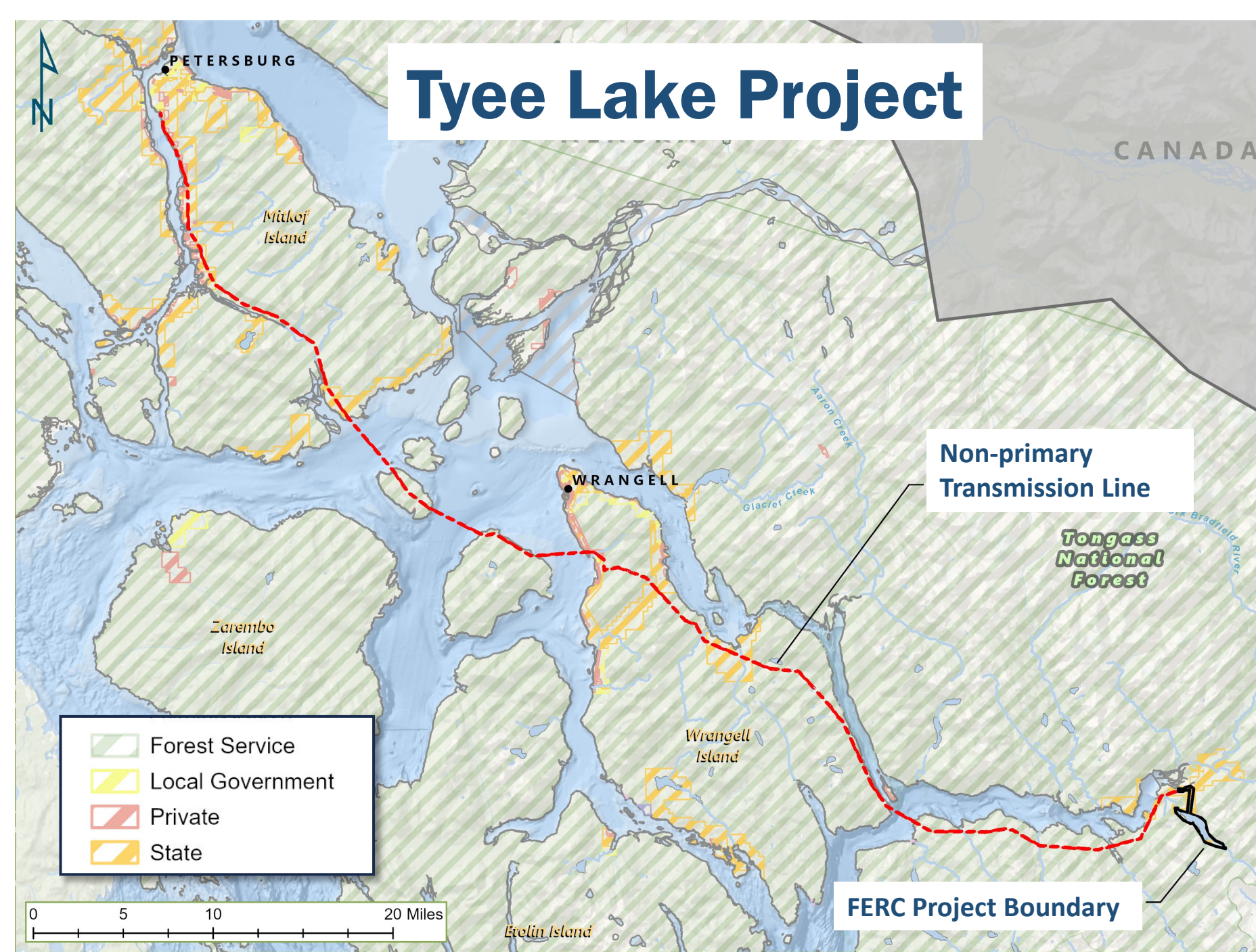
- **Tye Lake Hydro Project - 1984**
 - Initially delivered power to Petersburg and Wrangell
- **Swan Lake Hydro Project - 1984**
 - Initially delivered power to Ketchikan
- **Swan-Tye Intertie (STI) - 2009**
 - Interconnected SEAPA projects and all three communities
- **Wrangell Solar Array - 2028**



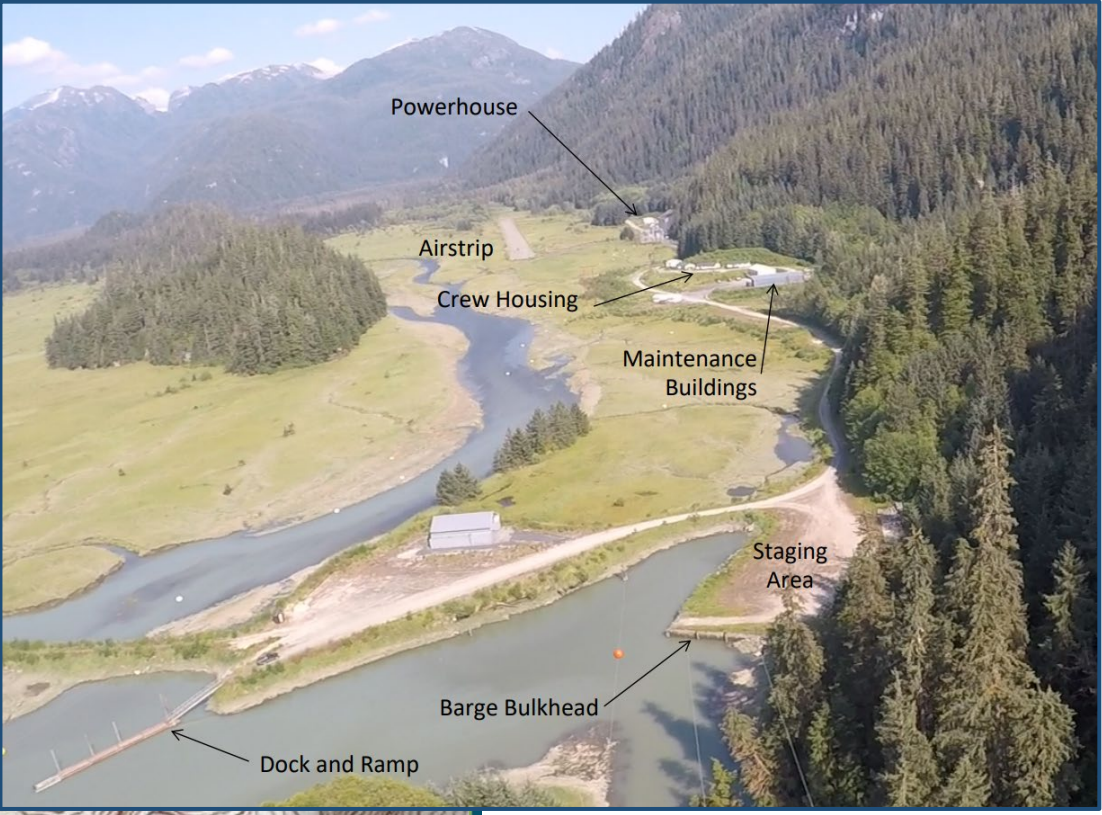
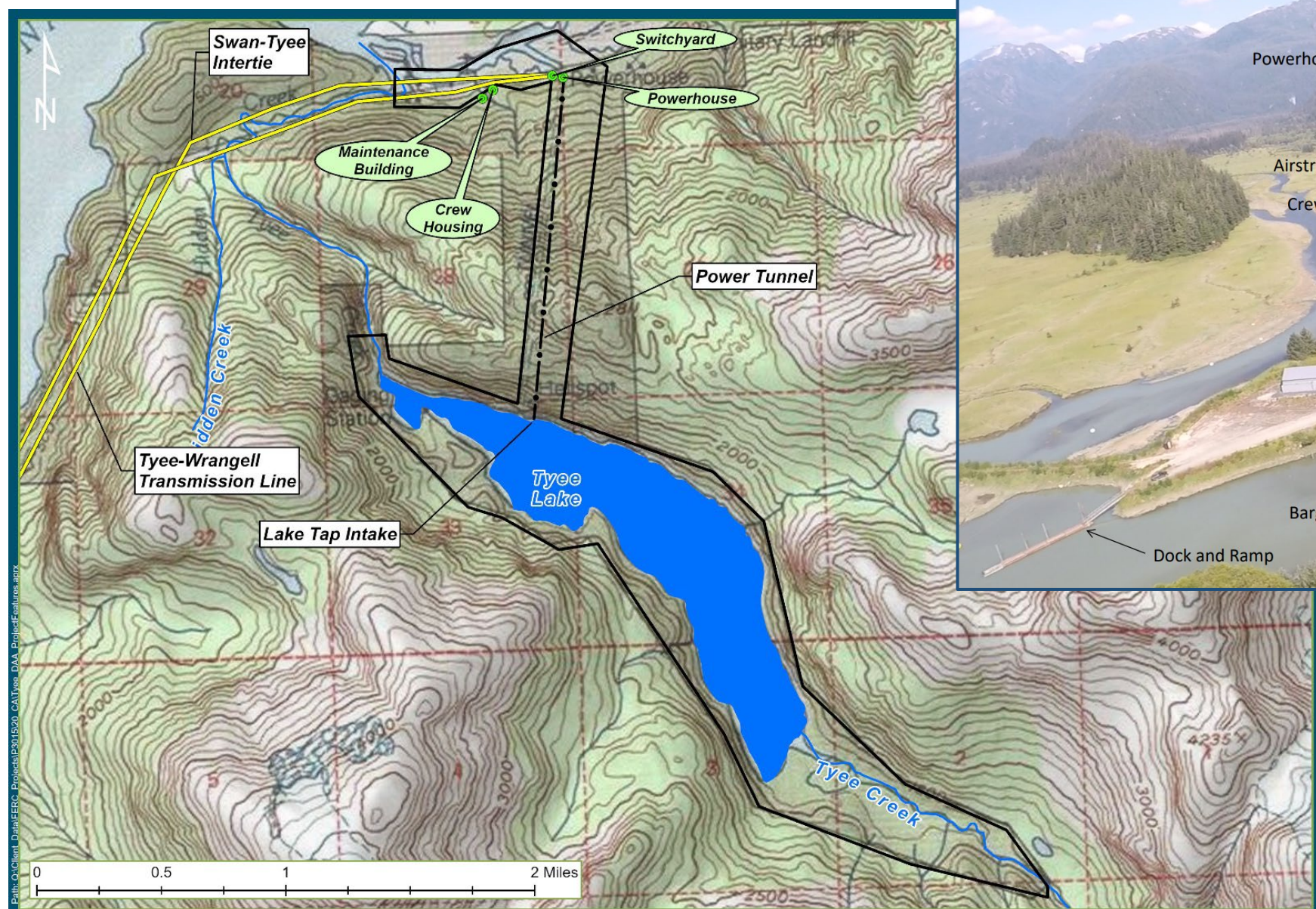
Project Overview

Tyee Lake Project

- Constructed in 1984
- Lake tap project
- Hidden Creek watershed, 40 miles southeast of Wrangell
- Constructed with provisions for three turbine-generator units
- 2 units installed; total capacity = 22.5 MW
- Amendment to install 3rd unit (11.25 MW)
 - FERC order: Apr 14, 2026
 - Installation: Fall 2027
- Transmission Line
 - Amendment to exclude non-primary T-line from Project Boundary filed Jun 29, 2026



Tyee Lake Project Boundary

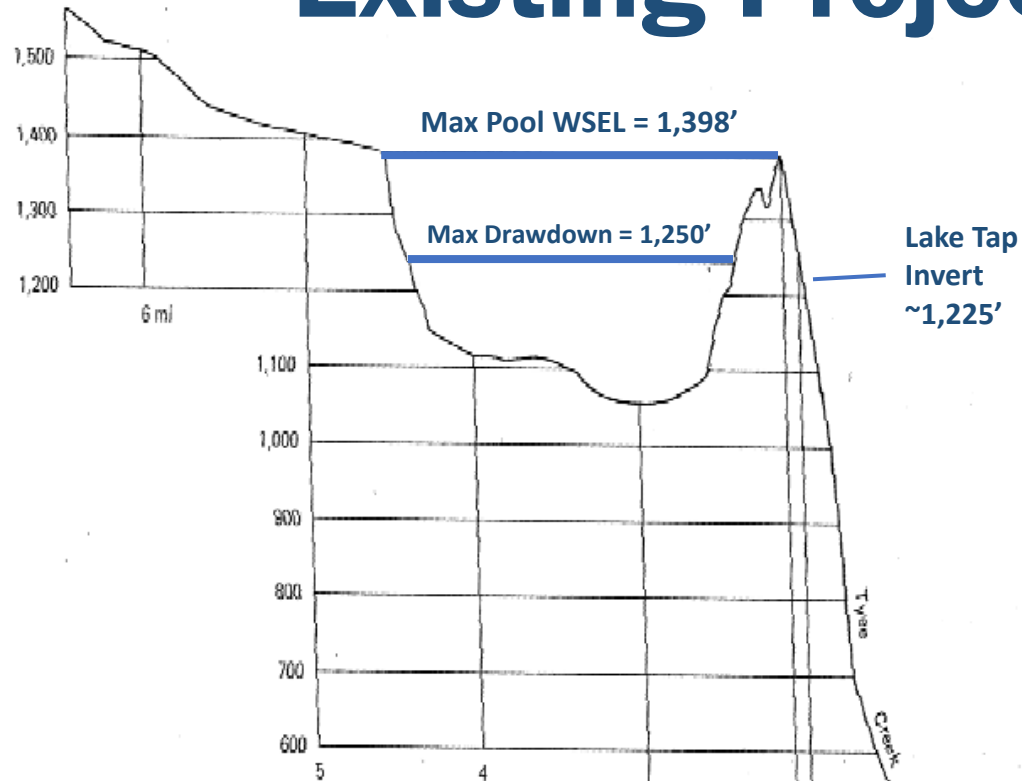


- **1,162 acres**
 - 1.6 acres USFS land adjacent to Bradfield Canal boat dock
 - Remaining land is state-owned

Path: C:\Client_Data\VEEC Projects\2016\2016 Tyee DAA Project\Features.aprx

Source: USGS 2021, NHD USGS 2022

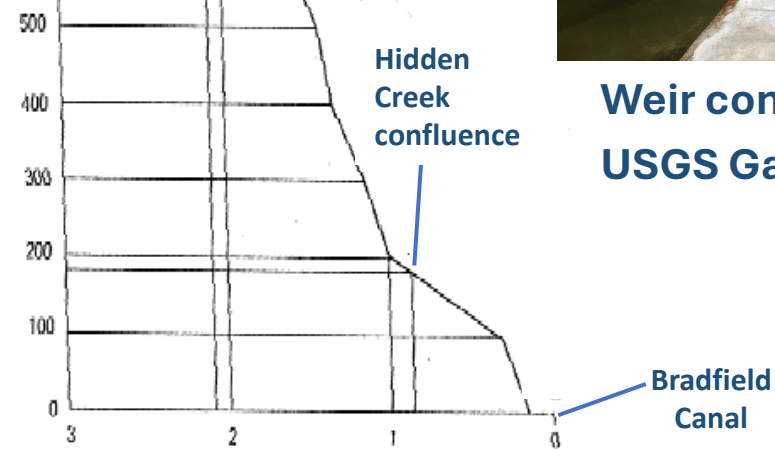
Existing Project



- Natural lake with a lake tap at ~1,225 ft EL.
- Normal pool elevation:
 - 1,250 – 1,398 ft (weir invert)
- Usable storage capacity: 52,400 ac-ft



Weir constructed in 2013 at lake outlet
USGS Gage 15019990 measures lake WSEL



Existing Project

- Lake tap intake structure directs water through an unlined 8,300-ft-long power tunnel to a 1,350-ft-long steel penstock to the powerhouse



Gate shaft intake gate



Gate shaft

Intake Structure

Gatehouse

Coarse Trashrack
at lake intake

Gate Shaft
Trashrack
60 spaces @ 1 3/8"

Power Tunnel and
Penstock



Gatehouse at Tye Lake



Power tunnel bulkhead

Existing Project

- Trifurcated penstock, powerhouse, switchyard, and tailrace designed and constructed with provisions for three generating units
- Two 11.25-MW Pelton-type (impulse) turbines currently in operation
 - Average annual generation 108,650 MWh
- Third turbine to be installed 2026; operational 2027



Powerhouse

Provisions for 3 units

Powerhouse

Two 11.25-MW units currently installed

FERC Licensed Capacity

33.75 MW

Switchyard

Point of Interconnection with Swan-Tyee Intertie

Tailrace

1,100 ft-long Intertidal

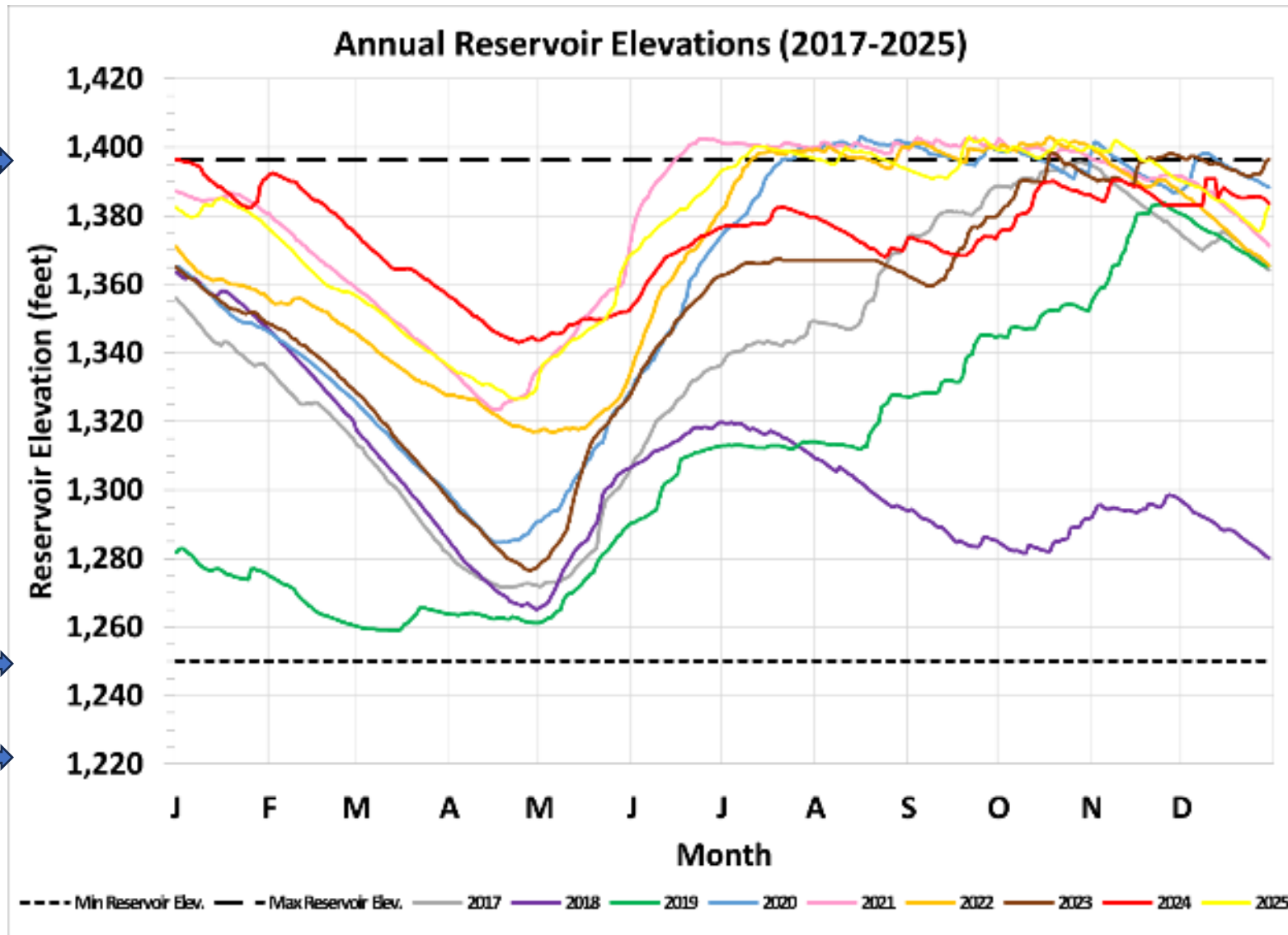
Existing Project

- **Water rights permit**
 - **135,000 ac-ft/yr**
- **No minimum flow requirement to Tye Creek**
- **Spill to Tye Creek occurs at lake WSEL 1,398 ft**
 - **Does not occur every year (2017-2019, 2024)**
 - **Typically occurs in response to precipitation events (2020-2023, 2025) or maintenance events (2026)**

1,398'
Weir
Invert

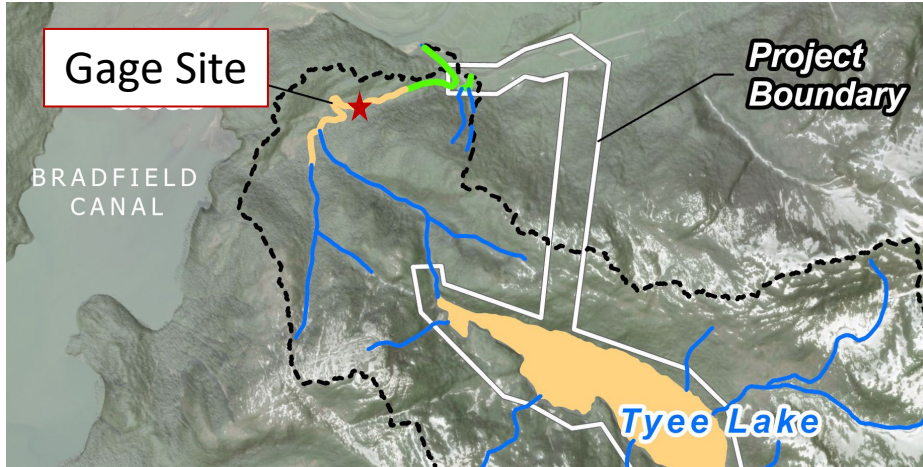
1,250'
Draft
Limit

1,225'
Intake



Third Turbine Monitoring Studies

- Hidden Creek Flow Monitoring



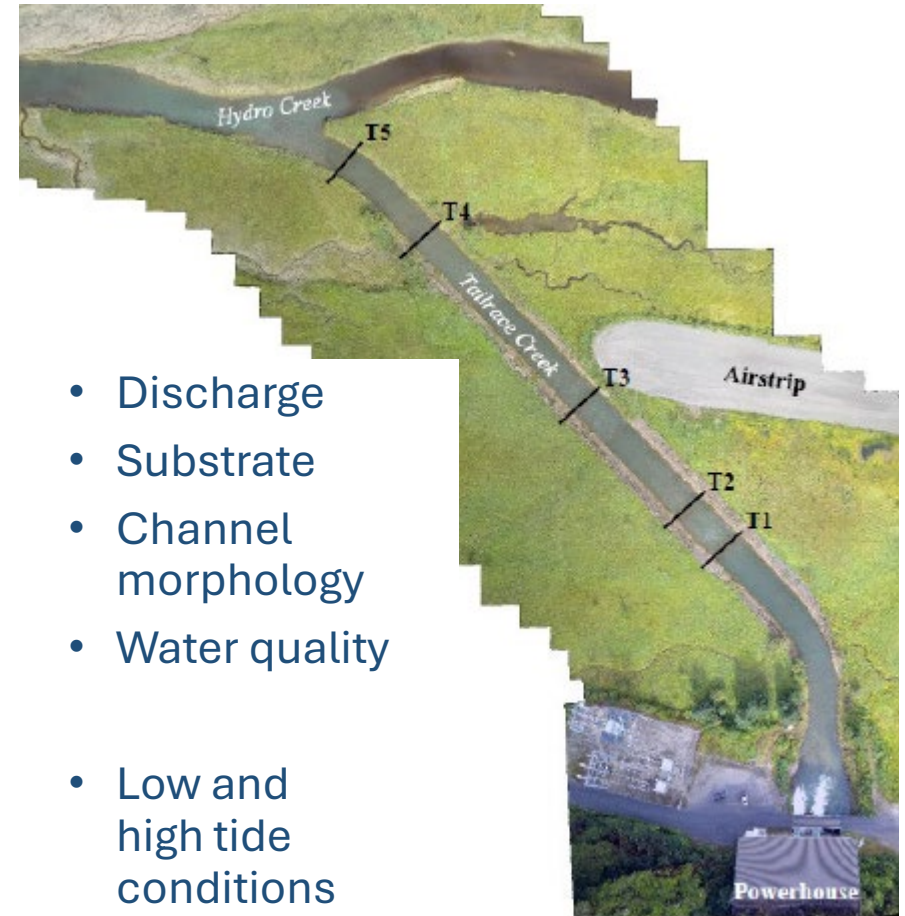
- **Pre-third unit operations**

- 2026 - May, August, October, December
- Report and meeting with agencies

- **Third unit operations**

- 2028 or 2029

- Tailrace Deposition and Scour Monitoring



- Discharge
 - Substrate
 - Channel morphology
 - Water quality
-
- Low and high tide conditions

Questions

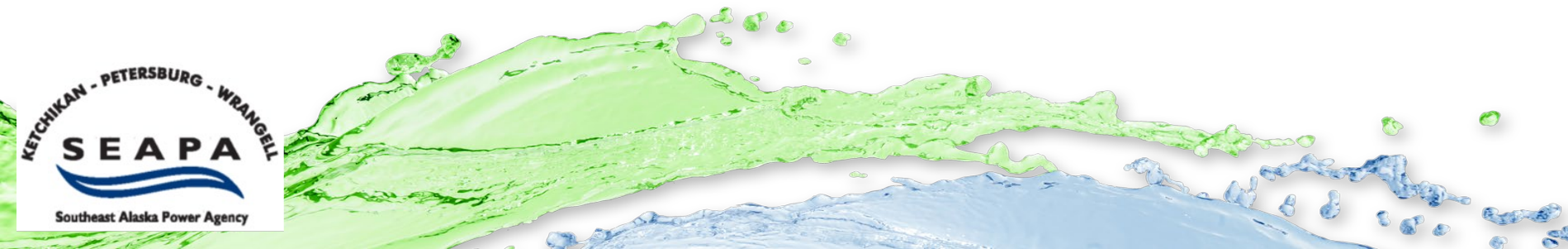




Relicensing Process

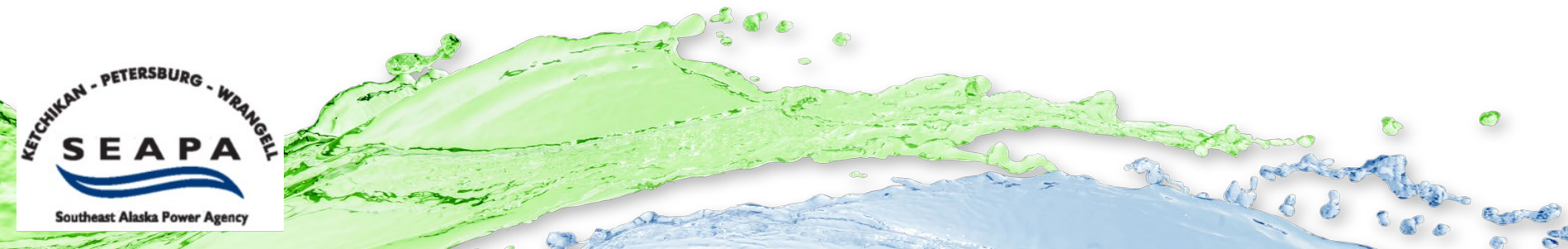
What is FERC Relicensing?

- FERC is an independent agency that regulates hydroelectric projects
- Licenses are issued by FERC for 30 to 50-year terms
- Tyee Lake Project license expires July 2031
- Multiyear process, starting 5 - 5.5 years before license expiration
- Involves multiple participants with public involvement opportunities
- Provides FERC with decision-making information
- Determines license term and requirements

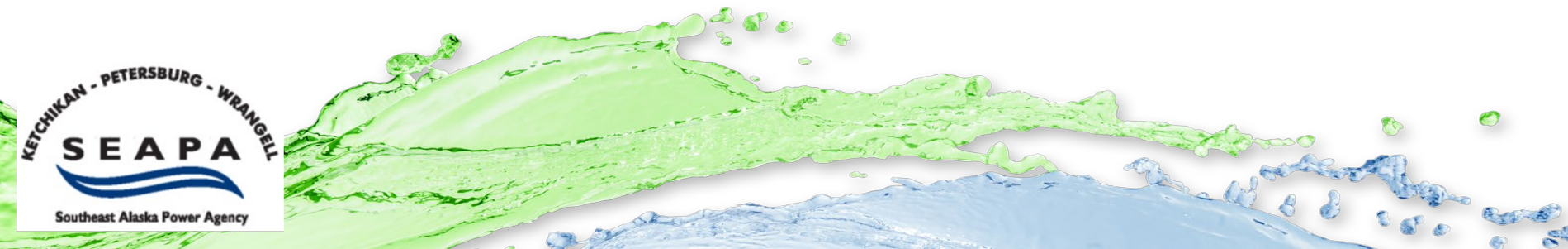
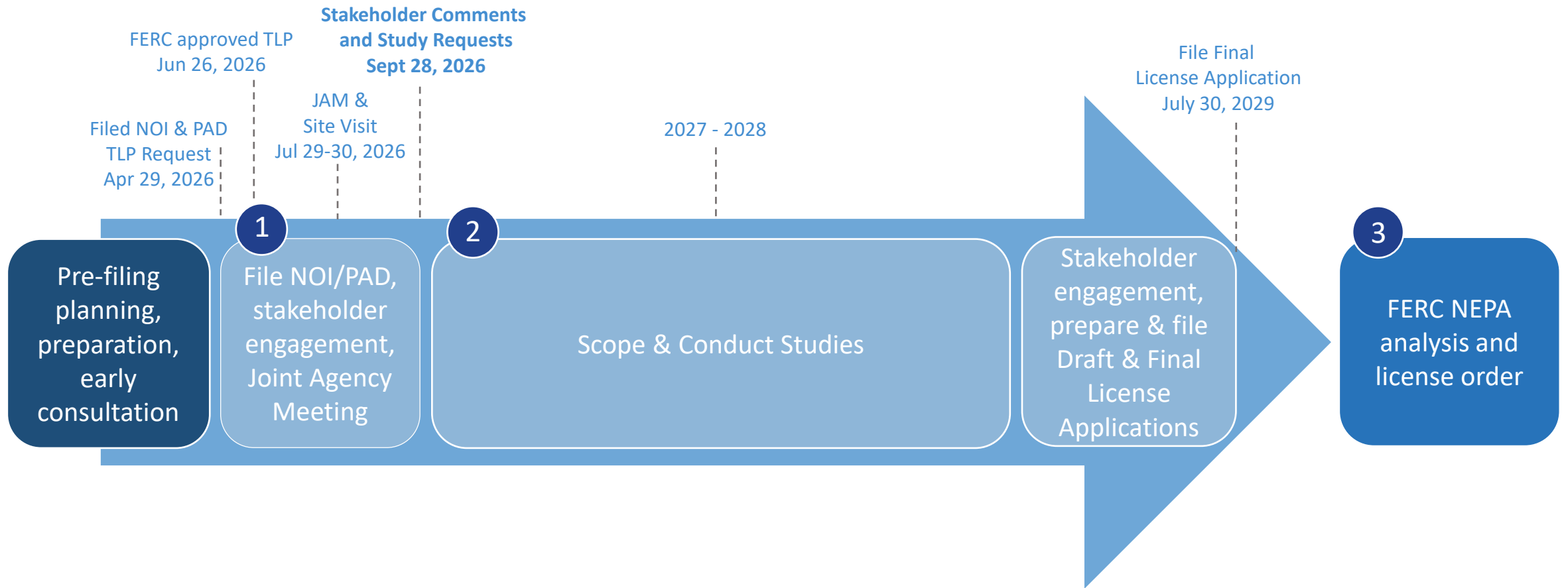


Request to use Traditional Licensing Process

- Integrated Licensing Process is FERC default
- SEAPA requested use of Traditional Licensing Process (TLP)
 - provides greater flexibility
 - less rigid schedule for comments and responses throughout process
- No objections to use of TLP received
- FERC approved use of TLP June 26, 2026

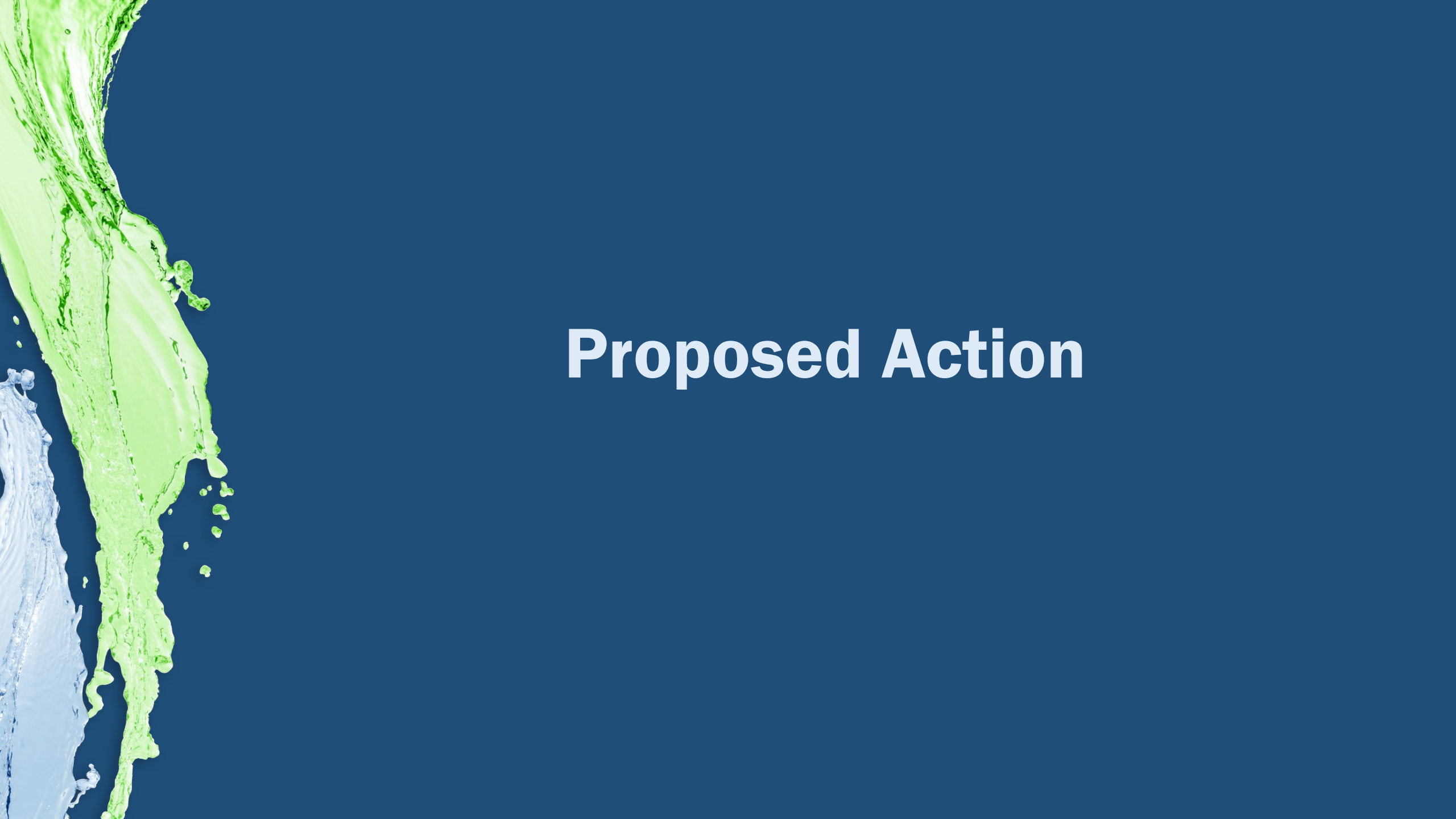


Stages of Relicensing



Questions

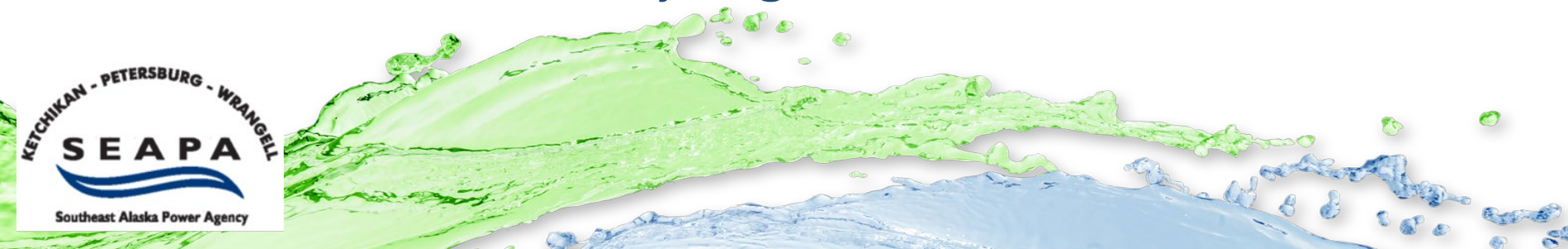




Proposed Action

Proposed Action

- Operation of the Project through the next license term
- Evaluation of FERC Project Boundary and Project lands
- Potential modification of the lower draft limit from 1,250 ft to 1,235 ft EI
 - Preliminary proposal, evaluating engineering constraints
 - SEAPA expects the lower draft limit would be used infrequently
 - Rationale for lower draft limit:
 - Increase useable storage capacity of Tyee Lake
 - Allow additional hydro generation in a low springtime lake level scenario
 - Reduce reliance on diesel generation
 - Allow short-term water movement by wire (across Swan-Tyee Intertie) facilitating more efficient hydro generation



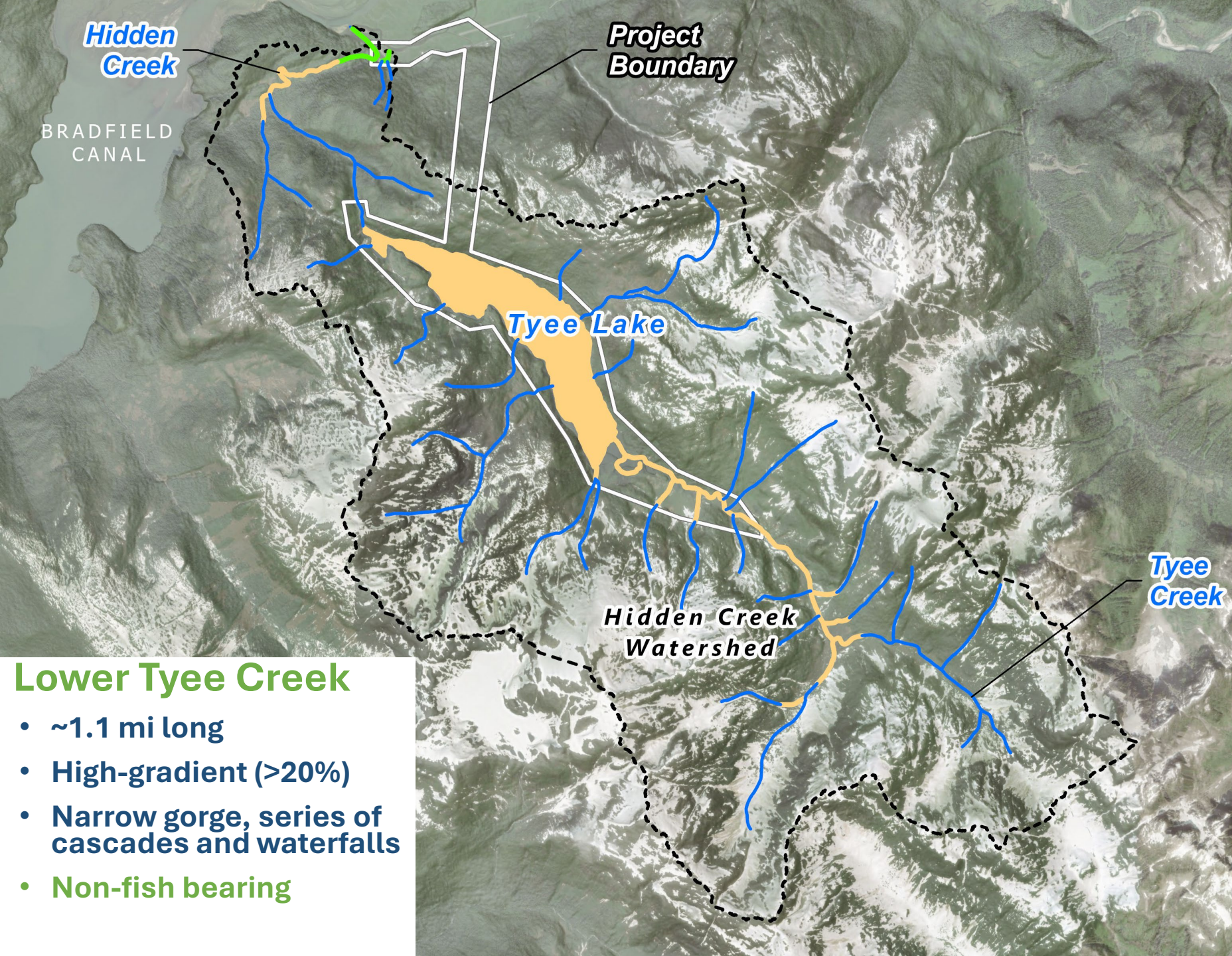


Overview of Environmental Resource Information Presented in PAD



Environmental Resource Areas

- Geology and Soils
- Water Quantity and Quality
- Fish and Aquatic Resources
- Wildlife, Botanical and Wetlands
- Rare, Threatened, and Endangered Species
- Recreation, Land Use, and Aesthetics
- Cultural and Tribal Resources
- Socioeconomics



Hidden
Creek

BRADFIELD
CANAL

Project
Boundary

Tyee Lake

Hidden Creek
Watershed

Tyee
Creek

Aquatic Resources

Tyee Lake

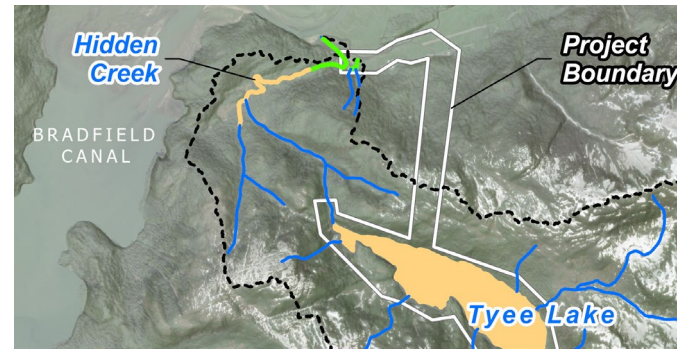
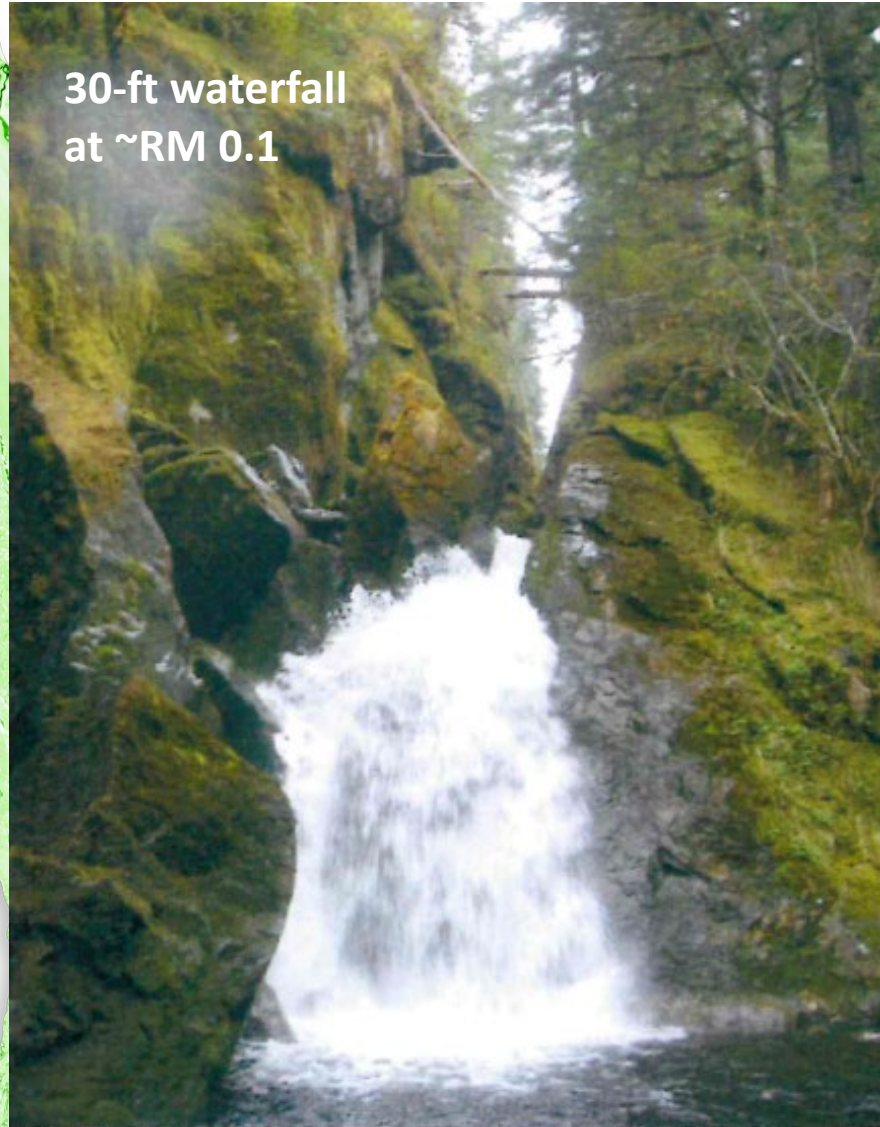
- 14.4 sq mi drainage
- 2.5 mi x 0.5 mi
- 300 – 480 ac
- Steep-sided
- Deep: ~300 ft at full pool
- Temp: 0 - 13 °C
- DO: 100%
- pH: 6.2 - 7.0
- Low specific conductance, dissolved solids, and suspended solids
- **Arctic Grayling (adfluvial)**
 - ADFG stocked in 1960s
 - 1980s found infected with BKD and ERM
 - 2018 presence

Lower Tyee Creek

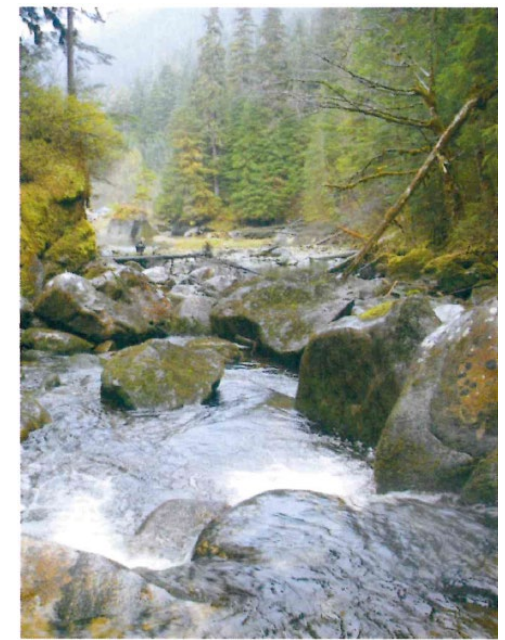
- ~1.1 mi long
- High-gradient (>20%)
- Narrow gorge, series of cascades and waterfalls
- **Non-fish bearing**

Aquatic Resources

Hidden Creek (~0.6 mi)



- **Above barrier (RM 0.1-0.6)**
 - Moderate gradient (~4% average)
 - Cascades over boulders with pockets of pools and gravel substrate
 - Temperature: 0 – 12.5 °C
 - **Rainbow Trout**
- **Below barrier (RM 0-0.1)**
 - Low gradient, intertidal
 - Cobble, gravel, sand and mud
 - Provides low quality spawning habitat for anadromous fish
 - **Pink, Chum, and Coho salmon; Dolly Varden, Cutthroat Trout, Rainbow Trout; sculpin**



Upper Hidden Creek
looking downstream



Lower Hidden Creek at low
tide

Aquatic Resources – Tailrace Creek

1,100 ft long

- Bed width = ~40 ft
- Bankfull width = ~68 ft
- Mean channel slope = 0.5%

Intertidal

Depth, velocity influenced by tidal stage and operations

e.g., at low tide:

Water depth = 0.5 – 2.5 ft

Velocity = 1.4 – 4.4 ft/s

Discharge = 79 (@11.4 MW) – 146 cfs (@19.8 MW)

Water quality heavily influenced by tidal stage, season

e.g., April 2016 low to higher tide:

Temperature = 3.5 to 8.3 °C

DO = 17.0 to 8.8 mg/L

pH = 6.0 to 7.6

Salinity = 0 to 17 ppt

Conductivity = 1 to 19,000 $\mu\text{s}/\text{cm}$

Substrate size distribution gradient

- Dominated by gravels > 0.75 in;
- Sand < 10% at PH to 17% near Airstrip Slough
- Greatest amount of sand found closest to Airstrip Slough in most tidally-influenced areas



-1.5 ft tide view from powerhouse



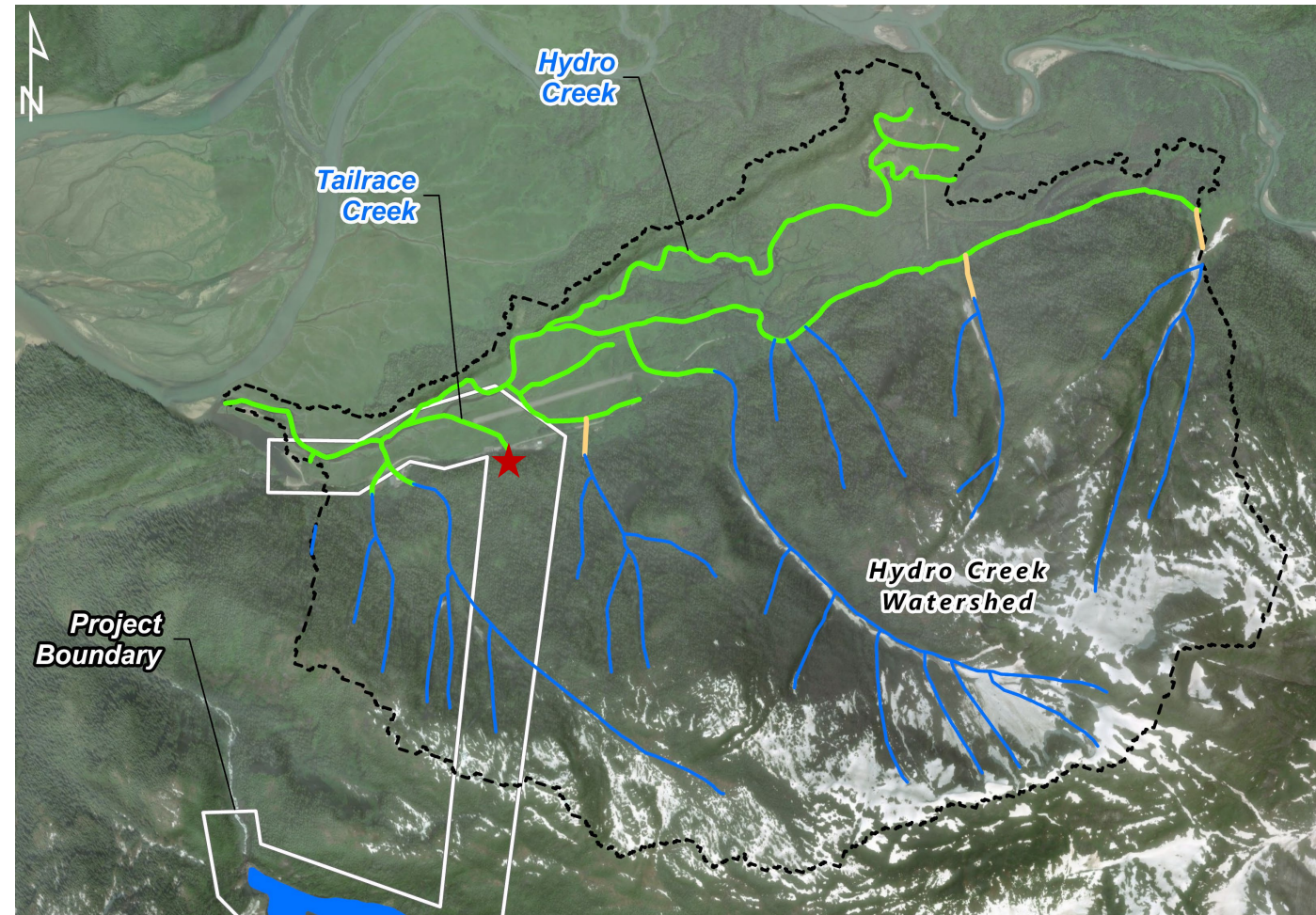
+18.5 ft tide view from powerhouse

Aquatic Resources – Tailrace, Airstrip Slough, Hydro Creek

Tailrace originally designed as experimental Pink Salmon spawning channel for mitigation for Hidden Creek anadromous habitat

ADFG monitoring concluded:

- Provides low-quality intertidal spawning habitat for a few Pink Salmon, mostly in the upper half of the channel less influenced by salt water.
- Channel will not continue to provide spawning habitat because no source of gravel.
- **Mitigation was not necessary because Hidden Creek has continued to flow year-round regardless of Tye Lake discharges**



Tailrace and Hydro Creek: Chum (p), Pink (p), and Coho (r)
Other species: Dolly Varden, sculpin, 3-spine Stickleback, shrimp

Wildlife, Botanical, and Wetlands

- Five physiographic zones
 - Subalpine, Upland, Riverine, Lacustrine, Coastal
- 444.9 waters and 196.6 ac wetlands (NWI 1986)
- No invasive species documented in AKEPIC (ACCS 2026)
- No rare plants documented
- 16 Wildlife Habitat Types (2021)
 - 35 species of mammals
 - 232 species of birds
 - 6 species of amphibians
 - No threatened or endangered species
 - USFS Sensitive species
 - Queen Charlotte Goshawk (*Accipiter gentiles laingi*)
 - Black Oystercatcher (*Haematopus bachmani*)
 - Stellar Sea Lion Eastern DPS (*Eumetopias jubatus*)

Questions

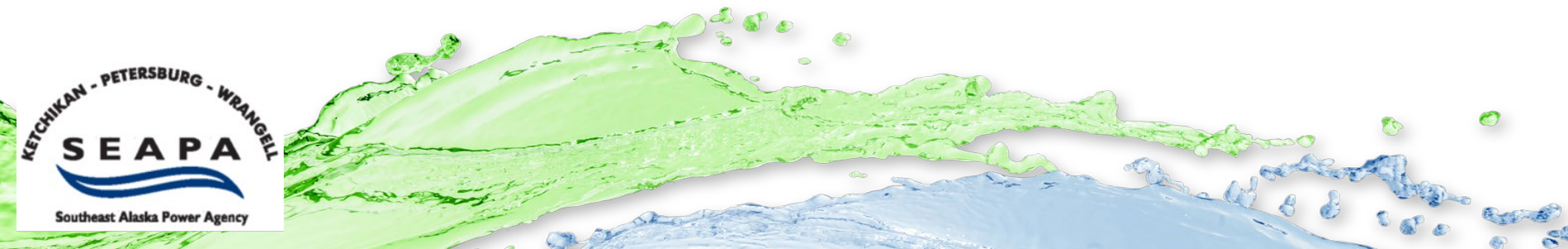




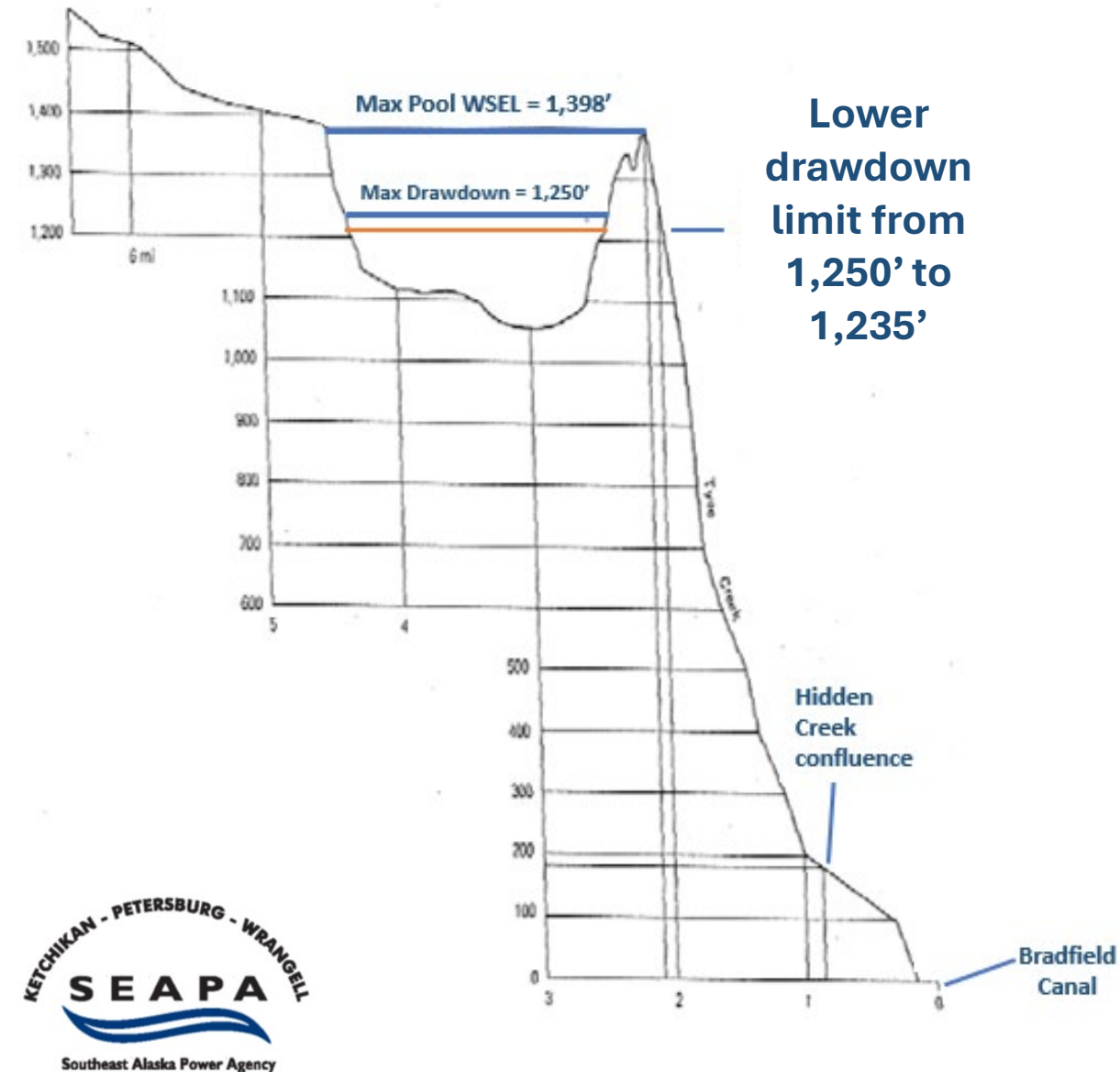
Potential Environmental Effects and Preliminary Proposed Studies

Proposed Studies – Purpose

- FERC will use available information to complete their environmental analysis and develop recommendations in the new license
- If there are information gaps, these can be studied during the relicensing process (PAD Comment and Study Requests by September 28, 2026)
- Proposed Actions
 - Operation of the project through next license term
 - Evaluation of FERC Project boundary
 - Potential lower minimum draft limit



Reservoir Drawdown Feasibility



- Determine the operational limits and feasibility of a lower drawdown
- Assess the risks of the new operational limits on equipment and structures
- Estimate the capacity value and system response values of a lower drawdown limit
- Identify potential effects to:
 - Fish and aquatic resources
 - Water quality and quantity
 - Soils and slope stability in the reservoir
- Will require FERC approval to temporarily draw down reservoir to collect engineering feasibility data
 - SEAPA will consult with agencies on the drawdown itself

TYEE LAKE RESERVOIR BATHYMETRIC SURVEY (SEAPA-09-05)

NOTES

1. BATHYMETRIC AND TOPOGRAPHIC SURVEY OF TYEE LAKE WAS CONDUCTED BY TERRASOND AUGUST 3 - 5, 2009 FOR THE SOUTHEAST ALASKA POWER AGENCY (SEAPA).
2. HORIZONTAL DATUM IS NAD83 AND PROJECTION IS ALASKA STATE PLANE, ZONE 1, US SURVEY FEET. VERTICAL DATUM IS NAVD83 BASED ON THE GEOID08 MODEL APPLIED TO THE ELLIPSOID HEIGHT DERIVED FROM A STATIC GPS OBSERVATION.
3. PROJECT CONTROL WAS BASED ON UNITED STATES GEODETTIC SURVEY (USGS) CONTROL AT THE TYEE LAKE STREAM GAUGE. "SCREW" WAS HELD AS LATITUDE 58° 11' 49.62662" N, LONGITUDE 131° 30' 12.36570" W, NAD83 (CONGRU 2003 EPOCH). USGS BRASS CAP "RM3" WAS HELD AS 1387.56 (NAVD83).
4. LAKE LEVEL THROUGHOUT THE SURVEY WAS ESTABLISHED FROM DIFFERENTIAL LEVELS FROM "RM3" TO THE WATER LINE AT THE BEGINNING AND END OF EACH SURVEY SESSION. SPILLWAY ELEVATION IS 1389.11' AS REPORTED BY THE USGS.
5. MULTIBEAM BATHYMETRIC SURVEY WAS CONDUCTED WITH AN R2 SONIC 2004 ECHOSOUNDER, COCA F106 INERTIAL NAVIGATION SYSTEM, AML SURPLUS VELOCITYMETER AND TRIMBLE R8 LOCAL BASE STATION BROADCASTING DIFFERENTIAL CORRECTIONS.
6. AIRBORNE TOPOGRAPHIC LIDAR WAS ACQUIRED BY AEROMETRIC AUGUST 4, 2009 USING A PIPER NAVAJO WITH AN OPTTECH ALTM GEMINI LASER OPERATING AT A 50 KHZ SCAN FREQUENCY. ALTITUDE WAS CONTROLLED WITH POST PROCESSED KINEMATIC GPS AND CALIBRATED TO TOPOGRAPHIC CONTROL POINTS AT TYEE LAKE.
7. BOTTOM SAMPLES WERE COLLECTED AT 31 LOCATIONS THROUGHOUT THE LAKE USING A PONAR 6"X6" GRAB SAMPLER.

PROJECT CONTROL				
STATION	LATITUDE	LONGITUDE	NORTHING	EASTING
SCREW	58° 11' 49.62662" N	131° 30' 12.36570" W	1600447.26	3126391.03
RM3	---	---	---	---

THE INTAKE LOCATION WAS IDENTIFIED IN THE RAW BATHYMETRIC DATA AT ELEVATION 1228.9'. HORIZONTAL COORDINATES FOR THE INTAKE ARE 1600360.6 N, 3128302.3 E.

LEGEND	
	CONTOURS, 100' INDEX INTERVAL
	LAKE LEVEL AUGUST 4, 2009 (1384.11')
	1500' ELEVATION CONTOUR
	APPROXIMATE DAM LOCATION
	TYEE LAKE HORIZONTAL CONTROL "SCREW"
	TYEE LAKE BENCHMARK "RM3"
	HELICOPTER PAD
	INTAKE LOCATION

GEODETTIC PARAMETERS:
HORIZONTAL: NORTH AMERICAN DATUM OF 1983 (NAD83, GRS96, 2003 EPOCH)
VERTICAL: NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88, GEOID08)
PROJECTION: ALASKA STATE PLANE, ZONE 1, US SURVEY FEET

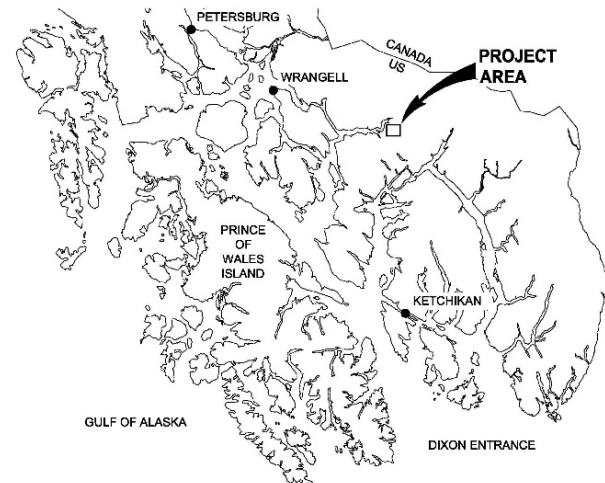
TYEE LAKE RESERVOIR BATHYMETRIC SURVEY AUGUST 3 - 5, 2009 TYEE LAKE, ALASKA			
SHEET 1 OF 1			
Rev. No.	Revision	Drawn	Date
Drawn: LNL	Checked: CDK	Date: 09/17/2009	
Interpretation:	Approved: CDK	Drawn By: 2009-050	



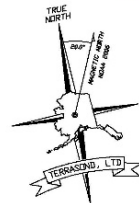
SURVEYOR'S CERTIFICATE
I HEREBY CERTIFY THAT I AM PROPERLY REGISTERED AND LICENSED TO PRACTICE LAND SURVEYING IN THE STATE OF ALASKA AND THAT THIS MAP REPRESENTS A HYDROGRAPHIC AND TOPOGRAPHIC SURVEY MADE BY ME OR UNDER MY DIRECT SUPERVISION. THE INFORMATION SHOWN HEREON REFLECTS THE CONDITIONS AS SURVEYED AUGUST 3-5, 2009, TO THE BEST OF MY KNOWLEDGE AND BELIEF.



PROJECT VICINITY



VICINITY MAP
SCALE 1 INCH = 20 MILES



SCALE 1 INCH = 500 FEET

Landscape Mapping Study: Vegetation, Wetlands, and Wildlife Habitats

- Map vegetation using recent high-resolution, leaf-on, cloud-free aerial photography or satellite imagery
- **Vegetation Classification Map**
 - Level IV of the Alaska Vegetation Classification
 - National Wetland Inventory types
- **Wildlife Habitat Map**
 - Level IV AVC vegetation type, physiography, surface form, disturbance type

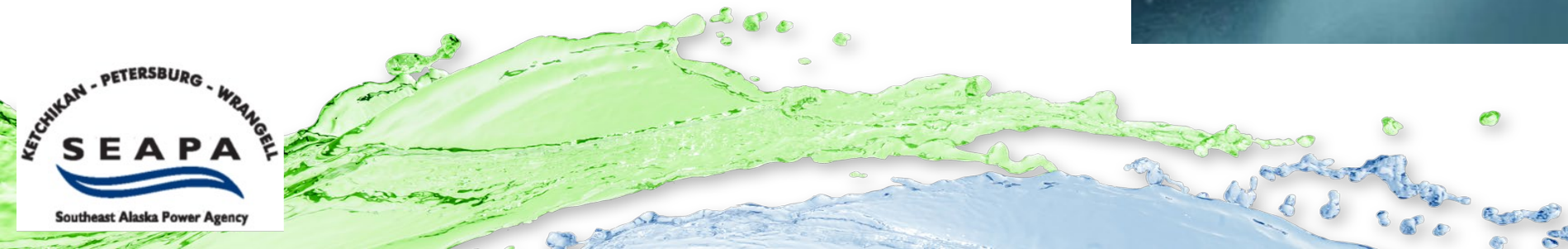
Wildlife Habitat Evaluation

- Evaluation based on Wildlife Habitat Map
- Identify target wildlife species of interest
- Identify habitats considered to be consistently used by wildlife species of concern
- Complete matrix species-habitat relationship analysis ranking habitat values



Potential Key Issues pertaining to:

- Relicensing?
- Lower Lake Draft Limit?



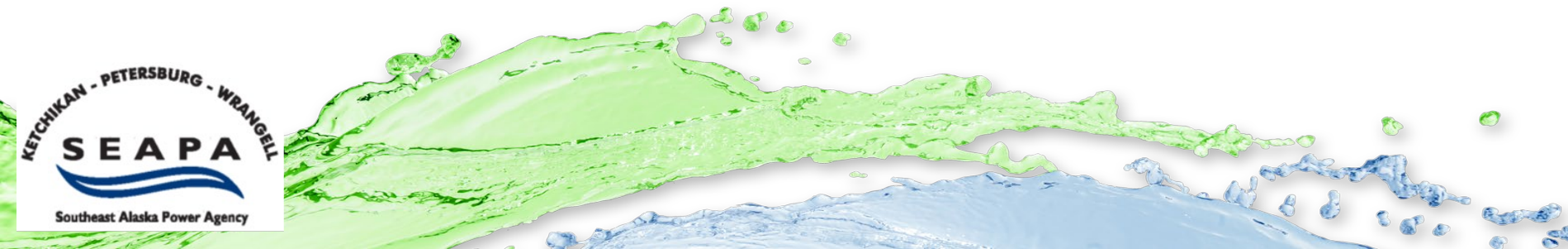
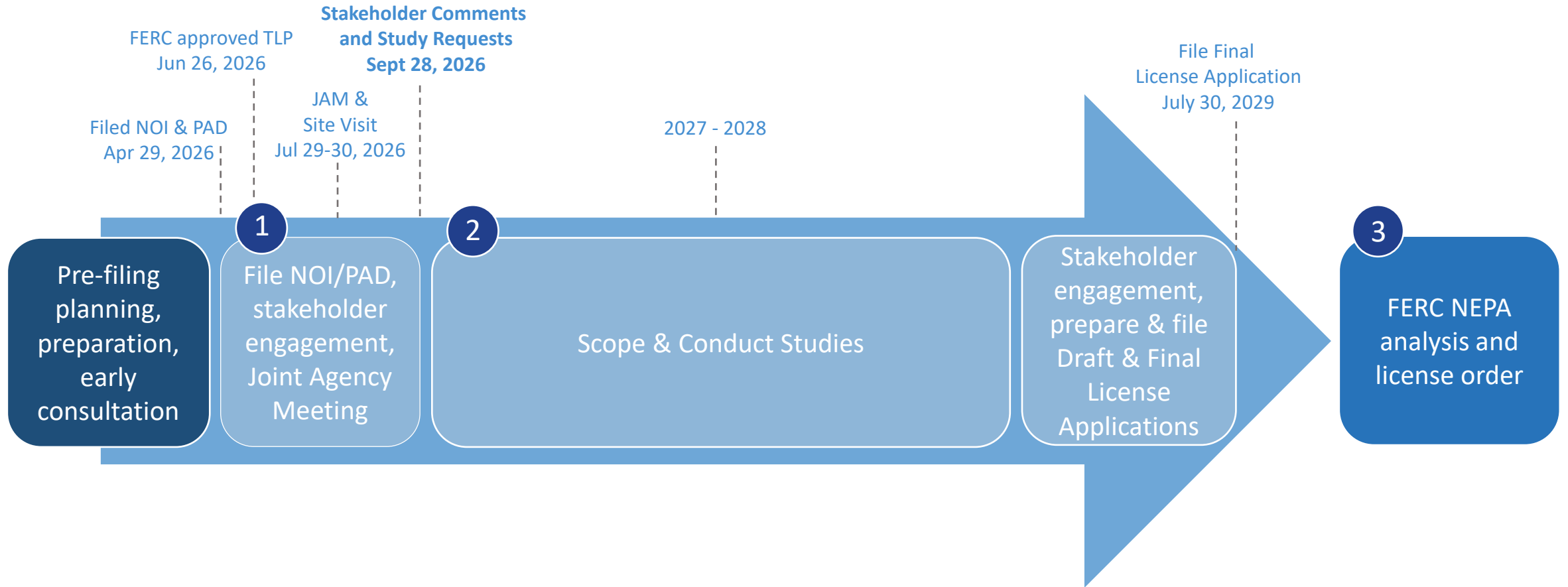
Study Request Process

- Stakeholders can request additional studies, if they believe the information is necessary for FERC's environmental analysis.
- FERC guidance for requesting studies includes:
 - Describe goals and objectives of the proposed study
 - Explain relevant resource management goals
 - Explain relevant public interest considerations
 - Describe existing information and need for more info
 - Explain nexus to project operations and effects and how study results would inform license requirements
 - Describe study methodology and how it is consistent with accepted practice
 - Describe consideration of level of effort and cost of study and why study is needed



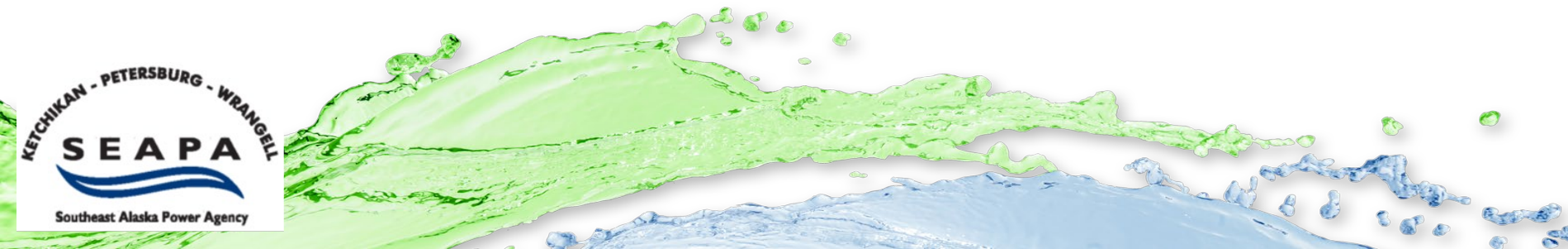
Relicensing Schedule Overview, Next Steps

Stages of Relicensing



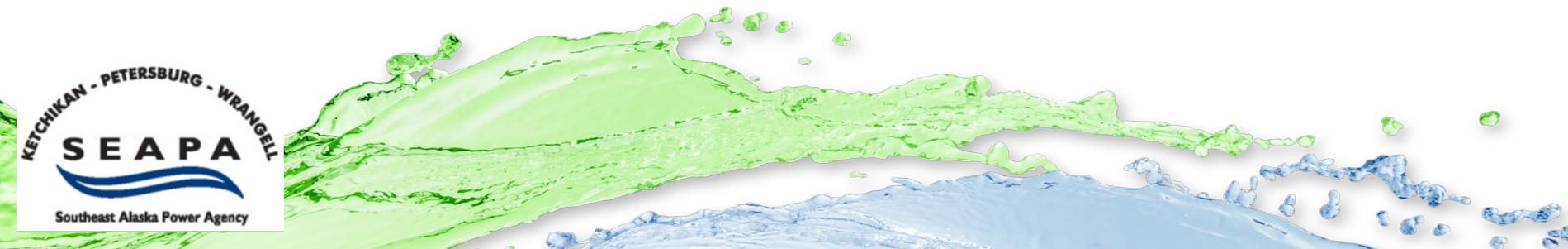
Next Steps

- Stakeholder comments on PAD, study requests – October 2026
- Lake drawdown, invasive plants, landscape mapping, habitat evaluation studies - 2027
- Review study reports
- Draft License Application
- Final License Application

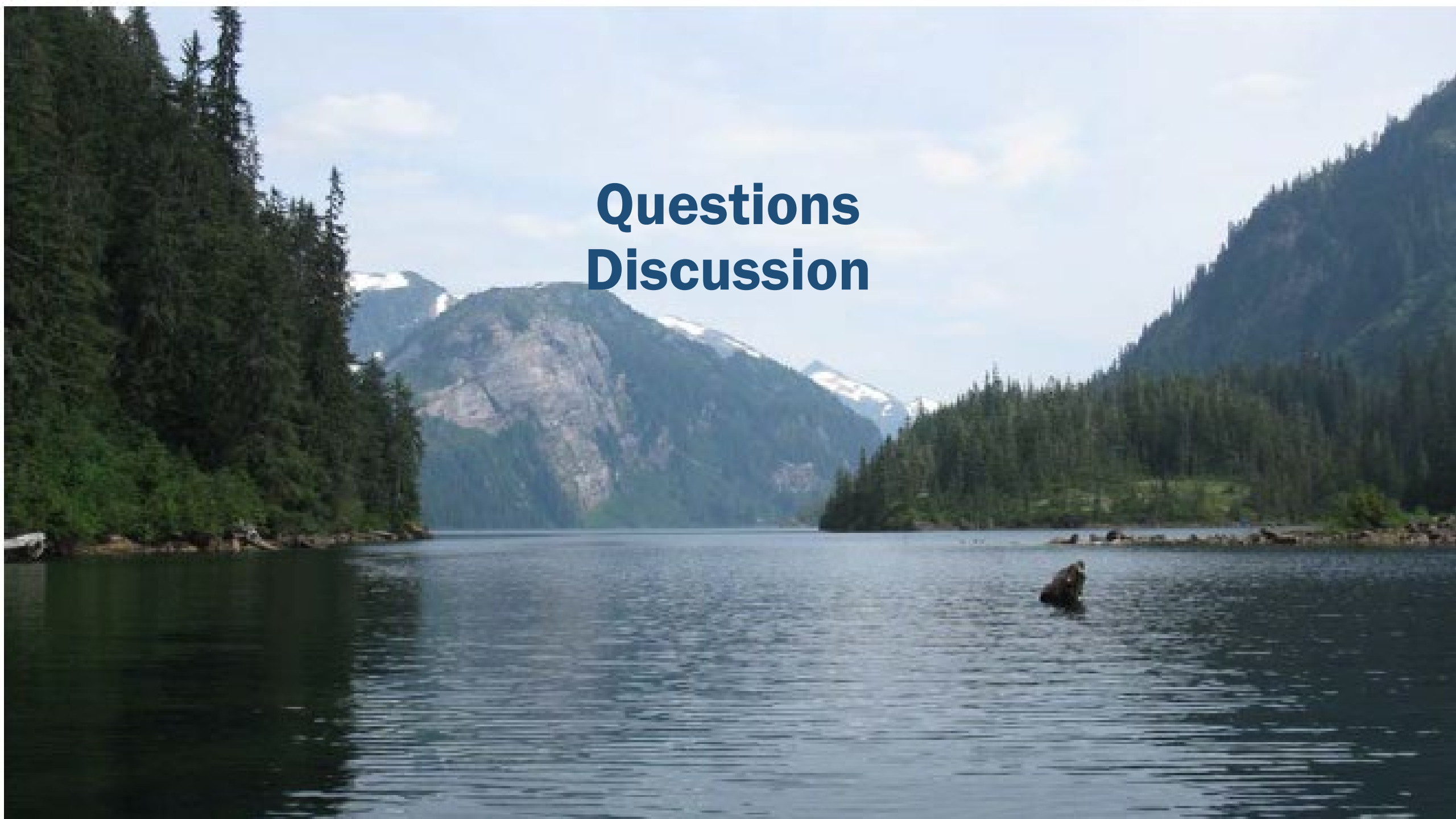


How to Stay Involved

- Check Project website for updates
 - <https://www.tyeelakerelicensing.com/>
- Sign up for FERC's e-subscription
 - Docket number "P-3015" at www.ferc.gov
- Contact Mark Hilson with question
 - mhilson@seapahydro.org



Questions Discussion



Thank you