Eklutna Hydroelectric Project
Year 2 Study Results
Wetlands and Wildlife Habitat

Terrestrial TWG Meeting
March 29, 2023

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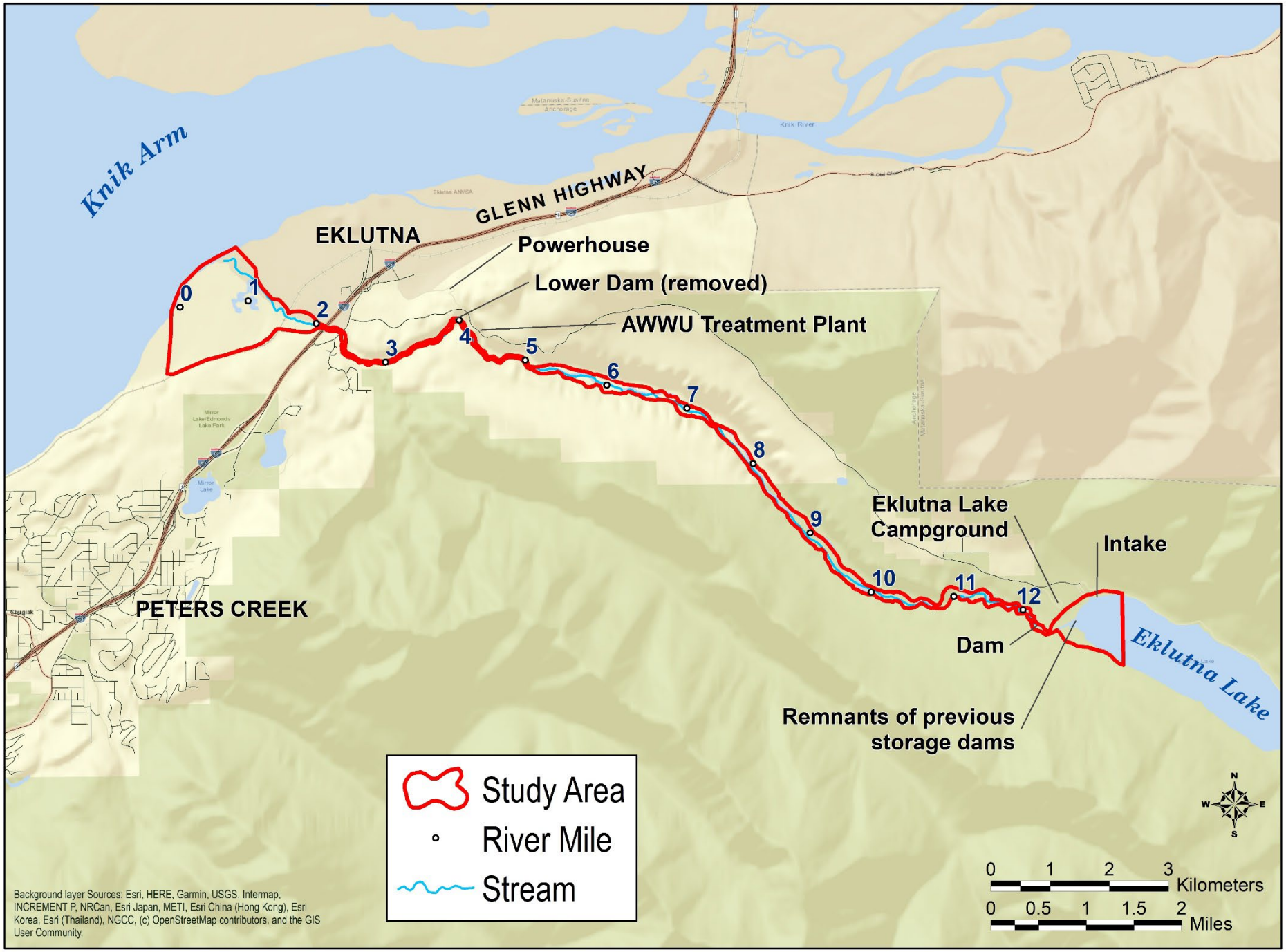
Wetlands and Wildlife Habitat – Objectives

- Prepare a fine-scale wetland map and preliminary wetland functional assessment
  - Wetland mapping scale suitable for Section 404 wetland permitting and to support mitigation planning during the impact analysis process
- Prepare a fine-scale wildlife habitat map
  - To support a wildlife habitat-use assessment
- Prepare a habitat change map with a retrospective analysis of historical imagery
  - To quantify and delineate wetland and wildlife habitat impacts over time specific to individual development projects, in support of mitigation planning during the impact analysis process

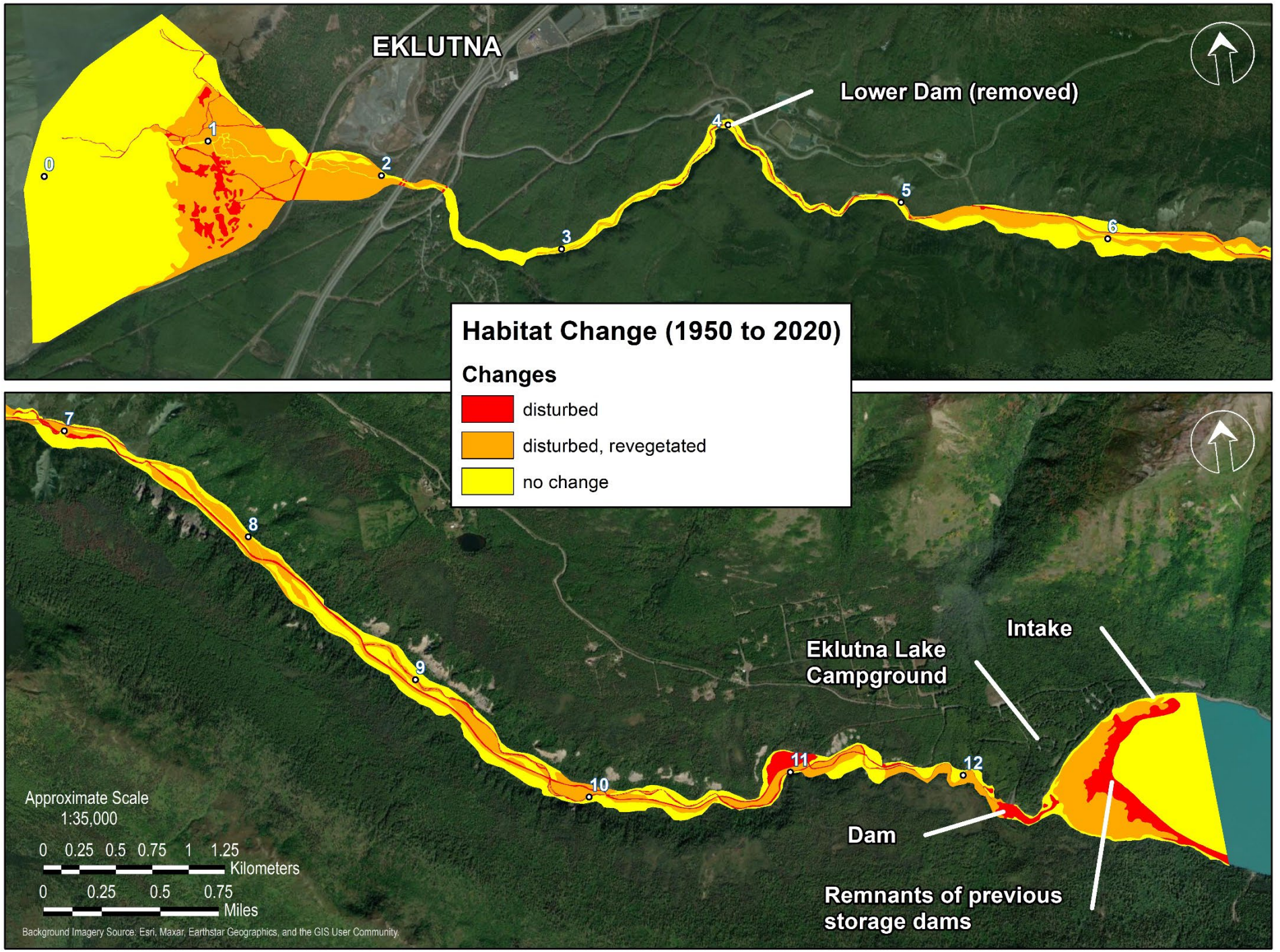
Wetlands and Wildlife Habitat – Methods

- Wetland map prepared using standard National Wetland Inventory (NWI) wetland mapping techniques; delineation based on field survey data collected during summer 2022
- Functional assessment was a qualitative assessment based on best professional judgement and knowledge of typical wetland functions associated with commonly occurring wetlands in Southcentral Alaska
- Wildlife habitat map was developed through image interpretation and aggregation of several variables (wetland, vegetation, macrotopography, and disturbance types)
- Wetland and habitat change map developed by comparing historical and current wetland and wildlife habitat maps prepared using black and white 1950 aerial photos and 2022 project imagery, respectively


Knik Arm
GLENN HIGHWAY
EKLUTNA
Powerhouse
Lower Dam (removed)
AWWU Treatment Plant
Eklutna Lake Campground
Intake
Dam
Remnants of previous storage dams
Eklutna Lake
PETERS CREEK
0
1
2
3
4
5
6
7
8
9
10
11
12
Study Area
River Mile
Stream
Background layer Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community.
0 1 2 3 Kilometers
0 0.5 1 1.5 2 Miles

Wetlands and Wildlife Habitat – Results

- 23 NWI wetland types identified: 12 water, 9 wetland, and 2 upland types.
- Retrospective image analysis shows 62% of the study area is unchanged, 8.5% disturbed and not revegetated, and 29.5% disturbed and revegetated.
- NWI mapping, functional assessment, and retrospective image analysis can be used to calculate wetland loss and help plan mitigation projects.
- Many changes to or loss of wetlands and waters over time are an indirect result of river dewatering and are not associated with placement of fill.
- Dewatering the upper and middle reaches of the Eklutna River have resulted in changes to, and narrowing of, the permanently flooded channel and adjacent seasonally flooded riparian wetlands.
- Fill and erosion occurring along the AWWU access road are responsible for some wetland loss, with many areas now converting to disturbed uplands.


EKLUTNA
Lower Dam (removed)
0
1
2
3
4
5
6
7
8
9
10
11
12
Habitat Change (1950 to 2020)
Changes
disturbed
disturbed, revegetated
no change
Eklutna Lake Campground
Intake
Dam
Remnants of previous storage dams
Approximate Scale
1:35,000
0 0.25 0.5 0.75 1 1.25
Kilometers
0 0.25 0.5 0.75
Miles
Background Imagery Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Wetlands and Wildlife Habitat – Results

- 23 wildlife habitat types and wetland functional classes were identified.
- Evaluating functional change can pinpoint important wetland gains and losses.
- Brackish Sedge Marsh, the highest-ranking wetland functional class, has become established on over 25 acres of disturbed surfaces associated with prior gravel extraction near the estuary.
- Seasonally Flooded (Riparian) Low and Tall Alder-Willow Shrub Scrub decreased from over 10% of the study area in 1950 to under 4% in 2022, with ramifications for wildlife that heavily use riparian shrub habitats.

Wetlands and Wildlife Habitat – Results

- Mitigation planning could consider impacts associated with current operations, targeting disturbances that have not yet naturally revegetated.
- Current trails, clearings, and the AWWU access road are examples of disturbed areas that are not revegetated.
- Not all observed wetland change or loss is associated with the current hydroelectric project. Examples are:
  - Gravel extraction near the estuary
  - Eklutna River channel diversion to support gravel extraction
  - Flooded Forest