

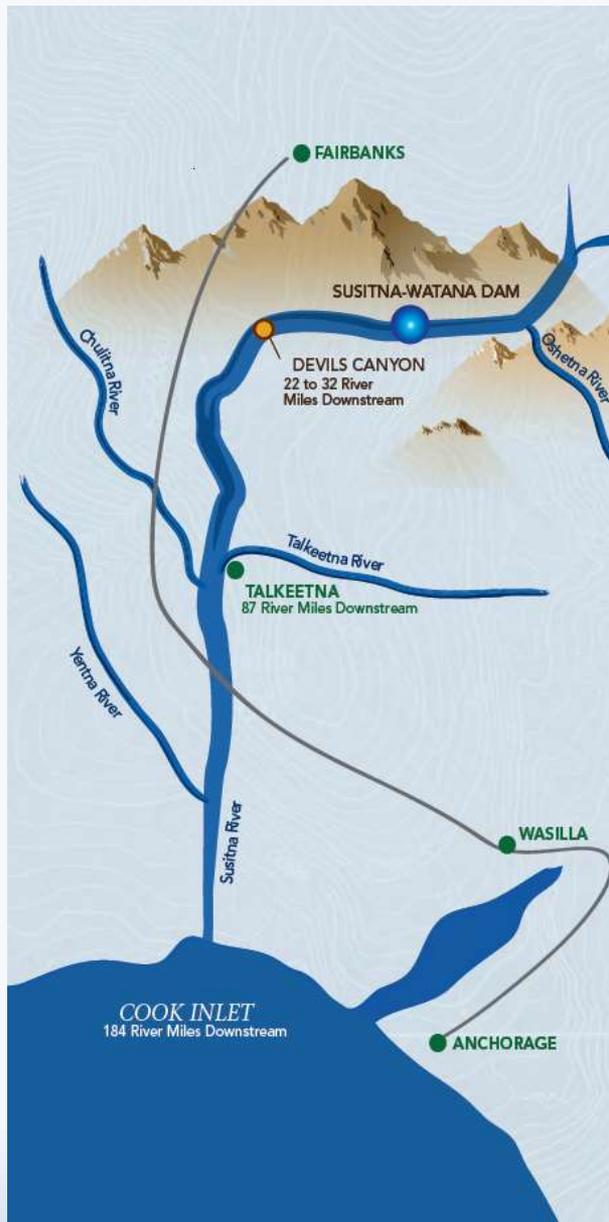
Initial Study Report Meeting

Study 10.18 Wood Frog Occupancy and Habitat Use

October 21, 2014

Prepared by

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Services



Study 10.18 Objectives

- **Review existing data** on habitat use and distribution of breeding wood frogs.
- **Estimate the occupancy rate** for breeding wood frogs in suitable habitats in the study area through a combination of field surveys and habitat-occupancy modeling.
- Use information on current habitat occupancy and habitat use to estimate the habitat loss and alteration expected to occur from development of the Project.
- **Sample frogs opportunistically for the presence of the amphibian chytrid fungus**, which has been linked to amphibian population declines elsewhere.

Study 10.18 Components

- **Auditory Field Surveys** (ISR Part A, Section 4.1, pg 2)
- **Occupancy Modeling and Habitat Associations**
(ISR Part A, Section 4.2, pg 4)
- **Acoustic Monitoring** (ISR Part A, Section 4.3, pg 5)
- **Chytrid Fungus Bioassay** (ISR Part A, Section 4.4, pg 6)

Study 10.18 Variances

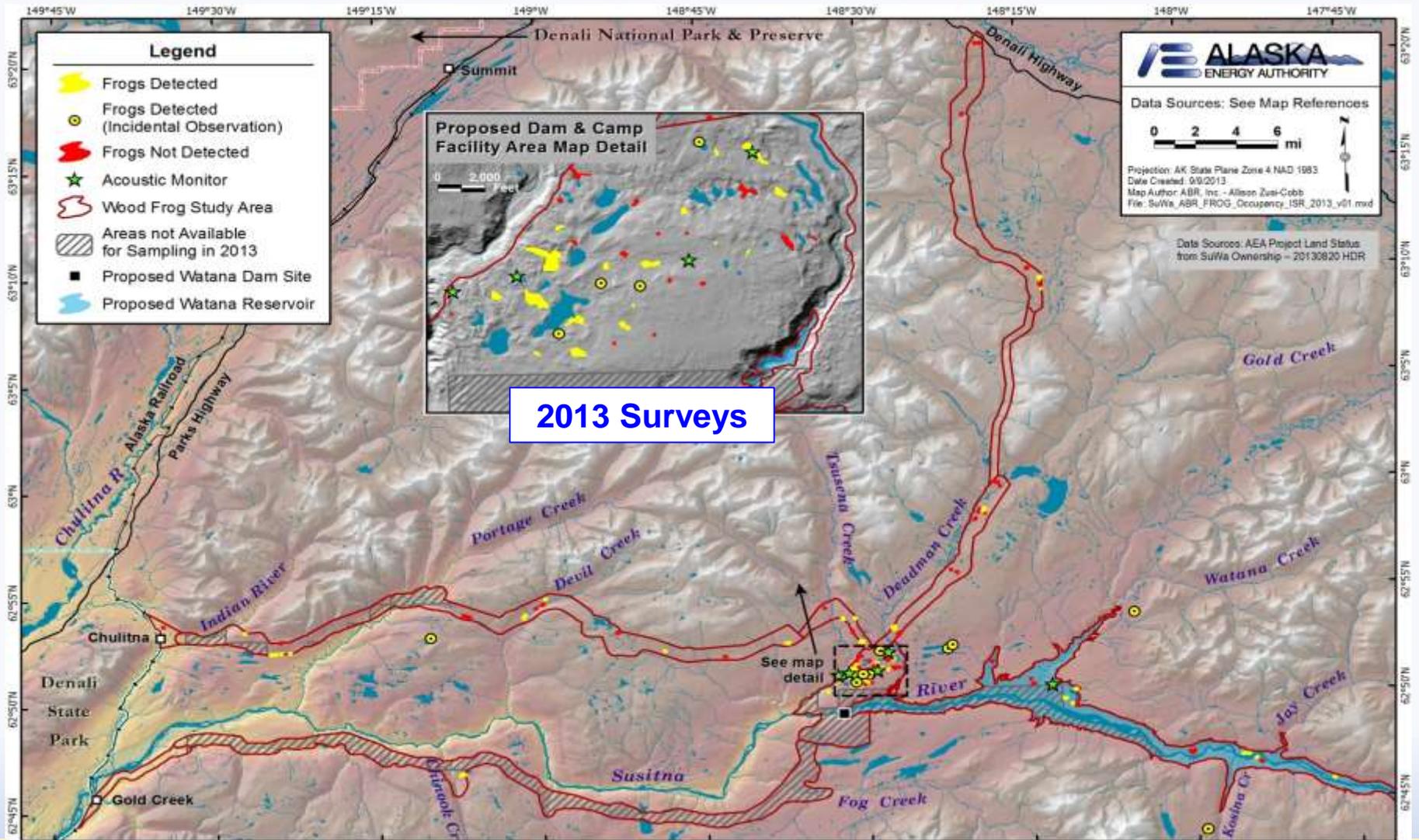
- The methodology for selecting sample locations (RSP Section 10.18.4.1) was adjusted in 2013 for several reasons:
 - Habitat mapping and fish presence data were not yet available for the study area.
 - Access to sampling sites on Cook Inlet Regional Working Group (CIRWG) lands was not permitted, so the Gold Creek Corridor and western portion of the proposed reservoir inundation zone could not be sampled.
 - Diurnal timing of field surveys was adjusted slightly due to logistical challenges.

Study 10.18 Summary of Results in ISR (ISR Part A – Section 5)

2013 Auditory Surveys:

- 90 randomly selected wetlands and waterbodies were sampled from May 30 to June 8 in the proposed reservoir inundation zone, dam/camp infrastructure area, and the Chulitna and Denali West access-road corridors.
- Frogs were widely distributed, from tundra to forested wetlands.
- Frogs were detected at
 - 31.0% of shallow-water (depth ≤ 1.5 m) locations.
 - 70.8% of deep-water (depth > 1.5 m) locations.
- Naïve (uncorrected) estimate of frog occupancy was 52.2%.

Study 10.18 Summary of Results in ISR (ISR Part A – Section 5)



Study 10.18 Summary of Results in ISR (ISR Part A – Section 5)

- **Diurnal pattern of calling activity** recorded by acoustic monitors peaked around 1:00 A.M., declined sharply by 5:00 A.M., then increased throughout the remainder of the day.
- **Estimated detectability** in 2013 (best model of occupancy):
 - 1 visit: 60.6%, nearly identical to 60.8% from acoustic monitor data.
 - 2 visits: 84.5%.
 - 3 visits: 93.9%.
- **Estimated occupancy** in 2013:
 - 36.8% for shallow-water habitats (depth ≤ 1.5 m).
 - 81.8% for deep-water habitats (depth > 1.5 m).
 - **63.4% overall.**

AEA Proposed Modifications to Study 10.18 in ISR (ISR Part C – Section 7.1.2)

- **Add Denali East Corridor Option** to the study area.
- **Drop opportunistic sampling of amphibian chytrid fungus** (RSP Section 10.18.4.2):
 - Based on the small sample of adult frogs captured in 2013 ($n = 7$), this approach was judged unlikely to provide meaningful results for evaluating the presence/absence of chytrid fungus.



New Modifications to Study 10.18 since ISR

The Chulitna Corridor has been dropped from the study area.

Steps to Complete Study 10.18 (ISR Part C – Section 7.1)

To complete this study, AEA implemented the methods in the RSP, except as described in ISR Section 7.1.2. These activities included the following:

- **Conduct auditory field surveys** for habitat-occupancy modeling (RSP Section 10.18.4.1, incorporating variances described in ISR Section 4.1.1), **focusing on areas not sampled in 2013:**
 - CIRWG lands (western reservoir zone and Gold Creek Corridor).
 - Denali East Corridor Option (see ISR Section 7.1.2).
 - High-elevation areas not accessible in 2013 (> 2,500 ft asl).
- **Deploy acoustic monitors at five sites** where frogs are detected on the first visit, to provide additional data on the frequency and duration of calling (RSP Section 10.18.4.1).
- **Both of these activities were completed in 2014.**

Study 10.18 Summary of Preliminary Results since ISR

2014 Auditory Surveys:

- Sampled 104 randomly selected wetlands and waterbodies from May 20 to May 29 in the Gold Creek, Denali West (elevations >2,500 ft asl), and Denali East access-road corridors.
- Frogs were detected at
 - 8.6% of shallow-water (depth ≤ 1.5 m) locations.
 - 34.7% of deep-water (depth >1.5 m) locations.
- **Naïve (uncorrected) estimate of frog occupancy was 20.2%.**

2014 Acoustic Monitors:

- Battery problems limited acquisition of data for use in evaluating detectability, but diurnal pattern of calling activity was similar to 2013.

Licensing Participants' Proposed Modifications to Study 10.18?



- Agencies
- CIRWG members and Ahtna
- Public

