

Yakutat Tlingit Tribe



BASELINE WATER QUALITY IN YAKUTAT FORELAND

Water Resources in a Changing Landscape
September 17, 2019



Presentation Overview



Properties of Metals

Mineral Exploration around Yakutat

Yakutat Foreland Water Quality Monitoring
Plan

Water Reservations and other approaches to
protect Tribal/Local Interests



Properties of Metals: essential vs. non-essential

- Essential: Low concentrations needed for health; in diets of humans
 - Copper, zinc, manganese
 - However, narrow window on levels that could be “too much of a good thing”
- Non-Essential: No known biological function and shouldn't be in our bodies

When metals entered into water ways, it can easily be taken up by an organism

- Bioaccumulation: taken up faster rate than can be excreted. Exposed organisms can have higher concentrations even when metal levels are low

Metal Toxicity



Metals can have adverse impacts to survival or health of an organism.

- Cause harm to reproduction; metabolism, growth rate

Different species have different sensitivity levels to different elements and different concentration levels

- Salmon and trout are among most sensitive fish
 - Copper: least toxic to humans but most toxic to fish. Copper can disrupt ability to smell (olfaction) which makes it difficult for salmon to find natal streams, find food, or avoid predators.

Types of Toxicity: short-term (acute) and long-term (chronic).

Mining and metal discharges: all phases of a mine can release metals.

Yakutat Foreland



Interconnected watershed
that extends 53 miles
from Yakutat to Dry Bay

Highly productive fish
and wildlife habitat

Traditionally, culturally,
and economically
important to the Yakutat
Tlingit and local
community

Largely under USFS
management



Mineral Exploration Around Yakutat



2008: junior company staked 96 square miles of claims in the Yakutat Foreland to explore for titanium and gold.

- Claims forfeited in 2010
- Area is open for future exploration

2015: Alaska Mental Health Trust started exploration in Icy Bay area. Currently on-going.

- Brought attention back to the Yakutat area

What is baseline water quality?



What happens upstream

Doesn't stay upstream.

Baseline: conditions in current state

Water quality: chemical, physical, and biological characteristics to meet requirements for a designated use

Why collect baseline data?

- Assess ecosystem health and safety for human contact and consumption.
- Measure before/after and above/below impacts
- Inform watershed management

Yakutat Foreland Monitoring Plan



Prompted by local concerns, YTT developed Yakutat Forelands Water Quality Monitoring plan (“monitoring plan”).

Plan identified 12 waterbodies, based on community importance and existing data, to include for establishing **baseline** conditions and future **monitoring**.



Monitoring area



Yakutat Forelands
Water Quality Monitoring Plan



Legend

-  Project Waterbodies
-  ADFG Anadromous Waters Catalog (2012)



Monitoring Plan Goals



- 1) **Produce comprehensive, statistically valid, and scientifically defensible baseline water quality data** prior to exploration and proposed development.
- 2) **Improve understanding** of these waterbodies and **aid in management** to protect tribal and local interests.
- 3) **Establish future monitoring** to assess and detect the impact of human activities to salmon habitat and cultural resources.

Monitoring Plan Objectives



Collect quarterly samples from the 12 waterbodies the Monitoring plan

Have raw data undergo independent third-party review and validation

Share validated data with local, state, federal and tribal governments and regulatory agencies

Use data to apply for water quality protection approaches which include supporting a Tier 3/Outstanding National Resource Water (ONRW) status and to build capacity for applying for water rights

Water Quality measurements

Physical Parameters

- Water temperature
- Dissolved Oxygen
- pH
- Conductivity
- Salinity
- Turbidity
- Nitrates

Factors can influence impacts from the presence of metals to fish and other aquatic life



Water Quality measurements cont.

Chemical Parameters

- Dissolved metals
- Hydrocarbons
- Alkalinity
- Methyl Mercury
- Hardness

Metals and hydrocarbons (fuels) can impact human and aquatic health.



Monitoring Plan

Where and How:



Sample sites chosen based on historic data (if available) and consistent accessibility.

Samples and measurements taken surface level and (where feasible) five feet and ten feet in depth

Chemical samples sent to certified laboratory

Physical parameters with a YSI meter and turbidity meter



Water Rights

- YTT wishes to maintain water quality that supports traditional, customary, and economic uses.
 - This is the right to reserve water to protect existing and historic uses
 - Needed: water quantity data
 - One of our next phases of capacity building and data collection
 - Clean water in sufficient amount

As the Indigenous stewards of the Yakutat Foreland since time immemorial, we'll continue to strive for maintaining the balance and respect of these waters that has nourished us since the time of our ancestors.

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