

Program Review and Data Report

Technical Working Group on Monitoring

Terri Lomax – Alaska Department of Environmental
Conservation

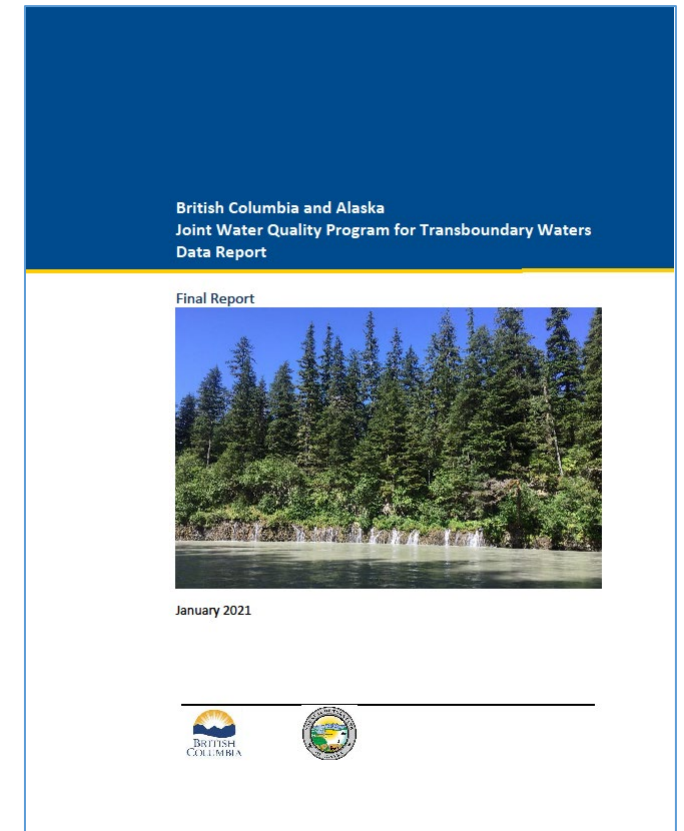
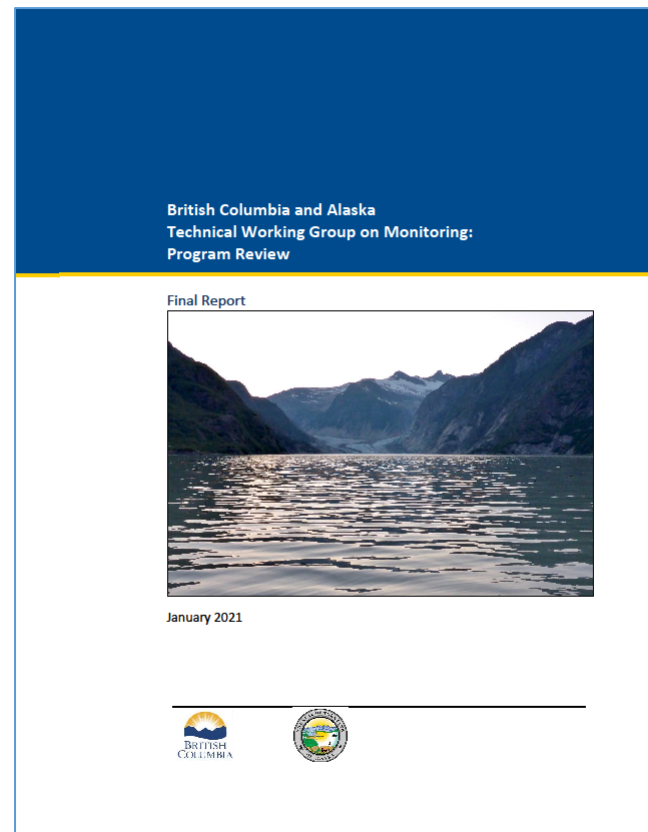
Greg Tamblyn – Ministry of Environment and Climate
Change Strategy



May 19th Public meeting

Outline

- Program Review
- Two- year work plan
- Data Report
- Recommendations
- Future work

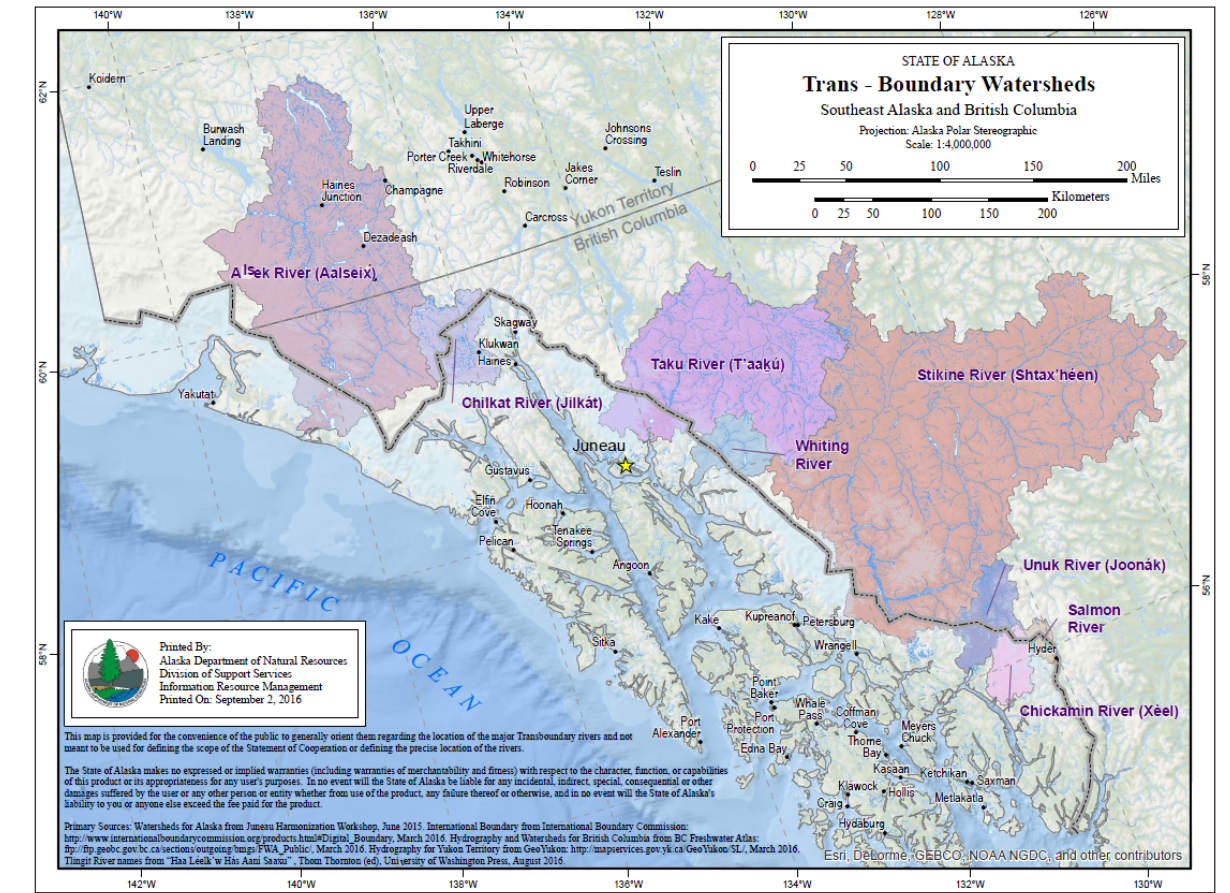


TWG-M Member Agencies



Program Review

- Assure Trustworthiness of Data
 - Split sampling and side-by-side sampling
- Collaboration
 - Data Mining and TEK
 - Engagement
- Two-year work plan
 - Efficient
 - Mid-point report
 - Final report
- Recommendations



Two Year Work Plan

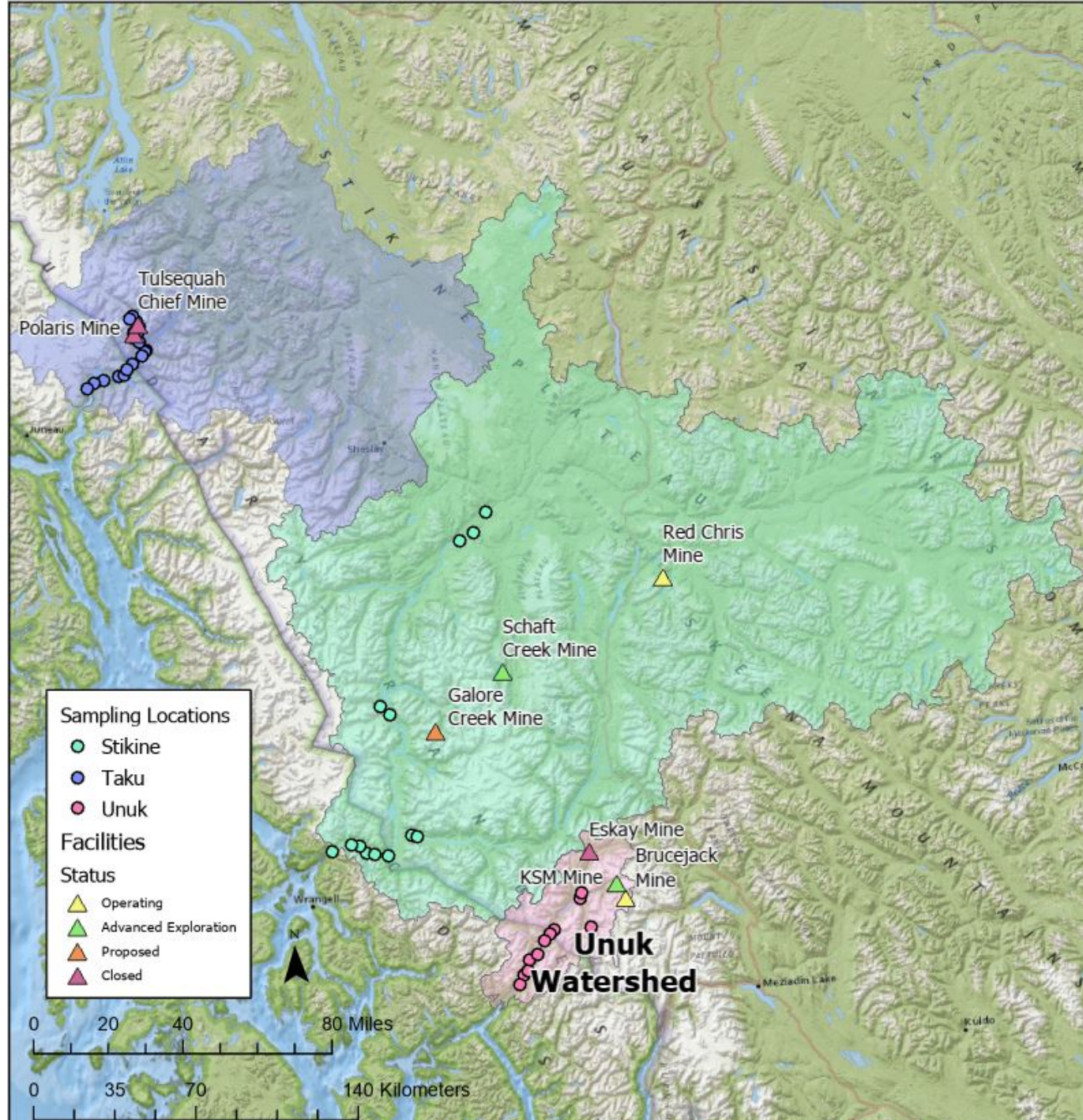
- Purpose- baseline, regional and project specific water quality
- Coordinated effort, avoid duplication
- Monitoring
 - Taku, Stikine, and Unuk
 - 2017-2019
- What are the results?

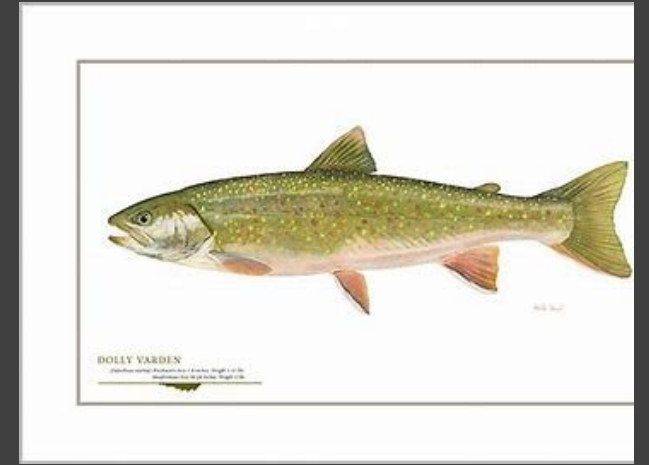
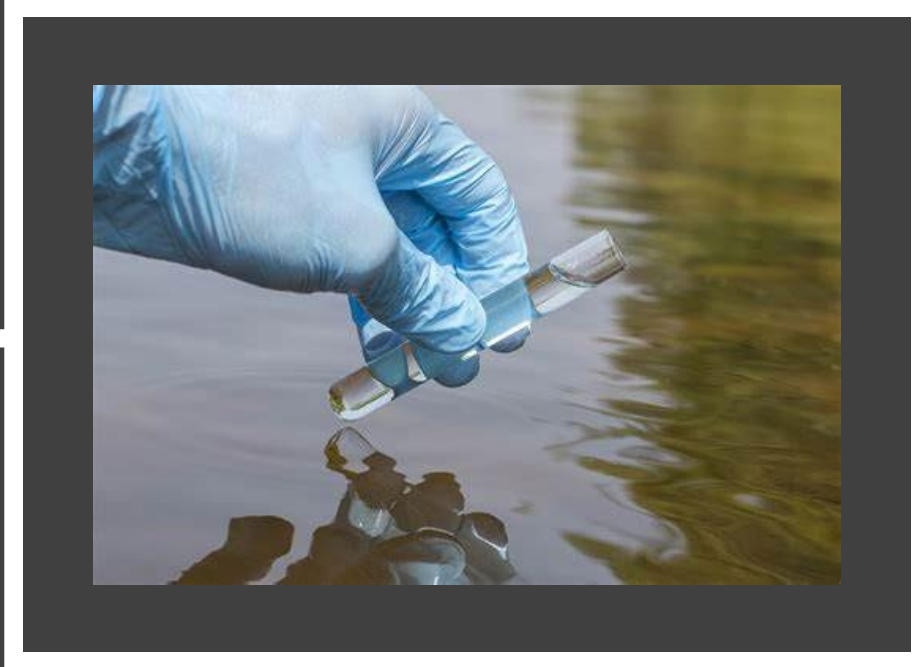
British Columbia and Alaska Joint Water Quality Program for Transboundary Waters Data Report

Final Report



January 2021





Water Quality Sample Site summary

	B.C. Sites			Alaska Sites		
	# sites	Max Times sampled	Total # of samples	# sites	Times sampled	Total # of samples
Taku	3	5	12	7	1	7
Tulsequah	8	5	27	n/a	n/a	n/a
Stikine	7	6	25	6	1	6
Unuk	5	5	25	7	1	7
Total	23		89	20		20

Taku / Tulsequah water sampling locations



Water Quality Results – Taku/ Tulsequah

British Columbia

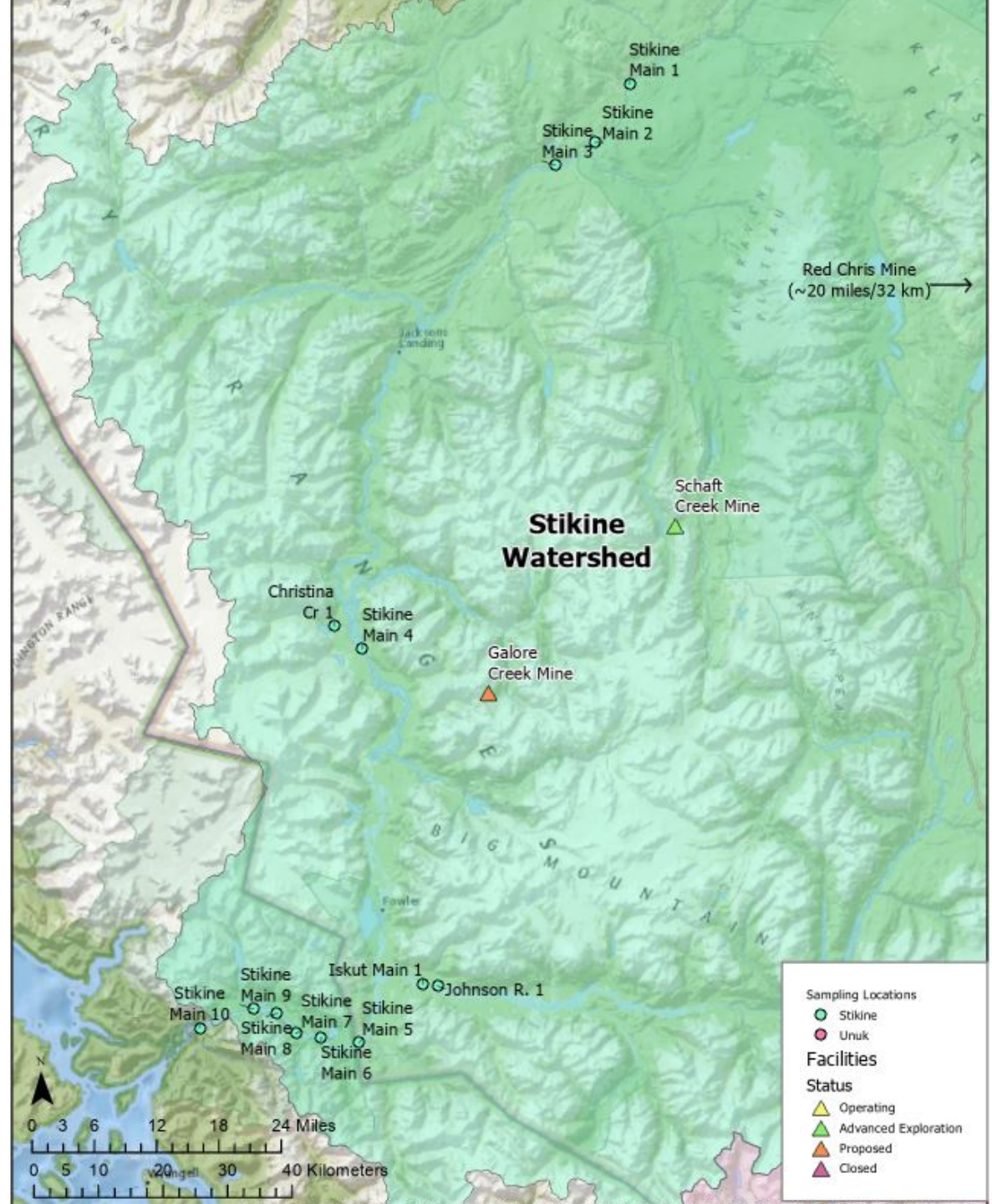
- Total zinc and iron– exceeded BC water quality guidelines (WQG) in all sites at various times
- Dissolved copper, cadmium and zinc– elevated downstream of Tulsequah Chief mine
- Concentrations of metals in Taku R. upstream & downstream of Tulsequah confluence similar
 - Total zinc, iron and dissolved copper – exceed BC WQGs at times

Alaska

- No exceedances of water quality standards

Concentrations of dissolved metals generally decrease with distance downstream from the Tulsequah Chief Mine

Stikine Sampling Locations



Water Quality Results - Stikine

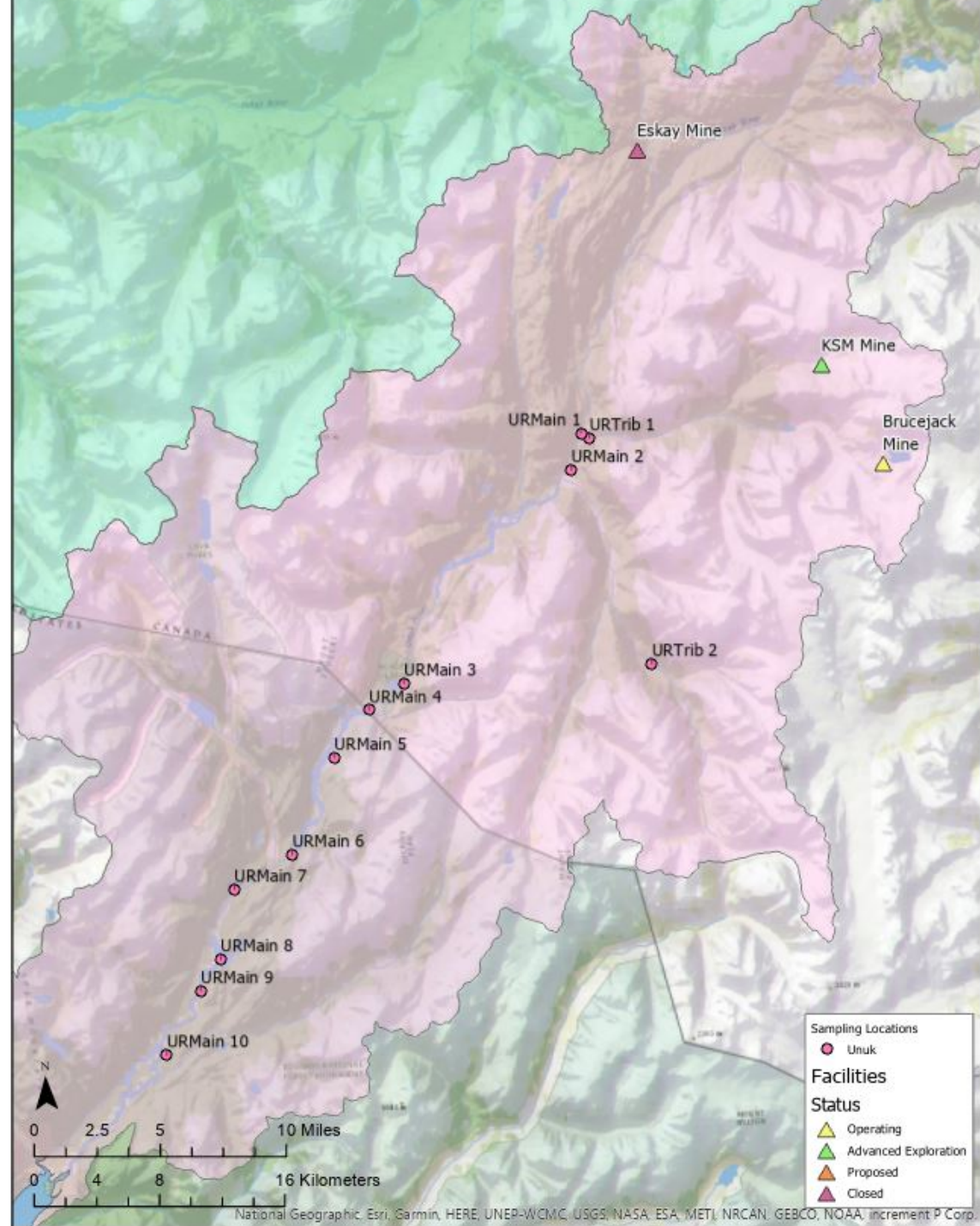
British Columbia

- Total iron exceeded BC WQGs at all 4 Stikine sites in BC occasionally (summer)
- Total zinc exceeded BC WQGs at 3 Stikine sites in summer
- Dissolved copper sometimes exceeded BC WQGs on 3 tributaries sampled (Iskut R, Johnson R and Christina Cr.)
- Iskut River – Iron and zinc exceedances of BC WQGs in summer

Alaska

- No exceedances of water quality standards

Unuk Sampling Sites



Water Quality Results - Unuk

British Columbia

- High concentrations of total iron and zinc and dissolved copper at upstream Unuk site
- Greatest concentrations of metals seen in Sulphurets Creek
- WQG exceedances: total iron & zinc; dissolved cadmium, copper & zinc
- Dissolved lead below guidelines
- Dissolved selenium below guidelines except for 2 samples in Sulphurets Cr

Alaska

- No exceedances of water quality standards

Highest average concentrations of dissolved elements



Natural High metals
Mitchell Valley - 2008

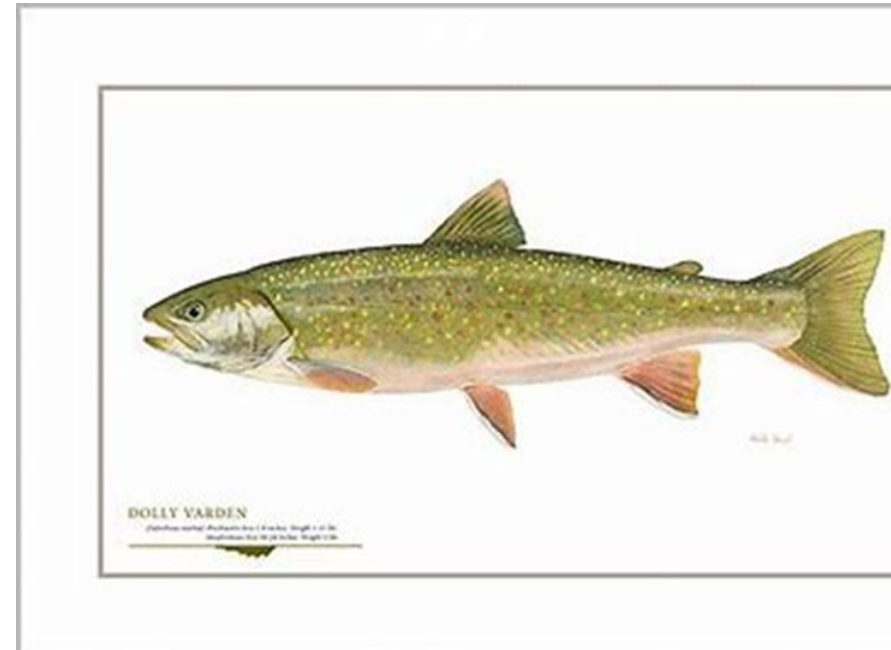
Sediment results

- Arsenic, copper, iron, manganese and nickel exceed B.C. sediment guidelines
- Arsenic, copper and nickel exceed NOAA sediment guidelines in Taku, Stikine, Unuk (+Cd, Pb and Zn).
- Highest concentrations of metals in Sulphurets Cr. / Unuk River
- Sediment concentrations likely influenced by natural geology



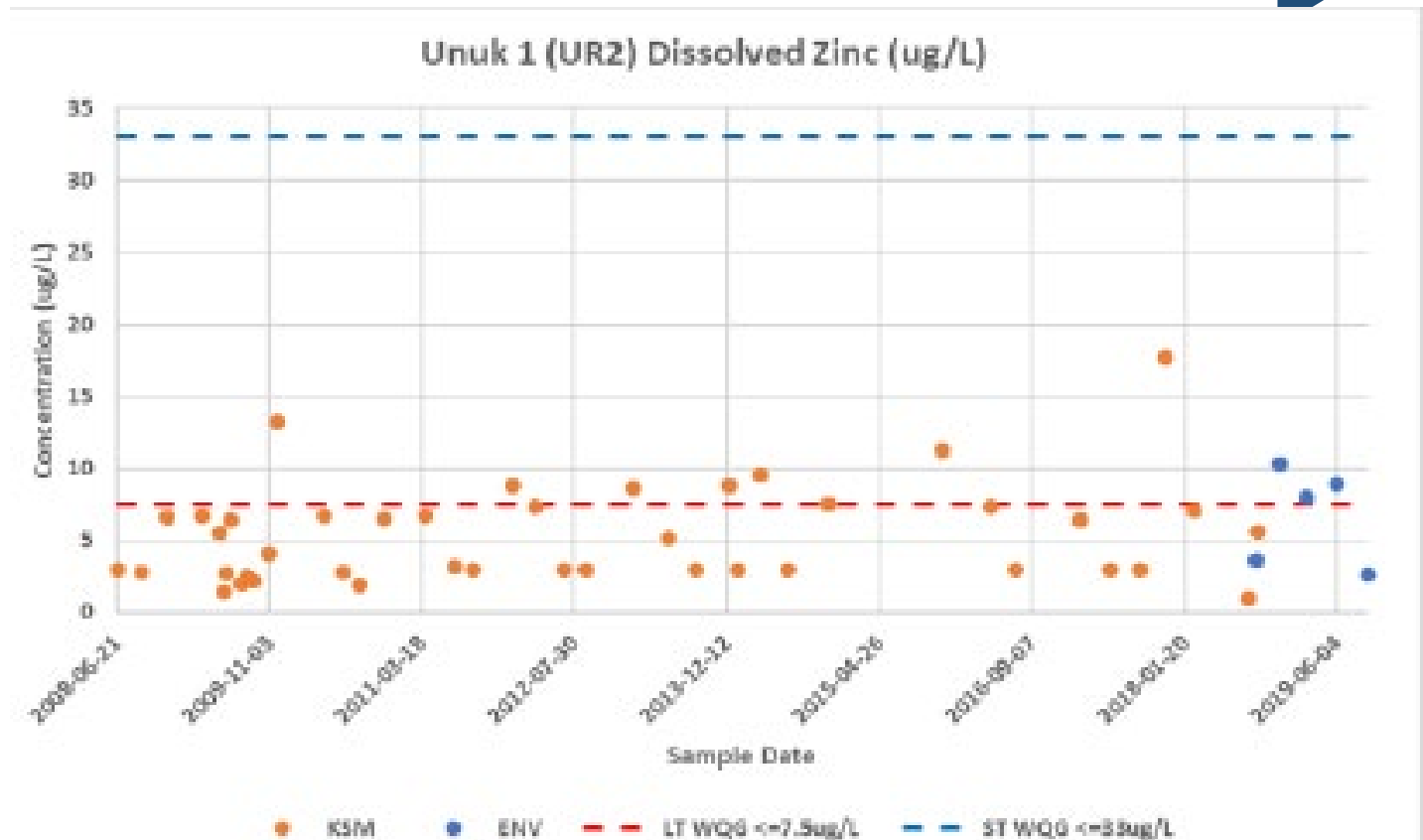
Metals in fish tissue

- Few trends in study area
- Tulsequah – some metals higher in fish upstream of mine and some higher downstream
- Unuk – conc similar at all 4 sites; lower in Dolly Varden in AK
- Stikine – Sculpins in AK have higher copper, but lower Selenium
- Mercury - below Health Canada limit (0.5 mg/kg)




Validation of Industry Data

- Audits, side by side sampling and comparison of long term data sets
- ENV and mining company data show significant agreement
- Monitoring met regulatory standards

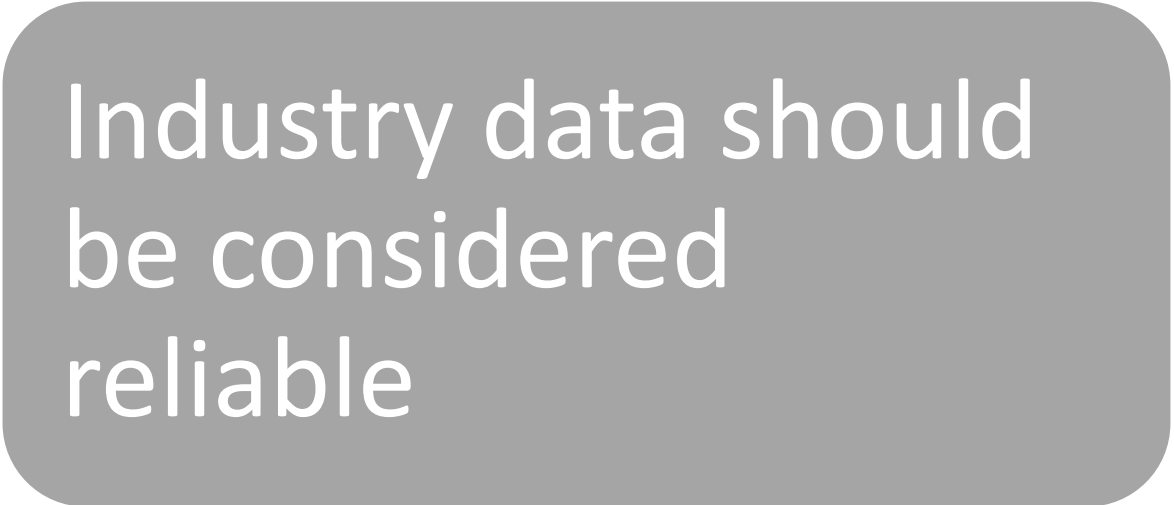




Conclusions



Current conditions –
support and sustain
aquatic resources



Industry data should
be considered
reliable



Current Monitoring - Taku

BC- Tulsequah

- Year 2 of five-year WQ program
- TRT First Nation – WQ and benthics 2021

Alaska- Taku

- CCTHITA – 2 sites – approx. monthly since 2015
- USGS – 1 site near border – stream flow and water quality - Instantaneous and discrete sampling ~ 6 weeks

Current Monitoring - Stikine

BC

- Environment Canada / Province of BC
 - Iskut River – WQ - 1980 to current. Monthly to Quarterly
- Environment Canada – three hydrometric sites
- Red Chris Mine
 - Klappan R tributaries and Todigan watershed since early 2000s
 - Federal Environmental Effects program and Provincial Aquatic Env Monitoring

Alaska

- CCTHITA – 2 sites – approx. monthly since 2015
- USGS – 1 site near border – stream flow and water quality - Instantaneous and discrete sampling ~ 6 weeks

Current Monitoring - Unuk

BC

- KSM proposed mine
 - Quarterly WQ sampling – 4 sites
 - Water flow – 10 stations
 - AEMP – benthic invertebrates, sediment, periphyton, selenium bioaccumulation
- Brucejack Gold mine
 - WQ – Range from weekly to quarterly - 7 environmental sites
 - Water flow – 2 stations

Alaska

- USGS – 1 site near border – stream flow and water quality – Instantaneous and discrete sampling ~ 6 weeks

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Other monitoring activities

- DEC Ports and SE Waterways
 - Organized Village of Kake marine sampling
 - Yakutat Tlingit Tribe - Ocean Acidification
 - Yakutat Tlingit Tribe - Yakutat Forelands Water Quality Monitoring
 - Flathead Lake Bio Station- University of Montana
 - CCTHITA- Alek
 - USGS- Alek and Salmon
- 
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TWG-M Recommendations

Continued collaboration among federal and state agencies, Tribes and First Nations and the public to support sustainable natural resource management in transboundary waters and foster positive working relationships.

The two-year life span of the Joint Sampling Program has ended. The TWG-M does not recommend additional sampling under this program, as it would be redundant with existing and future water quality monitoring planned by other state, federal and provincial agencies.

Future Work

- Integrated Report
- Publically host the data
- Environmental Monitoring System Database
- Permittee compliance and monitoring

Thank You

Questions?

