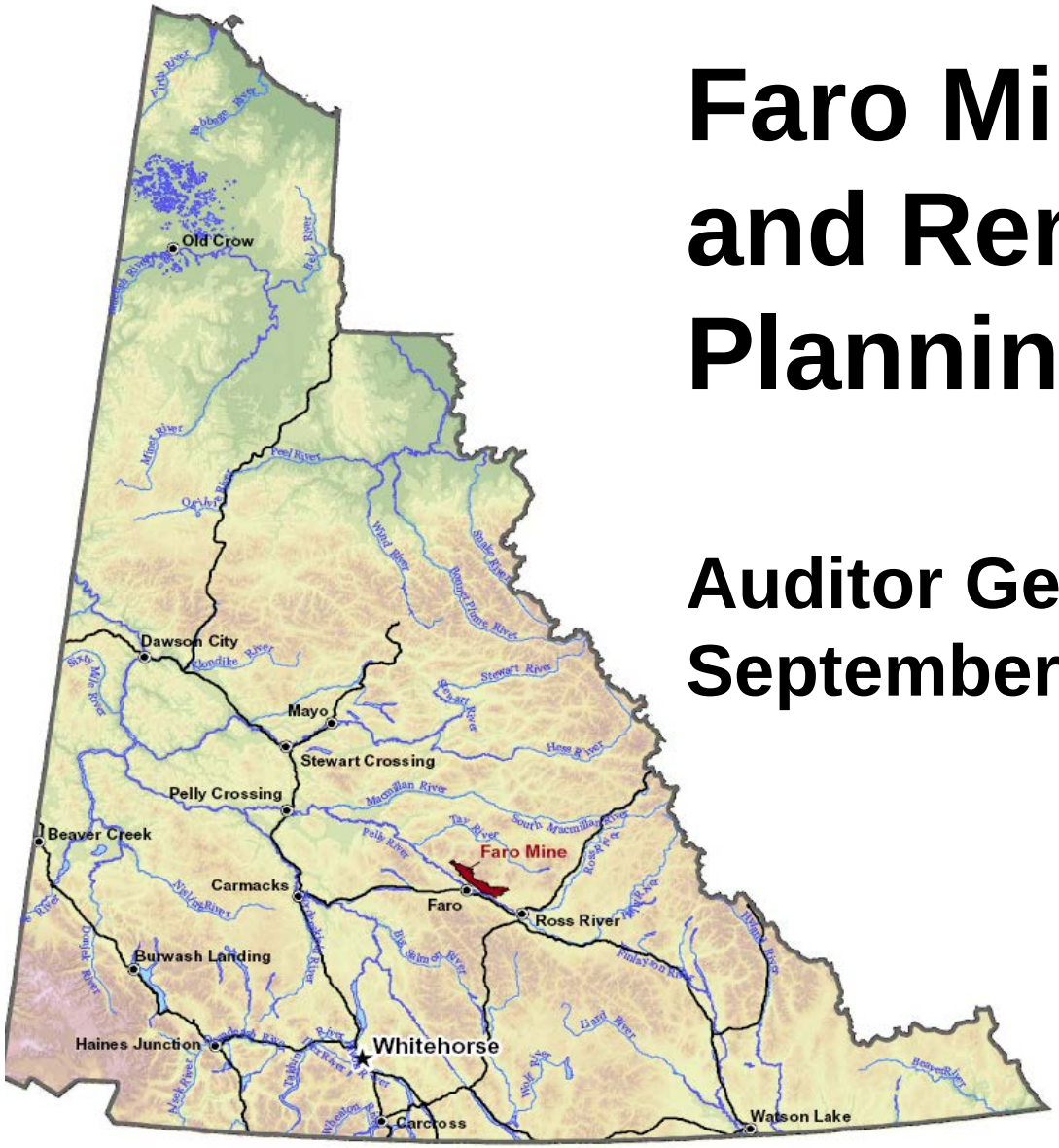


Faro Mine Closure and Remediation Planning

Auditor General's Office Tour - September 2006

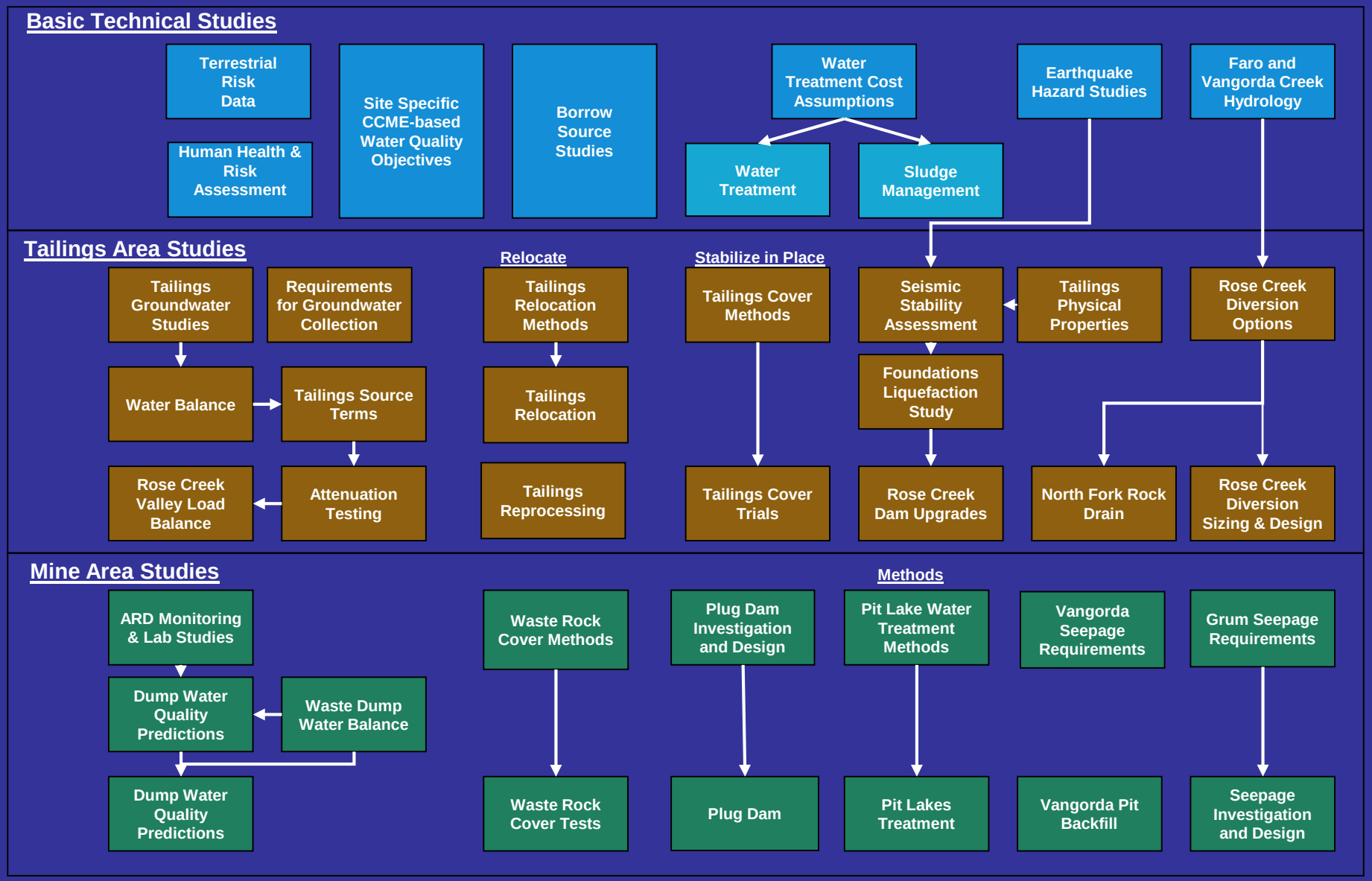
Progress since 2003

	Establishment of Management Structures	Site Understanding
2003	**Canada-Yukon-First Nation Oversight Committee** *- Senior level leadership & strategic direction*	**Scoping of components and issues**
2004	**Canada-Yukon Joint Office/Steering Committee** *- Project management of Type II Sites, including approval of budgets and work plans*	**Establishment of Closure Objectives** **Technical studies** *- Current and Future Conditions* *- Impacts and Effects*
2005	**Faro Mine Closure Office** (Whitehorse, Pelly Crossing, Ross River, Faro) - Development and preparation of a Closure and Remediation Plan	**Closure methods** *- Methodology* *- Costs* *- Practicality* *- Performance/Effectiveness*

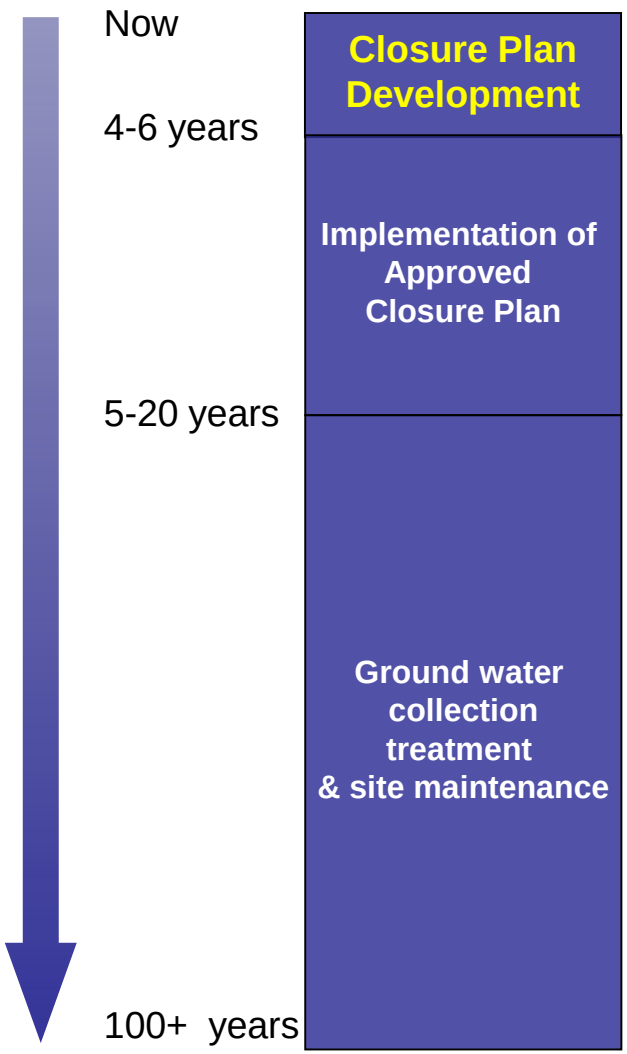
Overarching Closure Objectives

1. Protect human health and safety
2. Protect and to the extent practicable restore the environment, including land, air, water, fish and wildlife
3. Return mine site to an acceptable state of use, that reflects pre-mine land use where possible
4. Maximize local and Yukon socio-economic benefits
5. Manage long term site risk in a cost effective manner

Technical Studies 2003-2006



Closure Planning



Development of Example Closure Alternatives

Environmental Performance, Costs, Social & Economic Impacts, Residual Risks

Peer Review of Example Closure Alternatives

Consultation Phase 1 & 2

Information sharing/feedback on closure alternatives

Evaluation Phase

Stakeholder evaluation to arrive at a “preferred” plan

Development of Preferred Closure Plan

Peer Review of Preferred Closure Plan

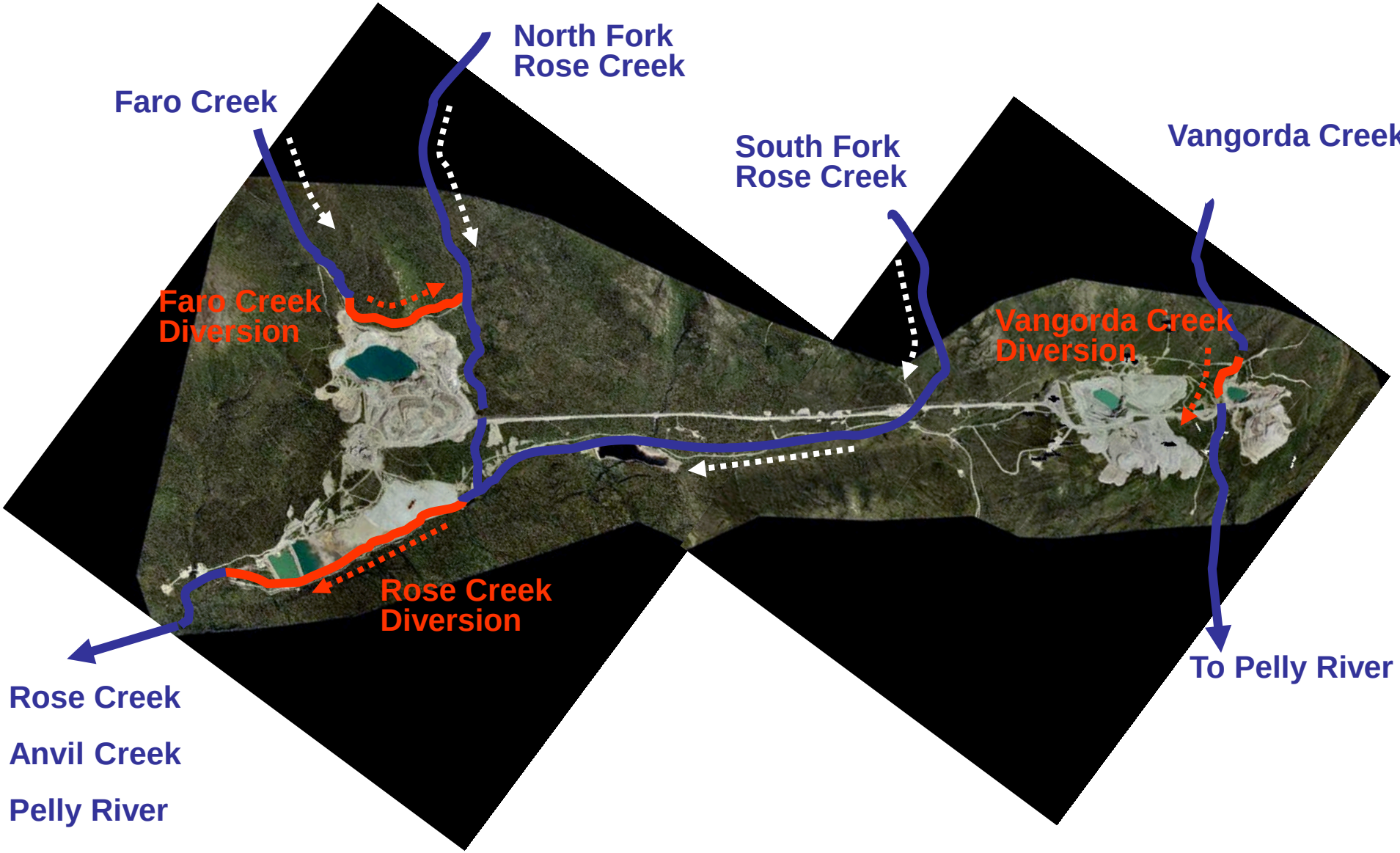
Consultation Phase 3

Information sharing & feedback on “preferred” closure plan

Preliminary Project Approval by Governments on Preferred Plan

Submission of Closure Plan for Assessment and Regulatory processes

Faro Mine Complex Overview



Faro Mine Complex Site Inventory

Faro Mine Area

13km Haul Road

Vangorda Plateau

Components

- 70 million MT tailings (3 dams)
- 1 open pit – Faro Pit
- 2 stream diversions
- 250 million MT waste rock

Components

- No tailings
- 2 open pits: Vangorda & Grum
- 1 stream diversion
- 70 million MT waste rock

Environmental Issues - Tailings

Acid generation & release of metals
(continue to increase 400-600 yrs)

→

Ground & Surface Water Contamination
(Groundwater “breakthrough” expected in 10-20 years)

Stability of dams/diversion
(Probable Maximum Flood & Maximum Credible Earthquake)

→

Mass tailings release to aquatic environment after extreme event
(Rose Creek, Anvil Creek, Pelly River)

Dust transport
(from tailings and mill area)

→

Contamination of terrestrial environment
(ongoing – currently no risk to human and ecological health)

Environmental Issues - Waste Rock

Exposed Waste Rock Piles
(320 million MT in total across whole site)

→

Direct contact by human/animals

&

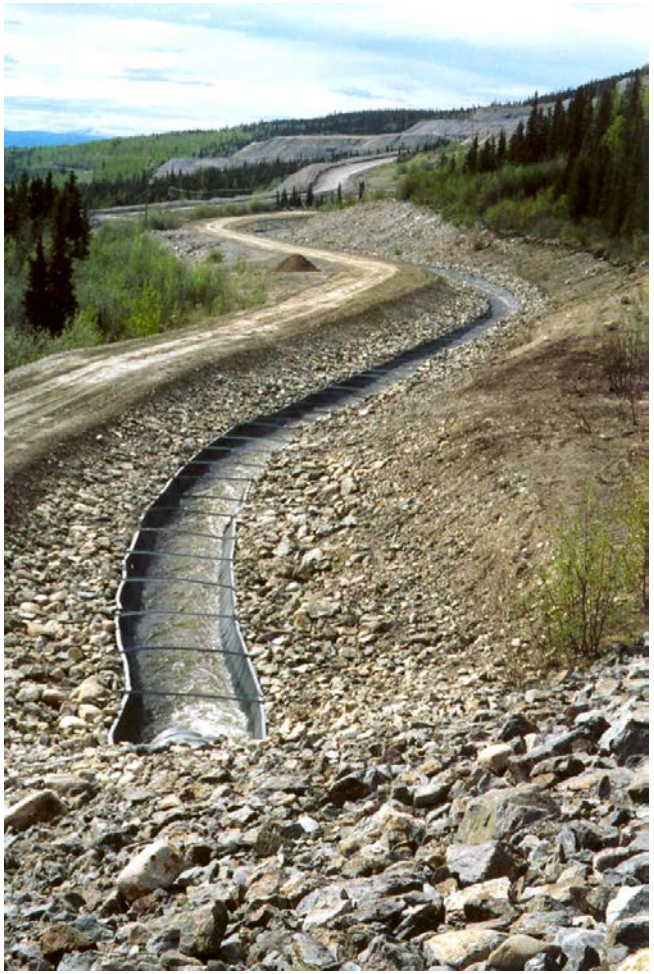
Future land use and aesthetics
(mine complex in traditional territory of Ross River Dena)

Acid generation & release of metals
(continue to increase 400-600 yrs)

→

Ground & Surface Water Contamination
(waste rock varies in composition & potential to release metals)

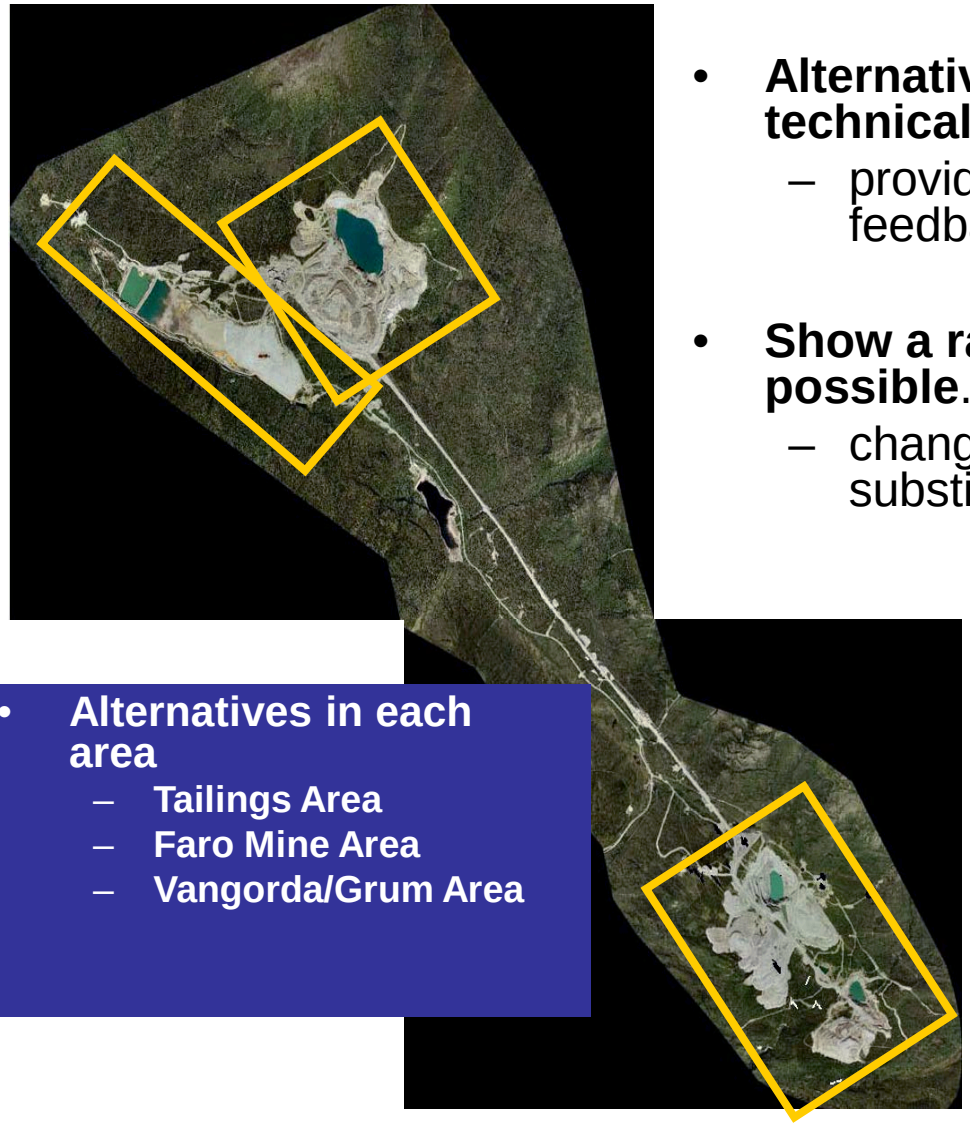
Environmental Issues - Diversions



Three main stream diversions currently keep clean surface water away from areas of contamination.

If these structures are needed for the long-term, they will need to be upgraded to withstand severe floods and earthquakes

Example Alternatives



- **Alternatives created from technical studies**
  - provide focus for community feedback
- **Show a range of what's possible**.
  - changes, combinations and substitutions are still possible

- **Alternatives in each area**
  - **Tailings Area**
  - **Faro Mine Area**
  - **Vangorda/Grum Area**

Addressing the Tailings Issues

1. Move the Tailings

1. Pump tailings slurry to Faro Pit (8-12 yrs)
2. Excavate remaining contaminated soil (2 yrs)
3. Collect contaminated water under valley bottom (10-20 yrs)
4. Remove dams and diversions; restore Rose Creek

2. Stabilize and Leave in place

1. Upgrade dams and diversions
2. Install cover over tailings
3. Collect and treat contaminated water (100 + years)

3. Partial Relocation

(Move Some and Leave Some)

1. Uses a combo of 1 and 2
2. Avoids most expensive and technically challenging part of diversion upgrade

Addressing the Faro Mine Area Issues

Divert Faro Creek ***into*** Faro Pit

OR

Divert Faro Creek ***around*** Faro Pit

AND

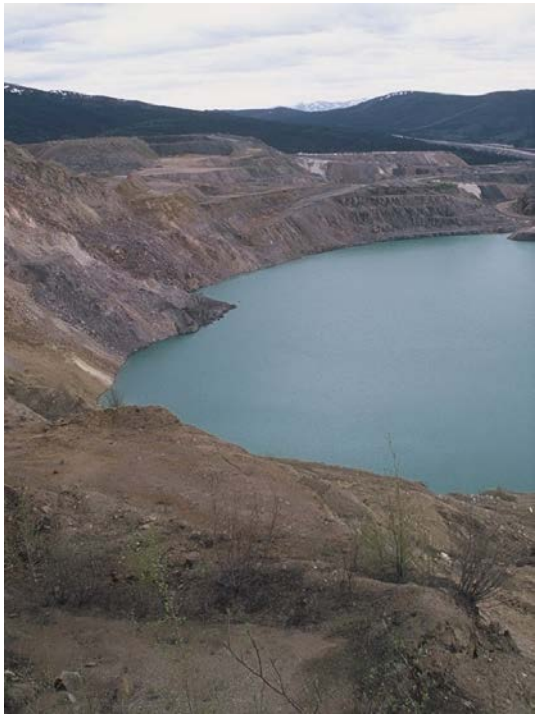
Moving towards Biological Water Treatment

AND/OR

Water Treatment in a Treatment Plant

AND

Cover and/or Move Waste Rock



Addressing the Vangorda/Grum Mine Area Issues

1. ***Move*** Vangorda Waste into Vangorda Pit
WITH
Biological Treatment in Grum Pit

OR

2. ***Leave*** Vangorda Waste in Place
WITH
Biological Treatment (Grum Pit) **and** Water Treatment in a Treatment Plant

AND

Cover and/or Move Waste Rock

Uncertainties and Assumptions

Uncertainties

Future Rock Chemistry

"what will happen to the rock over time"

and

- **Groundwater Collection Efficiency *(load release)***
- **Cover Effectiveness *(infiltration)***
- **Movement of contamination through ground *(timing)***

Assumptions

All alternatives include:

- **Soil covers on waste rock and/or tailings**
- **Long-term collection & treatment of contaminated water**
- **Long-term, ongoing site activities, monitoring and maintenance**