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Giant Mine Remediation Project

Technical Requirement
Construction Management Contract

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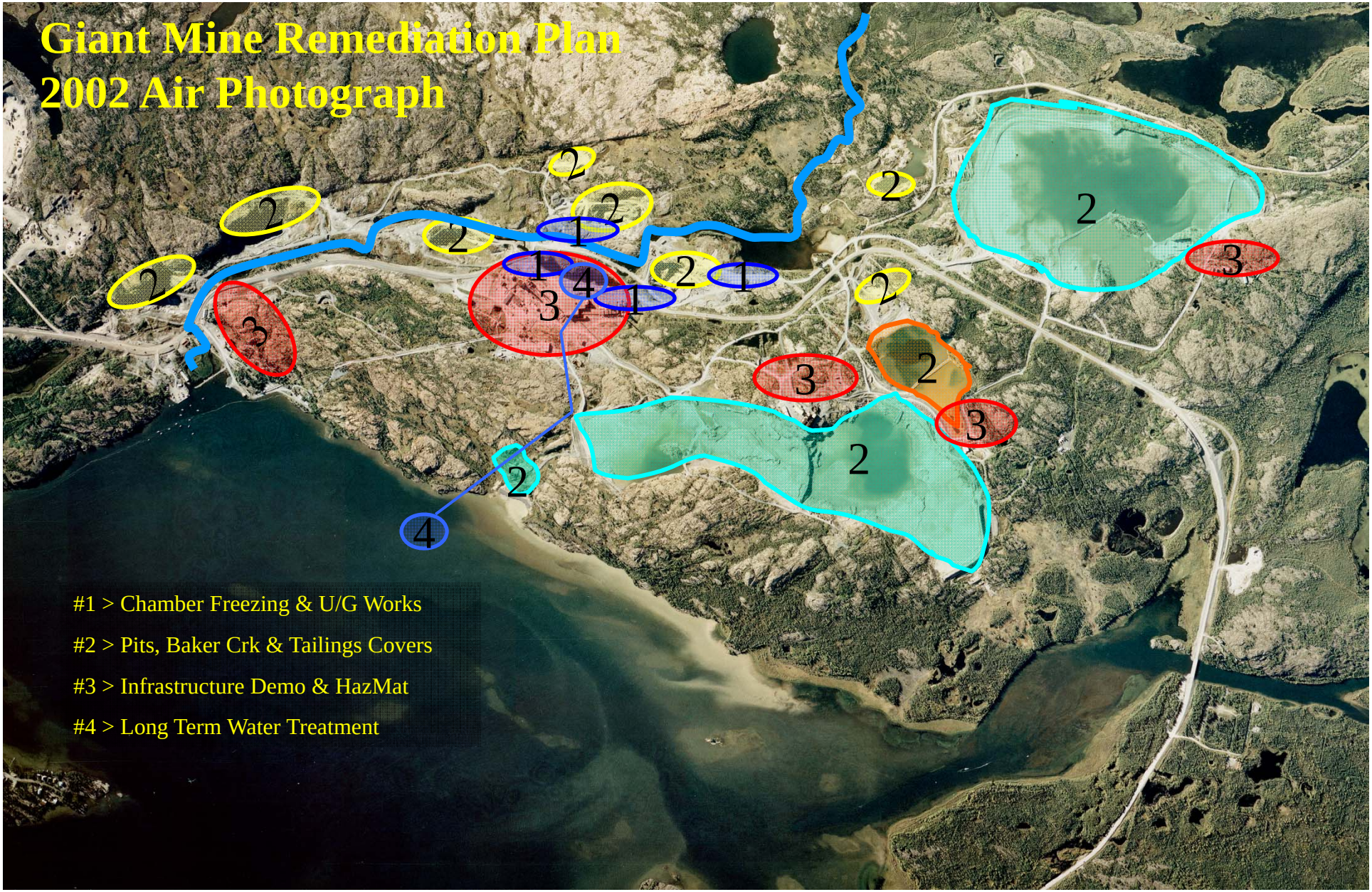
Presentation Outline

- Overview of Remediation Plan
- Project Organization
- Construction Manager Technical Requirements
- Project Time Line
- Contract Considerations

Giant Mine Remediation Plan
2002 Air Photograph



Overview of Remediation Plan

- Surface Demolition and Debris
- Surface Water Management
- Tailings Rehabilitation
- Openings to Surface
- Open Pit Closures
- Contaminated Surface Material
- Borrow Sources
- Underground Stabilization
- Freeze Program
- Baker Creek Realignment
- New Water Treatment Plant
- Offsite/utilities/municipal services

Overview of Remediation Plan – Surface Demolition and Debris

Major scope:

- Collect/dispose of ~ 57,000 m^3 of non-hazardous waste from building demolition and surface debris collection
- Collect/dispose of ~14,000 m^3 of hazardous waste from building demolition, surface debris collection, and underground hazardous waste collection
- Construct, operate and close non-hazardous waste landfill on-site

Overview of Remediation Plan – Surface Demolition and Debris

Overview of Remediation Plan – Surface Water Management

Major scopes:

- Construct sumps for active storage
- Construct contact water channels
- Construct contact water storage ponds
- Construct non-contact water channels
- Construct non-contact water storage ponds
- Construct spillways
- Improve 11 existing drainage channels

Overview of Remediation Plan – Tailings Rehabilitation

Major scopes:

- Tailings, settling and polishing pond covers ~ 95 hectares
  - Grading to promote drainage
  - Place cover system consisting of:
    - 400 mm of 75 mm minus material
    - Geotextile
    - 700 mm of silt or silty clay
  - Revegetation
  - Depending on the depth of the tailings, coarse bridging material may have to be placed over the tailings

Overview of Remediation Plan – Tailings Rehabilitation

Overview of Remediation Plan - Openings to Surface

Major scopes:

- Formally close 37 openings to surface
- Includes adits, raises, shaft, portals, and stope breakthroughs
- Includes engineered concrete caps, rock fill, etc.

Overview of Remediation Plan – Open Pit Closures

Major scopes:

- Eight open pits on property
- B1 pit will be backfilled as part of the freeze solution, possibly others
- Final closure approach for the seven remaining open pits still being evaluated. Options include backfilling, backsloping, berns, fenicng and/or signage

Overview of Remediation Plan - Contaminated Surface Material

Major scopes:

- Excavate marginally contaminated material (<3000 mg/kg arsenic), mostly soil, potentially for use as intermediate fill in nonhazardous landfill
- Excavate heavily contaminated material (>3000 mg/kg arsenic), mostly waste rock, possibly available for use as backfill for pits
- Excavate/treat 3000 m^3 of petroleum hydrocarbon-contaminated soil. Soil to be disposed of based on arsenic levels.
- If contaminated material exceeds thickness of 2 m below grade, area will be capped similar to that of the tailings

Overview of Remediation Plan – Borrow Sources

Major scopes:

- Excavate, load, haul and place approximately 1,000,000 m^3 of fine grain soils from onsite borrow sources for tailings and landfill covers
- Blast, crush, haul and place approximately 1,200,000 m^3 of coarse grain soils
    - Spillway construction can produce sufficient quarry volume
    - Coarse grain material required for tailings cover, open pits, sludge areas and landfill cover.

Overview of Remediation Plan – Underground Stabilization

Major scopes:

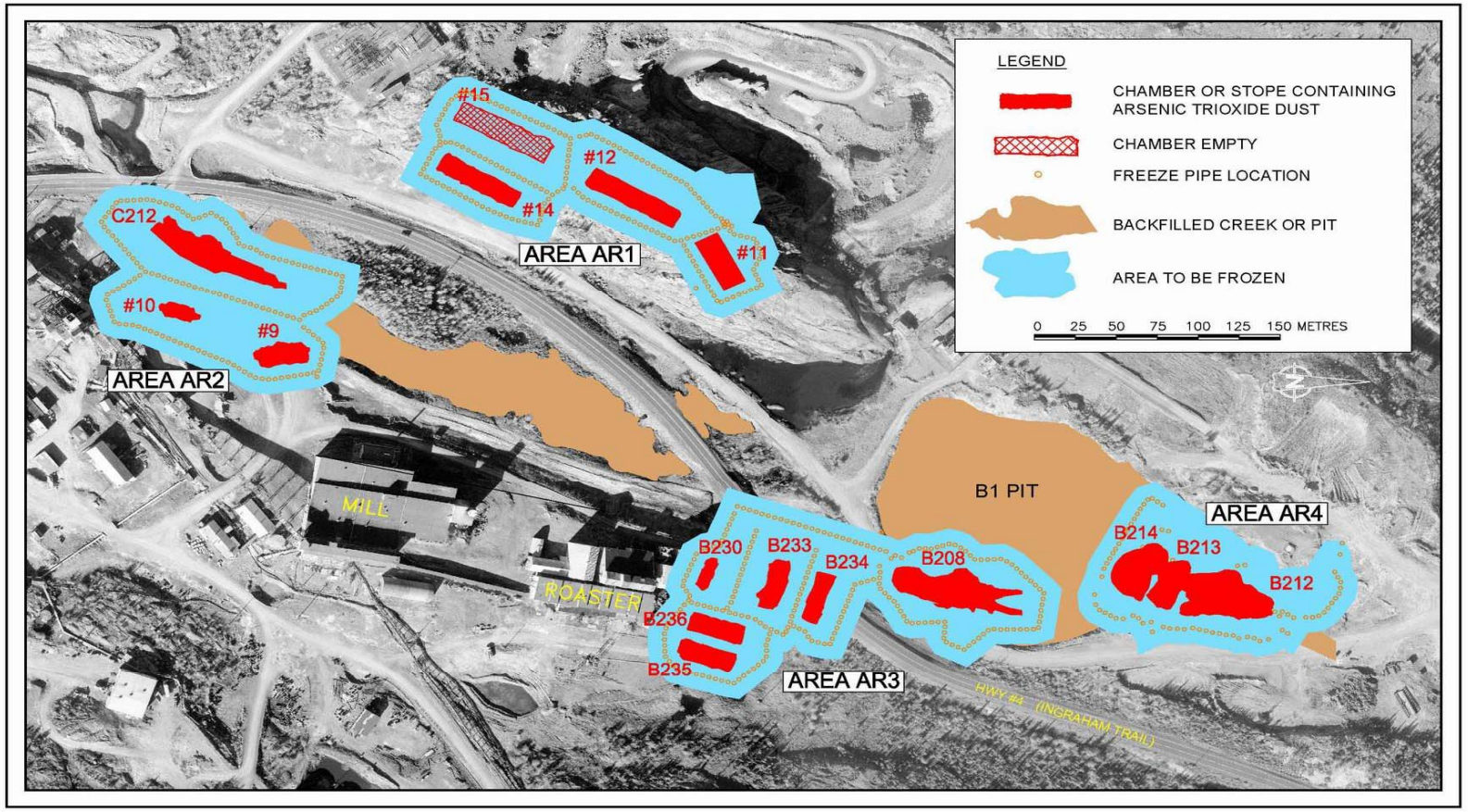
- Backfilling underground, crown pillars, key adjacent stopes to arsenic storage chambers
- Underground mining rehabilitation and new development
- Geotechnical drilling for investigations and backfill delivery

Overview of the Remediation Plan - Freeze Program

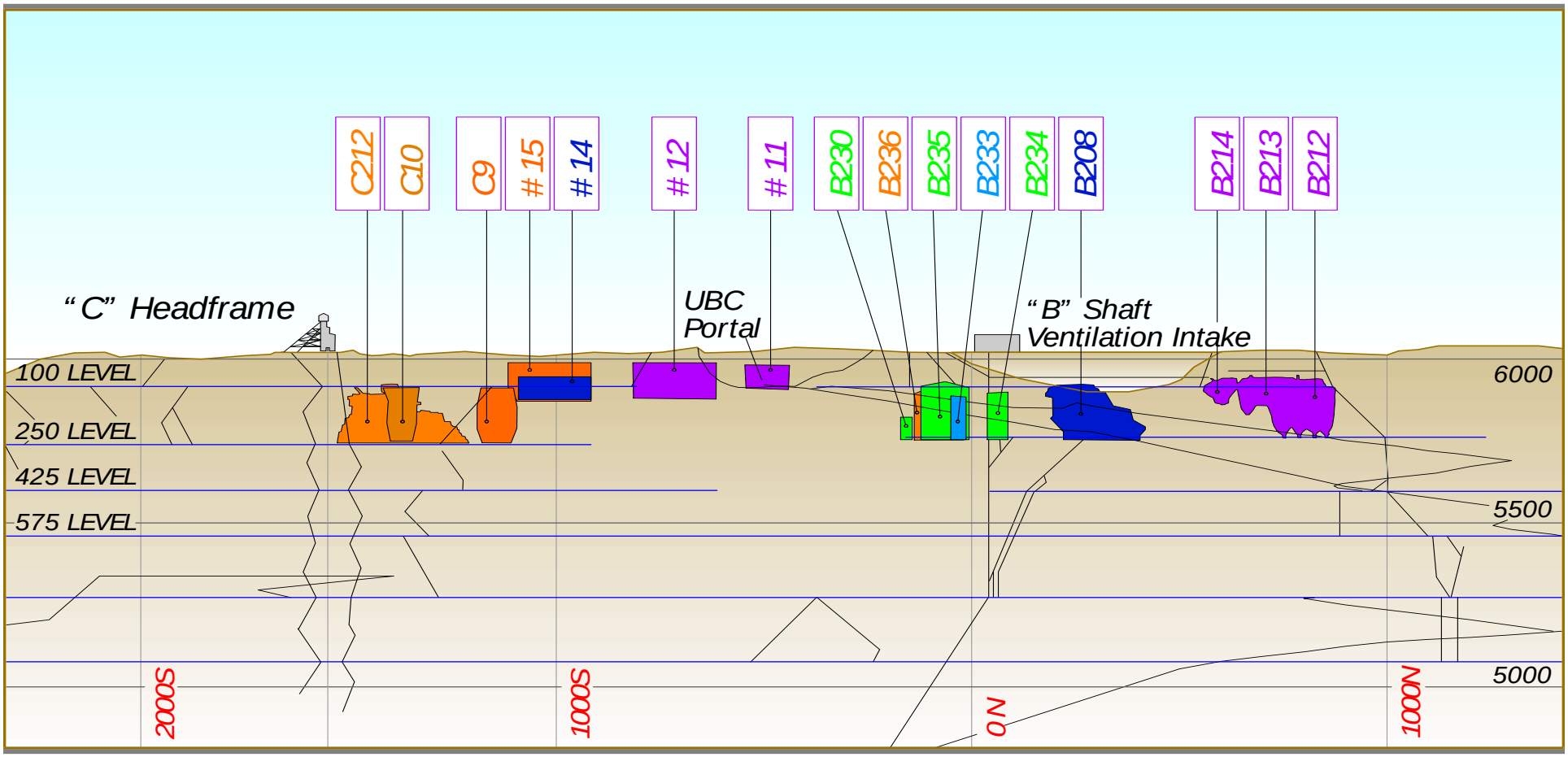
Major scopes:

- Four freeze areas: AR1 to AR4
- Surface drilling – 60,000 m
- Prepare drill pad – 135,000 m^3
- Freeze Plant(s) and thermosyphons; supporting mechanical/electrical systems
- Complex undertaking with significant implementation risks
- Freeze Optimization Study (FOS) to better define design parameters.

Overview of Remediation Plan - Freeze Program



Overview of Remediation Plan - Freeze Program



Frozen chamber to scale: B208 and Precambrian Building

Overview of Remediation Plan - Baker Creek

- Historic tailings and contaminated sediments

  in the existing creek alignment
- Poor hydraulic capacity; risk of flooding underground workings
- Creek channel needs realignment to execute remediation plan

Overview of Remediation Plan – Water Treatment Plant

Major scopes:

- Design, construct, operate new water treatment plant for arsenic removal to drinking water standard
- Design capacity is ~1840 m^3 /day (peak flow) at ~280 mg/L arsenic (peak concentration)
- Long-term underground to surface pumping system, from 425 level
- Near-shore discharge to Yellowknife Bay

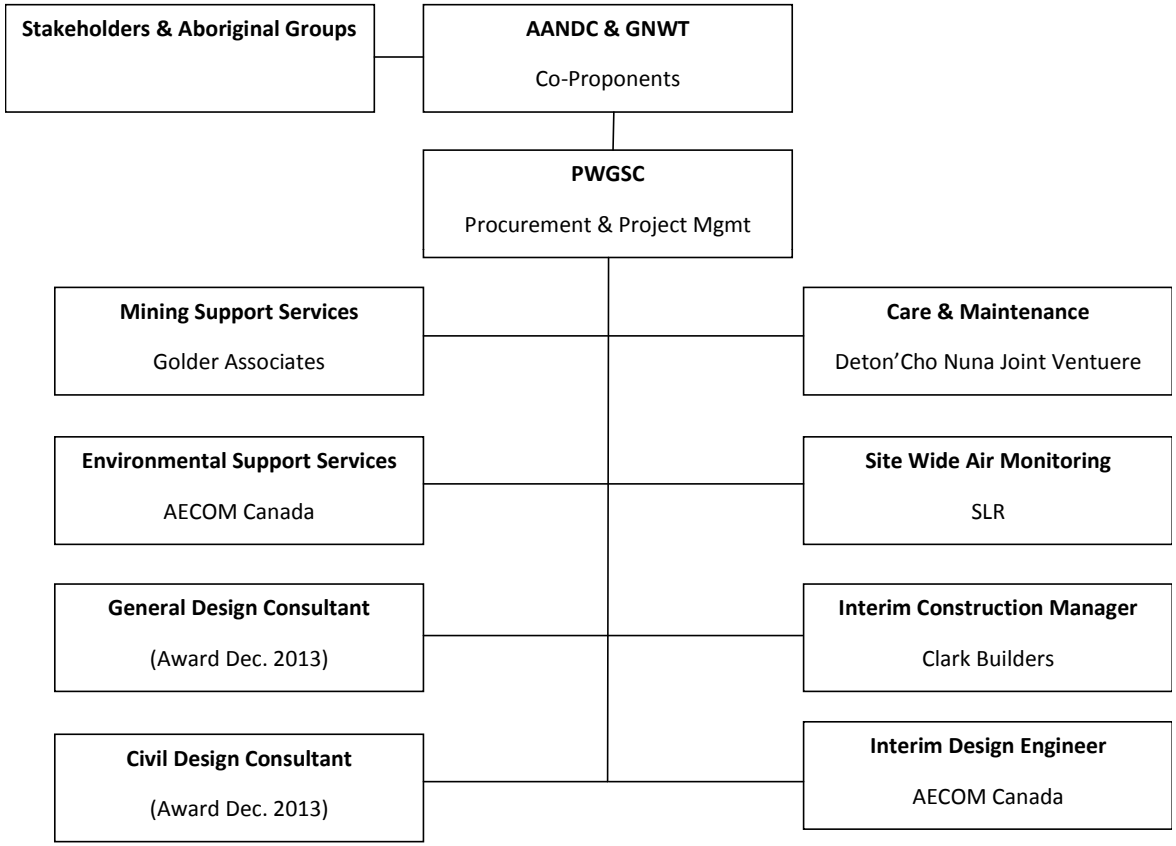
Offsite, utilities, municipal services

Major scopes:

- Fire suppression is by tanked supply
- Water and sewer is by truck services
- Estimated workforce of 2.5 million person-hours over the course of the project
- Annual employment ranges from 25 to 350 people depending on the phase of the project.
- Other services:
    - Administration
    - Logistics
    - Camp services and support

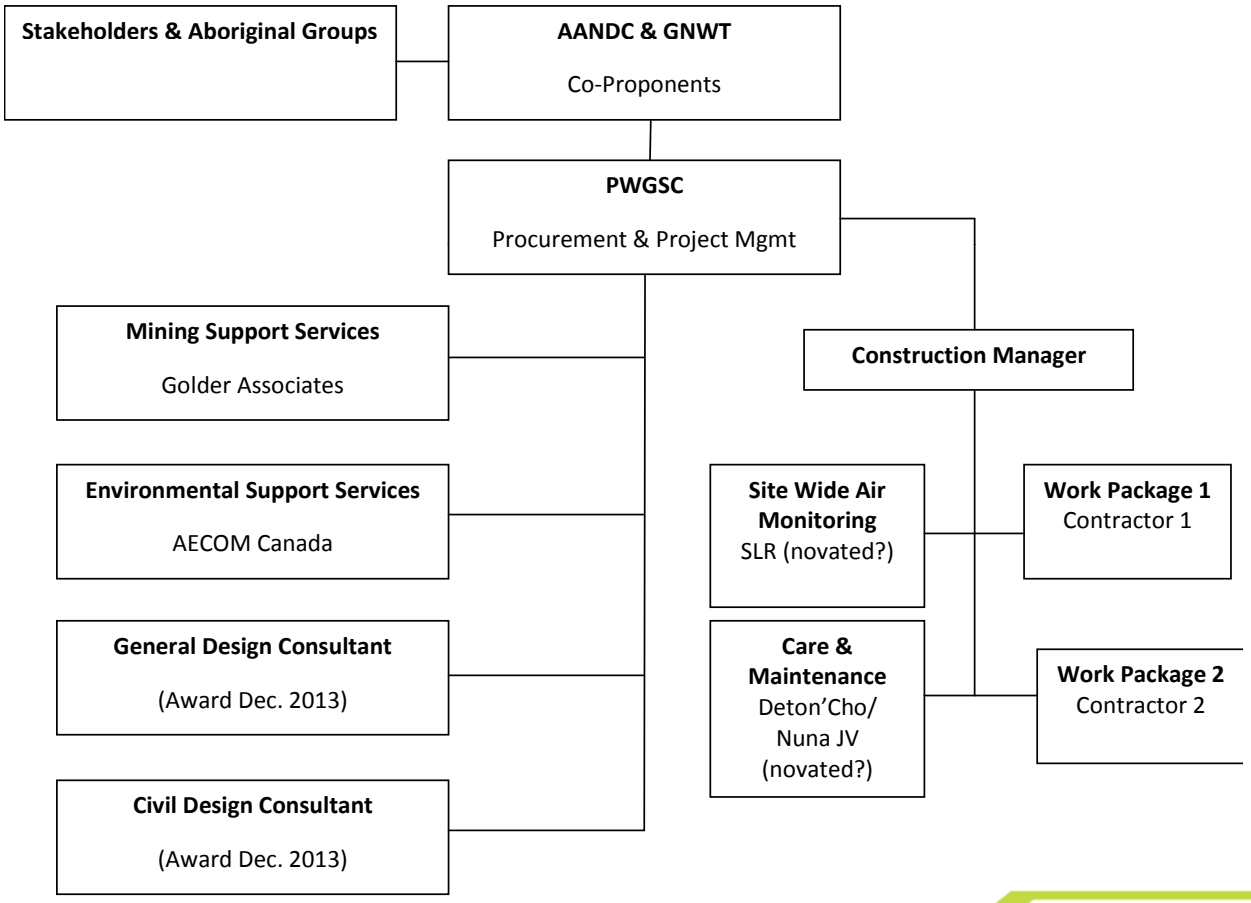
Project Organization

Giant Mine Current Organizational Structure



Project Organization

Giant Mine Planned Organizational Structure



Construction Management Contract – Technical Requirements

- Site Health & Safety/Mine Manager as defined by the GNWT Mine Health & Safety Act
- Maintaining site within environmental and regulatory compliance (including implementation of Environmental Management System)
- Care and maintenance of site infrastructure during the transition period to the completion of final remediation

Construction Management Contract – Technical Requirements: Care and Maintenance

Major scopes:

- Safety and security
- Heating systems
- Mine ventilation
- Mine dewatering
- Inspection and maintenance of underground infrastructure and arsenic chambers
- Surface water management
- Inspection and maintenance of tailings impoundments
- Effluent treatment

Construction Management Contract – Technical Requirements (con't)

- Advisory services including planning, scheduling, cost estimating and tendering of construction work packages.
- Delivery of construction work packages
  - Design-Bid-Build
  - Design-Build
  - Design-Build-Operate

Project Time Line

3 time lines to consider

1. Funding
2. Regulatory
3. Design & Remediation

Project Time Line - Funding

Preliminary Project Approval (PPA)

- PPA expenditure authority valid until March 31, 2017

Effective Project Approval (EPA)

- Submission to Treasury Board for EPA 1 year in advance of PPA expiration.
- Submission with include detailed schedule, estimated cash flow, and AACS Class 2 cost estimate
- EPA valid until project completion defined in EPA submission

Project Time Line - Regulatory

Environmental Assessment (EA)

- EA process currently underway
- Unknown completion date (6 months to 2 years)

Water License (WL)

- Necessary to start remediation activities
- Initiate upon completion of the EA process.
- Estimated to be a 2 year process (could take longer…)

Project Time Line – Design & Remediation

Preliminary Design

- Preliminary design activities will resume upon award of the two outstanding design contracts
- Completion of preliminary design also dependent on the completion of the EA process since select design elements are included in the EA
- Completion of preliminary design required for the EPA submission
- PPA expires March 31, 2017

Project Time Line – Design & Remediation

Detailed Design & Remediation

- Detailed design will commence upon completion of the EPA submission (during PPA phase) for the initial construction work packages
- Detailed design will continue concurrently with construction work packages
- Approved Water License and EPA is required to initiate remediation activities
- EPA expiration is defined in the schedule provide in EPA submission

Contract Considerations

- Unique nature of requirement
- Insurance and bonding
- Maximizing aboriginal and local involvement
- Contract flexibility

Questions?