MIRAMAR HOPE BAY LTD.

Doris North Project

NWB PUBLIC HEARING
August 13-15, 2007
Cambridge Bay, Nunavut

Presentation Outline

- Doris North Project Overview
- Planned Water Use
- General Conditions
  - License Term
  - Compensation Measures
- Waste Disposal
  - Mill Tailings
  - Sewage
  - Garbage
  - Other Hazardous Wastes

Presentation Outline

- Water Management
  - Tail Lake
  - Storm water
- Environmental Management System
- Environmental Performance Monitoring
- Closure and Reclamation Planning
- Financial Security
- Potential Future Development

Introduction of the Miramar Team

- **Jim Currie** Vice President of Operations
- **Larry Connell** General Manager, Environment
- **Terri Maloof** Manager of Permitting & Compliance
- **Alex Buchan** Manager of Community Relations
- **Katheryn McIvor** Tenure & Permitting Coordinator

Introduction of the Miramar Team of Expert Consultants

- **Maritz Rykaart, Ph. D., P. Eng. - SRK Consulting Ltd.**
  Principal Geotechnical Engineer
  Tailings management, geotechnical engineering

- **John Chapman, M. Eng., P. Eng. - SRK Consulting Ltd.**
  Principal Engineer
  Water Quality modeling, geochemistry

- **Nathan Schmidt, Ph. D., P. Eng. - Golder Associates**
  Senior Water Resources Engineer
  Hydrology

- **Gary Ash, M. Sc., P. Biol. - Golder Associates**
  Principal & Senior Fisheries Biologist
  Water quality monitoring, wildlife monitoring, Fish No-Net-Loss Plan

- **Diana Valiela, Lawson Lundell LLP**
  Legal Counsel

Project Overview

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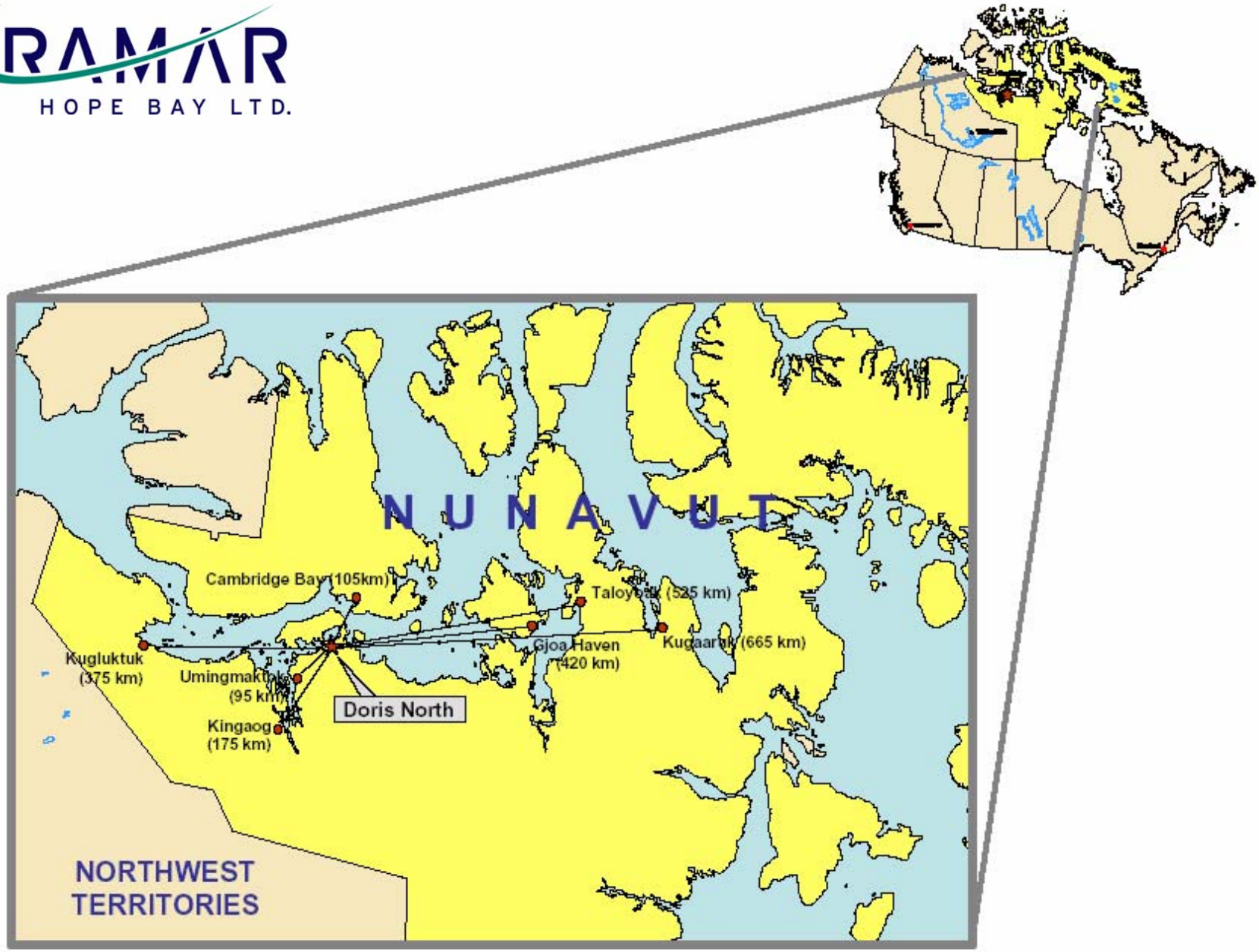
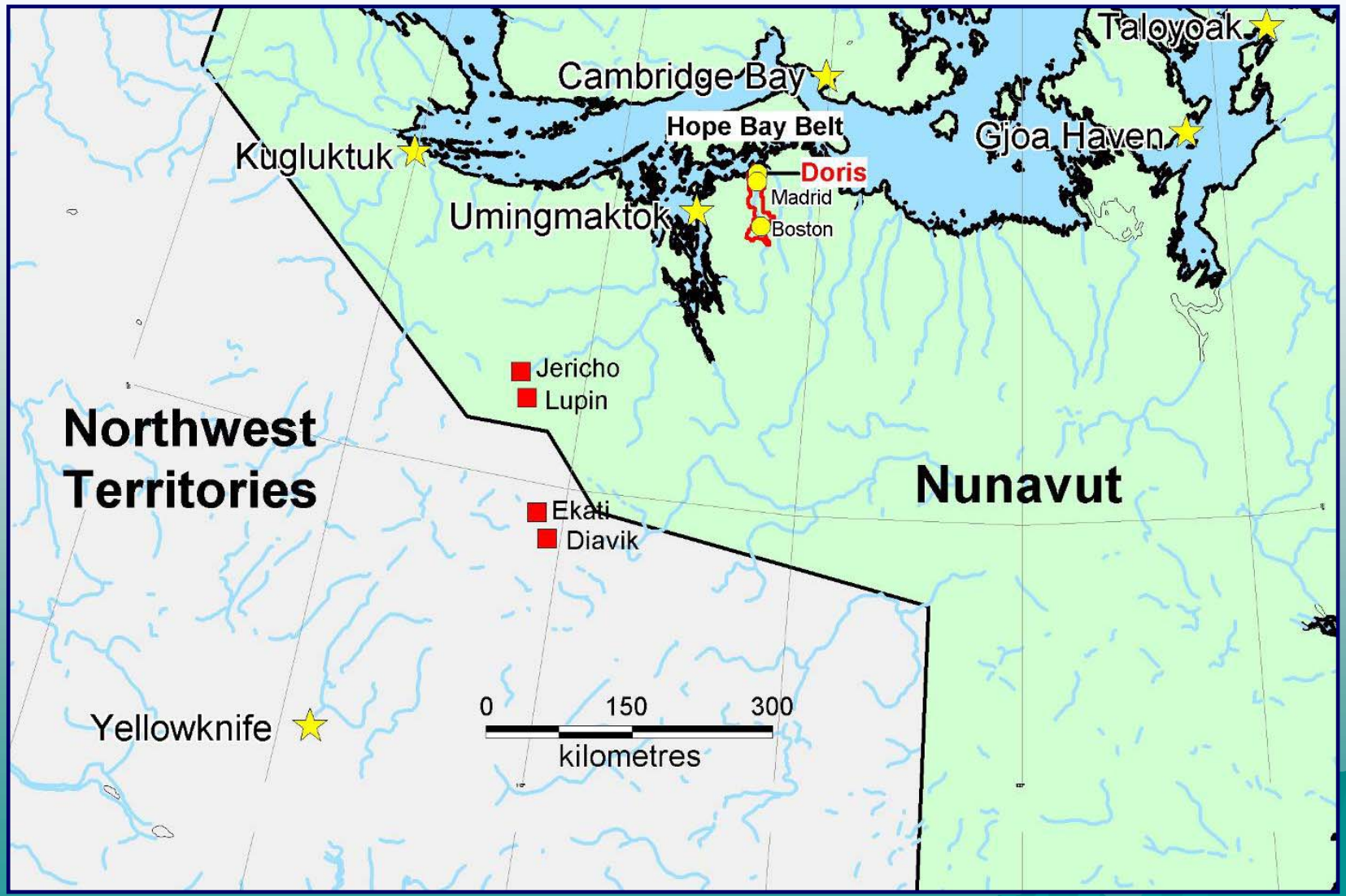


Doris North Project Location

Location of the Hope Bay Greenstone Belt



Project Overview

- Located on Inuit Owned Land
- Minerals owned by Nunavut Tunngavik Inc.
- Small underground gold mine - mining rate of 720 TPD of ore
- Expected to produce 311,000 ounces of gold from 460,000 tons of ore over 2 year mine life.
- Short term, profitable project in a large area with significant potential for long term profitable mineral production
- Site footprint will be approximately 54 hectares

Major Project Components

- Underground mine accessed by a decline
- Mill to process the ore - design throughput of 800 TPD of ore)
- Power house (diesel generators) by mill
- Maintenance shop with warehousing
- Camp to house and feed workers
- Sewage Treatment Plant

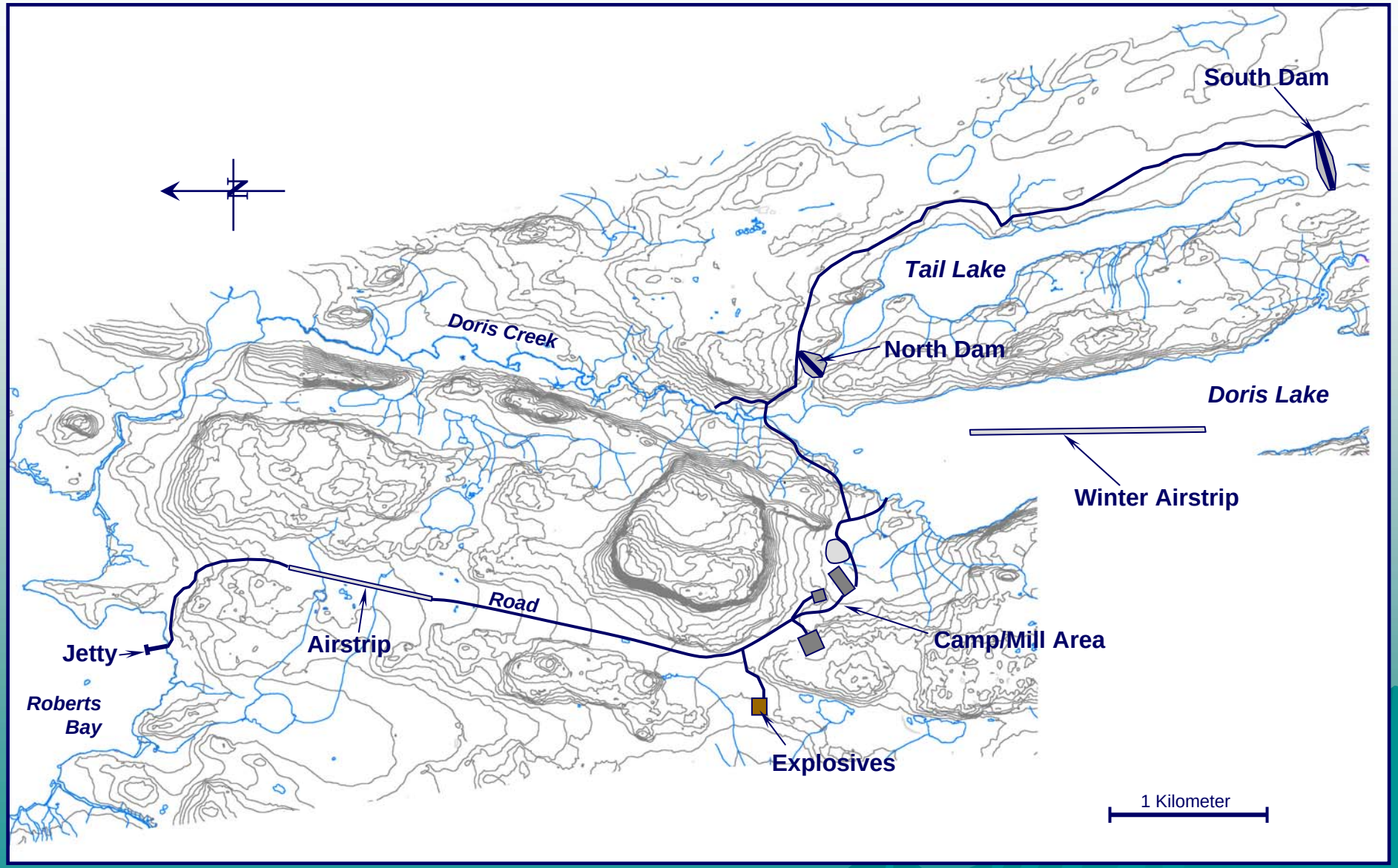
Major Project Components

- Fuel storage tank farm at the mill within a secondary containment (7.5 million litres)
- Fuel storage tank at Roberts Bay within a secondary containment constructed inside Quarry 1 (5.0 million litres)
- Tailings containment area and associated piping (Tail Lake located approximately 5 km from the mill)
- A non-hazardous landfill area to be constructed inside Quarry 2
- A landfarm facility to remediate petroleum contaminated soil to be constructed inside Quarry 2

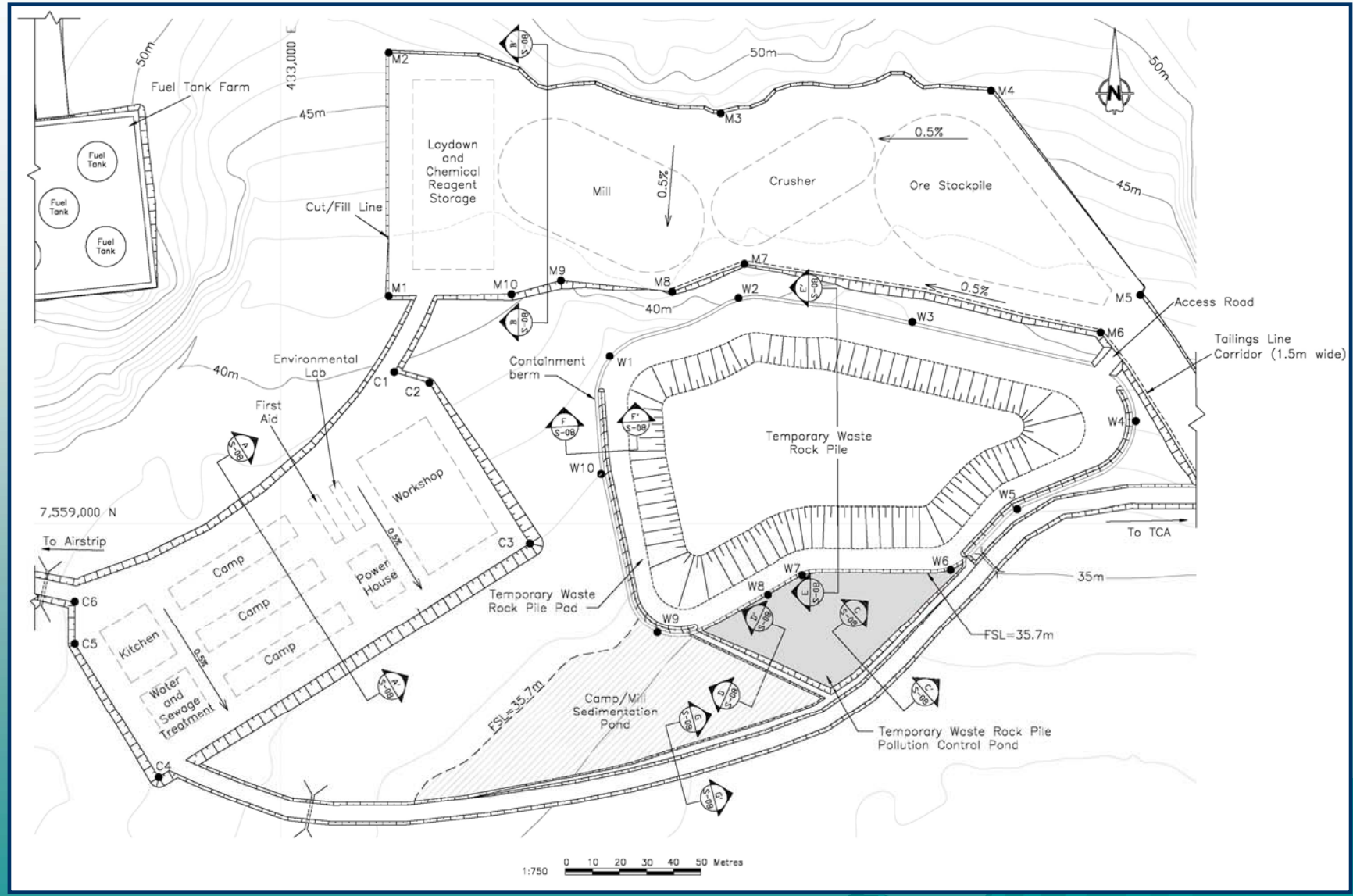
Major Project Components

- All-weather airstrip constructed as a widened section of the access road to Roberts Bay and a winter airstrip on Doris Lake
- Rock fill jetty in Roberts Bay to offload supplies shipped by barge to site
- Lay down area near the jetty at Roberts Bay
- 4.8 km long access road between Roberts Bay and the mill site
- 5.8 km long access road between the mill site and Tail Lake

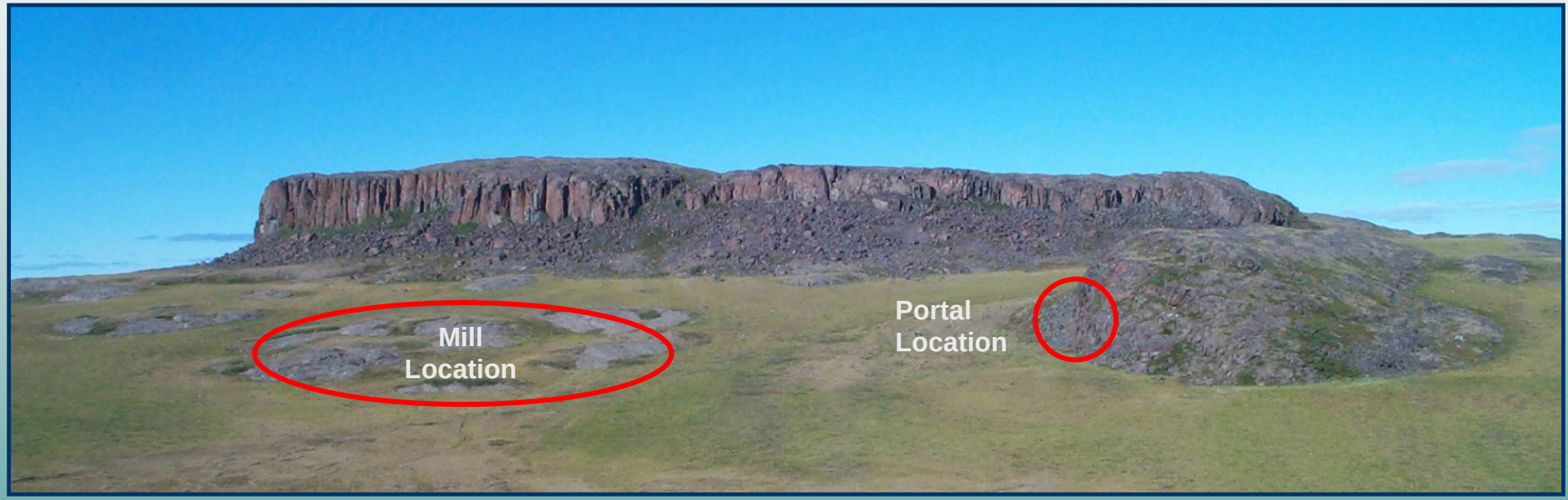
Site Layout


South Dam
Tail Lake
Doris Creek
North Dam
Doris Lake
Winter Airstrip
Road
Airstrip
Jetty
Camp/Mill Area
Roberts Bay
Explosives
1 Kilometer

Site Layout


Fuel Tank Farm
Fuel Tank
Fuel Tank
Fuel Tank
433,000 E
50m
45m
40m
Laydown and Chemical Reagent Storage
Cut/Fill Line
Mill
Crusher
Ore Stockpile
0.5%
M1
M2
M3
M4
M5
M6
M7
M8
M9
M10
W1
W2
W3
W4
W5
W6
W7
W8
W9
W10
C1
C2
C3
C4
C5
C6
Access Road
Tailings Line Corridor (1.5m wide)
Containment berm
Temporary Waste Rock Pile
Environmental Lab
First Aid
Workshop
Power House
Camp
Kitchen
Water and Sewage Treatment
7,559,000 N
To Airstrip
To TCA
Temporary Waste Rock Pile Pad
Camp/Mill Sedimentation Pond
Temporary Waste Rock Pile Pollution Control Pond
FSL=35.7m
35m
1:750
0 10 20 30 40 50 Metres

Mill/Camp Site

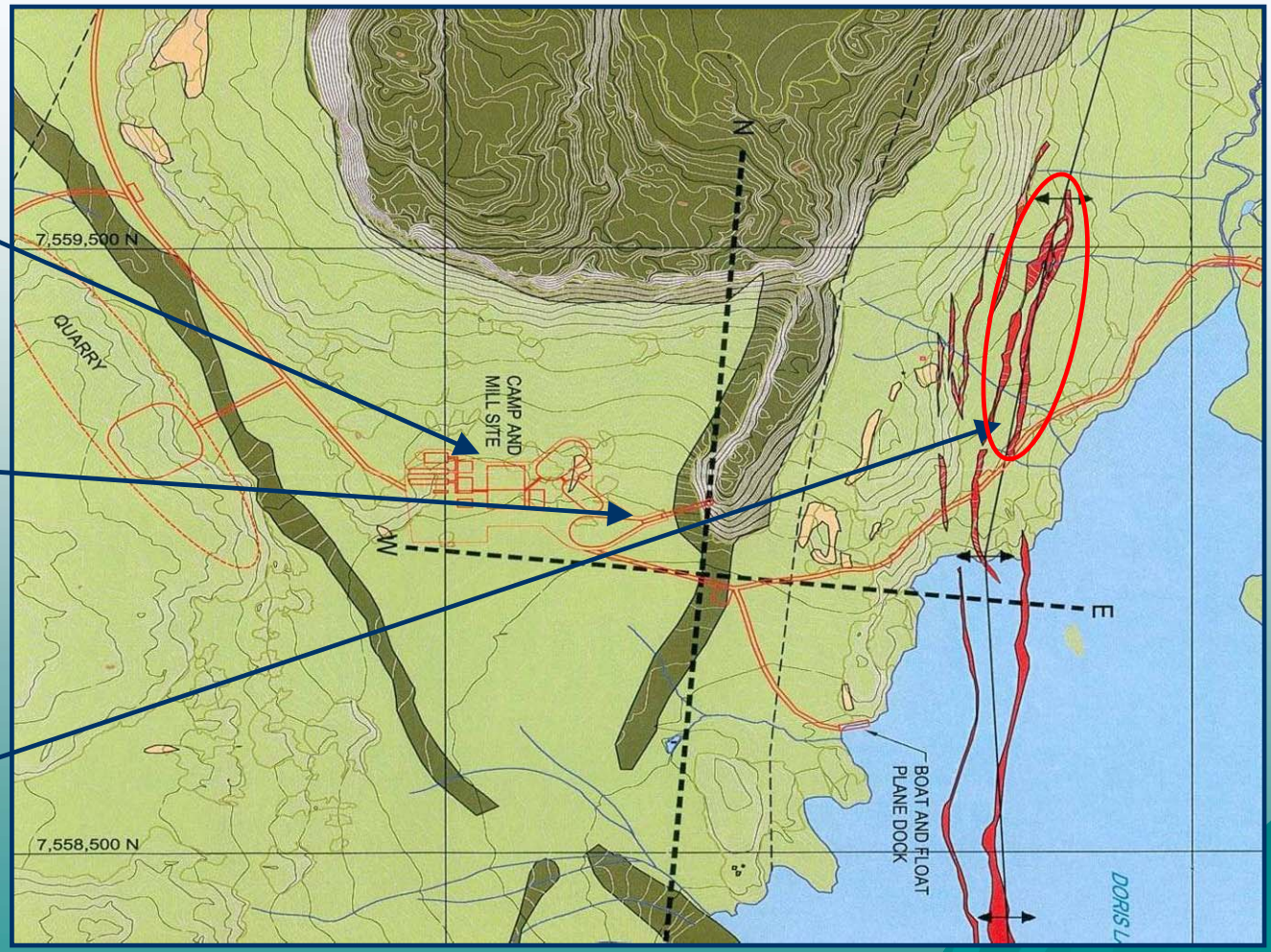


Doris North Deposit in Relation to Doris Lake

Camp/Mill Pad

Portal

Deposit lenses



How Will the Ore Be Mined?

- Underground mine using open stoping & mechanized cut and fill methods
- Access by way of a ramp from surface, 4 m high by 5 m wide, 900 m long at 10% grade
- Lowest production level planned is 62.5 m below surface (2965 level)
- Ventilation by three vertical raises, one will provide secondary escape route

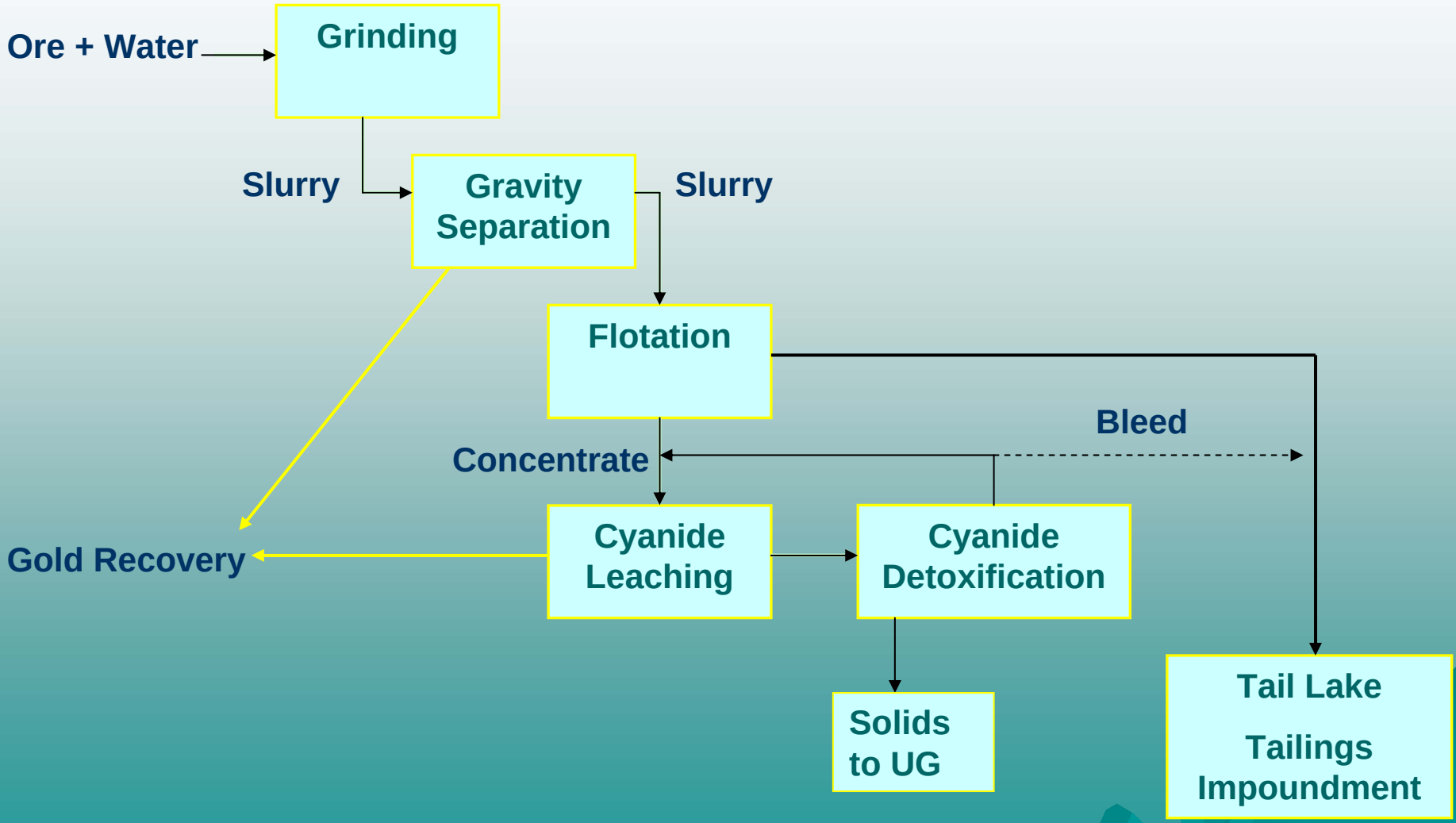
The Underground Mining Cycle

- Ore & waste rock are drilled off
- Drill holes are loaded with explosives and blasted
- Loose rock is scaled & rock bolts installed to secure roof
- Broken rock is loaded into underground haul trucks
- Ore is hauled to surface for milling
- Waste rock is hauled to other U/G locations as backfill or to surface for storage pending return to mine

Underground Mining

Ore Processing (Milling)

Ore Processing Cycle



Ore Stockpiling & Crushing

- Ore is brought to surface by mine dump truck
- Placed into a stockpile located near crusher
- Picked up by front end loader and fed into the crusher
- Large rock is crushed into smaller rock and then placed on a crushed ore stockpile to be fed into the mill

Ore Processing

- Ore is mixed with water and milled to break rock into a sand size (wet slurry)
- “Free” gold recovered using gravity circuit (jigs, gravity concentrators & tables). About 40% of the gold is recovered in the gravity circuit

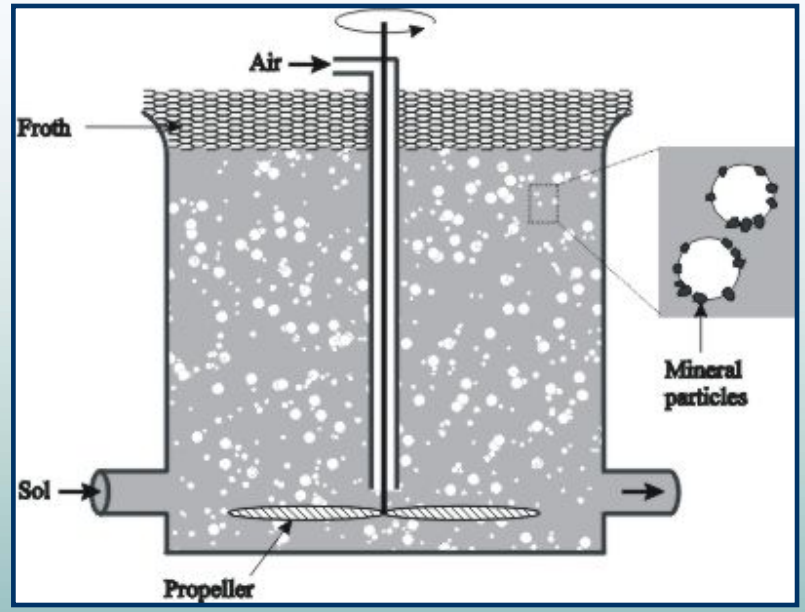
Mill - Grinding Circuit

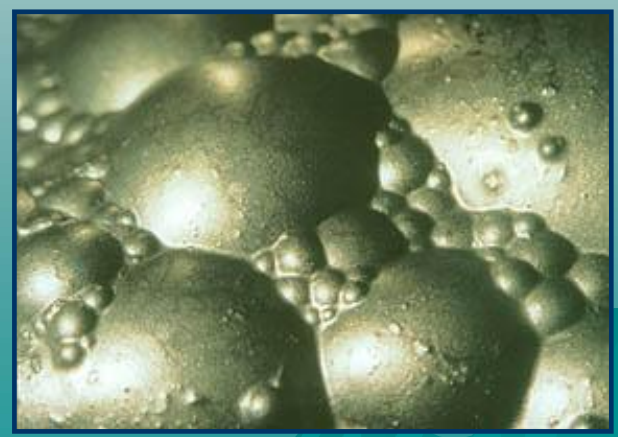
Gravity Gold Recovery

Flotation/Leaching

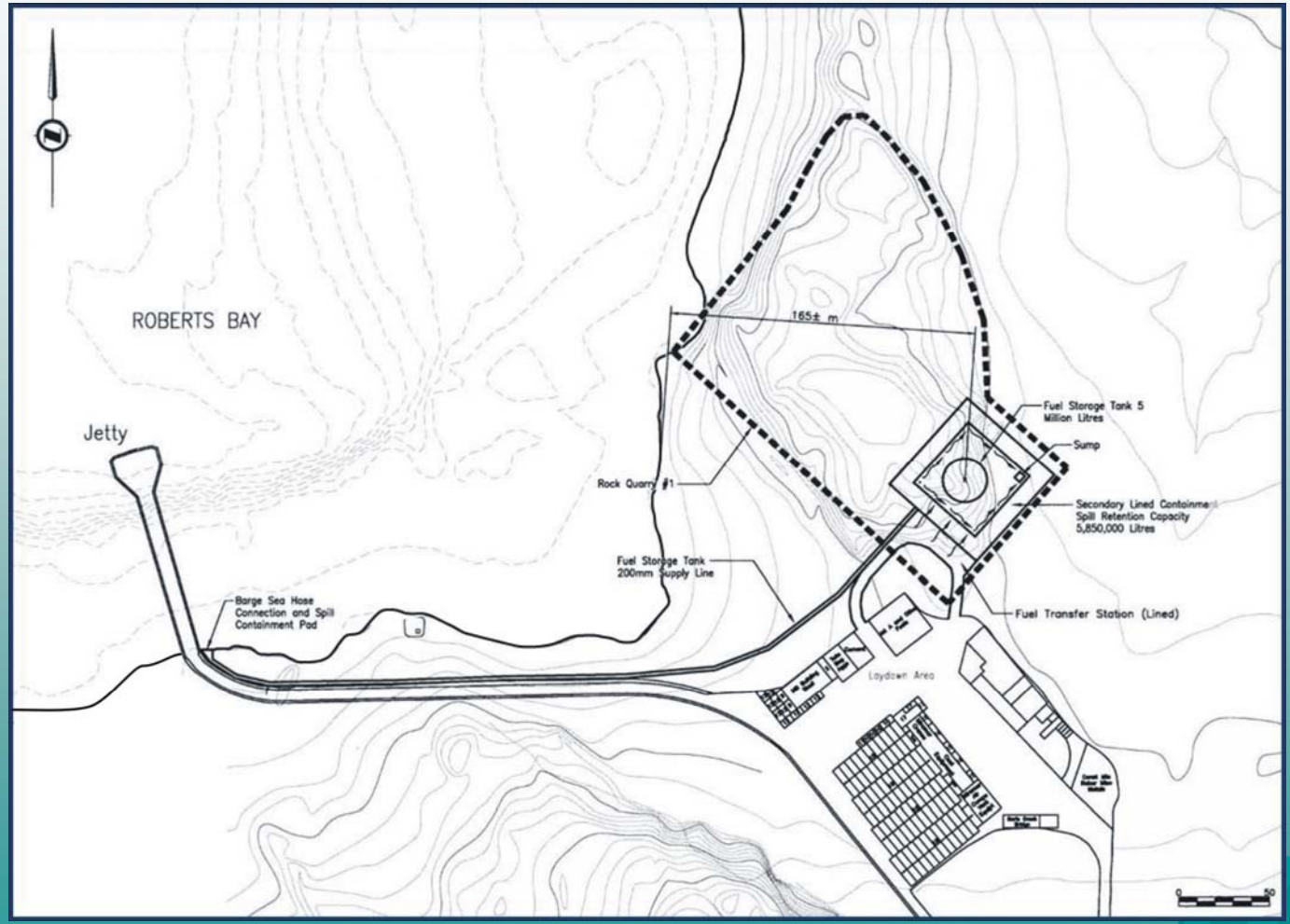
- Remaining gold bearing minerals extracted by froth flotation
- 90% of the weight sent to tailings with no further chemical treatment
- Gold concentrated into 10% of the weight milled
- Only this concentrate is leached with cyanide to extract gold
- Leached gold is recovered on activated carbon
- Slurry from the leach circuit is treated to detoxify remaining cyanide and remove metals

Milling - Flotation





Proposed Roberts Bay Facilities



Fuel Storage Tank Facility in Quarry #1

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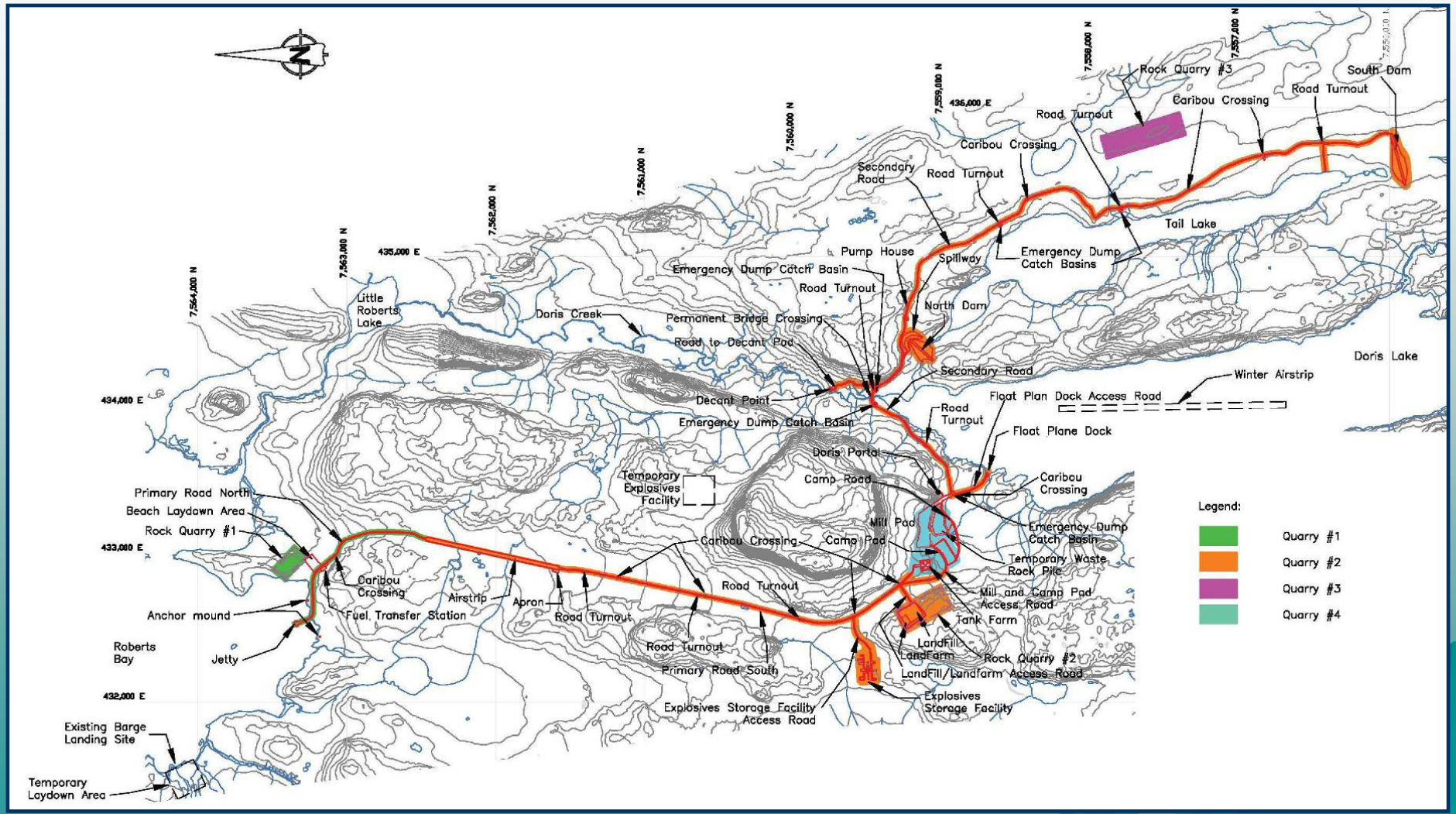
Estimated Construction Quarry Source



Planned Water Use

Planned Water Use

- **The Doris North Project is projected to use the following maximum volumes of water:**

Potable Water:	**30,000 m^3 per year**
Mill Process Water:	**450,000 m^3 per year**

- **MHBL will maximize to the greatest practical extent the use of recycle water from the tailings containment area for use in the mill.**

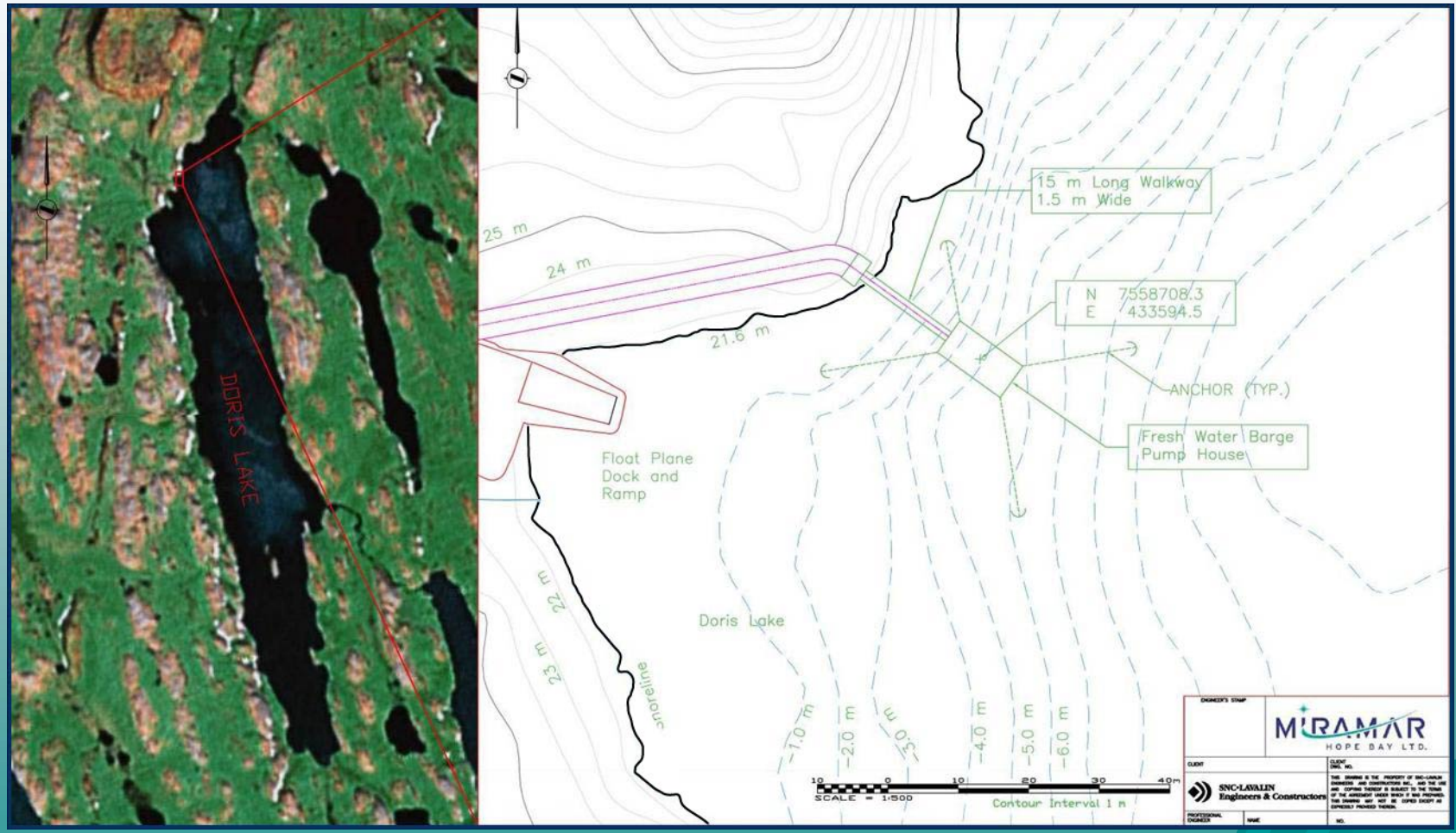
Potable Water Use

- **Potable Water:**
  - **Drawn from Doris Lake**
  - **Based on an estimated per person consumption of 0.40 m^3 per day (400 litres)**
  - **Maximum camp size of 175 persons**
  - **Added 17% contingency**
  - **Maximum Volume: 0.40 x 175 x 365 x 1.17 = 30,000 m^3 per year**

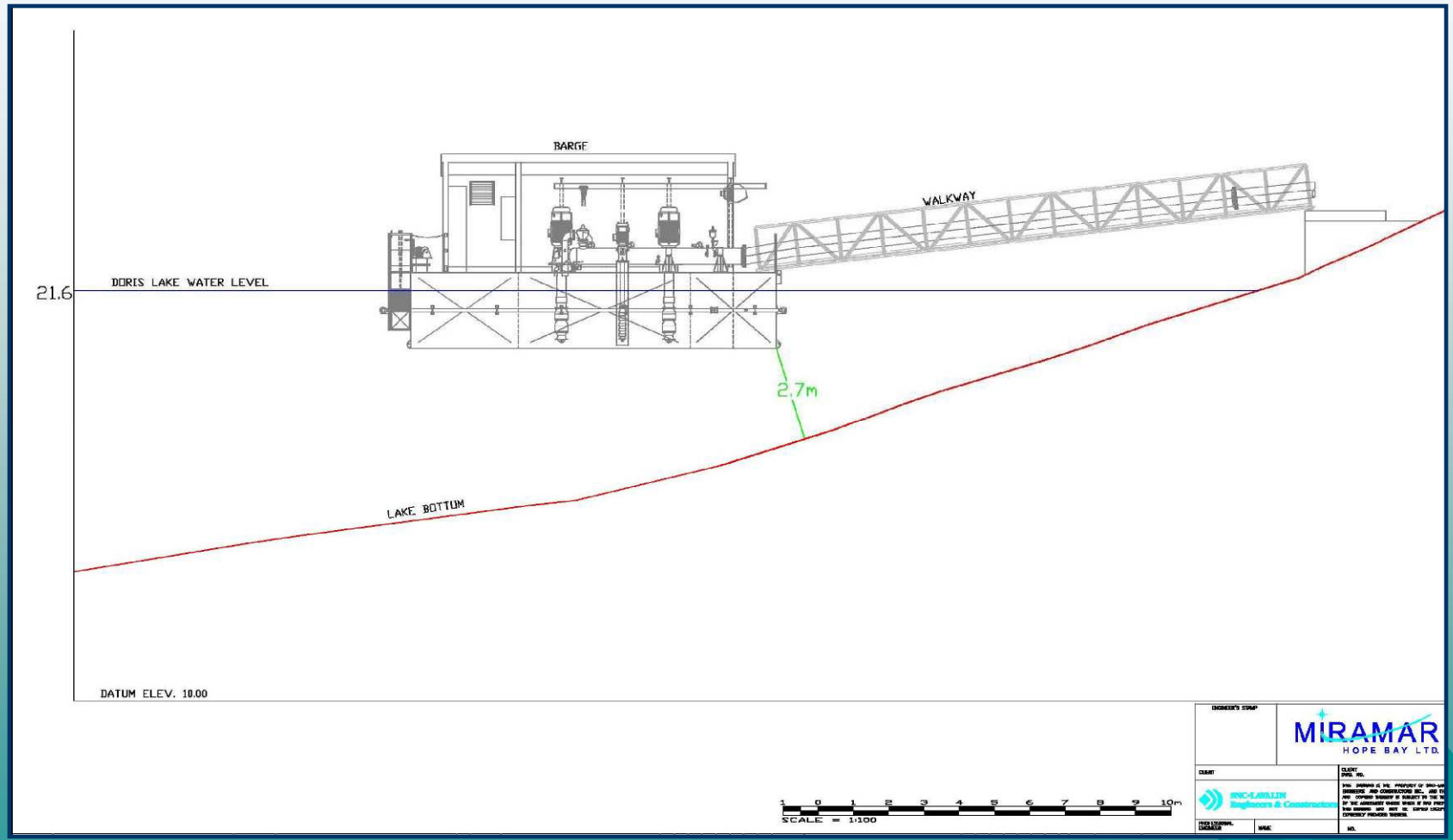
- **Potable water use will be minimized to the greatest extent possible.**

- **Water drawn from Doris Lake will be measured through a meter and reported to the NWB monthly as part of the SNP reporting.**

Doris Lake Fresh Water Pump House



Doris Lake Fresh Water Pump House



Mill Process Water

- **Mill Process Water (includes water used UG):**
  - **Combination of recycled water from tailings containment area + fresh water from Doris Lake;**
  - **Average consumption ~ 970 m^3 per day with a maximum use of ~ 1,183 m^3 per day.**
  - **Water used UG will be minimal. Brine solution will be sent UG and recycled using underground sumps.**
- **Annual maximum consumption of 450,000 m^3 per year:**

1,183 x 365 x 1.05* = 450,000 m^3 per year

* Includes a 5% contingency allowance

Mill Process Water

Fresh water use in the mill will be minimized as follows:

- **Water will be pumped back to the mill process water tank from the tailings containment area using the reclaim water pumping system. At a minimum MHBL expects to be able to reclaim 145,000 m^3 per year.**
  - MHBL will attempt to reclaim water from the tailings containment area throughout the year. However when ice is present, the water quality in Tail Lake may become too turbid due to the ongoing sub-aqueous deposition of tailings. This turbidity problem will diminish once the water level in Tail Lake rises. Consequently MHBL believes that, while it may be difficult to reclaim clean water from Tail Lake in the first winter of operation it will become easier as the pond level rises in 2009.

Mill Process Water

Fresh water use in the mill will be minimized as follows:

- **There will be three internal water recycle streams within the milling process**
  - Overflow from the regrind circuit thickener
  - Overflow from CIL circuit thickener
  - Treated barren solution from filtering the leach residue sent UG as backfill

Mill Process Water

- MHBL will maximize to the greatest extent practical its use of reclaim water in the mill to minimize fresh water use;
- Process water will be drawn from the process water tank, which will be fed from the Tail Lake reclaim water pipeline, with fresh water only used to top off the tank when reclaim water cannot be used.
- All fresh water use will be metered and reported monthly to the NWB as part of the SNP reporting.

General Conditions

General Conditions – Term of License

- **MHBL has requested a license term of 8 years**

- **The logic behind this request is based on having the water license issued to carry the Project through to the end of the projected reclamation period with the next license addressing post closure monitoring only:**

  – Year 1 – Project is under construction (mill start up scheduled for late 2008);
  – Year 2 and 3 – Mine operating life (mining and mill scheduled to be complete by end of 2010);

Cont….

General Conditions – Term of License

- Year 4 and 5 – Mine reclamation (all facilities except those required to maintain control over Tail Lake will be removed by the end of 2012);
- Years 4, 5, 6 – Continued annual managed release of water from Tail Lake (By the end of 2013 Tail Lake is predicted to have returned to its pre-development level of 28.3 m ASL and amount of water to be discharged will from then forward equal natural runoff into the lake);
- In Year 5 MHBL will complete a human health and ecological risk assessment to determine if the water quality is suitable for unregulated release starting in Year 6;
- Years 7, 8 and 9 – Continued annual managed release of water from Tail Lake if results from risk assessment do not allow for unregulated release earlier (water predicted to be at or below CCME concentrations by end of year 9);

General Conditions – Compensation

- In 2006 MHBL signed an Inuit Impact Benefits Agreement with the KIA.
- In 2006 MHBL also signed a Water Rights Compensation Agreement with the KIA.
- Fisheries Compensation - MHBL has proposed a package of compensation measures to DFO to offset the fish habit altered or destroyed by the Doris North Project. A “No-Net-Loss” compensation plan has been submitted to DFO, and after much discussion, agreement in principle has been reached. MHBL is to submit a final plan, including final engineering designs for these compensation measures to DFO by September 15, 2007.

Compensation Measures

Tail Lake:

- Increasing fish accessibility to Roberts Lake
- Stream enhancement in Roberts Outflow
- Creation of rearing habitat in Doris Lake
- Creation of pool habitat in a tributary of Roberts Lake

Tail Outflow:

- Creation of rearing habitat in Doris Lake

Jetty:

- Habitat enhancement using rock spurs and riprap

Waste Disposal

Types of Waste to be Managed

Types of waste to be managed at Doris North

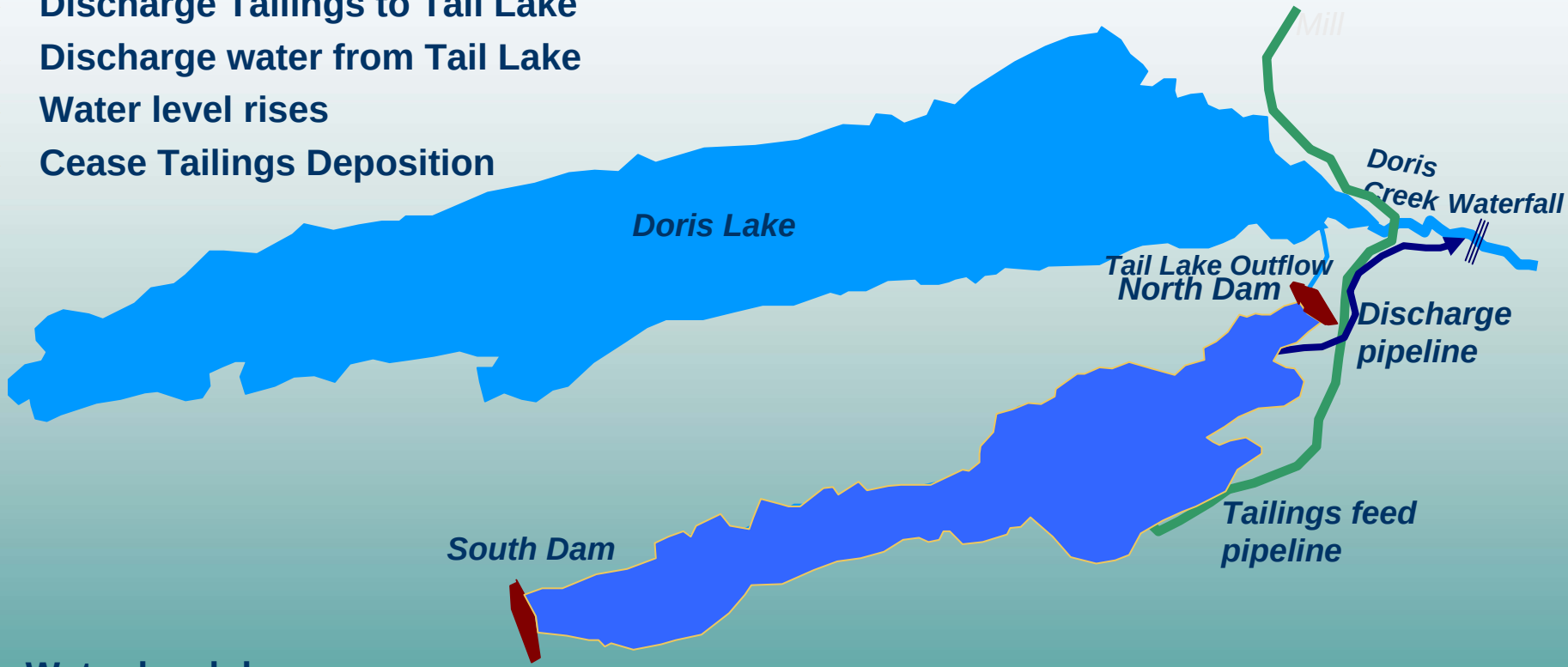
- **Mill Tailings Slurry: Sent to Tail Lake tailings containment area**
- **Cyanide leach residue solids: filtered following CN destruction and then sent UG as backfill**
- **Sewage: Treated grey water to Tail Lake. Solids filtered & incinerated**

Types of Waste to be Managed

- Non-Hazardous Solid Waste: Sent to landfill in Quarry 2
- Other Hazardous Waste (batteries, spent glycol, spent solvent, etc): shipped off site to an appropriate recycle/treatment facility in the south
- Petroleum Contaminated Soils: Sent to the landfarm facility in Quarry 2

Tailings Containment System

- Construct Dams
- Discharge Tailings to Tail Lake
- Discharge water from Tail Lake
- Water level rises
- Cease Tailings Deposition

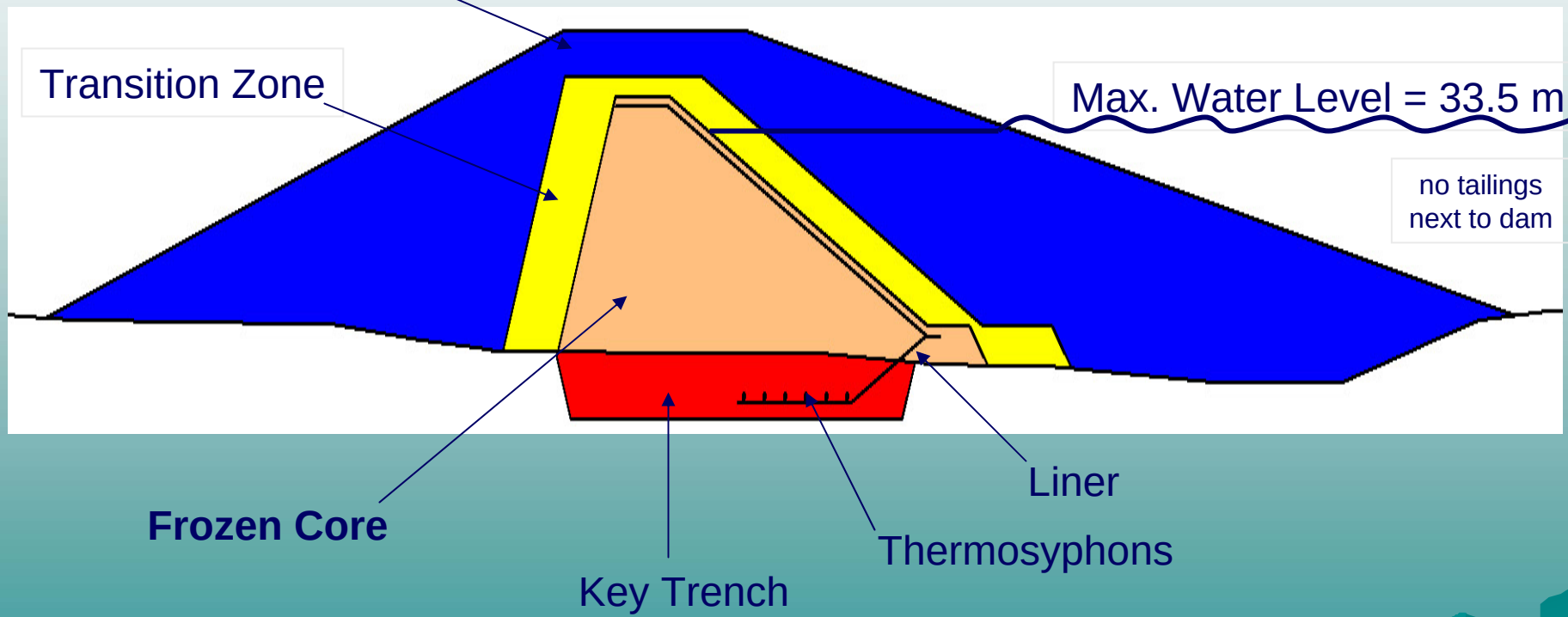


- Water level decreases
- Breach dam and re-establish outflow

Tail Lake Dam Design

- Frozen core dam – most appropriate design for this environment
- Secondary upstream liner
- Thermosyphons in key trench
- Design included input and review by leading experts in frozen core design
- Design has high level of conservatism and contingency
- Design includes large amount of instrumentation to verify dam performance
- Design life of dam; 25 years – expected life of 4 to 10 years

Typical Dam Cross Section



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Typical Layout

Water Management

Site Water Management

Water management consists of the following elements:

- **Management of storm water and snowmelt runoff at the plant site, landfarm and landfill, and, at the fuel containment facilities**
- **Management of the annual release from the tailings containment area**

Site Water Management

Storm water and snowmelt runoff at plant site

- Divert non-contact water away from the plant site
- Collect runoff from the ore and waste rock stockpiles in the pollution control pond and transfer this water to the tailings containment area
- Collect runoff from the remainder of the plant site in the sedimentation pond and release clean water from the sedimentation pond onto the tundra in a controlled manner

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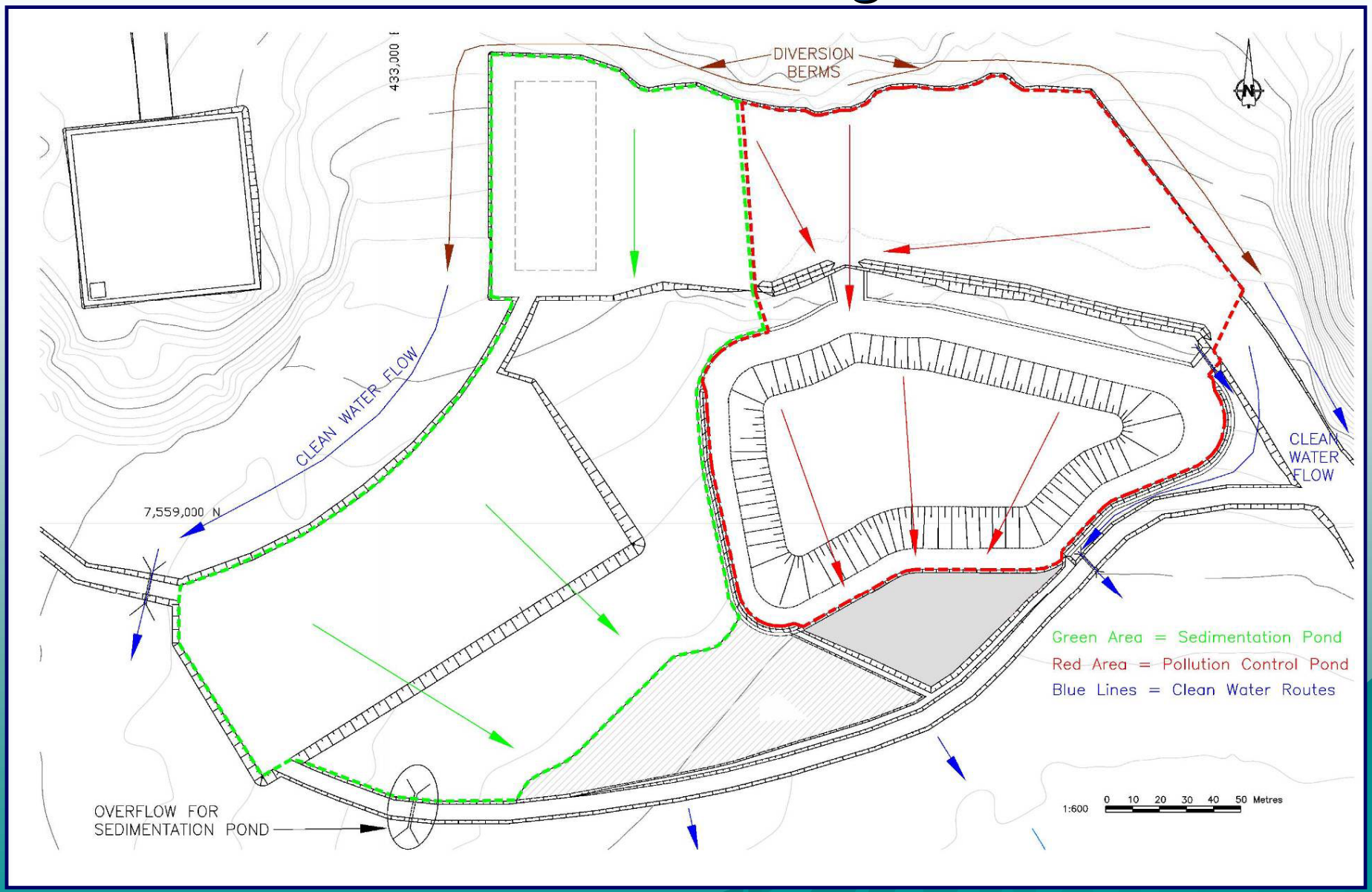
Plant Site Storm Water Management



Site Water Management

Storm Water Runoff at Landfill and Fuel Storage Facilities Site

- Divert non-contact water away from the landfill and fuel storage facilities
- Collect contact water in a sump

Landfill Sump

- Measure water quality and if it meets discharge standard then discharge water onto the tundra in a manner that prevents erosion of the tundra
- If water does not meet standard, then truck water to Tail Lake

Site Water Management

Fuel Storage Containment Area Sumps

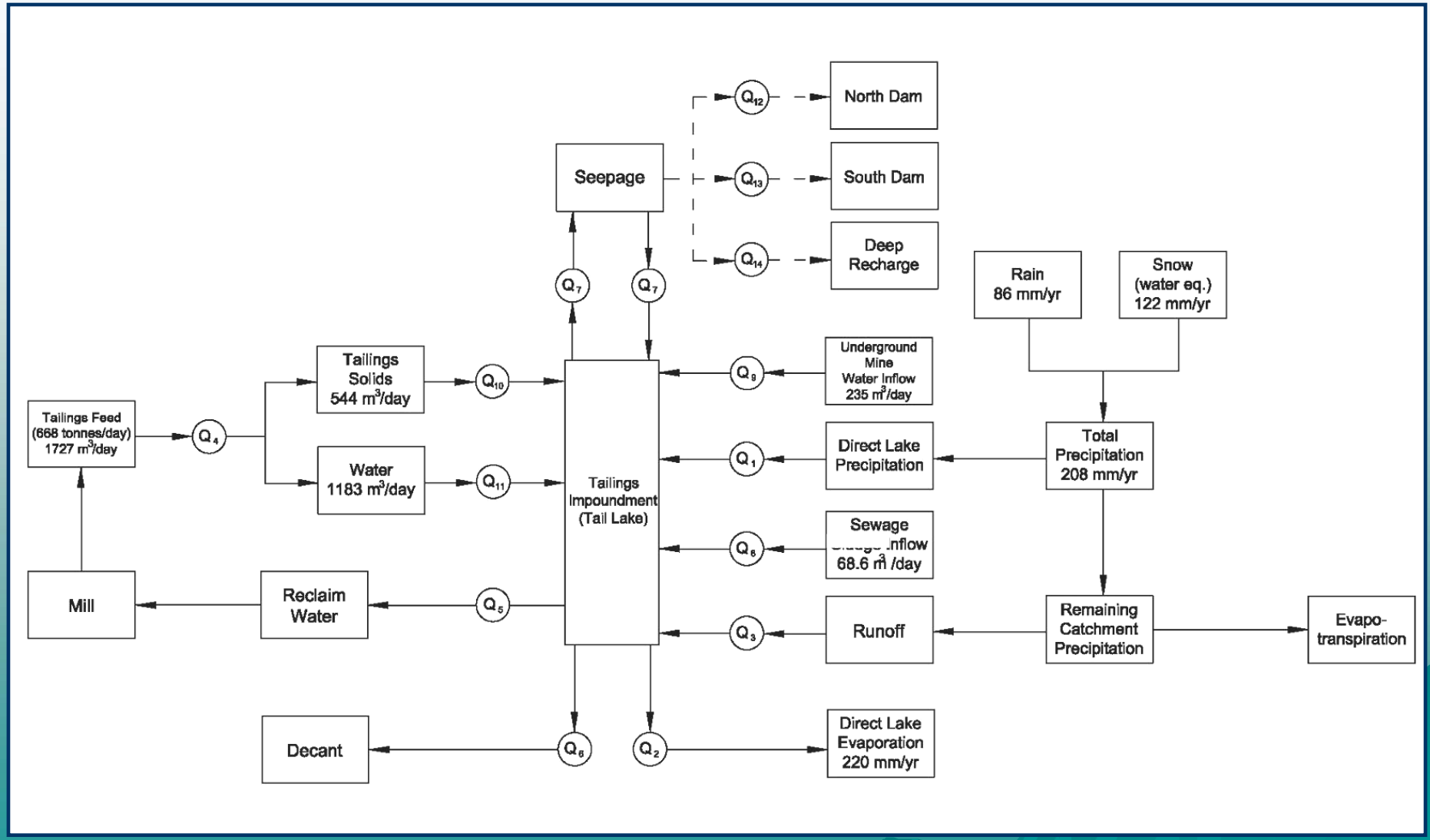
- Filter water through an oil-water separation unit and then discharge “clean” water onto the tundra in a manner that prevents erosion of the tundra
- Sample “clean” water to verify that discharge standards are being met from the oil-water separation unit

Tail Lake Water Management Strategy

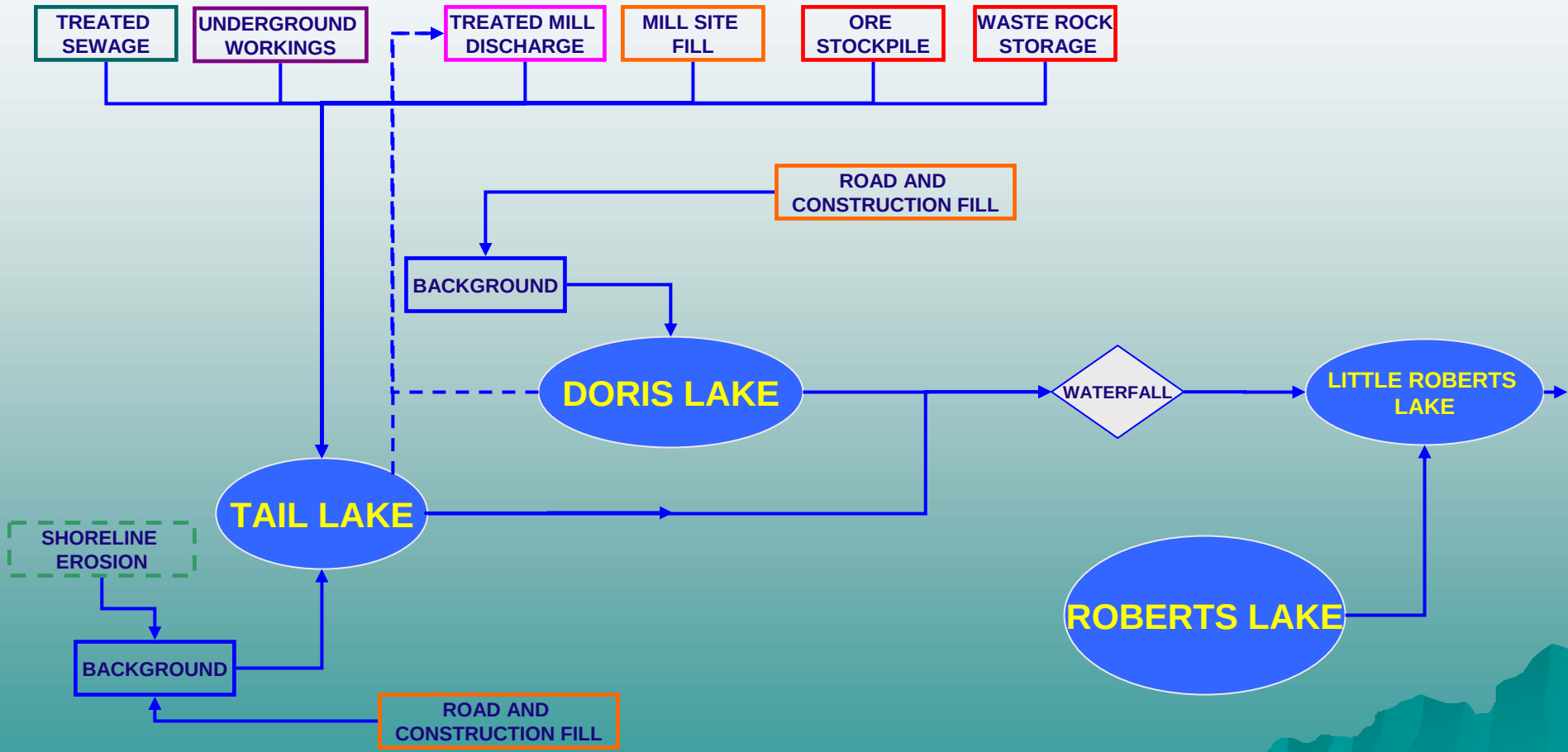
Overview of Water Quality Modelling

- **Purpose of the modelling:**
  - **Assess the potential changes in Tail Lake water quality**
  - **Evaluate discharge strategies and their effects on receiving water quality**

Simplified Tail Lake Water Balance Model



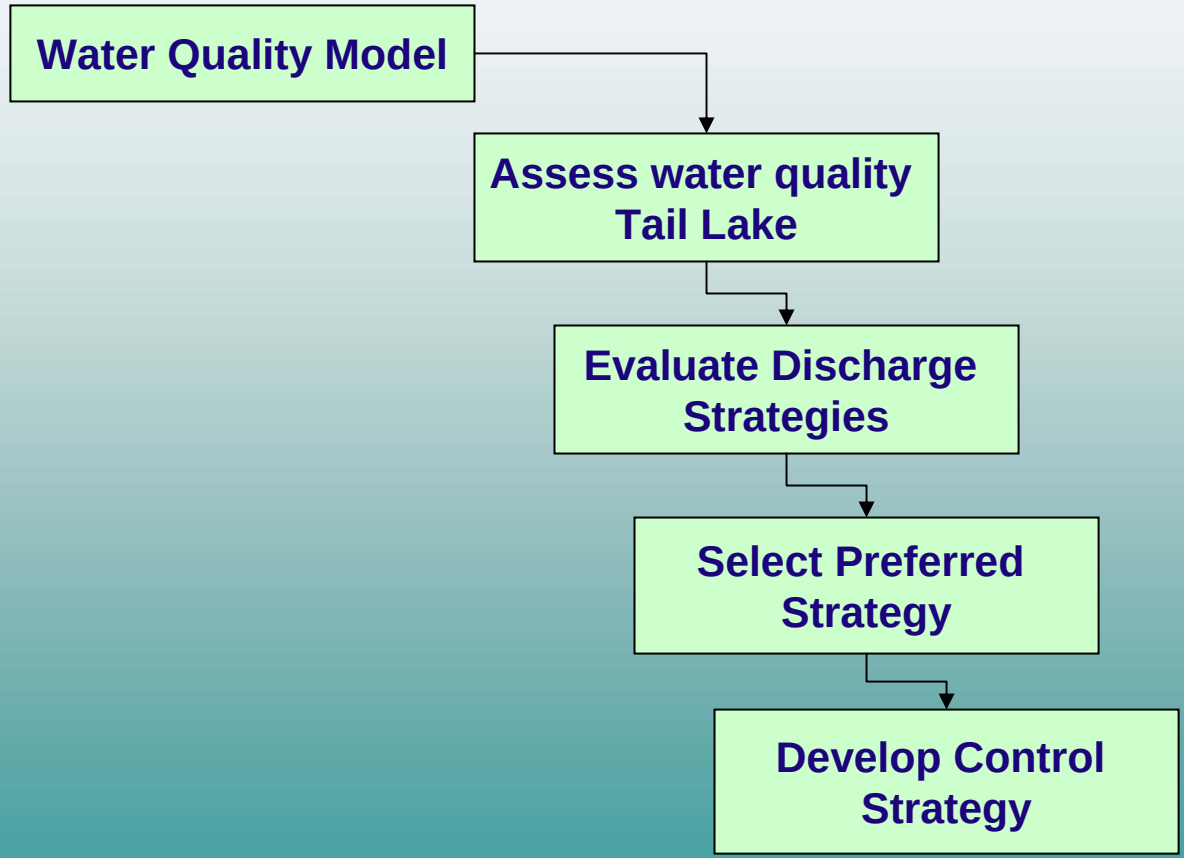
Schematic Water and Load Balance



Contaminant Sources Used in WQ Model

Description	Information
Mill site fill	*Acid base accounting* *Leach extraction, Kinetic testing* *Nutrients (ANFO)*
Ore stockpile	
Waste rock storage area	
Tailings	*Metallurgical testing* *Treatment effluent* *Nutrients (ANFO)*
Sewage effluent	*Supplier performance data*
Underground workings	*Acid base accounting* *Leach extraction, Kinetic testing* *Nutrients (ANFO)*

Development of Discharge Control Strategy



Water Management Control Strategy

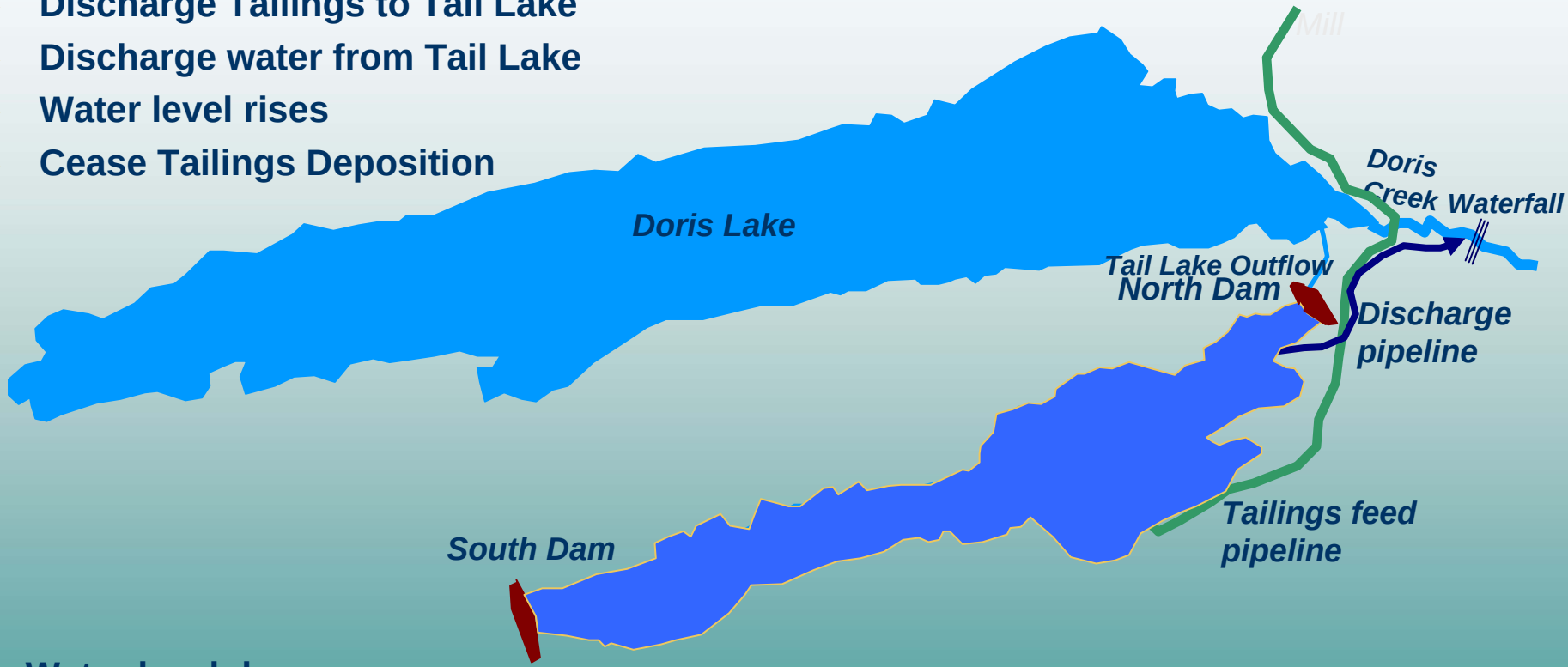
Two Objectives:

- **Meet MMER Criteria before discharge**
- **Meet CCME Guidelines in Doris Creek downstream of waterfall**

While also minimizing the rise of water level in Tail Lake to reduce the risk of shoreline erosion.

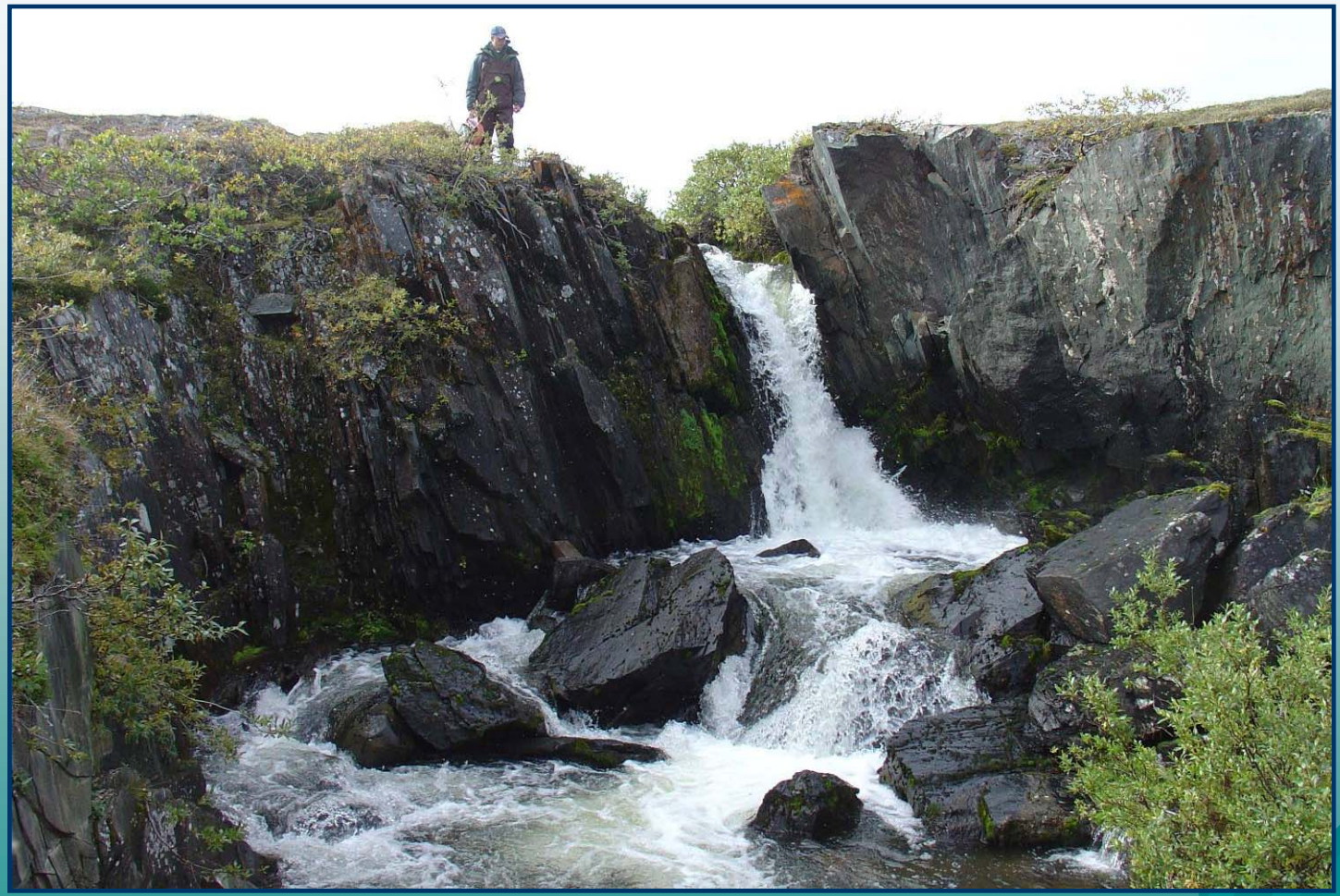
Water Management Control Strategy

- Construct Dams
- Discharge Tailings to Tail Lake
- Discharge water from Tail Lake
- Water level rises
- Cease Tailings Deposition



- Water level decreases
- Breach dam and re-establish outflow

Doris Creek – D/S Waterfall



Control Strategy

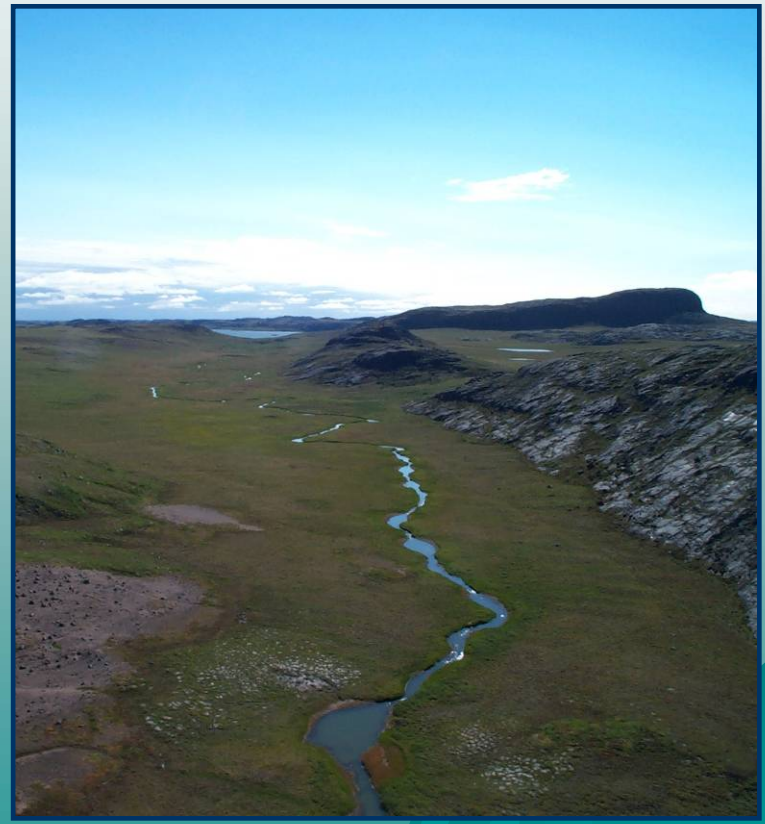
Key Components:

- **Allows for full containment of Tail Lake water if necessary**
- **Continuous flow monitoring**
- **Uses a variable flow discharge pumping system**
- **Monitoring Program**
- **Based on adaptive management**

Control Strategy

Phase 1 – Operational Discharge Management

- **Control Parameters**
  - Monitor Flow Conditions in Doris Creek
  - Monitor Water Quality
    - *Doris Creek upstream*
    - *Tail Lake at intake*
  - Calculate Maximum Allowable Discharge Ratio
  - Calculate Target Discharge Rate
- **Regulate Discharge Flow**
- **Monitor Water Flows and Quality**
  - Assess performance and adjust as required



Calculation of ADVR & TDR

ALLOWABLE DISCHARGE VOLUME RATIO

$ADVR\ (Cu) = (CCME_{Cu} - [Cu]_{DC}) / ([Cu]_{TL} - CCME_{Cu})$

Where:

- $[Cu]_{DC}$ = copper concentration in Doris Creek (mg/L)
- $[Cu]_{TL}$ = copper concentration in Tail Lake (mg/L); and
- $CCME_{Cu}$ – CCME Freshwater Aquatic Guideline for copper (mg/L)

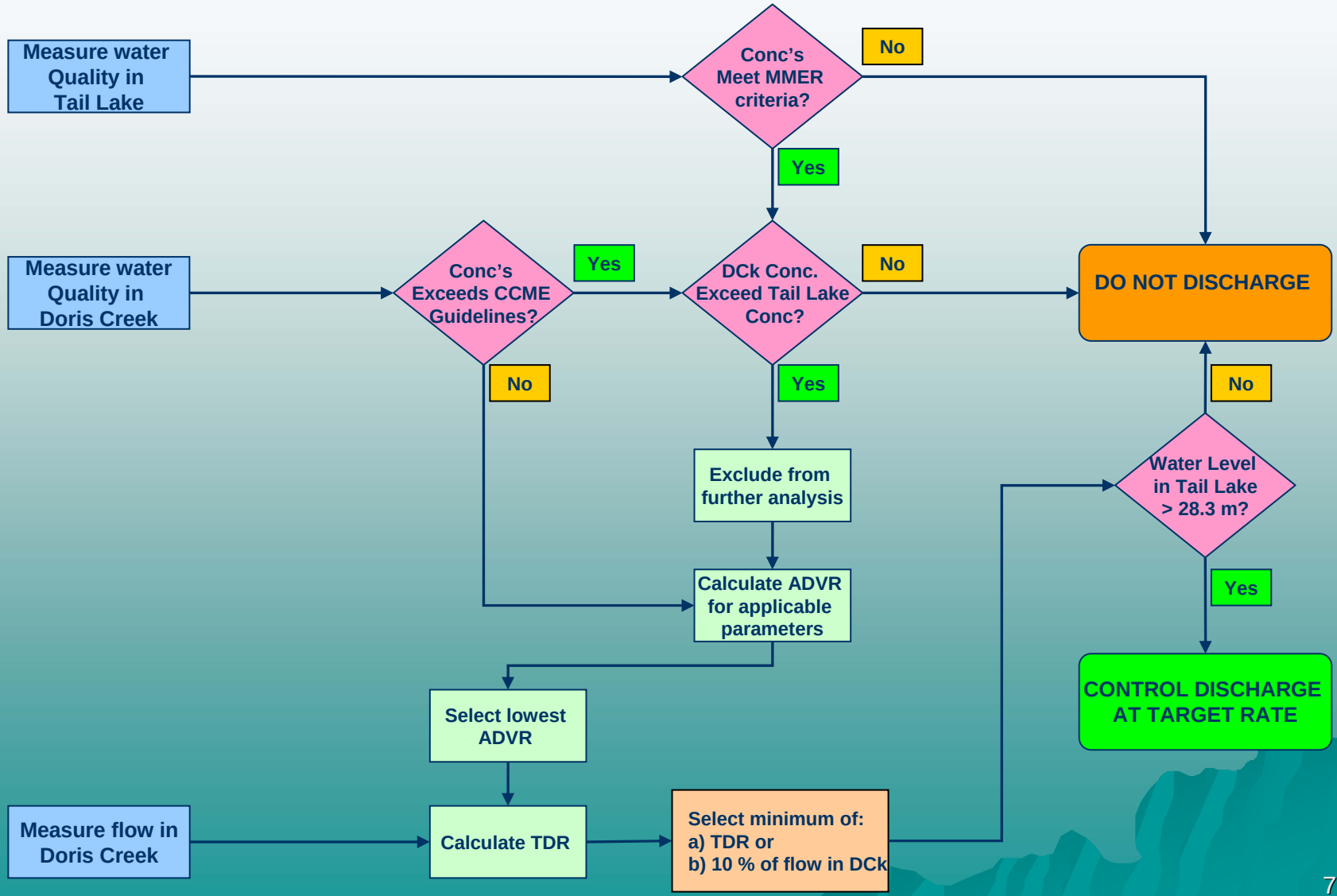
TARGET DISCHARGE RATE

$TDR = Q_{DC} \times 0.8 \times ADVR_{Min}$

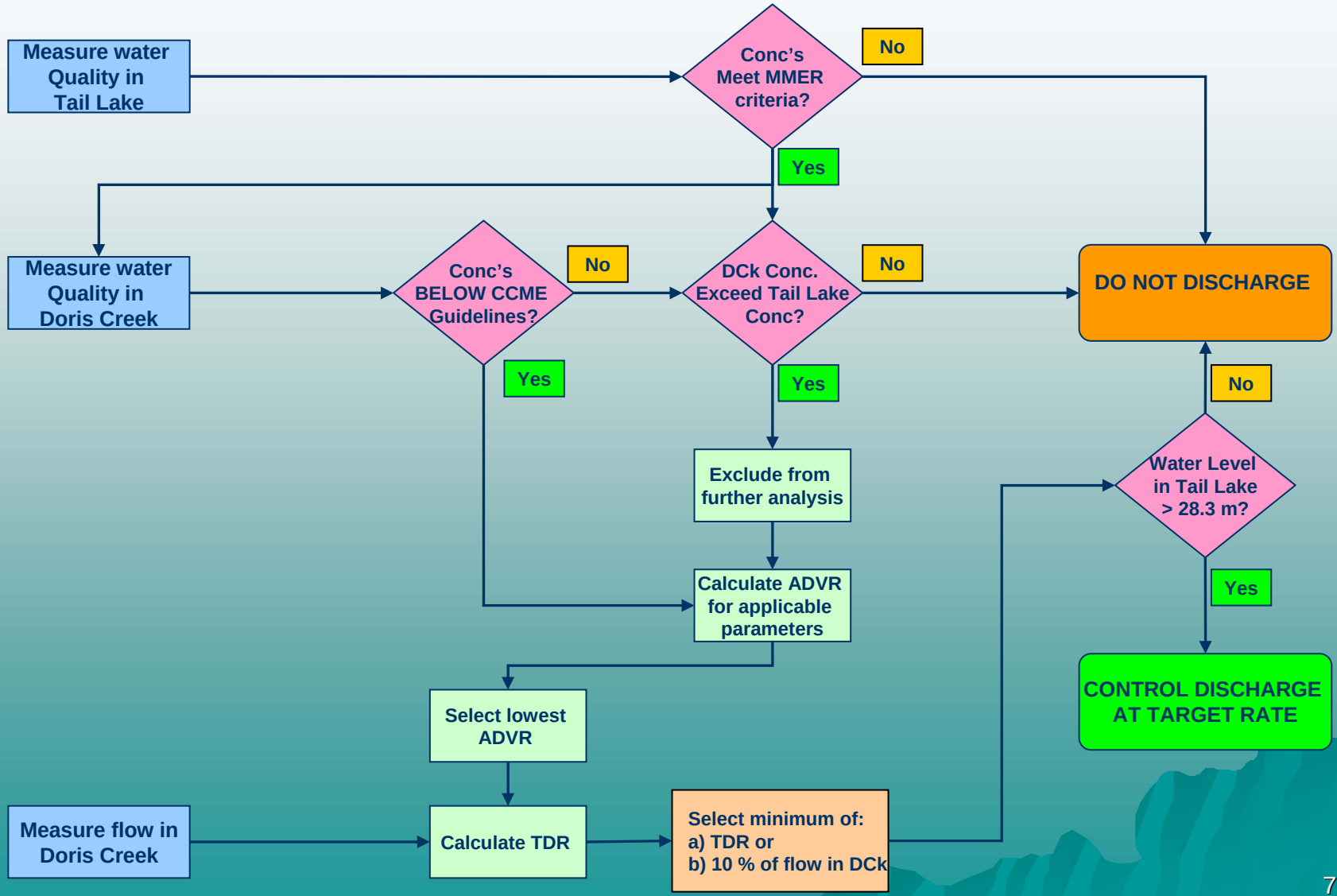
Where:

- Q_{DC} = measured flow in Doris Creek
- $ADVR_{Min}$ – lowest allowable discharge volume ratio

Decision Flow Diagram for Determining Discharge Flow Rate



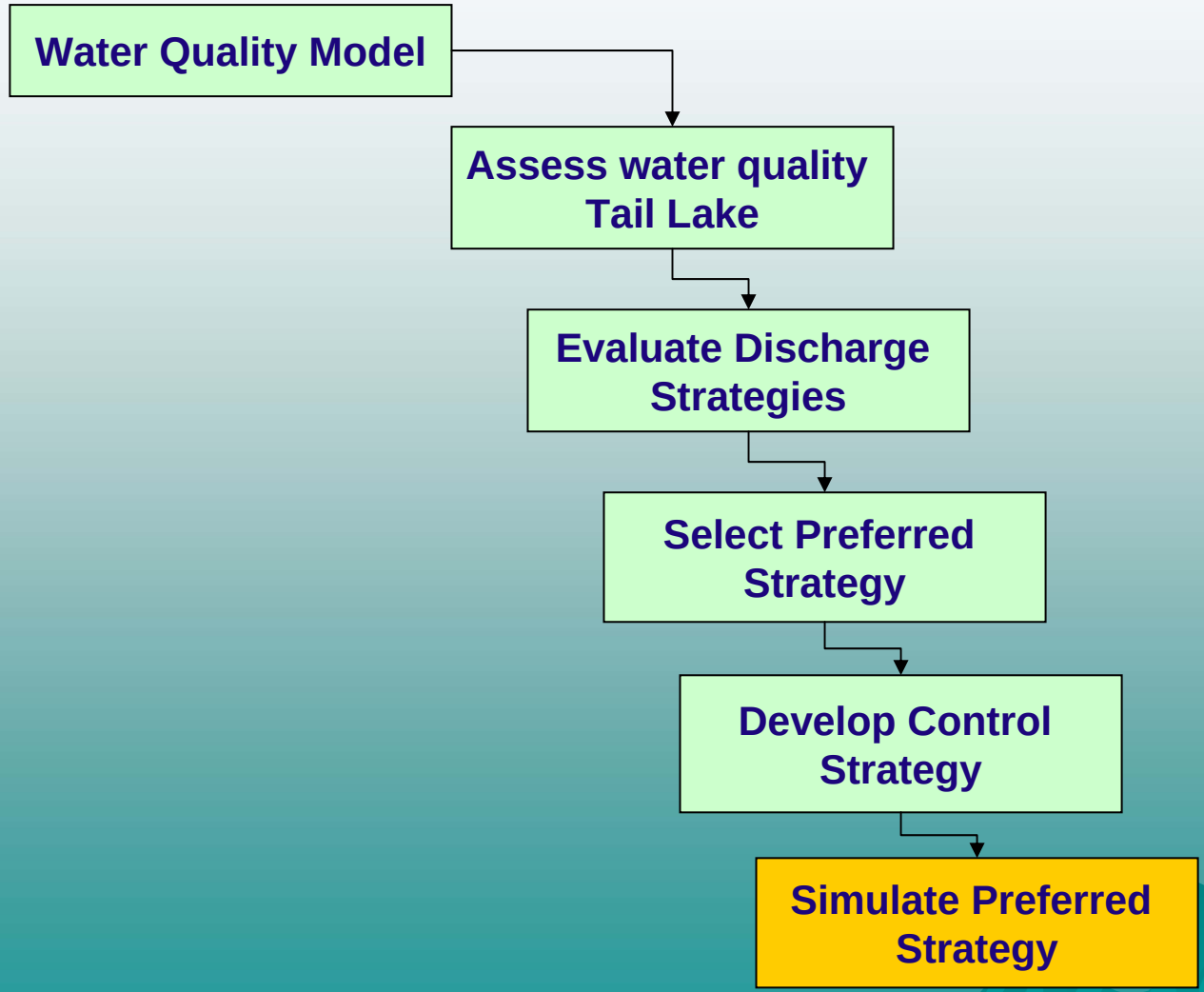
Decision Flow Diagram for Determining Discharge Flow Rate



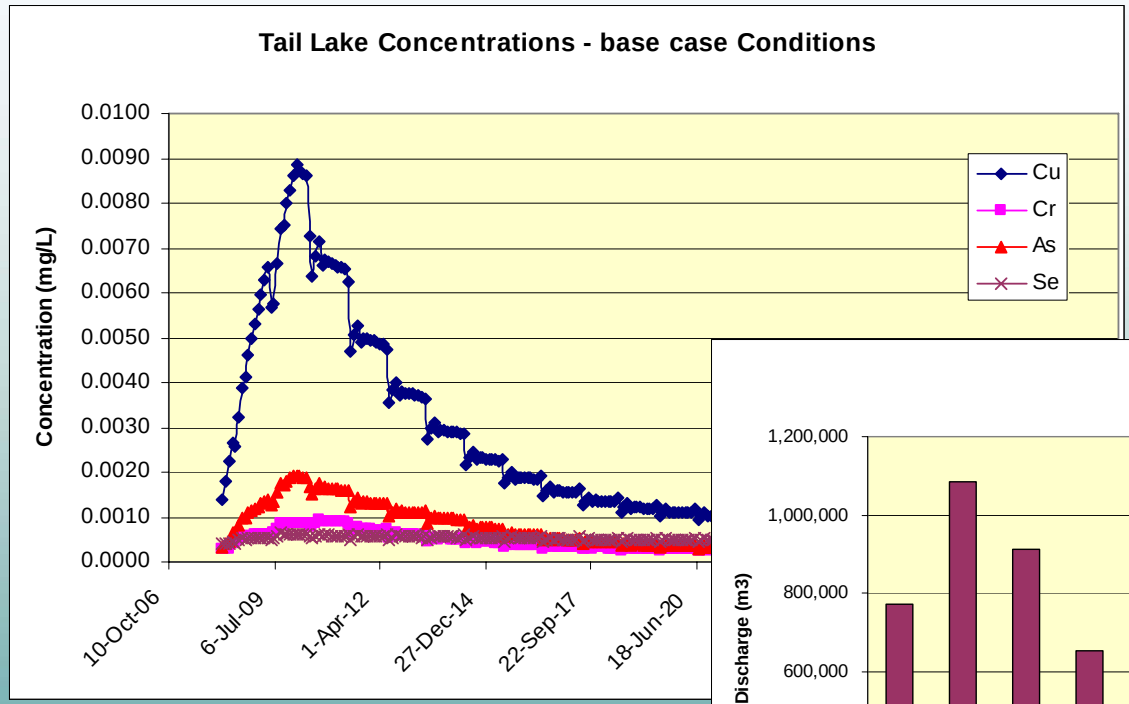
Water Management Control Strategy:
After Mining Ceases

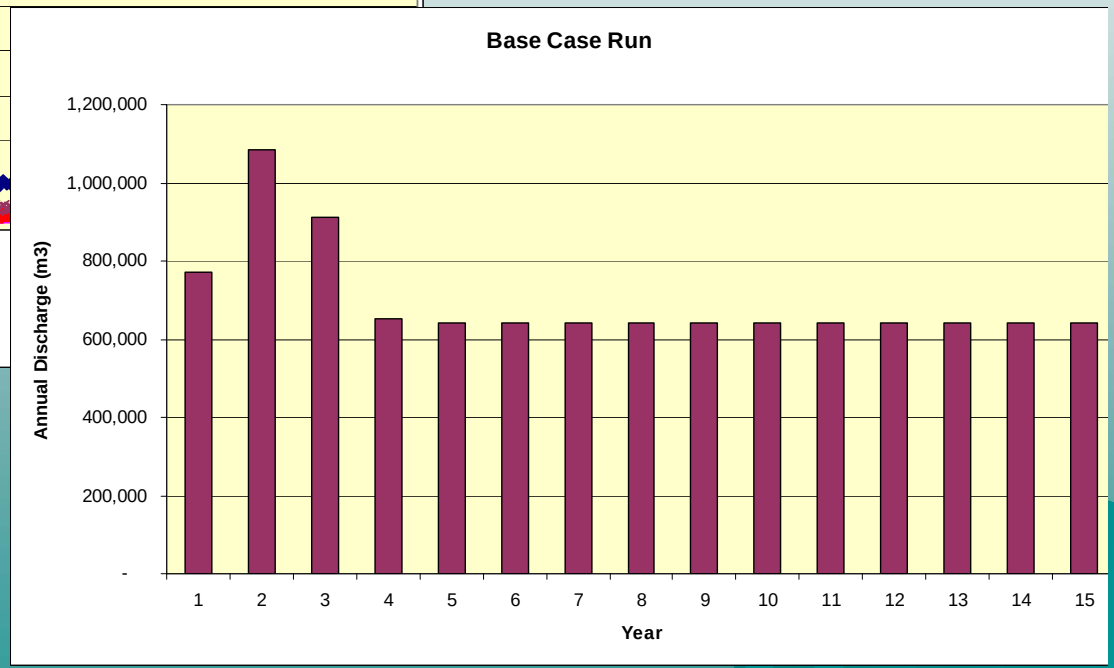
- **Phase 2 -**
  - **Water Level at Natural Outflow Elevation (~ 3 years after mining ceases)**
  - **The timing of the dam breach is dependant on the protection of downstream aquatic life based on CCME Guidelines and Risk Assessment.**
  - **These conditions are expected to be met between 3 and 7 years after mining ceases**
  - **Environmental effects monitoring will continue post-breaching**

Simulation of Control Strategy



Simulation of Control Strategy





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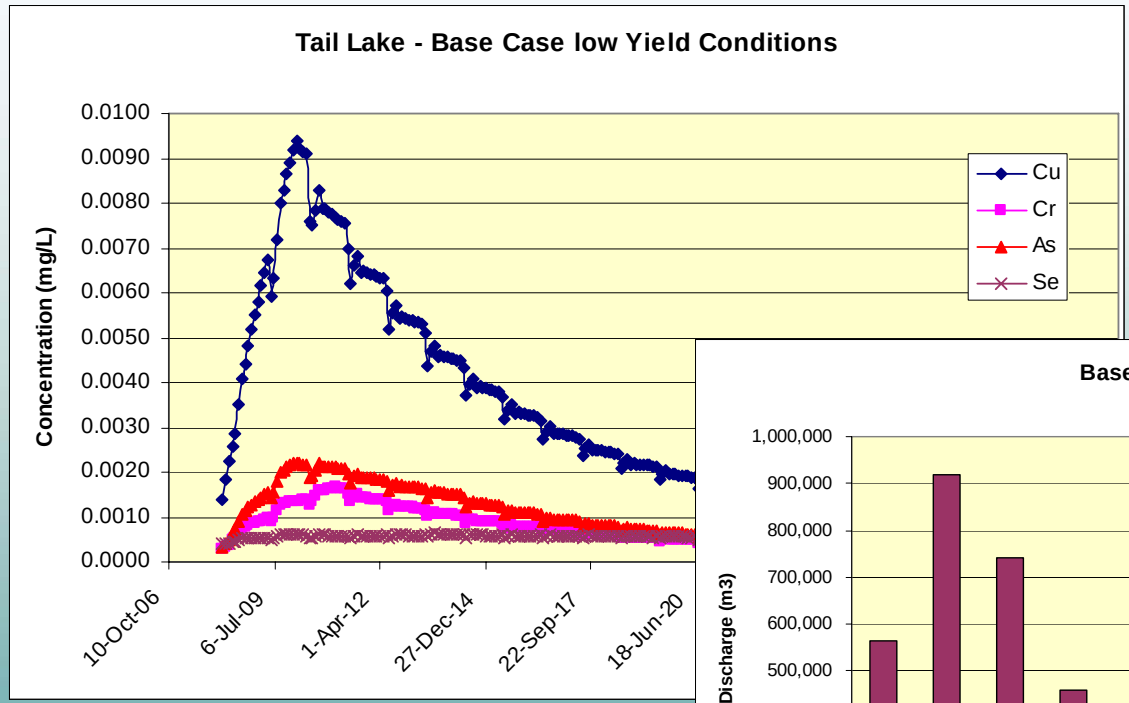
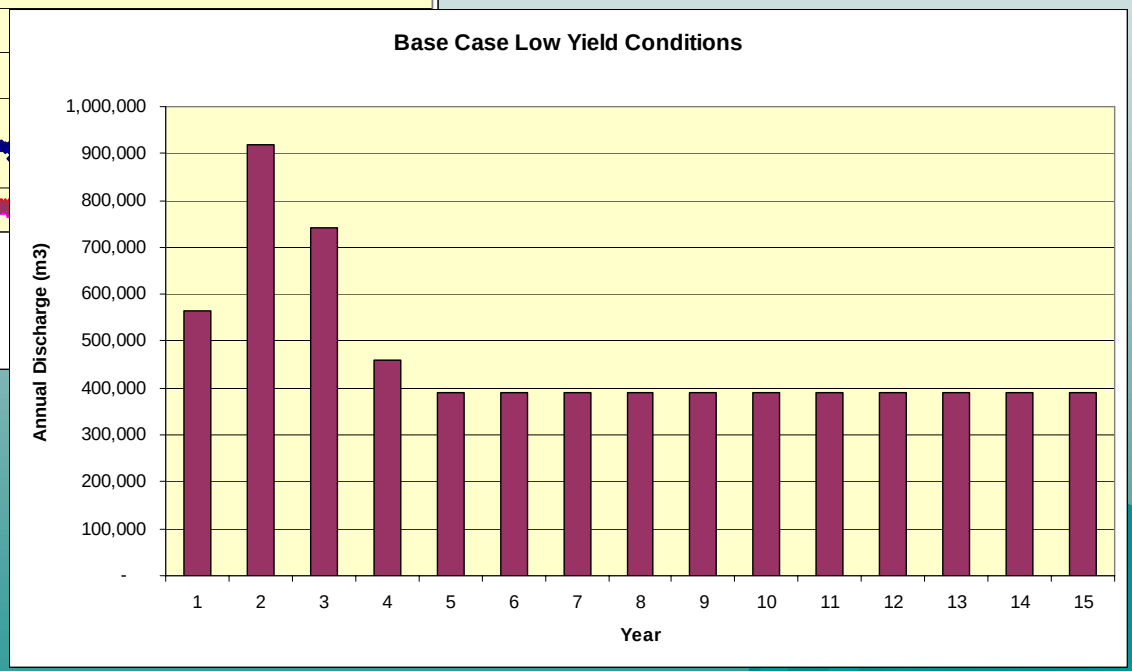
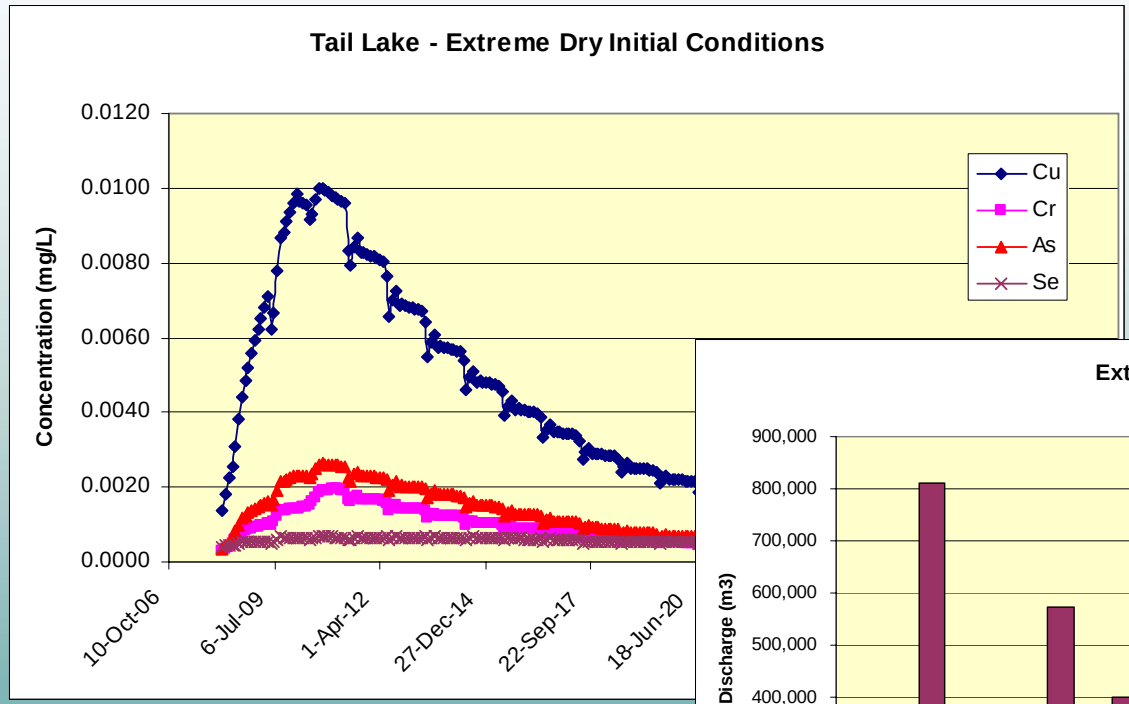
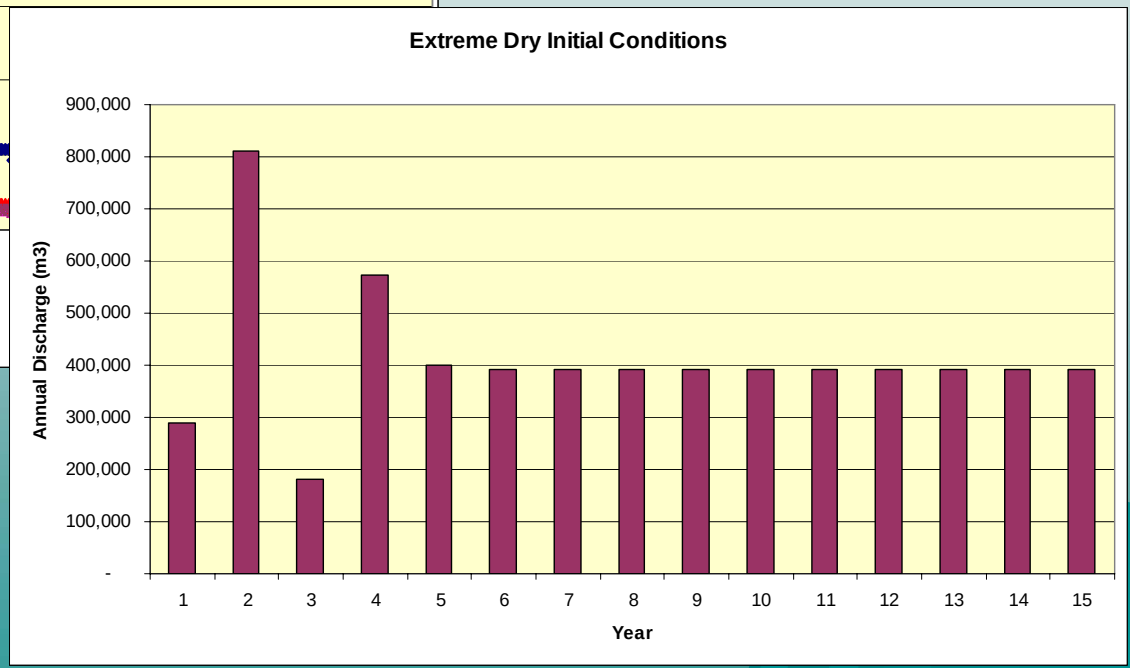




Simulation of Control Strategy





Tail Lake Water Management: Control Strategy

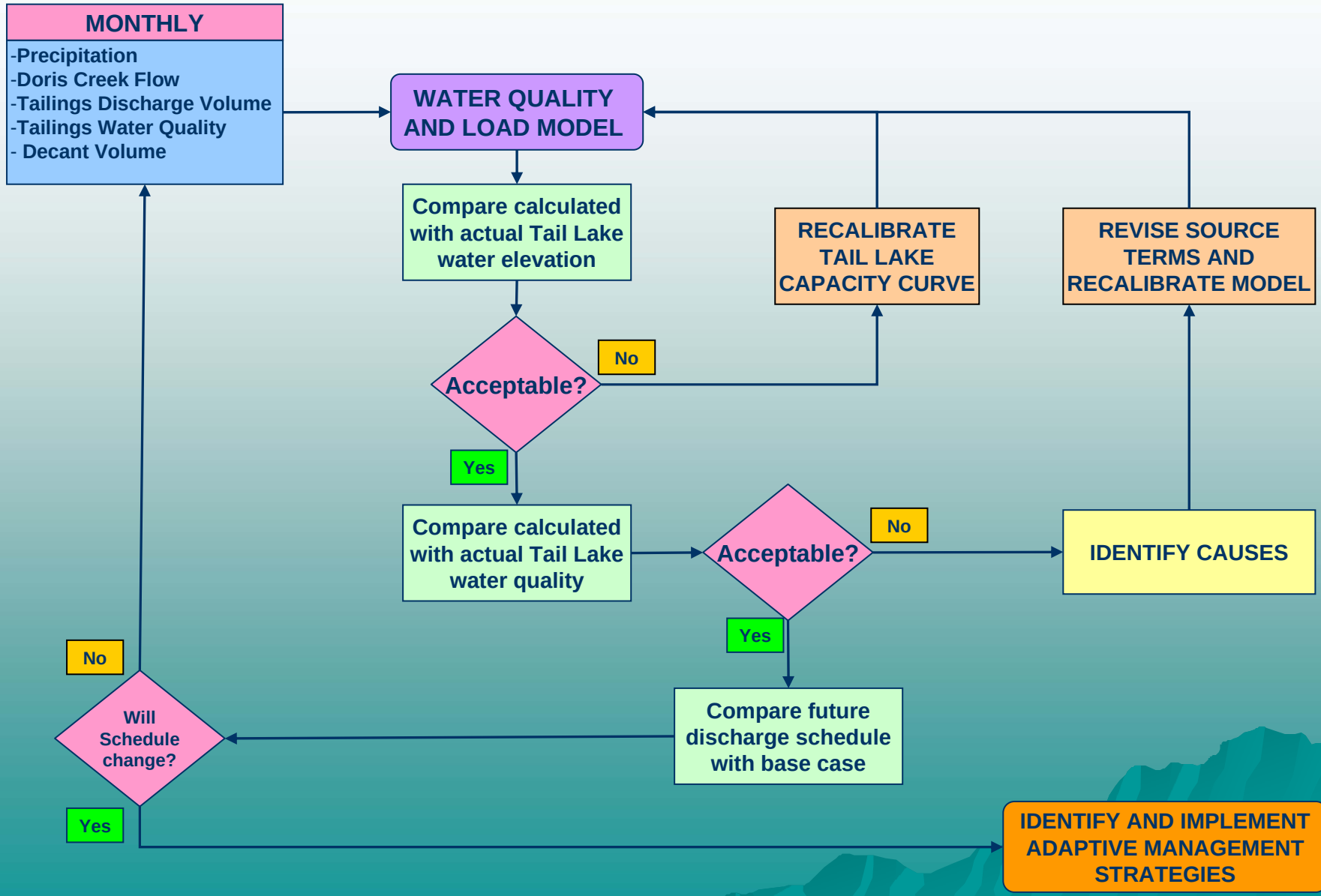
Conclusion:

- Model shows CCME guidelines can be met in Doris Creek
- Flexible – can be adjusted to suit changing conditions
- Minimizes timeframe for closure
- Minimizes water level rise in Tail Lake
- Reduces risk of shoreline erosion
- Uses conventional discharge methods

Operational Use of Model

- Model will not be used to determine or control discharge volumes
- Model shows that water quality will vary with climatic conditions
- Model will be used only to assess potential implications for future water management requirements
- Model will be revised for operational use to allow direct input of climatic and flow data / loadings

Operational Use of Model



Tail Lake Water Quality Model
Verification and Recalibration

Recalibration of the WQ Model:

What is Meant by Acceptable (significant difference)?

- Level of significance for water elevation is 0.1 m
- Level of significance for water quality is a function of actual climatic conditions
  - 20% increase in copper concentration in Tail Lake for "low flow conditions" could extend active management by 1 year
  - > 40 % Increase in copper concentration in Tail Lake for "base case" conditions is required to extend active management by 1 year

Environmental Management System

Environmental Management System

- MHBL has developed an integrated environmental health and safety management system (EHSMS) to encompass all of its operational activities at the Doris North Project site
- Web-site (Miramar intranet) based so accessible to all employees, easier to keep current
- Based on the Principle of:

  PLAN => DO => CHECK => ACT => CHECK AGAIN => ACT

- Continual Improvement

Environmental Protection Plan

- As part of the EHSMS, MHBL has developed an Environmental Protection Plan
- 15 Management Plans, encompassing:
  - Emergency Response & Contingency Plan
  - Air Quality Management
  - Noise Management
  - Waste Rock Management
  - Hazardous Materials Management
  - Explosives Management
  - Landfill Management
  - Landfarm Management
  - Tailings Management
  - Water Management
  - Quality Assurance & Quality Control
  - Mine Closure & Reclamation Planning
  - Monitoring & Follow Up
  - Wildlife Mitigation & Monitoring
  - Heritage Resource Protection
- Plans are “Living” Documents to be updated on a regular ongoing basis

Environmental Performance Monitoring

Environmental Performance Monitoring

- **The Monitoring & Follow Up Plan includes monitoring activity in the following areas**:
  - Air quality and climate monitoring
  - Noise monitoring
  - Hydrology monitoring
  - Site water quality monitoring
  - Geotechnical monitoring
  - Waste rock characterization
  - Aquatic effects monitoring
  - Fish monitoring
  - Vegetation and soil quality monitoring
  - Wildlife monitoring
- **MHBL have proposed an SNP sampling program, including WQ monitoring locations, frequency and parameters to be monitored**
- **MHBL's proposed monitoring programs meet or exceed all legislated and NIRB Project Certificate monitoring requirements**

Monitoring

- MHBL fully supports environmental monitoring & reporting to a level that ensures that the Project is meeting all regulatory requirements and to ensure that impacts are as predicted during EA (verify that mitigation measures are working & trigger adaptive management)

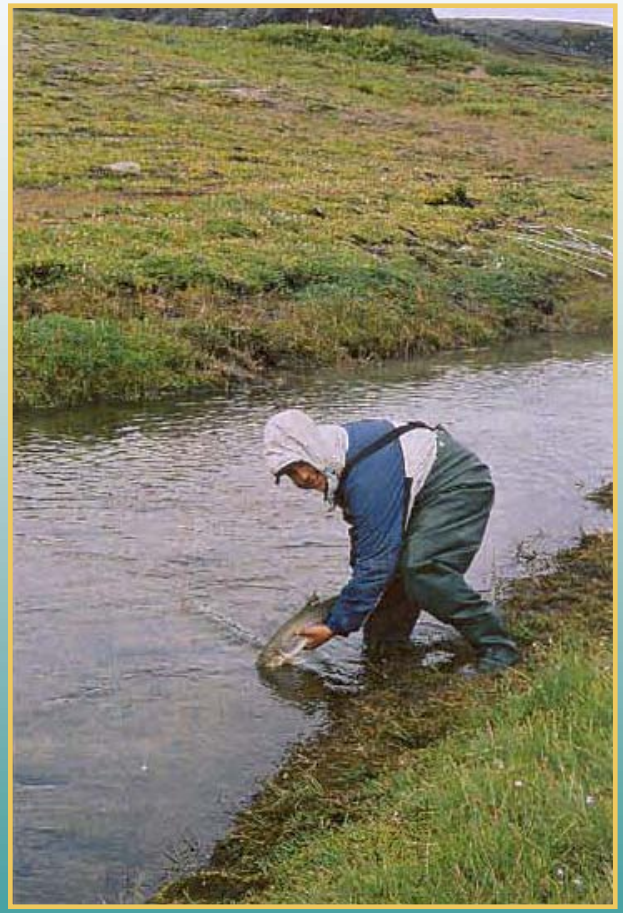
- MHBL is confident that the proposed monitoring programs have been developed to address all of the risks associated with the project

Monitoring

- Some interveners have recommended monitoring beyond that proposed by MHBL
- MHBL asks the Board to consider what monitoring & reporting is required to meet the objectives stated earlier and to hold the line on requiring the collection & reporting of additional data that may be nice to have but does not influence how the mine is regulated
- The Board can always add additional monitoring & reporting requirements to the Water License SNP at any time in the future if conditions demonstrate such a need

Closure and Reclamation Planning

Reclamation Planning



- Mine Closure and Reclamation Plan has been prepared by MHBL
- Reclamation planning has advanced beyond the conceptual level in view of the short mine life
- Project site can be reclaimed so that no perpetual care is required.
  - No long term water treatment or management required
  - Tailing solids will be under a 4 m water cover
  - Cyanide leach residue solids encapsulated in permafrost within the sealed underground mine

What Happens at Mine Closure?

- All access into the UG Mine will be sealed. Mine will remain in a frozen condition (permafrost)
- All ore and waste rock stockpiles will be removed
- Mill will be cleaned out and the mill dismantled
- All chemicals, hydrocarbons & hazardous materials will be removed from site

What Happens at Mine Closure?

- All equipment & buildings no longer needed will be cleaned and dismantled
- Equipment and building material with salvage value will be removed from site by sea lift
- Inert material with no salvage value will be buried in landfill on site
- Tail Lake will be returned to its pre-development water level by breaching the North Dam

Tail Lake Reclamation

- The annual water discharge from Tail Lake will continue in a managed fashion until it can be shown that there will be no impact on downstream aquatic life from an unregulated discharge from the lake (expected to be 3 to 7 years after mining ceases)
- Water level expected to return to pre-development level of 28.3 m ASL in third year following cessation of mining. Annual discharge will then equal the natural runoff into the lake

Tail Lake Reclamation

- Managed discharge will continue. The North Dam will then be breached.
- All tailings solids will be below 24.3 m level. Water cover will be 4 m hence no tailings solids will be exposed to surface after North Dam breached.
- One year before water level reaches 28.3 m level, MHBL will commission a human health and ecological risk assessment to determine when water quality is suitable for unregulated release.

Reclamation: How Long Will It Take?

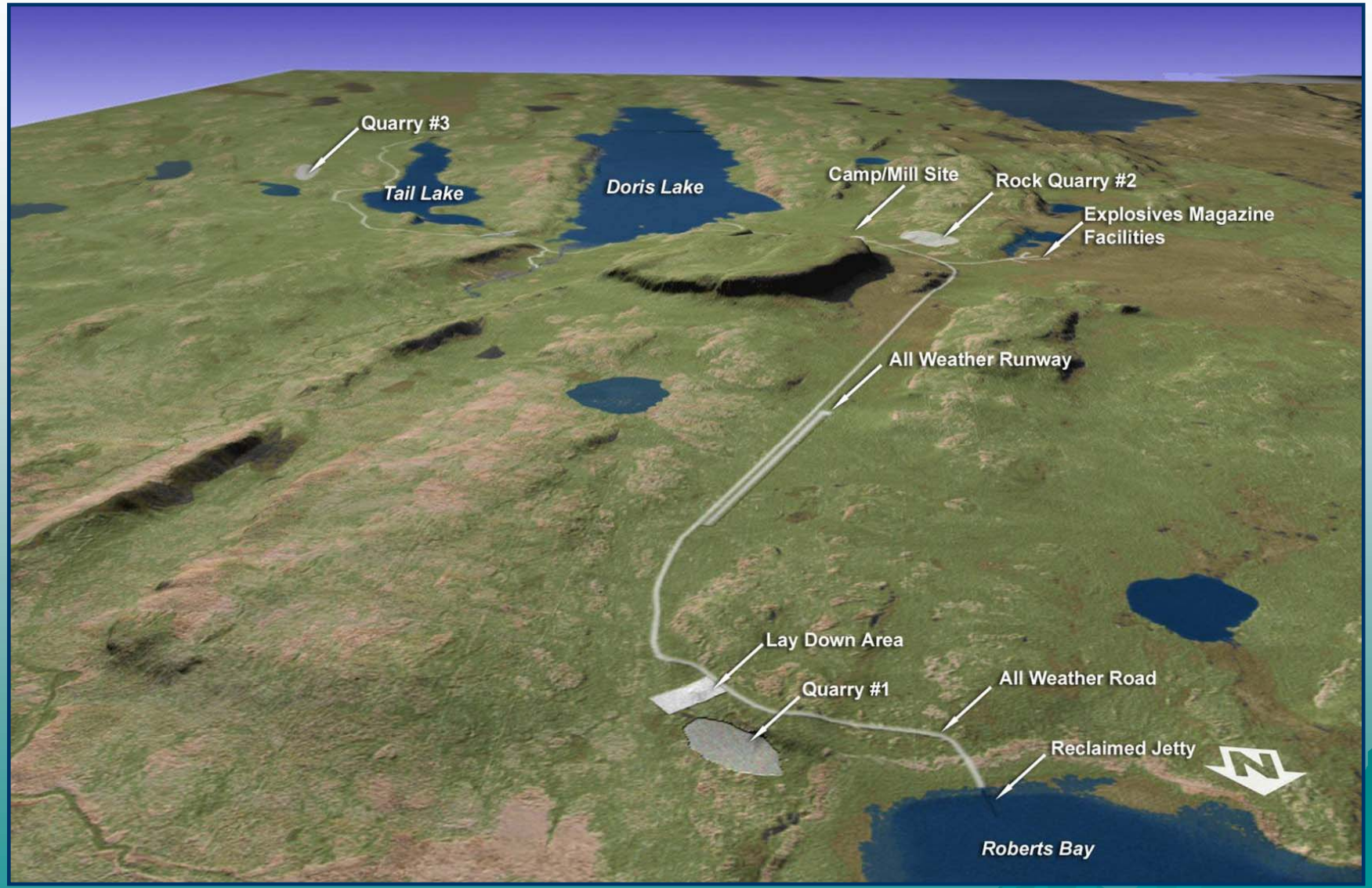
- Removing equipment & buildings will be done over two summers following the mine closure (completed by the end of 2010)
- Closure and reclamation of Tail Lake expected to be completed in 7 years following cessation of mining (2015)
- Post-closure monitoring will continue until it is shown that no environmental harm is happening (expected to be a minimum of 10 years following cessation of mining)

Reclamation: What May Be Left?

- Rock fill building pads & roadways (all rock drains, culverts and bridges will be removed)
- Landfill area buried under a cap of quarry rock
- Reclaimed construction rock quarries
- Roberts Bay jetty fill will be removed so that there is a minimum of 1 m of water cover over the remaining jetty base
- Tail Lake tailings containment area will remain as a flooded shallow lake with an armoured breach through the North Dam
- Fisheries compensation structures in Little Roberts Outflow, Little Roberts Lake, Roberts Bay and in Doris Lake

Depiction of Site after Reclamation

Depiction of Site after Reclamation



Financial Security

Estimated Cost of Reclamation & Post Closure Monitoring

- Cost of Reclamation was estimated by MHBL using both the KIA Reclamation Costing Model and INAC's RECLAIM Costing Model:
  - KIA Model $11.714 Million
  - INAC Model $11.535 Million
  - Both estimates discount future costs at a discount rate of 3%
    (i.e., Costs to be incurred after 2012 such as environmental monitoring and management of Tail Lake after the site has been physically reclaimed)
- INAC independently prepared their own estimate of this cost:
  - INAC Estimate $11.500 Million
  - Includes Future Costs Discounted at 3%
- MHBL worked cooperatively with the KIA to develop the reclamation cost estimate using the KIA Model
- Appears to be consensus that the cost of reclamation is in the order of $11.5 to $12 Million

MHBL Reclamation Cost Estimate

Capital Costs		
COMPONENT TYPE		TOTAL COST
UNDERGROUND MINE		$203,500
TAILINGS	Tail Lake	$2,608,493
BUILDINGS AND EQUIPMENT		$2,172,193
CHEMICALS AND SOIL MANAGEMENT		$406,500
MOBILIZATION/DEMOBILIZATION		$1,123,000
CARE AND MAINTENANCE DURING RECLAMATION		$302,000
SUBTOTAL		$6,815,686
PROJECT MANAGEMENT	15 % of subtotal	$1,022,353
ENGINEERING	10 % of subtotal	$681,569
CONTINGENCY	15 % of subtotal	$1,022,353
GRAND TOTAL - CAPITAL COSTS		$9,541,960
POST-CLOSURE MONITORING COST (NPV at 3%)		$984,231
POST-CLOSURE MONITORING CONTINGENCY 15%		$144,690
Years of post-closure monitoring	10	
POST CLOSURE MONITORING COST OVER 10 YEARS (NPV at 3%)		$1,128,921
POST CLOSURE MAINTENANCE ANNUAL AVERAGE COST		$26,000
Years of post-closure maintenance	200	
Discount Rate for Calc of NPV	3%	
POST CLOSURE MAINTENANCE SINKING FUND		$864,320
GRAND TOTAL CAPITAL AND POST-CLOSURE COSTS		$11,535,201

Estimated Security for Reclamation Liability

- KIA have indicated that they will ask MHBL for $11.7 Million under the Land Lease as reclamation security to protect KIA interests
- INAC have recommended that total reclamation security be $12.3 Million and of that $6.1 Million of this total is for water related reclamation liability
- The INAC recommendation on reclamation liability does not discount future costs. This differs from their past practice applied across the NWT and Nunavut and adds ~ $0.8 Million to the estimate

Double Bonding for Reclamation Liability

- To date INAC and the KIA have been unable to reach an agreement on how security held against reclamation at the Doris North Project could be jointly administered to reclaim the site if MHBL did not meet its obligations
- Hence KIA has indicated that they will seek $11.7 Million in security and INAC have recommended that the NWB seek $6.1 Million in security against water only related reclamation
- This would result in MHBL having to post total security bonds of $17.8 Million against an acknowledged reclamation liability of $11.5 to $12 Million (an excess of $5.8 to $6.3 Million)
- This $6 Million in double bonding is a significant issue to MHBL and to the mining industry as it has the potential to render larger projects to be developed on Inuit Owned Lands to become totally uneconomic

Double Bonding for Reclamation Liability

- Reclamation activities cannot be separated between land and water. They are interrelated.
- Trying to isolate water related reclamation from land related reclamation activities will lead to inefficient reclamation completed at much higher cost (potentially doubles project management, administration, mobilization costs, etc.)
- On a larger scale project this double bonding could add tens of millions of $ to the reclamation bonding requirements
- This makes development of mining projects on IOL unattractive and potentially penalizes Inuit beneficiaries without providing any improvement in protection
- This double bonding issue is unfair to industry and to Inuit and needs to be resolved by the Federal Government. MHBL has been asking both parties to reach some form of agreement for at least two years

Options for Resolving this Double Bonding Issue

- **Option 1:**
  - **INAC would hold the full reclamation security. INAC and KIA would have an agreement covering how they could jointly manage reclamation activity if the proponent fails to meet its reclamation obligation**
- **Option 2:**
  - **INAC hold full reclamation security for the project and in return provide the KIA with an indemnity against liability resulting from the mining company's activity on IOL. INAC and KIA could then have an agreement where they would jointly manage reclamation activity if the proponent failed to meet its reclamation obligation**

Options for Resolving this Double Bonding Issue

- **Option 3:**
  - **INAC and KIA each hold reclamation security that in combination represents the total estimated reclamation liability (i.e., with no overlap). KIA and INAC have an agreement that sets out how they will jointly manage reclamation if the proponent fails to meet its obligations. Both parties provide the other party with an indemnity against additional claims made by the other party against liability resulting from the mining company's activity on IOL**

- **Option 4:**
  - **INAC and KIA would jointly hold the full reclamation security. INAC and KIA would have an agreement covering how they could jointly manage reclamation activity if the proponent fails to meet its reclamation obligation (e.g. Boston)**

Estimate of Water vs. Land Related Reclamation Liability

Division of Water and Land Related Security

Future Costs Discounted at 3%	INAC ESTIMATE		Future Costs Discounted at 3%	MHBL ESTIMATE	
COMPONENT TYPE	LAND LIABILITY	WATER LIABILITY	COMPONENT TYPE	LAND LIABILITY	WATER LIABILITY
UNDERGROUND MINE	$183,500	$0	UNDERGROUND MINE	$163,500	$40,000
TAILINGS	$636,900	$609,600	TAILINGS	$511,332	$2,097,161
ROCK PILE	$0	$35,438	ROCK PILE	$0	$0
BUILDINGS AND EQUIPMENT	$1,855,043	$280,994	BUILDINGS AND EQUIPMENT	$2,117,493	$54,700
CHEMICALS AND SOIL MANAGEMENT		$414,140	CHEMICALS AND SOIL MANAGEMENT	$406,500	$0
POST CLOSURE SITE MAINTENANCE	$646,024	$1,771,856	POST CLOSURE SITE MAINTENANCE	$1,166,320	$0
SUBTOTAL	$3,321,467	$3,112,028	SUBTOTAL	$4,365,145	$2,191,861
PERCENTAGES	51.6%	48.4%	PERCENTAGES	66.6%	33.4%
MOBILIZATION/DEMOBILIZATION	$579,779	$543,221	MOBILIZATION/DEMOBILIZATION	$747,606	$375,394
MONITORING AND MAINTENANCE	$167,790	$157,210	MONITORING AND MAINTENANCE	$751,548	$377,373
PROJECT MANAGEMENT (10%)	$332,147	$311,203	PROJECT MANAGEMENT (15%)	$680,603	$341,750
ENGINEERING (5%)	$166,073	$155,601	ENGINEERING (10%)	$453,736	$227,833
CONTINGENCY (25%)	$830,367	$778,007	CONTINGENCY (15%)	$680,603	$341,750
SUB-TOTAL	$5,397,623	$5,057,270	SUB-TOTAL	$7,679,241	$3,855,961
MARKET PRICE FACTOR ADJUSTMENT (10%)	$539,762	$505,727		$0	$0
DISCOUNTED SPLIT GRAND TOTAL	$5,937,385	$5,562,997	DISCOUNTED SPLIT GRAND TOTAL	$7,679,241	$3,855,961
COMBINED GRAND TOTAL	$11,500,382		COMBINED GRAND TOTAL	$11,535,202	
UNDISCOUNTED SPLIT GRAND TOTAL	$6,206,298	$6,118,768	UNDISCOUNTED SPLIT GRAND TOTAL	$7,738,556	$4,514,694

Double Bonding Issue

- INAC estimates the split between Land and Water liability as ~ 50%:50%
- MHBL sees the split between Land and Water liability as ~ 67%:33%
- Hard to separate land from water liability; Most sensible method is to approach reclamation on a combined approach
- MHBL should not be asked to double bond reclamation liability – Parties holding security need to cooperate
- Without such cooperation Double Bonding will be a significant disincentive to investing in mine development on IOL