C0791-001

Whites Point Quarry and Marine Terminal

Environmental Effects Presentation to the Joint Review Panel

Introduction & Overview
Presentation Outline

- Part 1: Background / Introduction
- Part 2: EA Process
- Part 3: Description of the Existing Environment
- Part 4: Effects Assessment
- Part 5: Overall Conclusion of the EA

Introduction & Overview
Project Team - Environmental & Engineering Consultants

- AMEC Earth and Environmental
- Atlantic Marine Geological Consulting Ltd
- Gardner Pinfold
- Jacques Whitford Environmental Limited
- JASCO Research Ltd
- LGL Limited
- Mallet Research Services Ltd.

Introduction & Overview
Project Team:
Senior Staff, Scientists, Consultants

Bilcon Representatives

- Paul Buxton. P.Eng. – Project Manager
- John Wall – Operations Manager
- Josephine Monk Lowry – EIS Director

Study Team Experts/Scientists (in attendance)

- John Amirault, P.Eng. – Engineering, Malfunctions & Accidents
- George Alliston, PHD – Terrestrial Vertebrates and Marine Birds
- David Kern , B.Sc. - Environmental Planning
- Ruth Newell, M.Sc. - Botany
- John Walker, PHD – Noise and Air Emissions
- Uwe Wittkugel, M.E.Des. – Environmental Assessment Process

The EA Process

The EA Process

Guidance for the Environmental Assessment

- Nova Scotia Environment Act
- Canadian Environmental Assessment Act (CEAA)
- Provincial and Federal Joint Panel Agreement (Nov. 3, 2004)
- EIS Guidelines (Joint Review Panel, March 2005)

The EA Process

Objectives/ Purpose of the Environmental Assessment

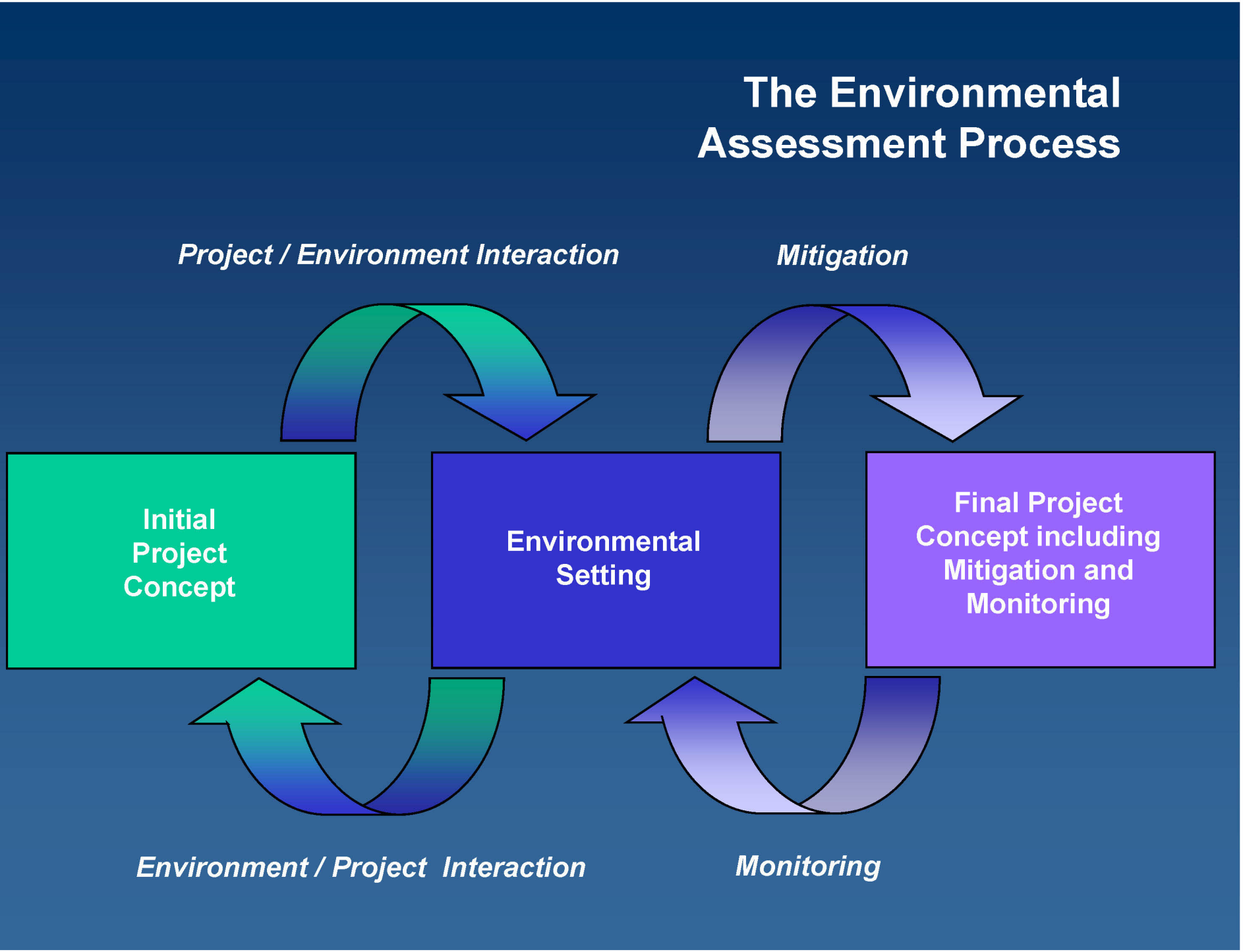
- Serve as planning tool (early project stages)
- Identify potential for environmental change
- Provide for compliance with regulatory framework
- Ensure transparency
- Facilitate public involvement

The EA Process

Key EA Process Elements

- Project description
- Environmental baseline
- Scoping, project-environment Interactions
- Valued Environmental Components (VECs)
- Assessment of effects
- Mitigation
- Residual effects and their significance
- Cumulative effects
- Effects of the environment on the Project
- Malfunctions and accidents
- Overall conclusion

The Environmental Assessment Process



C0791-009

The EA Process
Determination of Significance

Criteria for determining significance

- Magnitude
- Frequency/Duration
- Geographic Extent
- Reversibility
- Ecological Context

The EA Process
Public Involvement

Comprehensive consultation via:

- Issues scoping meetings
- Public meetings
- Open house events
- Meetings with individuals and stakeholder groups
- Open door policy at Bilcon field office
- Community surveys (quality of life; attitudes)
- Newsletters
- E-mail; telephone; fax; letters

" Health Canada acknowledges the effort invested by the proponent regarding the public information and consultation process as detailed in the EIS Guidelines. Communication activities and information are well presented and easy to retrieve. "

Source: Health Canada Review Comment

The EA Process
Principles

Ecosystem Approach

- Interconnections: physical, biological, human environment
- Links: terrestrial, coastal zone, and oceanic processes
- Interchanges: subsurface, surface, atmosphere
- Repercussions: local, regional, national and global levels

The EA Process
Principles

Precautionary Principle

- Planning for worst case scenarios
- Conservative model assumptions
- Avoidance strategies
- Extensive and frequent monitoring
- Low threshold values/trigger values
- Frequent review of monitoring results (3rd party reviews)
- Adaptive management approach

Description of the Existing Environment

Existing Environment Component Studies (Examples)

Biophysical Studies

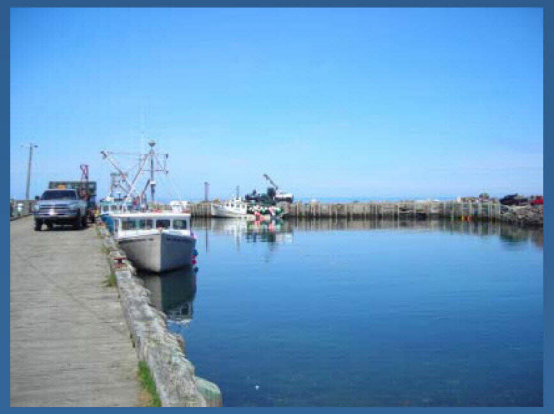
- **Terrestrial Surveys/Studies**
  - Migratory birds, breeding birds
  - Vegetation
  - Mammals
  - Herpetofauna
  - Lepidoptera (Butterflies)
  - Odonata (Damselflies and Dragonflies)
- **Marine Surveys/Studies**
  - Intertidal habitat and communities
  - Near-shore coastal habitat and communities
  - Plankton communities
  - Waterbirds
  - Marine mammals
  - Sediment, -transport
  - Water & sediment quality (suspended solids; chemistry)
  - Physiography and bathymetry
- **(Hydro-) Geological Investigations**
  - Geology (marine and on-shore environments)
  - Hydrogeology incl. residential wells (chemistry, yield)
  - Seismic hazard, faults and earthquakes
- **Air Quality, Noise**
  - Dust levels
  - Greenhouse gas generation
  - Noise level predictions
  - Peak pressure and ground vibration (blast-related)
  - Shock wave propagation (modeling of marine environment)

C0791-016

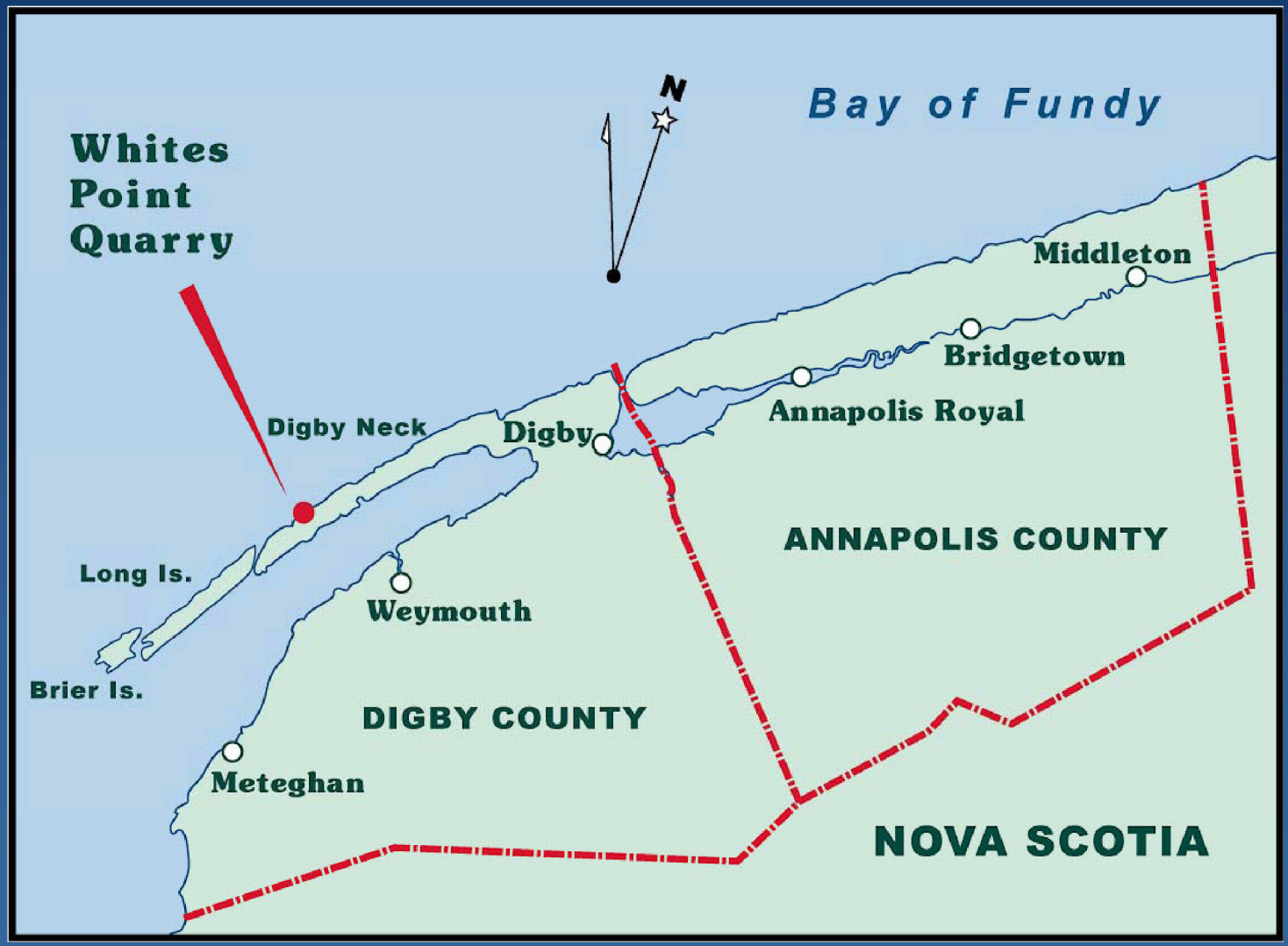
Existing Environment
Component Studies (Examples)

Socio-Economic

- **Land Use (existing, traditional)**
- **Transportation (land)**
- **Land Ownership**
- **Archaeology (terrestrial, marine)**
- **Visual Aesthetics (visibility)**
- **Economic Profile of Community/Region**
  - Employment
  - Income
  - Business sectors
- **Human Health and Community Wellness**
  - Contaminants (marine & land)
  - Country food
  - Drinking water quality
- **Resident Attitudes**
- **Traditional Knowledge**



Existing Environment
The Project Site



C0791-017

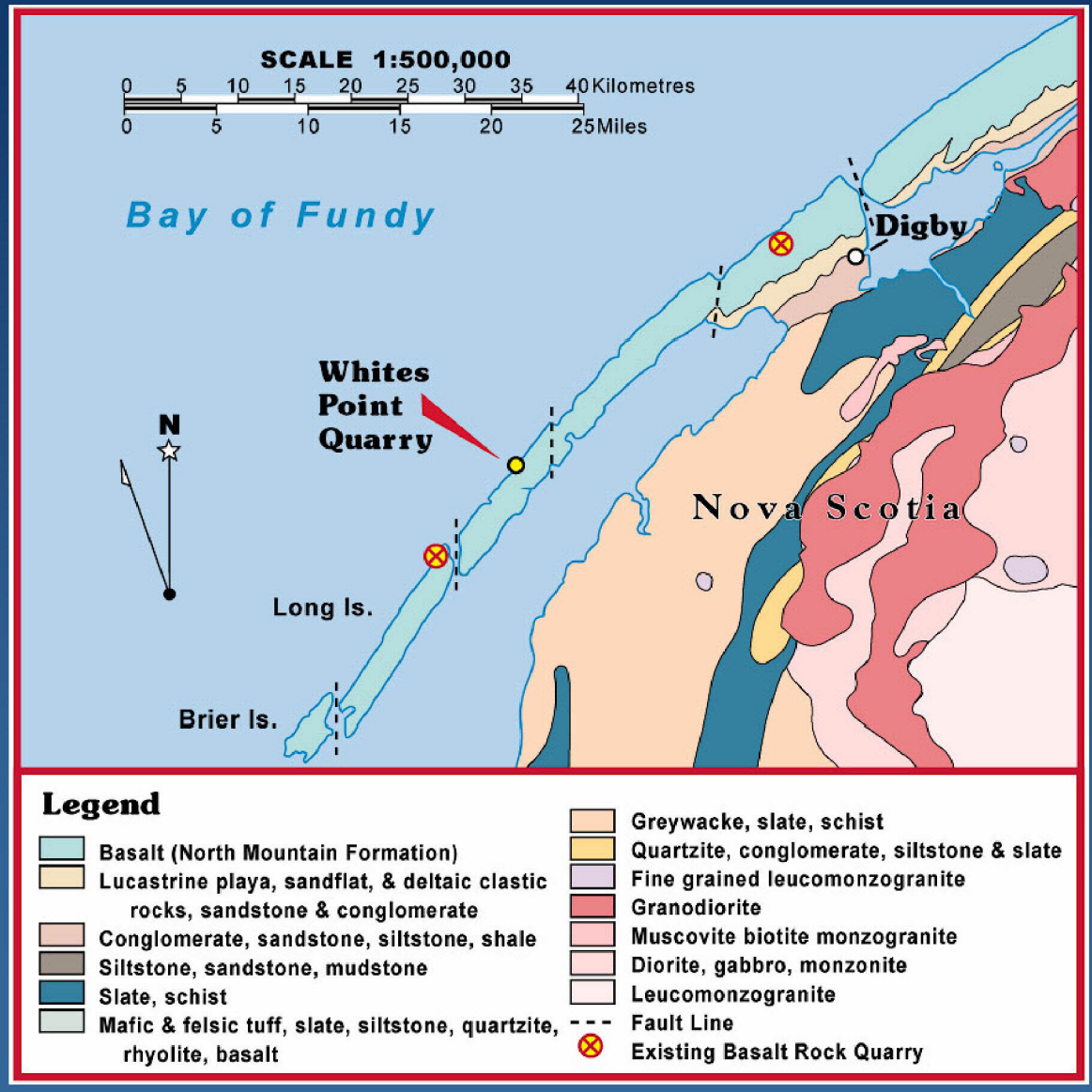
Existing Environment
Physical Environment

Key Features

- 154 ha (380 acres) site
- 2.6 km (1.6 miles) coastline
- Located on Bay of Fundy side of North Mountain
- Soils are thin overlying North Mountain Basalt
- Highest point: ~ 90 m ASL
- Existing topography slopes towards the Bay of Fundy
- Groundwater divide east of active quarry site (near eastern property boundary)
- Intermittent water courses (most defined at north and south end of property)
- One wetland (coastal bog)

Existing Environment - Physical

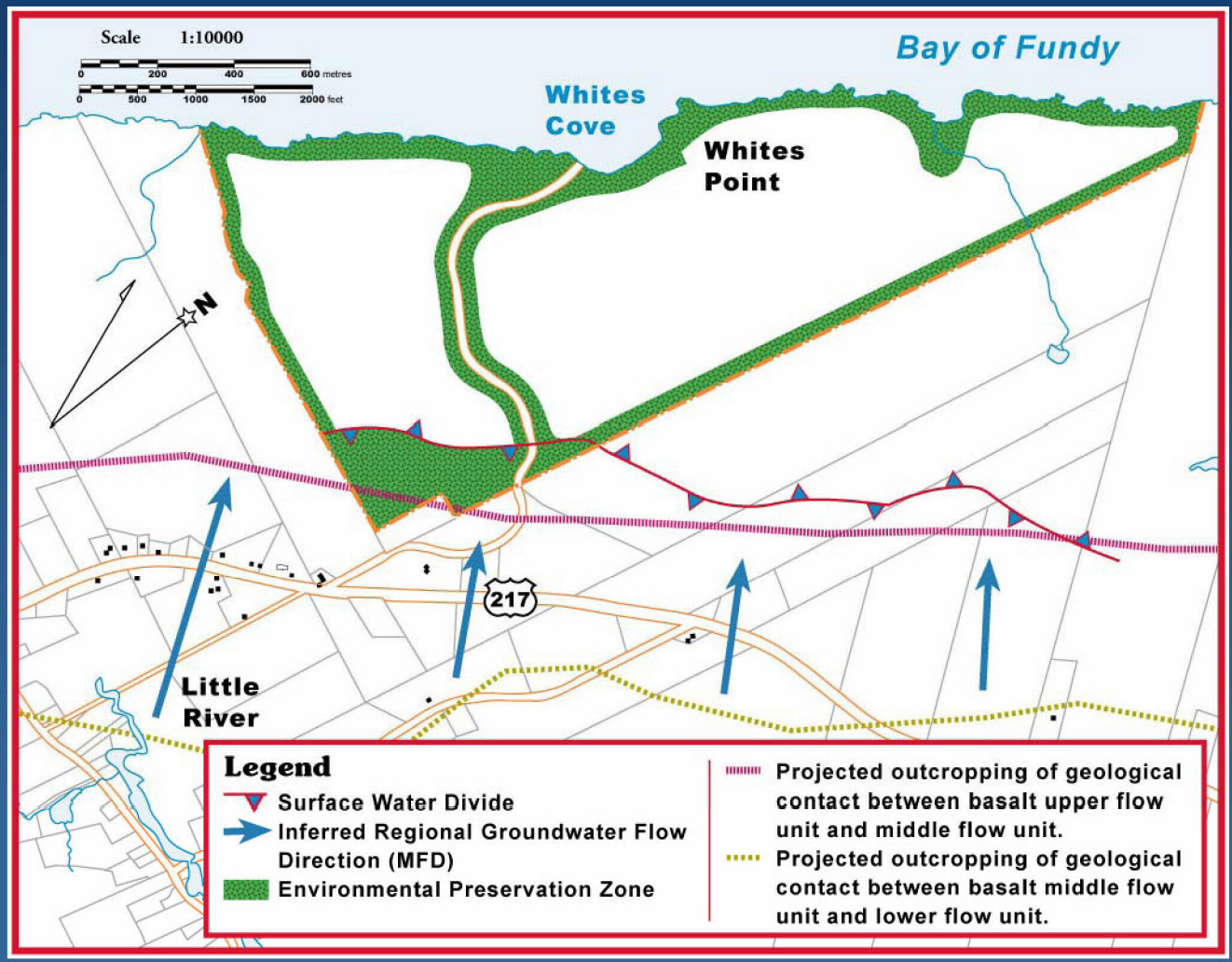
Project Site:
North Mountain Basalt Formation



C0791-019

Existing Environment - Physical

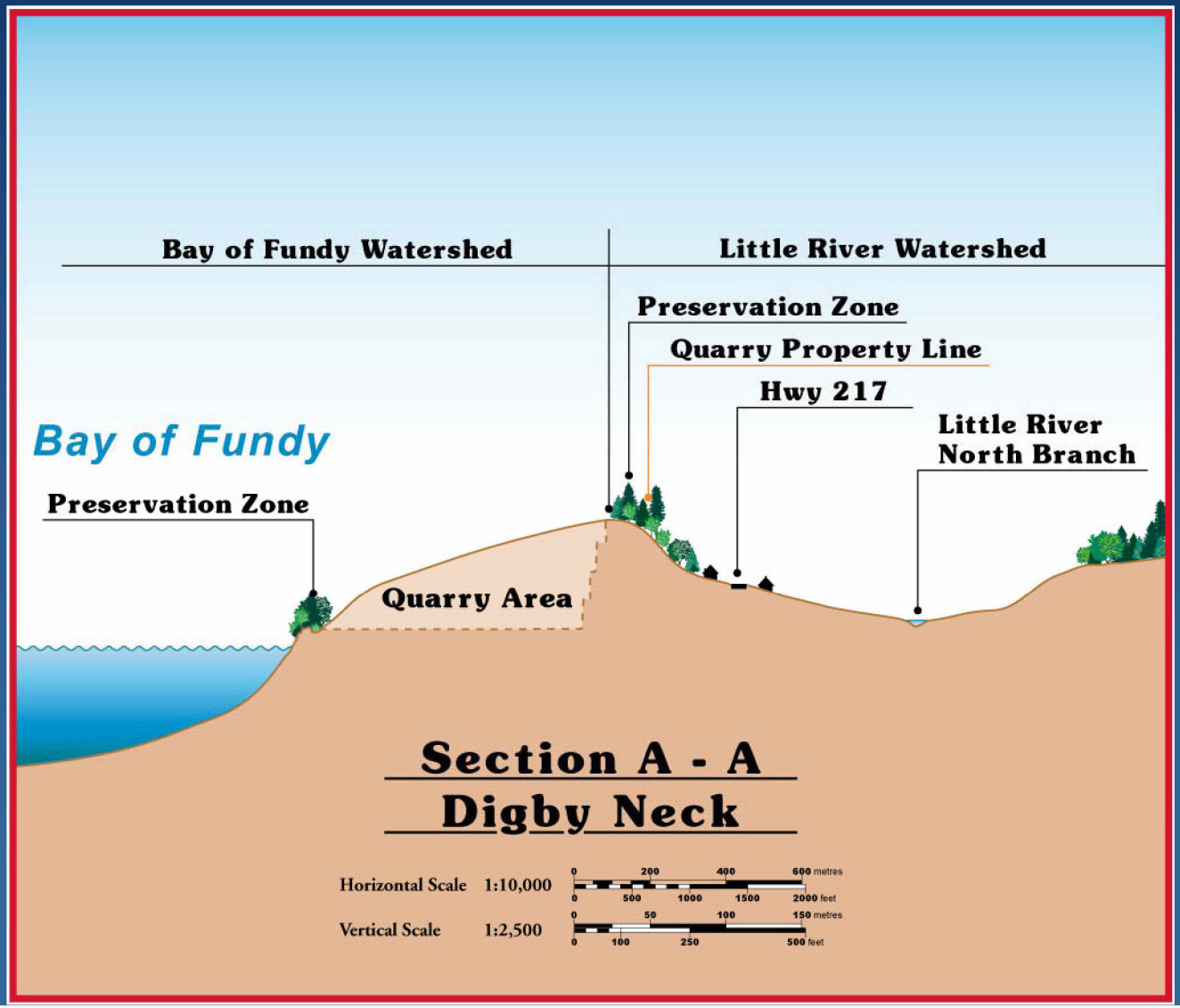
Groundwater Flow Direction



C0791-020

Existing Environment - Physical

Topography



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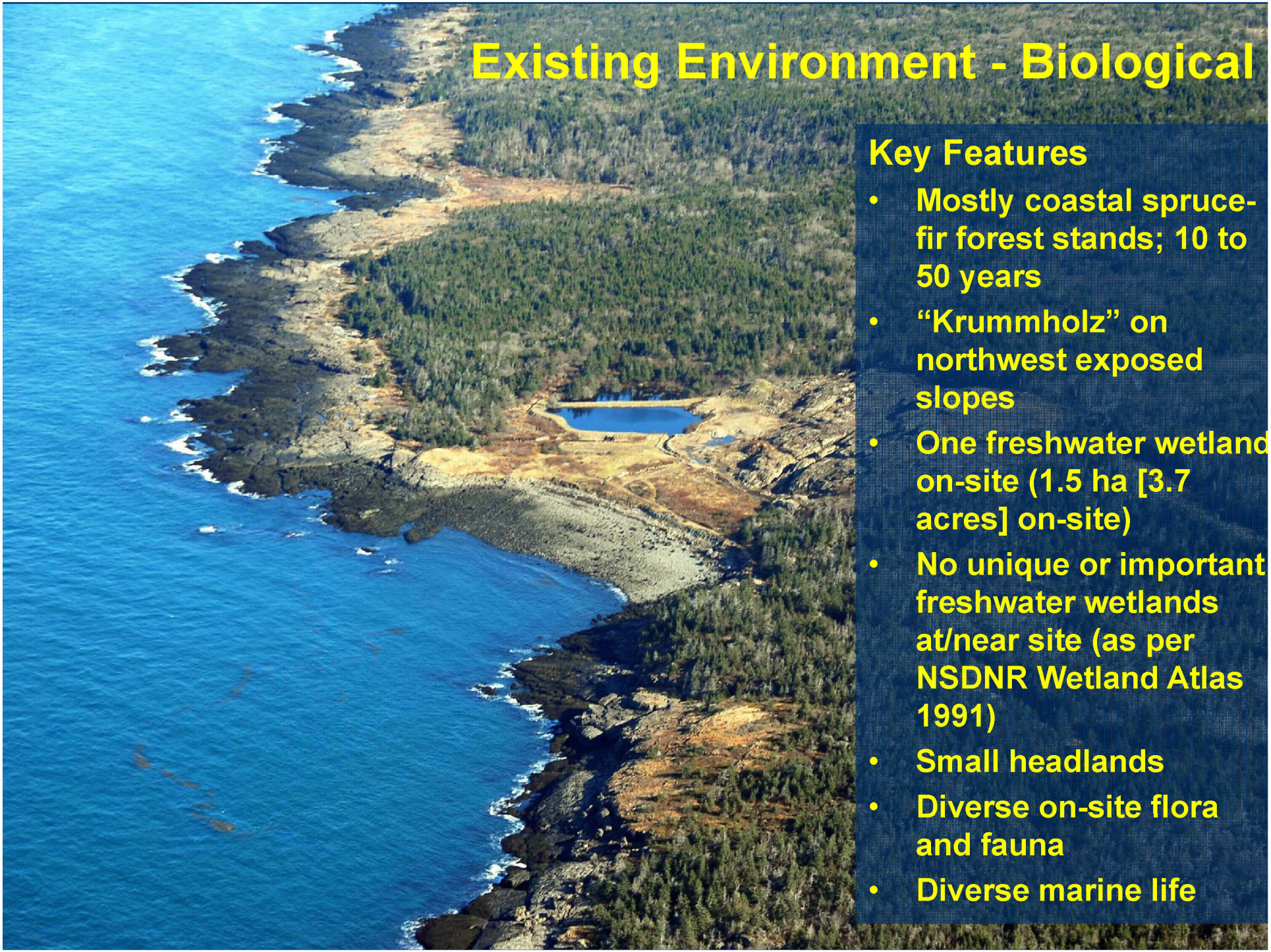

Existing Environment - Biological
Key Features
• Mostly coastal spruce-fir forest stands; 10 to 50 years
• "Krummholz" on northwest exposed slopes
• One freshwater wetland on-site (1.5 ha [3.7 acres] on-site)
• No unique or important freshwater wetlands at/near site (as per NSDNR Wetland Atlas 1991)
• Small headlands
• Diverse on-site flora and fauna
• Diverse marine life

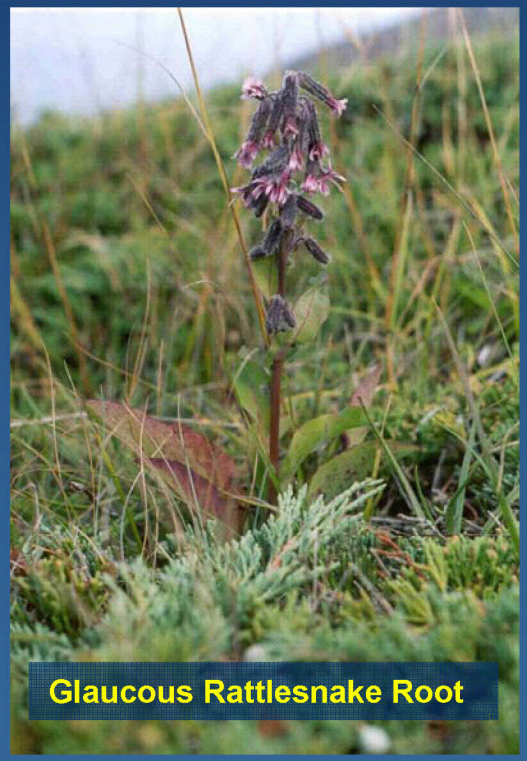
C0791-022

Existing Environment - Biological

Plant Species at Risk – NS GSR

- Vegetation/ Flora
  - Hemlock Parsley (NS: yellow)
  - Mountain Sandwort (NS: yellow)
  - Glaucous Rattlesnake Root (NS: Blue – to be reclassified)

(No plants with federal conservation status.)



Existing Environment - Biological

Species at Risk in accordance with:

- **Federal Species at Risk List** (SARA, Schedules 1 to 3)
- **COSEWIC** (Committee on the Status of Endangered Wildlife in Canada)
  - Endangered, Threatened, Special Concern
- **Nova Scotia Endangered Species Act**
  - Endangered, Threatened, Vulnerable
- **Nova Scotia General Species Ranks** (NSDNR)
  - Blue, Red, Yellow

Existing Environment - Biological

Terrestrial Fauna at Risk (Site)

- **Mammals**
  - Little Brown Bat (NS: yellow)
  - Northern Long-Eared Bat (NS: yellow)
  - (Note: site for possible foraging)
- **Land Birds** (breeding)
  - None identified on-site

  (Note: migrants at risk likely to pass over / through site)
- **Odonata; Lepidoptera** (Damselflies & Dragonflies; Butterflies)
  - None identified on-site

"The calibre of individual field investigators is very high, and accordingly we have high confidence in the quality of their results and recommendations"

Source: NSDNR Review Comment


Little Brown Bat

Existing Environment - Biological

Marine Biota at Risk (Bay of Fundy)

Marine Mammals

- North Atlantic right whale
- Harbour porpoise
- Fin whale (occasional in area)
- Blue whale (occasional in area)

Marine Fish

- Atlantic Cod
- Porbeagle Shark
- White Shark
- Shortfin Mako
- Winter Skate
- Atlantic Wolffish
- Blue Shark
- American Eel
- iBoF Salmon
- Atlantic Whitefish
- Striped Bass

Other Species

- Leatherback Turtle

Waterbirds – Site

- Common Loon

Note: all but Common Loon federally listed (SARA, Schedule 1 or COSEWIC); Common Loon provincially ranked "yellow"

Existing Environment
- Socio-Economic/Cultural

Site Characteristics

- Vacant property (former pit & licensed 4a quarry site)
- Site accessible via Highway 217
- Access to shoreline via public road (Whites Cove Road)
- Nearest village: Little River
- Nearest (non-Bilcon) residence ~ 350m (~1000 ft) from active quarry
- 24 active wells within site vicinity (17 drilled, 7 dug wells)
- No designated/registered heritage properties on-site
- No significant archaeological features identified

Existing Environment - Socio-Economic/Cultural

Aerial View of Little River

Effects Assessment

Effects Assessment
Project Works and Activities

Construction Phase

- Site Development
- Infrastructure (power, water supply; water treatment; access)
- Admin. & processing units
- Marine terminal

Operation Phase

- Quarry face development
- Blasting
- Processing, stockpiling
- Loading
- Marine transport
- Site rehabilitation (incremental)
- Water Management

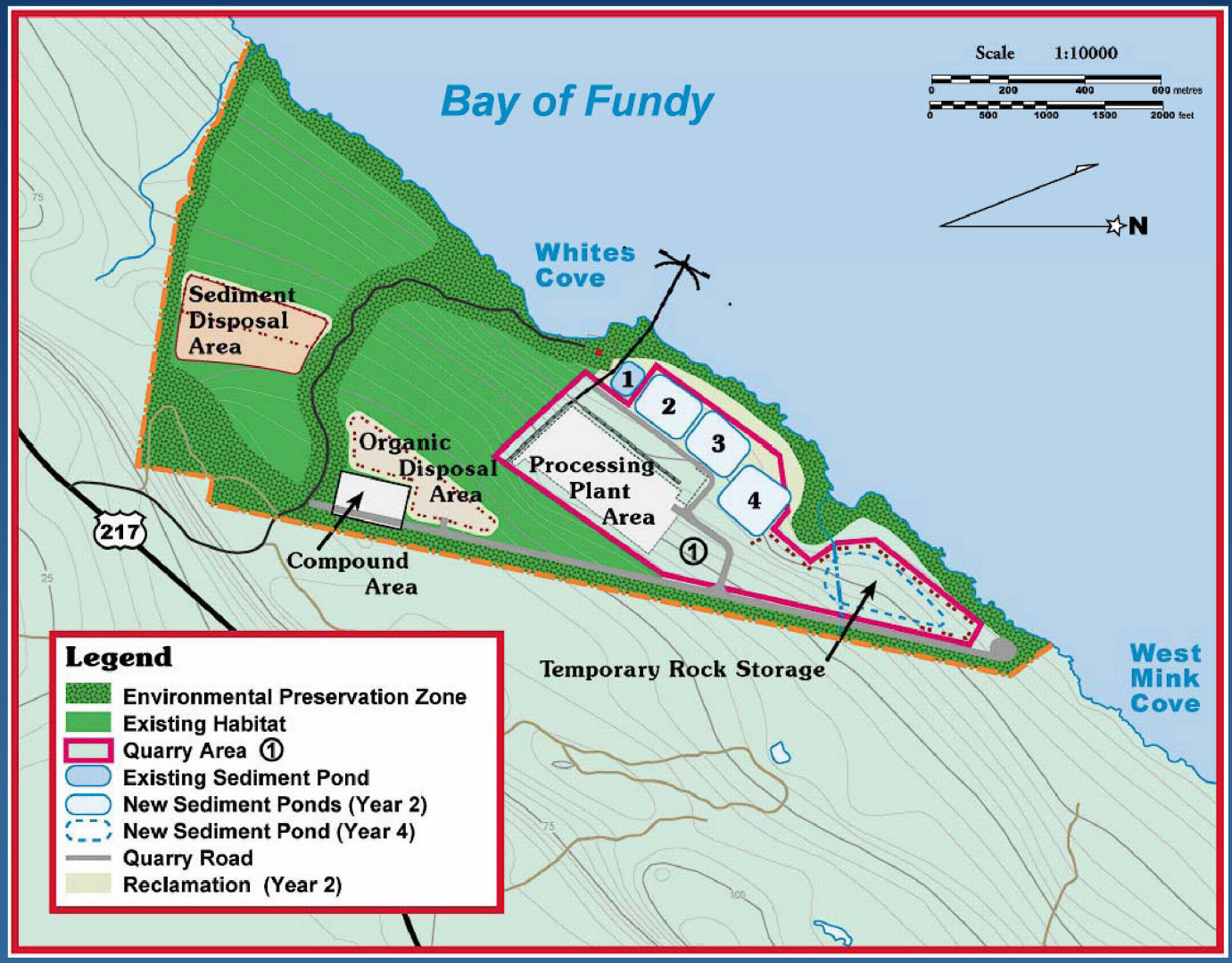
Decommissioning/ Abandonment Phase

- Site decommissioning
- Site reclamation
- Monitoring

C0791-030

Effects Assessment
Project Works and Activities

Quarry
Years 1-5



C0791-031

Effects Assessment
Valued Environmental Components (VECs)

VECs are…

- issues or features of concern (e.g., air quality)
- potentially affected by the Project (directly or via pathway)
- established to focus the EA work
- identified in consultation with public.

Effects Assessment VECs

Description of the Existing Environment,

Analysis of Interactions, Effects

Bio-physical VECs

- Climate
- Geology & Hydrogeology
- Surficial Geology and Soils
- Surface Water
- Physical Oceanography
- Air Quality
- Noise and Vibration
- Light
- Terrestrial Ecology
- Aquatic Ecology – Freshwater
- Aquatic Ecology - Marine

Socio-Economic VECs

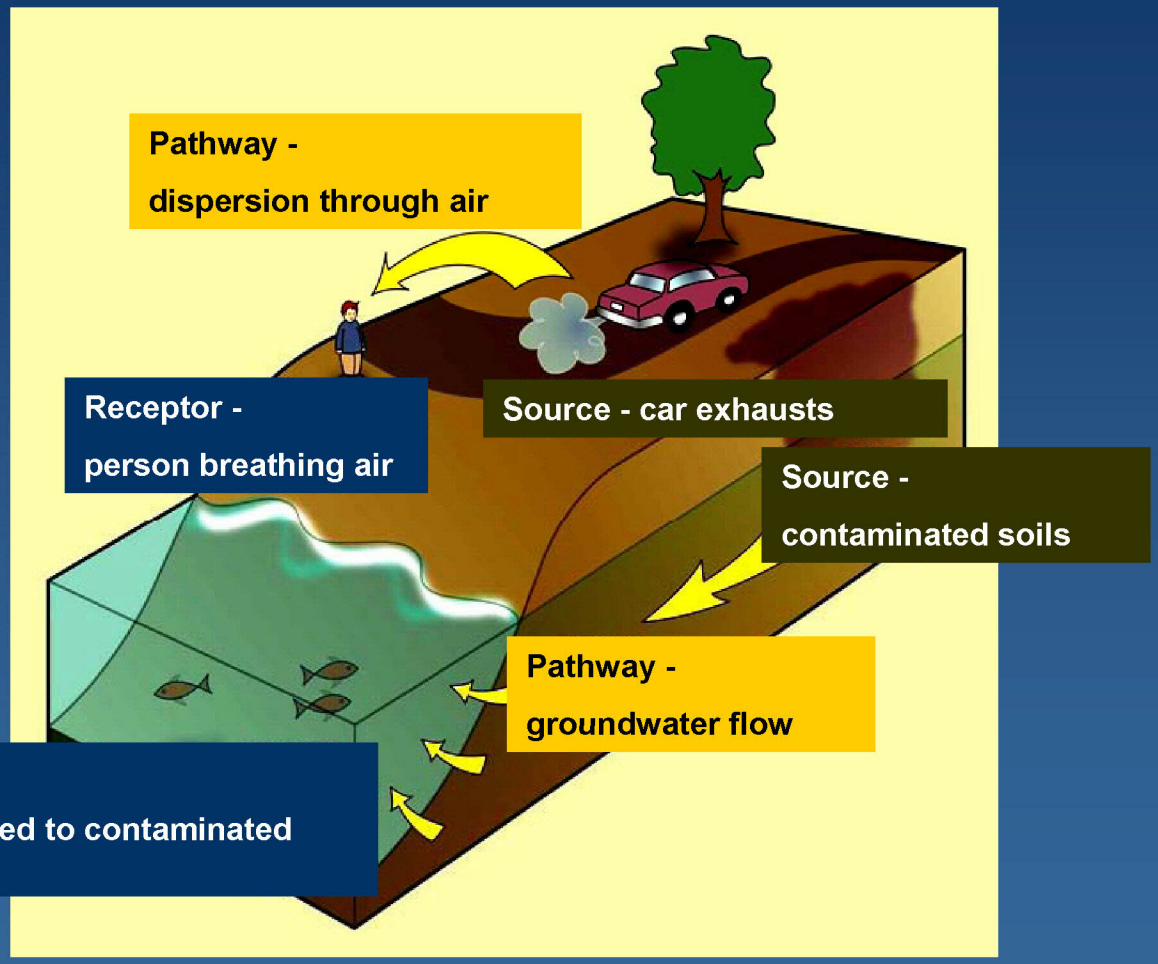
- Heritage Resources (incl. Archaeology)
- Aboriginal Land and Resources Use
- Transportation
- Economy
- Human Health, Wellness
- Socio-Cultural Environment

Effects Assessment
Key Concerns

Key Concerns

- Interactions/Pathways
  - Direct interaction (e.g., removal of habitat)
  - Interaction via pathways (e.g., ground water and domestic wells)
- Receptors
  - Ecological Health (flora, fauna)
  - Socio-Economic Environment
  - Human Health

Effects Assessment
Pathways



Source-Pathway-Receptor Schematic

C0791-035

Air Quality, Noise

Effects Assessment
Air Quality and Noise

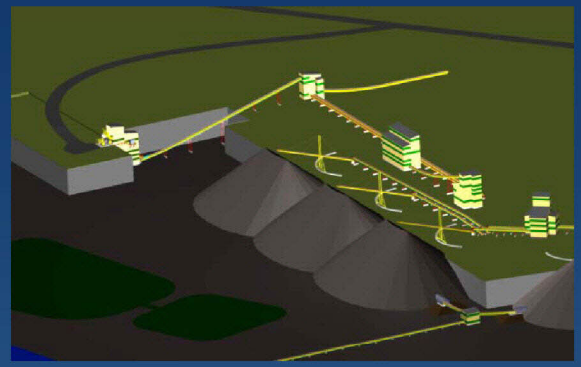
Key concerns:

- Dust (total suspended particulate –TSP)
- Greenhouse gas emissions
- Operation related noise emissions

Effects Assessment
Air Quality and Noise

Analysis, Key Considerations

- Existing air quality, noise levels
- Potential emission sources
- Guidelines, standards
- Noise level modeling (CadnaA model)
- Mitigation measures
- Significance of effects
- Environmental Management (compliance monitoring & adaptive management)



Example: Screens (closed facility)

Example: Screens (open facility)

C0791-038

Effects Assessment
Air Quality and Noise

Thresholds for Significance (NSDEL Pit and Quarry Guidelines):

- Maximum Dust (TSP) at/beyond property boundary:
  - 70 ug/m^3 annual mean or
  - 120 ug/m^3 over 24 hr period
- Maximum sound level limits (non-blasting)
  - **Day** (7:00 – 19:00): **65 dBA** at property line
  - **Evening** (19:00 – 23:00): **60 dBA** at property line
  - **Night** (23:00 – 7:00): **55 dBA** at property line
- Maximum noise & vibration (blasting related)
  - 128 dBA within 7m of nearest structure
  - 12.5 mm/sec peak particle velocity at nearest structure

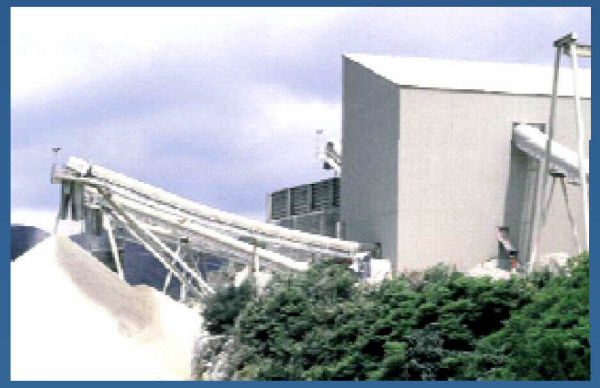
Effects Assessment
Air Quality and Noise

Key Mitigation Measures (Dust & Noise):

- Use of electric power (conveyor systems, stationary equipment, ship loader)
- Marine transport (no truck haul through residential areas)
- Paved access road from Hwy 217 to quarry
- Enclosures for processing equipment (incl. crusher)
- Minimal direct rock/steel contact (i.e., lined steel surfaces)
- Hooded conveyor system
- Use of dust suppressants - water
- Forest cover/ vegetated perimeter zone
- No blasting within 800m of residential structure outside of quarry
- No blasting on Sunday/statutory holiday
- No blasting between 18:00 and 8:00 hrs
- Environmental Management Plans

Compliance Monitoring at Site Boundary:

- Particulate matter (dust)
- Noise and vibration (operation and blast-related noise)
- Results to be made available to regulators, CLC and other interested parties



Example: enclosed crushing structure

C0791-040

Effects Assessment
Air Quality and Noise

Results & Conclusion (Dust and Noise):

Predictions:

- Noise levels (operation & blasting) to remain within guidelines (based on model/ proposed monitoring & operation)
- Dust levels to remain within guidelines (based on similar quarry project/ proposed monitoring & operation)

Conclusions:

- Effects not significant:
  - Within provincial guidelines
  - Localized
  - Blasting noise / vibration limited to 1 event every 1 to 2 weeks

"We are satisfied that the mitigation measures proposed in the EIS for air quality issues are adequate."

Source: NSDEL, Air Quality Branch

C0791-041

Effects Assessment
Air Quality and Noise

Greenhouse Gases:

- **Analysis, Key Considerations**
  - On-site sources minimal (mobile equipment)
  - No legislation/standards for industry in place (Kyoto Protocol applies to states only)
  - Estimated GHG generated/year: 0.27% of total for NS
- **Mitigation**
  - Incremental site reclamation (creation of carbon sinks)
  - Chipping and re-use of wood fibers from land clearing
  - Commitment to
    - Energy conservation and
    - Use of alternative energy (e.g., biodiesel fuel)
    - Continuous exploration of new technologies and evolving policies re climate change/GHG emissions
- **Conclusion**
  - The operations will meet Guidelines
  - Effects not significant

"…there are no implications under the Kyoto Protocol for this project"

Source: Foreign Affairs Review Comment

C0791-042

Terrestrial Environment

Effects Assessment
Terrestrial Environment

Key concerns:

- **Species at Risk**
  - Flora
  - Fauna (birds, mammals)
- **On-site wetland (coastal bog)**

Mountain Sandwort

Effects Assessment
Terrestrial Environment

Analysis, Key Considerations

- **Existing conditions (Surveys/Studies)**
  - Vegetation communities/habitat
  - Birds (i.e., migratory, breeding)
  - Vegetation, Flora
  - Mammals
  - Herpetofauna
  - Arthropods - Lepidoptera (Butterflies), Odonata (Damselflies and Dragonflies)
- **Interactions with Project**
  - Habitat removal (all plant species at risk within Preservation Zone)
  - Disturbance/ habitat impairment (e.g., drainage)
  - Direct loss of species
  - Contribution to threat factors
- **Conservation status of plants/animals (federal & provincial)**
- **Mitigation**
- **Site rehabilitation**
- **Environmental Management (monitoring & adaptive management)**

Effects Assessment
Terrestrial Environment

Thresholds for Significance

- **Species at Risk (SAR):**
  - Long-term sustainability of SAR population jeopardized as a result of magnitude, geographic extent and frequency of effect; effect irreversible

- **Wetlands**
  - Long-term sustainability of on-site wetland jeopardized as a result of magnitude, geographic extent and frequency of effect; effect irreversible

Effects Assessment
Terrestrial Environment

Mitigation

- **Environmental Preservation Zone**
- **Species-specific mitigation plan (e.g., habitat management)**
- **Wetland/pond creation**
- **Incremental site reclamation**
- **Forest / habitat management on-site and on adjacent lands**
- **Monitoring / Follow up**
  - Species at Risk
  - Invasive species
  - Habitat rehabilitation

Hemlock Parsley

Effects Assessment
Terrestrial Environment

Conclusion

- **No significant adverse effects:**
- **Plant Species at Risk**
  - All plant SAR found/protected in Preservation Zone
  - Sustainability of population not affected
- **Mammal Species at Risk (Bats)**
  - Bats possibly use site for foraging purposes
  - Sustainability of population not affected (extensive foraging habitat available beyond site boundaries)
- **On-site Wetland**
  - Sustainability of wetland not affected (i.e., effects, if any, small scale, localized, temporary, reversible)
  - Potential for "net gain" through creation of additional wetland and site reclamation

"The authors and proponent are to be commended for the rigour applied to examination of these issues, in particular their consideration of rare species and species potentially at risk."

Source: NSDNR Review Comment

Marine Environment

Environmental Effects
Marine Environment

Key concerns

- **Blasting – effects on**
  - Whales
  - Water birds
  - Fish (incl. Fish Species at Risk)
  - Lobster
- **Marine Transport – ship-whale collisions**
- **Introduction of invasive species**

C0791-050

Environmental Effects
Marine Environment - Blasting

Potential Effects of Blasting

- **Whales**
  - Auditory damage
  - Behaviour changes
  - Masking effects
- **Waterbirds, Fish, Lobster**
  - Adverse health/behavioural effects

Environmental Effects
Marine Environment - Blasting

Regulatory Requirements

- **Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters (DFO1998)**
  - No explosives to be knowingly detonated within 500m of any marine mammal
  - Maximum 100 kPa in swim bladder of fish
  - Maximum 13mm/sec in spawning area

- **Pit and Quarry Guidelines (NSDEL 1999)**
  - No regulations specific to marine environments

Environmental Effects
Marine Environment - Blasting

Analysis

- **Model Predictions (CONWEP): ~25 kPa in nearest water column; i.e., compliance with guidelines**

Mitigation

- **Set back distances (from detonation point)**
  - Blasting at low tide (at least within 3hrs of low tide)
  - 170 m for waterbirds (precautionary principle)
  - 500 m for marine mammals
  - 3 x set back distance during iBoF Atlantic salmon migration, May – September (precautionary principle)
  - 2500 m for marine mammals at risk (precautionary principle)
- **Other**
  - Detection/deterring devices
  - Periodic consultation with DFO
  - Training of marine observers
  - Consultation with DFO on model verification/finalization of safety zones

Environmental Effects
Marine Environment - Blasting

Monitoring

- Underwater sound levels (for model verification and on-going – precautionary principle)
- Underwater background noise, vessel noise (precautionary principle)
- Prior to blasting: presence of waterbirds, mammals, marine mammals at risk within setback distance (observations from boat and/or shiploader)

Environmental Effects
Marine Environment - Blasting

Conclusion - Blasting Effects on Whales, Fish, Lobster, Waterbirds

- **No significant residual adverse effects:**
  - Sound pressure levels within guidelines
  - Set back distances meet (and exceed) guidelines
  - Blasting events infrequent (bi-weekly)
  - Localized effect

"…unlikely that blasting would result in physical effects on marine mammals endangered or otherwise, beyond 500m" Source: DFO Review comment

"Since the model parameters were selected fairly conservatively, and in light of the fact that the … model would appear to overestimate the theoretical pressure, there seems to be minimal cause for concern in terms of direct harm to fish."

Source: DFO Review Comment

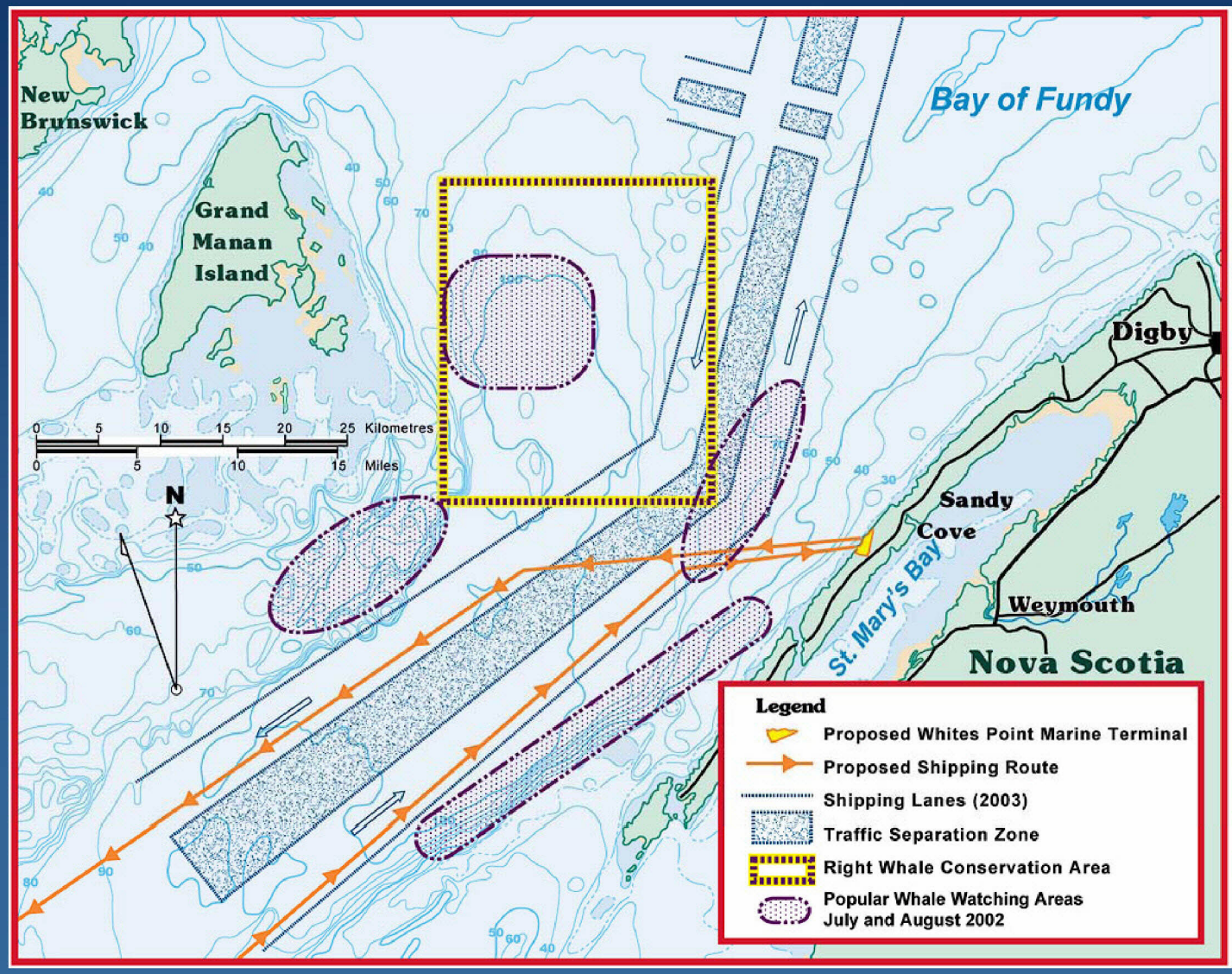
Environmental Effects
Marine Environment – Ship Strikes/Whales

Marine Transport – Ship-Whale Collisions

- **Effects**
  - 6% increase (rule) vessel traffic
  - Possible ship strikes (contribution to threat to North Atlantic right whale)
- **Mitigation**
  - Navigation outside of North Atlantic Right Whale Conservation Area
  - Reduced approach/departure speeds (<12 knots)
  - Course adjustments
- **Monitoring**
  - Presence of whales (from work boat / ship loader)
  - Reports on whale sightings

Environmental Effects
Marine Environment – Ship Strikes/Whales

Proposed Shipping Route



C0791-057

Environmental Effects
Marine Environment – Ship Strikes/Whales

Thresholds for Significance

- **Whale Species at Risk (SAR):**
  - Long-term sustainability of population jeopardized as a result of magnitude, geographic extent and frequency of effect; effect irreversible

Environmental Effects
Marine Environment

Conclusion - Ship Strikes

No significant residual adverse effects likely

- **Sustainability of whale population not jeopardized by Project:**
  - Ship strike highly unlikely
  - Infrequent vessel transport
  - Reduced ship speed

"The conclusions provided in the EIS regarding collision risk with right whales are generally correct. The increased ship traffic due to the proposed activity, and the proposed route…, will result in an increase in the probability of vessel/whale interaction…, but the increase will not be substantial."

Source: DFO Review Comment

Socio-economic Environment

Environmental Effects - Socio-economic

Valued Environmental Components (VECs)

Heritage Resources
- Marine Archaeology
- Land Archaeology
- Heritage Properties, Site History

Aboriginal Land & Resource Use

Aesthetics

Transportation
- Land and Sea

Economy
- Employment
- GDP
- Municipal Taxes
- Fishery
- Tourism
- Land Value
- Recreation

Human Health, Wellness & Socio-Cultural Environment
- Drinking Water Quality
- Marine Contaminants
- Land Contaminants
- Country Foods
- Quality of Life
- Social Capital
- Commercial Patterns
- Community Infrastructure
- Institutional Capacity
- Education,Training, Skills

Environmental Effects - Socio-economic

Key concerns

- **Key Pathways**
  - Air quality (dust)
  - Noise and vibration
  - Water quality
- **Effects**
  - Health effects
  - Labour and Economy

Environmental Assessment
Socio-economic

Health

- Key Considerations: Predicted effects levels for
  - **Air** quality, noise
  - Ground-, well water and surface water quality
  - Terrestrial and marine biota (food source/cultural value)
  - All predicted effects to remain within government standards and guidelines
- Further mitigation
  - Comprehensive monitoring
  - Community involvement (e.g., CLC)
  - Adaptive management
- **Conclusion: No significant residual adverse effects**

Environmental Assessment
Socio-economic

Labour and Economy:

Key Considerations

- Economic profile (regional and local community)
- Economic profile of quarry (jobs, payroll, tax payments, etc.)
- Provincial economic policies
- Economic impact model (Input-Output Model)
- Potential for beneficial effects

Mitigation / Enhancement Measures

- Hiring and procurement policy
- Promotion of female work force
- Training policy

Conclusions

- No significant adverse effects
- Likely beneficial economic effects

Environmental Assessment
Socio-economic

Labour and Economy

"The Government of Nova Scotia recognizes mineral exploration and mining as a key sector contributing to jobs, wealth and a high quality of life for Nova Scotians."

Source: Mineral Policy for the Province of Nova Scotia (2005)

Effects Assessment
Other VECs

Other Effects Assessed

- Water quality (freshwater)
- Water quality (marine)
- Groundwater & domestic wells
- Physical oceanography
- Freshwater fish habitat
- Archaeology (marine & land)
- Transportation (land)
- Visual Aesthetics

Mitigation & Monitoring

- Environmentally sensitive Project design / operation
- Monitoring programs (effects and compliance)
- Adaptive management

Residual Effects

- Not significant
- Small scale, localized, short-term/infrequent, mostly reversible

Effects Assessment
Other considerations

Effects of the Environment on the Project

- Storm surges
- Climate change
- Earthquakes

Effects of Accidents and Malfunctions

- Marine Environment (e.g., Grounding of vessel; fuel spill)
- Terrestrial Environment (e.g., Fuel spill; fire)

Cumulative Effects (effects of Project together with other projects)

- Future planned projects (e.g., LNG Projects in US)
- Reasonably foreseeable projects (e.g., Canaport - Irving St.John)

"Overall the proponent's plan appears to have anticipated and designed adequate mitigative measures to address most potential concerns related to areas within the P2 mandate"

Source: Review Comment NSDEL- P2: Pollution Prevention Branch responsible for hazardous substances, environmental emergencies, pollution

Effects Assessment
Other considerations

Effects of the Environment; Malfunctions / Accidents; Cumulative Effects:

- **Mitigation**
  - Detailed design based on anticipated env. conditions
  - Comprehensive Environmental Management incl. Emergency Response Plans / Spill Prevention
  - All mitigation measures relevant to biophysical environment

- **Conclusion**
  - No significant residual adverse effects likely to occur

Environmental Assessment
Summary and Conclusion

Effects Assessment Summary & Conclusion

Project Proposal

- State of the art, modern operation
- Extensive environmental management/protection features

Project Site

- Some previous disturbances (pit and quarry activities – forest clear cut)
- Vegetation and habitat typical for region
- Terrestrial habitats of concern within Preservation Zone
- North Atlantic Right Whale Conservation Area outside of navigation route

Effects Assessment

- Extensive baseline studies
- Comprehensive analysis (direct effects, pathways)
- Modeling of effects (conservative assumptions)
- Mitigation and monitoring based on precautionary principle

Effects Assessment Summary & Conclusion

Adverse Effects

- Project not likely to cause significant residual adverse effects
- All effect levels within regulatory guidelines/ standards
- Residual effects generally small scale, localized, infrequent, reversible

Beneficial Effects

- Beneficial effects for socio-economic environment
  - New employment and training opportunities
  - Contributions to municipal tax base
  - Diversification of local economy
  - Future development opportunities
- New terrestrial, wetland and forest habitat

Effects Assessment Summary & Conclusion

Bilcon Commitments

Comprehensive Mitigation Measures

- Noise reduction
- Dust control
- Water recycling
- Incremental reclamation
- Fish habitat compensation
- Environmental Preservation Zone
- Setback distances
- Reduced vessel speed
- Environmental Management Plan

Comprehensive Monitoring Program

- Noise levels - property boundary
- Noise levels - underwater
- Dust levels
- Water discharge quality
- On-site water wells
- Presence of mammals &water birds
- Plant species at risk
- Invasive species

Adaptive Management Approach

- Management structure
- Review of performance

Continued Public Involvement

- Community Liaison Committee
- Complaint record and response mechanism

Compensation Policies

- Domestic water supply
- Damage to fishing gear

Effects Assessment
Summary & Conclusion

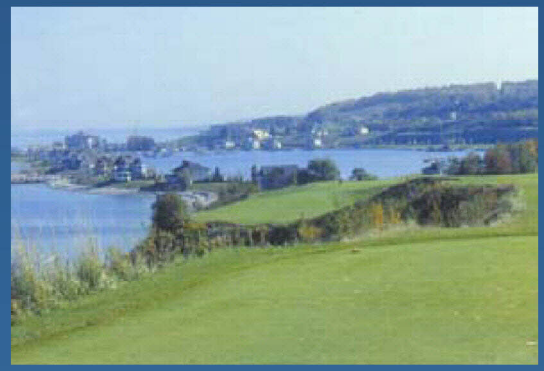
Assurance: Environmental Management Plan

- Roles and responsibilities
- Monitoring - environmental effects and compliance
- Environmental inspections and audits
- Contingency and emergency response plans
- Training and education
- Communication and reporting
  - Monitoring results
  - Environmental performance

Effects Assessment Conclusion

The Path Forward - Towards Sustainable Economic Development

- Environmental Assessment Process
- Detailed Design & Engineering
- Additional Studies / Follow-up Activities
- Permits and Approvals
- Tender process
- Project realization (incl. follow up; monitoring)
- On-going public involvement
- First step reclamation in year 5



Bay Harbor Reclaimed Pit / Quarry

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