



Receiving Water Quality Criteria Assessment Approach

Giant Mine Remediation Project Environmental Assessment
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Assessment Approach Based on:

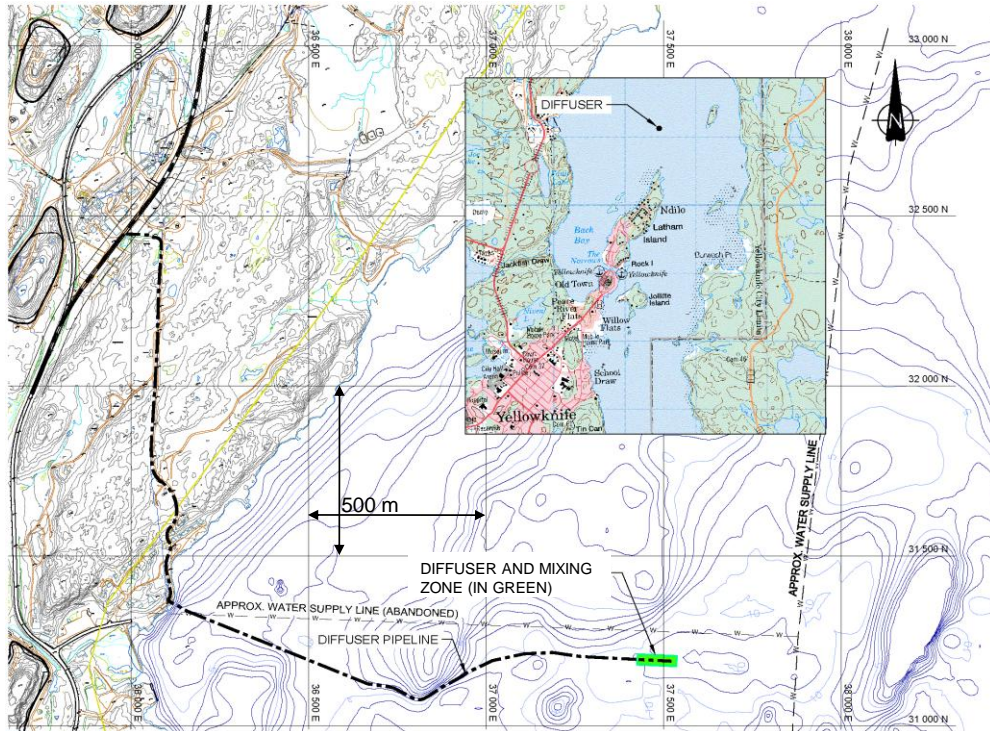
- Protection of water quality in Yellowknife Bay to support all beneficial uses including:
 - providing a healthy environment for all forms of aquatic life including fish
 - source of drinking water;
 - recreational pursuits (boating, swimming, diving....)
- Conservative approach adopted in selecting water quality objectives because we are still collecting baseline water quality data to support a more detailed approach.



Assessment Approach (cont'd):

- Selected Canadian water quality guidelines for protection of aquatic life as appropriate objectives as they are more stringent than objectives/guidelines for other water uses.
- Based assessment on meeting objectives at the edge of the near-field mixing zone.
 - For Arsenic the receiving water quality objective is 0.005 mg/L (5 µg/L) for CCME FAL
 - WTP effluent Arsenic level expected to be normally less than 0.2 mg/L (200 µg/L) with peak short-term levels of up to 0.4 mg/L (400 µg/L)
- Therefore, set dilution target of 100-to-1 for the design of the outfall diffuser to meet water quality objective for Arsenic.

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Predicted Concentrations at Edge of Mixing Zone

Parameter	Units	Expected Effluent Quality	Incremental Concentration at Edge of Mixing Zone (100:1 Dillution)	Canadian Water Quality Guideline	Source
Ammonia	mg/L	0.017-5.3 (1.5 average)	0.0002 - 0.053	1.54 (at pH=7.5 & Temp=20° C)	CCME 2000
Cyanide	mg/L	<0.002 - 0.015	<0.0015	0.005 (as free CN)	CCME 2011
Nitrate	mg/L	0.02 - 5.3	0.053	2.9	CCME 2011
pH	mg/L	7.5-8 (target)	:-	6.5 - 9	CCME 2011
Arsenic (total)	mg/L	0.2 (target) 0.4 (upper bound)	0.0025 - 0.004	0.005	CCME 2011
Copper	mg/L	0.0054 - 0.0162	<0.0002	0.002	CCME 2011
Lead	mg/L	<0.0001 - <0.00025	<0.0001	0.001	CCME 2011
Nickel	mg/L	0.0234 - 0.0687	<0.001	0.025	CCME 2011
Zinc	mg/L	0.0028 - 0.0713	<0.001	0.03	CCME 2011



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