New Effluent Treatment Plant (ETP)

- **New Effluent Treatment Plant (ETP)**
- **Near Shore Outfall**
- **New Effluent Treatment Plant**
- **RemediaEon**
- **Plan**
- **Included**
- **Use**
- **Diffuser**
- **Discharge**
- **From**
- **The**
- **ETP.**

- **MVEIRB**
- **Public Hearings**
- **September 2012.**
- **Original application and public**
- **Ice cover**
- **Barricade**

- **Disturbance**
- **Sediments**
- **Installation**
- **Open area**
- **Inland**
- **Water Body**
- **Near shore**
- **Riparian**
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- **RemediaEon**
- **Overall**
- **Giant Mine**
- **RemediaEon Plan**
- **Development**
- **Operating**
- **Effluent Quality Criteria**
- **Arsenic**
- **Water Quality Guidelines**
- **Canadian Drinking Water**
- **Regulations**

- **Environmental Assessment & Measures**
- **What is a Diffuser?**
- **What is the Outfall?**

- **Existing Effluent Treatment Plant**
- **Operates under the former water**
- **licence.**

- **Operates seasonally and discharges in**
- **the southern tributaries to Baker Creek.**

- **Treats water to meet federal effluent**
- **regulations (MER) and**

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**Concerns with Diffuser**

- **Disturbance**
- **Sediments**
- **Ice**
- **Ice**
- **Ice**
- **Ice**
- **Ice**
- **Ice**
- **Ice**

- **What is a Diffuser?**
- **What is the Outfall?**
- **Conceptual Outfall Designs**

- **The MSSRI held Public Hearings in September 2012.**
- **The original application and**
- **Barricade**
- **Open area**
- **Inland**
- **Water Body**
- **Near shore**
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Site Constraints

The main site constraints as shown on the figure include:
• Water quality/health
• City water intake and sedimentation sites
• Topography where outfall is located
• Silica levels identified in group.

Base Parameters

Basic parameters that the outfall must accommodate:
• Yearly flows and average:
  - Phase 1: 1.67 m³/s
  - Long term average: 21,000 m³/day
  - Long term average: 210,000 m³/yr
  - Flow rate of 90 %: 15,000 m³/day
  - Flow rate of 10 %: 1,000 m³/day
  - Average long term daily flow at 17°C is 405,000 m³/day

Potential Locations

In order to assess each of the four locations discussed during the consultations the following work was completed:
• A mixing study at each of the locations:
  - An Optimum Evaluation Matrix was developed incorporating criteria at the level of the grid cells at the non-technical locations and the four criteria as they relate to the Sullivill.
  - Each of the four locations were assessed using the Optimum Evaluation Matrix.
  - Each of the four locations were also assessed comparing the three different existing systems, no-coverage, mixed coverage and portion coverage.

Assessment

In order to assess each of the four locations discussed during the consultations the following work was completed:
• A mixing study at each of the locations:
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  - Each of the four locations were also assessed comparing the three different existing systems, no-coverage, mixed coverage and portion coverage.
Recap of Cooling

• To cool the effluent such that the impacts on ice thickness is minimized.

Why would Cooling be considered?

No Cooling

Passive Cooling

AcEve Cooling

Cooling Options

Option Evaluation Matrix

Option Evaluation Matrix (Ranked Options)

<table>
<thead>
<tr>
<th>Option</th>
<th>Meet Site Specific Water Quality Objectives at mixing zone boundary</th>
<th>Potential for sediment disturbance during construction</th>
<th>Potential for sediment disturbance during operation</th>
<th>Minimize potential for fish habitat and aquatic impact</th>
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<tr>
<td>Baker Creek</td>
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<td>85</td>
<td>86</td>
<td>87</td>
</tr>
<tr>
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<td>85</td>
<td>86</td>
<td>87</td>
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<tr>
<td>North of Foreshore Tailings</td>
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<td>87</td>
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Results of the assessment

• The Baker Creek location, with the no cooling, came out as the #1 option mainly due to:
  - High scoring on the Environmental Criteria.
  - It was the most feasible construction option.
  - It would have the least impact on sediments during construction and operation.
  - It had the least amount of safety concerns when compared to the other locations with no cooling.

Recommended Outfall Option

Location – in the bay somewhere within the vicinity of Baker Creek

Cooling Option – No Cooling required

Next Steps

• Pilot Plant option analysis, and
• Financially implement pilot plant depending on the results of the analysis.

• Conduct mine water intake study;
• Conduct effluent discharge line location assessment, and
• Update preliminary design.