



Nitrite Removal from Mining Waste Water

Nitrite Removal – Ozone Oxidation
Gold Mining Client

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BACKGROUND

ClearBakk was approached by major Gold Mining client in British Columbia to provide a solution for treating their construction offspec water to a level that will be environmentally acceptable and meet discharge quality criteria. The project location is unique as it sits on top of a glacier, which was close to the client's mining operations.



ClearBakk received the water analysis and the BC environmental regulator report and with the assistance of a specialized lab, conducted tests and trials to be able to design a water treatment system that could handle the wide range of flows and would be adequate for high spikes in concentrations.

CHALLENGES

The client was experiencing a wide range of flow rates of construction waste water that had high levels of nitrites. They needed a system that was able to handle the wide range of flow rates and the inconsistent but high nitrite concentrations.

The nitrite concentration was higher than the allowable discharge limitations to a surface water stream. Due to the project being in a sensitive area on a glacier, no chemicals or consumables could be used.

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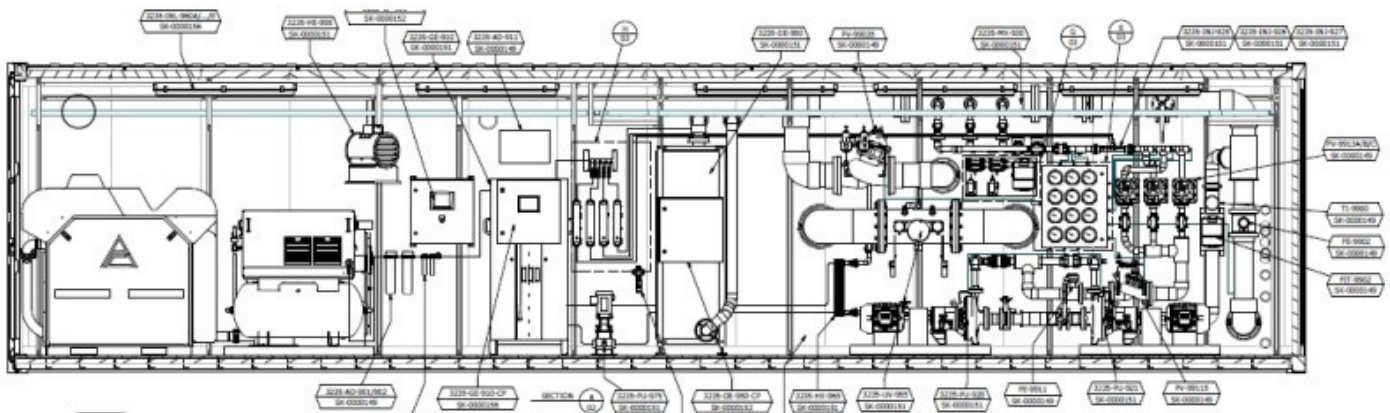
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SOLUTION

Ozonation was selected to handle a wide range of flow rates with inconsistent but high nitrite concentrations.

Nitrites were oxidized to form nitrates that meet regulations.

Ozone Generation on site eliminated the need to fly-in oxidation chemicals and avoids requiring a large footprint needed for conventional oxygen aeration system in a challenging location with limited space.



SUMMARY

A full scale system was designed with the following criteria:

- Inlet Flow Rate: 480-6000 m³/day
- Overall System Recovery: 100%
- Building Size: One 53' ISO HC Container

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SYSTEM OVERVIEW

Waste Stream Characteristics:

- Influent Rate Before Treatment:
 - Flow Rate: 20-250 m³/hr
 - Nitrite Level: 0.9-1.2 mg/L
- Target Rate to Meet Regulations:
 - Nitrite Level: <0.6 mg/L
- Effluent Rate After Treatment:
 - Exceeded the allowable targets with continuous concentrations of less than 0.1 mg/L

