



Sidestream Injection Skids



City of White Rock, BC, Canada White Rock Water Treatment Plant

Sidestream Injection Skids & Pipeline Flash Reactor Systems

THE PROBLEM: The City of White Rock, located in southwestern British Columbia, Canada, near Vancouver, is home to approximately 20,000 residents. The community's drinking water system draws water from the Sunnyside Uplands Aquifer and seven wells dispersed throughout the city. After four decades under private utility ownership, the City of White Rock assumed control of its water infrastructure in 2015.

Following the transition, elevated arsenic levels were occasionally detected in two of the seven wells, surpassing permissible limits. The city promptly took action to address this and other water quality concerns. Plans were started for the design and construction of a water treatment facility aimed at resolving major issues, particularly arsenic and manganese removal, and to incorporate secondary disinfection throughout the entire distribution network. With the assistance of a grant from the Clean Water and Wastewater Fund (CWWF), the construction of the "Arsenic and Manganese Water Treatment Project" began.

THE SOLUTION: The goal of the White Rock Water Treatment Plant is to remove naturally occurring manganese and arsenic in the city's source water, guaranteeing that the drinking water delivered to residents meets all regulatory guidelines and aesthetic standards. The plant employs a multi-stage process featuring several key treatment components:

- Pre-Oxidation with ozone to address arsenic and manganese in the raw water supply.
- Manganese removal using Greensand Plus media filters.
- Arsenic removal using Bayoxide E33 media filters.

Ozone, a strong oxidant, is very effective in oxidizing both organic and inorganic compounds, surpassing chlorine in effectiveness. Its utilization enhances the removal of many emerging contaminants while reducing disinfectant byproducts. This oxidation process improves the downstream removal of manganese and arsenic by filtration and adsorption processes.

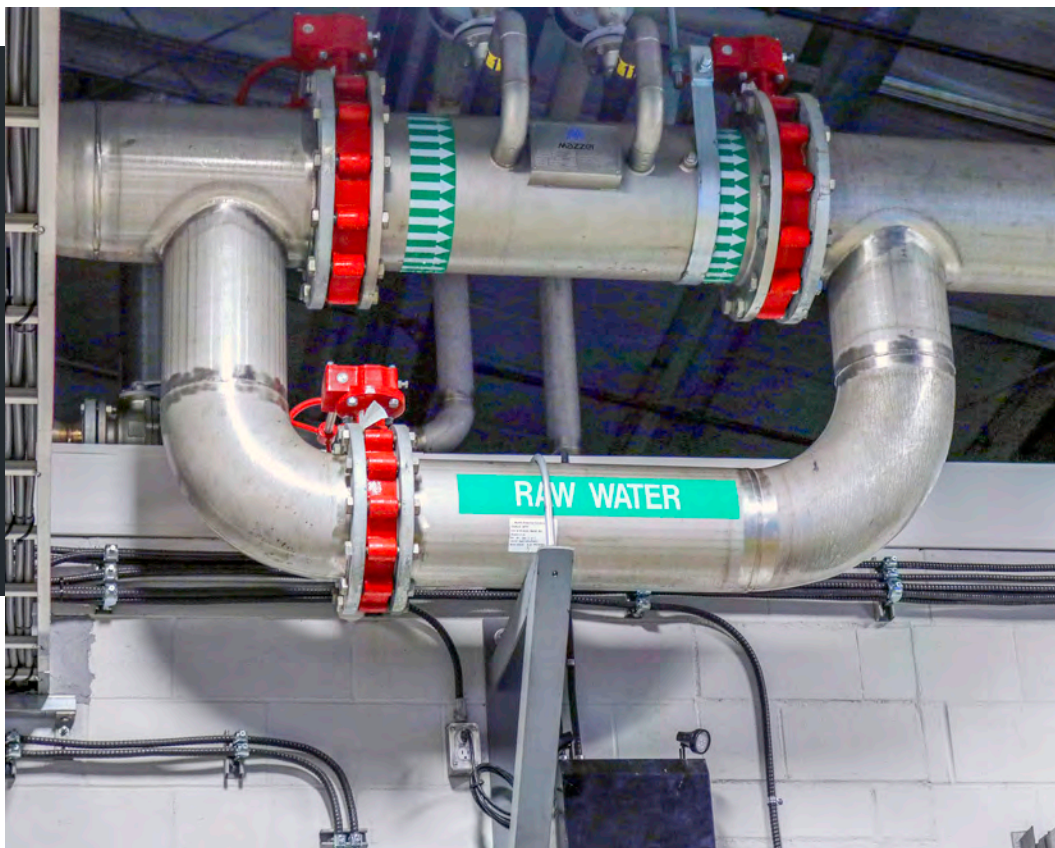
To provide a rapid mix and thorough contacting of the produced ozone into the raw water, a Mazzei sidestream injection system was chosen. The system consists of two sidestream injector skids, each equipped with a degas separator, followed by a Pipeline Flash Reactor™ (PFR). Each PFR mixes the ozonated sidestream with the mainline water and can operate individually or simultaneously based on demand. Additionally, the Mazzei ozone sidestream system requires minimal space—the PFRs are installed on the plant's ceiling—which reduces the facility's footprint, steel and concrete usage, and tree removal from the site.

THE RESULT: Since assuming control of their water infrastructure, White Rock has undertaken many steps to improve water quality. In addition to constructing a new water treatment facility, they've boosted water storage capacity by 33% and completed mandatory secondary disinfection throughout the entire distribution system.

Ozone has been instrumental to the city in realizing its objectives of delivering safe, good-tasting water to its residents. This was achieved efficiently and effectively, yielding these additional benefits:

- Energy conservation,
- Reduced physical footprint (space & construction materials),
- Decreased chemical usage,
- Reduced maintenance requirements,
- Improved downstream processes,
- Water savings,
- Enhanced safety for employees and end-users,
- Reduction in disinfection byproducts.

The enhancement of water quality in the City of White Rock will impact the community significantly for years to come.



Pipeline Flash Reactor
on ceiling

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