

Co-op Refinery Complex Wastewater Improvement Project, Phase 2

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Co-op Refinery Complex

- Operates on 800 acres in Regina, Saskatchewan, Canada
- > Employs >1,000 people
- > Processes 130,000 bpd
- Distributes up to 17
 million liters of fuel daily
 (4.5 million gallons) in
 western Canada



Water Reuse Project – the Expansion

- > Phase V major expansion: 100,000 bpd to 130,000 bpd (\$2.8B)
- High quality water needs for boilers, cooling towers, powering equipment, hydrogen production
- Water supply: onsite groundwater wells supplemented by City water insufficient for expansion
- > Provincial Water Security Agency strictly regulates water allocation
- > Wastewater pre-treated before sending to City's WRF not of reuse quality



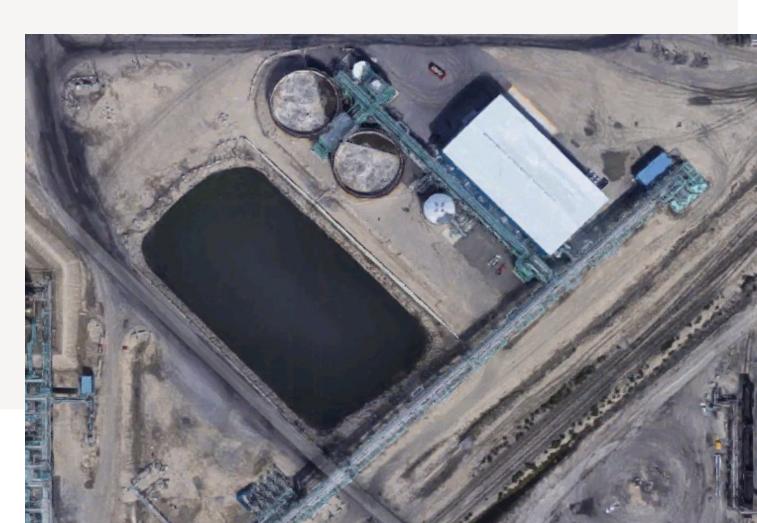
2-mgd Membrane Bioreactor Plant

- > Two 1-mg membrane bioreactor tanks
- Dissolved gas flotation
- > Permeate and oily sludge tank
- > Biosolids stabilization tank
- Dewatering centrifuges
- > Chemical feed
- > Piperacks
- > Firewater system, electrical/controls, buildings, site work
- > HERO (High Efficiency Reverse Osmosis) process downstream for reuse at demineraliser plant

https://www.youtube.com/watch?v=KO9zYiQDU 0&feature=youtu.be

Water Reuse Project – Challenges

- > Oily substances in the water; very high quality reuse water required
- > Fast track construction with sequencing constraints
- > Poor soils
- Site safety



Results

- > Project completed in 2016
- > CRC: only refinery in North America to reuse wastewater for steam production
- > Freshwater consumption reduced by 28%, equivalent to 3,100 households
- Multiple awards



Questions?

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