

A Clear Solution

Scientific breakthrough turns tailings water into life-sustaining fish habitats

BY Caleb Caswell

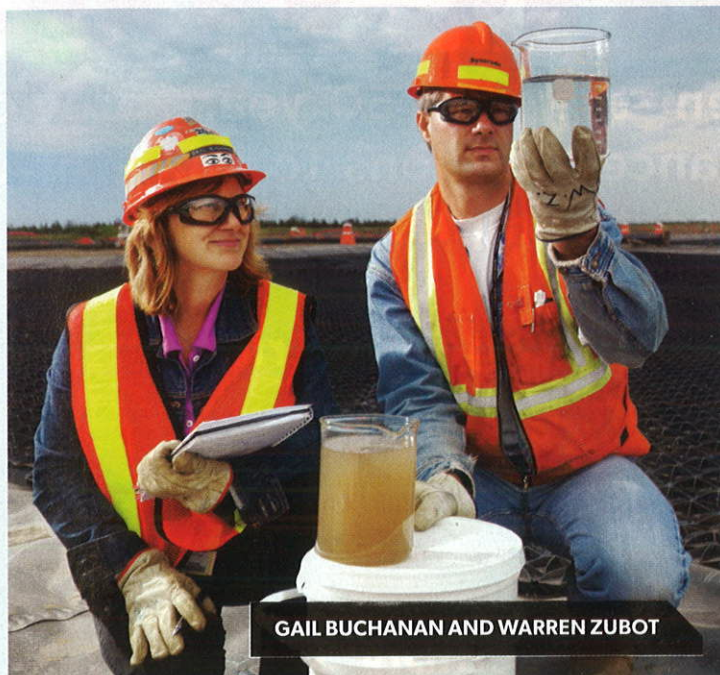
▼ KOI FISH DRIFT THROUGH

a tank sitting in Syncrude's Research and Development Centre in Edmonton. They swim about while Warren Zubot, a research associate at Syncrude, explains how difficult it can be to get the message out about what companies like his are doing to forward the cause of environmental reclamation.

"There's so much misinformation out there, people don't know what to think anymore," says Zubot, examining the fish. They have the normal number of fins, eyes and gills, and the only thing out of the ordinary might be how large they've grown. "People take a look at the size of the fish in this tank and ask me, 'Why are the fish so big? Is there something wrong with the water?'"

The water is remarkable for its clarity. The fish are swimming in tailings pond water that has been treated using petroleum fluid coke – part of Zubot's ongoing research into using a byproduct of the coker units used in bitumen upgrading. Zubot compares the process to a home water filter. Just as the filter absorbs chemicals present in drinking water, petroleum coke can filter suspended solids and absorb organics like naphthenic acids, the major components in tailings water that make it toxic to aquatic life.

"Studies have shown that it will take years for [tailings] water to naturally detoxify and support aquatic life," says Zubot. "We're coming to a point in Syncrude's business life where we have to do large-scale aquatic reclamation projects, and to do that we have



GAIL BUCHANAN AND WARREN ZUBOT

PHOTO: ROTH AND RAMBERG

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—Warren Zubot,
research associate

to speed up reclamation of the water." Zubot's research findings speed up the reclamation process considerably, and he continues to discover how adding different chemical compounds can further improve the process.

Zubot isn't alone in this project. Gail Buchanan, senior technology development engineer, worked closely with him to develop his research into a field pilot program as part of Syncrude's Research and Development team.

Buchanan oversaw the development phase of the field pilot project. While most field tests may take one or two months, this project took the better part of two years, due to engineering requirements and seasonal restrictions. The field tests are

typically conducted between May and the end of October. But the long R&D timeline is only a fraction compared to the overall mining timeframe. "I think people don't understand that these mines can be active for 30 to 40 years and maybe even more," Buchanan says.

"We're here for generations," Zubot says. "You can't wait until you're done mining. We need to start progressive reclamation as we're going along."

"We've spent millions of dollars on this project so far, and it is actually a direct result of Syncrude investing in R&D," Zubot says. "We're trying to make a difference and improve our environmental performance. That's why we are committed to keep moving forward." ▲