

CASE STUDY: Solutions for Remote Sites in the Resource Sector



Background

In 2013, Headworks Bio was awarded a contract with Claude Resources to supply an MBBR nitrification system in FRAC tanks. There were challenges of getting our equipment up to the site over the winter ice roads before they melted. Everything made it up north safely and was installed this year when things thawed out enough for people to work.

Solution

The system is designed to greatly reduce the ammonia in wastewater removed from their Seabee Gold Mine operation in northern Saskatchewan, Canada. The process employs Headworks' proprietary mobile biofilm carriers, ActiveCell AC920, to support extremely high concentrations of attached biomass and maintain excellent mass transfer conditions. The neutrally buoyant HDPE ActiveCell biofilm carriers within the bioreactor tank provide a stable base for growth of a diverse community of microorganisms. Every biofilm carrier has a very high surface-to-volume ratio, allowing for a high concentration of biological growth to thrive within the internally protected areas.

Customer: Claude Resources Inc.
Industry: Mining
Location: Seabee Frac Tank at Northern Saskatchewan, Canada



ActiveCell AC920 Mobile Biofilm Carrier

The system is a two-stage MBBR system to nitrify the influent which can have as much as 45 mg/L of Ammonia (NH₃-N). Operating under aerobic conditions, this is reduced to less than 5 mg/L – well below the requirement of 15 mg/L. Since becoming operational in the spring of 2014, the system has consistently exceeded the performance targets!



Figure 1 – Seabee FRAC tanks being loaded with AC920 Media

The mine is situated in a remote location in Northern Canada where direct access is severely restricted. As mentioned above, equipment and heavy supplies can only be trucked to

the site via a 60 kilometer winter ice road only available for use from January through March when an ice is thick enough to sustain heavy traffic. Given this remoteness and logistical challenge, the Headworks Bio system was installed into readily available FRAC Tanks, successfully using two such tanks as bioreactors.



Figure 2 – Typical FRAC Tank

FRAC tanks are common in many resource sector applications, especially the oil and gas industry. They are a mobile storage tank that is the approximate size of a commercial trailer, and are easily moved as such. They were originally designed for the gas industry but their prevalence in recent years has resulted in them being now used in a wide range of

applications. Providing up to 21,000 Gallons of capacity, these tanks are ideal for conversion to MBBR bioreactors, especially when portability and rapid deployment is a priority.

Headworks Bio provides other key equipment such as blowers, dosing and control systems on a pre-assembled skid, along with the required MBBR internals to be added to a locally procured Frac Tank. This provides for rapidly deployed MBBR treatment systems to remote and/or transient locations, and can be used for a wide variety of biological treatment applications such as temporary work camp wastewater, industrial treatment, biological impurity removal from mining and petrochemical water by products, etc.

No matter where in the world your water challenge is located, and no matter what the application, our process engineers are ready to work with you to find the most efficient and cost effective solution to fit your needs. Give us a call!