Is wastewater safe to be discharged into the environment?

Yes. A sewage lagoon system works to restore the natural aerobic ecosystem. Wastewater flows to a facultative lagoon, which provides both aerobic (at the surface) and anaerobic (at the bottom) conditions required for treatment. The algae plays an important role in the process to treat the wastewater. The algae uses the sun's energy, wind and carbon dioxide to produce oxygen that is used by aerobic/facultative bacteria in the wastewater to stabilize the organic matter in the upper layer of the lagoon.

The solids or sludge settle to the bottom of the cell. This bottom layer of sludge decomposes anaerobically. This process uses microorganisms to breakdown sludge, grease and other solids that are in the lagoon. Wastewater is annually dispelled from the lagoon and tested multiple times before being returned to the environment.

Additionally, the lagoon cells are lined to prevent sludge from entering into the ground and a fence is secured around the Lagoon area to prevent people and animals from entering.

Biochemical Process to Treat Wastewater

Source: Optimization of Lagoon Operation: A Best Practice By the National Guide to Sustainable Municipal Infrastructure

Phase 1
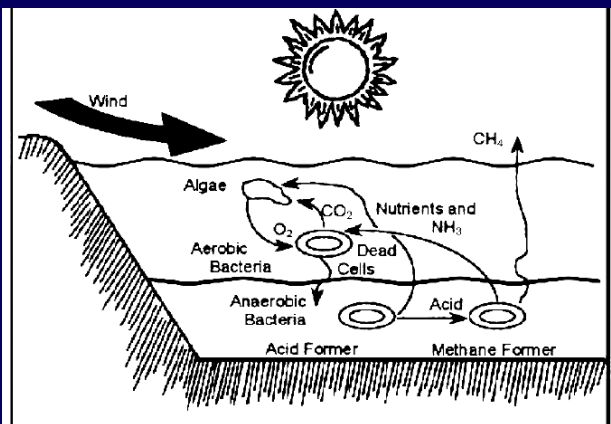
Phase 1 will include a new pipeline installation. This will tie into the existing pipeline and extend to the release point into the Blackfoot Creek

Phase 2

Phase 2 will be construction of a new lagoon storage cell with a discharge pumping station and new pipelines flowing in and out of the new storage cell to existing facultative cells.

Contact Us

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County of VERMILION River

BLACKFOOT WASTEWATER PROJECT

Why are upgrades needed?

As part of providing sustainable wastewater treatment for the Hamlet of Blackfoot, the County of Vermilion River is planning an upgrade to the existing wastewater facility. These upgrades are to accommodate current and future population and development within and immediately adjacent to the Hamlet.

Testing & Regulations

The Blackfoot Wastewater System must adhere to Wastewater Systems Effluent Regulations (WSER), federal government standards, and Alberta Environment and Parks Standards and Guidelines.
WSER requires testing of the maximum allowable concentrations of:
- Biochemical Oxygen Demand (BOD)
- Total Suspended Solids (TSS)
- Ammonia

Test Sites

Testing

Several locations have been tested along the proposed discharge sites for comparison. The charts below show results from various test spots.
Full testing reports and a map of the locations can be found on our website.

Tested Oct 2015

Test Site	BOD	TSS	Ammonia
WSER Limits	25 (mg/L)	25 (mg/L)	1.25 (mg/L)
Blackfoot Lagoon	5 (mg/L)	8 (mg/L)	-
2	4 (mg/L)	12 (mg/L)	<0.01 (mg/L)
5	10(mg/L)	63 (mg/L)	<0.01 (mg/L)
8	4 (mg/L)	197 (mg/L)	<0.01 (mg/L)

Tested Aug/Sept 2016

Test Site	BOD	TSS	Ammonia
WSER Limits	25 (mg/L)	25 (mg/L)	1.25 (mg/L)
Blackfoot Lagoon	7 (mg/L)	25 (mg/L)	-
2	4 (mg/L)	10 (mg/L)	<0.01 (mg/L)
4	4 (mg/L)	8 (mg/L)	<0.01 (mg/L)
6	14 (mg/L)	96 (mg/L)	<0.01 (mg/L)

Tested December 2022

| Test Site	BOD	TSS	Ammonia
WSER Limits	25 (mg/L)	25 (mg/L)	1.25 (mg/L)
Blackfoot Lagoon (tested Oct 2021)	7 (mg/L)	25 (mg/L)	-
9	4 (mg/L)	12 (mg/L)	<0.01 (mg/L)
10	10 (mg/L)	63 (mg/L)	<0.01 (mg/L)

## How does the Wastewater System currently work?

Wastewater flows through pipes and it delivered to the lagoon into a facultative cell

The wastewater treated and regularly tested before it is returned to the environment. Wastewater is discharged annually.
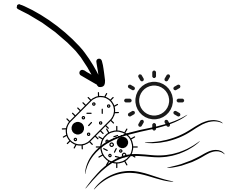
The wastewater is treated by the combination of algae, sun, wind and carbon dioxide to provide conducive conditions for treatment.
The sludge settles to the bottom and is broken down.
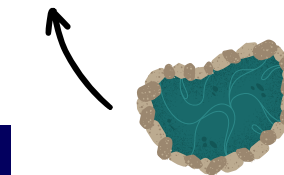
Wastewater remains in the lagoon undergoing to biochemical process.

What changes are expected with the Wastewater Project?

- Construction of a new storage cell and pipelines flowing in and out of the cell
- A new pipeline will be constructed to move the treated wastewater to be discharged to the Blackfoot Creek. The projected pipeline is highlighted in red, in the map below.