Battle River Watershed Considerations RE: Proposed CFO at Coal Lake

Communique

January 27, 2023 - Residents in the watershed recently reached out to the Battle River Watershed Alliance (BRWA) about the environmental considerations related to the application for a Confined Feeding Operation (CFO) at Coal Lake in Alberta. As a Watershed Planning and Advisory Council, the BRWA has a role to share information with stakeholders on land and water matters from the perspective of watershed management.

The Natural Resources Conservation Board (NRCB) Application RA22027 is an application to register a dairy CFO with 190 milking cows (plus associated dries and replacements). The application further indicates this is an application to convert livestock category on a CFO (i.e. converting an existing hog operation of 440 sows and expanding it into a dairy CFO). The application was submitted to the NRCB by Mr. Damien Rasmuson of Darcor Holsteins Inc. The deadline for feedback is February 9, 2023.

BRWA is providing information on the NRCB application in the attached document in terms of watershed considerations, including:

- The state of Coal Lake, Battle River and its watershed, including data related to the drainage area, water quality, shoreline intactness and landscape pressures,
- Environmental and watershed management planning considerations, and
- Local land use policy, provincial environment guidelines, and legislation relevant in this context.

For context, the proposed CFO is in the County of Wetaskiwin. It is in the effective drainage area of the Coal Lake watershed, a sub-watershed of the Battle River watershed. Three ephemeral streams flow from the lands surrounding the CFO site into Coal Lake, including the area identified for manure application. Coal Lake is the drinking water source for the City of Wetaskiwin and is connected to the Battle River via Pipestone Creek. There is a potential downstream impact on water quality for Camrose, Wainwright, and other rural communities.

As a new dairy CFO, this CFO is not in compliance with the CFO exclusion zone set out in the County of Wetaskiwin Municipal Development Plan. In addition, BRWA recommendations under the *Non-point Source Pollution Management Implementation Guidelines* (2013) indicate that “efforts should be taken to limit the development of new Confined Feeding Operations within the effective drainage area of the Battle River and Sounding Creek watersheds.”

The BRWA state of the watershed data reports, watershed management recommendations, and other provincial guidelines provided in the attached document reinforce the need to maintain a CFO exclusion zone for Coal Lake to protect water quality in the lake, tributary streams, and Battle River.

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BRWA ASSESSMENT OF WATERSHED CONSIDERATIONS

ABOUT THE PROPOSED CFO

NRCB Application RA22027 - Darcor Holsteins Inc. (Damien Rasmuson)
Confined Feeding Operation Registration, January 4, 2023
Notice of Application | Part 1 Application | Part 2 Application

- 190 milking cows (plus associated dries and replacements).
- Registration to convert livestock category on a CFO, ie. converting the existing hog operation (440 sows) and expanding it into a dairy CFO. "Currently there is 6 hog barns with 5 joined together. Propose to demolish stand alone barn completely. 2 wings of second barn to be demolished, 2 more converted to shop/storage. Final wing to be renovated for young stock. New barn to be constructed for 120 milking cows. Existing lagoon to be modified as per current NRCB specifications." (excerpt from NRCB application, Part 1)

LOCATION

- NE 14-47-23 W4M (Lat: 53.057909, Long: -113.250882)
- Lake elevation: 705m, CFO elevation: 745m
- Land base for manure application is outlined in the application. Noted below are areas identified for manure spreading (see Figure 1). Areas with water courses / ephemeral streams that flow into Coal Lake include:
    - NW/SW 13-47-23-W4
    - NW/SW 24-47-23-W4
    - SE 23-47-23-W4

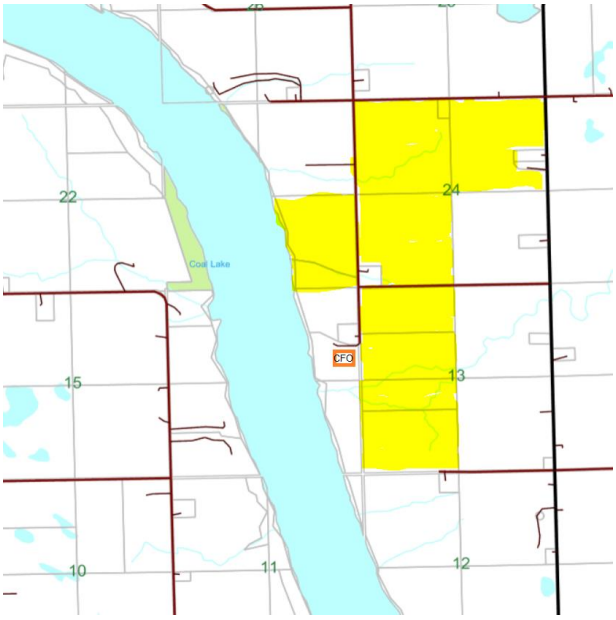

Figure 1: Rudimentary map to highlight site of the proposed CFO, areas identified for manure application, and ephemeral streams (ie. creeks or seasonal drainage courses)

ENVIRONMENTAL CONSIDERATIONS

- Coal Lake is the public drinking water source for the City of Wetaskiwin.
- There is major water management infrastructure at Coal lake used to store water for flow augmentation on the Battle River and to provide the water supply for the City of Wetaskiwin.
- Coal Lake flows into Pipestone Creek, which is a tributary of the Battle River.
- Coal Lake and Pipestone Creek are part of the effective drainage area that is expected to contribute surface runoff, under average runoff conditions, to the Battle River, according to the Agriculture and Agri-Food Canada (AAFC) *Effective Drainage Area of the AAFC Watersheds Project - 2013* dataset (see Figure 2).
- The proposed CFO is located approximately 300 meters from the shores of Coal Lake.
- Manure spreading is proposed, at the shortest distance, within approximately 150 meters of Coal Lake.
- Manure spreading is proposed on fields in which three ephemeral streams (subwatersheds) flow to Coal Lake (see Figure 3).
- The ephemeral streams are visible from satellite imagery. The imagery also shows treed areas along the stream channels, which suggests that these are significant drainage areas within the subwatersheds of Coal Lake (see Figure 4).

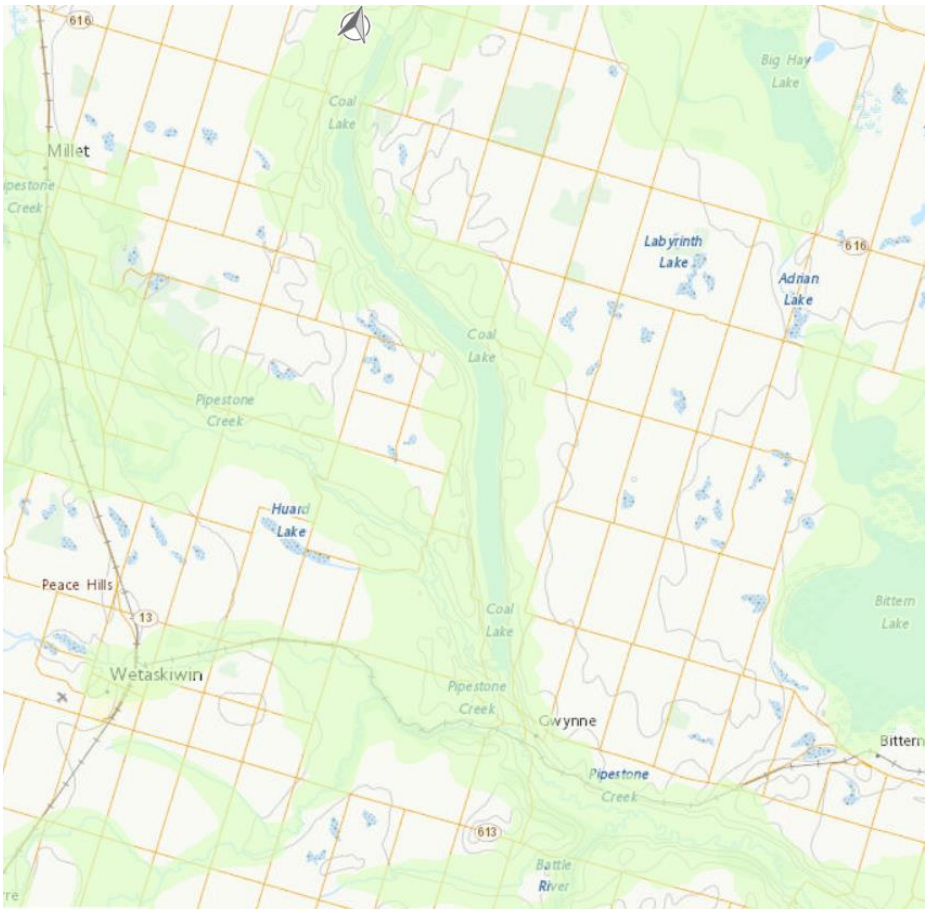

Figure 2: Effective drainage area (in green) in the Coal Lake watershed (source: AAFC Watersheds Project - 2013 https://search.open.canada.ca/openmap/aeb7959a-9683-421a-be35-fb7c6100d0dc)

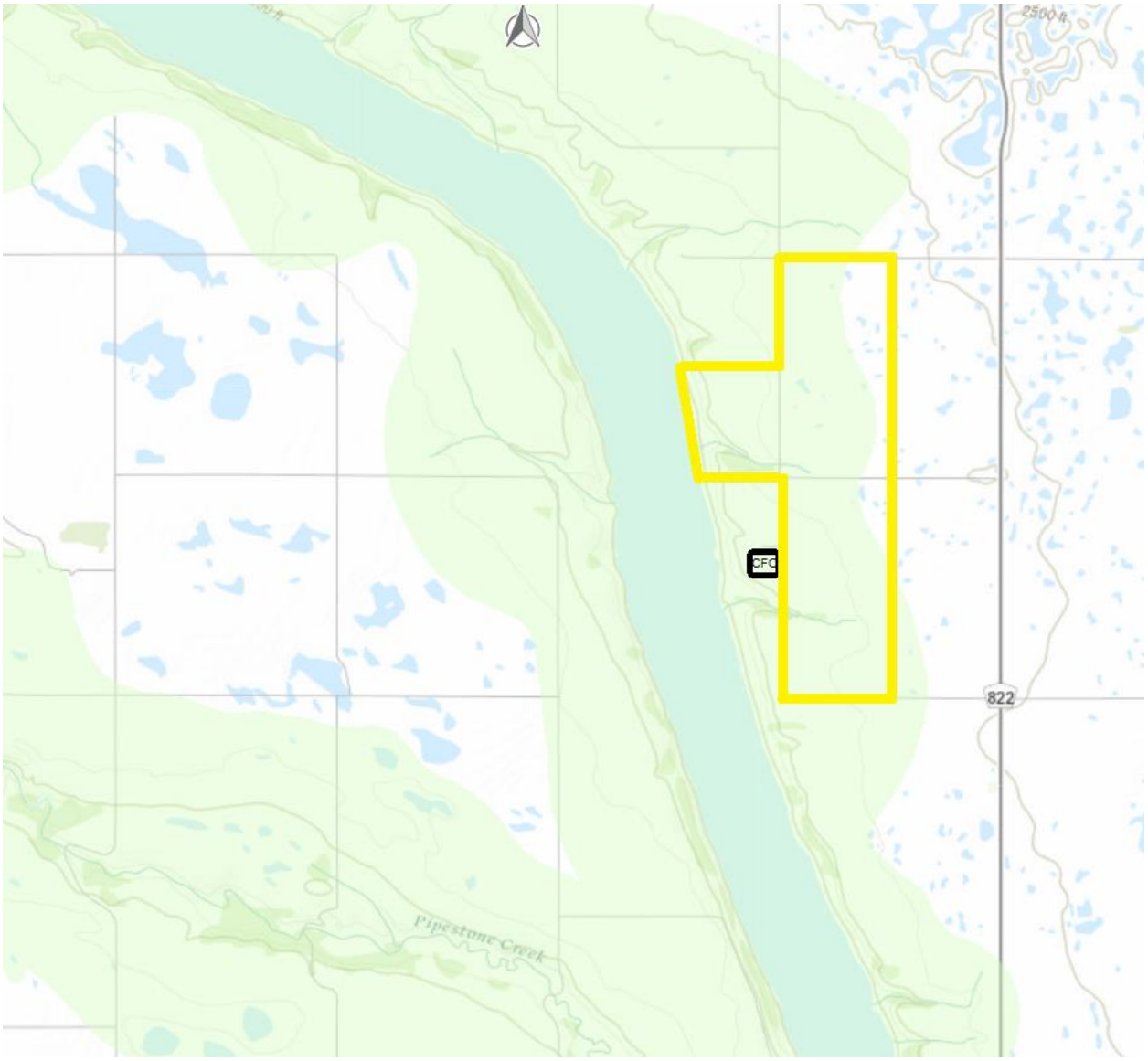

Figure 3: Land base for manure application within the effective drainage area (area inside yellow lines)

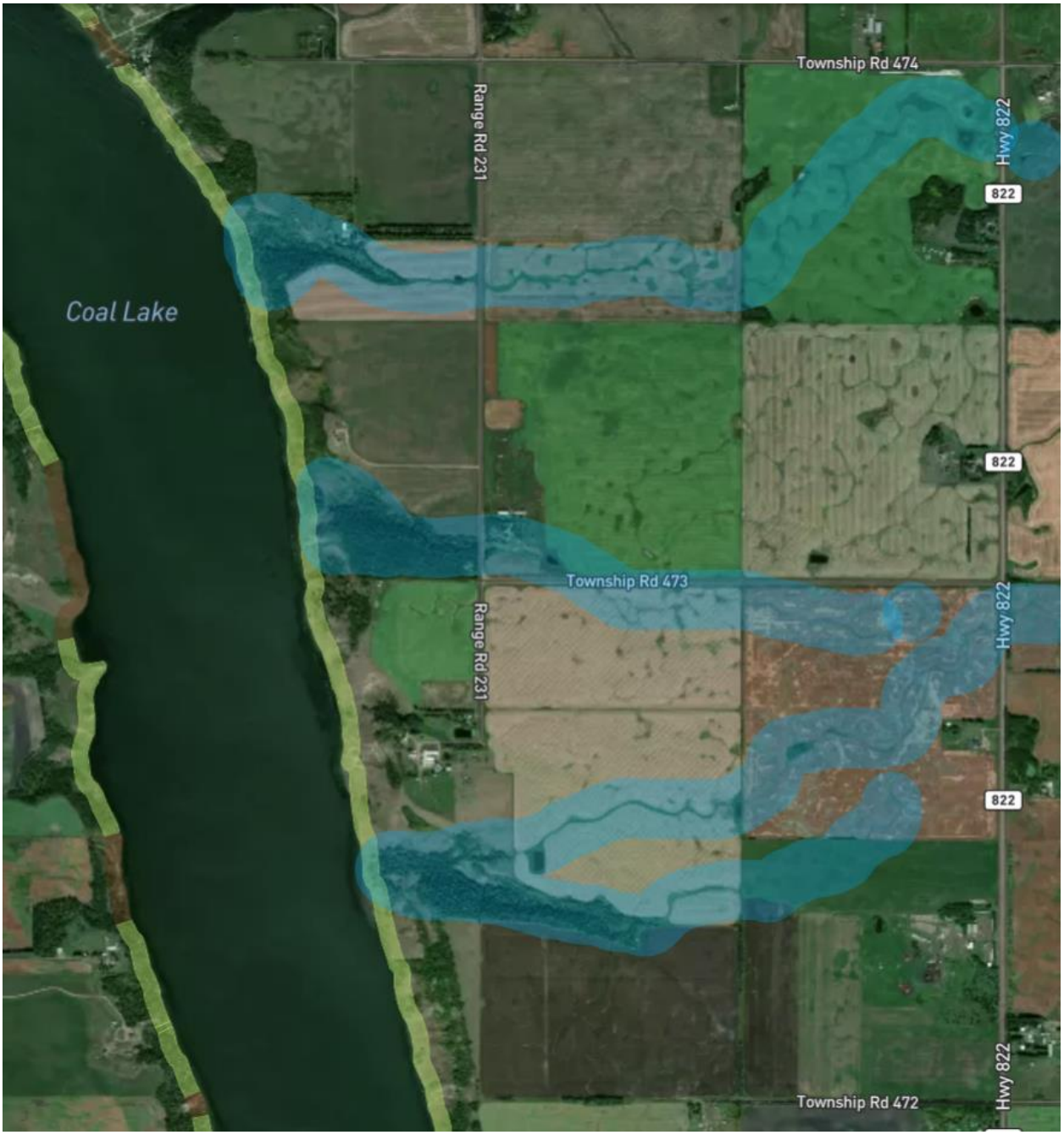

Figure 4: Satellite imagery of area surrounding the proposed CFO, with tributary stream channels highlighted in blue

LAND USE PLANS

Much of Coal Lake falls within the jurisdiction of the County of Wetaskiwin, while the northern part of the lake is in Leduc County. The proposed CFO is in the County of Wetaskiwin. A primary consideration in the NRCB decision is the municipal land use plans.

County of Wetaskiwin Municipal Development Plan

Objective 1.4 Minimize the land use conflict with Confined Feeding Operations and surrounding land uses

1.4.3 Any size of new Confined Feeding Operation (including Intensive Livestock Operation) must not locate within the following setback distances as illustrated in Figure 3.

a) 2.4km (1.5 miles) from the boundary of any city, town, village, hamlet, and school and hospital.
b) Under no circumstances can a new CFO be located within 1.6km (1 mile) of the following named lakes: Battle Lake, Buck Lake, Coal Lake, Pigeon Lake, Red Deer Lake, Wizard Lake and Twin Lakes.
c) All other unspecified environmental features, including but not limited to lakes not specified in (b), wetlands, and watercourses shall have setbacks in accordance with Alberta Operation Practices Act and Regulations (AOPA) as amended.

Source: County of Wetaskiwin Municipal Development Plan

BRWA WATERSHED MANAGEMENT PLAN RECOMMENDATIONS

Non-point Source Pollution Management

The BRWA *Non-point Source Pollution Management Implementation Guidelines* offers recommendations for crop and manure beneficial management practices, where applicable. This advice was developed with broad input from watershed residents, stakeholders and decision-makers. Regarding CFOs proposed within the Battle River and Sounding Creek watersheds, the following is recommended:

- Recommendation 2.4.8: Efforts should be taken to limit the development of new Confined Feeding Operations within the effective drainage area of the Battle River and Sounding Creek watersheds.
  Rationale: The effective drainage area is that portion of the watershed that might be expected to contribute runoff to the main stem during a flood with a return period of two years. As these areas regularly contribute water to the main stem, the potential for nutrient transport from these areas is greater than in non contributing areas.

Source: Non-point Source Pollution Management Implementation Guidelines, PDF

Source Water Protection

- Through its multi-stakeholder watershed management planning process, the BRWA has developed recommendations around source water protection:
    - It is recommended that source water protection plans be developed within the Battle River watershed, and that the planning areas include the watershed upstream of the drinking water intake locations for each community that relies on surface water sources in the watershed. The City of Wetaskiwin's drinking water source is Coal Lake; as such, the source water protection planning area is recommended to include the Coal Lake and Pipestone Creek watersheds. This plan would identify risks to source water from the cumulative effects of land uses in the watershed, including from agricultural activities, and recommend management actions to minimize any potential adverse impacts. In this way, the long-term safety and security of this drinking water source would be supported. In the absence of this plan, proposed land uses within the watershed may not be properly evaluated and managed for their potential adverse impacts on the drinking water source.

Source: Source Water Protection Implementation Guidelines, PDF

Water Quality

- Coal Lake flows into Pipestone Creek, which is a major tributary of the Battle River. Water quality in the Battle River is impaired by high nutrient levels. Data from the Government of Alberta's long-term river network monitoring station on the river near Driedmeat Lake (downstream of Coal Lake) indicates that for the sample period of 2003-2016, the Alberta River Water Quality Index scores for nutrients ranged from marginal to poor (with scores ranging from 21-46, on a scale of 0-100). The "marginal" score category ranges from 46-65, and indicates that "guidelines [are] often exceeded, sometimes by large amounts; quality is threatened, often departing from desirable levels". The "poor" score category ranges from 0-45, and indicates that "guidelines [are] almost always exceeded by large amounts; quality is impaired and well below desirable levels".
- In making land use decisions with the watershed context in mind, it is important to consider the cumulative effects of all land uses that may contribute to nutrient loading in lakes, wetlands, tributary streams, and the Battle River.

Source: https://open.alberta.ca/opendata/river-water-quality-index-alberta, with Battle River specific data compiled at: https://www.battleriverwatershed.ca/wp-content/uploads/2021/05/Battle-River-Water-Quality-Data_Branded-2021.pdf

Shoreline and Riparian Considerations

- Healthy riparian areas support improved water storage and filtration, among many other benefits (see https://www.riparianresourcesab.info/importance). Riparian intactness, pressure and prioritization data collected for the Battle River Watershed Alliance and North Saskatchewan Watershed Alliance (and available on the Riparian Web Portal and in the *Shoreline and Riparian Condition Assessment: County of Wetaskiwin*) indicate:
    - Current riparian intactness data for Coal Lake is reported as high intactness in the area of the proposed CFO (see Figure 5). However, on-the-ground observations from local residents indicate that cattle pressure along the hillside and shoreline may be impacting riparian and upland conditions (see Figure 6).
    - Overall riparian intactness for Coal Lake: 29.97 km (59.8%) high intactness, 11.31 km (22.6%) moderate intactness, 5.39 km (10.8%) low intactness, 3.41 km (6.8%) very low intactness
    - Catchment pressure is high in the watershed area around the proposed CFO (see Figure 7). Catchment pressure is defined as pressures on the landscape that may impact riparian health. This includes natural stressors (such as slope and land cover) and human stressors (such as land use intensity).
    - Steep slopes, bare ground, and limited woody vegetation along portions of the shoreline (and adjacent hillside) are factors that may contribute to higher landscape pressure in the Coal Lake watershed, which in turn leads to increased risk to riparian health (especially due to an increased risk of erosion in areas with steep slopes and limited woody vegetation to support soil stabilization).
    - Riparian areas along the eastern shore of Coal Lake have been identified as being of moderate conservation priority (see Figure 8).

Source: Riparian Web Portal, *Shoreline and Riparian Condition Assessment: County of Wetaskiwin,* December 2021. https://drive.google.com/file/d/15uyaJx_XJkgCp03kK_tXCRagCsinX-wh/view?usp=share_link

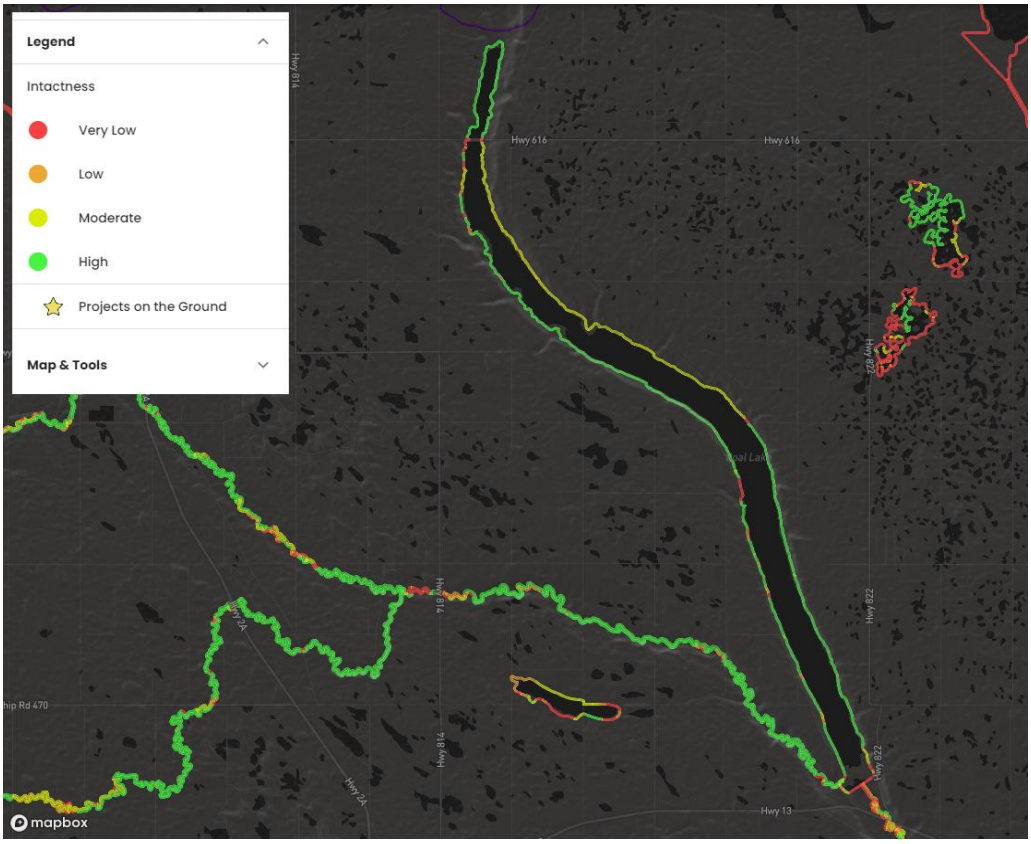

Figure 5: Riparian intactness data for Coal Lake (source: https://riparian.info/#/riparian)


Figure 6: Photo of hillside and riparian area in the vicinity of the proposed CFO, indicating potential pressures on riparian condition due to steep slopes, bare ground, limited woody vegetation cover, and livestock activity.

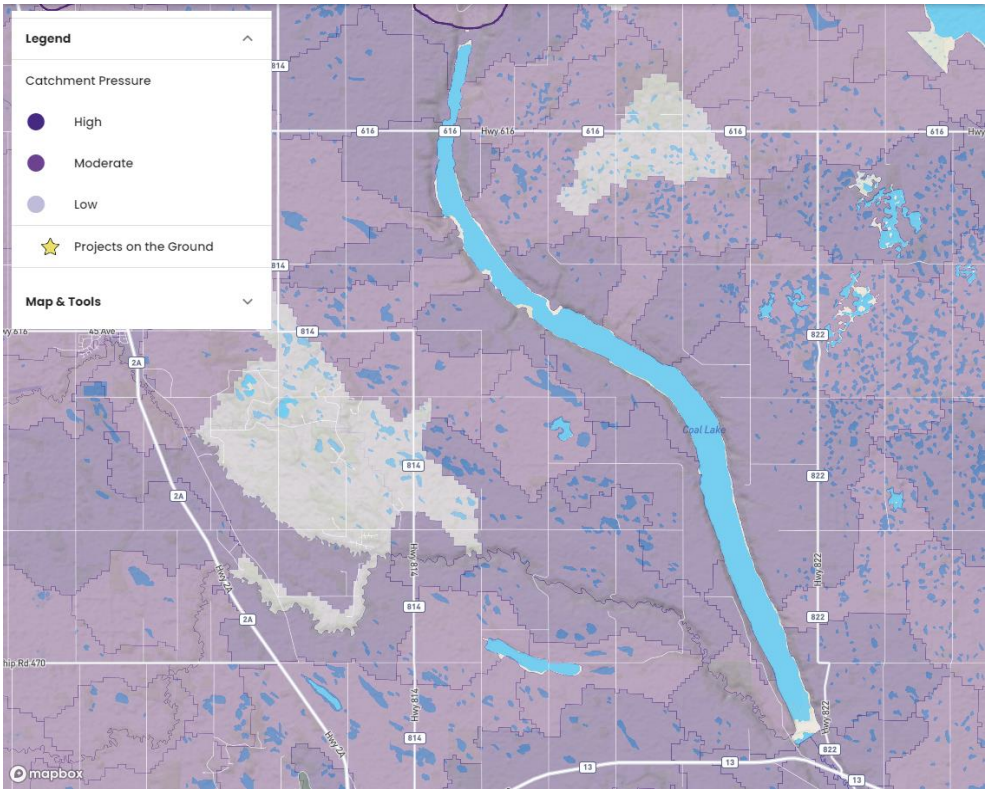

Figure 7: Catchment pressure data for Coal Lake (source: https://riparian.info/#/riparian)

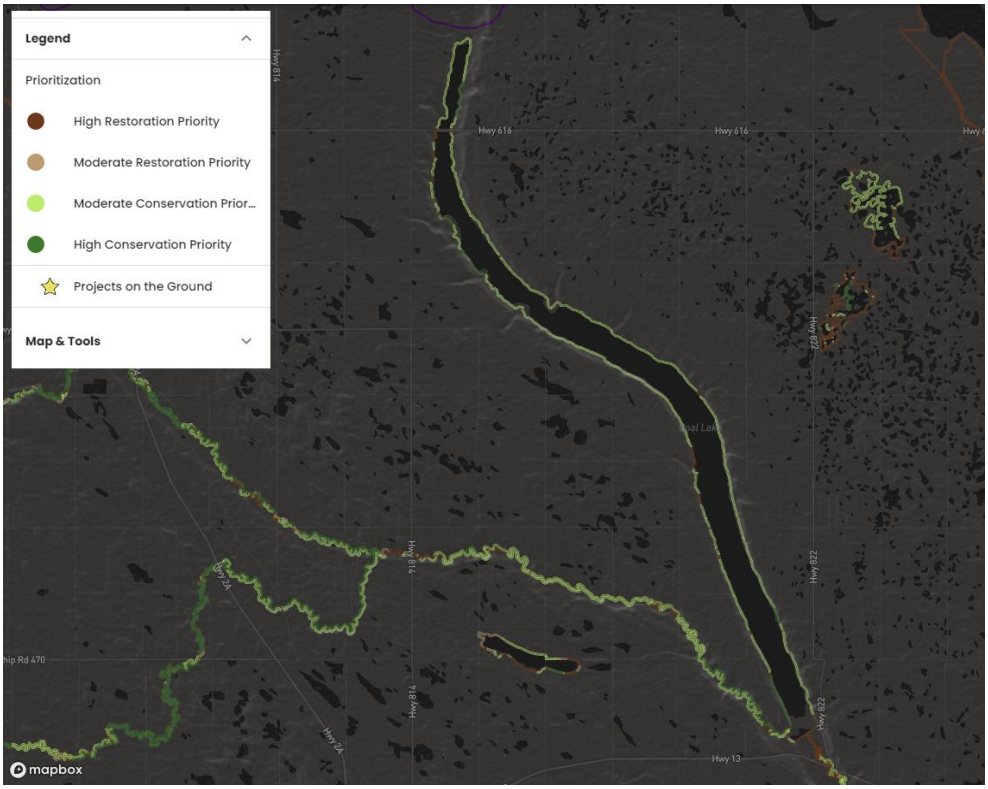

Figure 8: Riparian conservation/restoration prioritization data for Coal Lake (source: https://riparian.info/#/riparian)

ENVIRONMENTAL QUALITY GUIDELINES FOR ALBERTA SURFACE WATERS

The Government of Alberta demonstrates a commitment to protecting water quality in water bodies within Alberta as outlined in environmental quality guidelines and the new surface water quality management framework outlined below.

The Government of Alberta's *Environmental Quality Guidelines for Alberta Surface Waters* states that for lakes, there should be: "No increase in nitrogen (total) or phosphorus over existing conditions. Where nitrogen and/or phosphorus have increased due to human activity, develop lake-specific nutrient objectives and management plans where warranted." In addition, there are now site-specific surface water quality triggers and limits for nutrients, including nitrogen and phosphorus, in the Battle River (as outlined in the *Surface Water Quality Management Framework for the North Saskatchewan and Battle Rivers*).

Sources:
Government of Alberta. 2018. Table 1.5. Surface water quality guidelines for nutrients, *Environmental Quality Guidelines for Alberta Surface Waters*. Water Policy Branch, Alberta Environment and Parks. Edmonton, Alberta.
https://open.alberta.ca/dataset/5298aadb-f5cc-4160-8620-ad139bb985d8/resource/38ed9bb1-233f-4e28-b344-808670b20dae/download/environmentalqualitysurfacewaters-mar28-2018.pdf

Surface water quality management framework for the North Saskatchewan and Battle Rivers
https://open.alberta.ca/dataset/a5049f19-d46c-4b43-8782-c10c076afe29/resource/382503d1-7c73-475c-856f-438e62571ab1/download/epa-north-saskatchewan-region-surface-water-quality-management-framework-2022.pdf

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MORE ABOUT BRWA

The Battle River Watershed Alliance (BRWA) is a non-profit organization that works in partnership with a diverse group of stakeholders to promote the health and sustainable management of land and water in the Battle River and Sounding Creek watersheds using the best science and social science available. Under the Government of Alberta's *Water for Life: Alberta's Strategy for Sustainability*, the BRWA was designated in 2006 as the Watershed Planning and Advisory Council (WPAC) for the Battle River and Sounding Creek watersheds in Alberta. As a WPAC, the BRWA has a role as convenor and collaborator with watershed stakeholders. Our role is to:

- Lead, promote and coordinate watershed management planning; and
- Inform, educate and involve stakeholders on water issues and watershed stewardship.

BRWA is made up of the people who live, work, and play in the Battle River and Sounding Creek watersheds. We are landowners, community members, agricultural producers, business owners, researchers, and decision-makers. We work together to ensure a stable economy, healthy natural areas, and resilient communities in this place that we love. We are dedicated to protecting our watershed for the current and future generations.

Visit our website here: www.battleriverwatershed.ca
