
Volume 1, Section 4 Snake Lake Reservoir Expansion Project

Project Description

Regional and Cooperative Initiatives



Submitted to:



a division of **Englobe**

MPE
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Lethbridge, Alberta

On behalf of:



Eastern Irrigation District
Brooks, Alberta

Submitted by:



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AARES Project #: 21-127

Executive Summary

The Eastern Irrigation District (EID) is applying for approval under the *Environmental Protection and Enhancement Act* (EPEA) (Government of Alberta [GOA], 2000) to construct the proposed Snake Lake Reservoir (SLR) Expansion Project (the Project). The Project, located between Bassano and Brooks in Alberta, involves the construction of a roughly 8 km long, 20 m high dam to increase the storage capacity of the reservoir system from 19.25 million m³ to 87.4 million m³. This document provides a comprehensive description of the existing regional and cooperative initiatives that are occurring within the Project and surrounding areas. This section meets the requirements outlined in the Final Terms of Reference (FTOR) to discuss regional and cooperative efforts.

The EID is currently involved in a range of initiatives aimed at improving rural farm life, water supply, communications, wildlife habitats, and irrigation delivery systems. The EID provides water benefits to various users, including municipalities, environmental organizations, and industries, such as the implementation of Alberta's Drought Response Plan, which prioritizes water access for upstream municipalities and livestock operations during drought conditions. The key regional and cooperative initiatives of the EID include provision of an internet system called EIDNet, which supports rural landowners, the EID District Scholarship Program established in 2008 to provide financial support to residents pursuing post-secondary education, and Partners in Habitat Development (PHD) that aims to enhance wildlife habitats within cultivated areas of the EID which has supported over 500 projects. Other initiatives include the partnership with Ducks Unlimited Canada for various wetland habitat projects and other projects within habitat improvement areas. The EID launched an Aquatic Invasive Species Program and seasonal pesticide application program to manage invasive species. Additionally, the EID supports farming initiatives through the Farming Improvement Policy and Farm Improvement Grants. The EID has also partnered with the County of Newell on several projects including the County of Newell Drainage Program, the Kinbrook Connection Pathway project, and the County of Newell Water Project. The EID maintains two regional campgrounds, several reservoirs for fishing and boating, a boat launch in SLR, and roadways along canals and the future expanded SLR.

A variety of monitoring programs take place within the boundaries of the EID. These programs work to ensure that waterways, air quality, public health, and wildlife habitats are properly maintained and managed. Water Survey of Canada (WSC) Stations operate over 2,800 hydrometric gauges across Canada including the Bassano Dam and downstream in the Bow River, providing data on water intake and flow. The Palliser Airshed Monitoring Program monitors air quality for public health in Alberta. The Antelope Creek Ranch Monitoring Project focuses on sustainable rangeland management and research on vegetation and wildlife. eBird monitoring takes bird observations from the public and compiles them into a database that is accessible for research and conservation efforts. ABMI monitoring program has 11 monitoring sites within the EID to track wildlife and habitat changes every 5 years. The Alberta Irrigation District Water Quality Project assesses water quality within Alberta's irrigation districts and the Alberta Environmental Public Health Information Network collects health data and monitors methylmercury levels in fish and issues advisories if necessary.

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Abbreviations

ABMI	Alberta Biodiversity Monitoring Institute
Alberta EPA	Alberta Environment and Protected Areas
CCME	Canadian Council of Ministers of the Environment
DUC	Ducks Unlimited Canada
EID	Eastern Irrigation District
EPEA	<i>Environmental Protection and Enhancement Act</i>
FTOR	Final Terms of Reference
GOA	Government of Alberta
GOC	Government of Canada
HRIA	Historical Resources Impact Assessment
PHD	Partners in Habitat Development
SLR	Snake Lake Reservoir
WSC	Water Survey of Canada

4.1 REGIONAL COOPERATIVE ACTIVITIES

The Eastern Irrigation District (EID) is involved with several initiatives related to rural farm life, water supply, communications, wildlife habitat, control of weeds and invasive species, and improvements to irrigation delivery. The EID remains committed to these initiatives as they reflect improvements in rural livelihoods and maintenance of the natural systems.

The EID is dedicated to providing water benefits to other users including municipalities, environmental organizations, and industries. It has voluntarily signed on to the newest version of the provincial Drought Response Plan (Government of Alberta [GOA], 2024a), that ensures other users, such as upstream municipalities and livestock operations, receive water at a higher priority during droughts.

The EID is highly invested in its regional area as it manages water and recreation activities, maintains lands leased for grazing, supports the oil and gas industry, and works cooperatively with the County of Newell to manage water and other surface resources in district lands. In support of this, the EID is involved in several regional and cooperative efforts, including:

- The district runs an internet system for rural landowners, EIDNet (<https://www.eidnet.ca/>), supporting farming operations, business, and residential needs.
- The Eastern Irrigation District Scholarship Program (EID, 2024a), established in 2008, provides financial support to local recipients to attend universities or other post-secondary institutions.
- The Partners in Habitat Development (PHD) initiative was developed to enhance wildlife habitat within cultivated areas of the EID (EID, 2024b). PHD has supported over 500 projects including planting about one million trees and shrubs (to date), installation of over 180 km of fences to control livestock access to habitat sites, development of 42 wetland projects, and seeding 60 ha of dense nesting cover.
- For over 80 years, the EID has worked with Ducks Unlimited Canada (DUC) on water projects, supplying water for San Francisco Lakes and other habitat improvement areas and creating over 70 wetland habitat projects totalling over 15,000 ha (see Attachment 4A, Figure 4-1). An average of 28 million m³ of water was provided for DUC needs from 2004 to 2023 (Figure 4-1, below).
- EID's Aquatic Invasive Species Prevention Program (EID, 2024c) was launched in 2018. It aims to prevent the introduction and spread of invasive species into waterbodies managed by EID and supporting provincial initiatives with the same goal. The EID also runs a seasonal pesticide application program to control noxious weeds throughout the EID.
- The EID has a Farm Improvement Policy (EID, 2022) that supports various initiatives to improve district infrastructure or better manage water resources. From 2018 to 2022, the EID approved over \$7.5 million in Farm Improvement Grants. As of 2024, the program funds drain and canal relocation, infrastructure improvements (turnouts, canal or drain cattle crossing) and conversion to more efficient irrigation methods.
- The EID and The County of Newell are currently partnering on the following projects:
 - County of Newell Drainage Program: The EID and the County of Newell are both contributing one million dollars to a program that addresses drainage concerns in specific areas of the County. The EID surveys, designs, and rehabilitates road

borrow ditches, including the EID's drains, ensuring proper drainage as a complete system. Recent work has been ongoing in Rosemary and is planned for Rolling Hills.

- The Kinbrook Connection Pathway is a 12 km long recreational trail near Kinbrook Lake and Kinbrook Provincial Park. The pathway will feature lake views, grasslands, a pedestrian bridge, and shorebird habitats.
- County of Newell Water Project: a regional water system allowing county residents to access a secure potable water supply reducing the need for well water.
- EID also maintains two regional campgrounds and multiple reservoirs for fishing and boating, including a boat launch in SLR (EID, 2024b).
- EID provides road surfaces along several of its canals and will develop a new road surface along the upper berms of the expanded SLR.

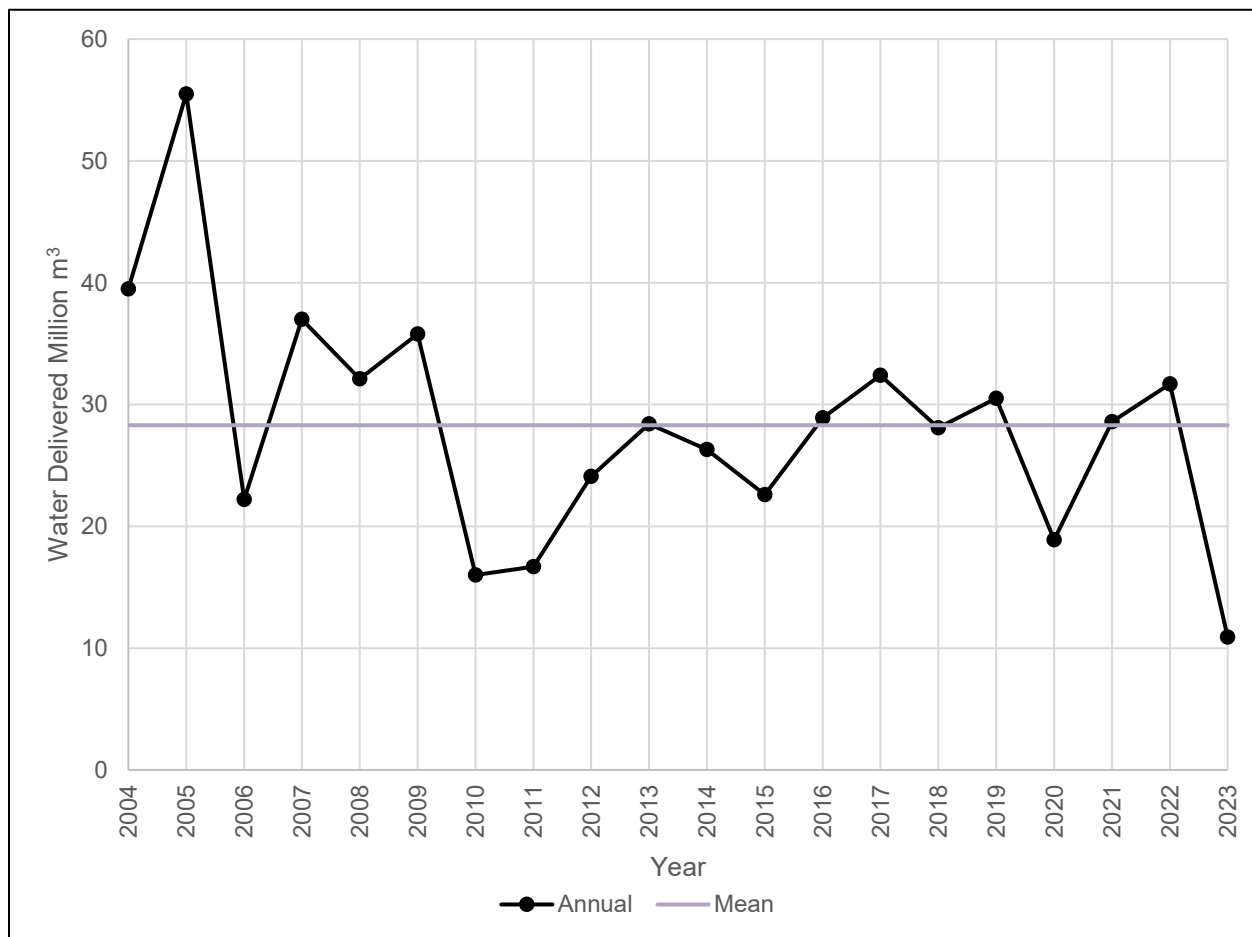


Figure 4-1: Water supplied by EID to Ducks Unlimited Canada (DUC) 2004 to 2023

4.2 MONITORING PROGRAMS

Several monitoring programs exist on EID lands associated with EID water infrastructure. Where possible, EID supports these initiatives with in-kind support.

4.2.1 Water Survey of Canada Stations

The Water Survey of Canada (WSC) is the national authority responsible for the collection, interpretation and dissemination of standardized water resource data and information in Canada. WSC operates over 2,800 active hydrometric gauges across the country, including a station at the Bassano dam and another station directly downstream in the Bow River. These stations provide needed data on water intake to the EID canal system and ensuring minimum water flow requirements in the Bow River are achieved.

4.2.2 Palliser Airshed Monitoring

The Palliser Airshed Society monitors air quality in urban areas with the objective to measure air quality for the health of Albertans. In the past, most monitoring occurred in larger cities, but in recent years this has expanded to include nearby monitoring stations in Bassano and Brooks (Palliser Airshed Society, 2024).

4.2.3 Antelope Creek Ranch Monitoring

Antelope Creek Ranch is approximately 7 km south and east of the project area. Water is conveyed to the Ranch by EID. It is a 35+ year collaborative demonstration project (between Alberta Fish and Game, DUC, Alberta Environment and Protected Areas (Alberta EPA), and Wildlife Habitat Canada) on sustainable rangeland management to benefit both livestock and wildlife. The Ranch has had many research initiatives and projects over the years, with a focus on indexing and monitoring the production values of the rangeland, measuring metrics such as precipitation, forage yield/production, vegetation and wildlife inventories, including avian point counts, burrowing owl surveys, waterfowl and shorebird surveys, mammal surveys, and amphibian surveys.

4.2.4 eBird Monitoring

The online eBird database (<https://ebird.org/region/CA-AB>) allows the public to observe and count bird species at sites throughout North America and enter bird observations to a database with access for research, conservation, and other uses. There is an eBird site at the extant SLR; 117 species have been observed at this site.

4.2.5 Alberta Biodiversity Monitoring Institute (ABMI)

The Alberta Biodiversity Monitoring Institute (ABMI) Monitoring Program, established in 2007, tracks changes in wildlife and habitats across Alberta and provides scientifically credible information about each region's living resources. ABMI samples a grid of 1,656 site locations spaced 20 km apart throughout the province. Three ABMI terrestrial and wetland survey sites occur near the project area. These sites are monitored approximately every 5 years. A total of 11 sites occur within the EID (ABMI, 2024).



4.2.6 Alberta Irrigation District Water Quality Project

The Alberta Irrigation District Water Quality Project is an Alberta Irrigation Districts associated partnership with the individual irrigation districts in Alberta, GOA, and Agriculture and Agri-Food Canada. It has been active since 2006 to assess the quality of irrigation water within Alberta's irrigation districts. The EID monitors water quality within reservoirs and canals throughout the district from just below Bassano Dam on the main canal to sites immediately upstream of the return flow sites, where remaining water enters the Red Deer River (GOA, 2024b).

Water quality data is needed for a variety of applications, including assessing the quality of source water used for irrigation from a food production perspective and determining if there are differences in water quality between different types of irrigation infrastructure and within different irrigation districts. The project collects data from sites dispersed throughout the irrigation districts' conveyance system. Annual water quality index values are calculated for each site using the Canadian Council of Ministers of the Environment (CCME) Water Quality Index that compares site specific water quality data to irrigation water quality guidelines that were developed to protect all life stages of crop species grown in Canada (CCME, 2017).

The Alberta Irrigation District Water Quality Project could support the monitoring of the water resources discipline as one of the sites is located downstream of the outflow from the SLR (Site name: E-S2). Changes to water quality indexes at this site during the expanded reservoir's operation could reflect the quality of water leaving the reservoir (Alberta Irrigation Districts Association, 2024).

4.2.7 Alberta Environmental Public Health Information Network

The Alberta Environmental Public Health Information Network summarizes data collected by Alberta Health, assessing factors that affect public health including information on methylmercury loads in fish (GOA, 2022). This information is used to issue advisories on fishing to protect against mercury effects on humans. This project is the result of a collaboration between Alberta Health and the University of Alberta. A smartphone app is provided to allow users to determine the risk of eating fish from various lakes and reservoirs in Alberta. Fish mercury loads are measured by a combination of federal (Environment and Climate Change Canada), Provincial (Alberta EPA), and industry-led initiatives.

4.3 REFERENCES

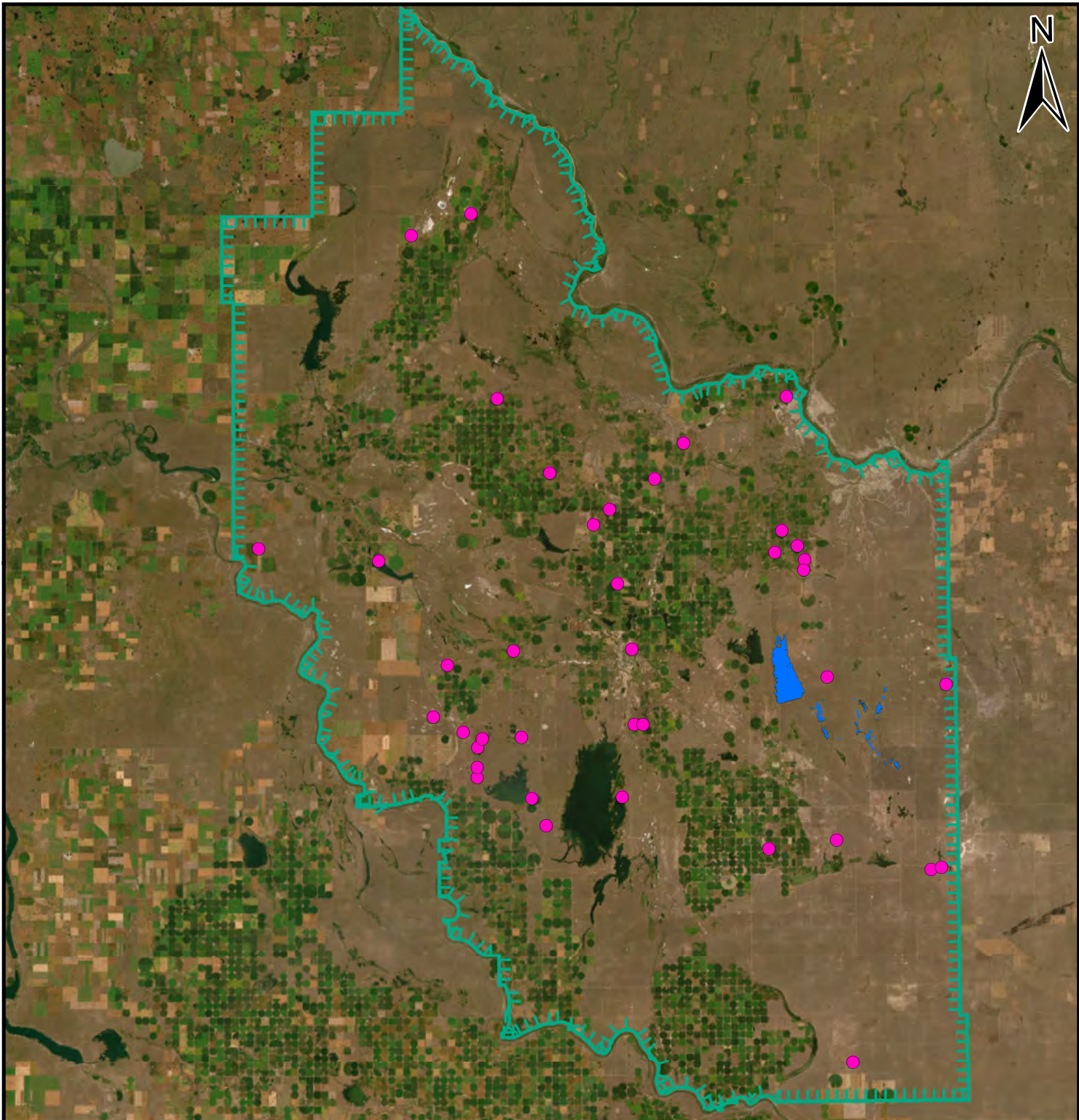
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Attachment 4



Figures

Figure 4A-1: Ducks Unlimited Canada (DUC) Water Projects in the EID1



SCALE: 1:600,000

4 0 4 8 Km

<i>Drafted</i>	MM	<i>Date</i>	Mar 14, 2025
<i>Approved</i>	WB	<i>Revision</i>	0
<i>Route Source</i>		<i>Date</i>	Feb 18, 2022
CAD Survey		<i>Revision</i>	0

Data Sources:
Imagery Reference: ESRI 2021/07/10
ATS Grid: AltaLIS 2007

*All Data is based on Ducks Unlimited Canada
Land Management System as of 1/6/2023



Please contact AARES
for all other sources.

*Please note that the imagery
is from 2021 and although we
have no reason to doubt the
accuracy and completeness
of it, users should be aware that
discrepancies may be present*

Legend



Eastern Irrigation District No. 13 Boundary



Wetlands (without geometry)
Under Agreement with DUC*
1,894 ha



Wetlands
Under Agreement with DUC*
14,496 ha



**Ducks Unlimited Canada
(DUC)
Water Projects in the EID**

March 2025

REF.: AARES21-127
(ProjectDescription)

Figure 4A-1