

Memorandum



To: Travis Ritchie, Yukon Energy Corporation
From: EDI Environmental Dynamics Inc.
Date: August 25, 2022
Project No: 22Y0197
Re: Marsh Lake Low Water Investigations — Monitoring Event 11 Fieldwork Summary

Monitoring Event 11

Table 1. Monitoring event information.

Date of monitoring event	August 17-19, 2022
Field staff	EDI personnel: Ben Schonewille, James McGrath and Petra Szekeres KDFN personnel: Emily McDougall (August 17 only)
Weather	Variable
Marsh Lake elevation (9 am to 5 pm average)	656.867 to 656.927 m (0.637 to 0.697 m above full supply level)
Areas monitored	Judas Creek wetland, north end of Marsh Lake, Lewes Marsh area near Sawmill Road and Alaska Highway, Kettley's Canyon wetland and Yukon River connected wetland 3.7 km downstream of Marsh Lake, (Map 1).
Access	Pickup truck, and boat

Methods

Drone Imagery Collection

Drone imagery was collected at each monitoring location along pre-determined flight paths at a consistent height of 80 m using a drone (DJI Mavic Pro II) by operators with a valid drone operator's certificate. Identical flight paths will be used for subsequent monitoring events to ensure consistent imagery collection. During each flight, field staff monitored the imagery for areas of interest and recorded any wildlife observations. Following the completion of all monitoring events, the recorded imagery will be reviewed to compare conditions at different water levels throughout the duration of monitoring period.

Collection of Bird and Wildlife Observations

Bird and wildlife observations were recorded by field staff on the ground and in the air (via drone). Observations were completed for wildlife at all monitoring sites and bird observations were recorded at sites LM3 and LM5 only. Species and number of individuals were recorded for each observation, as well as any additional observations.



Fish Sampling

Fish sampling was completed on August 17 and 18 via small mesh gillnetting with the net panels used ranging in size from 13 mm (0.5 inch) to 51 mm (2.0 inch). Net set durations were kept to less than one hour to allow as many fish to be released alive as possible. A total of 32 short duration sets were completed and focused on wetland areas of Lewes Marsh and adjoining areas of the Yukon River channel.

Results

General Site Conditions

Conditions were similar across all monitoring locations. Water levels continue to rise, with the mudflats along the Marsh Lake shoreline and within Lewes Marsh area completely underwater. The highwater levels have resulted in some flooding of riparian vegetation (shrubs) around the margin of the wetlands surveyed. Representative photos of each site are shown in Photo 1 to Photo 11 at the end of this summary.

Bird Observations

A total of 18 bird species were detected during the monitoring event (Table 2). This relatively low species diversity is indicative of the seasonal timing of the survey which was passed the peak breeding period but also prior to the onset of southward fall migration. Small numbers of scoters (surf and white-winged; a species of diving duck) observed in the study area are indicative of the onset of southward fall migration for these species.

Wildlife Observations

No wildlife were observed during the August 3 monitoring event; however, the beaver lodges documented during previous surveys were once again observed.

Fish Sampling

A total of 84 fish were captured on August 17 and 18 through the use of small mesh gillnetting with the highest numbers of fish captured in the LM2 (Kettley's canyon) wetland. Lake whitefish were the most frequently captured fish species (30 juveniles and 9 juveniles), followed by least cisco (21), round whitefish (12) and northern pike (12). A number of juvenile, young-of-the-year northern pike (see Photo 12 at the end of this summary) were captured during the sampling event, thus providing an indication of spawning by the species in the wetlands during the spring of 2022.



Table 2. Summary of bird species observed during the August 17 and 18, 2022, monitoring event.

Species	LM3	LM5
Mallard	✓	✓
Surf Scoter	✓	✓
White-winged Scoter	✓	
Red-necked Grebe	✓	
Spotted Sandpiper	✓	
Lesser Yellowlegs	✓	
Short-billed Gull	✓	
Herring Gull	✓	
Common Loon	✓	
Bald Eagle	✓	✓
American Kestrel		✓
Black-billed Magpie	✓	✓
Common Raven		✓
Black-capped Chickadee	✓	
Common Yellowthroat		✓
Yellow Warbler		✓
Myrtle Warbler	✓	
White-winged Crossbill	✓	

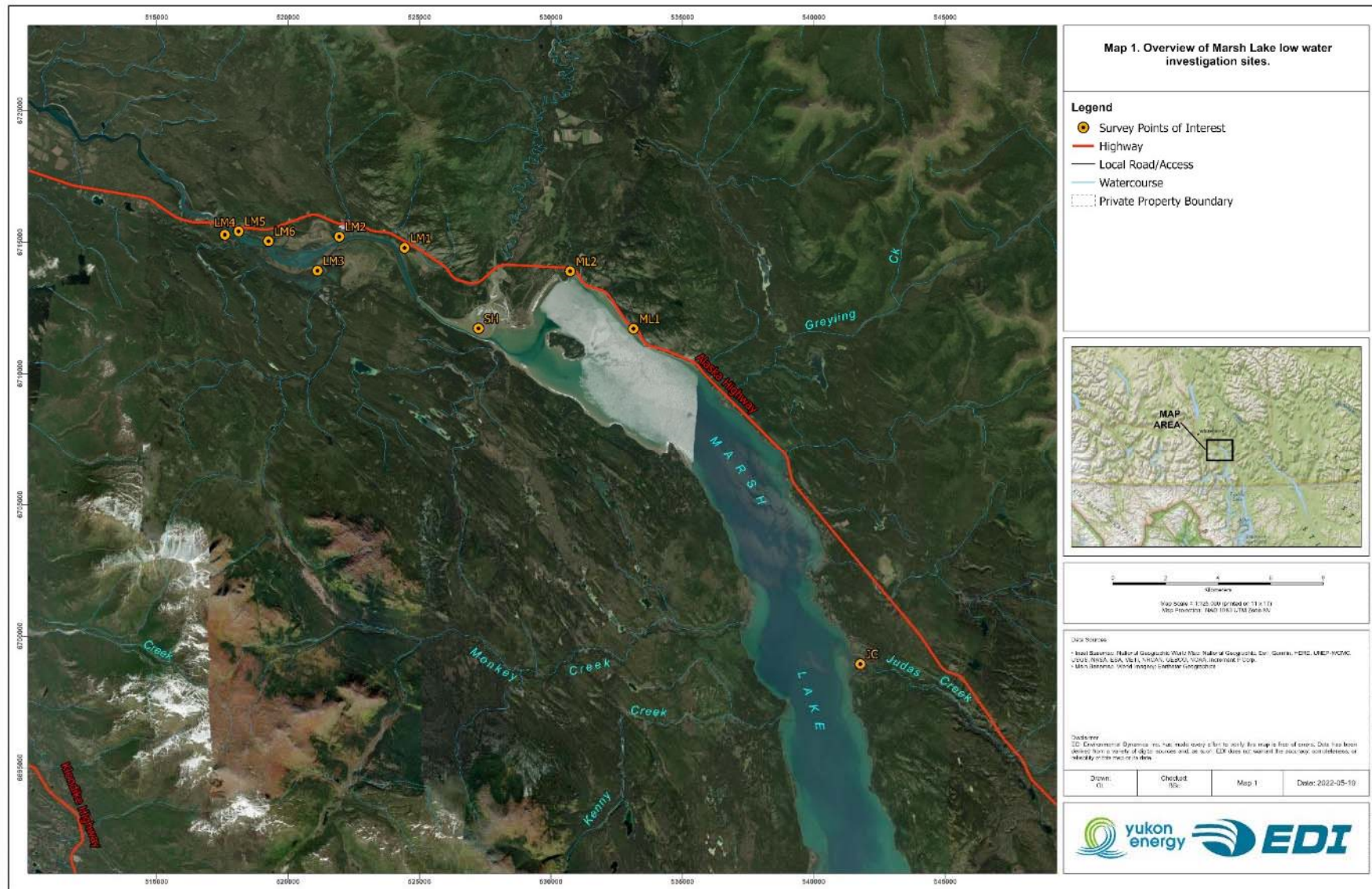




Photo 1. Conditions at monitoring site JC1 at the outlet of Judas Creek on Marsh Lake on August 19, 2022.



Photo 2. Conditions at monitoring site ML1 at an unnamed creek mouth on Marsh Lake on August 19, 2022.



Photo 3. Conditions at monitoring site ML2 at the north end of Marsh Lake on August 19, 2022.



Photo 4. Conditions at monitoring site LM1 (Yukon River wetland 3.7 km downstream of Marsh Lake) on August 18, 2022.



Photo 5. Conditions at monitoring site LM2 (Kettley's Canyon wetland) on August 18, 2022.



Photo 6. Conditions at monitoring site LM3A (Lewes Marsh) adjacent to Sawmill Road on August 17, 2022.



Photo 7. Conditions at monitoring site LM3B (Lewes Marsh) adjacent to Sawmill Road on August 19, 2022.



Photo 8. Conditions at monitoring site LM3C (Lewes Marsh) adjacent to Sawmill Road on August 17, 2022.



Photo 9. Conditions at monitoring site LM4 (Lewes Marsh adjacent to Sawmill Road) on August 17, 2022.



Photo 10. Conditions at monitoring site LM5 (Lewes Marsh) on August 17, 2022.



Photo 11. Conditions at monitoring site LM6 (Lewes Marsh) on August 18, 2022.



Photo 12. Juvenile northern pike captured at monitoring site LM3 (Lewes Marsh) on August 17, 2022.