

## Wetland 06 Water Monitoring Report – Southwest Calgary Ring Road Project Calgary, Alberta

**Prepared for:**

**KGL Constructors**  
18 Seven Chiefs Road SW  
Calgary, AB T2W 3C4

Project No. 102604-01

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## List of Acronyms and Abbreviations

| Acronym / Abbreviation | Definition                                       |
|------------------------|--|
| the Approval           | Water Act Approval No.: 00388473-00-00           |
| Ausenco                | Ausenco Sustainability ULC                       |
| BOD                    | Biochemical Oxygen Demand                        |
| CCME                   | Canadian Council of Ministers of the Environment |
| DO                     | Dissolved Oxygen                                 |
| ESC                    | Erosion and Sediment Control                     |
| GOA                    | Government of Alberta                            |
| GPS                    | Global Positioning System                        |
| Hemmera                | Hemmera Envirochem Inc.                          |
| KGL                    | KGL Constructors                                 |
| Monitoring Plan        | Long-Term Monitoring Plan                        |
| the Order              | Ministerial Order 06/2018                        |
| the Project            | Southwest Calgary Ring Road Project              |
| QEP                    | Qualified Environmental Professional             |
| SCC                    | Standards Council of Canada                      |
| SWCRR                  | Southwest Calgary Ring Road                      |
| TUC                    | Transportation Utility Corridor                  |
| TSS                    | Total Suspended Solids                           |
| WAIR                   | Wetland Assessment and Impact Report             |

## List of Symbols and Units of Measure

| Symbol / Unit of Measure | Definition              |
|--------------------------|-------------------------|
| km                       | Kilometre               |
| m                        | Metre                   |
| mg/L                     | Milligrams per litre    |
| µg/L                     | Microgram per litre     |
| m/sec                    | Metres per second       |
| m <sup>3</sup> /sec      | Metres cubed per second |

## 1.0 Project Background

Wetland 06 is a historic oxbow of the Elbow River located in the Weaselhead Natural Area, a natural environmental park that borders the west end of Glenmore Reservoir (**Figure 1**) within the City of Calgary. A small portion of Wetland 06 intersects the Transportation Utility Corridor (TUC) running north-south through the Weaselhead Natural Area. Wetland 06 is oriented along an east-west axis and is approximately 500 metres (m) long with wetted widths generally less than 30 m. Wetland 06 collects surface water from several other upslope wetlands, namely Wetland 07, 08 and 09 (**Figure 1**), and drains generally east through the Weaselhead Natural Area, eventually discharging to the Glenmore Reservoir, which provides approximately half of the City of Calgary's drinking water supply.

The TUC intersecting the western portion of Wetland 06 was incorporated into the proposed design of the Southwest Calgary Ring Road (SWCRR) Project (the Project). The SWCRR Project was awarded by Alberta Transportation to Mountain View Partnership, which in turn engaged KGL Constructors (KGL) to develop the Project. The scope of the Project encompassed the design and construction of approximately 31 kilometres (km) of new six and eight lane divided freeway, 14 interchanges, as well as three watercourse realignments and associated crossing structures. The Project corridor is located along the western limit of the City of Calgary south of Highway 8 and includes sections of Highways 8 and 22.

On August 11, 2017, the Project received *Water Act* Approval No.: 00388473-00-00 (the Approval) to impact twenty-four wetlands, including Wetland 06. Subsequently, an Environmental Appeal was filed (*Brockman and Tulick v. Director, South Saskatchewan Region, AEP*; Appeal No.: 17-047 and 17-050-R. 2017) affecting KGL's ability to impact the wetlands, as described in the Approval.

As a result of the Environmental Appeal, the Minister of Environment and Parks issued Ministerial Order 06/2018 (the Order), on January 29, 2018. The Order amended the previously received Approval to include additional conditions to address water quality and quantity impacts to Wetland 06. In June 2018, the Director of Alberta Environment and Parks approved a Long-Term Monitoring Plan (Monitoring Plan) developed by Hemmera Envirochem (Hemmera) on behalf of KGL to fulfil requirements of the Order (see conditions 6.2 and 6.6).

The Monitoring Plan (Hemmera 2018) outlined the following obligations:

- The Monitoring Plan comes into effect as soon as approved by the Director and shall remain in effect for a period of five years after the road is officially opened to the public.
- Monitoring of the flow of water into Wetland 06 shall occur in the spring and fall of each year that the plan is in effect.
- Monitoring of water quality in Wetland 06 shall occur in the spring and fall of each year that the plan is in effect, including total dissolved solids, salts, dissolved metals, and other parameters consistent with a stormwater sampling program.
- The monitoring data shall be provided to the Director within one month from the date the data were collected.
- The results of the monitoring and analysis of the monitoring shall be provided to the Director in an annual report by March 31 of the year following the calendar year in which the data were collected.

## 2.0 Introduction

This monitoring report has been prepared by Ausenco Sustainability ULC (Ausenco, formerly Hemmera) on behalf of KGL. The Monitoring Plan was initially implemented in 2018 during construction. The construction phase was completed in October 2020 initiating the operational phase. Monitoring in 2025 represented Year 8 of the Monitoring Plan, and five years after the SWCRR was opened to the public (i.e., the final year of monitoring). The Monitoring Plan is provided in **Appendix A**. The Monitoring Plan initially established eight sampling locations, including one reference site outside of the potential impact area of construction to determine naturally occurring variation affecting wetlands in the Weaselhead Natural Area. The overall number of sampling sites has changed over time in response to conditions encountered over the course of the Project. Monitoring efforts to date are summarised in **Table 2.a**.

**Table 2.a Summary of Water Quality Monitoring Conducted at Wetland 06**

| Date | Monitoring Year | Events   | Changes to Monitoring Program  | Monitoring Stations     |
|------|-----------------|--|--|-------------------------|
| 2018 | 1               | Construction phase. Monitoring plan implemented.   | -  | 8                       |
| 2019 | 2               | Construction phase. Two sediment release events in August.<br>AEP issued Enforcement Order <sup>1</sup> . Hemmera prepared Wetland 06 Sediment Release Remediation Memorandum recommending additional monitoring (Hemmera 2019). | Site WQ-05c removed (encompassed by active construction area).   | 7                       |
| 2020 | 3               | Construction completed in October; operational phase begins.<br>Fall sampling documented elevated zinc concentration along Pathway 1.  | Two monitoring sites added in western portion of Wetland 06.<br>Sediment sampling initiated at monitoring sites along Pathway 1.<br>Supplemental sampling conducted in late fall Two monitoring sites established along Pathway 1 in response to elevated zinc concentrations. | 9 (spring)<br>11 (fall) |
| 2021 | 4               | Operational phase.<br>Sediment release following significant rain event (24.6 mm on July 2, 12.5 mm on July 4).<br>Fall sampling documented elevated zinc concentration along Pathway 1.   | Wetland Assessment and Impact Report (WAIR) submitted to AEP in response to sediment release. WAIR proposed that monitoring per the 2020 Enforcement Order be continued in 2021 through 2023.  | 11                      |
| 2022 | 5               | Operational phase.   | -  | 11                      |
| 2023 | 6               | Operational phase.   | Final year of additional monitoring per the Enforcement Order.   | 11                      |
| 2024 | 7               | Operational phase.   | -  | 11                      |
| 2025 | 8               | Operational phase.   | Final year of monitoring   | 8                       |

<sup>1</sup> Requirements under the Enforcement Order included monitoring of water quality, vegetation regeneration, weed growth and local amphibian populations. Monitoring was implemented in 2021 with results provided under separate cover in a Monitoring Report following two years of growing seasons, and a Verification Report following three years of growing seasons as conditioned in the Order.

The objective of Year 8 monitoring was to follow monitoring protocols established during Year 1 and collect surface water quality and surface water flow measurements from sample sites located within Wetland 06 as well as other waterbodies/drainages providing surface flow to Wetland 06. Consistent with previous monitoring, surface water quality and surface water flow were also monitored in a nearby reference wetland, located outside the potential impact area of construction and operations to capture naturally occurring variations affecting wetlands in the Weaselhead Natural Area.

Information collected during Year 8 monitoring will facilitate comparative analysis with data collected during previous monitoring years to assess potential influences or lack thereof of the Project on surface water quality and flow in Wetland 06. Additionally, Year 8 information will contribute to the final year of data collected by Ausenco facilitating long term analysis of potential Project influences on surface water quality and flow in Wetland 06.

### 3.0 Site Description

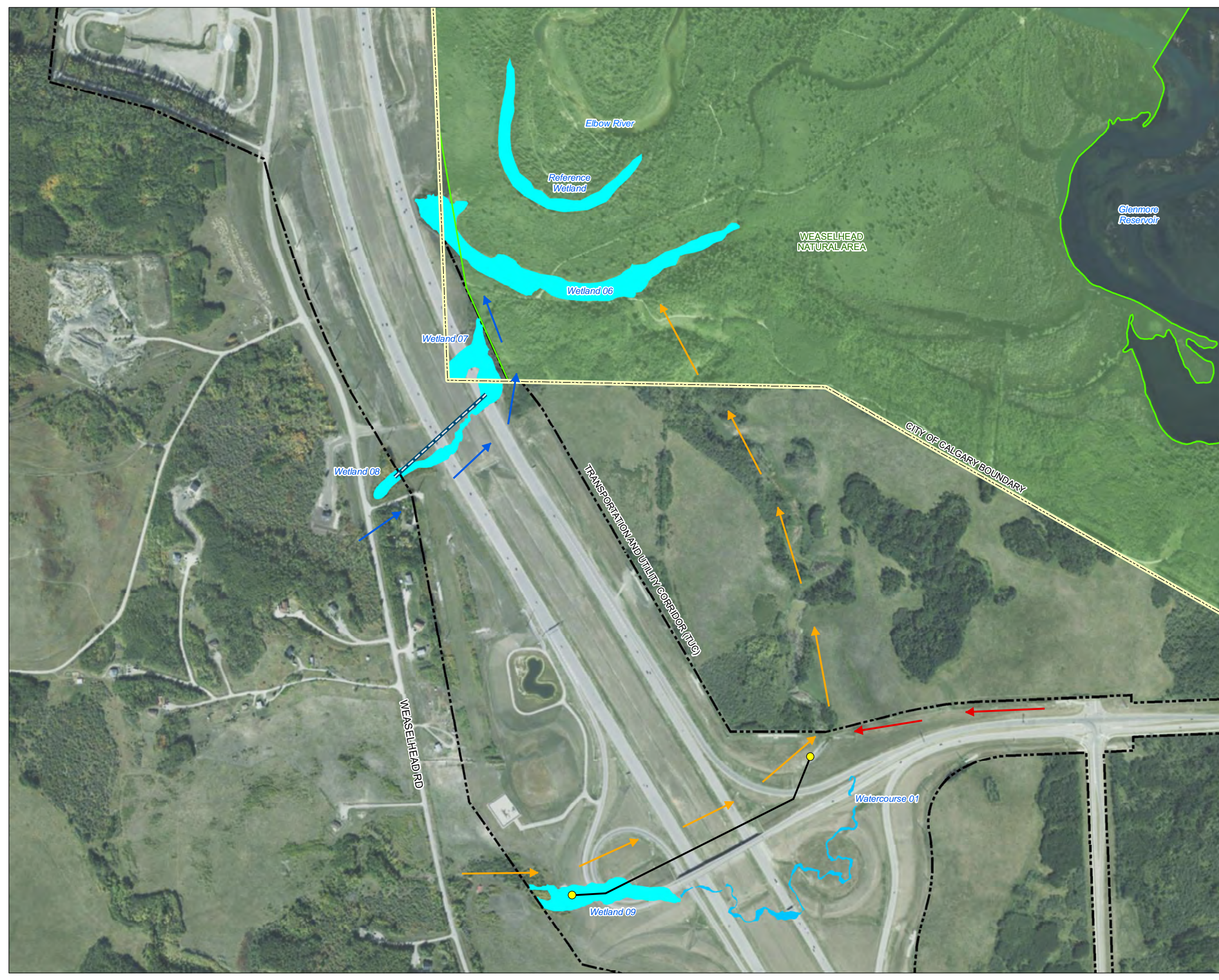
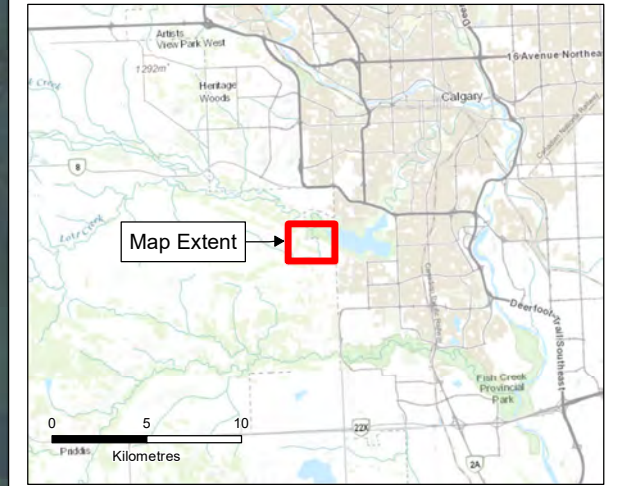
Several adjacent wetlands within the Weaselhead Natural Area contribute surface flow to Wetland 06 (see **Figure 1**). The Monitoring Plan identified two pathways through which Project-influenced water could flow into Wetland 06.

Pathway 1 – An undefined drainage channel conveys flow from Wetland 08 and Wetland 07 diagonally across the Project footprint and northeast toward Wetland 06. The channel becomes defined downstream from the TUC and drains into Wetland 06 over a distance of approximately 400 m.

Pathway 2 – An undefined channel flows east through Wetland 09 and connects to a bypass drainage system installed as part of the Project to maintain flow from Wetland 09 to Wetland 06. The drainage system outlets to a riprap-lined constructed ditch which flows north towards the TUC boundary. From the northern edge of the TUC, a defined channel meanders north for approximately 1,000 m, draining to Wetland 06.

During the construction phase of the Project, surface run-off from the work area was managed through temporary erosion and sediment control (ESC) measures and directed away from Wetland 06 to protect water quality. The construction phase was completed in October 2020 initiating the operational phase. During the operational phase of the Project, the natural flow of surface water from the west side of the TUC into Wetland 06 is being maintained via the bypass drainage systems described above. The Project has been designed such that runoff from the road surfaces within the TUC is directed northwest into a stormwater pond and does not discharge into Wetland 06.

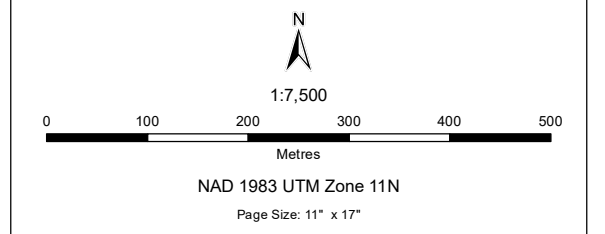
**Wetland Locations**



- Legend**
- Bypass Culvert
  - Pathway #1 Approximate Direction of Flow
  - Pathway #2 Approximate Direction of Flow
  - Pathway #2 Approximate Direction of Flow (Decommissioned)
  - Stormwater Drainage Line
  - City of Calgary Boundary
  - Natural Area
  - Transportation and Utility Corridor (TUC)
  - Watercourse
  - Wetland

- Notes**
1. All mapped features are approximate and should be used for discussion purposes only.
  2. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

- Sources**
- Aerial Image: City of Calgary, 2020
  - Inset Basemap: ESRI World Topographic Map



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## 4.0 Methods

Year 8 monitoring visits were conducted by a two-person crew, led by a Qualified Environmental Professional (QEP) from Ausenco. As per the Monitoring Plan (**Appendix A**), site visits were conducted during the spring and the fall to capture seasonal variability of the wetlands. The timing of each site visit was influenced by environmental conditions, including ambient air temperatures, snow/ice cover, and precipitation events. No sampling was conducted within 72 hours of a substantial precipitation event. Site visits were completed on the following dates:

- Spring – May 28 and June 27, 2025
- Fall – October 16, 2025.

### 4.1 Sample Locations

The original locations for surface water quality and flow monitoring established by the Monitoring Program are provided in **Figure 2**. Sites were strategically selected in 2018 (i.e., Year 1 of monitoring). Sampling locations have been adjusted over the course of the monitoring program according to the events outlined in **Table 2.a** and summarized here:

- In 2019, sample site WQ-05c along Pathway 2 was encompassed by active construction and surface water was no longer accessible for sampling. WQ-05c was eliminated from the monitoring plan and no new sampling points were added as sample site WQ-05b was located downstream and would reflect relevant water quality and flow changes along Pathway 2.
- Four sample sites were added to the Monitoring Plan in 2020 to facilitate additional data collection. Two sites were established at the west end of Wetland 06 (WQ-06 and WQ-07) in response to turbidity releases from the project area, and two sites were established along Pathway 1 (WQ-04c and WQ-04d) to provide additional data resolution following elevated zinc concentrations documented during fall sampling.
- As the pattern of elevated zinc concentrations was not observed in 2023 or 2024, the surface sampling locations were reduced to the original two sites (i.e., WQ-04a and WQ-04b) along Pathway 1 in 2025; WQ-04c and WQ-04d were removed from the sampling program.

Locations sampled during the 2025 Year 8 program are illustrated in **Figure 3** and listed in **Table 4.a**.

#### 4.1.1 Water Quality Monitoring

A total of nine surface water quality monitoring sites were sampled during Year 8 (**Table 4.a, Figure 3**), including seven surface water quality monitoring sites originally established during Year 1 (i.e., 2018) and two sites established at the west end of Wetland 06 in Year 3 (i.e., 2020).

One surface water quality reference site (WQ-01) is located north of Wetland 06, in an adjacent wetland outside the TUC. There are no identified pathways that could direct Project-affected water to this location.

Three surface water quality monitoring sites (WQ-04a, WQ-04b, and WQ-02) were originally established along Pathway 1 from Wetland 08 and Wetland 07 into Wetland 06. Site WQ-04a is located upstream of any potential Project influences and was selected to represent background conditions along Pathway 1. In late fall of 2020, following repeated instances of elevated zinc concentrations detected along Pathway 1, two supplementary surface water quality sample sites (WQ-04d and WQ-04c) were added within

the channel flowing from Wetland 7 to Wetland 6. The WQ-04d sample point is located at 11U 699123, 5652000 UTM and the WQ-04c sample point is located at 11U 699129, 5652100 UTM. These sites were sampled once during Year 3 monitoring, and during all sampling events in Years 4 through 7. Monitoring at these supplementary sites was discontinued in 2025 because the pattern of zinc exceedances observed in 2019-2022 were not observed in 2023 or 2024, suggesting that the zinc in the water has attenuated into the environment as expected.

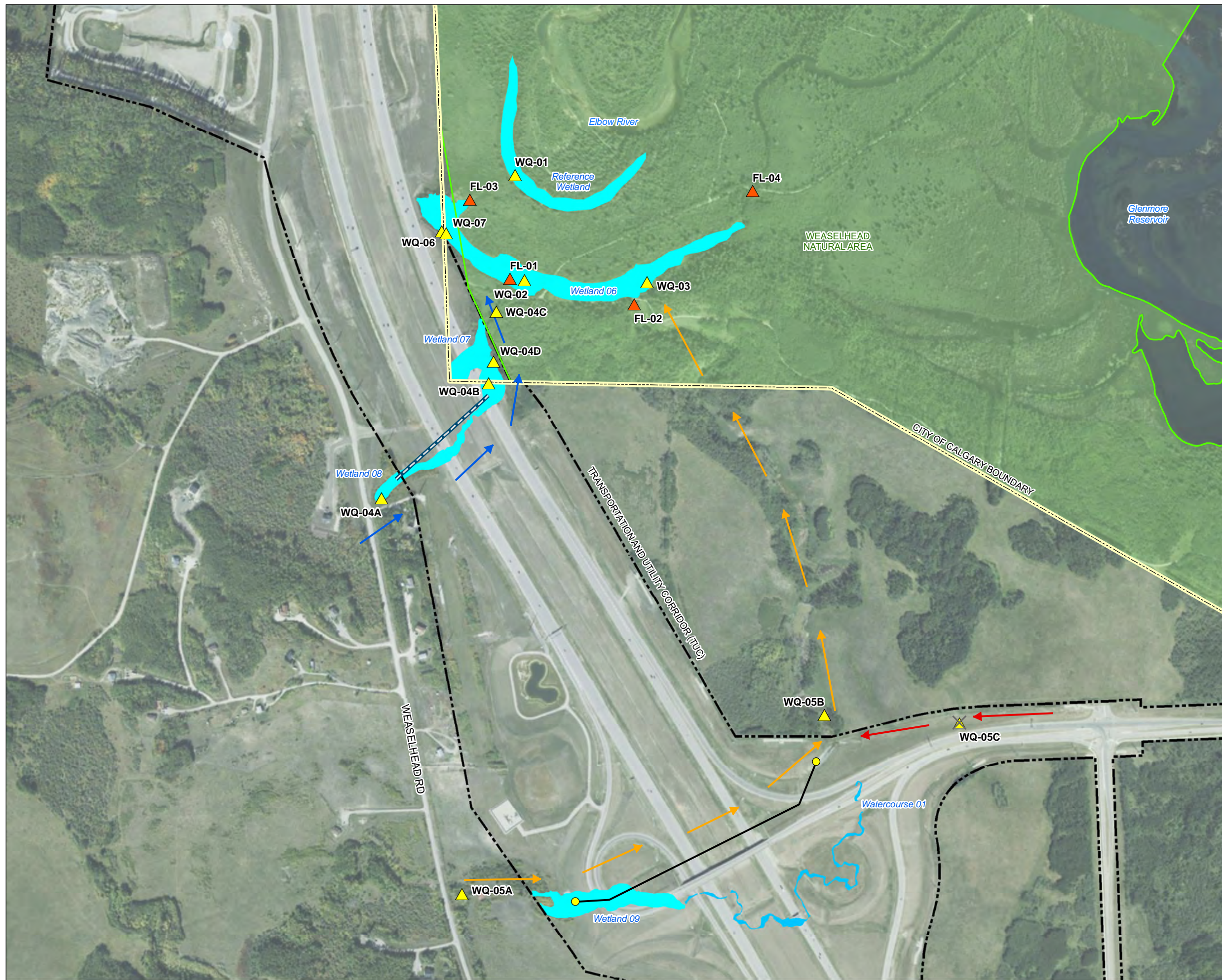
Three surface water quality monitoring sites (WQ-05a, WQ-05b and WQ-03) are located along Pathway 2 from Wetland 09 to Wetland 06. Site WQ-05a is upstream of any potential influences from the Project and was selected to represent background conditions along Pathway 2. Station WQ-05c was also part of the original Monitoring Program along Pathway 2 but was eliminated in 2019 as it was no longer accessible for sampling.

Following the recommendations of the 2019 Wetland 06 Sediment Release Remediation Memorandum (Hemmera 2020), two sample sites (i.e., WQ-06 and WQ-07) were added along a vegetated bank on the west side of Wetland 06. The WQ-06 sample point is located at 11U 699028E, 5652251 N UTM and the WQ-07 sample point is located at 11U 699027, 5652284 UTM.

#### **4.1.2 Sediment Sampling**

Sediment sampling was initiated in Year 3 following repeated instances of elevated zinc concentrations detected along Pathway 1 in Fall 2020. Sediment sample sites were co-located with the surface water quality monitoring sites along Pathway 1 (**Figure 3**). Sediment sampling was discontinued for Year 8 because the pattern of zinc exceedances observed in 2019-2022 were not observed in 2023 or 2024, suggesting that the zinc in the water has attenuated into the environment as expected.

**Water Flow and Quality Sampling Locations**



**Legend**

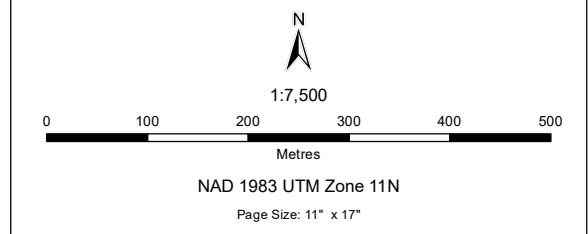
- Water Flow Sample Location (Hemmera, 2020)
- Water Quality Sample Location (Hemmera, 2020)
- Decommissioned Water Quality Location (Hemmera, 2019)
- Bypass Culvert
- Pathway #1 Approximate Direction of Flow
- Pathway #2 Approximate Direction of Flow
- Pathway #2 Approximate Direction of Flow (Decommissioned)
- Stormwater Drainage Line
- City of Calgary Boundary
- Natural Area
- Transportation and Utility Corridor (TUC)
- Watercourse
- Wetland

**Notes**

- All mapped features are approximate and should be used for discussion purposes only.
- This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

**Sources**











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- Aerial Image: City of Calgary, 2020



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**Water Flow and Quality  
 Sampling Location Details**

**Legend**

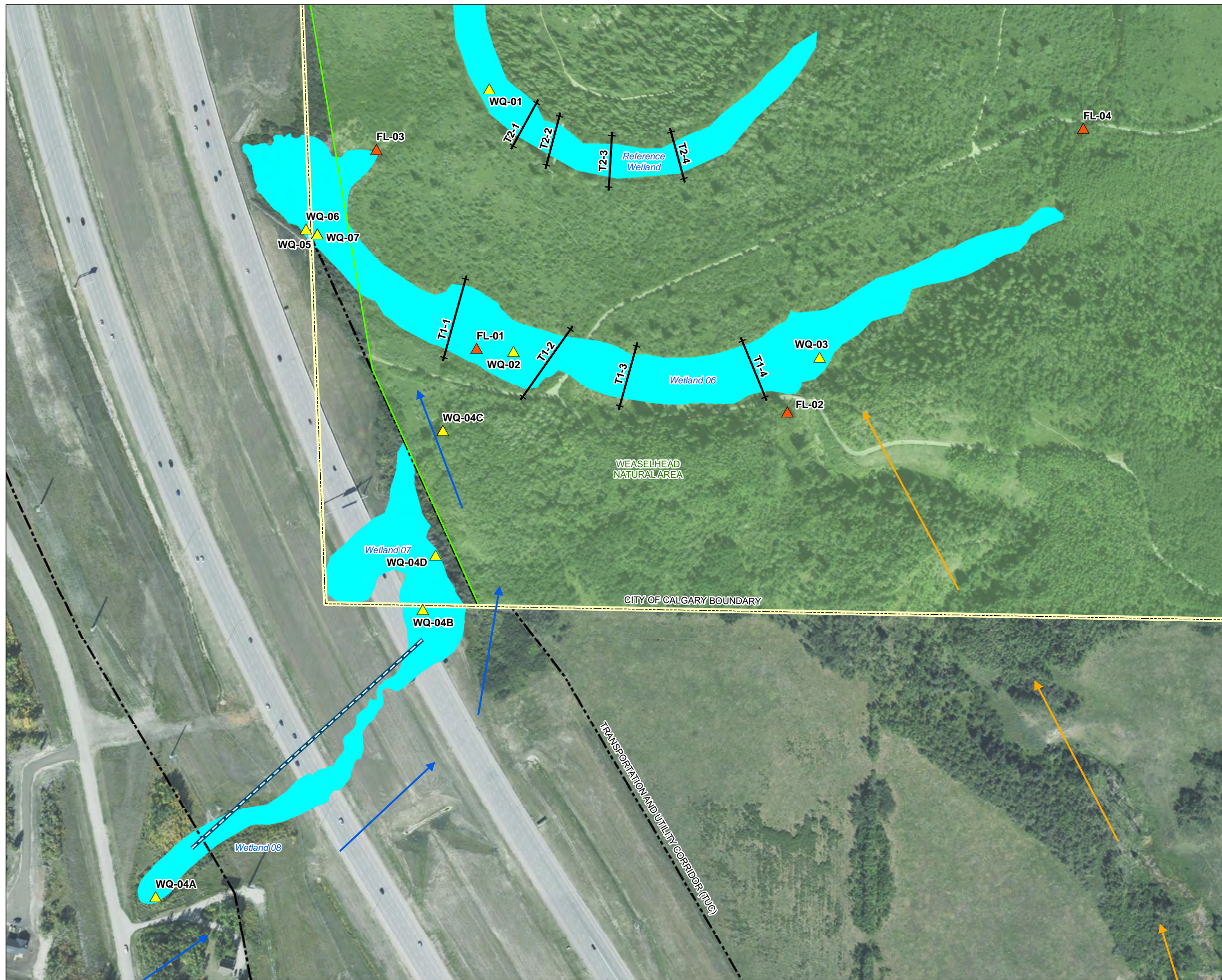
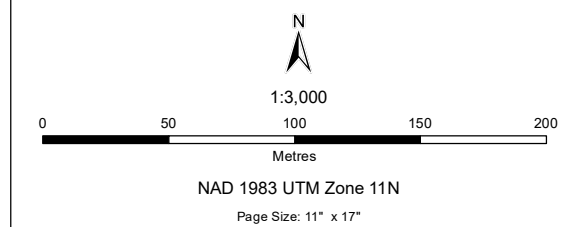
-  Water Flow Sample Location (Hemmera, 2020)
-  Water Quality Sample Location (Hemmera, 2020)
-  Transect Location (Hemmera, 2019)
-  Bypass Culvert
-  Pathway #1 Approximate Direction of Flow
-  Pathway #2 Approximate Direction of Flow
-  City of Calgary Boundary
-  Natural Area
-  Transportation and Utility Corridor (TUC)
-  Wetland

**Notes**

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**Sources**

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- Aerial Image: ESRI World Imagery, 2016



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**Table 4.a Year 8 (i.e., 2025) Sample Locations**

| Site Name           | Universal Transverse Mercator (Zone 11U) |          | Site Description   | Site Type <sup>1</sup> | Sampling Component                   |                                |
|---------------------|--|----------|--|------------------------|--------------------------------------|--------------------------------|
|                     | Easting                                  | Northing |  |                        | In-situ and Analytical Water Quality | Sediment <sup>4</sup> Sampling |
| WQ-01               | 699168                                   | 5652375  | Reference wetland to the north of Wetland 06   | Reference              | X                                    | -                              |
| WQ-02               | 699186                                   | 5652164  | West (upslope) side of Wetland 06  | Comparison             | X                                    | -                              |
| WQ-03               | 699432                                   | 5652159  | East (downslope) side of Wetland 06  | Comparison             | X                                    | -                              |
| WQ-04a              | 698898                                   | 5651725  | Wetland 08, upslope of SWCRR Project   | Background             | X                                    | -                              |
| WQ-04b              | 699113                                   | 5651956  | Wetland 07, downslope of SWCRR Project and Wetland 08  | Comparison             | X                                    | -                              |
| WQ-04c <sup>2</sup> | 699129                                   | 5652100  | Wetland 07, downslope of SWCRR Project and WQ-04b  | Comparison             | -                                    | -                              |
| WQ-04d <sup>2</sup> | 699123                                   | 5652000  | Wetland 07, downslope of SWCRR Project and WQ-04b  | Comparison             | -                                    | -                              |
| WQ-05a              | 699060                                   | 5650929  | Upslope of Wetland 09 and SWCRR Project  | Background             | X                                    | -                              |
| WQ-05b              | 699788                                   | 5651289  | Watercourse 01 downslope of Wetland 09 and SWCRR Project                                     | Comparison             | X                                    | -                              |
| WQ-06 <sup>3</sup>  | 699028                                   | 5652251  | Northwest (upslope) side of Wetland 06 down gradient of the Green Wall                       | Comparison             | X                                    | -                              |
| WQ-07 <sup>3</sup>  | 699027                                   | 5652284  | Northwest (upslope) side of Wetland 06 down gradient of the Green Wall                       | Comparison             | X                                    | -                              |
| WQ-05c              | 700061                                   | 5651274  | WQ-05c was no longer accessible for sampling and eliminated from the monitoring plan in 2019 | Comparison             | N/A                                  | N/A                            |

**Notes:**

- <sup>1</sup> The reference site is an adjacent wetland outside the TUC with no identified pathways that could direct Project-affected water into the wetland. Background sites are located upstream of the Project. Comparison sites are located downstream of potential Project-affected water.
- <sup>2</sup> WQ-04c and WQ-04d were added in fall 2020 following repeated exceedances of zinc concentrations detected along Pathway 1. No sampling occurred in 2025
- <sup>3</sup> WQ-06 and WQ-07 were added in spring 2020 following the recommendations of the 2019 Wetland 06 Sediment Release Remediation Report (Hemmera 2019).
- <sup>4</sup> Sediment sampling was completed in 2024 and not required in future years (Ausenco 2025).

### 4.1.3 Water Flow Monitoring and Wetted Widths

A total of four surface water flow monitoring sites have been established within Wetland 06 (**Table 4.b, Figure 3**). Flow monitoring has been conducted at these locations during each sampling event throughout the program. Sampling locations were selected based on the expectation they would convey surface flow (inflow or outflow) year-round during normal surface flow conditions. Locations with defined channels were selected for monitoring to optimize the accuracy of flow measurements. Three of the sampling locations were identified to measure surface water inflows into Wetland 06:

- Site FL-01 along Pathway 1 to capture inflow coming from Wetland 07 and 08
- Site FL-02 along Pathway 2 to capture inflow coming from Wetland 09
- Site FL-03 along the drainage pathway from the reference wetland to Wetland 06.

Site FL-04 was established 75 m downstream of Wetland 06 at the Glenmore Pathway bridge crossing to capture outflow from Wetland 06.

Wetted width transect locations were established during Year 1 (i.e., 2018) (**Figure 3**). The location of each transect was recorded in reference to distinct local landmarks and using a global positioning system (GPS) device.

**Table 4.b Surface Water Flow Sample Locations**

| Site Name | Universal Transverse Mercator (Zone 11U) |          | Inflow or Outflow |
|-----------|--|----------|-------------------|
|           | Easting                                  | Northing |                   |
| FL-01     | 699156                                   | 5652166  | Inflow            |
| FL-02     | 699406                                   | 5652115  | Inflow            |
| FL-03     | 699075                                   | 5652326  | Inflow            |
| FL-04     | 699644                                   | 5652343  | Outflow           |

### 4.2 Water Quality Monitoring

Surface water quality sampling was conducted at all the sample sites provided in **Table 4.a** and described in **Section 4.1.1**. Weather conditions were recorded, and photos documenting current conditions were taken at each location during each sampling visit.

Sampling was conducted following the Canadian Council of Ministers of Environment shore sampling protocol (CCME 2011). The crew wore unpowdered nitrile disposable gloves during sample collection. At each sample site, the crew worked from the bank and collected water samples using an extension pole to avoid site disturbance. To minimize the risk of contamination between sites, the extension pole and clamp were rinsed upon arrival at each site before samples were collected. The field crew followed laboratory protocols for sample bottle rinsing; all rinsing of bottles or collection equipment was conducted slightly downslope of the sample site to prevent cross contamination.

Water samples were collected at approximately 60% depth if site conditions allowed and facing upstream if flow was present. During fall sampling several of the sample sites were extremely shallow (i.e., less than 0.10 m of water present), and samples comprised the entire water depth. Algae, sediment, organic matter, scum, and film were avoided to prevent contamination and ensure the sample was representative. Water samples were collected one at a time, capped immediately to prevent contamination and labelled with a water-proof marker. After collection, samples were placed in a cooler with ice packs and kept at approximately 4°C until delivery to the laboratory. Before transport from site, all samples were packed and sealed to prevent spillage and breakage. Samples were delivered to the laboratory within the same day as collection to allow analysis within appropriate holding times.

Bureau Veritas, a laboratory certified by the Standard Council of Canada (SCC), completed the analysis of water samples. A chain of custody form was completed, indicating the transfer of custody from the authorized crew member to the accredited laboratory.

Water quality parameters with a holding time of less than 7-days (i.e., biological oxygen demand, nitrate, nitrite, sulfate, total dissolved solids, and total suspended solids) were immediately analyzed in all samples. Samples collected from the reference wetland (WQ-01) and Wetland 06 (WQ-02, WQ-03, WQ-06 and WQ-07) were immediately analysed for the parameters listed in **Table 4.c**. These parameters are reflective of the City of Calgary Stormwater Management and Design Manual (2011) and likely to facilitate the detection of any potential impacts of the construction and operation phases of the Project. The remaining samples (WQ-04a, WQ-04b, WQ-05a, and WQ-05b) were held by the laboratory and tested if exceedances of water quality parameters under the Environmental Quality Guidelines for Alberta Surface Water were detected in Wetland 06 samples (GOA; Government of Alberta 2018). This testing protocol facilitated the potential determination of source pathway of water quality exceedances in Wetland 06.

*In-situ* measurements of turbidity and physical parameters (i.e., specific conductivity, dissolved oxygen, pH, and water temperature) were also collected at all water quality sample sites. Measurements were taken at approximately 60% water depth using a calibrated Aquatroll 600.

Year 8 water quality parameters were compared to data collected in previous monitoring years. Surface water quality data collected from proximate sites in Wetland 06 in 2016 and 2017 by the Weaselhead / Glenmore Preservation Society and presented in their 2017 Environmental Monitoring Report (Porto 2018) was also compared to select parameters from sampling sites within Wetland 06.

**Table 4.c Water Quality Parameters**

| Sediment and Physical             |                  |   |                  |
|-----------------------------------|------------------|---|------------------|
| • Total Suspended Solids (TSS)    |                  | • Specific conductivity (EC)            |                  |
| • Total Dissolved Solids (TDS)    |                  | • pH                                    |                  |
| • Turbidity                       |                  | • Dissolved Oxygen (DO)                 |                  |
| Nutrients and Others (mg/L)       |                  |   |                  |
| • Biochemical Oxygen Demand (BOD) |                  | • Total Kjelaht Nitrogen (TKN)          |                  |
| • Chemical Oxygen Demand (COD)    |                  | • Ammonia-Nitrogen (NH <sub>3</sub> -N) |                  |
| • Nitrate (NO <sub>3</sub> )      |                  | • Total Phosphorus (TP)                 |                  |
| • Nitrite (NO <sub>2</sub> )      |                  | • Dissolved Reactive Phosphorus (DRP)   |                  |
|                                   |                  | • Ortho-Phosphate                       |                  |
| Metals (mg/L)                     |                  |   |                  |
| • Silver (Ag)                     | • Cobalt (Co)    | • Molybdenum (Mo)                       | • Tin (Sn)       |
| • Aluminum (Al)                   | • Chromium (Cr)  | • Nickel (Ni)                           | • Strontium (Sr) |
| • Arsenic (As)                    | • Copper (Cu)    | • Lead (Pb)                             | • Sodium (Na)    |
| • Boron (B)                       | • Iron (Fe)      | • Sulfur (S)                            | • Titanium (Ti)  |
| • Barium (Ba)                     | • Potassium (K)  | • Antimony (Sb)                         | • Thallium (Tl)  |
| • Beryllium (Be)                  | • Lithium (Li)   | • Selenium (Se)                         | • Uranium (U)    |
| • Calcium (Ca)                    | • Magnesium (Mg) | • Silicon (Si)                          | • Vanadium (V)   |
| • Cadmium (Cd)                    | • Manganese (Mn) |   | • Zinc (Zn)      |
| Major Ions and Salts              |                  |   |                  |
| • Sodium (Na <sup>2+</sup> )      |                  | • Calcium (Ca <sup>2+</sup> )           |                  |
| • Potassium (K <sup>+</sup> )     |                  | • Chloride (Cl <sup>-</sup> )           |                  |
| • Potassium (K <sup>+</sup> )     |                  | • Sulfate (SO <sup>4-</sup> )           |                  |

### 4.3 Water Flow Monitoring and Wetted Widths

Surface flow monitoring was conducted by the crew at the sample sites provided in **Table 4.b** and described in **Section 4.1.3**. Surface flow was determined using the velocity-area method (Government of Alberta 2009) and a HACH® velocity flow meter. Following each seasonal monitoring visit, the inflows and outflow of Wetland 06 were used to calculate a modified water balance within the wetland.

In previous years, water level measurements were taken at staff gauges located within Wetland 06 and the reference wetland during spring and fall monitoring visits. The water level staff gauges were originally deployed during spring 2018, during Year 1 monitoring. Gauges have since been removed, and water level was not recorded at these locations during the 2025 site visits.

Wetted width was measured at four transects in Wetland 06 during the spring monitoring visit and at one transect during fall sampling. There was no surface water present in the reference wetland during spring or fall sampling, and no wetted widths could be measured.

Water level and wetted width of Wetland 06 and the reference wetland were compared and used to assess if the wetted perimeter of Wetland 06 was impacted by Project activities, by accounting for seasonal variability resulting from natural fluctuations.

## 5.0 Results

### 5.1 Water Quality Monitoring and Sediment Sampling

#### 5.1.1 2025 Water Quality Results

Water quality parameters outlined in **Table 4.c** were measured at sample sites located within Wetland 06, the inflow pathways from Wetlands 07 and 08, and Wetland 09.

Water quality samples could not be collected from the following locations as these sites were dry, or water was too low to allow sampling during monitoring visits:

- WQ-01 (reference wetland), WQ-02, WQ-04a (upstream on Pathway 1) and WQ-05a (upstream on Pathway 2) during spring sampling events
- WQ-01 (reference wetland) and WQ-02 during fall sampling events
- WQ-04a and WQ-05a were not visited during the fall as the Weaselhead Road was closed and access not permitted.

Water quality sampling results between 2018 and 2025 from WQ-01, WQ-02, and WQ-03 are summarized in **Table 5.a1**. These sample sites are intended to demonstrate the natural seasonal variability within Wetland 06 and the reference wetland. Additionally, the 2025 results for water quality sampling along Pathways 1 and 2 are shown in **Table 5.a2**. Surface water quality analytical results from the two additional sites on the west side of Wetland 06 are presented in **Table 5.b**. The certificates of analysis for surface water results and raw water quality data from all viable sample sites from spring and fall monitoring are provided in **Appendix B and C**, respectively. Photographs taken at each sample site are provided in **Appendix D**.

#### **Exceedances**

Water quality sampling results from Year 8 sampling were compared to the Environmental Quality Guidelines (EQG) for Alberta Surface Water (GOA 2018). For parameters with no Alberta EQG, comparisons were made to the CCME Canadian Environmental Quality Guidelines (CCME 1999). In the text below, both Alberta and CCME water quality guidelines are referred to as the EQGs. The following exceedances were observed:

**Selenium:** Dissolved selenium concentrations above the surface water EQG of 0.001 mg/L were detected at site WQ-04b (fall) samples along Pathway 1, as well as at sites WQ-05b (spring and fall) and WQ-03 (spring) on Pathway 2. Selenium concentrations exceeded the EQG at sites WQ-06 and WQ-07 at the west end of Wetland 06 during spring and fall sampling. No selenium exceedances have been documented within the reference wetland; however, limited data is available for comparison, as the reference site has been dry during most sampling events to date.

Selenium concentrations in sediment from these locations have been consistently elevated throughout the duration of the sampling program.

**Uranium:** Marginally elevated dissolved uranium concentration (0.019 mg/L, above the EQG of 0.015 mg/L) was recorded within the spring surface water sample at site WQ-03 within Wetland 06. Dissolved uranium was also elevated (0.018 mg/L) at this site in the spring of Year 6 (2023) and during both sampling events in Year 5. No uranium exceedances were recorded from any of the other sampling locations during any monitoring year, and there is no pattern of elevated uranium concentrations in sediment samples.

Elevated uranium concentrations may be considered naturally occurring and background conditions given the surficial geology of the area. The geology can be characterized as either fluvial deposits (sedimentary) of the Holocene epoch, or morainal deposits (diamicton till) of the Pleistocene epoch (AGS 2015). Both sedimentary deposits and diamicton till within Alberta have been found to contain uranium (CCME 2007; AITF 2011). It is likely that the uranium is weathering out of deposits into the water. Exceedance of the long-term exposure guideline at WQ-03 is marginal and may fall within natural variation. Therefore, it is unlikely that the uranium concentrations observed within the Project corridor are anthropogenic.

**Zinc:** Dissolved zinc concentrations exceeding the long-term EQG of 0.007 mg/L were detected at sample sites WQ-04b (0.045 mg/L) during the spring sampling program. These sites are located on the downstream side of the road along Pathway 1.

Zinc is an essential element for various biological functions but can produce adverse effects at higher concentrations. Potential anthropogenic sources of zinc in this context include road surface runoff, soil and sediment mobilized during the construction process, corrosion of galvanized surfaces, and dust and debris from vehicle tires and brakes.

Between 2018 and 2020 elevated zinc concentrations (above EQG of 0.003 mg/L) were recorded in water samples in Wetland 06 (WQ-02) and along Pathway 1 (WQ-04b, WQ-04d, and WQ-04c). Since 2022, no zinc exceedances in surface water or sediment have been observed within Wetland 06 suggesting that zinc is being attenuated into the sediment along Pathway 1 and is not being transported downstream into Wetland 06.

**Table 5.a1 Summary of 2018 to 2025 Water Quality Sampling Results – Exceedances Only**

|                                    | Guidelines  |  | WQ-01             |         |            |            |      |      |      |      |      |            |      |      |      |      |      |      |
|------------------------------------|---|--|-------------------|---------|------------|------------|------|------|------|------|------|------------|------|------|------|------|------|------|
|                                    |   |  | Spring            |         |            |            |      |      |      |      | Fall |            |      |      |      |      |      |      |
|                                    | AB or CCME SW Freshwater Aquatic Life (Long-term) | AB or CCME SW Freshwater Aquatic Life (Short-term) | 2018 <sup>a</sup> | 2019    | 2020       | 2021       | 2022 | 2023 | 2024 | 2025 | 2018 | 2019       | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
| <b>Sediment and Physical</b>       |   |  |                   |         |            |            |      |      |      |      |      |            |      |      |      |      |      |      |
| pH                                 | 6.50 – 9.00                                       | N/A  | 8.13              | 7.97    | 7.91       | 7.82       | -    | -    | -    | -    | -    | 8.12       | -    | -    | -    | -    | -    | -    |
| Dissolved Oxygen (mg/L)            | Narr.   | 5  | <b>2.2</b>        | 5.1     | <b>3.2</b> | <b>2.8</b> | -    | -    | -    | -    | -    | <b>3.7</b> | -    | -    | -    | -    | -    | -    |
| <b>Nutrients and Others (mg/L)</b> |   |  |                   |         |            |            |      |      |      |      |      |            |      |      |      |      |      |      |
| Nitrate (NO3)                      | 3   | 124  | <0.044            | <0.044  | <0.044     | <0.044     | -    | -    | -    | -    | -    | <0.044     | -    | -    | -    | -    | -    | -    |
| <b>Dissolved Metals (mg/L)</b>     |   |  |                   |         |            |            |      |      |      |      |      |            |      |      |      |      |      |      |
| Iron (Fe)                          | 0.30 mg/L   | N/A  | <b>1</b>          | 0.2     | <0.060     | 0.07       | -    | -    | -    | -    | -    | 0.09       | -    | -    | -    | -    | -    | -    |
| Selenium (Se)                      | 0.001 mg/L (total, alert)                         | N/A  | <0.0002           | <0.0002 | <0.0002    | <0.0002    | -    | -    | -    | -    | -    | <0.0002    | -    | -    | -    | -    | -    | -    |
| Uranium (U)                        | 0.015 mg/L (total)                                | 0.033 mg/L (total)                                 | 0.0004            | 0.0018  | 0.0011     | 0.0015     | -    | -    | -    | -    | -    | 0.0022     | -    | -    | -    | -    | -    | -    |
| Zinc (Zn)                          | 0.007 mg/L <sup>b</sup>                           | 0.037mg/L <sup>b</sup>                             | <0.0030           | <0.0030 | 0.0062     | 0.0045     | -    | -    | -    | -    | -    | 0.0051     | -    | -    | -    | -    | -    | -    |

|                                    | Guidelines  |  | WQ-02             |         |         |               |         |      |         |      |               |               |               |               |         |         |      |      |
|------------------------------------|---|--|-------------------|---------|---------|---------------|---------|------|---------|------|---------------|---------------|---------------|---------------|---------|---------|------|------|
|                                    |   |  | Spring            |         |         |               |         |      |         |      | Fall          |               |               |               |         |         |      |      |
|                                    | AB or CCME SW Freshwater Aquatic Life (Long-term) | AB or CCME SW Freshwater Aquatic Life (Short-term) | 2018 <sup>a</sup> | 2019    | 2020    | 2021          | 2022    | 2023 | 2024    | 2025 | 2018          | 2019          | 2020          | 2021          | 2022    | 2023    | 2024 | 2025 |
| <b>Sediment and Physical</b>       |   |  |                   |         |         |               |         |      |         |      |               |               |               |               |         |         |      |      |
| pH                                 | 6.50 – 9.00                                       | N/A  | 8.25              | 8.26    | 8.34    | 8.32          | 7.64    | -    | 8.18    | -    | 8.25          | 8.22          | 8.30          | 8.14          | 8.15    | 8.25    | -    | -    |
| Dissolved Oxygen (mg/L)            | Narr.   | 5  | 10.00             | 7.70    | 11.00   | 7.60          | 10.94   | -    | 9.0     | -    | 11.00         | 10.00         | 10.00         | 7.00          | 11.25   | 11.00   | -    | -    |
| <b>Nutrients and Others (mg/L)</b> |   |  |                   |         |         |               |         |      |         |      |               |               |               |               |         |         |      |      |
| Nitrate (NO3)                      | 3   | 124  | <0.044            | <0.044  | <0.044  | <0.220        | <0.044  | -    | <0.044  | -    | 0.600         | 0.079         | 0.710         | 0.190         | 0.110   | <0.044  | -    | -    |
| <b>Dissolved Metals (mg/L)</b>     |   |  |                   |         |         |               |         |      |         |      |               |               |               |               |         |         |      |      |
| Iron (Fe)                          | 0.30 mg/L   | N/A  | <0.060            | 0.083   | 0.090   | <0.060        | <0.060  | -    | <0.060  | -    | 0.100         | <0.060        | 0.083         | <0.060        | <0.060  | <0.060  | -    | -    |
| Selenium (Se)                      | 0.001 mg/L (total, alert)                         | N/A  | <b>0.0011</b>     | 0.0006  | 0.0009  | 0.0008        | 0.0003  | -    | 0.00096 | -    | <b>0.0014</b> | <b>0.0011</b> | <b>0.0013</b> | <b>0.0014</b> | 0.0004  | 0.0006  | -    | -    |
| Uranium (U)                        | 0.015 mg/L (total)                                | 0.033 mg/L (total)                                 | 0.0031            | 0.0059  | 0.0035  | 0.0054        | 0.0130  | -    | 0.012   | -    | 0.0048        | 0.0043        | 0.0032        | 0.0065        | 0.0110  | 0.0042  | -    | -    |
| Zinc (Zn)                          | 0.007 mg/L <sup>b</sup>                           | 0.037mg/L <sup>b</sup>                             | <0.0030           | <0.0030 | <0.0030 | <b>0.0160</b> | <0.0030 | -    | <0.0030 | -    | <b>0.0130</b> | <b>0.0180</b> | <b>0.0071</b> | <0.0030       | <0.0030 | <0.0030 | -    | -    |

|                                    | Guidelines  |  | WQ-03             |         |         |         |         |         |         |         |         |         |         |        |         |      |         |         |
|------------------------------------|---|--|-------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--------|---------|------|---------|---------|
|                                    |   |  | Spring            |         |         |         |         |         |         |         | Fall    |         |         |        |         |      |         |         |
|                                    | AB or CCME SW<br>Freshwater Aquatic Life<br>(Long-term) | AB or CCME SW<br>Freshwater Aquatic Life<br>(Short-term) | 2018 <sup>a</sup> | 2019    | 2020    | 2021    | 2022    | 2023    | 2024    | 2025    | 2018    | 2019    | 2020    | 2021   | 2022    | 2023 | 2024    | 2025    |
| <b>Sediment and Physical</b>       |   |  |                   |         |         |         |         |         |         |         |         |         |         |        |         |      |         |         |
| pH                                 | 6.50 – 9.00   | N/A  | 9.1               | 8.33    | 8.29    | 8.22    | 8.15    | 8.15    | 8.18    | 8.17    | 8.09    | 8.29    | 7.96    | 7.72   | 8.17    | -    | 7.78    | 7.96    |
| Dissolved Oxygen (mg/L)            | Narr.   | 5  | 14                | 7.9     | 9.4     | 8       | 11.35   | 11      | 6.6     | 6.5     | 4.3     | 8       | 8.2     | 1.8    | 10.62   | -    | 1.8     | 9.0     |
| <b>Nutrients and Others (mg/L)</b> |   |  |                   |         |         |         |         |         |         |         |         |         |         |        |         |      |         |         |
| Ammonia (as N)                     | 5.74   1.83   0.077   0.022                             |  | -                 | -       | -       | -       | -       | -       | -       | 0.17    | -       | -       | -       | -      | -       | -    | -       | 0.096   |
| Nitrate (NO3)                      | 3   | 124  | 0.072             | <0.044  | 8       | <0.220  | <0.044  | <0.22   | 0.25    | <0.44   | <0.044  | <0.044  | <0.22   | 0.027  | 0.5     | -    | <0.22   | <0.18   |
| <b>Dissolved Metals (mg/L)</b>     |   |  |                   |         |         |         |         |         |         |         |         |         |         |        |         |      |         |         |
| Iron (Fe)                          | 0.30 mg/L   | N/A  | <0.060            | 0.076   | <0.060  | 0.068   | <0.060  | 0.065   | <0.060  | <0.060  | 0.064   | <0.060  | 0.1     | 0.25   | <0.060  | -    | 0.29    | 0.19    |
| Selenium (Se)                      | 0.001 mg/L (total, alert)                               | N/A  | 0.0006            | 0.0003  | 0.0007  | 0.0006  | 0.0007  | 0.0009  | 0.003   | 0.0038  | 0.0004  | 0.0004  | 0.0005  | 0.0004 | 0.0006  | -    | 0.00039 | 0.00038 |
| Uranium (U)                        | 0.015 mg/L (total)                                      | 0.033 mg/L (total)                                       | 0.0023            | 0.0052  | 0.003   | 0.0085  | 0.016   | 0.018   | 0.01    | 0.017   | 0.0083  | 0.0056  | 0.0071  | 0.0075 | 0.016   | -    | 0.019   | 0.0081  |
| Zinc (Zn)                          | 0.007 mg/L <sup>b</sup>                                 | 0.037mg/L <sup>b</sup>                                   | <0.0030           | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | 0.0043 | <0.0030 | -    | <0.0030 | <0.0030 |

**Note:** **Bold** = Indicates exceedance of **long-term** CCME water quality guidelines  
 (-) = null result/site was dry  
 Narr = Narrative guideline. For dissolved oxygen: 6.5 mg/L 7-day mean, increased to 8.3 mg/L from mid May to end of June to protect mayfly emergence. Where natural conditions create DO concentrations <120% of the applicable criteria means and/or minima, the minimal acceptable concentration is 90% of the natural concentration.  
 N/A = CCME data regarding water quality limits for specified parameter is unavailable.  
<sup>a</sup> Spring sampling in 2018 occurred during the summer (June 5, 2018)  
<sup>b</sup> CWQG for the Protection of Aquatic Life for Dissolved Zinc for Specified Water Quality Conditions. Guidelines are calculated based on an equation that takes into account pH, hardness and dissolved organic carbon. The value in the table is provided for reference and is for surface water of 50 mg CaCO<sub>3</sub>·L<sup>-1</sup> hardness and 0.5 mg·L<sup>-1</sup> dissolved organic carbon (DOC).

**Table 5.a2 Summary of 2025 Water Quality Sampling Results along Pathways 1 and 2 – Exceedances Only**

|                                | Alberta Surface Water Guidelines PAL (2018) |                        | WQ04A  |      | WQ04B        |               | WQ05B         |               |
|--------------------------------|---|------------------------|--------|------|--------------|---------------|---------------|---------------|
|                                |   |                        | Spring | Fall | Spring       | Fall          | Spring        | Fall          |
|                                | Long-term                                   | Short-term             | 2025   | 2025 | 2025         | 2025          | 2025          | 2025          |
| <b>Sediment and Physical</b>   |   |                        |        |      |              |               |               |               |
| pH                             | 6.50 – 9.00                                 | N/A                    | -      | -    | 8.59         | 8.45          | 8.13          | 8.19          |
| Dissolved Oxygen (mg/L)        | Narr.                                       | 5                      | -      | -    | 8.8          | 9.8           | 5.0           | 9.1           |
| <b>Nutrients (mg/L)</b>        |   |                        |        |      |              |               |               |               |
| Nitrate (NO3)                  | 3   | 124                    | -      | -    | 0.05         | 1.6           | <0.22         | 2.3           |
| <b>Dissolved Metals (mg/L)</b> |   |                        |        |      |              |               |               |               |
| Iron (Fe)                      | 0.30 mg/L                                   | N/A                    | -      | -    | <0.060       | <0.060        | <0.060        | <0.060        |
| Selenium (Se)                  | 0.001 mg/L (total, alert)                   | N/A                    | -      | -    | 0.00063      | <b>0.0014</b> | <b>0.0015</b> | <b>0.0014</b> |
| Uranium (U)                    | 0.015 mg/L (total)                          | 0.033 mg/L (total)     | -      | -    | 0.0019       | 0.0036        | 0.007         | 0.014         |
| Zinc (Zn)                      | 0.007 mg/L <sup>b</sup>                     | 0.037mg/L <sup>b</sup> | -      | -    | <b>0.045</b> | 0.017         | <0.0030       | <0.0030       |
| <b>Salts (mg/L)</b>            |   |                        |        |      |              |               |               |               |
| Chloride (Cl-)                 | 120 mg/L                                    | 640 mg/L               | -      | -    | 6.5          | 13            | 30            | 39            |

**Note:** **Bold** = Indicates exceedance of **long-term** CCME water quality guidelines  
 (-) = null result/site was dry  
 Narr = Narrative guidelines. For dissolved oxygen: 6.5 mg/L 7-day mean, increased to 8.3 mg/L from mid May to end of June to protect mayfly emergence. Where natural conditions create DO concentrations <120% of the applicable criteria means and/or minima, the minimal acceptable concentration is 90% of the natural concentration.  
 N/A = CCME data regarding water quality limits for specified parameter is unavailable.  
<sup>b</sup>CWQG for the Protection of Aquatic Life for Dissolved Zinc for Specified Water Quality Conditions. Guidelines are calculated based on an equation that takes into account pH, hardness and dissolved organic carbon. The value in the table is provided for reference and is for surface water of 50 mg CaCO3·L<sup>-1</sup> hardness and 0.5 mg·L<sup>-1</sup> dissolved organic carbon (DOC).

**Table 5.b Summary of Water Quality Sampling Results from 2020 to 2025 at WQ-06 and WQ-07- Exceedances Only**

|                                | Alberta Surface Water Guidelines PAL (2018) |            | WQ-06  |          |         |               |               |               |         |         |         |      |         |               | WQ-07   |          |         |             |               |              |      |      |         |      |         |               |  |
|--------------------------------|---|------------|--------|----------|---------|---------------|---------------|---------------|---------|---------|---------|------|---------|---------------|---------|----------|---------|-------------|---------------|--------------|------|------|---------|------|---------|---------------|--|
|                                |   |            | Spring |          |         |               |               |               | Fall    |         |         |      |         |               | Spring  |          |         |             |               |              | Fall |      |         |      |         |               |  |
|                                | Long-term                                   | Short-term | 2020   | 2021     | 2022    | 2023          | 2024          | 2025          | 2020    | 2021    | 2022    | 2023 | 2024    | 2025          | 2020    | 2021     | 2022    | 2023        | 2024          | 2025         | 2020 | 2021 | 2022    | 2023 | 2024    | 2025          |  |
| <b>Sediment and Physical</b>   |   |            |        |          |         |               |               |               |         |         |         |      |         |               |         |          |         |             |               |              |      |      |         |      |         |               |  |
| pH                             | 6.50 – 9.00                                 | N/A        | 8.29   | 8.72     | -       | <b>9.7</b>    | 8.41          | 8.62          | 8.26    | 8.31    | 8.23    | -    | 8.2     | 8.33          | 8.18    | 8.56     | -       | <b>9.65</b> | 8.35          | 8.53         | -    | -    | 8.27    | -    | 8.3     | 8.39          |  |
| <b>Dissolved Metals (mg/L)</b> |   |            |        |          |         |               |               |               |         |         |         |      |         |               |         |          |         |             |               |              |      |      |         |      |         |               |  |
| Iron (Fe)                      | 0.30 mg/L                                   | N/A        | 0.0007 | <0.00020 | 0.00057 | <b>0.0012</b> | <b>0.0017</b> | <0.060        | 0.00032 | 0.00046 | 0.00089 | -    | 0.00048 | <0.060        | 0.00057 | <0.00020 | 0.00058 | 0.00084     | <b>0.0016</b> | <0.060       | -    | -    | 0.00086 | -    | 0.00048 | <0.060        |  |
| Selenium (Se)                  | 0.001 mg/L (total, alert)                   | N/A        | -      | -        | -       | -             | -             | <b>0.0012</b> | -       | -       | -       | -    | -       | <b>0.0011</b> | -       | -        | -       | -           | -             | <b>0.001</b> | -    | -    | -       | -    | -       | <b>0.0012</b> |  |

**Note:** **Bold** = Indicates exceedance of **long-term** CCME water quality guidelines  
 (-) = null result/site was dry  
 Narr = Narrative guidelines. For dissolved oxygen: 6.5 mg/L 7-day mean, increased to 8.3 mg/L from mid May to end of June to protect mayfly emergence. Where natural conditions create DO concentrations <120% of the applicable criteria means and/or minima, the minimal acceptable concentration is 90% of the natural concentration.

### 5.1.2 Comparison with Results from Previous Years

After eight years of spring and fall water quality monitoring, the following observations have been made:

- Following elevated zinc concentrations documented in water samples at WQ-02 during fall sampling from 2018 - 2020, additional sediment and surface water sampling along Pathway 1 has been ongoing to help identify potential project-related sources of elevated zinc concentrations and verify results. Elevated zinc concentrations observed at all sample sites along Pathway 1 from 2019 to 2022 had suggested a potential Project-related input source of the zinc.
  - In 2023, water and sediment samples collected in both the spring and the fall from site WQ-04d were the only recorded samples with an exceedance in zinc concentrations. No zinc exceedances were documented in sediment or water samples collected from other sites along Pathway 1 or within Wetland 06 in 2023.
  - In 2024, zinc concentration exceeding the long-term Alberta Surface Water Quality Guideline for the Protection of Aquatic Life was documented at sites WQ-04b and WQ-04d during spring sampling. Zinc concentration was also elevated in sediment samples collected at WQ-04d during both spring and fall sampling events.
  - In 2025, zinc concentration exceeding the long-term Alberta Surface Water Quality Guideline for the Protection of Aquatic Life was documented only at site WQ-04b during spring sampling.
  - Water quality and sediment sampling results suggest that zinc has attenuated into the sediment along Pathway 1 downstream from the road and is not being transported into Wetland 06.
- Slight exceedances of selenium and uranium were documented in water samples taken from Wetland 06. Although these concentrations were higher than previously recorded, it is likely that they are related to the local geology.
- All other Wetland 06 parameters remain within the CCME and Alberta EQG.

### 5.1.3 Multi-Year Sampling Comparison of Measurements

Select surface water quality parameters (i.e., turbidity, temperature, pH, specific conductivity, DO, phosphate and chloride) collected at WQ-02 and WQ-03 during Year 8 post construction monitoring were compared to data collected in 2016 and 2017 by the Weaselhead / Glenmore Preservation Society (Porto 2018) at two sample sites in close proximity to WQ-02 and WQ-03. Water quality data collected by the Weaselhead / Glenmore Preservation Society in 2016 was collected prior to the initiation of construction activities on the Project. During the 2025 monitoring, WQ-02 was dry during the spring and fall sampling events. A comparison of surface water quality parameters is presented in **Table 5.c** and demonstrates the natural variability in water quality between sites and season in Wetland 06.

**Turbidity:** In 2025, turbidity ranged from a low of 8.23 NTU in the spring to 50.35 NTU at WQ-03 in the fall. Pre-construction turbidity measurements at these sites ranged from 0.80 to 36.00 NTU (Porto 2018). Elevated turbidity at WQ-03 in fall 2025 sampling was likely caused by physical disturbance to the substrate while the field crew was breaking through the ice cover to collect in-situ measurements.

**Chloride:** Similar to previous monitoring years (i.e. 2018 to 2023), in 2025, the Wetland 06 samples exhibited higher chloride concentrations than the pre-construction samples collected by the Weaselhead / Glenmore Preservation Society in 2016 and 2017. Chloride concentrations in pre-construction samples ranged from 2.88 mg/L to 7.70 mg/L. In 2025, chloride concentrations ranged from 25 to 29 mg/L.

Elevated chloride concentrations may result from various sources including road salt runoff and herbicides (Kelly et al. 2012). A comparison between post-construction sampling years shows that although chloride measurements are elevated from pre-construction concentrations, the chloride concentration at WQ-02 and WQ-03 sites within Wetland 06 has not shown an increasing trend since 2018, and has remained well below the long-term guideline for the protection of aquatic life of 120 mg/L (CCME 1999). Chloride has limited reactivity with the environment and is highly soluble in water, meaning its residence time within a water body is greatly influenced by the rate of water flow. Limited flow, as has been observed within Wetland 06 will result in a longer persistence time.

**Conductivity:** In-situ water quality sampling of Wetland 06 in 2025 measured elevated specific conductivity when compared to pre-construction water quality data collected by the Weaselhead / Glenmore Preservation Society in 2016 and 2017. In-situ samples measured in 2025 ranged from a conductivity of 1422  $\mu\text{S}/\text{cm}$  in the spring to 1248  $\mu\text{S}/\text{cm}$  at WQ-03 in the fall. Specific conductivity has shown a generally increasing trend from pre-construction levels, with higher conductivity levels documented annually since 2023.

Specific conductivity in surface water is affected by the presence of a variety of inorganic cations and anions, including chloride. There are no EQG specific to conductivity due to its high natural variability and because it is a numerical indicator of water quality and not an independent parameter of water, however natural waters can vary between 50  $\mu\text{S}/\text{cm}$  and 1,500  $\mu\text{S}/\text{cm}$  (BC Ministry of Environment 2013). The lab results for conductivity at both locations fall within this range for all samples collected.

**Table 5.c Surface Water Quality Parameters Collected from Wetland 06 Sites from 2016 to 2025**

|   |                      | 2016 <sup>a</sup> |        | 2017 <sup>a</sup> |        | 2018 <sup>b</sup> |        | 2019 <sup>b</sup> |         | 2020 <sup>b</sup> |        | 2021 <sup>b</sup> |        | 2022 <sup>b</sup> |        | 2023 <sup>b</sup> |                  | 2024 <sup>b</sup> |         | 2025 <sup>b</sup> |        |
|---|----------------------|-------------------|--------|-------------------|--------|-------------------|--------|-------------------|---------|-------------------|--------|-------------------|--------|-------------------|--------|-------------------|------------------|-------------------|---------|-------------------|--------|
|   |                      | Summer            | Fall   | Summer            | Fall   | Summer            | Fall   | Spring            | Fall    | Spring            | Fall   | Spring            | Fall   | Spring            | Fall   | Spring            | Fall             | Spring            | Fall    | Spring            | Fall   |
| Sampling Site 1<br>(close proximity to WQ-02) | Turbidity (NTU)      | 30.80             | 0.80   | 20.00             | 18.70  | 6.50              | 5.40   | 2.00              | 8.90    | 6.40              | 60.40  | 92.42             | 129.10 | 40.00             | 130.00 | -                 | 0.47             | 6.23              | -       | -                 | -      |
|   | Temperature C        | 11.90             | 4.00   | 14.60             | 4.20   | 19.10             | 1.10   | 12.30             | 3.25    | 14.58             | 3.12   | 19.79             | 3.70   | 17.85             | 6.55   | -                 | 7.79             | 10.0              | -       | -                 | -      |
|   | pH                   | 7.60              | 7.90   | 7.53              | 8.07   | 7.60              | 6.50   | 8.00              | 8.20    | 9.00              | 8.50   | 8.28              | 7.56   | 7.96              | 7.88   | -                 | 8.42             | 8.29              | -       | -                 | -      |
|   | Conductivity (uS/cm) | 470               | 444    | 589               | 500    | 882               | 833    | 712               | 698     | 662               | 760    | 756               | 783    | 867               | 665    | -                 | 970 <sup>c</sup> | 1000              | -       | -                 | -      |
|   | DO (mg/L)            | 5.20              | 10.48  | 2.03              | 9.12   | 10.50             | 9.80   | 7.20              | 10.00   | 9.67              | 11.01  | 5.86              | 7.80   | 10.94             | 11.25  | -                 | 3.50             | 8.00              | -       | -                 | -      |
|   | Phosphate (mg/L)     | 0                 | 0      | 0.0100            | 0.0100 | 0.0068            | 0.0034 | 0.0037            | <0.0030 | 0.0030            | 0.0040 | <0.0030           | 0.0034 | -                 | -      | -                 | <0.0030          | <0.0030           | -       | -                 | -      |
|   | Chloride (mg/L)      | 2.88              | 5.26   | 3.68              | 5.25   | 41                | 12     | 13                | 7.3     | 12                | 15     | 15                | 11     | 22                | 63     | -                 | 14               | 25                | -       | -                 | -      |
| Sampling Site 2<br>(close proximity to WQ-03) | Turbidity (NTU)      | 3.30              | 10.00  | 36.00             | 19.60  | 7.00              | 7.00   | 1.80              | 6.50    | 22.20             | 33.20  | 21.00             | 105.40 | 15.00             | 12.00  | 18.69             | -                | 8.63              | 50.35   | 2.91              | 50.35  |
|   | Temperature C        | 12.20             | 4.10   | 10.70             | 2.40   | 20.60             | 0.50   | 16.06             | 3.87    | 12.68             | 5.34   | 19.27             | 3.90   | 12.22             | 2.73   | 22.57             | -                | 10.80             | 1.60    | 14.60             | 4.70   |
|   | pH                   | 8.00              | 8.00   | 7.95              | 8.15   | 8.90              | 6.80   | 8.27              | 8.19    | 8.89              | 7.96   | 8.28              | 6.95   | 8.08              | 8.41   | 8.70              | -                | 8.06              | 7.35    | 8.07              | 7.32   |
|   | Conductivity (uS/cm) | 469               | 449    | 523               | 491    | 509               | 688    | 575               | 766     | 591               | 737    | 706               | 455    | 712               | 893    | 1355              | -                | 1279              | 1350    | 1422              | 1284   |
|   | DO (mg/L)            | 5.30              | 5.10   | 2.65              | 9.99   | 14.40             | 5.80   | 8.68              | 7.31    | 9.72              | 4.86   | 5.86              | 2.60   | 11.35             | 10.62  | 9.96              | -                | 9.86              | 4.94    | 8.20              | 3.70   |
|   | Phosphate (mg/L)     | 0.1600            | 0.0100 | 0                 | 0      | 0.0085            | 0.0085 | 0.0039            | <0.0030 | 0.0040            | 0.0040 | 0.0037            | 0.0083 | -                 | -      | <0.0030           | -                | <0.0030           | <0.0030 | 0.0130            | 0.0270 |
|   | Chloride (mg/L)      | 4.18              | 5.85   | 7.70              | 4.68   | 51                | 29     | 12                | 12      | 18                | 7.0    | 23                | 24     | 5.0               | 25     | 26                | -                | 20                | 31      | 25                | 29     |

**Note:** <sup>a</sup> Porto 2018  
<sup>b</sup> Data collected at WQ-02 and WQ-03 from 2018 to 2025 as part of the Monitoring Plan.  
<sup>c</sup> This value is the conductivity measures in the lab sample in Fall 2023. The in situ measurement recorded was 2299 uS/cm which was assumed to be a sampling error.

## 5.2 Water Flow Monitoring and Wetted Widths

Surface water flow monitoring was conducted during the spring and fall at three inflow sites and one outflow site located within Wetland 06 (**Table 4.b**). Information on channel width, channel depth, velocity and discharge were collected during each monitoring visit; the results are summarized in **Table 5.d**.

Following procedures specified in the Monitoring Plan and recommendations made following Year 1 surface water flow monitoring, the initial 2025 site visit was conducted later in the spring (i.e., late May) to attempt to capture higher periods of flow within the Project area; with the aim of enabling calculations of velocity and discharge at all inflow and outflow locations. During the spring monitoring visit in 2025, water levels remained low. Depth and velocity measurements were able to be recorded at FL-01 and FL-02 during the spring. The inflow channel at FL-03 and outflow channel at FL-04 were dry during spring monitoring. The outflow site, FL-04 has been recorded as dry since 2018.

During the fall monitoring all sites were dry and thus no flow data was collected. There was not sufficient surface water or velocity during spring and fall monitoring to calculate discharge at any of the sites. These results were consistent with the results of all previous years of monitoring.

All inflow sites that were wetted during the spring visit showed a reduction in channel depth and wetted widths during the fall monitoring visit. Site FL-02 showed the greatest seasonal change, with a spring wetted width of 13 m to dry conditions being present at the site during the fall. These results were consistent with the results of previous years monitoring.

**Table 5.d Summary of Water Flow Monitoring Site Channel Width, Depth, Velocity and Discharge**

| Year | Season | Parameter      | FL-01 (inflow) |      |      | FL-02 (inflow) |      |      | FL-03 (inflow) |      |      | FL-04 (outflow) |     |      |
|------|--------|----------------|----------------|------|------|----------------|------|------|----------------|------|------|-----------------|-----|------|
|      |        |                | RMID           | MID  | LMID | RMID           | MID  | LMID | RMID           | MID  | LMID | RMID            | MID | LMID |
| 2018 | Summer | Depth (m)      | 0.30           | 0.27 | 0.28 | 0.68           | 0.58 | 0.39 | -              | -    | -    | -               | -   | -    |
|      |        | Velocity (m/s) | 0              | 0    | 0    | 0              | 0    | 0    | -              | -    | -    | -               | -   | -    |
|      |        | Ww (m)         | 0.42           |      |      | 2.50           |      |      | -              |      |      | -               |     |      |
|      |        | Flow (m³/s)    | 0              |      |      | 0              |      |      | -              |      |      | -               |     |      |
|      | Fall   | Depth (m)      | 0.07           | 0.07 | 0.07 | 0.14           | 0.23 | 0.28 | -              | -    | -    | -               | -   | -    |
|      |        | Velocity (m/s) | 0              | 0.15 | 0    | 0              | 0    | 0    | -              | -    | -    | -               | -   | -    |
|      |        | Ww (m)         | 0.49           |      |      | 1.15           |      |      | -              |      |      | -               |     |      |
|      |        | Flow (m³/s)    | 0.0017         |      |      | 0              |      |      | -              |      |      | -               |     |      |
| 2019 | Spring | Depth (m)      | -              | 0.04 | -    | 0.26           | 0.55 | 0.66 | -              | -    | -    | -               | -   | -    |
|      |        | Velocity (m/s) | -              | 0.20 | -    | 0              | 0    | 0    | -              | -    | -    | -               | -   | -    |
|      |        | Ww (m)         | 0.55           |      |      | 1.58           |      |      | -              |      |      | -               |     |      |
|      |        | Flow (m³/s)    | 0.0015         |      |      | 0              |      |      | -              |      |      | -               |     |      |
|      | Fall   | Depth (m)      | -              | 0.12 | -    | 0.26           | 0.42 | 0.66 | -              | 0.40 | -    | -               | -   | -    |
|      |        | Velocity (m/s) | -              | 0.10 | -    | 0              | 0    | 0    | 0              | 0    | 0    | -               | -   | -    |
|      |        | Ww (m)         | 0.25           |      |      | 1.30           |      |      | 5.0            |      |      | -               |     |      |
|      |        | Flow (m³/s)    | 0.001          |      |      | 0              |      |      | 0              |      |      | -               |     |      |
| 2020 | Spring | Depth (m)      | 0.03           | 0.08 | 0.05 | 0.62           | 0.65 | 0.64 | -              | -    | -    | -               | -   | -    |
|      |        | Velocity (m/s) | 0              | 0.10 | 0    | 0              | 0    | 0    | -              | -    | -    | -               | -   | -    |
|      |        | Ww (m)         | 0.55           |      |      | 1.62           |      |      | -              |      |      | -               |     |      |
|      |        | Flow (m³/s)    | 0.0015         |      |      | 0              |      |      | -              |      |      | -               |     |      |
|      | Fall   | Depth (m)      | 0.01           | 0.08 | 0.02 | 0.22           | 0.32 | 0.44 | -              | -    | -    | -               | -   | -    |
|      |        | Velocity (m/s) | 0              | 0.11 | 0    | 0              | 0    | 0    | -              | -    | -    | -               | -   | -    |
|      |        | Ww (m)         | 0.82           |      |      | 1.32           |      |      | -              |      |      | -               |     |      |
|      |        | Flow (m³/s)    | 0.0024         |      |      | 0              |      |      | -              |      |      | -               |     |      |
| 2021 | Spring | Depth (m)      | 0.02           | 0.03 | 0.02 | 0.36           | 0.50 | 0.41 | 0.13           | 0.16 | 0.10 | -               | -   | -    |
|      |        | Velocity (m/s) | 0              | 0    | 0    | 0              | 0    | 0    | 0              | 0    | 0    | -               | -   | -    |
|      |        | Ww (m)         | 0.60           |      |      | 1.40           |      |      | 1.20           |      |      | -               |     |      |
|      |        | Flow (m³/s)    | 0              |      |      | 0              |      |      | 0              |      |      | -               |     |      |
|      | Fall   | Depth (m)      | 0.10           | 0.10 | 0.10 | 0.28           | 0.30 | 0.26 | -              | -    | -    | -               | -   | -    |
|      |        | Velocity (m/s) | 0              | 0    | 0    | 0              | 0    | 0    | -              | -    | -    | -               | -   | -    |
|      |        | Ww (m)         | 0.40           |      |      | 1.20           |      |      | -              |      |      | -               |     |      |
|      |        | Flow (m³/s)    | 0              |      |      | 0              |      |      | -              |      |      | -               |     |      |

| Year | Season | Parameter      | FL-01 (inflow) |      |      | FL-02 (inflow) |      |      | FL-03 (inflow) |      |      | FL-04 (outflow) |     |      |
|------|--------|----------------|----------------|------|------|----------------|------|------|----------------|------|------|-----------------|-----|------|
|      |        |                | RMID           | MID  | LMID | RMID           | MID  | LMID | RMID           | MID  | LMID | RMID            | MID | LMID |
| 2022 | Spring | Depth (m)      | 0.05           | 0.05 | 0.05 | 1.25           | 2.0  | 2.0  | -              | -    | -    | -               | -   | -    |
|      |        | Velocity (m/s) | 0.02           | 0.05 | 0.05 | 0              | 0    | 0    | -              | -    | -    | -               | -   | -    |
|      |        | Ww (m)         | 0.60           |      |      | 17             |      |      | -              |      |      | -               |     |      |
|      |        | Flow (m³/s)    | 0.0012         |      |      | 0              |      |      | -              |      |      | -               |     |      |
|      | Fall   | Depth (m)      | 0.03           | 0.03 | 0.01 | -              | -    | -    | -              | -    | -    | -               | -   | -    |
|      |        | Velocity (m/s) | 0.01           | 0.01 | 0.01 | -              | -    | -    | -              | -    | -    | -               | -   | -    |
|      |        | Ww (m)         | 0.75           |      |      | 1.5            |      |      | -              |      |      | -               |     |      |
|      |        | Flow (m³/s)    | 0.00018        |      |      | -              |      |      | -              |      |      | -               |     |      |
| 2023 | Spring | Depth (m)      | -              | -    | -    | 0.10           | 0.75 | 0.10 | 0.10           | 0.25 | 0.10 | -               | -   | -    |
|      |        | Velocity (m/s) | -              | -    | -    | 0              | 0    | 0    | 0              | 0    | 0    | -               | -   | -    |
|      |        | Ww (m)         | 0.75           |      |      | 2.0            |      |      | 3.6            |      |      | -               |     |      |
|      |        | Flow (m³/s)    | -              |      |      | 0              |      |      | 0              |      |      | -               |     |      |
|      | Fall   | Depth (m)      | -              | -    | -    | -              | -    | -    | -              | -    | -    | -               | -   | -    |
|      |        | Velocity (m/s) | -              | -    | -    | -              | -    | -    | -              | -    | -    | -               | -   | -    |
|      |        | Ww (m)         | -              |      |      | -              |      |      | -              |      |      | -               |     |      |
|      |        | Flow (m³/s)    | -              |      |      | -              |      |      | -              |      |      | -               |     |      |
| 2024 | Spring | Depth (m)      | 0.05           | 0.15 | 0.05 | 0.50           | 1.50 | 0.50 | -              | -    | -    | -               | -   | -    |
|      |        | Velocity (m/s) | 0.01           | 0.01 | 0.01 | 0.01           | 0.01 | 0.01 | -              | -    | -    | -               | -   | -    |
|      |        | Ww (m)         | 1.0            |      |      | 13             |      |      | -              |      |      | -               |     |      |
|      |        | Flow (m³/s)    | 0.00083        |      |      | 0.11           |      |      | -              |      |      | -               |     |      |
|      | Fall   | Depth (m)      | 0.04           | 0.15 | 0.05 | -              | -    | -    | -              | -    | -    | -               | -   | -    |
|      |        | Velocity (m/s) | 0.01           | 0.01 | 0.01 | -              | -    | -    | -              | -    | -    | -               | -   | -    |
|      |        | Ww (m)         | 1.0            |      |      | -              |      |      | -              |      |      | -               |     |      |
|      |        | Flow (m³/s)    | 0.00083        |      |      | -              |      |      | -              |      |      | -               |     |      |
| 2025 | Spring | Depth (m)      | 0.04           | 0.05 | 0.06 | -              | 1.50 | -    | -              | 0.5  | -    | -               | -   | -    |
|      |        | Velocity (m/s) | 0.08           | 0.08 | 0.02 | -              | -    | -    | -              | -    | -    | -               | -   | -    |
|      |        | Ww (m)         | 1.0            |      |      | 13             |      |      | -              |      |      | -               |     |      |
|      |        | Flow (m³/s)    | 0.00063        |      |      | -              |      |      | -              |      |      | -               |     |      |
|      | Fall   | Depth (m)      | -              | 0.05 | -    | -              | 1.5  | -    | -              | -    | -    | -               | -   | -    |
|      |        | Velocity (m/s) | -              | 0.01 | -    | -              | -    | -    | -              | -    | -    | -               | -   | -    |
|      |        | Ww (m)         | 0.5            |      |      | 13-            |      |      | -              |      |      | -               |     |      |
|      |        | Flow (m³/s)    | -              |      |      | -              |      |      | -              |      |      | -               |     |      |

**Note:** Ww = wetted width  
\* RMID= right mid channel, MID= mid channel, LMID= left mid channel  
(-) = null result

Wetted widths measured at four transects in Wetland 06 and four transects in the reference wetland are summarized in **Table 5.e**. In Wetland 06, wetted widths were only collected in during the spring sampling from T1-1, T1-2, and T1-3 as T1-4 and the reference wetland were dry. In the fall both Wetland 06 and the reference wetland were dry. As previously recorded (2021 and 2022), during the fall the wetted width percent change has shown a decline in water level. This reduction was evident as the site was dry during the fall. Photos taking during the fall monitoring visit are presented in **Appendix D**. The reference wetland was dry during the spring and fall monitoring visit and wetted width transects could not be conducted. These results were consistent with the wetted widths results of Years 1 through 7 (i.e., 2018 - 2024) monitoring.

In the previous years of monitoring a staff gauge located within wetland has been monitored and provided measurements of water depth. Since Year 6 monitoring, the staff gauge installed in Wetland 06 was no longer present at site. This area was dry in both the spring and fall sampling. Previously this section of the wetland has been previously heavily impacted by beaver activity.

**Table 5.e Summary of Wetted Width Measurements from 2018 to 2025**

| Site              | Transect | Wetted Width(m) |           | Percent Change of Wetted Width (%) | Wetted Width(m) |           | Percent Change of Wetted Width (%) | Wetted Width(m) |           | Percent Change of Wetted Width (%) | Wetted Width(m) |           | Percent Change of Wetted Width (%) | Wetted Width(m) |           | Percent Change of Wetted Width (%) | Wetted Width(m) |           | Percent Change of Wetted Width (%) | Wetted Width (m) |           | Percent Change of Wetted Width (%) | Wetted Width (m) |           | Percent Change of Wetted Width (%) |
|-------------------|----------|-----------------|-----------|------------------------------------|-----------------|-----------|------------------------------------|-----------------|-----------|------------------------------------|-----------------|-----------|------------------------------------|-----------------|-----------|------------------------------------|-----------------|-----------|------------------------------------|------------------|-----------|------------------------------------|------------------|-----------|------------------------------------|
|                   |          | Summer 2018     | Fall 2018 |                                    | Spring 2019     | Fall 2019 |                                    | Spring 2020     | Fall 2020 |                                    | Spring 2021     | Fall 2021 |                                    | Spring 2022     | Fall 2022 |                                    | Spring 2023     | Fall 2023 |                                    | Spring 2024      | Fall 2024 |                                    | Spring 2025      | Fall 2025 |                                    |
| Wetland 06        | T1-1     | 28              | 1         | 96.40                              | -               | -         | -                                  | 34              | 1.80      | 94.70                              | 15              | 1         | 93.30                              | -               | 0.50      | 100                                | 0.75            | -         | 100                                | 1.5              | -         | 100                                | 0.5              | 0         | 100                                |
|                   | T1-2     | 26              | 22        | 15.4                               | 45              | 2         | 95.6                               | 14              | 25        | 44                                 | 20              | 2         | 90                                 | -               | -         | 0                                  | 2               | -         | 100                                | 2                | -         | 100                                | 0.0              | 0         | 100                                |
|                   | T1-3     | 52              | 51        | 1.9                                | 35              | 29        | 17.1                               | 24              | 22        | 8.3                                | 32              | 3         | 90.6                               | -               | 1.5       | 100                                | 36              | -         | 100                                | 1.5              | -         | 100                                | 2.5              | 2.5       | 16.7                               |
|                   | T1-4     | 37              | 35        | 5.4                                | 40              | 32        | 20                                 | 28              | 27        | 3.6                                | 24              | 2         | 91.6                               | -               | 1         | 100                                | -               | -         | 0                                  | 3.5              | -         | 100                                | 2.0              | 2.0       | 20                                 |
| Reference Wetland | T2-1     | 25              | -         | 100                                | 13              | -         | 100                                | 19              | -         | 100                                | -               | -         | 0                                  | -               | -         | 0                                  | -               | -         | 0                                  | -                | -         | 0                                  | -                | -         | 0                                  |
|                   | T2-2     | 32              | -         | 100                                | 15              | -         | 100                                | 22              | -         | 100                                | 6               | -         | 100                                | -               | -         | 0                                  | -               | -         | 0                                  | -                | -         | 0                                  | -                | -         | 0                                  |
|                   | T2-3     | 28              | -         | 100                                | 13              | -         | 100                                | 22              | -         | 100                                | 3               | -         | 100                                | -               | -         | 0                                  | -               | -         | 0                                  | -                | -         | 0                                  | -                | -         | 0                                  |
|                   | T2-4     | 28              | -         | 100                                | 7               | -         | 100                                | 13              | -         | 100                                | -               | -         | 0                                  | -               | -         | 0                                  | -               | -         | 0                                  | -                | -         | 0                                  | -                | -         | 0                                  |

**Note:** (-) = no surface water present during monitoring visit, (\*) = data not available

## 6.0 Summary

Monitoring efforts undertaken in 2025 represent Year 8 and the final year of the Wetland 06 monitoring program. Year 8 of the monitoring program was completed according to the criteria specified in the Monitoring Plan, with the addition of supplemental monitoring sites.

During Year 8 of monitoring, the following key observations were noted:

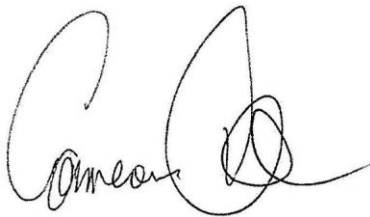
- Water quality results showed variation in water quality parameters among sampling locations within Wetland 06, as well as between spring and fall sampling visits.
- The majority of surface water quality parameters measured were within CCME and EQG for the protection of aquatic life. Slight exceedances in **zinc, uranium and selenium were detected at localized sites.**
- Elevated concentrations of uranium and selenium are most likely naturally occurring and are representative of background conditions.
- In 2025, water samples collected during spring sampling from site WQ-04b had an elevated zinc concentration exceeding the EQG. No other zinc exceedances were detected in surface water at other sampling locations. These results suggest that zinc has attenuated into the sediment along Pathway 1 and is no longer being transported into Wetland 06.
- The spring water flow and wetted width measurements were collected in late June within 72 hours of a precipitation event to capture higher periods of flow within the Project area to enable calculations of velocity and discharge. Depth and velocity measurements were successfully collected at one inflow location during spring sampling; no surface water flow into or out of Wetland 06 was present during fall sampling. There has not been measurable surface outflow from Wetland 06 during any of the sampling events over the course of the monitoring program.
- Wetted widths recorded during the fall site visit at all transects in Wetland 06 since 2018 have shown a reduction in surface water quantity compared with spring. Lower water levels in fall are consistent with all previous years of post-construction monitoring, however results since 2023 have shown the lowest observed water levels since the start of the monitoring program.
- The reference wetland has been dry for all fall and spring sampling events since 2022, and during all fall sampling events since 2020.

## 7.0 Closure

Monitoring in 2025 (Year 8) represents 5 years after the SWCRR was opened to the public (i.e., October 2020) and Year 8 of the overall monitoring plan, and will be the final monitoring year. Based on the results of the Year 8 (i.e., 2025) monitoring program, we recommend that no further monitoring is required as KGL has met the requirements of the Order (see conditions 6.2 and 6.6).

The results of Year 8 monitoring provide an additional year of surface water quality comparison for Wetland 06 following the initiation of construction phase of the SWCRR. This report addresses water quality and quantity impacts to Wetland 06, fulfilling the requirements of the Order which amended the initial *Water Act* Approval received by the Project No.: 00388473-00-00.

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# Appendix A

## Monitoring Plan

# Wetland 06 Water Monitoring Plan Southwest Calgary Ring Road Project Calgary, Alberta

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## 1.0 INTRODUCTION

The Southwest Calgary Ring Road (SWCRR) Project (the Project) includes the design and construction of approximately 31 kilometers of new six and eight lane divided freeway, 14 interchanges, as well as three watercourse realignments and associated crossing structures. The Project corridor is located along the western limit of the City of Calgary south of Highway 8 and includes sections of Highways 8 and 22. The Project has been awarded by Alberta Transportation to Mountain View Partnership, which in turn has engaged KGL Constructors (KGL) to develop the Project.

On August 11, 2017, the Project received *Water Act* Approval No.: 00388473-00-00 (the Approval) to impact twenty-four (24) wetlands, including Wetland 06. Subsequently, an Environmental Appeal was filed (*Brockman and Tulick v. Director, South Saskatchewan Region, AEP*; Appeal Nos.: 17-047 and 17-050-R. 2017) affecting KGL's ability to impact the wetlands, as described in the Approval.

As a result of the Environmental Appeal, the Minister of Environment and Parks issued a Ministerial Order 06/2018 (the Order), on January 29, 2018, that amended the previously received Approval to include conditions to address water quality and quantity impacts to Wetland 06 (see conditions 6.2 to 6.6). To address these conditions, KGL Constructors retained Hemmera Envirochem Inc. (Hemmera) to develop a monitoring plan (the Plan) that includes:

- monitoring of the flow of water flow into Wetland 06 in the spring and fall of each year that the plan is in effect;
- monitoring of the water quality in Wetland 06 in the spring and fall of each year that the plan is in effect, including total dissolved solids, salts, dissolved metals, and other parameters consistent with a stormwater sampling program;
- the monitoring data shall be provided to the Director within one month from the date the data were collected;
- the results of the monitoring and an analysis of the monitoring shall be provided to the Director in an annual report by March 31 of the year following the calendar year in which the data were collected; and
- the monitoring plan shall come into effect as soon as the Director approves the plan and shall remain in effect for a period of five years after the road is officially opened to the public.

### 1.1 Monitoring Objectives

Wetlands consist of land that has been saturated for sufficient time to promote the formation of water altered soils, growth of water tolerant vegetation, and various kinds of biological activity, adapted to wet environments (ESRD 2013). They play an important role on the landscape and are ecologically and economically significant by maintaining water quality and supply in watersheds, providing flood protection and erosion control, as well as providing habitat for various fish and wildlife species. Wetland health is reflective of numerous physical, chemical, and biological components. We acknowledge that there are numerous indicators of wetland health; however, the monitoring plan has been developed specifically to reflect requirements of the Order. As a result, monitoring elements of this Plan were prioritized to surface water quality and flow exclusively.

The objectives of the Plan include:

- monitoring surface water quality in Wetland 06 and flow into Wetland 06,
- monitoring surface water flow out of Wetland 06,
- monitoring surface water quality in waterbodies/drainages that provide surface water flow into Wetland 06, and
- monitoring surface water quality in an adjacent reference wetland.

It is expected that by monitoring Wetland 06 as well as other nearby wetlands and waterbodies, the Plan will result in a suitable comparative analysis about the potential influences or lack thereof of the Project on surface water quality and flow in Wetland 06.

## 2.0 DESCRIPTION OF WETLAND 06

Wetland 06 is located in the Weaselhead Natural Area, a natural environmental park that borders the west end of Glenmore Reservoir (**Figure 1**) within the City of Calgary. A small portion of Wetland 06 is located within the Transportation Utility Corridor (TUC). Wetland 06 is a historical oxbow channel to the Elbow River that is over 500 m in length with wetted widths that are generally less than 30 m. A pedestrian/bike bridge associated with the Glenmore Reservoir Regional Pathway network crosses Wetland 06. Wetland 06 drains generally east through the Weaselhead Natural Area and eventually discharges into the Glenmore Reservoir, which provides approximately half of the City of Calgary's drinking water supply.

Wetlands 07, 08, and 09 are located upslope of Wetland 06 and are the source of surface water flow into Wetland 06 (**Figure 1**). Wetland 08 and 07 are located to the southwest of Wetland 06. Surface flow from Wetland 08 and 07 are conveyed into Wetland 06 by an undefined channel that becomes defined downstream of the TUC near Wetland 06 as the slope gradient increases. A bypass drainage culvert will be installed during the construction phase of the Project to convey water from Wetland 07 and 08 through the Project area. Wetland 09 is located south of Wetland 06. Surface flow from Wetland 09 is conveyed by an undefined channel first flowing easterly through the Project and then northerly from the TUC boundary through a defined channel to Wetland 06. A bypass drainage system has been installed as part of the Project to maintain flow from Wetland 09 to Wetland 06.

During the construction phase of the Project, surface run-off from the work area will be managed through temporary erosion and sediment control (ESC) measures and will be redirected away from Wetland 06. During the operational phase of the Project, the natural flow of surface water (i.e., from the west side of the TUC) into Wetland 06 will be maintained via the bypass drainage systems described above. Further, during the operational phase, Project-impacted water will not be discharged into Wetland 06. All Project-impacted water in the vicinity of Wetland 06 has been designed to flow north into a stormwater pond.

### 3.0 MONITORING SCHEDULE

The monitoring schedule, including field sampling visits, seasonal data summaries, and annual reports is provided in **Table 1**. Field sampling visits to monitor surface water quality and flow will occur during the spring and fall of each year of the Plan. Additional details on sampling frequency are provided in **Section 4.2**.

Following each season of monitoring, data summaries (i.e., surface water quality and flow) will be made publicly available by KGL within one month of the seasonal field sampling visits. The annual report will be made publicly available by March 31 of the year following the field sampling visits.

**Table 1 Monitoring Schedule**

| Task                                     | Monitoring Year <sup>a</sup> |     |     |     |     |     |     |     |     |     |     |     |
|--|------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|  | Apr                          | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan | Feb | Mar |
| 1. Water Quality Monitoring <sup>b</sup> |                              |     |     |     |     |     |     |     |     |     |     |     |
| 2. Water Flow Monitoring <sup>b</sup>    |                              |     |     |     |     |     |     |     |     |     |     |     |
| 3. Seasonal Data Summary <sup>c</sup>    |                              |     |     |     |     |     |     |     |     |     |     |     |
| 4. Annual Report <sup>d</sup>            |                              |     |     |     |     |     |     |     |     |     |     |     |

<sup>a</sup> Plan year includes construction phase and first five years of the operational phase.

<sup>b</sup> Surface water quality and flow field sampling visits are proposed in May and October of each year of the Plan; however, annual variability in ambient air temperature, snow/ice cover, and precipitation events may impact the exact date of sampling.

<sup>c</sup> Surface water quality and flow data summaries will be made publicly available within one month of each seasonal monitoring visit.

<sup>d</sup>The Annual Report will be made publicly available by March 31 of the year following the field sampling visits (e.g., the 2018 Annual Report will be posted by March 30, 2019).

## 4.0 METHODOLOGY

### 4.1 Sample locations

The locations for surface water quality and flow monitoring are provided in **Figure 2**. The sites have been selected strategically for appropriate reference and comparison site considerations, in order to allow for a comparative analysis. An enhanced view of the sampling sites in and near Wetland 06 is provided in **Figure 3**. Suitability of these locations has been field verified during a reconnaissance survey in early spring 2018, however, the locations of these sites are subject to change pending potential subsequent annual and seasonal variability in site conditions.

#### 4.1.1 Surface Water Quality

Surface water quality will be monitored at eight site locations (**Table 2**).

One surface water quality reference site (WQ-01) is identified for the Plan. The reference site is located north of Wetland 06 in an adjacent wetland that is outside the TUC. This site was selected as there are no identified or known pathways from the Project that could potentially direct Project-affected water into the adjacent wetland.

Based on a desktop assessment and a field reconnaissance, Hemmera identified two pathways in which Project-influenced water could potentially flow into Wetland 06 (see **Figure 1**). The two identified pathways are described below. For each of the respective pathways, comparison samples will be collected from a series of sample sites (i.e., background vs. comparison) (see **Figure 2**).

- Pathway 1 is an undefined channel that diagonally bisects the Project footprint. From the west side of the TUC boundary, water flows northeast through Wetland 08 into Wetland 07 where it then flows past the east side of the TUC boundary and then into a defined channel (approximately 400 m) that ultimately drains into Wetland 06 (see **Figure 1**). The sample sites associated with Pathway 1 are; WQ-04a, WQ-04b, and WQ-02 (see **Figure 2**). WQ-04a has been selected as a background site, as it is located upstream of potential influences from the Project.
- Pathway 2 is an undefined channel that flows east through Wetland 09 where it then enters a recently construction stormwater drainage system (see **Figure 1**). The drainage system outlets into a constructed riprap lined drainage ditch that flows north towards the eastern TUC boundary. In addition, a constructed drainage ditches channels water west where it converges with flows in the aforementioned constructed riprap lined drainage ditch. From the eastern TUC water meanders north through a defined channel (approximately 1,000 m) that eventually drains into Wetland 06 (see **Figure 1**). The samples sites associated with Pathway 2 are; WQ-05a, WQ-05b, WQ-05c, and WQ-03 (see **Figure 2**).

Surface water quality monitoring sites are subject to change due to seasonality and site conditions. Additional or alternative surface water quality monitoring sites may be identified if field crews observe abnormal site conditions or contaminant indicators, more information is provided in **Section 4.3**.

**Table 2 Surface Water Quality Sample Locations**

| Site Name | Universal Transverse Mercator (Zone 11U) |          | Site Description   | Reference or Comparison Site |
|-----------|--|----------|--|------------------------------|
|           | Easting                                  | Northing |  |                              |
| WQ-01     | 699168                                   | 5652375  | Reference wetland to the north of Wetland 06   | Reference                    |
| WQ-02     | 699186                                   | 5652164  | West (upslope) side of Wetland 06  | Comparison                   |
| WQ-03     | 699432                                   | 5652159  | East (downslope) side of Wetland 06  | Comparison                   |
| WQ-04a    | 698898                                   | 5651725  | Wetland 08, upslope of SWCRR Project   | Background                   |
| WQ-04b    | 699113                                   | 5651956  | Wetland 07, downslope of SWCRR Project and Wetland 08  | Comparison                   |
| WQ-05a    | 699060                                   | 5650929  | Upslope of Wetland 09 and SWCRR Project  | Background                   |
| WQ-5b     | 699788                                   | 5651289  | Watercourse 01 downslope of Wetland 09 and SWCRR Project                                       | Comparison                   |
| WQ-05c    | 700061                                   | 5651274  | Catchment basin to the east of SWCRR Project and upslope of the confluence with Watercourse 01 | Comparison                   |

**4.1.2 Surface Water Flow**

Surface water flow will be monitored at four locations around Wetland 06 (**Table 3**). Each of these locations are expected to provide conveyance of surface flow (inflow or outflow) year-round during normal surface flow conditions. Given the higher than average snowfall and later than normal lowland melt in 2018, sampling locations for surface water flow may need to be reconsidered in subsequent sampling visits.

Surface water inflows have been identified at FL-01, FL-02, and FL-03. The sampling location FL-01 occurs where surface water inflow is associated with drainage from Wetland 07 and 08. Site FL-02 is where the surface water inflow is conveyed from Wetland 09. Site FL-03 is where the surface water inflow associated with drainage from the reference wetland to the north of Wetland 06. Surface water outflow monitoring will occur at FL-04 at the Glenmore Pathway bridge crossing approximately 75 m downslope from Wetland 06.

**Table 3 Surface Water Flow Sample Locations**

| Site Name | Universal Transverse Mercator (Zone 11U) |          | Inflow or Outflow |
|-----------|--|----------|-------------------|
|           | Easting                                  | Northing |                   |
| FL-01     | 699156                                   | 5652166  | Inflow            |
| FL-02     | 699406                                   | 5652115  | Inflow            |
| FL-03     | 699075                                   | 5652326  | Inflow            |
| FL-04     | 699644                                   | 5652343  | Outflow           |

Surface flow in undefined channels (i.e., lacking defined bed and banks) may be present at the surface water flow monitoring locations pending flow conditions during each field sampling visit and are expected to be influenced by natural events (e.g., precipitation levels) within and between monitoring years. Monitoring flow in waterbodies lacking defined bed and banks can also have reduced accuracy as compared to a defined channel. Therefore, field crews may be required to adjust the surface water flow monitoring sites

during each field sampling visit to a location where channel characteristics are most appropriate for flow measurements. If additional surface water inflow or outflow locations are identified during the field sampling visits due to variability in hydrological connectivity, contingency surface water flow monitoring sites will be added.

## 4.2 Frequency of sampling

Surface water quality and flow monitoring will occur twice annually, once in the spring and once in the fall. The spring field sampling visit is proposed to occur in May and the fall field sampling visit is proposed to occur in October of each year of the Plan. The exact timing of the spring and fall field sampling visits are dependent on environmental conditions including ambient air temperatures, snow/ice cover, and precipitation events. Sampling will not occur during or within 72 hours of a substantial precipitation event to reduce any temporal variation (short-term pulse response) associated with extreme disturbances resulting in water and flow sampling that is more representative of the wetland conditions.

## 4.3 Water Quality Monitoring

Surface water quality samples will be taken from the banks of at the sample sites provided in **Tables 2** and discussed in **Section 4.1.1**. Site conditions (e.g., weather) will be recorded by the field crew. At each sampling site, five photos will be taken in a north, south, east, west, and ground direction.

Discrete profile lake water sampling and composite integrated water sampling methodologies (Alberta Environment 2006) have been determined to be inappropriate sampling methodologies for this Plan as water depths at the sampling sites are not deep enough to require spatial characterization over a horizontal or depth profile. The protocol provided by Canadian Council of Ministers of the Environment (CCME) (2011) for shore sampling will be followed and is summarized below. A certified Canadian Association for Laboratory Accreditation (CALA) laboratory will complete the laboratory analysis of water samples.

Samples will be labeled using a water-proof marker for accurate identification by the field crews and the laboratory. A chain of custody form will be completed, and any transfers of custody will be noted on the form by the authorized personnel including transfer to the CALA laboratory. Field crews will wear unpowdered latex or polyethylene disposable gloves and refrain from smoking or eating while collecting water samples (Alberta Government 2006).

An extension pole will be used to collect a “grab sample” from each sampling site and to avoid disturbing the site during collection of the water samples (CCME 2011). At each sampling location, the extension pole and clamp will be rinsed prior to collecting the water samples to reduce possible contamination between sites. Laboratory protocols for sample bottle rinsing will be followed and any rinsing of sample bottles or collection equipment will be completed slightly downslope of the sampling location to prevent cross contamination.

Water samples will be collected facing upstream if flow is present (CCME 2011). Water bottles will be uncapped immediately prior to filling. Water samples will be collected one at a time ensuring the lid is immediately capped once the bottle is filled. Water samples will be collected at approximately 60% water depth to avoid surface scum and film, and to collect a representative water sample. Algae, sediment, and organic matter will be avoided in the water sample.

Laboratory protocols for preservatives, storage, and transportation of water samples will be followed. Water samples will be kept in coolers containing enough ice packs or warm water bottles to keep the samples at approximately 4°C. All water samples will be sealed and packed in the coolers as to prevent spillage or breakage. Water samples will be delivered to the laboratory as soon as possible after collection, preferably the same day and hold times will be followed so analysis will occur within the appropriate hold periods.

Water sample parameters to be monitored during the Plan include those identified as potential sources or indicators of sources of pollutants or contaminants that may result from the construction and operations phases of the Project. Previous studies have shown sediment transport and deposition pose the greatest risk to the construction phase of highway projects, resulting from excavation and earthworks (Barrett et. al., 1995). Eroded soil can also transport nutrients, ions, and metals (Barrett et. al., 1995). During the operations phase of highway projects, sedimentation remains a concern along with transportation of pollutants from vehicles operating on the highway through run-off (Barrett et. al., 1995).

Water samples will be collected at all eight sampling (**Table 2**) for the parameters provided in **Table 4**. All samples collected from Wetland 06 and the reference wetland (i.e., WQ-01, WQ-02, and WQ-03) will be submitted for analysis for all parameters immediately after collection, with regular turn around time of 7-days requested. For remaining sample locations (i.e., WQ-04a,b; WQ-05a,b,c), all samples will be submitted, however, only those samples which have a holding time of less than 7 days will be immediately analysed (i.e., biological oxygen demand, nitrate, nitrite, sulfate, total dissolved solids, and total suspended solids. Samples not immediately analysed will be kept at the laboratory, pending the results from WQ-01 to WQ-03, and will be stored at the laboratory in accordance with CALA standards. If an exceedance value is identified at WQ- 01, WQ-02, or WQ-03, additional laboratory analysis for the exceedance parameter(s) will be conducted for the remaining sample sites (i.e., WQ-04a,b; WQ-05a,b,c), to determine if the exceedance is Project related or generated offsite.

The parameters provided in **Table 4** are reflective of those included in the City of Calgary Stormwater Management and Design Manual (2011). Project activities associated with the construction and operations phase of the Project are unlikely to have effects on microbiological indicators; as such they have been excluded from the Plan.

**Table 4 Water Quality Parameters Monitored During the Plan**

| Sediment & Physical   |  |
|---|--|
| <ul style="list-style-type: none"> <li>• Total Suspended Solids (TSS)</li> <li>• Total Dissolved Solids (TDS)</li> <li>• Turbidity</li> </ul>   | <ul style="list-style-type: none"> <li>• Conductivity (EC)</li> <li>• pH</li> <li>• Dissolved Oxygen (DO)</li> </ul>   |
| Nutrients and Others (mg/L)   |  |
| <ul style="list-style-type: none"> <li>• Biochemical Oxygen Demand (BOD)</li> <li>• Chemical Oxygen Demand (COD)</li> <li>• Nitrate (NO<sub>3</sub>)</li> <li>• Nitrite (NO<sub>2</sub>)</li> </ul> | <ul style="list-style-type: none"> <li>• Total Kjelaht Nitrogen (TKN)</li> <li>• Ammonia-Nitrogen (NH<sub>3</sub>-N)</li> <li>• Total Phosphorus (TP)</li> <li>• Dissolved Reactive Phosphorus (TDP)</li> <li>• Ortho-Phosphate</li> </ul> |

| Dissolved Metals & Metals (mg/L) |                  |                               |                  |
|----------------------------------|------------------|-------------------------------|------------------|
| • Silver (Ag)                    | • Cobalt (Co)    | • Molybdenum (Mo)             | • Tin (Sn)       |
| • Aluminum (Al)                  | • Chromium (Cr)  | • Nickel (Ni)                 | • Strontium (Sr) |
| • Arsenic (As)                   | • Copper (Cu)    | • Lead (P)                    | • Sodium (Na)    |
| • Boron (B)                      | • Iron (Fe)      | • Lead (Pb)                   | • Titanium (Ti)  |
| • Barium (Ba)                    | • Potassium (K)  | • Sulfur (S)                  | • Thallium (Tl)  |
| • Beryllium (Be)                 | • Lithium (Li)   | • Antimony (Sb)               | • Uranium (U)    |
| • Calcium (Ca)                   | • Magnesium (Mg) | • Selenium (Se)               | • Vanadium (V)   |
| • Cadmium (Cd)                   | • Manganese (Mn) | • Silicon (Si)                | • Zinc (Zn)      |
| Major Ions & Salts               |                  |                               |                  |
| • Sodium (Na <sup>2+</sup> )     |                  | • Calcium (Ca <sup>2+</sup> ) |                  |
| • Potassium (K <sup>+</sup> )    |                  | • Chloride (Cl <sup>-</sup> ) |                  |
| • Potassium (K <sup>+</sup> )    |                  | • Sulfate (SO <sup>4-</sup> ) |                  |

Sediment and physical parameters provided in the first section of **Table 4** (i.e., TSS, TDS, turbidity, conductivity, dissolved oxygen, and pH) will be measured at all water quality monitoring sites listed in **Table 2**. In addition, water temperature, conductivity, pH, and dissolved oxygen which will be measured in-situ at all water quality monitoring sites provided in **Table 2**. These measurements will be taken below the water surface at approximately 60% water depth. Manufacturers instructions for calibration and measuring parameters will be followed.

In-situ measurements will be used as field indicators for any supplemental water quality sampling, if required. Field crews may collect additional water samples for analysis at the existing water sampling locations or at additional locations not included in **Table 2** if abnormal site conditions are observed or in-situ measurements indicate potential water quality abnormalities. Field indicators of potential hydrocarbons (e.g., oil sheen, odor) will be noted by field crews and a potential observation will trigger further water quality analysis for hydrocarbons.

#### 4.4 Water Flow Monitoring

The proposed locations for surface water flow monitoring have been discussed in **Section 4.1**. Surface flow will be measured at each monitoring site using a HACH® velocity flow meter (or comparable model) and using the velocity-area method (Government of Alberta 2009). Using the surface water inflows and outflows of Wetland 06, a modified water balance will be completed. The sum of all surface water inflow and sum of all outflows will be compared for each seasonal sampling visit and between years of the Plan.

In addition to flow monitoring, field crews will deploy a water level staff gauge in both Wetland 06 and the reference wetland. Water depths will be recorded during each field sampling visit. Wetted widths will also be measured at four transects across Wetland 06 and the reference wetland. Transect locations will be recorded using a global positioning system (GPS) device and natural landmarks will be recorded for replicability in the transect location from each seasonal field sampling visit during the Plan.

A comparison of the wetted widths and water depths of Wetland 06 and the reference wetland will be used to assess if the wetted perimeter of Wetland 06 is being reduced while accounting for natural fluctuations resulting in annual variability through comparison to the reference wetland.

## 4.5 Reporting

Surface water quality and flow results for each monitoring field visit will be made publicly available by KGL within one month of the seasonal field sampling event. The annual report, incorporating both seasonal field sampling visits will be made publicly available by KGL by March 31 of the year following the seasonal field sampling visits.

The annual report will include analysis of the surface water quality and flow results for both seasonal field visits. Surface water quality results will be compared relative the Environmental Quality Guidelines for Alberta Surface Waters (Government of Alberta 2014). Select surface water quality parameters (i.e., turbidity, temperature, pH, conductivity, dissolved oxygen, phosphate, and chloride) will also be compared to water quality parameters collected by the Weaselhead /Glenmore Park Preservation Society in 2016 within Wetland 06 as part of a baseline conditions environmental monitoring study (Porto 2017). This study will provide baseline conditions (i.e., prior to construction activities on the Project) in Wetland 06 with the limitation that not all water quality parameters measured in this Plan were included in the 2016 baseline study.

The annual report will also compare wetted width measurements and water depths in Wetland 06 versus the reference wetland to the north. Any change in wetted width or water depth recorded during prescribed sampling times (i.e., May and October) will be compared in the reference wetland to identify if changes in the wetland are due to Project effects or natural environmental conditions (e.g., drought). Following the first annual report, subsequent annual reports will also include a trend analysis through comparison of surface water quality and flow between years of the Plan.

## 5.0 CLOSURE

This Monitoring Plan has been developed to meet the monitoring requirements described in Condition 6.2 and other additional monitoring components that will enable identification of potential impacts to the surface water quality and flow of Wetland 06. Alternatively, the Plan may also identify and inform on other potential impacts that are not related to the Project.

In developing this Plan, Hemmera has relied in good faith on information provided by others and has assumed that the information provided by those individuals is both complete and accurate. This Plan was developed to current industry standard practice for similar environmental work, within the relevant jurisdiction and same locale, but with specific reference to the Order. The Plan presented herein should be considered within the context of the scope of work and project terms of reference; further, the Plan is time sensitive and should be considered valid only during the timeline included in this Plan. This Plan is based upon the applicable guidelines, regulations, and legislation existing at the time the Plan was produced.

Prepared by:  
**Hemmera Envirochem Inc.**



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Aquatic Biologist



Greg Eisler, B.Sc., P.Biol., R.P.Bio.  
Senior Aquatic Biologist

## 6.0 REFERENCES

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<http://aep.alberta.ca/water/reports-data/water-use-reporting-system/documents/WUR-WaterMeasurementGuidebook-2009.pdf>

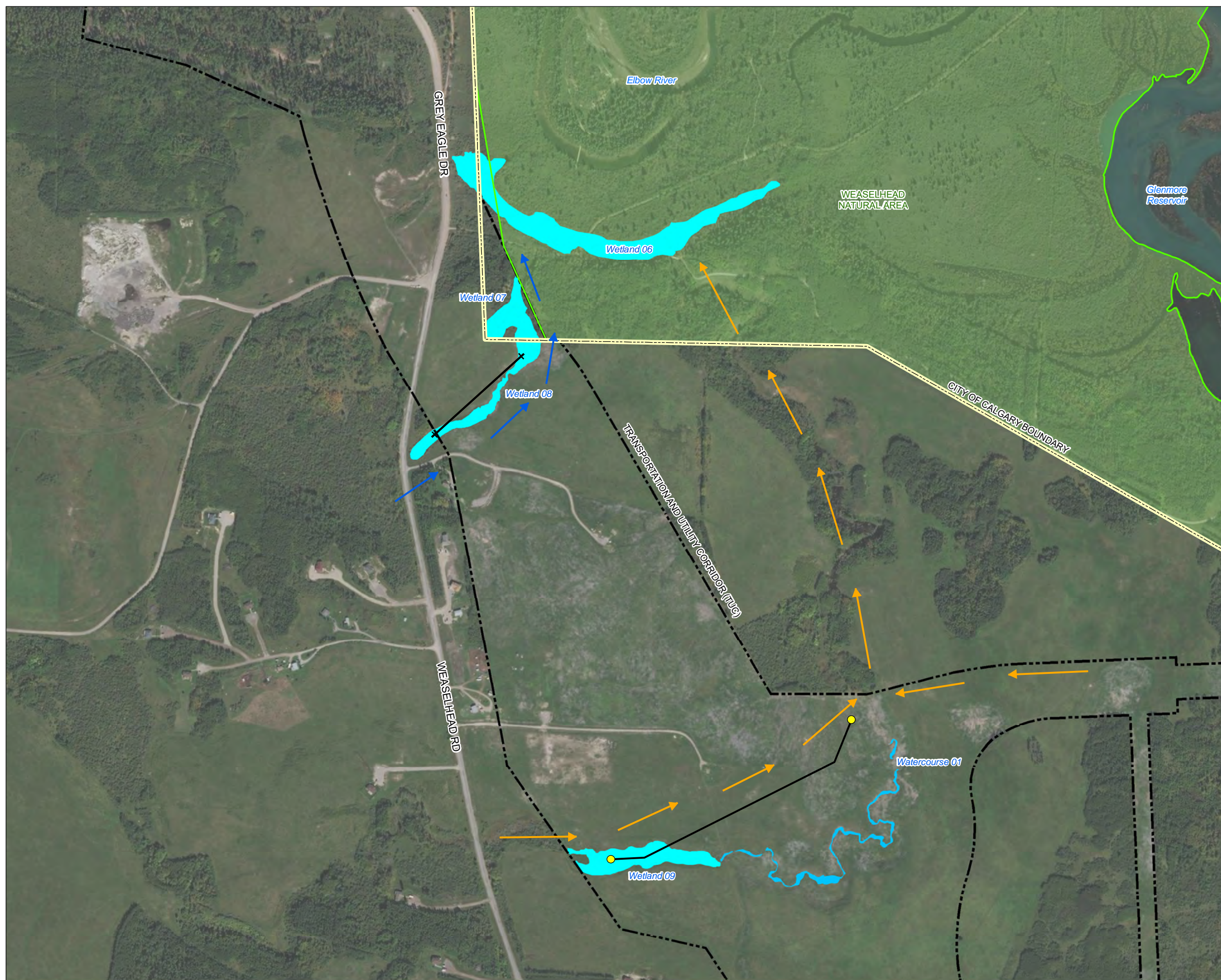
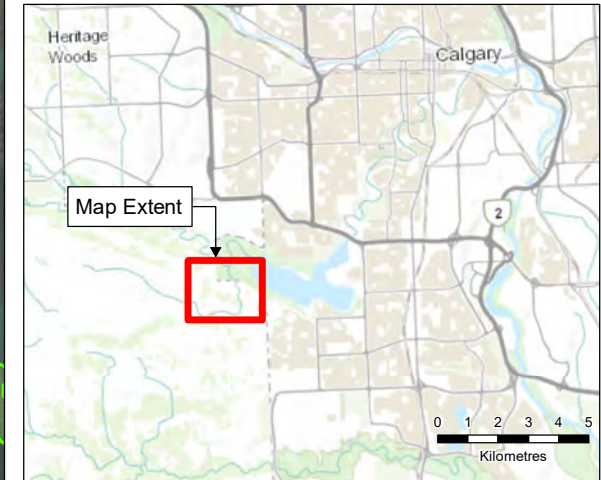
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# FIGURES

- Figure 1 Wetland Locations
- Figure 2 Water Flow and Quality Sampling Locations
- Figure 3 Water Flow and Quality Sampling Location Details

**Wetland Locations**



**Legend**

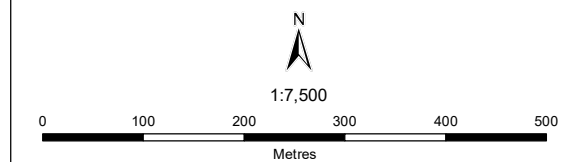
- Bypass Culvert
- Pathway #1 Approximate Direction of Flow
- Pathway #2 Approximate Direction of Flow
- Stormwater Drainage Line
- City of Calgary Boundary
- Natural Area
- Transportation and Utility Corridor (TUC)
- Watercourse
- Wetland

**Notes**

1. All mapped features are approximate and should be used for discussion purposes only.
2. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

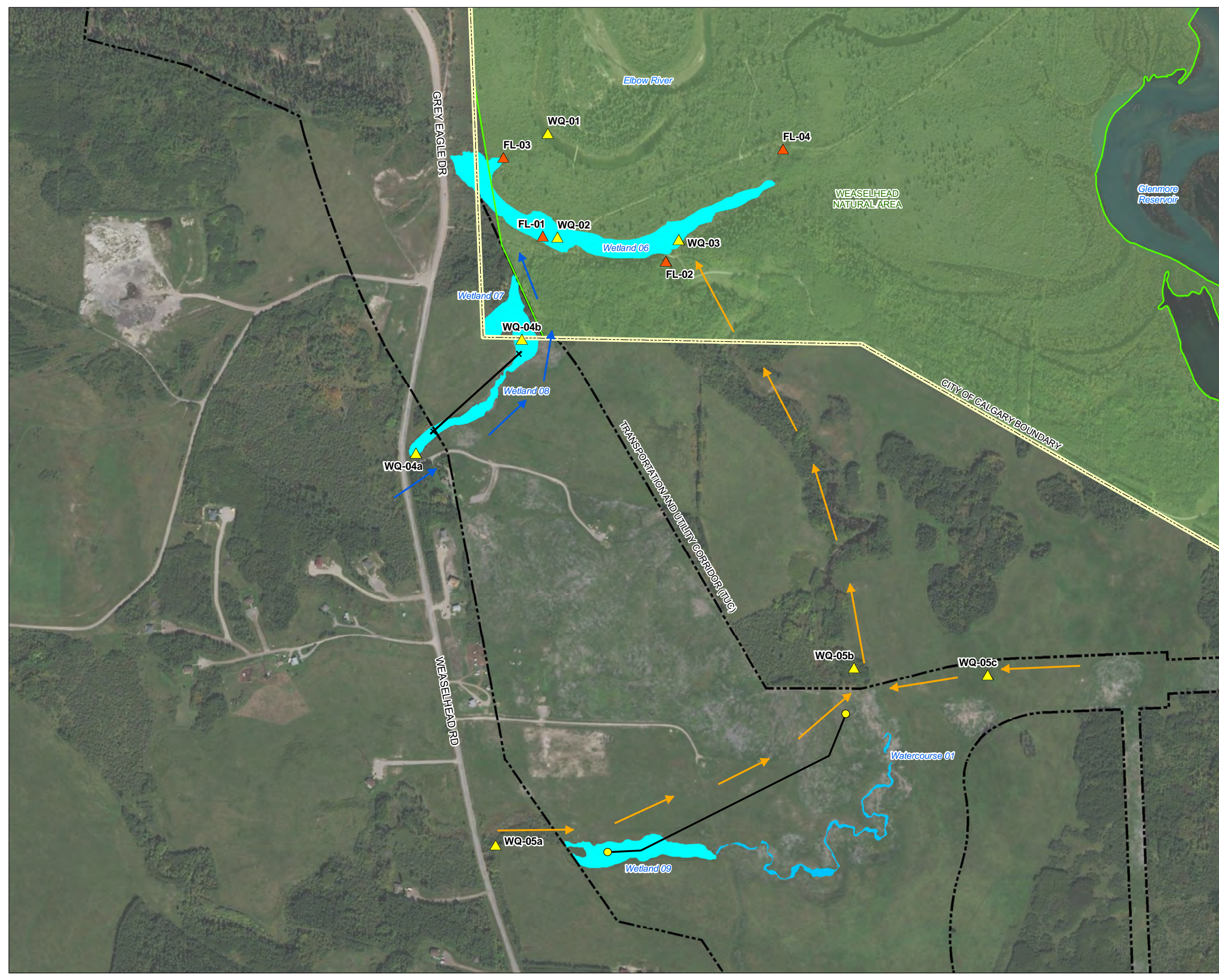
**Sources**

- Aerial Image: ESRI World Imagery, 2016
- Inset Basemap: ESRI World Topographic Map



NAD 1983 UTM Zone 11N  
Page Size: 11" x 17"

**Water Flow and Quality Sampling Locations**



**Legend**

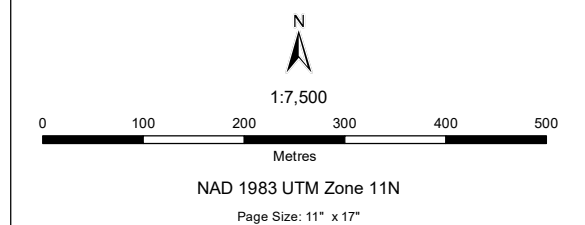
- ▲ Water Flow Sample Location (Hemmera, 2018)
- ▲ Water Quality Sample Location (Hemmera, 2018)
- Bypass Culvert
- Pathway #1 Approximate Direction of Flow
- Pathway #2 Approximate Direction of Flow
- Stormwater Drainage Line
- City of Calgary Boundary
- Natural Area
- Transportation and Utility Corridor (TUC)
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






**Sources**

- Aerial Image: ESRI World Imagery, 2016



**Water Flow and Quality  
Sampling Location Details**

**Legend**

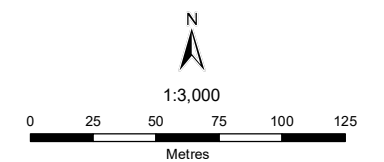
-  Water Flow Sample Location (Hemmera, 2018)
-  Water Quality Sample Location (Hemmera, 2018)
-  Bypass Culvert
-  Pathway #1 Approximate Direction of Flow
-  Pathway #2 Approximate Direction of Flow
-  City of Calgary Boundary
-  Natural Area
-  Transportation and Utility Corridor (TUC)
-  Wetland

**Notes**

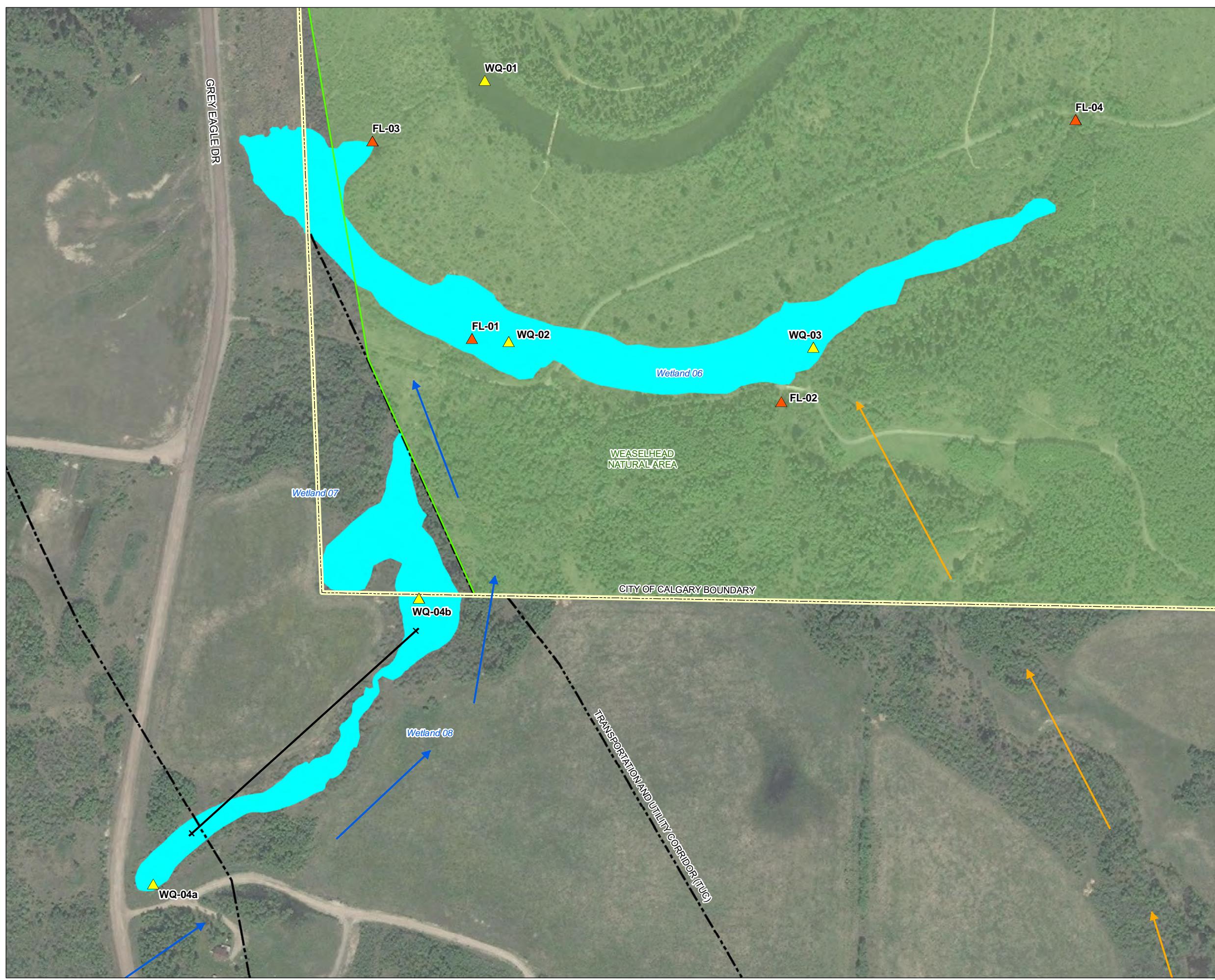
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2. This map is not intended to be a "stand-alone" document, but a visual aid of the information contained within the referenced Report. It is intended to be used in conjunction with the scope of services and limitations described therein.

**Sources**

- Aerial Image: ESRI World Imagery, 2016



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Page Size: 11" x 17"



# Appendix B

## Raw Spring Sampling Data

SWCRR Wetland 06 - Spring 2025 Monitoring Data Results

Project 102604-01

Report To Ausenco Sustainability Inc.

Bureau Veritas Job No. C548508

**ROUTINE WATER & DISS. REGULATED METALS (WATER)**

| Bureau Veritas ID                |       | DLW489           |          |          | DLW490           |          |          | DLW491           |          |          | DLW492           |          |          | DLW493           |          |          |
|----------------------------------|-------|------------------|----------|----------|------------------|----------|----------|------------------|----------|----------|------------------|----------|----------|------------------|----------|----------|
| Sampling Date                    |       | 2025/05/28 12:15 |          |          | 2025/05/28 10:15 |          |          | 2025/05/28 10:45 |          |          | 2025/05/28 13:00 |          |          | 2025/05/28 13:30 |          |          |
| COC Number                       |       | 1/1              |          |          | 1/1              |          |          | 1/1              |          |          | 1/1              |          |          | 1/1              |          |          |
|                                  | UNITS | WQ-3             | RDL      | QC Batch | WQ-5B            | RDL      | QC Batch | WQ-4B            | RDL      | QC Batch | WQ-6             | RDL      | QC Batch | WQ-7             | RDL      | QC Batch |
| <b>Calculated Parameters</b>     |       |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Anion Sum                        | meq/L | 18               | N/A      | B964476  | 13               | N/A      | B964476  | 8.8              | N/A      | B964476  | 11               | N/A      | B964476  | 11               | N/A      | B964476  |
| Cation Sum                       | meq/L | 17               | N/A      | B964476  | 13               | N/A      | B964476  | 9.0              | N/A      | B964476  | 12               | N/A      | B964476  | 11               | N/A      | B964476  |
| Hardness (CaCO3)                 | mg/L  | 760              | 0.50     | B964791  | 550              | 0.50     | B964791  | 350              | 0.50     | B964791  | 440              | 0.50     | B964791  | 420              | 0.50     | B964791  |
| Ion Balance (% Difference)       | %     | 1.5              | N/A      | B964473  | 0.43             | N/A      | B964473  | 0.98             | N/A      | B964473  | 0.78             | N/A      | B965049  | 0.55             | N/A      | B965049  |
| Nitrate (N)                      | mg/L  | <0.10            | 0.10     | B964371  | <0.050           | 0.050    | B965050  | 0.011            | 0.010    | B965050  | <0.010           | 0.010    | B965050  | <0.050           | 0.050    | B965050  |
| Nitrate (NO3)                    | mg/L  | <0.44            | 0.44     | B964792  | <0.22            | 0.22     | B964792  | 0.050            | 0.044    | B964792  | <0.044           | 0.044    | B964792  | <0.22            | 0.22     | B964792  |
| Nitrite (NO2)                    | mg/L  | <0.033           | 0.033    | B964792  | <0.033           | 0.033    | B964792  | <0.033           | 0.033    | B964792  | <0.033           | 0.033    | B964792  | <0.033           | 0.033    | B964792  |
| Calculated Total Dissolved Solid | mg/L  | 980              | 10       | B964502  | 650              | 10       | B964502  | 440              | 10       | B964502  | 600              | 10       | B964502  | 570              | 10       | B965051  |
| <b>Elements</b>                  |       |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Dissolved Cadmium (Cd)           | mg/L  | <0.000020        | 0.000020 | B964661  | <0.000020        | 0.000020 | B964661  | <0.000020        | 0.000020 | B964661  | <0.000020        | 0.000020 | B964661  | <0.000020        | 0.000020 | B964661  |
| <b>Misc. Inorganics</b>          |       |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Conductivity                     | uS/cm | 1500             | 2.0      | B969533  | 1100             | 2.0      | B969533  | 740              | 2.0      | B969533  | 970              | 2.0      | B969533  | 980              | 2.0      | B969533  |
| pH                               | pH    | 8.17             | N/A      | B969532  | 8.13             | N/A      | B969532  | 8.59             | N/A      | B969532  | 8.62             | N/A      | B969532  | 8.53             | N/A      | B969532  |
| <b>Anions</b>                    |       |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Alkalinity (PP as CaCO3)         | mg/L  | <1.0             | 1.0      | B969531  | <1.0             | 1.0      | B969531  | 13               | 1.0      | B969531  | 14               | 1.0      | B969531  | 9.7              | 1.0      | B969531  |
| Alkalinity (Total as CaCO3)      | mg/L  | 420              | 1.0      | B969531  | 490              | 1.0      | B969531  | 400              | 1.0      | B969531  | 350              | 1.0      | B969531  | 350              | 1.0      | B969531  |
| Bicarbonate (HCO3)               | mg/L  | 510              | 1.0      | B969531  | 600              | 1.0      | B969531  | 450              | 1.0      | B969531  | 390              | 1.0      | B969531  | 400              | 1.0      | B969531  |
| Carbonate (CO3)                  | mg/L  | <1.0             | 1.0      | B969531  | <1.0             | 1.0      | B969531  | 16               | 1.0      | B969531  | 16               | 1.0      | B969531  | 12               | 1.0      | B969531  |
| Hydroxide (OH)                   | mg/L  | <1.0             | 1.0      | B969531  | <1.0             | 1.0      | B969531  | <1.0             | 1.0      | B969531  | <1.0             | 1.0      | B969531  | <1.0             | 1.0      | B969531  |
| Chloride (Cl)                    | mg/L  | 25               | 1.0      | B966226  | 30               | 1.0      | B966226  | 6.5              | 1.0      | B966219  | 33               | 1.0      | B966226  | 33               | 1.0      | B966226  |
| Sulphate (SO4)                   | mg/L  | 410              | 5.0      | B966226  | 110              | 1.0      | B966226  | 31               | 1.0      | B966219  | 160              | 5.0      | B966226  | 150              | 5.0      | B966226  |
| <b>Nutrients</b>                 |       |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Nitrite (N)                      | mg/L  | <0.010           | 0.010    | B966229  | <0.010           | 0.010    | B966271  | <0.010           | 0.010    | B966271  | <0.010           | 0.010    | B966271  | <0.010           | 0.010    | B966229  |
| Nitrate plus Nitrite (N)         | mg/L  | <0.10 (1)        | 0.10     | B966229  | <0.050 (1)       | 0.050    | B966271  | 0.011            | 0.010    | B966271  | <0.010           | 0.010    | B966271  | <0.050 (1)       | 0.050    | B966229  |
| <b>Elements</b>                  |       |                  |          |          |                  |          |          |                  |          |          |                  |          |          |                  |          |          |
| Dissolved Aluminum (Al)          | mg/L  | <0.0030          | 0.0030   | B966576  | <0.0030          | 0.0030   | B966576  | <0.0030          | 0.0030   | B965686  | <0.0030          | 0.0030   | B965686  | <0.0030          | 0.0030   | B966576  |
| Dissolved Antimony (Sb)          | mg/L  | <0.00060         | 0.00060  | B966576  | <0.00060         | 0.00060  | B966576  | <0.00060         | 0.00060  | B965686  | <0.00060         | 0.00060  | B965686  | <0.00060         | 0.00060  | B966576  |
| Dissolved Arsenic (As)           | mg/L  | 0.0013           | 0.00020  | B966576  | 0.0025           | 0.00020  | B966576  | 0.00055          | 0.00020  | B965686  | 0.0013           | 0.00020  | B965686  | 0.0012           | 0.00020  | B966576  |
| Dissolved Barium (Ba)            | mg/L  | 0.087            | 0.010    | B966353  | 0.30             | 0.010    | B966225  | 0.083            | 0.010    | B966225  | 0.10             | 0.010    | B966225  | 0.10             | 0.010    | B966353  |
| Dissolved Beryllium (Be)         | mg/L  | <0.0010          | 0.0010   | B966576  | <0.0010          | 0.0010   | B966576  | <0.0010          | 0.0010   | B965686  | <0.0010          | 0.0010   | B965686  | <0.0010          | 0.0010   | B966576  |
| Dissolved Boron (B)              | mg/L  | 0.087            | 0.020    | B966353  | 0.056            | 0.020    | B966225  | 0.071            | 0.020    | B966225  | 0.070            | 0.020    | B966225  | 0.063            | 0.020    | B966353  |
| Dissolved Calcium (Ca)           | mg/L  | 170              | 0.30     | B966353  | 91               | 0.30     | B966225  | 68               | 0.30     | B966225  | 61               | 0.30     | B966225  | 55               | 0.30     | B966353  |
| Dissolved Chromium (Cr)          | mg/L  | <0.0010          | 0.0010   | B966576  | <0.0010          | 0.0010   | B966576  | <0.0010          | 0.0010   | B965686  | <0.0010          | 0.0010   | B965686  | <0.0010          | 0.0010   | B966576  |
| Dissolved Cobalt (Co)            | mg/L  | <0.00030         | 0.00030  | B966576  | 0.00064          | 0.00030  | B966576  | <0.00030         | 0.00030  | B965686  | <0.00030         | 0.00030  | B965686  | <0.00030         | 0.00030  | B966576  |
| Dissolved Copper (Cu)            | mg/L  | <0.0010          | 0.0010   | B966576  | <0.0010          | 0.0010   | B966576  | <0.0010          | 0.0010   | B965686  | 0.0010           | 0.0010   | B965686  | 0.0016           | 0.0010   | B966576  |
| Dissolved Iron (Fe)              | mg/L  | <0.060           | 0.060    | B966353  | <0.060           | 0.060    | B966225  | <0.060           | 0.060    | B966225  | <0.060           | 0.060    | B966225  | <0.060           | 0.060    | B966353  |
| Dissolved Lead (Pb)              | mg/L  | <0.00020         | 0.00020  | B966576  | <0.00020         | 0.00020  | B966576  | <0.00020         | 0.00020  | B965686  | <0.00020         | 0.00020  | B965686  | <0.00020         | 0.00020  | B966576  |
| Dissolved Lithium (Li)           | mg/L  | 0.038            | 0.020    | B966353  | <0.020           | 0.020    | B966225  | <0.020           | 0.020    | B966225  | 0.028            | 0.020    | B966225  | 0.029            | 0.020    | B966353  |
| Dissolved Magnesium (Mg)         | mg/L  | 84               | 0.20     | B966353  | 79               | 0.20     | B966225  | 43               | 0.20     | B966225  | 70               | 0.20     | B966225  | 68               | 0.20     | B966353  |

|                           |      |          |         |         |          |         |         |          |         |         |          |         |         |          |         |         |
|---------------------------|------|----------|---------|---------|----------|---------|---------|----------|---------|---------|----------|---------|---------|----------|---------|---------|
| Dissolved Manganese (Mn)  | mg/L | 0.092    | 0.0040  | B966353 | 0.32     | 0.0040  | B966225 | 0.011    | 0.0040  | B966225 | 0.0051   | 0.0040  | B966225 | 0.0044   | 0.0040  | B966353 |
| Dissolved Molybdenum (Mo) | mg/L | 0.0066   | 0.00020 | B966576 | 0.0023   | 0.00020 | B966576 | 0.00087  | 0.00020 | B965686 | 0.0031   | 0.00020 | B965686 | 0.0033   | 0.00020 | B966576 |
| Dissolved Nickel (Ni)     | mg/L | 0.0017   | 0.00050 | B966576 | 0.0024   | 0.00050 | B966576 | <0.00050 | 0.00050 | B965686 | 0.0015   | 0.00050 | B965686 | 0.0024   | 0.00050 | B966576 |
| Dissolved Phosphorus (P)  | mg/L | <0.10    | 0.10    | B966353 | <0.10    | 0.10    | B966225 | <0.10    | 0.10    | B966225 | <0.10    | 0.10    | B966225 | <0.10    | 0.10    | B966353 |
| Dissolved Potassium (K)   | mg/L | 10       | 0.30    | B966353 | 5.2      | 0.30    | B966225 | 3.3      | 0.30    | B966225 | 3.7      | 0.30    | B966225 | 3.4      | 0.30    | B966353 |
| Dissolved Selenium (Se)   | mg/L | 0.0038   | 0.00020 | B966576 | 0.0015   | 0.00020 | B966576 | 0.00063  | 0.00020 | B965686 | 0.0012   | 0.00020 | B965686 | 0.0010   | 0.00020 | B966576 |
| Dissolved Silicon (Si)    | mg/L | 4.5      | 0.50    | B966353 | 2.3      | 0.50    | B966225 | 6.0      | 0.50    | B966225 | 0.55     | 0.50    | B966225 | 0.53     | 0.50    | B966353 |
| Dissolved Silver (Ag)     | mg/L | <0.00010 | 0.00010 | B966576 | <0.00010 | 0.00010 | B966576 | <0.00010 | 0.00010 | B965686 | <0.00010 | 0.00010 | B965686 | <0.00010 | 0.00010 | B966576 |
| Dissolved Sodium (Na)     | mg/L | 36       | 0.50    | B966353 | 40       | 0.50    | B966225 | 45       | 0.50    | B966225 | 61       | 0.50    | B966225 | 54       | 0.50    | B966353 |
| Dissolved Strontium (Sr)  | mg/L | 1.1      | 0.020   | B966353 | 0.73     | 0.020   | B966225 | 0.71     | 0.020   | B966225 | 0.81     | 0.020   | B966225 | 0.82     | 0.020   | B966353 |
| Dissolved Sulphur (S)     | mg/L | 150      | 0.20    | B966353 | 35       | 0.20    | B966225 | 9.9      | 0.20    | B966225 | 55       | 0.20    | B966225 | 57       | 0.20    | B966353 |
| Dissolved Thallium (Tl)   | mg/L | <0.00020 | 0.00020 | B966576 | <0.00020 | 0.00020 | B966576 | <0.00020 | 0.00020 | B965686 | <0.00020 | 0.00020 | B965686 | <0.00020 | 0.00020 | B966576 |
| Dissolved Tin (Sn)        | mg/L | <0.0010  | 0.0010  | B966576 | <0.0010  | 0.0010  | B966576 | <0.0010  | 0.0010  | B965686 | <0.0010  | 0.0010  | B965686 | <0.0010  | 0.0010  | B966576 |
| Dissolved Titanium (Ti)   | mg/L | <0.0010  | 0.0010  | B966576 | <0.0010  | 0.0010  | B966576 | <0.0010  | 0.0010  | B965686 | <0.0010  | 0.0010  | B965686 | <0.0010  | 0.0010  | B966576 |
| Dissolved Uranium (U)     | mg/L | 0.017    | 0.00010 | B966576 | 0.0070   | 0.00010 | B966576 | 0.0019   | 0.00010 | B965686 | 0.0087   | 0.00010 | B965686 | 0.0075   | 0.00010 | B966576 |
| Dissolved Vanadium (V)    | mg/L | <0.0010  | 0.0010  | B966576 | <0.0010  | 0.0010  | B966576 | <0.0010  | 0.0010  | B965686 | <0.0010  | 0.0010  | B965686 | <0.0010  | 0.0010  | B966576 |
| Dissolved Zinc (Zn)       | mg/L | <0.0030  | 0.0030  | B966576 | <0.0030  | 0.0030  | B966576 | 0.045    | 0.0030  | B965686 | <0.0030  | 0.0030  | B965686 | <0.0030  | 0.0030  | B966576 |

RDL = Reportable Detection Limit

N/A = Not Applicable

(1) Detection limits raised due to matrix interference.

Results relate only to the items tested.

**RESULTS OF CHEMICAL ANALYSES OF WATER**

| Bureau Veritas ID          |       | DLW489           |        | DLW490           |        | DLW491           |          | DLW492           |          | DLW493           |        |          |
|----------------------------|-------|------------------|--------|------------------|--------|------------------|----------|------------------|----------|------------------|--------|----------|
| Sampling Date              |       | 2025/05/28 12:15 |        | 2025/05/28 10:15 |        | 2025/05/28 10:45 |          | 2025/05/28 13:00 |          | 2025/05/28 13:30 |        |          |
| COC Number                 |       | 1/1              |        | 1/1              |        | 1/1              |          | 1/1              |          | 1/1              |        |          |
|                            | UNITS | WQ-3             | RDL    | WQ-5B            | RDL    | WQ-4B            | QC Batch | WQ-6             | QC Batch | WQ-7             | RDL    | QC Batch |
| <b>Demand Parameters</b>   |       |                  |        |                  |        |                  |          |                  |          |                  |        |          |
| Biochemical Oxygen Demand  | mg/L  | <2.0             | 2.0    | <2.0             | 2.0    | <2.0             | B965456  | <2.0             | B965456  | <2.0             | 2.0    | B965456  |
| Chemical Oxygen Demand     | mg/L  | 43               | 10     | 49               | 10     | 25               | B971612  | 37               | B971612  | 36               | 10     | B971612  |
| <b>Misc. Inorganics</b>    |       |                  |        |                  |        |                  |          |                  |          |                  |        |          |
| Dissolved Oxygen (O2)      | mg/L  | 6.5              | 0.10   | 5.0              | 0.10   | 8.8              | B965363  | 8.6              | B965363  | 10               | 0.10   | B965363  |
| Total Dissolved Solids     | mg/L  | 1000             | 10     | 600              | 10     | 420              | B968834  | 560              | B968834  | 550              | 10     | B968834  |
| Total Suspended Solids     | mg/L  | 1.4              | 1.0    | 840 (1)          | 3.0    | 220              | B969637  | 1.5              | B969637  | 10               | 1.0    | B969637  |
| <b>Nutrients</b>           |       |                  |        |                  |        |                  |          |                  |          |                  |        |          |
| Total Ammonia (N)          | mg/L  | 0.17             | 0.015  | 0.036            | 0.015  | <0.015           | B970182  | <0.015           | B970182  | <0.015           | 0.015  | B970182  |
| Orthophosphate (P)         | mg/L  | 0.013            | 0.0030 | <0.0030          | 0.0030 | 0.0037           | B966186  | <0.0030          | B966186  | <0.0030          | 0.0030 | B966186  |
| Dissolved Phosphorus (P)   | mg/L  | 0.025            | 0.0030 | 0.0048           | 0.0030 | 0.0042           | B966410  | 0.0067           | B966362  | 0.0065           | 0.0030 | B966410  |
| Total Phosphorus (P)       | mg/L  | 0.043            | 0.0030 | 0.087            | 0.0030 | 0.030            | B967850  | 0.015            | B967850  | 0.016            | 0.0030 | B970505  |
| <b>Physical Properties</b> |       |                  |        |                  |        |                  |          |                  |          |                  |        |          |
| Turbidity                  | NTU   | 0.16             | 0.10   | 430              | 0.10   | 67               | B965556  | 0.16             | B965556  | 3.6              | 0.10   | B965556  |

RDL = Reportable Detection Limit

(1) Detection limit raised based on sample volume used for analysis.

Results relate only to the items tested.

**TOTAL KJELDAHL NITROGEN (TOTAL)**

|                                    |              |                  |            |                  |            |                  |                  |            |                 |                  |            |                 |
|------------------------------------|--------------|------------------|------------|------------------|------------|------------------|------------------|------------|-----------------|------------------|------------|-----------------|
| Bureau Veritas ID                  |              | DLW489           |            | DLW490           |            | DLW491           | DLW492           |            |                 | DLW493           |            |                 |
| Sampling Date                      |              | 2025/05/28 12:15 |            | 2025/05/28 10:15 |            | 2025/05/28 10:45 | 2025/05/28 13:00 |            |                 | 2025/05/28 13:30 |            |                 |
| COC Number                         |              | 1/1              |            | 1/1              |            | 1/1              | 1/1              |            |                 | 1/1              |            |                 |
|                                    | <b>UNITS</b> | <b>WQ-3</b>      | <b>RDL</b> | <b>WQ-5B</b>     | <b>RDL</b> | <b>WQ-4B</b>     | <b>WQ-6</b>      | <b>RDL</b> | <b>QC Batch</b> | <b>WQ-7</b>      | <b>RDL</b> | <b>QC Batch</b> |
| <b>Calculated Parameters</b>       |              |                  |            |                  |            |                  |                  |            |                 |                  |            |                 |
| Total Total Kjeldahl Nitrogen (Ca) | mg/L         | 1.1              | 0.10       | 1.0              | 0.050      | 0.48             | 0.82             | 0.020      | B964879         | 0.90             | 0.050      | B964879         |
| <b>Nutrients</b>                   |              |                  |            |                  |            |                  |                  |            |                 |                  |            |                 |
| Total Nitrogen (N)                 | mg/L         | 1.1              | 0.020      | 1.0              | 0.020      | 0.49             | 0.82             | 0.020      | B967652         | 0.90             | 0.020      | B970178         |

RDL = Reportable Detection Limit

**Results relate only to the items tested.**

**In-Situ Water Quality Parameters**

| Site     | Date Sampled | Time Sampled | Depth (m) | Temp (C) | Dissolved Oxygen (mg/l) | Dissolved Oxygen (%) | Specific Conductivity (µS/cm) | pH   | ORP          | Turbidity | Status                                 |
|----------|--------------|--------------|-----------|----------|-------------------------|----------------------|-------------------------------|------|--------------|-----------|--|
| WQ-01    | 28/05/2025   | -            | -         | -        | -                       | -                    | -                             | -    | not recorded | -         | Dry                                    |
| WQ-02    | 28/05/2025   | -            | -         | -        | -                       | -                    | -                             | -    | not recorded | -         | Dry                                    |
| WQ-03    | 28/05/2025   | 12:15        | 0.25      | 14.6     | 8.20                    | 81.03                | 1422.00                       | 8.07 | not recorded | 2.91      | Wet                                    |
| WQ-04A   | 28/05/2025   | -            | -         | -        | -                       | -                    | -                             | -    | not recorded | -         | Dry                                    |
| WQ-04B   | 28/05/2025   | 10:45        | 0.15      | 11.1     | 9.98                    | 90.98                | 864.00                        | 9.14 | not recorded | 9.85      | Wet                                    |
| WQ-04C*  | 28/05/2025   | n/a          | n/a       | n/a      | n/a                     | n/a                  | n/a                           | n/a  | not recorded | n/a       | Not sampled in 2025                    |
| WQ-04D*  | 28/05/2025   | n/a          | n/a       | n/a      | n/a                     | n/a                  | n/a                           | n/a  | not recorded | n/a       | Not sampled in 2025                    |
| WQ-05A   | 28/05/2025   | -            | -         | -        | -                       | -                    | -                             | -    | not recorded | -         | Dry                                    |
| WQ-05B   | 28/05/2025   | 10:15        | 0.10      | 17.2     | 2.36                    | 24.61                | 1188.00                       | 7.96 | not recorded | 79.70     | Dam present with fresh beaver activity |
| WQ-05C** | 28/05/2025   | n/a          | n/a       | n/a      | n/a                     | n/a                  | n/a                           | n/a  | not recorded | n/a       | Permanently dry                        |
| WQ-06    | 28/05/2025   | 13:00        | 0.25      | 21.7     | 10.90                   | 124.43               | 1036.00                       | 9.29 | not recorded | 4.80      | Wet                                    |
| WQ-07    | 28/05/2025   | 13:30        | 0.20      | 22.0     | 10.1                    | 115.96               | 1021.00                       | 9.14 | not recorded | 6.00      | Wet                                    |

(-)= null result due to site being dry

(\*) = site was removed from 2025 sampling program per recommendation in 2024 Annual Report

(\*\*) = site has been encompassed by the construction area and is permanently dry

**Flow Data**

| Site  | Date Sampled | Time Sampled | Channel Width (m) | Depth*(m) |       |      | Velocity* (m/sec) |      |      | Discharge (m3/sec) | Comments   |
|-------|--------------|--------------|-------------------|-----------|-------|------|-------------------|------|------|--------------------|--|
|       |              |              |                   | LMID      | MID   | RMID | LMID              | MID  | RMID |                    |  |
| FL-01 | 27/06/2025   | 11:15        | 0                 | -         | 0.051 | -    | -                 | 0.05 | -    | -                  | low flow present   |
| FL-02 | 27/06/2025   | 12:00        | 13                | 0.50      | 1.50  | 0.50 | 0.01              | 0.01 | 0.01 | -                  | Water is ponded at bridge; no flow travelling downstream |
| FL-03 | 27/06/2025   | 11:00        | -                 | -         | -     | -    | -                 | -    | -    | -                  | Wetted ground, no flow                                   |
| FL-04 | 27/06/2025   | 10:15        | -                 | -         | -     | -    | -                 | -    | -    | -                  | Dry  |

\* RMID= right mid channel, MID= mid channel, LMID= left mid channel

(-)= null result

**Transect Data**

| Site | Date Sampled | Time Sampled | Wetted Width (m) | Comments  |
|------|--------------|--------------|------------------|---|
| T1-1 | 27/06/2025   | 11:40        | 0                | Small pockets of standing water                           |
| T1-2 | 27/06/2025   | 11:42        | 0                | Dry   |
| T1-3 | 27/06/2025   | 11:50        | 2.5              | Multiple wetted channels with widths ranging from 1-2.5 m |
| T1-4 | 27/06/2025   | 11:55        | 2.0              | Multiple wetted channels with widths ranging from 1-2.5 m |
| T2-1 | 27/06/2025   | -            | 0                | Dry   |
| T2-2 | 27/06/2025   | -            | 0                | Dry   |
| T2-3 | 27/06/2025   | -            | 0                | Dry   |
| T3-4 | 27/06/2025   | -            | 0                | Dry   |

# Appendix C

## Raw Fall Sampling Data



Your Project #: 102604-01  
 Your C.O.C. #: 768446-01-01

**Attention: Cameron Davis**

AUSENCO SUSTAINABILITY ULC  
 Suite 1430, 401-9 Avenue  
 CALGARY, AB  
 CANADA T2P 3C5

**Report Date: 2025/10/22**  
 Report #: R3724242  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C586762**

**Received: 2025/10/16, 14:25**

Sample Matrix: Water  
 # Samples Received: 5

| Analyses                                    | Quantity | Date       | Date       | Laboratory Method | Analytical Method    |
|---|----------|------------|------------|-------------------|----------------------|
|   |          | Extracted  | Analyzed   |                   |                      |
| Alkalinity @25C (pp, total), CO3,HCO3,OH    | 2        | N/A        | 2025/10/20 | AB SOP-00005      | SM 24 2320 B m       |
| Alkalinity @25C (pp, total), CO3,HCO3,OH    | 3        | N/A        | 2025/10/21 | AB SOP-00005      | SM 24 2320 B m       |
| Biochemical Oxygen Demand                   | 5        | 2025/10/17 | 2025/10/22 | AB SOP-00017      | SM 24 5210B m        |
| Cadmium - low level CCME - Dissolved        | 4        | N/A        | 2025/10/21 |                   | Auto Calc            |
| Cadmium - low level CCME - Dissolved        | 1        | N/A        | 2025/10/22 |                   | Auto Calc            |
| Chloride/Sulphate by Auto Colourimetry      | 3        | N/A        | 2025/10/20 | AB SOP-00020      | SM24-4500-Cl/SO4-E m |
| Chloride/Sulphate by Auto Colourimetry      | 2        | N/A        | 2025/10/21 | AB SOP-00020      | SM24-4500-Cl/SO4-E m |
| COD by Colorimeter                          | 5        | N/A        | 2025/10/20 | AB SOP-00016      | SM 24 5220D m        |
| Oxygen (Dissolved) (1)                      | 5        | N/A        | 2025/10/18 | AB SOP-00017      | SM 24 4500-O G m     |
| Conductivity @25C                           | 2        | N/A        | 2025/10/20 | AB SOP-00005      | SM 24 2510 B m       |
| Conductivity @25C                           | 3        | N/A        | 2025/10/21 | AB SOP-00005      | SM 24 2510 B m       |
| Hardness                                    | 5        | N/A        | 2025/10/20 |                   | Auto Calc            |
| Elements by ICP - Dissolved (2)             | 5        | N/A        | 2025/10/19 | AB SOP-00042      | EPA 6010d R5 m       |
| Elements by ICPMS - Dissolved (2)           | 4        | N/A        | 2025/10/20 | AB SOP-00043      | EPA 6020b R2 m       |
| Elements by ICPMS - Dissolved (2)           | 1        | N/A        | 2025/10/22 | AB SOP-00043      | EPA 6020b R2 m       |
| Ion Balance                                 | 5        | N/A        | 2025/10/21 |                   | Auto Calc            |
| Sum of cations, anions                      | 5        | N/A        | 2025/10/20 |                   | Auto Calc            |
| Ammonia-N (Total)                           | 5        | N/A        | 2025/10/21 | AB SOP-00007      | SM 24 4500 NH3 A G m |
| Nitrate and Nitrite                         | 5        | N/A        | 2025/10/18 |                   | Auto Calc            |
| NO2 (N); NO2 (N) + NO3 (N) in Water         | 5        | N/A        | 2025/10/18 | AB SOP-00091      | SM 24 4500 NO3m      |
| Nitrate (as N)                              | 5        | 2025/10/16 | 2025/10/18 |                   | Auto Calc            |
| pH @25°C (3)                                | 2        | N/A        | 2025/10/20 | AB SOP-00005      | SM 24 4500-H+B m     |
| pH @25°C (3)                                | 3        | N/A        | 2025/10/21 | AB SOP-00005      | SM 24 4500-H+B m     |
| Orthophosphate by Automated Analyzer (4)    | 5        | N/A        | 2025/10/18 | AB SOP-00025      | SM 24 4500-P A,B,F m |
| Total Dissolved Solids (Filt. Residue)      | 5        | 2025/10/18 | 2025/10/19 | AB SOP-00065      | SM 24 2540 C m       |
| Total Dissolved Solids (Calculated)         | 5        | N/A        | 2025/10/21 |                   | Auto Calc            |
| Total Kjeldahl Nitrogen (Total)             | 5        | N/A        | 2025/10/21 |                   | Auto Calc            |
| Nitrogen (Total)                            | 4        | 2025/10/19 | 2025/10/20 | AB SOP-00093      | SM 24 4500-N C m     |
| Nitrogen (Total)                            | 1        | 2025/10/19 | 2025/10/21 | AB SOP-00093      | SM 24 4500-N C m     |
| Total Phosphorus Dissolved client FF/FP (5) | 5        | 2025/10/19 | 2025/10/20 | AB SOP-00024      | SM 24 4500-P A,B,F m |
| Total Phosphorus                            | 5        | 2025/10/19 | 2025/10/20 | AB SOP-00024      | SM 24 4500-P A,B,F m |
| Total Suspended Solids (NFR)                | 3        | 2025/10/17 | 2025/10/17 | AB SOP-00061      | SM 24 2540 D m       |



Your Project #: 102604-01  
Your C.O.C. #: 768446-01-01

**Attention: Cameron Davis**

AUSENCO SUSTAINABILITY ULC  
Suite 1430, 401-9 Avenue  
CALGARY, AB  
CANADA T2P 3C5

**Report Date: 2025/10/22**  
Report #: R3724242  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C586762**

**Received: 2025/10/16, 14:25**

Sample Matrix: Water  
# Samples Received: 5

| Analyses                     | Quantity | Date       | Date       | Laboratory Method | Analytical Method |
|------------------------------|----------|------------|------------|-------------------|-------------------|
|                              |          | Extracted  | Analyzed   |                   |                   |
| Total Suspended Solids (NFR) | 2        | 2025/10/18 | 2025/10/20 | AB SOP-00061      | SM 24 2540 D m    |
| Turbidity                    | 5        | N/A        | 2025/10/17 | CAL SOP-00081     | SM 24 2130 B m    |

**Remarks:**

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested. This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

- (1) The APHA Standard Method requires dissolved oxygen to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory dissolved oxygen analyses in this report are reported past the APHA Standard Method holding time. Bureau Veritas endeavors to analyze samples as soon as possible after receipt.
- (2) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
- (3) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.
- (4) Orthophosphate > Total Phosphorus Imbalance: When applicable, Orthophosphate, Total Phosphorus and dissolved Phosphorus results were reviewed and data quality meets acceptable levels unless otherwise noted.
- (5) Dissolved Phosphorus > Total Phosphorus Imbalance: When applicable, Dissolved Phosphorus and Total Phosphorus results were reviewed and data quality meets acceptable levels unless otherwise noted.



Your Project #: 102604-01  
Your C.O.C. #: 768446-01-01

**Attention: Cameron Davis**

AUSENCO SUSTAINABILITY ULC  
Suite 1430, 401-9 Avenue  
CALGARY, AB  
CANADA T2P 3C5

**Report Date: 2025/10/22**  
Report #: R3724242  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C586762**

**Received: 2025/10/16, 14:25**

Encryption Key



Bureau Veritas  
22 Oct 2025 17:52:59

Please direct all questions regarding this Certificate of Analysis to:  
Danielle Boisvert, Customer Solutions Representative  
Email: danielle-andrea.boisvert@bureauveritas.com  
Phone# (780)782-5528

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BUREAU  
VERITAS

Bureau Veritas Job #: C586762  
Report Date: 2025/10/22

AUSENCO SUSTAINABILITY ULC  
Client Project #: 102604-01  
Sampler Initials: CD

### ROUTINE WATER & DISS. REGULATED METALS (WATER)

| Bureau Veritas ID  |       | DVB609              |          | DVB610              |          | DVB611              |          |          |
|--|-------|---------------------|----------|---------------------|----------|---------------------|----------|----------|
| Sampling Date  |       | 2025/10/16<br>11:15 |          | 2025/10/16<br>13:00 |          | 2025/10/16<br>10:30 |          |          |
| COC Number   |       | 768446-01-01        |          | 768446-01-01        |          | 768446-01-01        |          |          |
|  | UNITS | WQ3                 | QC Batch | WQ4B                | QC Batch | WQ5B                | RDL      | QC Batch |
| <b>Calculated Parameters</b>                             |       |                     |          |                     |          |                     |          |          |
| Anion Sum  | meq/L | 14                  | C126832  | 9.1                 | C126832  | 14                  | N/A      | C126832  |
| Cation Sum   | meq/L | 14                  | C126832  | 8.9                 | C126832  | 13                  | N/A      | C126832  |
| Hardness (CaCO3)   | mg/L  | 600                 | C126764  | 350                 | C126764  | 580                 | 0.50     | C126935  |
| Ion Balance (% Difference)                               | %     | 0.34                | C126820  | 0.97                | C126820  | 0.54                | N/A      | C126820  |
| Nitrate (N)  | mg/L  | <0.040              | C126822  | 0.36                | C126822  | 0.53                | 0.040    | C126822  |
| Nitrate (NO3)  | mg/L  | <0.18               | C126773  | 1.6                 | C126773  | 2.3                 | 0.18     | C126773  |
| Nitrite (NO2)  | mg/L  | <0.13               | C126773  | <0.13               | C126773  | <0.13               | 0.13     | C126773  |
| Calculated Total Dissolved Solids                        | mg/L  | 690                 | C126826  | 460                 | C126826  | 680                 | 10       | C126826  |
| <b>Elements</b>  |       |                     |          |                     |          |                     |          |          |
| Dissolved Cadmium (Cd)                                   | mg/L  | <0.000020           | C125763  | <0.000020           | C125763  | <0.000020           | 0.000020 | C125763  |
| <b>Misc. Inorganics</b>                                  |       |                     |          |                     |          |                     |          |          |
| Conductivity   | uS/cm | 1200                | C130005  | 770                 | C130023  | 1200                | 2.0      | C130023  |
| pH   | pH    | 7.96                | C130004  | 8.45                | C130022  | 8.19                | N/A      | C130022  |
| <b>Anions</b>  |       |                     |          |                     |          |                     |          |          |
| Alkalinity (PP as CaCO3)                                 | mg/L  | <1.0                | C129999  | 13                  | C130021  | <1.0                | 1.0      | C130021  |
| Alkalinity (Total as CaCO3)                              | mg/L  | 580                 | C129999  | 370                 | C130021  | 520                 | 1.0      | C130021  |
| Bicarbonate (HCO3)                                       | mg/L  | 710                 | C129999  | 420                 | C130021  | 640                 | 1.0      | C130021  |
| Carbonate (CO3)  | mg/L  | <1.0                | C129999  | 16                  | C130021  | <1.0                | 1.0      | C130021  |
| Hydroxide (OH)   | mg/L  | <1.0                | C129999  | <1.0                | C130021  | <1.0                | 1.0      | C130021  |
| Chloride (Cl)  | mg/L  | 29                  | C130217  | 13                  | C130153  | 39                  | 1.0      | C130217  |
| Sulphate (SO4)   | mg/L  | 73                  | C130217  | 58                  | C130153  | 99                  | 1.0      | C130217  |
| <b>Nutrients</b>   |       |                     |          |                     |          |                     |          |          |
| Nitrite (N)  | mg/L  | <0.040              | C128569  | <0.040              | C128571  | <0.040              | 0.040    | C128569  |
| Nitrate plus Nitrite (N)                                 | mg/L  | <0.040              | C128569  | 0.36                | C128571  | 0.53                | 0.040    | C128569  |
| <b>Elements</b>  |       |                     |          |                     |          |                     |          |          |
| Dissolved Aluminum (Al)                                  | mg/L  | <0.0030             | C133044  | <0.0030             | C129605  | <0.0030             | 0.0030   | C129605  |
| Dissolved Antimony (Sb)                                  | mg/L  | <0.00060            | C133044  | <0.00060            | C129605  | <0.00060            | 0.00060  | C129605  |
| Dissolved Arsenic (As)                                   | mg/L  | 0.0023              | C133044  | <0.00020            | C129605  | 0.00046             | 0.00020  | C129605  |
| Dissolved Barium (Ba)                                    | mg/L  | 0.19                | C129428  | 0.072               | C129428  | 0.16                | 0.010    | C129428  |
| Dissolved Beryllium (Be)                                 | mg/L  | <0.0010             | C133044  | <0.0010             | C129605  | <0.0010             | 0.0010   | C129605  |
| Dissolved Boron (B)                                      | mg/L  | 0.037               | C129428  | 0.033               | C129428  | 0.026               | 0.020    | C129428  |
| RDL = Reportable Detection Limit<br>N/A = Not Applicable |       |                     |          |                     |          |                     |          |          |



BUREAU  
VERITAS

Bureau Veritas Job #: C586762  
Report Date: 2025/10/22

AUSENCO SUSTAINABILITY ULC  
Client Project #: 102604-01  
Sampler Initials: CD

### ROUTINE WATER & DISS. REGULATED METALS (WATER)

| Bureau Veritas ID                |       | DVB609              |          | DVB610              |          | DVB611              |         |          |
|----------------------------------|-------|---------------------|----------|---------------------|----------|---------------------|---------|----------|
| Sampling Date                    |       | 2025/10/16<br>11:15 |          | 2025/10/16<br>13:00 |          | 2025/10/16<br>10:30 |         |          |
| COC Number                       |       | 768446-01-01        |          | 768446-01-01        |          | 768446-01-01        |         |          |
|                                  | UNITS | WQ3                 | QC Batch | WQ4B                | QC Batch | WQ5B                | RDL     | QC Batch |
| Dissolved Calcium (Ca)           | mg/L  | 130                 | C129428  | 69                  | C129428  | 110                 | 0.30    | C129428  |
| Dissolved Chromium (Cr)          | mg/L  | <0.0010             | C133044  | <0.0010             | C129605  | <0.0010             | 0.0010  | C129605  |
| Dissolved Cobalt (Co)            | mg/L  | 0.00084             | C133044  | <0.00030            | C129605  | <0.00030            | 0.00030 | C129605  |
| Dissolved Copper (Cu)            | mg/L  | 0.0020              | C133044  | <0.0010             | C129605  | 0.0016              | 0.0010  | C129605  |
| Dissolved Iron (Fe)              | mg/L  | 0.19                | C129428  | <0.060              | C129428  | <0.060              | 0.060   | C129428  |
| Dissolved Lead (Pb)              | mg/L  | <0.00020            | C133044  | <0.00020            | C129605  | <0.00020            | 0.00020 | C129605  |
| Dissolved Lithium (Li)           | mg/L  | 0.026               | C129428  | 0.020               | C129428  | 0.025               | 0.020   | C129428  |
| Dissolved Magnesium (Mg)         | mg/L  | 69                  | C129428  | 42                  | C129428  | 75                  | 0.20    | C129428  |
| Dissolved Manganese (Mn)         | mg/L  | 0.59                | C129428  | <0.0040             | C129428  | 0.011               | 0.0040  | C129428  |
| Dissolved Molybdenum (Mo)        | mg/L  | 0.0031              | C133044  | 0.0021              | C129605  | 0.0042              | 0.00020 | C129605  |
| Dissolved Nickel (Ni)            | mg/L  | 0.0024              | C133044  | <0.00050            | C129605  | 0.0013              | 0.00050 | C129605  |
| Dissolved Phosphorus (P)         | mg/L  | <0.10               | C129428  | <0.10               | C129428  | <0.10               | 0.10    | C129428  |
| Dissolved Potassium (K)          | mg/L  | 7.7                 | C129428  | 4.0                 | C129428  | 5.3                 | 0.30    | C129428  |
| Dissolved Selenium (Se)          | mg/L  | 0.00038             | C133044  | 0.0014              | C129605  | 0.0063              | 0.00020 | C129605  |
| Dissolved Silicon (Si)           | mg/L  | 6.5                 | C129428  | 4.5                 | C129428  | 7.2                 | 0.50    | C129428  |
| Dissolved Silver (Ag)            | mg/L  | <0.00010            | C133044  | <0.00010            | C129605  | <0.00010            | 0.00010 | C129605  |
| Dissolved Sodium (Na)            | mg/L  | 38                  | C129428  | 43                  | C129428  | 43                  | 0.50    | C129428  |
| Dissolved Strontium (Sr)         | mg/L  | 0.87                | C129428  | 0.69                | C129428  | 0.95                | 0.020   | C129428  |
| Dissolved Sulphur (S)            | mg/L  | 22                  | C129428  | 19                  | C129428  | 34                  | 0.20    | C129428  |
| Dissolved Thallium (Tl)          | mg/L  | <0.00020            | C133044  | <0.00020            | C129605  | <0.00020            | 0.00020 | C129605  |
| Dissolved Tin (Sn)               | mg/L  | <0.0010             | C133044  | <0.0010             | C129605  | <0.0010             | 0.0010  | C129605  |
| Dissolved Titanium (Ti)          | mg/L  | <0.0010             | C133044  | <0.0010             | C129605  | <0.0010             | 0.0010  | C129605  |
| Dissolved Uranium (U)            | mg/L  | 0.0081              | C133044  | 0.0036              | C129605  | 0.014               | 0.00010 | C129605  |
| Dissolved Vanadium (V)           | mg/L  | <0.0010             | C133044  | <0.0010             | C129605  | <0.0010             | 0.0010  | C129605  |
| Dissolved Zinc (Zn)              | mg/L  | <0.0030             | C133044  | 0.017               | C129605  | <0.0030             | 0.0030  | C129605  |
| RDL = Reportable Detection Limit |       |                     |          |                     |          |                     |         |          |



**ROUTINE WATER & DISS. REGULATED METALS (WATER)**

| Bureau Veritas ID  |       | DVB612              |          | DVB613              |          |          |
|--|-------|---------------------|----------|---------------------|----------|----------|
| Sampling Date  |       | 2025/10/16<br>12:00 |          | 2025/10/16<br>12:30 |          |          |
| COC Number   |       | 768446-01-01        |          | 768446-01-01        |          |          |
|  | UNITS | WQ6                 | QC Batch | WQ7                 | RDL      | QC Batch |
| <b>Calculated Parameters</b>                             |       |                     |          |                     |          |          |
| Anion Sum  | meq/L | 9.4                 | C126832  | 9.2                 | N/A      | C126832  |
| Cation Sum   | meq/L | 9.0                 | C126832  | 9.2                 | N/A      | C126832  |
| Hardness (CaCO3)   | mg/L  | 350                 | C126935  | 360                 | 0.50     | C126935  |
| Ion Balance (% Difference)                               | %     | 2.3                 | C126820  | 0.091               | N/A      | C126820  |
| Nitrate (N)  | mg/L  | 0.090               | C126822  | 0.084               | 0.040    | C126822  |
| Nitrate (NO3)  | mg/L  | 0.40                | C126773  | 0.37                | 0.18     | C126773  |
| Nitrite (NO2)  | mg/L  | <0.13               | C126773  | <0.13               | 0.13     | C126773  |
| Calculated Total Dissolved Solids                        | mg/L  | 460                 | C126826  | 460                 | 10       | C126826  |
| <b>Elements</b>  |       |                     |          |                     |          |          |
| Dissolved Cadmium (Cd)                                   | mg/L  | <0.000020           | C125763  | <0.000020           | 0.000020 | C125763  |
| <b>Misc. Inorganics</b>                                  |       |                     |          |                     |          |          |
| Conductivity   | uS/cm | 810                 | C130005  | 780                 | 2.0      | C130023  |
| pH   | pH    | 8.33                | C130004  | 8.39                | N/A      | C130022  |
| <b>Anions</b>  |       |                     |          |                     |          |          |
| Alkalinity (PP as CaCO3)                                 | mg/L  | 5.9                 | C129999  | 10                  | 1.0      | C130021  |
| Alkalinity (Total as CaCO3)                              | mg/L  | 390                 | C129999  | 380                 | 1.0      | C130021  |
| Bicarbonate (HCO3)                                       | mg/L  | 460                 | C129999  | 430                 | 1.0      | C130021  |
| Carbonate (CO3)  | mg/L  | 7.1                 | C129999  | 13                  | 1.0      | C130021  |
| Hydroxide (OH)   | mg/L  | <1.0                | C129999  | <1.0                | 1.0      | C130021  |
| Chloride (Cl)  | mg/L  | 19                  | C130217  | 18                  | 1.0      | C130153  |
| Sulphate (SO4)   | mg/L  | 56                  | C130217  | 55                  | 1.0      | C130153  |
| <b>Nutrients</b>   |       |                     |          |                     |          |          |
| Nitrite (N)  | mg/L  | <0.040              | C128569  | <0.040              | 0.040    | C128571  |
| Nitrate plus Nitrite (N)                                 | mg/L  | 0.090               | C128569  | 0.084               | 0.040    | C128571  |
| <b>Elements</b>  |       |                     |          |                     |          |          |
| Dissolved Aluminum (Al)                                  | mg/L  | 0.0033              | C129601  | <0.0030             | 0.0030   | C129605  |
| Dissolved Antimony (Sb)                                  | mg/L  | <0.00060            | C129601  | <0.00060            | 0.00060  | C129605  |
| Dissolved Arsenic (As)                                   | mg/L  | 0.00031             | C129601  | 0.00033             | 0.00020  | C129605  |
| Dissolved Barium (Ba)                                    | mg/L  | 0.069               | C129428  | 0.075               | 0.010    | C129428  |
| Dissolved Beryllium (Be)                                 | mg/L  | <0.0010             | C129601  | <0.0010             | 0.0010   | C129605  |
| Dissolved Boron (B)                                      | mg/L  | 0.026               | C129428  | 0.032               | 0.020    | C129428  |
| RDL = Reportable Detection Limit<br>N/A = Not Applicable |       |                     |          |                     |          |          |



**ROUTINE WATER & DISS. REGULATED METALS (WATER)**

| Bureau Veritas ID                |       | DVB612              |          | DVB613              |         |          |
|----------------------------------|-------|---------------------|----------|---------------------|---------|----------|
| Sampling Date                    |       | 2025/10/16<br>12:00 |          | 2025/10/16<br>12:30 |         |          |
| COC Number                       |       | 768446-01-01        |          | 768446-01-01        |         |          |
|                                  | UNITS | WQ6                 | QC Batch | WQ7                 | RDL     | QC Batch |
| Dissolved Calcium (Ca)           | mg/L  | 66                  | C129428  | 67                  | 0.30    | C129428  |
| Dissolved Chromium (Cr)          | mg/L  | <0.0010             | C129601  | <0.0010             | 0.0010  | C129605  |
| Dissolved Cobalt (Co)            | mg/L  | <0.00030            | C129601  | <0.00030            | 0.00030 | C129605  |
| Dissolved Copper (Cu)            | mg/L  | <0.0010             | C129601  | <0.0010             | 0.0010  | C129605  |
| Dissolved Iron (Fe)              | mg/L  | <0.060              | C129428  | <0.060              | 0.060   | C129428  |
| Dissolved Lead (Pb)              | mg/L  | <0.00020            | C129601  | <0.00020            | 0.00020 | C129605  |
| Dissolved Lithium (Li)           | mg/L  | <0.020              | C129428  | 0.021               | 0.020   | C129428  |
| Dissolved Magnesium (Mg)         | mg/L  | 45                  | C129428  | 46                  | 0.20    | C129428  |
| Dissolved Manganese (Mn)         | mg/L  | 0.012               | C129428  | 0.0085              | 0.0040  | C129428  |
| Dissolved Molybdenum (Mo)        | mg/L  | 0.0017              | C129601  | 0.0020              | 0.00020 | C129605  |
| Dissolved Nickel (Ni)            | mg/L  | 0.00089             | C129601  | <0.00050            | 0.00050 | C129605  |
| Dissolved Phosphorus (P)         | mg/L  | <0.10               | C129428  | <0.10               | 0.10    | C129428  |
| Dissolved Potassium (K)          | mg/L  | 4.3                 | C129428  | 4.2                 | 0.30    | C129428  |
| Dissolved Selenium (Se)          | mg/L  | 0.0011              | C129601  | 0.0012              | 0.00020 | C129605  |
| Dissolved Silicon (Si)           | mg/L  | 4.1                 | C129428  | 4.3                 | 0.50    | C129428  |
| Dissolved Silver (Ag)            | mg/L  | <0.00010            | C129601  | <0.00010            | 0.00010 | C129605  |
| Dissolved Sodium (Na)            | mg/L  | 43                  | C129428  | 44                  | 0.50    | C129428  |
| Dissolved Strontium (Sr)         | mg/L  | 0.67                | C129428  | 0.69                | 0.020   | C129428  |
| Dissolved Sulphur (S)            | mg/L  | 18                  | C129428  | 18                  | 0.20    | C129428  |
| Dissolved Thallium (Tl)          | mg/L  | <0.00020            | C129601  | <0.00020            | 0.00020 | C129605  |
| Dissolved Tin (Sn)               | mg/L  | <0.0010             | C129601  | <0.0010             | 0.0010  | C129605  |
| Dissolved Titanium (Ti)          | mg/L  | <0.0010             | C129601  | <0.0010             | 0.0010  | C129605  |
| Dissolved Uranium (U)            | mg/L  | 0.0037              | C129601  | 0.0038              | 0.00010 | C129605  |
| Dissolved Vanadium (V)           | mg/L  | <0.0010             | C129601  | <0.0010             | 0.0010  | C129605  |
| Dissolved Zinc (Zn)              | mg/L  | 0.0077              | C129601  | <0.0030             | 0.0030  | C129605  |
| RDL = Reportable Detection Limit |       |                     |          |                     |         |          |



BUREAU  
VERITAS

Bureau Veritas Job #: C586762  
Report Date: 2025/10/22

AUSENCO SUSTAINABILITY ULC  
Client Project #: 102604-01  
Sampler Initials: CD

### RESULTS OF CHEMICAL ANALYSES OF WATER

| Bureau Veritas ID   |       | DVB609              |        |          | DVB610              |        |          | DVB611              |        |          |
|---|-------|---------------------|--------|----------|---------------------|--------|----------|---------------------|--------|----------|
| Sampling Date   |       | 2025/10/16<br>11:15 |        |          | 2025/10/16<br>13:00 |        |          | 2025/10/16<br>10:30 |        |          |
| COC Number  |       | 768446-01-01        |        |          | 768446-01-01        |        |          | 768446-01-01        |        |          |
|   | UNITS | WQ3                 | RDL    | QC Batch | WQ4B                | RDL    | QC Batch | WQ5B                | RDL    | QC Batch |
| <b>Calculated Parameters</b>  |       |                     |        |          |                     |        |          |                     |        |          |
| Total Total Kjeldahl Nitrogen (Calc)  | mg/L  | 1.1                 | 0.040  | C125935  | 0.067               | 0.040  | C125935  | 0.37                | 0.20   | C125935  |
| <b>Demand Parameters</b>  |       |                     |        |          |                     |        |          |                     |        |          |
| Biochemical Oxygen Demand   | mg/L  | <3.4 (1)            | 3.4    | C126872  | <2.0                | 2.0    | C126872  | <2.0                | 2.0    | C126872  |
| Chemical Oxygen Demand  | mg/L  | 46                  | 10     | C130132  | <10                 | 10     | C130132  | 15                  | 10     | C130132  |
| <b>Misc. Inorganics</b>   |       |                     |        |          |                     |        |          |                     |        |          |
| Dissolved Oxygen (O2)   | mg/L  | 9.0                 | 0.10   | C128540  | 9.1                 | 0.10   | C128540  | 9.1                 | 0.10   | C128540  |
| Total Dissolved Solids  | mg/L  | 710                 | 10     | C128526  | 440                 | 10     | C128526  | 680                 | 10     | C128526  |
| Total Suspended Solids  | mg/L  | 3.3                 | 1.0    | C127919  | 13                  | 1.0    | C127919  | <1.0                | 1.0    | C127919  |
| <b>Nutrients</b>  |       |                     |        |          |                     |        |          |                     |        |          |
| Total Ammonia (N)   | mg/L  | 0.096               | 0.015  | C131039  | <0.015              | 0.015  | C131034  | <0.015              | 0.015  | C131036  |
| Orthophosphate (P)  | mg/L  | 0.027               | 0.0030 | C128584  | <0.0030             | 0.0030 | C128584  | <0.0030             | 0.0030 | C128584  |
| Dissolved Phosphorus (P)  | mg/L  | 0.035               | 0.0030 | C129178  | <0.0030             | 0.0030 | C129176  | <0.0030             | 0.0030 | C129178  |
| Total Phosphorus (P)  | mg/L  | 0.073               | 0.0030 | C129174  | <0.0030             | 0.0030 | C129174  | 0.0033              | 0.0030 | C129174  |
| Total Nitrogen (N)  | mg/L  | 1.1                 | 0.020  | C129337  | 0.43                | 0.020  | C129337  | 0.90 (2)            | 0.20   | C129337  |
| <b>Physical Properties</b>  |       |                     |        |          |                     |        |          |                     |        |          |
| Turbidity   | NTU   | 3.7                 | 0.10   | C127208  | 2.9                 | 0.10   | C127208  | 2.1                 | 0.10   | C127208  |
| RDL = Reportable Detection Limit  |       |                     |        |          |                     |        |          |                     |        |          |
| (1) Detection limit raised based on sample volume used for analysis.                              |       |                     |        |          |                     |        |          |                     |        |          |
| (2) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly. |       |                     |        |          |                     |        |          |                     |        |          |



**RESULTS OF CHEMICAL ANALYSES OF WATER**

| Bureau Veritas ID  |       | DVB612              |        |          | DVB613              |        |          |
|--|-------|---------------------|--------|----------|---------------------|--------|----------|
| Sampling Date  |       | 2025/10/16<br>12:00 |        |          | 2025/10/16<br>12:30 |        |          |
| COC Number   |       | 768446-01-01        |        |          | 768446-01-01        |        |          |
|  | UNITS | WQ6                 | RDL    | QC Batch | WQ7                 | RDL    | QC Batch |
| <b>Calculated Parameters</b>   |       |                     |        |          |                     |        |          |
| Total Total Kjeldahl Nitrogen (Calc)   | mg/L  | 0.51                | 0.040  | C125935  | 0.40                | 0.040  | C125935  |
| <b>Demand Parameters</b>   |       |                     |        |          |                     |        |          |
| Biochemical Oxygen Demand  | mg/L  | <4.5 (1)            | 4.5    | C126872  | <3.4 (1)            | 3.4    | C126872  |
| Chemical Oxygen Demand   | mg/L  | <10                 | 10     | C130132  | 11                  | 10     | C130132  |
| <b>Misc. Inorganics</b>  |       |                     |        |          |                     |        |          |
| Dissolved Oxygen (O2)  | mg/L  | 9.0                 | 0.10   | C128540  | 9.1                 | 0.10   | C128540  |
| Total Dissolved Solids   | mg/L  | 440                 | 10     | C128526  | 440                 | 10     | C128526  |
| Total Suspended Solids   | mg/L  | 20                  | 1.0    | C128522  | 10                  | 1.0    | C128522  |
| <b>Nutrients</b>   |       |                     |        |          |                     |        |          |
| Total Ammonia (N)  | mg/L  | <0.015              | 0.015  | C131039  | <0.015              | 0.015  | C131039  |
| Orthophosphate (P)   | mg/L  | 0.0064              | 0.0030 | C128584  | 0.011               | 0.0030 | C128584  |
| Dissolved Phosphorus (P)   | mg/L  | 0.019               | 0.0030 | C129176  | 0.013               | 0.0030 | C129178  |
| Total Phosphorus (P)   | mg/L  | 0.062               | 0.0030 | C129174  | 0.21                | 0.0030 | C129174  |
| Total Nitrogen (N)   | mg/L  | 0.60                | 0.020  | C129337  | 0.49                | 0.020  | C129337  |
| <b>Physical Properties</b>   |       |                     |        |          |                     |        |          |
| Turbidity  | NTU   | 46                  | 0.10   | C127208  | 2.8                 | 0.10   | C127212  |
| RDL = Reportable Detection Limit<br>(1) Detection limit raised based on sample volume used for analysis. |       |                     |        |          |                     |        |          |



BUREAU  
VERITAS

Bureau Veritas Job #: C586762

Report Date: 2025/10/22

AUSENCO SUSTAINABILITY ULC

Client Project #: 102604-01

Sampler Initials: CD

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

|           |       |
|-----------|-------|
| Package 1 | 3.7°C |
|-----------|-------|

**Results relate only to the items tested.**



BUREAU  
VERITAS

Bureau Veritas Job #: C586762

Report Date: 2025/10/22

AUSENCO SUSTAINABILITY ULC

Client Project #: 102604-01

Sampler Initials: CD

### QUALITY ASSURANCE REPORT

| QA/QC Batch | Init | QC Type                  | Parameter                 | Date Analyzed | Value   | Recovery | UNITS | QC Limits |
|-------------|------|--------------------------|---------------------------|---------------|---------|----------|-------|-----------|
| C126872     | IDV  | Spiked Blank             | Biochemical Oxygen Demand | 2025/10/22    |         | 99       | %     | 85 - 115  |
| C126872     | IDV  | Method Blank             | Biochemical Oxygen Demand | 2025/10/22    | <2.0    |          | mg/L  |           |
| C126872     | IDV  | RPD                      | Biochemical Oxygen Demand | 2025/10/22    | 3.6     |          | %     | 20        |
| C127208     | DVN  | Spiked Blank             | Turbidity                 | 2025/10/17    |         | 100      | %     | 80 - 120  |
| C127208     | DVN  | Method Blank             | Turbidity                 | 2025/10/17    | <0.10   |          | NTU   |           |
| C127208     | DVN  | RPD                      | Turbidity                 | 2025/10/17    | 2.5     |          | %     | 20        |
| C127212     | DVN  | Spiked Blank             | Turbidity                 | 2025/10/17    |         | 99       | %     | 80 - 120  |
| C127212     | DVN  | Method Blank             | Turbidity                 | 2025/10/17    | <0.10   |          | NTU   |           |
| C127212     | DVN  | RPD [DVB613-02]          | Turbidity                 | 2025/10/17    | 17      |          | %     | 20        |
| C127919     | HE1  | Matrix Spike [DVB609-02] | Total Suspended Solids    | 2025/10/17    |         | 97       | %     | 80 - 120  |
| C127919     | HE1  | Spiked Blank             | Total Suspended Solids    | 2025/10/17    |         | 91       | %     | 80 - 120  |
| C127919     | HE1  | Method Blank             | Total Suspended Solids    | 2025/10/17    | <1.0    |          | mg/L  |           |
| C127919     | HE1  | RPD                      | Total Suspended Solids    | 2025/10/17    | NC      |          | %     | 20        |
| C128522     | DVN  | Matrix Spike             | Total Suspended Solids    | 2025/10/20    |         | 92       | %     | 80 - 120  |
| C128522     | DVN  | Spiked Blank             | Total Suspended Solids    | 2025/10/20    |         | 106      | %     | 80 - 120  |
| C128522     | DVN  | Method Blank             | Total Suspended Solids    | 2025/10/20    | <1.0    |          | mg/L  |           |
| C128522     | DVN  | RPD                      | Total Suspended Solids    | 2025/10/20    | NC      |          | %     | 20        |
| C128526     | DVN  | Matrix Spike [DVB609-02] | Total Dissolved Solids    | 2025/10/19    |         | 96       | %     | 80 - 120  |
| C128526     | DVN  | Spiked Blank             | Total Dissolved Solids    | 2025/10/19    |         | 100      | %     | 80 - 120  |
| C128526     | DVN  | Method Blank             | Total Dissolved Solids    | 2025/10/19    | <10     |          | mg/L  |           |
| C128526     | DVN  | RPD [DVB609-02]          | Total Dissolved Solids    | 2025/10/19    | 0.56    |          | %     | 20        |
| C128540     | IDV  | RPD                      | Dissolved Oxygen (O2)     | 2025/10/18    | 0.10    |          | %     | 20        |
| C128569     | ISW  | Matrix Spike             | Nitrite (N)               | 2025/10/18    |         | 100      | %     | 80 - 120  |
|             |      |                          | Nitrate plus Nitrite (N)  | 2025/10/18    |         | 114      | %     | 80 - 120  |
| C128569     | ISW  | Spiked Blank             | Nitrite (N)               | 2025/10/18    |         | 103      | %     | 80 - 120  |
|             |      |                          | Nitrate plus Nitrite (N)  | 2025/10/18    |         | 101      | %     | 80 - 120  |
| C128569     | ISW  | Method Blank             | Nitrite (N)               | 2025/10/18    | <0.040  |          | mg/L  |           |
|             |      |                          | Nitrate plus Nitrite (N)  | 2025/10/18    | <0.040  |          | mg/L  |           |
| C128569     | ISW  | RPD                      | Nitrite (N)               | 2025/10/18    | NC      |          | %     | 20        |
|             |      |                          | Nitrate plus Nitrite (N)  | 2025/10/18    | NC      |          | %     | 20        |
| C128571     | ISW  | Matrix Spike             | Nitrite (N)               | 2025/10/18    |         | 101      | %     | 80 - 120  |
|             |      |                          | Nitrate plus Nitrite (N)  | 2025/10/18    |         | 133 (1)  | %     | 80 - 120  |
| C128571     | ISW  | Spiked Blank             | Nitrite (N)               | 2025/10/18    |         | 97       | %     | 80 - 120  |
|             |      |                          | Nitrate plus Nitrite (N)  | 2025/10/18    |         | 99       | %     | 80 - 120  |
| C128571     | ISW  | Method Blank             | Nitrite (N)               | 2025/10/18    | <0.040  |          | mg/L  |           |
|             |      |                          | Nitrate plus Nitrite (N)  | 2025/10/18    | <0.040  |          | mg/L  |           |
| C128571     | ISW  | RPD                      | Nitrite (N)               | 2025/10/18    | NC      |          | %     | 20        |
|             |      |                          | Nitrate plus Nitrite (N)  | 2025/10/18    | NC      |          | %     | 20        |
| C128584     | KKC  | Matrix Spike [DVB610-03] | Orthophosphate (P)        | 2025/10/18    |         | 89       | %     | 80 - 120  |
| C128584     | KKC  | Spiked Blank             | Orthophosphate (P)        | 2025/10/18    |         | 90       | %     | 80 - 120  |
| C128584     | KKC  | Method Blank             | Orthophosphate (P)        | 2025/10/18    | <0.0030 |          | mg/L  |           |
| C128584     | KKC  | RPD [DVB610-03]          | Orthophosphate (P)        | 2025/10/18    | NC      |          | %     | 20        |
| C129174     | MAP  | Matrix Spike             | Total Phosphorus (P)      | 2025/10/20    |         | NC       | %     | 80 - 120  |
| C129174     | MAP  | QC Standard              | Total Phosphorus (P)      | 2025/10/20    |         | 89       | %     | 80 - 120  |
| C129174     | MAP  | Spiked Blank             | Total Phosphorus (P)      | 2025/10/20    |         | 97       | %     | 80 - 120  |
| C129174     | MAP  | Method Blank             | Total Phosphorus (P)      | 2025/10/20    | <0.0030 |          | mg/L  |           |
| C129174     | MAP  | RPD                      | Total Phosphorus (P)      | 2025/10/20    | 0.30    |          | %     | 20        |
| C129176     | MAP  | Matrix Spike             | Dissolved Phosphorus (P)  | 2025/10/20    |         | 101      | %     | 80 - 120  |
| C129176     | MAP  | QC Standard              | Dissolved Phosphorus (P)  | 2025/10/20    |         | 81       | %     | 80 - 120  |
| C129176     | MAP  | Spiked Blank             | Dissolved Phosphorus (P)  | 2025/10/20    |         | 96       | %     | 80 - 120  |
| C129176     | MAP  | Method Blank             | Dissolved Phosphorus (P)  | 2025/10/20    | <0.0030 |          | mg/L  |           |
| C129176     | MAP  | RPD                      | Dissolved Phosphorus (P)  | 2025/10/20    | 4.5     |          | %     | 20        |
| C129178     | MAP  | Matrix Spike             | Dissolved Phosphorus (P)  | 2025/10/20    |         | 99       | %     | 80 - 120  |
| C129178     | MAP  | QC Standard              | Dissolved Phosphorus (P)  | 2025/10/20    |         | 88       | %     | 80 - 120  |



BUREAU  
VERITAS

Bureau Veritas Job #: C586762  
Report Date: 2025/10/22

AUSENCO SUSTAINABILITY ULC  
Client Project #: 102604-01  
Sampler Initials: CD

### QUALITY ASSURANCE REPORT(CONT'D)

| QA/QC | Batch   | Init | QC Type                  | Parameter                | Date Analyzed | Value   | Recovery | UNITS | QC Limits |
|-------|---------|------|--------------------------|--------------------------|---------------|---------|----------|-------|-----------|
|       | C129178 | MAP  | Spiked Blank             | Dissolved Phosphorus (P) | 2025/10/20    |         | 96       | %     | 80 - 120  |
|       | C129178 | MAP  | Method Blank             | Dissolved Phosphorus (P) | 2025/10/20    | <0.0030 |          | mg/L  |           |
|       | C129178 | MAP  | RPD                      | Dissolved Phosphorus (P) | 2025/10/20    | NC      |          | %     | 20        |
|       | C129337 | YL7  | Matrix Spike [DVB613-05] | Total Nitrogen (N)       | 2025/10/21    |         | 110      | %     | 80 - 120  |
|       | C129337 | YL7  | QC Standard              | Total Nitrogen (N)       | 2025/10/20    |         | 105      | %     | 80 - 120  |
|       | C129337 | YL7  | Spiked Blank             | Total Nitrogen (N)       | 2025/10/20    |         | 109      | %     | 80 - 120  |
|       | C129337 | YL7  | Method Blank             | Total Nitrogen (N)       | 2025/10/20    | <0.020  |          | mg/L  |           |
|       | C129337 | YL7  | RPD [DVB613-05]          | Total Nitrogen (N)       | 2025/10/21    | 7.8     |          | %     | 20        |
|       | C129428 | KHU  | Matrix Spike             | Dissolved Barium (Ba)    | 2025/10/19    |         | 96       | %     | 80 - 120  |
|       |         |      |                          | Dissolved Boron (B)      | 2025/10/19    |         | 98       | %     | 80 - 120  |
|       |         |      |                          | Dissolved Calcium (Ca)   | 2025/10/19    |         | NC       | %     | 80 - 120  |
|       |         |      |                          | Dissolved Iron (Fe)      | 2025/10/19    |         | 108      | %     | 80 - 120  |
|       |         |      |                          | Dissolved Lithium (Li)   | 2025/10/19    |         | 92       | %     | 80 - 120  |
|       |         |      |                          | Dissolved Magnesium (Mg) | 2025/10/19    |         | NC       | %     | 80 - 120  |
|       |         |      |                          | Dissolved Manganese (Mn) | 2025/10/19    |         | NC       | %     | 80 - 120  |
|       |         |      |                          | Dissolved Phosphorus (P) | 2025/10/19    |         | 101      | %     | 80 - 120  |
|       |         |      |                          | Dissolved Potassium (K)  | 2025/10/19    |         | 95       | %     | 80 - 120  |
|       |         |      |                          | Dissolved Silicon (Si)   | 2025/10/19    |         | NC       | %     | 80 - 120  |
|       |         |      |                          | Dissolved Sodium (Na)    | 2025/10/19    |         | 92       | %     | 80 - 120  |
|       |         |      |                          | Dissolved Strontium (Sr) | 2025/10/19    |         | 90       | %     | 80 - 120  |
|       |         |      |                          | Dissolved Sulphur (S)    | 2025/10/19    |         | NC       | %     | 80 - 120  |
|       | C129428 | KHU  | Spiked Blank             | Dissolved Barium (Ba)    | 2025/10/19    |         | 100      | %     | 80 - 120  |
|       |         |      |                          | Dissolved Boron (B)      | 2025/10/19    |         | 100      | %     | 80 - 120  |
|       |         |      |                          | Dissolved Calcium (Ca)   | 2025/10/19    |         | 98       | %     | 80 - 120  |
|       |         |      |                          | Dissolved Iron (Fe)      | 2025/10/19    |         | 107      | %     | 80 - 120  |
|       |         |      |                          | Dissolved Lithium (Li)   | 2025/10/19    |         | 94       | %     | 80 - 120  |
|       |         |      |                          | Dissolved Magnesium (Mg) | 2025/10/19    |         | 101      | %     | 80 - 120  |
|       |         |      |                          | Dissolved Manganese (Mn) | 2025/10/19    |         | 102      | %     | 80 - 120  |
|       |         |      |                          | Dissolved Phosphorus (P) | 2025/10/19    |         | 97       | %     | 80 - 120  |
|       |         |      |                          | Dissolved Potassium (K)  | 2025/10/19    |         | 98       | %     | 80 - 120  |
|       |         |      |                          | Dissolved Silicon (Si)   | 2025/10/19    |         | 95       | %     | 80 - 120  |
|       |         |      |                          | Dissolved Sodium (Na)    | 2025/10/19    |         | 99       | %     | 80 - 120  |
|       |         |      |                          | Dissolved Strontium (Sr) | 2025/10/19    |         | 99       | %     | 80 - 120  |
|       |         |      |                          | Dissolved Sulphur (S)    | 2025/10/19    |         | 98       | %     | 80 - 120  |
|       | C129428 | KHU  | Method Blank             | Dissolved Barium (Ba)    | 2025/10/19    | <0.010  |          | mg/L  |           |
|       |         |      |                          | Dissolved Boron (B)      | 2025/10/19    | <0.020  |          | mg/L  |           |
|       |         |      |                          | Dissolved Calcium (Ca)   | 2025/10/19    | <0.30   |          | mg/L  |           |
|       |         |      |                          | Dissolved Iron (Fe)      | 2025/10/19    | <0.060  |          | mg/L  |           |
|       |         |      |                          | Dissolved Lithium (Li)   | 2025/10/19    | <0.020  |          | mg/L  |           |
|       |         |      |                          | Dissolved Magnesium (Mg) | 2025/10/19    | <0.20   |          | mg/L  |           |
|       |         |      |                          | Dissolved Manganese (Mn) | 2025/10/19    | <0.0040 |          | mg/L  |           |
|       |         |      |                          | Dissolved Phosphorus (P) | 2025/10/19    | <0.10   |          | mg/L  |           |
|       |         |      |                          | Dissolved Potassium (K)  | 2025/10/19    | <0.30   |          | mg/L  |           |
|       |         |      |                          | Dissolved Silicon (Si)   | 2025/10/19    | <0.50   |          | mg/L  |           |
|       |         |      |                          | Dissolved Sodium (Na)    | 2025/10/19    | <0.50   |          | mg/L  |           |
|       |         |      |                          | Dissolved Strontium (Sr) | 2025/10/19    | <0.020  |          | mg/L  |           |
|       |         |      |                          | Dissolved Sulphur (S)    | 2025/10/19    | <0.20   |          | mg/L  |           |
|       | C129428 | KHU  | RPD                      | Dissolved Calcium (Ca)   | 2025/10/19    | 0.23    |          | %     | 20        |
|       |         |      |                          | Dissolved Magnesium (Mg) | 2025/10/19    | 0.12    |          | %     | 20        |
|       |         |      |                          | Dissolved Sodium (Na)    | 2025/10/19    | 0.23    |          | %     | 20        |
|       | C129601 | JAB  | Matrix Spike             | Dissolved Aluminum (Al)  | 2025/10/20    |         | 111      | %     | 80 - 120  |
|       |         |      |                          | Dissolved Antimony (Sb)  | 2025/10/20    |         | 95       | %     | 80 - 120  |
|       |         |      |                          | Dissolved Arsenic (As)   | 2025/10/20    |         | 95       | %     | 80 - 120  |
|       |         |      |                          | Dissolved Beryllium (Be) | 2025/10/20    |         | 103      | %     | 80 - 120  |



**QUALITY ASSURANCE REPORT(CONT'D)**

| QA/QC   | Batch | Init | QC Type      | Parameter                 | Date Analyzed | Value    | Recovery | UNITS | QC Limits |
|---------|-------|------|--------------|---------------------------|---------------|----------|----------|-------|-----------|
|         |       |      |              | Dissolved Chromium (Cr)   | 2025/10/20    |          | 93       | %     | 80 - 120  |
|         |       |      |              | Dissolved Cobalt (Co)     | 2025/10/20    |          | 92       | %     | 80 - 120  |
|         |       |      |              | Dissolved Copper (Cu)     | 2025/10/20    |          | 91       | %     | 80 - 120  |
|         |       |      |              | Dissolved Lead (Pb)       | 2025/10/20    |          | 92       | %     | 80 - 120  |
|         |       |      |              | Dissolved Molybdenum (Mo) | 2025/10/20    |          | 95       | %     | 80 - 120  |
|         |       |      |              | Dissolved Nickel (Ni)     | 2025/10/20    |          | 90       | %     | 80 - 120  |
|         |       |      |              | Dissolved Selenium (Se)   | 2025/10/20    |          | 94       | %     | 80 - 120  |
|         |       |      |              | Dissolved Silver (Ag)     | 2025/10/20    |          | 90       | %     | 80 - 120  |
|         |       |      |              | Dissolved Thallium (Tl)   | 2025/10/20    |          | 94       | %     | 80 - 120  |
|         |       |      |              | Dissolved Tin (Sn)        | 2025/10/20    |          | 97       | %     | 80 - 120  |
|         |       |      |              | Dissolved Titanium (Ti)   | 2025/10/20    |          | 98       | %     | 80 - 120  |
|         |       |      |              | Dissolved Uranium (U)     | 2025/10/20    |          | 93       | %     | 80 - 120  |
|         |       |      |              | Dissolved Vanadium (V)    | 2025/10/20    |          | 93       | %     | 80 - 120  |
|         |       |      |              | Dissolved Zinc (Zn)       | 2025/10/20    |          | 94       | %     | 80 - 120  |
| C129601 | JAB   |      | Spiked Blank | Dissolved Aluminum (Al)   | 2025/10/20    |          | 119      | %     | 80 - 120  |
|         |       |      |              | Dissolved Antimony (Sb)   | 2025/10/20    |          | 102      | %     | 80 - 120  |
|         |       |      |              | Dissolved Arsenic (As)    | 2025/10/20    |          | 102      | %     | 80 - 120  |
|         |       |      |              | Dissolved Beryllium (Be)  | 2025/10/20    |          | 110      | %     | 80 - 120  |
|         |       |      |              | Dissolved Chromium (Cr)   | 2025/10/20    |          | 101      | %     | 80 - 120  |
|         |       |      |              | Dissolved Cobalt (Co)     | 2025/10/20    |          | 99       | %     | 80 - 120  |
|         |       |      |              | Dissolved Copper (Cu)     | 2025/10/20    |          | 98       | %     | 80 - 120  |
|         |       |      |              | Dissolved Lead (Pb)       | 2025/10/20    |          | 99       | %     | 80 - 120  |
|         |       |      |              | Dissolved Molybdenum (Mo) | 2025/10/20    |          | 103      | %     | 80 - 120  |
|         |       |      |              | Dissolved Nickel (Ni)     | 2025/10/20    |          | 99       | %     | 80 - 120  |
|         |       |      |              | Dissolved Selenium (Se)   | 2025/10/20    |          | 99       | %     | 80 - 120  |
|         |       |      |              | Dissolved Silver (Ag)     | 2025/10/20    |          | 97       | %     | 80 - 120  |
|         |       |      |              | Dissolved Thallium (Tl)   | 2025/10/20    |          | 100      | %     | 80 - 120  |
|         |       |      |              | Dissolved Tin (Sn)        | 2025/10/20    |          | 104      | %     | 80 - 120  |
|         |       |      |              | Dissolved Titanium (Ti)   | 2025/10/20    |          | 103      | %     | 80 - 120  |
|         |       |      |              | Dissolved Uranium (U)     | 2025/10/20    |          | 100      | %     | 80 - 120  |
|         |       |      |              | Dissolved Vanadium (V)    | 2025/10/20    |          | 100      | %     | 80 - 120  |
|         |       |      |              | Dissolved Zinc (Zn)       | 2025/10/20    |          | 98       | %     | 80 - 120  |
| C129601 | JAB   |      | Method Blank | Dissolved Aluminum (Al)   | 2025/10/20    | <0.0030  |          | mg/L  |           |
|         |       |      |              | Dissolved Antimony (Sb)   | 2025/10/20    | <0.00060 |          | mg/L  |           |
|         |       |      |              | Dissolved Arsenic (As)    | 2025/10/20    | <0.00020 |          | mg/L  |           |
|         |       |      |              | Dissolved Beryllium (Be)  | 2025/10/20    | <0.0010  |          | mg/L  |           |
|         |       |      |              | Dissolved Chromium (Cr)   | 2025/10/20    | <0.0010  |          | mg/L  |           |
|         |       |      |              | Dissolved Cobalt (Co)     | 2025/10/20    | <0.00030 |          | mg/L  |           |
|         |       |      |              | Dissolved Copper (Cu)     | 2025/10/20    | <0.0010  |          | mg/L  |           |
|         |       |      |              | Dissolved Lead (Pb)       | 2025/10/20    | <0.00020 |          | mg/L  |           |
|         |       |      |              | Dissolved Molybdenum (Mo) | 2025/10/20    | <0.00020 |          | mg/L  |           |
|         |       |      |              | Dissolved Nickel (Ni)     | 2025/10/20    | <0.00050 |          | mg/L  |           |
|         |       |      |              | Dissolved Selenium (Se)   | 2025/10/20    | <0.00020 |          | mg/L  |           |
|         |       |      |              | Dissolved Silver (Ag)     | 2025/10/20    | <0.00010 |          | mg/L  |           |
|         |       |      |              | Dissolved Thallium (Tl)   | 2025/10/20    | <0.00020 |          | mg/L  |           |
|         |       |      |              | Dissolved Tin (Sn)        | 2025/10/20    | <0.0010  |          | mg/L  |           |
|         |       |      |              | Dissolved Titanium (Ti)   | 2025/10/20    | <0.0010  |          | mg/L  |           |
|         |       |      |              | Dissolved Uranium (U)     | 2025/10/20    | <0.00010 |          | mg/L  |           |
|         |       |      |              | Dissolved Vanadium (V)    | 2025/10/20    | <0.0010  |          | mg/L  |           |
|         |       |      |              | Dissolved Zinc (Zn)       | 2025/10/20    | <0.0030  |          | mg/L  |           |
| C129601 | JAB   |      | RPD          | Dissolved Aluminum (Al)   | 2025/10/20    | NC       |          | %     | 20        |
|         |       |      |              | Dissolved Antimony (Sb)   | 2025/10/20    | NC       |          | %     | 20        |
|         |       |      |              | Dissolved Arsenic (As)    | 2025/10/20    | NC       |          | %     | 20        |
|         |       |      |              | Dissolved Beryllium (Be)  | 2025/10/20    | NC       |          | %     | 20        |



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### QUALITY ASSURANCE REPORT(CONT'D)

| QA/QC   | Batch | Init | QC Type      | Parameter                 | Date Analyzed | Value    | Recovery | UNITS | QC Limits |
|---------|-------|------|--------------|---------------------------|---------------|----------|----------|-------|-----------|
|         |       |      |              | Dissolved Chromium (Cr)   | 2025/10/20    | NC       |          | %     | 20        |
|         |       |      |              | Dissolved Cobalt (Co)     | 2025/10/20    | NC       |          | %     | 20        |
|         |       |      |              | Dissolved Copper (Cu)     | 2025/10/20    | NC       |          | %     | 20        |
|         |       |      |              | Dissolved Lead (Pb)       | 2025/10/20    | NC       |          | %     | 20        |
|         |       |      |              | Dissolved Molybdenum (Mo) | 2025/10/20    | NC       |          | %     | 20        |
|         |       |      |              | Dissolved Nickel (Ni)     | 2025/10/20    | NC       |          | %     | 20        |
|         |       |      |              | Dissolved Selenium (Se)   | 2025/10/20    | NC       |          | %     | 20        |
|         |       |      |              | Dissolved Silver (Ag)     | 2025/10/20    | NC       |          | %     | 20        |
|         |       |      |              | Dissolved Thallium (Tl)   | 2025/10/20    | NC       |          | %     | 20        |
|         |       |      |              | Dissolved Tin (Sn)        | 2025/10/20    | NC       |          | %     | 20        |
|         |       |      |              | Dissolved Titanium (Ti)   | 2025/10/20    | NC       |          | %     | 20        |
|         |       |      |              | Dissolved Uranium (U)     | 2025/10/20    | NC       |          | %     | 20        |
|         |       |      |              | Dissolved Vanadium (V)    | 2025/10/20    | NC       |          | %     | 20        |
|         |       |      |              | Dissolved Zinc (Zn)       | 2025/10/20    | NC       |          | %     | 20        |
| C129605 | JAB   |      | Matrix Spike | Dissolved Aluminum (Al)   | 2025/10/20    |          | 120      | %     | 80 - 120  |
|         |       |      |              | Dissolved Antimony (Sb)   | 2025/10/20    |          | 106      | %     | 80 - 120  |
|         |       |      |              | Dissolved Arsenic (As)    | 2025/10/20    |          | 101      | %     | 80 - 120  |
|         |       |      |              | Dissolved Beryllium (Be)  | 2025/10/20    |          | 113      | %     | 80 - 120  |
|         |       |      |              | Dissolved Chromium (Cr)   | 2025/10/20    |          | 98       | %     | 80 - 120  |
|         |       |      |              | Dissolved Cobalt (Co)     | 2025/10/20    |          | 95       | %     | 80 - 120  |
|         |       |      |              | Dissolved Copper (Cu)     | 2025/10/20    |          | 92       | %     | 80 - 120  |
|         |       |      |              | Dissolved Lead (Pb)       | 2025/10/20    |          | 99       | %     | 80 - 120  |
|         |       |      |              | Dissolved Molybdenum (Mo) | 2025/10/20    |          | 106      | %     | 80 - 120  |
|         |       |      |              | Dissolved Nickel (Ni)     | 2025/10/20    |          | 93       | %     | 80 - 120  |
|         |       |      |              | Dissolved Selenium (Se)   | 2025/10/20    |          | 102      | %     | 80 - 120  |
|         |       |      |              | Dissolved Silver (Ag)     | 2025/10/20    |          | 97       | %     | 80 - 120  |
|         |       |      |              | Dissolved Thallium (Tl)   | 2025/10/20    |          | 100      | %     | 80 - 120  |
|         |       |      |              | Dissolved Tin (Sn)        | 2025/10/20    |          | 106      | %     | 80 - 120  |
|         |       |      |              | Dissolved Titanium (Ti)   | 2025/10/20    |          | 104      | %     | 80 - 120  |
|         |       |      |              | Dissolved Uranium (U)     | 2025/10/20    |          | 103      | %     | 80 - 120  |
|         |       |      |              | Dissolved Vanadium (V)    | 2025/10/20    |          | 98       | %     | 80 - 120  |
|         |       |      |              | Dissolved Zinc (Zn)       | 2025/10/20    |          | 98       | %     | 80 - 120  |
| C129605 | JAB   |      | Spiked Blank | Dissolved Aluminum (Al)   | 2025/10/20    |          | 118      | %     | 80 - 120  |
|         |       |      |              | Dissolved Antimony (Sb)   | 2025/10/20    |          | 101      | %     | 80 - 120  |
|         |       |      |              | Dissolved Arsenic (As)    | 2025/10/20    |          | 102      | %     | 80 - 120  |
|         |       |      |              | Dissolved Beryllium (Be)  | 2025/10/20    |          | 110      | %     | 80 - 120  |
|         |       |      |              | Dissolved Chromium (Cr)   | 2025/10/20    |          | 100      | %     | 80 - 120  |
|         |       |      |              | Dissolved Cobalt (Co)     | 2025/10/20    |          | 99       | %     | 80 - 120  |
|         |       |      |              | Dissolved Copper (Cu)     | 2025/10/20    |          | 97       | %     | 80 - 120  |
|         |       |      |              | Dissolved Lead (Pb)       | 2025/10/20    |          | 99       | %     | 80 - 120  |
|         |       |      |              | Dissolved Molybdenum (Mo) | 2025/10/20    |          | 102      | %     | 80 - 120  |
|         |       |      |              | Dissolved Nickel (Ni)     | 2025/10/20    |          | 98       | %     | 80 - 120  |
|         |       |      |              | Dissolved Selenium (Se)   | 2025/10/20    |          | 100      | %     | 80 - 120  |
|         |       |      |              | Dissolved Silver (Ag)     | 2025/10/20    |          | 96       | %     | 80 - 120  |
|         |       |      |              | Dissolved Thallium (Tl)   | 2025/10/20    |          | 100      | %     | 80 - 120  |
|         |       |      |              | Dissolved Tin (Sn)        | 2025/10/20    |          | 103      | %     | 80 - 120  |
|         |       |      |              | Dissolved Titanium (Ti)   | 2025/10/20    |          | 106      | %     | 80 - 120  |
|         |       |      |              | Dissolved Uranium (U)     | 2025/10/20    |          | 100      | %     | 80 - 120  |
|         |       |      |              | Dissolved Vanadium (V)    | 2025/10/20    |          | 99       | %     | 80 - 120  |
|         |       |      |              | Dissolved Zinc (Zn)       | 2025/10/20    |          | 98       | %     | 80 - 120  |
| C129605 | JAB   |      | Method Blank | Dissolved Aluminum (Al)   | 2025/10/20    | <0.0030  |          | mg/L  |           |
|         |       |      |              | Dissolved Antimony (Sb)   | 2025/10/20    | <0.00060 |          | mg/L  |           |
|         |       |      |              | Dissolved Arsenic (As)    | 2025/10/20    | <0.00020 |          | mg/L  |           |
|         |       |      |              | Dissolved Beryllium (Be)  | 2025/10/20    | <0.0010  |          | mg/L  |           |



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### QUALITY ASSURANCE REPORT(CONT'D)

| QA/QC<br>Batch | Init | QC Type                  | Parameter                   | Date Analyzed | Value    | Recovery | UNITS | QC Limits |
|----------------|------|--------------------------|-----------------------------|---------------|----------|----------|-------|-----------|
|                |      |                          | Dissolved Chromium (Cr)     | 2025/10/20    | <0.0010  |          | mg/L  |           |
|                |      |                          | Dissolved Cobalt (Co)       | 2025/10/20    | <0.00030 |          | mg/L  |           |
|                |      |                          | Dissolved Copper (Cu)       | 2025/10/20    | <0.0010  |          | mg/L  |           |
|                |      |                          | Dissolved Lead (Pb)         | 2025/10/20    | <0.00020 |          | mg/L  |           |
|                |      |                          | Dissolved Molybdenum (Mo)   | 2025/10/20    | <0.00020 |          | mg/L  |           |
|                |      |                          | Dissolved Nickel (Ni)       | 2025/10/20    | <0.00050 |          | mg/L  |           |
|                |      |                          | Dissolved Selenium (Se)     | 2025/10/20    | <0.00020 |          | mg/L  |           |
|                |      |                          | Dissolved Silver (Ag)       | 2025/10/20    | <0.00010 |          | mg/L  |           |
|                |      |                          | Dissolved Thallium (Tl)     | 2025/10/20    | <0.00020 |          | mg/L  |           |
|                |      |                          | Dissolved Tin (Sn)          | 2025/10/20    | <0.0010  |          | mg/L  |           |
|                |      |                          | Dissolved Titanium (Ti)     | 2025/10/20    | <0.0010  |          | mg/L  |           |
|                |      |                          | Dissolved Uranium (U)       | 2025/10/20    | <0.00010 |          | mg/L  |           |
|                |      |                          | Dissolved Vanadium (V)      | 2025/10/20    | <0.0010  |          | mg/L  |           |
|                |      |                          | Dissolved Zinc (Zn)         | 2025/10/20    | <0.0030  |          | mg/L  |           |
| C129605        | JAB  | RPD                      | Dissolved Aluminum (Al)     | 2025/10/20    | 5.9      |          | %     | 20        |
|                |      |                          | Dissolved Chromium (Cr)     | 2025/10/20    | NC       |          | %     | 20        |
|                |      |                          | Dissolved Nickel (Ni)       | 2025/10/20    | 1.3      |          | %     | 20        |
|                |      |                          | Dissolved Zinc (Zn)         | 2025/10/20    | NC       |          | %     | 20        |
| C129999        | JVM  | Spiked Blank             | Alkalinity (Total as CaCO3) | 2025/10/20    |          | 100      | %     | 80 - 120  |
| C129999        | JVM  | Method Blank             | Alkalinity (PP as CaCO3)    | 2025/10/20    | <1.0     |          | mg/L  |           |
|                |      |                          | Alkalinity (Total as CaCO3) | 2025/10/20    | <1.0     |          | mg/L  |           |
|                |      |                          | Bicarbonate (HCO3)          | 2025/10/20    | <1.0     |          | mg/L  |           |
|                |      |                          | Carbonate (CO3)             | 2025/10/20    | <1.0     |          | mg/L  |           |
|                |      |                          | Hydroxide (OH)              | 2025/10/20    | <1.0     |          | mg/L  |           |
| C129999        | JVM  | RPD                      | Alkalinity (PP as CaCO3)    | 2025/10/20    | NC       |          | %     | 20        |
|                |      |                          | Alkalinity (Total as CaCO3) | 2025/10/20    | NC       |          | %     | 20        |
|                |      |                          | Bicarbonate (HCO3)          | 2025/10/20    | NC       |          | %     | 20        |
|                |      |                          | Carbonate (CO3)             | 2025/10/20    | NC       |          | %     | 20        |
|                |      |                          | Hydroxide (OH)              | 2025/10/20    | NC       |          | %     | 20        |
| C130004        | JVM  | Spiked Blank             | pH                          | 2025/10/20    |          | 100      | %     | 97 - 103  |
| C130004        | JVM  | RPD                      | pH                          | 2025/10/20    | 0.49     |          | %     | N/A       |
| C130005        | JVM  | Spiked Blank             | Conductivity                | 2025/10/20    |          | 102      | %     | 90 - 110  |
| C130005        | JVM  | Method Blank             | Conductivity                | 2025/10/20    | <2.0     |          | uS/cm |           |
| C130005        | JVM  | RPD                      | Conductivity                | 2025/10/20    | NC       |          | %     | 10        |
| C130021        | JVM  | Spiked Blank             | Alkalinity (Total as CaCO3) | 2025/10/21    |          | 101      | %     | 80 - 120  |
| C130021        | JVM  | Method Blank             | Alkalinity (PP as CaCO3)    | 2025/10/21    | <1.0     |          | mg/L  |           |
|                |      |                          | Alkalinity (Total as CaCO3) | 2025/10/21    | <1.0     |          | mg/L  |           |
|                |      |                          | Bicarbonate (HCO3)          | 2025/10/21    | <1.0     |          | mg/L  |           |
|                |      |                          | Carbonate (CO3)             | 2025/10/21    | <1.0     |          | mg/L  |           |
|                |      |                          | Hydroxide (OH)              | 2025/10/21    | <1.0     |          | mg/L  |           |
| C130021        | JVM  | RPD                      | Alkalinity (PP as CaCO3)    | 2025/10/21    | NC       |          | %     | 20        |
|                |      |                          | Alkalinity (Total as CaCO3) | 2025/10/21    | 0.035    |          | %     | 20        |
|                |      |                          | Bicarbonate (HCO3)          | 2025/10/21    | 0.035    |          | %     | 20        |
|                |      |                          | Carbonate (CO3)             | 2025/10/21    | NC       |          | %     | 20        |
|                |      |                          | Hydroxide (OH)              | 2025/10/21    | NC       |          | %     | 20        |
| C130022        | JVM  | Spiked Blank             | pH                          | 2025/10/21    |          | 100      | %     | 97 - 103  |
| C130022        | JVM  | RPD                      | pH                          | 2025/10/21    | 1.3      |          | %     | N/A       |
| C130023        | JVM  | Spiked Blank             | Conductivity                | 2025/10/21    |          | 103      | %     | 90 - 110  |
| C130023        | JVM  | Method Blank             | Conductivity                | 2025/10/21    | <2.0     |          | uS/cm |           |
| C130023        | JVM  | RPD                      | Conductivity                | 2025/10/21    | 0        |          | %     | 10        |
| C130132        | AP1  | Matrix Spike [DVB611-05] | Chemical Oxygen Demand      | 2025/10/20    |          | 101      | %     | 80 - 120  |
| C130132        | AP1  | Spiked Blank             | Chemical Oxygen Demand      | 2025/10/20    |          | 102      | %     | 80 - 120  |
| C130132        | AP1  | Method Blank             | Chemical Oxygen Demand      | 2025/10/20    | <10      |          | mg/L  |           |
| C130132        | AP1  | RPD [DVB611-05]          | Chemical Oxygen Demand      | 2025/10/20    | 6.5      |          | %     | 20        |



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### QUALITY ASSURANCE REPORT(CONT'D)

| QA/QC Batch             | Init       | QC Type                  | Parameter                 | Date Analyzed | Value    | Recovery | UNITS | QC Limits |
|-------------------------|------------|--------------------------|---------------------------|---------------|----------|----------|-------|-----------|
| C130153                 | YL7        | Matrix Spike             | Chloride (Cl)             | 2025/10/21    |          | NC       | %     | 80 - 120  |
|                         |            |                          | Sulphate (SO4)            | 2025/10/21    |          | NC       | %     | 80 - 120  |
| C130153                 | YL7        | Spiked Blank             | Chloride (Cl)             | 2025/10/21    |          | 105      | %     | 80 - 120  |
|                         |            |                          | Sulphate (SO4)            | 2025/10/21    |          | 103      | %     | 80 - 120  |
| C130153                 | YL7        | Method Blank             | Chloride (Cl)             | 2025/10/21    | <1.0     |          | mg/L  |           |
|                         |            |                          | Sulphate (SO4)            | 2025/10/21    | <1.0     |          | mg/L  |           |
| C130153                 | YL7        | RPD                      | Chloride (Cl)             | 2025/10/21    | 0.040    |          | %     | 20        |
|                         |            |                          | Sulphate (SO4)            | 2025/10/21    | 0.33     |          | %     | 20        |
| C130217                 | YL7        | Matrix Spike             | Chloride (Cl)             | 2025/10/20    |          | 103      | %     | 80 - 120  |
|                         |            |                          | Sulphate (SO4)            | 2025/10/20    |          | 102      | %     | 80 - 120  |
| C130217                 | YL7        | Spiked Blank             | Chloride (Cl)             | 2025/10/20    |          | 103      | %     | 80 - 120  |
|                         |            |                          | Sulphate (SO4)            | 2025/10/20    |          | 101      | %     | 80 - 120  |
| C130217                 | YL7        | Method Blank             | Chloride (Cl)             | 2025/10/20    | <1.0     |          | mg/L  |           |
|                         |            |                          | Sulphate (SO4)            | 2025/10/20    | <1.0     |          | mg/L  |           |
| C130217                 | YL7        | RPD                      | Chloride (Cl)             | 2025/10/20    | NC       |          | %     | 20        |
|                         |            |                          | Sulphate (SO4)            | 2025/10/20    | NC       |          | %     | 20        |
| C131034                 | AFI        | Matrix Spike [DVB610-08] | Total Ammonia (N)         | 2025/10/21    |          | 106      | %     | 80 - 120  |
| C131034                 | AFI        | Spiked Blank             | Total Ammonia (N)         | 2025/10/21    |          | 107      | %     | 80 - 120  |
| C131034                 | AFI        | Method Blank             | Total Ammonia (N)         | 2025/10/21    | <0.015   |          | mg/L  |           |
| C131034                 | AFI        | RPD [DVB610-08]          | Total Ammonia (N)         | 2025/10/21    | NC       |          | %     | 20        |
| C131036                 | AFI        | Matrix Spike [DVB611-08] | Total Ammonia (N)         | 2025/10/21    |          | 106      | %     | 80 - 120  |
| C131036                 | AFI        | Spiked Blank             | Total Ammonia (N)         | 2025/10/21    |          | 106      | %     | 80 - 120  |
| C131036                 | AFI        | Method Blank             | Total Ammonia (N)         | 2025/10/21    | <0.015   |          | mg/L  |           |
| C131036                 | AFI        | RPD [DVB611-08]          | Total Ammonia (N)         | 2025/10/21    | NC       |          | %     | 20        |
| C131039                 | AFI        | Matrix Spike             | Total Ammonia (N)         | 2025/10/21    |          | 107      | %     | 80 - 120  |
| C131039                 | AFI        | Spiked Blank             | Total Ammonia (N)         | 2025/10/21    |          | 105      | %     | 80 - 120  |
| C131039                 | AFI        | Method Blank             | Total Ammonia (N)         | 2025/10/21    | <0.015   |          | mg/L  |           |
| C131039                 | AFI        | RPD                      | Total Ammonia (N)         | 2025/10/21    | NC       |          | %     | 20        |
| C133044                 | KH2        | Matrix Spike [DVB609-07] | Dissolved Aluminum (Al)   | 2025/10/22    |          | 121 (1)  | %     | 80 - 120  |
|                         |            |                          | Dissolved Antimony (Sb)   | 2025/10/22    |          | 109      | %     | 80 - 120  |
|                         |            |                          | Dissolved Arsenic (As)    | 2025/10/22    |          | 106      | %     | 80 - 120  |
|                         |            |                          | Dissolved Beryllium (Be)  | 2025/10/22    |          | 106      | %     | 80 - 120  |
|                         |            |                          | Dissolved Chromium (Cr)   | 2025/10/22    |          | 104      | %     | 80 - 120  |
|                         |            |                          | Dissolved Cobalt (Co)     | 2025/10/22    |          | 101      | %     | 80 - 120  |
|                         |            |                          | Dissolved Copper (Cu)     | 2025/10/22    |          | 99       | %     | 80 - 120  |
|                         |            |                          | Dissolved Lead (Pb)       | 2025/10/22    |          | 100      | %     | 80 - 120  |
|                         |            |                          | Dissolved Molybdenum (Mo) | 2025/10/22    |          | 107      | %     | 80 - 120  |
|                         |            |                          | Dissolved Nickel (Ni)     | 2025/10/22    |          | 98       | %     | 80 - 120  |
|                         |            |                          | Dissolved Selenium (Se)   | 2025/10/22    |          | 105      | %     | 80 - 120  |
|                         |            |                          | Dissolved Silver (Ag)     | 2025/10/22    |          | 100      | %     | 80 - 120  |
|                         |            |                          | Dissolved Thallium (Tl)   | 2025/10/22    |          | 101      | %     | 80 - 120  |
|                         |            |                          | Dissolved Tin (Sn)        | 2025/10/22    |          | 108      | %     | 80 - 120  |
| C133044                 | KH2        | Spiked Blank             | Dissolved Titanium (Ti)   | 2025/10/22    |          | 106      | %     | 80 - 120  |
|                         |            |                          | Dissolved Uranium (U)     | 2025/10/22    |          | 99       | %     | 80 - 120  |
|                         |            |                          | Dissolved Vanadium (V)    | 2025/10/22    |          | 104      | %     | 80 - 120  |
|                         |            |                          | Dissolved Zinc (Zn)       | 2025/10/22    |          | 101      | %     | 80 - 120  |
|                         |            |                          | Dissolved Aluminum (Al)   | 2025/10/22    |          | 119      | %     | 80 - 120  |
|                         |            |                          | Dissolved Antimony (Sb)   | 2025/10/22    |          | 108      | %     | 80 - 120  |
|                         |            |                          | Dissolved Arsenic (As)    | 2025/10/22    |          | 106      | %     | 80 - 120  |
|                         |            |                          | Dissolved Beryllium (Be)  | 2025/10/22    |          | 106      | %     | 80 - 120  |
| Dissolved Chromium (Cr) | 2025/10/22 |                          | 106                       | %             | 80 - 120 |          |       |           |
| Dissolved Cobalt (Co)   | 2025/10/22 |                          | 104                       | %             | 80 - 120 |          |       |           |
| Dissolved Copper (Cu)   | 2025/10/22 |                          | 105                       | %             | 80 - 120 |          |       |           |
| Dissolved Lead (Pb)     | 2025/10/22 |                          | 101                       | %             | 80 - 120 |          |       |           |



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### QUALITY ASSURANCE REPORT(CONT'D)

| QA/QC<br>Batch | Init | QC Type         | Parameter                 | Date Analyzed | Value    | Recovery | UNITS | QC Limits |
|----------------|------|-----------------|---------------------------|---------------|----------|----------|-------|-----------|
|                |      |                 | Dissolved Molybdenum (Mo) | 2025/10/22    |          | 105      | %     | 80 - 120  |
|                |      |                 | Dissolved Nickel (Ni)     | 2025/10/22    |          | 105      | %     | 80 - 120  |
|                |      |                 | Dissolved Selenium (Se)   | 2025/10/22    |          | 106      | %     | 80 - 120  |
|                |      |                 | Dissolved Silver (Ag)     | 2025/10/22    |          | 100      | %     | 80 - 120  |
|                |      |                 | Dissolved Thallium (Tl)   | 2025/10/22    |          | 101      | %     | 80 - 120  |
|                |      |                 | Dissolved Tin (Sn)        | 2025/10/22    |          | 107      | %     | 80 - 120  |
|                |      |                 | Dissolved Titanium (Ti)   | 2025/10/22    |          | 108      | %     | 80 - 120  |
|                |      |                 | Dissolved Uranium (U)     | 2025/10/22    |          | 100      | %     | 80 - 120  |
|                |      |                 | Dissolved Vanadium (V)    | 2025/10/22    |          | 106      | %     | 80 - 120  |
|                |      |                 | Dissolved Zinc (Zn)       | 2025/10/22    |          | 102      | %     | 80 - 120  |
| C133044        | KH2  | Method Blank    | Dissolved Aluminum (Al)   | 2025/10/22    | <0.0030  |          | mg/L  |           |
|                |      |                 | Dissolved Antimony (Sb)   | 2025/10/22    | <0.00060 |          | mg/L  |           |
|                |      |                 | Dissolved Arsenic (As)    | 2025/10/22    | <0.00020 |          | mg/L  |           |
|                |      |                 | Dissolved Beryllium (Be)  | 2025/10/22    | <0.0010  |          | mg/L  |           |
|                |      |                 | Dissolved Chromium (Cr)   | 2025/10/22    | <0.0010  |          | mg/L  |           |
|                |      |                 | Dissolved Cobalt (Co)     | 2025/10/22    | <0.00030 |          | mg/L  |           |
|                |      |                 | Dissolved Copper (Cu)     | 2025/10/22    | <0.0010  |          | mg/L  |           |
|                |      |                 | Dissolved Lead (Pb)       | 2025/10/22    | <0.00020 |          | mg/L  |           |
|                |      |                 | Dissolved Molybdenum (Mo) | 2025/10/22    | <0.00020 |          | mg/L  |           |
|                |      |                 | Dissolved Nickel (Ni)     | 2025/10/22    | <0.00050 |          | mg/L  |           |
|                |      |                 | Dissolved Selenium (Se)   | 2025/10/22    | <0.00020 |          | mg/L  |           |
|                |      |                 | Dissolved Silver (Ag)     | 2025/10/22    | <0.00010 |          | mg/L  |           |
|                |      |                 | Dissolved Thallium (Tl)   | 2025/10/22    | <0.00020 |          | mg/L  |           |
|                |      |                 | Dissolved Tin (Sn)        | 2025/10/22    | <0.0010  |          | mg/L  |           |
|                |      |                 | Dissolved Titanium (Ti)   | 2025/10/22    | <0.0010  |          | mg/L  |           |
|                |      |                 | Dissolved Uranium (U)     | 2025/10/22    | <0.00010 |          | mg/L  |           |
|                |      |                 | Dissolved Vanadium (V)    | 2025/10/22    | <0.0010  |          | mg/L  |           |
|                |      |                 | Dissolved Zinc (Zn)       | 2025/10/22    | <0.0030  |          | mg/L  |           |
| C133044        | KH2  | RPD [DVB609-07] | Dissolved Aluminum (Al)   | 2025/10/22    | NC       |          | %     | 20        |
|                |      |                 | Dissolved Antimony (Sb)   | 2025/10/22    | NC       |          | %     | 20        |
|                |      |                 | Dissolved Arsenic (As)    | 2025/10/22    | 1.2      |          | %     | 20        |
|                |      |                 | Dissolved Beryllium (Be)  | 2025/10/22    | NC       |          | %     | 20        |
|                |      |                 | Dissolved Chromium (Cr)   | 2025/10/22    | NC       |          | %     | 20        |
|                |      |                 | Dissolved Cobalt (Co)     | 2025/10/22    | 0.52     |          | %     | 20        |
|                |      |                 | Dissolved Copper (Cu)     | 2025/10/22    | 1.4      |          | %     | 20        |
|                |      |                 | Dissolved Lead (Pb)       | 2025/10/22    | NC       |          | %     | 20        |
|                |      |                 | Dissolved Molybdenum (Mo) | 2025/10/22    | 4.4      |          | %     | 20        |
|                |      |                 | Dissolved Nickel (Ni)     | 2025/10/22    | 4.2      |          | %     | 20        |
|                |      |                 | Dissolved Selenium (Se)   | 2025/10/22    | 13       |          | %     | 20        |
|                |      |                 | Dissolved Silver (Ag)     | 2025/10/22    | NC       |          | %     | 20        |
|                |      |                 | Dissolved Thallium (Tl)   | 2025/10/22    | NC       |          | %     | 20        |
|                |      |                 | Dissolved Tin (Sn)        | 2025/10/22    | NC       |          | %     | 20        |
|                |      |                 | Dissolved Titanium (Ti)   | 2025/10/22    | NC       |          | %     | 20        |
|                |      |                 | Dissolved Uranium (U)     | 2025/10/22    | 1.5      |          | %     | 20        |
|                |      |                 | Dissolved Vanadium (V)    | 2025/10/22    | NC       |          | %     | 20        |



**QUALITY ASSURANCE REPORT(CONT'D)**

| QA/QC   | Batch | Init | QC Type | Parameter           | Date Analyzed | Value | Recovery | UNITS | QC Limits |
|---|-------|------|---------|---------------------|---------------|-------|----------|-------|-----------|
|   |       |      |         | Dissolved Zinc (Zn) | 2025/10/22    | NC    |          | %     | 20        |
| <p>N/A = Not Applicable</p> <p>Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.</p> <p>Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.</p> <p>QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.</p> <p>Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.</p> <p>Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.</p> <p>NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)</p> <p>NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference &lt;= 2x RDL).</p> <p>(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.</p> |       |      |         |                     |               |       |          |       |           |



### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

\_\_\_\_\_  
Suwan (Sze Yeung) Fock, B.Sc., Scientific Specialist

\_\_\_\_\_  
Bureau Veritas Certified by Ghayasuddin Khan, M.Sc., P.Chem., QP, Scientific Specialist, Inorganics

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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Scott Cantwell, General Manager responsible for Alberta Environmental laboratory operations.

**C586762**  
**2025/10/16 14:25**

Bureau Veritas  
 4000 15th N.E. Calgary, Alberta Canada T2E 6P6 Tel: (403) 291-3077 Toll-free 800-368-5765 Fax: (403) 291-4488 www.bv.com

**CHAIN OF CUSTODY RECORD**

|   |                           |                       |                       |                             |                  |                             |  |
|---|---------------------------|-----------------------|-----------------------|-----------------------------|------------------|-----------------------------|--|
| <b>Invoice To:</b>  |                           | <b>Report To:</b>     |                       | <b>PROJECT INFORMATION:</b> |                  | <b>Laboratory Use Only:</b> |  |
| Company: #10658 AUSENCO SUSTAINABILITY ULC                                  | Company: Cameron Davis    | Quotation #: C41504   | Bureau Veritas Job #: | Bottle Order #:             | 708446           |                             |  |
| Attention: Accounts Payable   | Attention: Cameron Davis  | P.O. #: 102604-01     | Project: Ausenco      | COC #:                      | Project Manager: |                             |  |
| Address: Suite 1430, 401-9 Avenue 17th 1407 2nd St SW<br>CALGARY AB T2P 2Y3 | Address:                  | Project Name: Ausenco | Site #:               | C#768446-01-01              |                  | Danielle Boisvert           |  |
| Tel: (403) 264-0671 Fax: (403) 264-0670                                     | Tel: (587) 832-4864 Fax:  | Sampled By: C Davis   |                       |                             |                  |                             |  |
| Email: procure2pay_na@ausenco.com   | Email: cdavis@ausenco.com |                       |                       |                             |                  |                             |  |

| Sample Barcode Label | Sample (Location) Identification | Date Sampled | Time Sampled | Matrix | Metals Field Filtered? (Y/N) | ANALYSIS REQUESTED (PLEASE BE SPECIFIC) |                           |                   |                                 |                           |                    |                  |                                |                |                    | # of Bottles | Comments  |
|----------------------|----------------------------------|--------------|--------------|--------|------------------------------|---|---------------------------|-------------------|---------------------------------|---------------------------|--------------------|------------------|--------------------------------|----------------|--------------------|--------------|---|
|                      |                                  |              |              |        |                              | Routine Water & Diss. Regulated Metals  | Orthophosphate by KoneLab | Ammonia-N (Total) | Total Kjeldahl Nitrogen (Total) | Biochemical Oxygen Demand | COD by Colorimeter | Total Phosphorus | Phosphorus-P (Total Dissolved) | TSS, TDS, TURB | Oxygen (Dissolved) |              |   |
| 1                    | WR3                              | 25/10/16     | 1115         | H2O    | ✓                            |   |                           |                   |                                 |                           |                    |                  |                                |                |                    | 8            |   |
| 2                    | WR4b                             | ↓            | 1300         |        | ✓                            |   |                           |                   |                                 |                           |                    |                  |                                |                |                    | 8            | * See attached quote for bottles and analysis. Quote C41504 |
| 3                    | WR5b                             | ↓            | 1030         |        | ✓                            |   |                           |                   |                                 |                           |                    |                  |                                |                |                    | 8            |   |
| 4                    | WR6                              | ↓            | 1200         |        | ✓                            |   |                           |                   |                                 |                           |                    |                  |                                |                |                    | 8            |   |
| 5                    | WR7                              | 25/10/16     | 1230         |        | ✓                            |   |                           |                   |                                 |                           |                    |                  |                                |                |                    | 8            |   |
| 6                    |                                  |              |              |        |                              |   |                           |                   |                                 |                           |                    |                  |                                |                |                    |              |   |
| 7                    |                                  |              |              |        |                              |   |                           |                   |                                 |                           |                    |                  |                                |                |                    |              |   |
| 8                    |                                  |              |              |        |                              |   |                           |                   |                                 |                           |                    |                  |                                |                |                    |              |   |
| 9                    |                                  |              |              |        |                              |   |                           |                   |                                 |                           |                    |                  |                                |                |                    |              |   |
| 10                   |                                  |              |              |        |                              |   |                           |                   |                                 |                           |                    |                  |                                |                |                    |              |   |

**Turnaround Time (TAT) Required:**  
 Please provide advance notice for rush projects

**Regular (Standard) TAT:**  
 (Will be applied if Rush TAT is not specified):  
 Standard TAT = 5-7 Working days for most tests.  
 Please note: Standard TAT for certain tests are > 5 days - contact your Project Manager for details

Regular (Standard) TAT


**Job Specific Rush TAT (If applies to entire submission)**  
 Date Required: \_\_\_\_\_  
 Rush Confirmation Number: \_\_\_\_\_ (call lab for #)



|                                      |  |                  |      |                                |  |                  |       |                               |                          |                             |   |
|--------------------------------------|--|------------------|------|--------------------------------|--|------------------|-------|-------------------------------|--------------------------|-----------------------------|---|
| * RELINQUISHED BY: (Signature/Print) |  | Date: (YY/MM/DD) | Time | RECEIVED BY: (Signature/Print) |  | Date: (YY/MM/DD) | Time  | # jars used and not submitted | Laboratory Use Only      |                             |   |
| <i>[Signature]</i>                   |  | 25/10/16         | 1422 | <i>[Signature]</i>             |  | 2025/10/16       | 14:23 |                               | Time Sensitive           | Temperature (°C) on Receipt | Custody Seal Intact on Cooler?                                      |
|                                      |  |                  |      |                                |  |                  |       |                               | <input type="checkbox"/> | 21.4/5                      | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |

\* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/ENVIRONMENTAL-LABORATORIES/RESOURCES/COC-TERMS-AND-CONDITIONS.  
 \*\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD, AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.  
 \*\* ALL SAMPLES ARE HELD FOR 60 DAYS AFTER SAMPLE RECEIPT, FOR SPECIAL REQUESTS CONTACT YOUR PROJECT MANAGER



Bottle Order #:   
768446

## SAMPLE CONTAINER REQUEST FORM

Date Ordered: 2025/09/29  
Bottle Order #: 768446  
Pr. Manager: Danielle Boisvert

Date Required: 2025/10/14  
Time Required: 03:00 PM  
Ship Method: Pickup  
Ship Courier:

Quote: C41504  
Site  
Project #: 102604-01  
PO #:

Comments:

Ordered By  
Company: AUSENCO SUSTAINABILITY ULC  
Attention: Accounts Payable  
Other Attn:  
Phone: (403) 264-0671  
Street: Suite 1430, 401-9 Avenue  
  
City: CALGARY, Alberta  
CANADA T2P 3C5


Ship To  
AUSENCO SUSTAINABILITY ULC  
Cameron Davis  
  
(587) 832-4864  
Suite 1430, 401-9 Avenue  
  
CALGARY, Alberta  
CANADA T2P 3C5

| Label ID                       | Size   | Type       | Preservative    | Analysis  | # of Samples | # of Containers / Sample | Addn | QC | Total # of Containers | Sampling Instructions                                    |
|--------------------------------|--------|------------|-----------------|---|--------------|--------------------------|------|----|-----------------------|--|
| <b>SET # 1 WATER</b>           |        |            |                 |   |              |                          |      |    |                       |  |
| AMMONIA-40ML -CLEAR GLASS VIAL | 40 ml  | Glass Vial | Sulfuric Acid   | Ammonia-N (Total)   | 11           | 1                        | 0    | 0  | 11                    | Bottle is Precharged with Preservative.                  |
| BOD-500ml (white)              | 500 ml | Plastic    | No preservative | Biochemical Oxygen Demand   | 11           | 1                        | 0    | 0  | 11                    | RUSH TO LAB, 48 hour hold time                           |
| GENERAL - 120ml (WHITE)        | 120 mL | Plastic    | No preservative | Oxygen (Dissolved)  | 11           | 1                        | 0    | 0  | 11                    |  |
| GENERAL - 250ml (WHITE)        | 250 mL | Plastic    | No preservative | Alkalinity @25C (pp, total), CO <sub>3</sub> ,HCO <sub>3</sub> ,OH, Chloride/Sulphate by Auto Colourimetry, Conductivity @25C, Nitrate and Nitrite, NO <sub>2</sub> (N); NO <sub>2</sub> (N) + NO <sub>3</sub> (N) in Water, Nitrate (as N), pH @25°C, Orthophosphate by Automated Analyzer | 11           | 1                        | 0    | 0  | 11                    |  |
| General-1000ml (GRV)           | 1 L    | Plastic    | No preservative | Total Dissolved Solids (Filt. Residue), Total Suspended Solids (NFR), Turbidity   | 11           | 1                        | 0    | 0  | 11                    |  |
| GENERAL - 120ml (RED) - FF/FP  | 120 mL | Plastic    | Nitric Acid     | Elements by ICP - Dissolved, Elements by ICPMS - Dissolved  | 11           | 1                        | 0    | 0  | 11                    | Field filter/preservative is precharged in sample bottle |

Calgary: 2021 - 41st Avenue N.E. T2E 6P2 Telephone(403) 291-3077 Fax(403) 291-9468

C586762  
2025/10/16 14:25



Bottle Order #:   
768446

| Label ID                        | Size   | Type    | Preservative   | Analysis  | # of Samples | # of Containers / Sample | Addn | QC | Total # of Containers | Sampling Instructions                                    |
|---------------------------------|--------|---------|----------------|---|--------------|--------------------------|------|----|-----------------------|--|
| NUTRIENTS-120ml - FF/FP         | 120 mL | Plastic | Filter / H2SO4 | Total Phosphorus Dissolved client FF/FP   | 11           | 1                        | 0    | 0  | 11                    | Field filter/preservative is precharged in sample bottle |
| NUTRIENTS-120ml (YELLOW)        | 120 mL | Plastic | Sulfuric Acid  | COD by Colorimeter, Total Kjeldahl Nitrogen (Total), Nitrogen (Total), Total Phosphorus | 11           | 1                        | 0    | 0  | 11                    | Preservative is precharged in sample bottle              |
| <b>MISCELLANEOUS ITEMS</b>      |        |         |                |   |              |                          |      |    |                       |  |
| Chain Of Custody                |        |         | N/A            | 2 prelog COC + 2 Regular COC  | 1            | 4                        |      |    | 4                     |  |
| DI Water -1 Litre (Metals free) |        |         | N/A            | 4 X 1L MF water   | 1            | 4                        |      |    | 4                     |  |

Bureau Veritas provides sampling container kits as a complimentary service for your convenience. Although every reasonable effort has been made to accurately fill your container request, we recommend that this order is verified prior to going to the field to ensure it meets your specific program requirements. This packing list has been included in your order to assist with your review. If there is a discrepancy, please contact your Project Manager for immediate resolution.

**SAMPLE INSTRUCTIONS**

- 1) Collect samples in the containers provided, using caution when handling bottles that contain preservatives. Do not overfill the bottle or rinse out preservatives, as this may impact your analytical results.
- 2) Ensure that all containers are clearly labeled with the sample ID and sampling date.
- 3) Complete the Chain of Custody form provided, ensuring that you list each sample ID along with your detailed testing requirements. Please indicate your Bureau Veritas Quotation Number on the form.
- 4) Ship all samples as soon as possible to Bureau Veritas.
- 5) Unless otherwise instructed, all samples **must be kept cool (<10 °C)** from the time of sampling until delivery to Bureau Veritas.
- 6) As a safety precaution, please ensure the weight of each cooler does not exceed 40 lbs.

**CAUTION:** Preservatives are corrosive. In case of contact, flush with plenty of water. SDS information is available upon request.

If you have any questions, or require additional information, please do not hesitate to contact your Bureau Veritas PM.

Danielle Boisvert; danielle-andrea.boisvert@bureauveritas.com or 780-782-5528

Calgary, 2021 - 41st Avenue N.E. T2E 6P2 Telephone(403) 291-3077 Fax(403) 291-9468

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2025/10/16 14:25

# Appendix D

## Photo Log



**Photo 1** View north from WQ-01 sample site, located within the Reference Wetland.  
Photo taken during spring sampling on May 28, 2025.



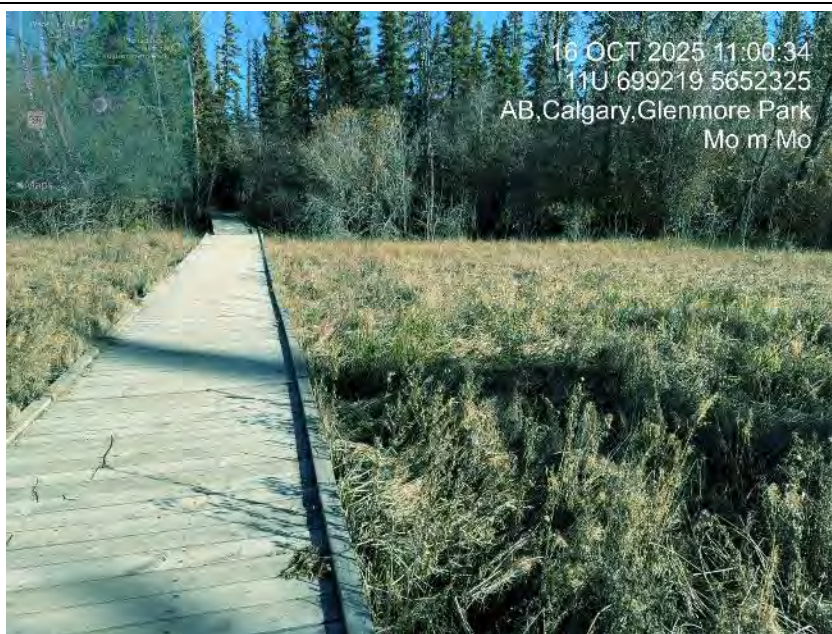
**Photo 2** View east from WQ-01 sample site, located within the Reference Wetland.  
Photo taken during spring sampling on May 28, 2025.



**Photo 3** View south from WQ-01 sample site, located within the Reference Wetland.  
Photo taken during spring sampling on May 28, 2025.



**Photo 4** View west from WQ-01 sample site, located within the Reference Wetland.  
Photo taken during spring sampling on May 28, 2025.



**Photo 5** View north from WQ-01 sample site, located within the Reference Wetland.  
Photo taken during fall sampling on October 16, 2025.



**Photo 6** View east from WQ-01 sample site, located within the Reference Wetland.  
Photo taken during fall sampling on October 16, 2025.



**Photo 7** View of south from WQ-01 sample site, located within the Reference Wetland. Photo taken during fall sampling on October 16, 2025.



**Photo 8** View of west from WQ-01 sample site, located within the Reference Wetland. Photo taken during fall sampling on October 16, 2025.



**Photo 9** View north from WQ-02 sample site, located within Wetland 06. Photo taken during spring sampling on May 28, 2025.



**Photo 10** View east from WQ-02 sample site, located within Wetland 06. Photo taken during spring sampling on May 28, 2025.



**Photo 11** View south from WQ-02 sample site, located within Wetland 06. Photo taken during spring sampling on May 28, 2025.



**Photo 12** View west from WQ-02 sample site, located within Wetland 06. Photo taken during spring sampling on May 28, 2025.



**Photo 13** View north from WQ-02 sample site, located within Wetland 06. Photo taken during fall sampling on October 16, 2025.



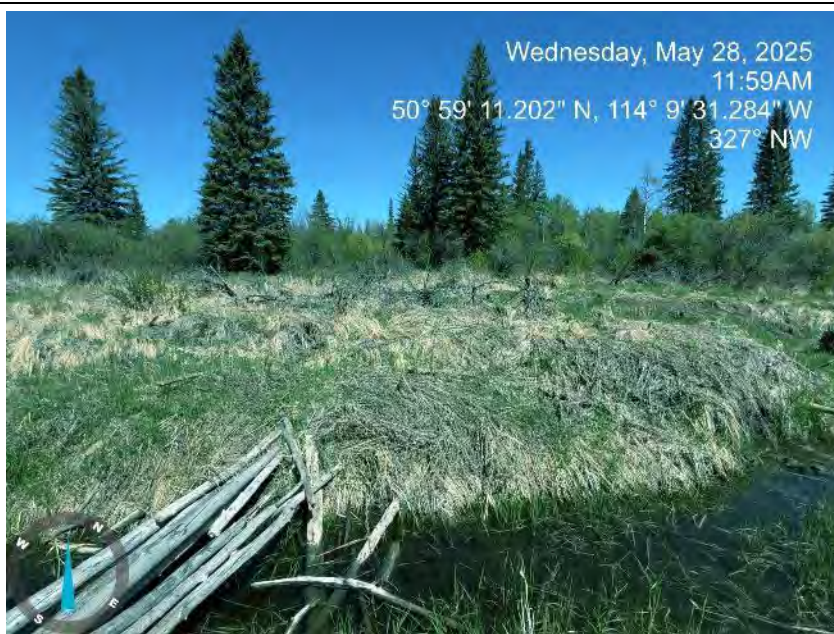
**Photo 14** View east from WQ-02 sample site, located within Wetland 06. Photo taken during fall sampling on October 29, 2025.



**Photo 15** View south from WQ-02 sample site, located within Wetland 06. Photo taken during fall sampling on October 16, 2025.



**Photo 16** View northwest from WQ-02 sample site, located within Wetland 06. Photo taken during fall sampling on October 16, 2025.



**Photo 17** View north from WQ-03 sample site, located within Wetland 06. Photo taken during spring sampling on May 28, 2025.



**Photo 18** View east from WQ-03 sample site, located within Wetland 06. Photo taken during spring sampling on May 28, 2025.



**Photo 19** View south from WQ-03 sample site, located within Wetland 06. Photo taken during spring sampling on May 28, 2025.



**Photo 20** View west from WQ-03 sample site, located within Wetland 06. Photo taken during spring sampling on May 28, 2025.



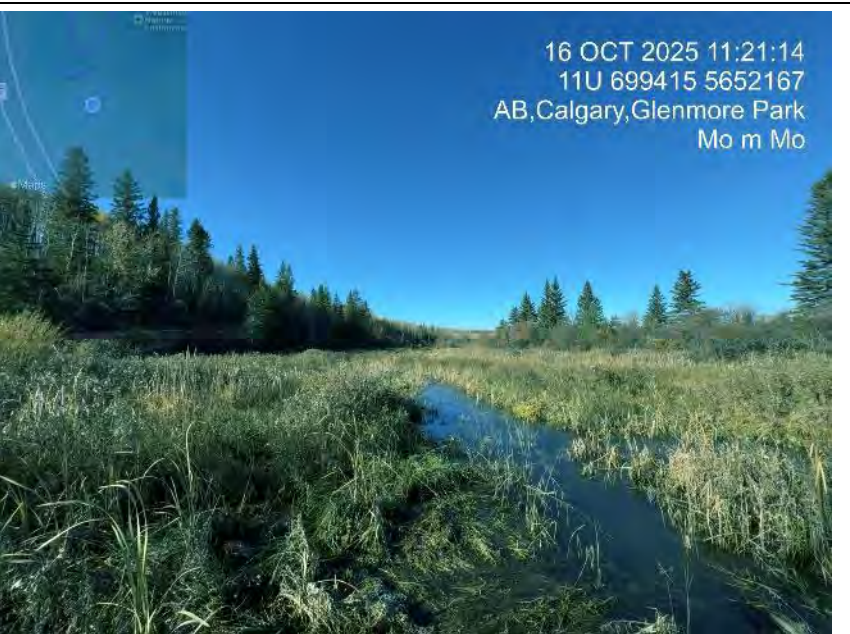
**Photo 21** View north from WQ-03 sample site, located within Wetland 6. Photo taken during fall sampling on October 16, 2025.



**Photo 22** View east from WQ-03 sample site, located within Wetland 6. Photo taken during fall sampling on October 16, 2025.



**Photo 23** View south from WQ-03 sample site, located within Wetland 6. Photo taken during fall sampling on October 16, 2025.



**Photo 24** View west from WQ-03 sample site, located within Wetland 6. Photo taken during fall sampling on October 16, 2025.



**Photo 25** View north from WQ-04A sample site, located upslope of the SWCRR Project and within Wetland 08. Photo taken during spring sampling on May 28, 2025.



**Photo 26** View east from WQ-04A sample site, located upslope of the SWCRR Project and within Wetland 08. Photo taken during spring sampling on May 28, 2025.



**Photo 27** View south from WQ-04A sample site, located upslope of the SWCRR Project and within Wetland 08. Photo taken during spring sampling on May 28, 2025.

**Note:** No fall photos were available for WQ-04A as the Weaselhead Road was closed.

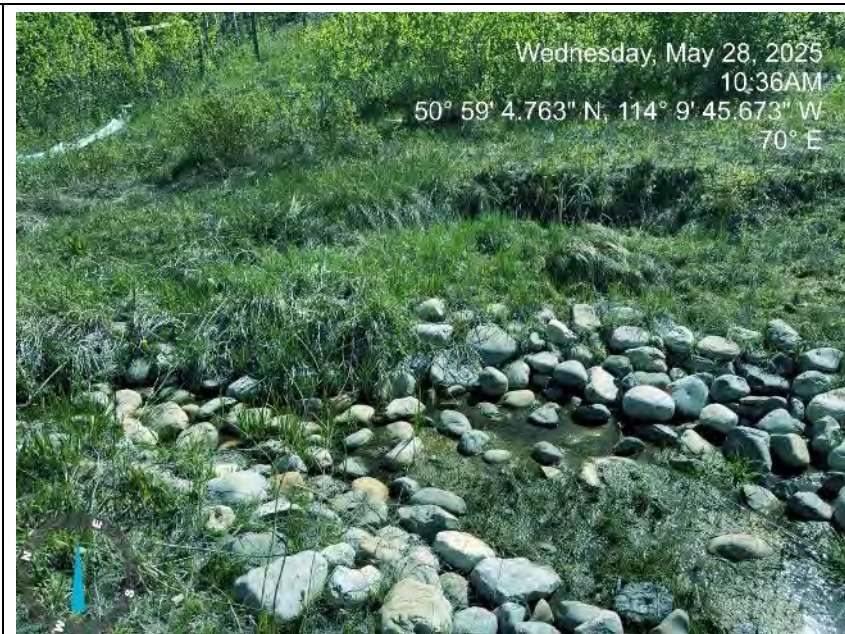


**Photo 28** View west from WQ-04A sample site located upslope of the SWCRR Project and within Wetland 08. Photo taken during spring sampling on May 28, 2025.

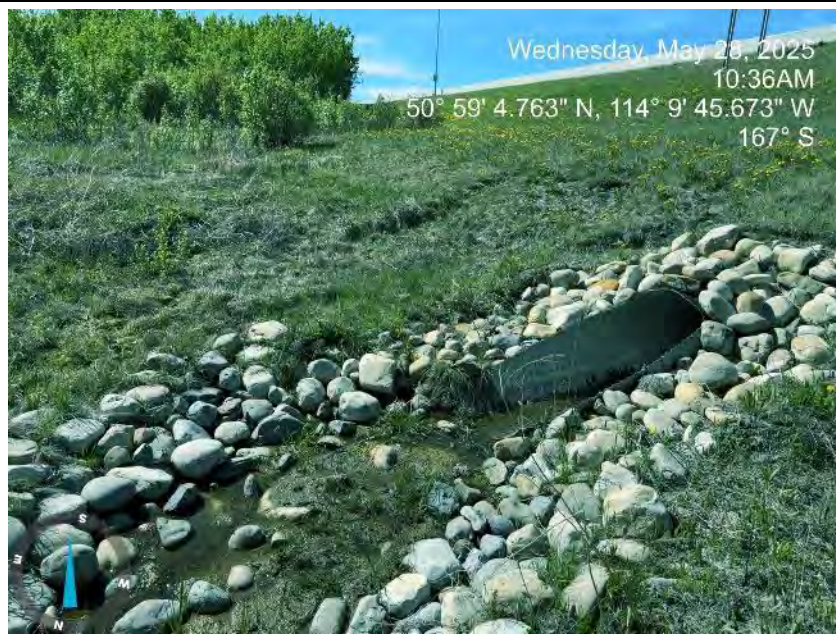
**Note:** No fall photos were available for WQ-04A as the Weaselhead Road was closed.



**Photo 29** View north from WQ-04B sample site, located downslope of the SWCRR Project and Wetland 08. Photo taken during spring sampling on May 208, 2025.



**Photo 30** View east from WQ-04B sample site, located downslope of the SWCRR Project and Wetland 08. Photo taken during fall sampling on May 28, 2025.



**Photo 31** View south from WQ-04B sample site, located downslope of the SWCRR Project and Wetland 08. Photo taken during spring sampling on May 28, 2025.



**Photo 32** View west from WQ-04B sample site, located downslope of the SWCRR Project and Wetland 08. Photo taken during spring sampling on May 28, 2025.



**Photo 33** View north from WQ-04B sample site, located downslope of the SWCRR Project and Wetland 08. Photo taken during fall sampling on October 16, 2025.



**Photo 34** View southeast from WQ-04B sample site, located downslope of the SWCRR Project and Wetland 08. Photo taken during fall sampling on October 16, 2025.



**Photo 35** View south from WQ-04B sample site, located downslope of the SWCRR Project and Wetland 08. Photo taken during fall sampling on October 16, 2025.



**Photo 36** View north from WQ-05A sample site, located upslope of the SWCRR Project within Wetland 09. Photo taken during spring sampling on May 28, 2025



**Photo 37** View east from WQ-05A sample site, located upslope of the SWCRR Project within Wetland 09. Photo taken during spring sampling on May 28, 2025.



**Photo 38** View south from WQ-05A sample site, located upslope of the SWCRR Project within Wetland 09. Photo taken during spring sampling on May 28, 2025.



**Photo 39** View north from WQ-05B sample site, located downslope of the SWCRR Project and Wetland 09. Photo taken during spring sampling on May 28, 2025.



**Photo 40** View east from WQ-05B sample site, located downslope of the SWCRR Project and Wetland 09. Photo taken during spring sampling on May 28, 2025.



**Photo 41** View south from WQ-05B sample site, located downslope of the SWCRR Project and Wetland 09. Photo taken during spring sampling on May 28, 2025.



**Photo 42** View southeast from WQ-05B sample site, located downslope of the SWCRR Project and Wetland 09. Photo taken during spring sampling on May 28, 2025.



**Photo 43** View north from WQ-05B sample site located downslope of the SWCRR Project and Wetland 09. Photo taken during fall sampling on October 16, 2025.



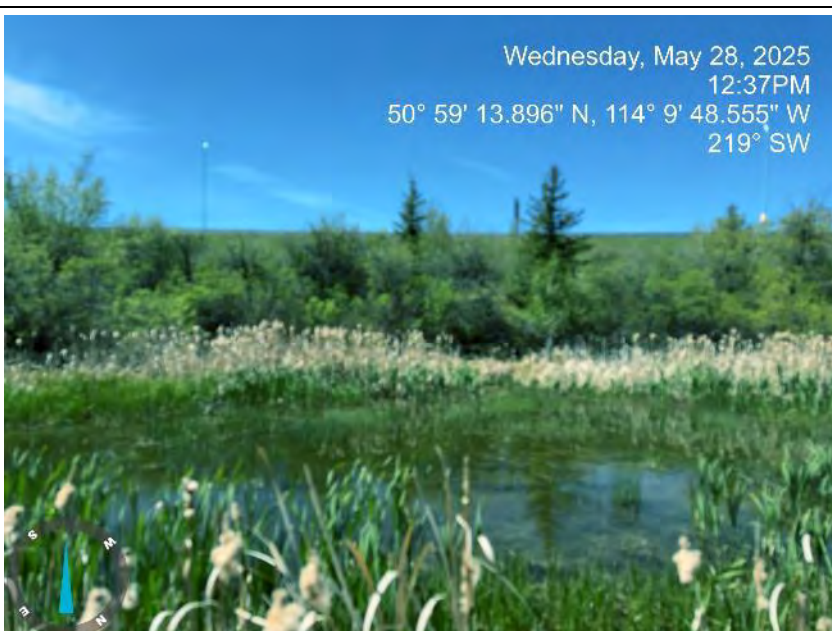
**Photo 44** View east from WQ-05B sample site located downslope of the SWCRR Project and Wetland 09. Photo taken during fall sampling on October 16, 2025.



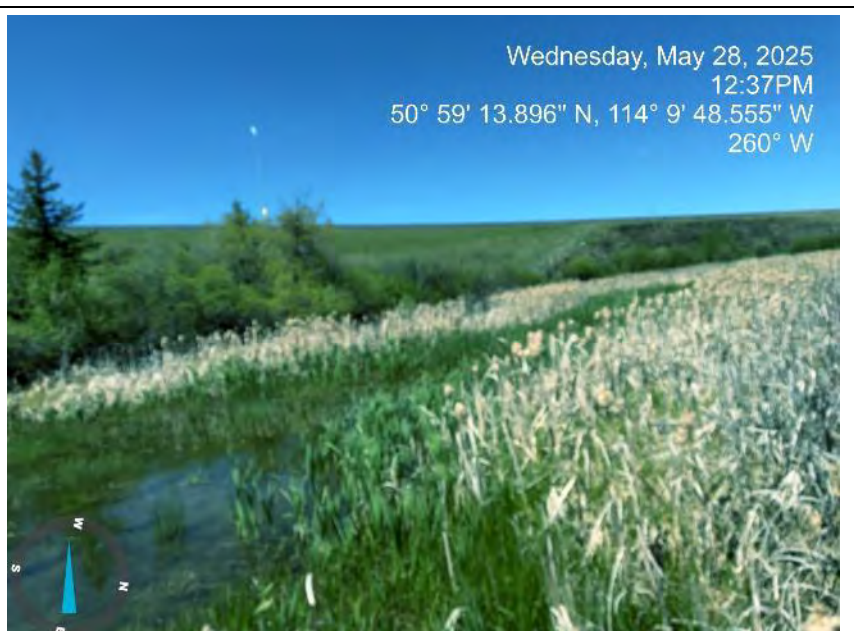
**Photo 45** View southwest from WQ-05B sample site located downslope of the SWCRR Project and Wetland 09. Photo taken during fall sampling on October 16, 2025.



**Photo 46** View west from WQ-05B sample site located downslope of the SWCRR Project and Wetland 09. Photo taken during fall sampling on October 16, 2025.



**Photo 47** View southwest from WQ-06 sample site, located downslope of the SWCRR Project and Wetland 08. Photo taken during spring sampling on May 28, 2025.



**Photo 48** View west from WQ-06 sample site, located downslope of the SWCRR Project and Wetland 08. Photo taken during spring sampling on May May 28, 2025.



**Photo 49** View south from WQ-06 sample site, located downslope of the SWCRR Project and Wetland 08. Photo taken during spring sampling on May 28, 2025.



**Photo 50** View of ground conditions at WQ-06 sample site, located downslope of the SWCRR Project and Wetland 08. Photo taken during spring sampling on May 28, 2025.



**Photo 51** View northwest from WQ-06 sample site, located downslope of the SWCRR Project and Wetland 08. Photo taken during fall sampling on October 16, 2025.



**Photo 52** View southeast from WQ-06 sample site, located downslope of the SWCRR Project and Wetland 08. Photo taken during fall sampling on October 16, 2025.



**Photo 53** View southwest from WQ-06 sample site, located downslope of the SWCRR Project and Wetland 08. Photo taken during fall sampling on October 16, 2025.



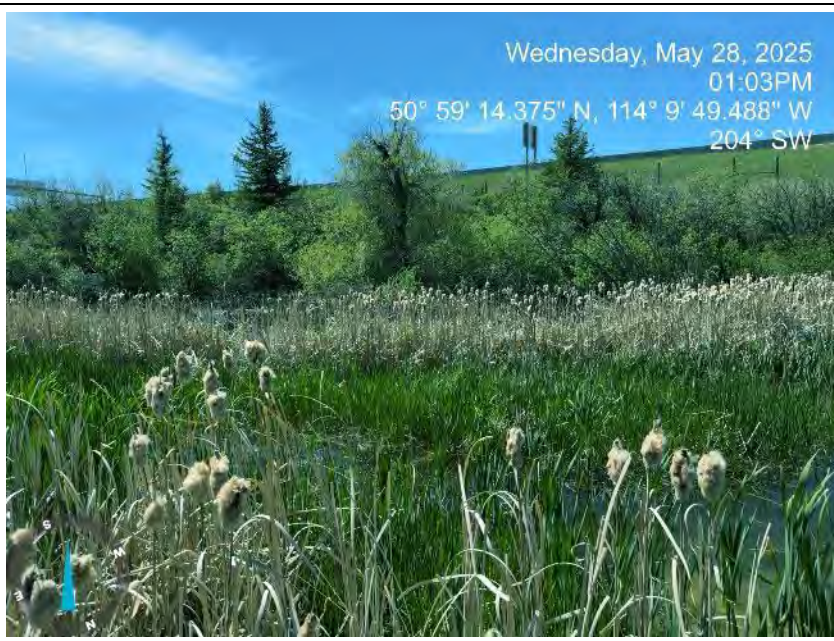
**Photo 54** View south from WQ-06 sample site, located downslope of the SWCRR Project and Wetland 08. Photo taken during fall sampling on October 16, 2025.



**Photo 55** View west from WQ-07 sample site, located downslope of the SWCRR Project and Wetland 08. Photo taken during spring sampling on May 28, 2025.



**Photo 56** View southwest from WQ-07 sample site, located downslope of the SWCRR Project and Wetland 08. Photo taken during spring sampling on May 28, 2025.



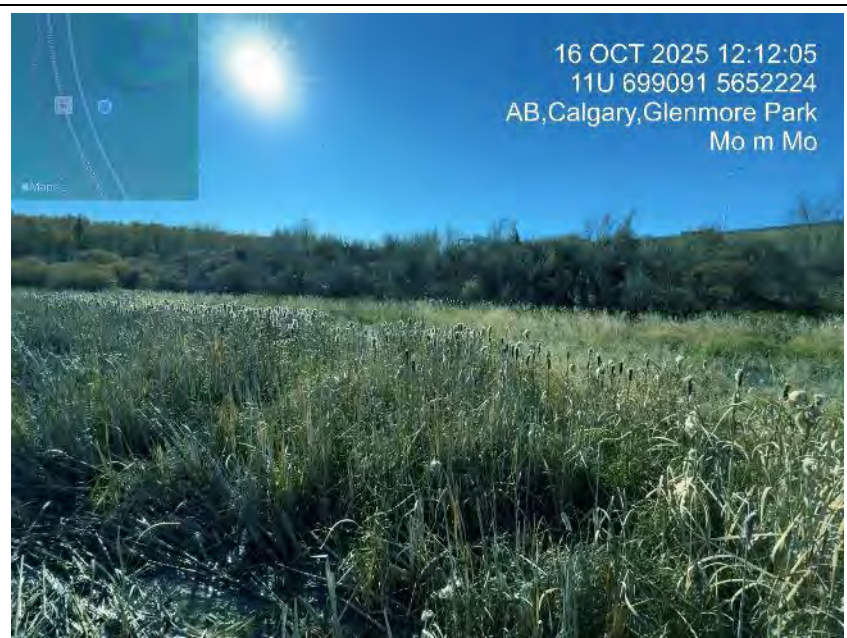
**Photo 57** View south from WQ-07 sample site, located downslope of the SWCRR Project and Wetland 08. Photo taken during spring sampling on May 28, 2025.



**Photo 58** View northwest from WQ-07 sample site, located downslope of the SWCRR Project and Wetland 08. Photo taken during spring sampling on May 28, 2025.



**Photo 59** View south from WQ-07 sample site, located downslope of the SWCRR Project and Wetland 08. Photo taken during fall sampling on October 16, 2025.



**Photo 60** View west from WQ-07 sample site, located downslope of the SWCRR Project and Wetland 08. Photo taken during fall sampling on October 16, 2025.



**Photo 61** View looking upstream from FL-01 inflow site.  
Photo taken during spring sampling on June 27, 2025.  
**Note: No fall photos for FL-01 in the fall.**



**Photo 62** View looking downstream from FL-01 inflow site.  
Photo taken during spring sampling on June 27, 2025.  
**Note: No fall photos for FL-01 in the fall.**



**Photo 63** View of FL-01 inflow site. Photo taken during spring sampling on June 27, 2025.



**Photo 64** View looking upstream from FL-02 inflow site.  
Photo taken during spring sampling on June 27, 2025.



**Photo 65** View looking downstream from FL-02 inflow site.  
Photo taken during spring sampling on June 27, 2025.



**Photo 66** View south from FL-02 inflow site.  
Photo taken during fall sampling on October 16, 2025.



**Photo 67** View north from FL-02 inflow site.  
Photo taken during fall sampling on October 16, 2025.



**Photo 68** View looking upslope from FL-03 inflow site.  
Photo taken during spring sampling on June 27, 2025.



**Photo 69** View of standing water from FL-03 inflow site.  
Photo taken during spring sampling on June 27, 2025.

**Note: No fall photos for FL-03 in the fall.**



**Photo 70** View looking upslope from FL-04 outflow site.  
Photo taken during spring sampling on June 27, 2025.



**Photo 71** View looking upslope from FL-04 outflow site.  
Photo taken during spring sampling on June 27, 2025.

**Note: No fall photos for FL-04 in the fall.**



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