APPENDIX G.1.6

Tote Road Fish Habitat Monitoring Report 2025

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

2025 TOTE ROAD FISH HABITAT MONITORING
ANNUAL REPORT

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SECTION 1.0 - INTRODUCTION

1.1 MARY RIVER PROJECT

The Mary River Project (the Project) is an iron ore mining project operated by Baffinland Iron Mines Corporation (Baffinland) located in the North Baffin region of Baffin Island, Nunavut. Commercial open pit mining, including pit bench development, ore haulage, and ore stockpiling, as well as the crushing and screening of high-grade iron ore, commenced at the Project Mine Site in September 2014. Ore from the Project Mine Site is transported along the Tote Road to Milne Port, located approximately 100 kilometres (km) north of the Mine Site, where it is stockpiled. At Milne Port, the ore is loaded onto bulk carrier ships for transport to international markets during the shipping season. Detailed descriptions of the Project and annual activities can be found in reports from Knight Piésold (2007b, 2008) and Baffinland (2009 to 2024, incl.).

The Tote Road was first established in the 1960s and extends approximately 100 kilometres between the Mary River Mine Site (Mine Site) and Milne Port. Currently, the Tote Road is used as a means of transport of iron ore, personnel, equipment, and supplies between the Mine Site and Milne Port. Since 2013, there have been ongoing upgrades to sections of the Tote Road as part of the construction and operation of the Early Revenue Phase (ERP) for the Project, to mitigate sedimentation and erosion concerns, and to safely and efficiently transport iron ore from the Mine Site to Milne Port. Tote Road upgrades and improvements have included the following activities:

- Several clear span bridges were constructed in 2014 replacing sea container crossings;
- Widening, straightening and realignment of sections of the Tote Road at strategic locations;
- Addition of and ongoing protective armouring on road embankments and erosion mitigation measures; and
- Continued installation, movement and/or extension of culverts at identified stream crossings to maintain and restore fish passage, improve transportation safety and minimize erosion/sedimentation.

Baffinland continues to work with the QIA and DFO to address outstanding issues and implement remedial works and upgrades at 20 priority culvert crossings along the Tote Road, however, also conducts work on culverts outside of priority list though consultations with both stakeholders. Baffinland retained external engineering support to design permanent replacements for the 20 high priority water crossings. In late February 2024, DFO indicated to the Nunavut Water Board (NWB) that their concerns with an earlier version of the previous Permanent Crossing Plan had

been addressed. Baffinland performed a culvert remediation program from February to May 2024 which included the construction of 7 of the 20 priority culverts before the start of freshet. The construction experienced several challenges with implementing designs and permafrost and ice lens complications at select crossings. Following construction significant settlement of select culvert crossings was observed along the culvert crossing alignments as result of suspected permafrost and ice lens degradation. The discovery of these design challenges has warranted additional engineering work and collaboration with DFO, in order to ensure the unique North Baffin Island environment is well understood based on lessons learned in the field, and to ensure future functionality of culvert crossings.

In 2025 recognizing the challenges experienced with the original designs submitted to DFO for approval, Baffinland developed a Gap Closure plan that was submitted to DFO in June outlining a modified approach to progress the remaining priority culverts. The plan outlined that was important for site-specific hydrotechnical and geotechnical assessments to be conducted to support Baffinland's understanding of the failures observed at some of the crossings that were re-constructed in 2024. The assessments were conducted in summer 2025 with external expertise to inform on site-specific design specifications for re-constructing settled crossings (CV 216 and C 106) as well as, informing on site-specific retrofits and replacement new designs for the remaining 13 priority culvert crossings. In collaboration with DFO, it was determined that some crossings could be retrofit with minor works to re-establish fish passage while others still required a complete re-construction to resolve fish passage issues. Designs and approvals are ongoing with DFO with active work occurring on approved designs in frozen conditions Q4 2025. As part of design submissions, a specific Fisheries Act Authorization was granted in October 2025 for construction of a new crossing at CV 216, which experienced the most severe settlement after it's 2024 re-construction location. Baffinland also submitted a monitoring plan to evaluate performance of all 20 crossings on May 30 2025, and the first year of monitoring was conducted culverts constructed in 2024 and results were submitted to DFO. Beyond the additional culvert retrofit and replacement Project Baffinland continues to progress with DFO, Baffinland continues to perform monitoring on historical fisheries crossing (beyond Authorisation requirements) for due diligence and future planning for fish passage restoration Projects beyond the priority culverts being worked on. This report details such monitoring.

1.2 AUTHORIZATION FOR WORKS

Fisheries and Oceans Canada (DFO) (1998) defined Harmful Alteration, Disruption or Destruction (HADD) as: "any meaningful change in one or more habitat components that can reasonably be expected to cause a real reduction in the capacity of the habitat to support the life requisites of fish". A HADD occurs when the physical, chemical, or biological features of a water body are sufficiently altered, such that habitat becomes less suitable for one or more life history processes

of fish. Detailed descriptions of the 2007 HADD authorization and any related amendments and Letters of Advice can be found in previous annual reports (Knight Piésold 2007b, 2008; Baffinland 2009 to 2023, incl.) and the Fish Habitat No Net Loss and Monitoring Plan as described by Knight Piésold (2007a). Habitat compensation is defined by DFO (1998) as "the replacement of natural habitat, increase in the productivity of existing habitat, or maintenance of fish production by artificial means in circumstances dictated by social and economic conditions, where mitigation techniques and other measures are not adequate to maintain habitats for Canada's fisheries resources".

A total of thirty-seven (37) fish-bearing crossings were originally identified as potential HADD locations (August 2007 *Fisheries Act* Authorization), those that require potential compensation, and those sites identified in the Letter of Advice (LOA) in the August 2007 No Net Loss and Monitoring Plan and/or subsequent amendments that have been monitored annually since 2008/2009 and were re-surveyed in spring 2023 (Figure 1). Twelve crossings previously determined to be non-fish bearing have been re-categorized as known or potential fish habitat following the completion of additional baseline surveys to support permitting for proposed expansion plans. Twenty-one (21) fishless crossings that were originally identified in the August 2007 No Net Loss and Monitoring Plan, and/or subsequent amendments that are periodically surveyed to confirm continued lack of fish use, were not visited in 2025. Two consecutive years (2019-2020) of surveys confirmed the original determinations of non-fish bearing status for these 21 fishless crossings.

In addition to monitoring of fish passage at stream crossings, crossings were surveyed for potential issues with erosional and sedimentation condition and/or performance. Crossings requiring remediation for potential fish passage issues (e.g., perched culverts) were identified and following geotechnical and hydrotechnical site-specific assessments, retrofits and replacements continued in 2025 following the Gap Closure plan approach and subsequent redesign approvals (ongoing).

Baffinland has been directed to perform work on the priority Tote Road culvert identified by DFO under Corrective Measures as per Section 38(6) and email correspondence without further Authorisations with the exception of CV 216 which was provided *Fisheries Act* Authorization 25-HCAA-01876 on December 22 2025, valid until May 31, 2025, permitting the construction of a tote road bypass and crossing.

1.3 REPORTING

Annual reports have previously been prepared for the years 2007 to 2024 (Knight Piésold 2007b, 2008 and Baffinland 2009 to 2025, incl.).

This 2025 Annual Report, herein, covers the period of activity up to and including December 31, 2025. It summarizes the fish habitat monitoring results and provides a record for additional works or undertakings completed in accordance with the approved No Net Loss and Monitoring Plan (Knight Piésold 2007a) and conditions of the authorization, subsequent amendments, and Letters of Advice.

SECTION 2.0 - PROJECT DESCRIPTION

2.1 CONSTRUCTION WORK

Design summaries and descriptions of work along the Tote Road completed up to the end of 2009 are presented, in detail, in Knight Piésold (2007c) and Baffinland (2009). Road construction activities and installation of fish access improvement structures and erosion mitigation measures at select crossings are described in Baffinland's annual reports to DFO (2010 to 2024, incl.).

In order to safely and efficiently transport iron ore from the Mine Site to Milne Port during the early operational period of the mine, the existing Tote Road has been further upgraded (sections were straightened, widened and/or moved) to accommodate B-Train trucks and in addition to mitigate sedimentation and erosion. The first phase of the upgrades involved replacement of sea container crossings with bridges. Bridge installation was completed during the winter of 2013/14 and seacan container crossings were removed at all locations by early 2017. Modifications to accommodate upgrades to the Tote Road and specific water crossings to support the ERP of the Project commenced in 2013 and remain ongoing. Baffinland has received approvals from DFO and the NWB in the form of LOAs (Appendix A) and email correspondence to proceed with these changes.

Seven fish-bearing crossings were remediated from February to May 2024 as per the Engineering designs and Issued for Construction Drawings (IFC) submitted within the Permanent Crossing Plan - Round CSP Culverts (KP, 2024a). An unprecedented rainfall event experienced on September 20, 2024 resulted in the washout of crossing CV-049. The washout at Km 63.5 removed the existing culverts at CV-049 and required an emergency remediation plan to be developed with two objectives: 1) to re-establish connectivity between the Mine and Port, and 2) to re-establish fish passage through the repaired roadway. Through standard design practices, environmental monitoring oversight and skilled operator implementation, the washout at km 63.5 was replaced in late September with no impacts to downstream water quality during in-stream work. DFO was kept appraised of the emergency culvert crossing repair work and a CSR was submitted in early February 2025.

In April of 2025, Baffinland submitted a Request for Review and letter documenting repairs and reinstallation plans of a single culvert to restore fish passage and water conveyance at CV 216 prior to freshet, following geotechnical destabilisation experienced at the crossing. This was deemed required following evaluation with DFO that the crossing redesign required further work. This construction was completed April 24th. In June 2025, Baffinland submitted a notification to DFO, under Section 38(6) of the Fisheries Act, advising that a blockage of CV-187 was identified and that corrective measures to reinstall and restore flow and passage was intended. Re-

construction of CV 187 was completed June 29 referencing original designs. While fish were not observed or expected at the crossing location, fish exclusion zones were erected to ensure there was no potential for fish to interact with the culvert replacement and turbidity monitoring was conducted during periods of active instream work (table 2.1). During the crossing replacement, significant improvements to road embankment armouring and check dams were implemented adjacent to the crossing. A *Fisheries Act* Authorization was granted in October 2025 for construction of a new crossing at CV 216, which experienced further settlement in the open water period of 2025; construction is ongoing on the crossing. Following approvals of the BG 17 site-specific retrofit, construction occurred on the aprons, road grades and embankments adjacent to the crossing, culminating January 2026. Table 1 summarizes the locations and activities where fish bearing culvert maintenance and associated erosion and sediment control measures was conducted in 2025 while Appendix C provides a photographic record of the activities completed.

Tote Road and crossing remediation plan design reviews and implementation of corrective actions are ongoing with DFO and future expansion projects will use guidance received from DFO to inform on development. Baffinland continues to work with the DFO as necessary to ensure planned modifications to fish bearing crossings are in compliance of the *Fisheries Act* and the interim codes of practice for culvert maintenance and temporary cofferdams and diversion channels (as published).

2.2 FISH HABITAT ASSESSMENT

Watercourses initially identified as HADD (n = 25), compensation (n = 12), and LOA (n = 23) sites (Knight Piésold 2007a) were assessed for quality of available fish habitat at least once between 2006 and 2009 (Baffinland 2009). Three sites (CV-183, CV-181, and BG-16) originally identified as potential compensation sites at the onset of the program were not revisited in recent surveys because:

- Sites CV-183 and CV-181 no longer exist (these crossings were removed during initial construction upgrades in the winter of 2008/2009).
- Site BG-16 was originally identified as a compensation site during the 2007 habitat assessment based on a desktop assessment rather than a field assessment. After a field habitat assessment conducted at the crossing in 2009 confirmed that BG-16 was not a fish bearing crossing, it was removed from the compensation site classification (Baffinland 2009).

In 2020, two additional fishless sites (CV-176 and CV-167) were removed from the compensation site list and LOA classifications, respectively. The stream crossing at CV-176 was significantly altered during the installation of authorized infrastructure that included diversions and infills of

stream reaches, where laydowns were constructed at the Port Site, and consequently the crossing no longer exists in its natural state. Site CV-167 was incorrectly identified as fish habitat.

Sites confirmed as fish habitat have been monitored annually from 2010-2025 while fishless sites have been monitored periodically, most recently in 2019 and 2020, to confirm the continued presence of natural barriers to fish passage preventing access to the crossing area (Knight Piésold 2007b, 2008, Baffinland 2009 to 2024, incl.).

The primary objectives of the 2025 Tote Road monitoring program were to assess the presence of fish, habitat quality, and upstream accessibility through installed culverts at fish-bearing sites. Monitoring of the seven sites remediated in winter of 2024 was conducted under the Tote Road Culvert Crossing Remediation Monitoring (TRCCRM) program. The results of the 2025 TRCCRM program are presented in NSC (2026). Results from the remaining Tote Road sites surveyed in 2025 are presented herein.

Habitat and fish surveys at all non-remediated sites were conducted along 50 m reaches upstream and downstream of each applicable crossing. Water temperature and general habitat conditions were recorded upstream and downstream of these crossings. Fish presence was determined through visual surveys and the use of a backpack electrofisher. In previous years, both methods have proven to be highly reliable techniques for determining fish presence/absence in the clear, shallow streams that are typical of the study area. Captured fish were identified to species, enumerated, measured for fork length (mm), and examined for evidence of any external health issues including deformities, erosions, lesions, or tumours (DELTs), physical injuries, and overall health (i.e., skinny individuals). Additional habitat details were collected at 20 m, 60 m, and 100 m intervals (i.e., along transects across the stream channel) upstream and downstream of the culverts at 17 sites targeted for future remediation work. Data collected at these sites included bankfull and wetted widths, water depths and velocities, stream morphology, and proportions of various substrate sizes. Additional data were also collected at crossing CV-129 as it has been identified as a potential offsetting site. Representative photos of habitat were taken at each transect. The condition of culverts was noted and water inflow and outflow velocity and depth were measured for each fish-bearing culvert at each crossing. Results of the 2025 stream crossing monitoring surveys are summarized in Section 3.0. Additional data are presented in Appendix B.

Compensation works completed for the Tote Road prior to 2009 are described in detail in Knight Piésold (2007a) and the results of recent compensation works (e.g., rustic fishway at BG-30) and detailed fish habitat and fish use surveys from 2009 to 2024 are presented in Baffinland (2009 to 2024, incl.). Following successful completion of habitat works at BG-30 (Baffinland 2012), there was a net habitat gain of approximately 1,050 km^2, which together with other gains met the compensation goals described in Knight Piésold (2007a). Fish presence upstream of the fishway

in BG-30 has been confirmed during site visits from 2013-2025, indicating continuous structural integrity and successful fish passage.

Monitoring will continue in 2026 to assess fish passage at crossings on fish-bearing streams, to assess the condition and performance of the crossings, and to inform engineering plans for future remediation sites.

SECTION 3.0 - AQUATIC MONITORING

An aquatic monitoring program was developed to ensure that all measures and works specified in the No Net Loss and Monitoring Plan (Knight Piésold 2007a), as well as the *Fisheries Act* Authorization and amendments have been implemented and are functioning as intended. Details of aquatic monitoring conducted up to 2024 are provided in Knight Piésold (2007b, 2008) and Baffinland (2009 to 2024, incl.). Aquatic monitoring in 2025 focused on assessing any changes to fish habitat and fish passage at fish-bearing crossings and to collect detailed habitat data in preparation for additional remediation works to be completed in subsequent years.

3.1 CONSTRUCTION AND TURBIDITY MONITORING

There was no in-stream construction work at HADD, compensation, or LOA classification crossings during periods of flow that required turbidity monitoring in 2025 with the exception of CV 187 (Table 2.1). BG 17 and CV 216 were retrofitted and reconstructed respectively within Frozen conditions. In stream monitoring is presented within Table 2.1.

3.2 WATER QUALITY MONITORING OF BASELINE FISHERIES CULVERTS

Water quality monitoring data from Knight Piésold baseline monitoring work performed during 2005 and 2006, in conjunction with monitoring of the same crossings from 2015-2025 are presented in Table 2.

3.3 FISH USE ASSESSMENTS

Fish use assessments were conducted at forty-three (43) fish-bearing crossings along the Tote Road from 9-20 July 2025 (Figure 1, Table 3). Three sites (CV-129, CV-072, and CV-049) being explored as potential offsetting sites were surveyed again on 18-19 August 2025. Seven additional fish-bearing sites (CV-106, CV-102, CV-059, CV-057, CV-216, BG-04, and CV-001) which were remediated during winter 2024 and were surveyed in 2025 are reported as part of the TRCCRM program. Results for the TRCCRM surveys are presented in NSC (2026). One additional site (CV-154a) was added to the spring 2025 program at the request of BIM. Velocities, and depths within the culverts at the inflow and outflow and the height of any perches were recorded for each crossing.

Four of the bridge crossings (CV-128, BG-50, CV-217, and CV-223) could only be surveyed visually due to deep water and/or higher flows that created unsafe wading conditions. Electrofishing was conducted at all other sites.

Tables 4 and 5 present catch statistics for Arctic Char and Ninespine Stickleback, respectively, from each of the 43 sites surveyed in 2025. See Appendix B for additional site-specific habitat details, photographs, and a summary of fish habitat use at planned remediation sites.

Table 6 summarizes habitat and fish use assessments for the surveyed sites and provides descriptions of potential fish passage or habitat issues noted in the July 2025 survey. A detailed summary of issues observed is provided in Section 3.4.

Overall, catch totals in 2025 were similar to previous years at many crossings as presented in previous annual reports (Baffinland, 2009 to 2024, incl.). Electrofishing surveys captured or observed four hundred and ninety-one (491) juvenile Arctic Char at forty-one (41) of forty-three (43) surveyed crossings in July 2025 and 55 char at all three (3) sites surveyed in August 2025 (Table 4).

Char were absent at two sites (CV-128a and CV-211) in July 2025. Char were not captured or observed downstream of four (4) crossings (CV-085, BG-32, CV-214, and CV-187) and not captured/observed upstream of twelve (12) crossings surveyed in July 2025 (i.e., CV-154a, CV-115, CV-111, CV-104, CV-099, CV-040, CV-211, BG-33, CV-215, BG-29, BG-27, and BG-03). Some of these absences are due to potential fish passage issues (CV-111, BG-33, CV-215, and BG-03) as described in Section 3.4. issues. The absence of char upstream of these crossings may be due to a variety of environmental factors such as distance from overwintering habitat (e.g., CV-040), higher upstream gradient (e.g., CV-104), and/or minimal available upstream habitat (e.g., CV-115). Others do not have any obvious fish passage issues and fish have been captured upstream in previous years (e.g., CV-099, CV-211).

CV-128a is characterized by habitat that is typically avoided by juvenile Arctic Char (very shallow, low flow, fine substrate, and abundant in-stream vegetation). As such, char have only rarely been observed at that site. Ninespine Stickleback, which prefer this habitat, were observed upstream and downstream of CV-128a; indicating successful fish passage. The crossing area at CV-211 has remained fishless since monitoring of the stream started in 2021 despite no obvious downstream barriers preventing access from the nearest potential overwintering lake (Muriel Lake). Site CV-115, which is typically dry or nearly dry during annual spring surveys, was wetted in July 2025 and a single juvenile char was captured for the first time since 2016.

Fifty (50) Ninespine Stickleback were captured at ten (10) of the crossings surveyed in July 2025 (Table 5). Stickleback were not captured during the August survey. Most of the sites where stickleback were observed in 2025 are characterized by habitat preferred by this species (very shallow, low flow, fine substrate, and abundant in-stream vegetation). A single stickleback was captured in CV-115, marking the first time the species has been recorded from that stream.

Site-specific Arctic Char catches in July ranged from zero to forty-eight (48) fish and catch-per-unit-effort (CPUE) ranged from 0.00 to 9.23 fish/minute (Table 4). Site-specific Ninespine Stickleback catches in July ranged from zero to nineteen (19) fish and CPUE ranged from 0.00 to 2.81 fish/minute (Table 5).

The fork length of Arctic Char captured in July 2025 ranged from 32-242 mm (mean = 97.4 mm; Table 4). The size of char captured in August was smaller than July at each of the three sites fished during both survey periods, likely due to an influx of smaller juveniles and young-of-the-year that had not yet left overwintering lakes when the July surveys were conducted. Weights were recorded for fish captured at eight (8) of the stream crossings, ranging from 0.3-117.6 g (mean = 14.1 g; Table 4). Condition factor ranged from 0.46-1.45 with a mean of 0.86. The fork-length frequency for the total catch is bimodal with fish 90-99 mm and 110-119 mm each representing 12.4% of the catch (Figure 2). Overall fork length distribution is relatively even with seven size bins each representing at least 8% of the total catch. Downstream catches had a mode of 50-59 mm while upstream catches had a mode of 110-119 mm (Figure 3). With one exception (BG-01), catches were of insufficient size to facilitate comparison of fork length distributions upstream and downstream for individual stream crossings. The fork-length distribution for BG-01 showed little overlap between the two reaches, with modes of 70-79 mm and 110-119 mm for downstream and upstream, respectively (Figure 4).

Ninespine Stickleback fork length ranged in size from 29-75 mm with a mean of 43.4 mm (Table 5). Stickleback weights were recorded from two sites (CV-129 and CV-224), which ranged from 0.3-1.3 g (mean = 0.6 g).

There were no DELTs present on any of the fish captured in the July 2025 survey, which is typical for char and stickleback in the study area. Additionally, no abnormal behaviour, physical injuries, or other indications of poor condition of fish were observed during the field programs.

3.4 REMEDIATION WORKS

Tote Road monitoring conducted in July 2025 identified eighteen (18) sites with potential issues requiring remediation at the culvert crossings (Table 6). Eleven of these sites (CV-114, CV 112, CV 106, CV 216, CV 78, CV 79, CV-111, BG-50, BG-27, CV-224, CV-225) are part of the current planned remediation initiatives that are ongoing with DFO. Baffinland has discussed proposed remediation actions with the DFO to decide upon a practical course of action and implementation schedule incorporating lessons learned from remediation work completed on seven sites in the TRCCRM program (NSC 2026).

Fourteen (14) crossings (CV-154a, CV-129, CV-114, CV-111, CV-061, CV-061b, BG-50, BG-33, CV-214, CV-215, BG-27, CV-224, CV-225, and CV-186) surveyed in July 2025 had fish passage culverts that were perched or may become perched as water levels decreased. The perching at CV-154a, CV-129, CV-061, CV-061b, CV-214, and CV-215 may only occur when water levels are very low and several had little to no perch at July 2025 water levels. Culverts at BG-27 and CV-186 are badly damaged potentially impeding at least some upstream movements. In addition, it appears that the damage at BG-27 has now resulted in perching of all crossings (only two of three were perched at the time of the 2024 survey). Site BG-03 has a step-pool approach to the culvert that, while suitable for char use when water depths are sufficient, may prevent stickleback access upstream. Low water periods may prevent upstream access for both species. Similarly, the step-pool approach to CV-021 could be susceptible to becoming a barrier at very low water levels. Despite perching, Arctic Char were observed upstream of the crossings at CV-061, CV-061b, CV-214, CV-224, CV-225 and CV-186 indicating at least some fish were able to successfully pass upstream of the culverts at some time prior to the surveys. Fish were also observed upstream at CV-129 and CV-111; both of those streams have potential overwintering habitat upstream of the crossing and the origin of the captured fish is unknown.

In addition to the issues noted above, there was a major rain event in fall 2024 that affected crossings along the Tote Road with CV-078, CV-072, CV-049, BG-24, and CV-224 experiencing particularly notable effects. Select culverts at CV-078 and all culverts at CV-049 were washed out. The CV-049 culverts were subsequently replaced prior to freshet. Re-installation was successful and there are no current issues with fish passage at either location. At CV-072, the rain event resulted in a blockage of the culvert in the fish-bearing channel (CV-072c) and a redirection of flows approximately 30 m northwards along the road to culverts at another channel in this drainage (CV-072b). The CV-072b channel was typically dry or had insufficient surface water for fish use, even during freshet site visits, prior to the diversion of flows from CV-072c. Fish were captured downstream and upstream of the CV-072b culverts in both July and August, indicating fish use of the stream has continued despite the blockage of one channel and shift of flows to another in the same watershed. There is a small perch of the culverts at CV-072b that may increase if erosion/sediment mobilization occurs with the increase in flows in this channel. It is recommended that an attempt be made to restore flows through the CV-072c culvert as it provides better quality habitat that is consistently wetted throughout the open-water period and there is no perch of the culvert at that channel.

In 2025 recognizing the challenges experienced with the original designs submitted to DFO for approval, Baffinland developed a Gap Closure plan that was submitted to DFO in June outlining a modified approach to progress the remaining priority culverts. The plan outlined that it was important for site-specific hydrotechnical and geotechnical assessments to be conducted to

support Baffinland's understanding of the failures observed at some of the crossings that were re-constructed in 2024. The assessments were conducted in summer 2025 with external expertise to inform on site-specific design specifications for re-constructing settled crossings (CV 216 and C 106) as well as informing on site-specific retrofits and replacement new designs for the remaining 13 priority culvert crossings. In collaboration with DFO, it was determined that some crossings could be retrofitted with minor works to re-establish fish passage while others still required a complete re-construction to resolve fish passage issues. Designs and approvals are ongoing with DFO with active work occurring on approved designs in frozen conditions Q4 2025.

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TABLES AND FIGURES

TABLE 1. EROSION AND SEDIMENT CONTROLS IMPLEMENTED IN 2025

Mary River Location	Event Summary	Action	Status	Photo #
SDLT, south of Power Generation facility	Constructed 3 aggregate filter berms across the ephemeral run-off channels in the location above CV 187	Constructed three aggregate berms across run-off channels. Construction and aggregate placement completed during frozen conditions.	Completed April 2025	4, 5
KM 103 (CV-186)	ESC required to mitigate run-ff and stream erosion	Coir logs installed and streambank armouring installed	Completed 2025-06-16	22
KM 103.5 (CV-187)	Replacement of obstructed culverts in fish-bearing watercourse.	Notification submitted to DFO, informing required works to ensure fish passage and water conveyance. CV 187 was reinstalled and embankments and aprons were armoured. New check dams were produced.	Completed 2025-06-29dditional Minor works completed 2025-09-12	1, 2, 3
KM 103 (CV-187)	Silt fence maintenance required	New silt fence installed along road embankment, post-construction of culvert replacement	Completed 2025-07-03	15
Milne Port Location	**Event Summary**	**Action**	**Status**	**Photo #**
Milne Port Beach	Erosion of embankment during rainfall event	Installed silt fencing	Completed 2025-07-13	25
East Beach	Buried drainage culvert replaced due to flooding of local roadway and erosion of embankment	Existing culvert removed and replaced with new culvert, backfilling, and re-grading/ armouring of the embankment	Completed 2025-09-26	6, 7
Tote Road Location	**Event Summary**	**Action**	**Status**	**Photo #**
KM 80.5 (CV-216)	Culvert replacement due to culvert settlement causing blocked fish passage and water flow. Temporary measures.	One 2.0 m diameter culvert was excavated from the crossing and replaced at grade of watercourse, prior to the onset of freshet	Completed 2025-04-25	10, 11
KM 72 (CV-040)	Step pool maintenance required	Sediment excavated from roadside step pools	Completed 2025-06-06	14
KM 97.5 (CV-224)	Silt fence requires maintenance	Re-secured geotextile to stakes	Completed 2025-06-13	20

Tote Road Location	Event Summary	Action	Status	Photo #
KM 88 (BG-24)	Run-off by-passing silt fence	Additional silt fence installed to intercept run-off	Completed 2025-06-13	21
KM 53 (CV-076)	Silt fence at toe of rip rap was ineffective	Removed old silt fence and replaced further from toe	Completed 2025-06-13	55
KM 77.5 (CV030)	Run-off along Tote Road	Installed coir logs along toe of rip rap embankment	Completed 2025-06-16	58
KM 100 (BG-01)	Defined sediment build-up/failing silt fences	Install three rolls of silt fence in front and behind existing silt fence to reinforce ESC measures at crossing	Completed 2025-06-29	23, 24
KM 88 (BG-24)	Silt fence maintenance required	New silt fence installed along road embankment	Completed 2025-07-18	16
KM 94.5 (CV-001)	Run-off pooling in proximity to watercourse	Installed coir log	Completed 2025-07-18	26
KM 99.5 (CV-225)	Road run-off running down embankment	Installed silt fence	Completed 2025-07-18	27
KM 32 (CV-111)	Run-off along Tote Road	Installed silt fence	Complete 2025-07-19	28
KM 51 (CV-078)	Run-off pooling in proximity to watercourse	Installed silt fence	Complete 2025-07-19	30
KM 60 (CV-059)	Silt fencing needs replacing	Installed new silt fence	Complete 2025-07-20	29
KM 60.5 (CV-057)	Replace damaged silt fence with coir log	Installed new coir log	Completed 2025-07-20	31
KM 74.5 (CV-212)	Run-off pooling in proximity to watercourse	Installed silt fence	Completed 2025-07-24	32
KM 79.5 (CV-215)	Install silt fence to cover greater area	Removed and replace old silt fence with and extended further	Completed 2025-07-24	33
KM 85 (CV-021)	Erosion occurring below established check dams from the north upstream swale	Installed two spring berms	Completed 2025-09-29	34
KM 91	Run-off along Tote Road	Installed silt fencing	Completed 2025-07-30	35
KM 58 (CV-061b)	Run-off from Tote Road	Install new silt fencing	Completed 2025-07-31	57

Tote Road Location	Event Summary	Action	Status	Photo #
KM 32 (CV-111)	Natural erosion on left stream bank, upstream of culvert crossing	Installed silt fence along the bank in two locations	Completed 2025-08-08	36
KM 29 (CV-114)	Erosion of road embankment observed	Installed silt fence to mitigate sediment migration	Completed 2025-08-11	18
KM 64 (CV-048)	Silt fence maintenance required	Silt fence re-secured, sediment accumulation removed	Completed 2025-08-10	17
KM 60 (CV-059)	Silt fence maintenance required	Re-secured silt fence to stake	Completed 2025-08-10	37
KM 92	Natural run-off along Tote Road	Installed silt fence on west side of Tote Road and 2 spring berms on east side of Tote Road	Complete 2025-08-10	38
KM 53 (CV-76)	Roadway embankment erosion, and potential for sediment movement	Installed 2.5 lengths of silt fence along northwest side of roadway, separating road embankment/road corner from the downstream culvert	Completed 2025-08-15	39
KM 51 (CV-079)	Potential culvert stranding area due to water pool beneath overflow culvert	Established small channel connecting the pool to the stream, providing passage for fish observed in pool	Completed 2025-08-16	40
KM 100 (BG-01)	Silt fence is disrepair on bank by culvert	Silt fence repaired/replaced, extended towards the culvert, removed weathered silt fence	Completed 2025-08-16	41, 42
KM 86.5 (BG-27)	Roadway embankment erosion, run-off pooling in proximity to watercourse	Installed silt fence (2) along sandy roadway embankment and sandy hill and installed five spring berms	Complete 2025-08-17	43

Tote Road Location	Event Summary	Action	Status	Photo #
KM 97.5 (CV-224)	Roadway embankment erosion	Existing downstream southwest side silt fence extended, now fully flush with road, additional silt fence installed. Installed silt fence on upstream bank south of culvert to separate water flow from roadway embankment erosion	Completed 2025-08-17	44, 45
KM 90 (BG-17)	Roadway embankment erosion and impacted run-off	Installed sild fence and spring berms along east slope on downstream side	Completed 2025-08-18	46
KM 51 (CV-078)	Potential culvert stranding area due to water pool beneath overflow culvert	Established small channel connecting the pool to the stream, providing passage for fish observed in pool	Completed 2025-08-19	47
KM 84.5 (BG-30)	Upstream silt fence in disrepair	Re-secured and performed maintenance on silt fence on upstream side and installed additional silt fence.	2025-08-24	48
KM 94 (BG-04)	Roadway embankment erosion not adequately addressed by current silt fence	Installed two additional silt fences to extend the original silt fence and form a J-shape curve to improve erosion control	2025-08-24	49
KM 21.5	Silt fence maintenance required	Silt fence re-secured, sediment accumulation removed	Completed 2025-09-10, 2025-09-12	19
KM 74.5 (CV-212)	Silt fence in disrepair	Re-secured and performed maintenance on silt fence	Completed 2025-09-10	50

Tote Road Location	Event Summary	Action	Status	Photo #
KM 88 (BG-24)	Roadway embankment erosion, and potential for sediment movement	On the north upstream side, two spring berms were installed within a swale to filter water and increase pool capacity. Below them, two silt fences were installed – one intercept and slow the flow velocity, and the second to promote sediment deposition.	Completed 2025-09-12	51
KM 15 (CV-129)	Erosion occurring on embankment along the downstream south side of the culvert.	Installed silt fence to mitigate sediment migration	Completed 2025-09-12	56
KM 88 (BG-24)	Repair and replaced downstream silt fence	Installed 100m of continuous silt fence downstream of south embankment, replaced with a series of hooking silt fences to capture roadway erosion. Installation was difficult due to rocky frozen tundra conditions.	Completed 2025-09-14	52
KM 80.5 (CV-216)	Install silt fence to capture terminus of the road for culvert construction	Two 100m silt fences were installed on each side of the water crossing. Shaped to capture terminus from the road. Silt fences remained in place for duration of the project and were removed when required to complete the construction.	Completed 2025-09-30	53, 54
KM 90 (BG-17)	Retrofit culvert inlets and outlets, re-construct transition to natural channel bed to resolve culvert perching, ensure fish passage. Re-grade and armour watercourse embankments.	Scour pools at culvert inlets/ outlets re-constructed with larger aggregate and boulders, watercourse embankment re-graded and benched then armoured to reduce run-off.	Completed 2025-12-19	8, 9
KM 81.5 (CV-216)	By-pass Road Construction upstream of existing/ settling CV-216 crossing	Construct new road and install three (3) culverts within crossing for fish and watercourse passage.	Construction On-going in 2026	12, 13, 14

Table 2.1: In Stream Construction Water Quality Monitoring - CV-187-US

		Location Name	CV-187-DS	CV-187-US	CV-187-DS	CV-187-US	CV-187-DS
		ALS Laboratory Work Order	BF2500095	BF2500095	BF2500095	BF2500097	BF2500097
		Sample Date & Time	2025-06-21 08:05	2025-06-21 16:00	2025-06-21 16:20	2025-06-22 06:25	2025-06-22 06:38
Analyte	**Units**	**Criteria**					
pH, Field	pH units	-	7.93	7.96	8.15	7.83	8.33
Specific Conductivity, Field	us/cm	-	206.6	562	146.6	605	197.3
Temperature, Field	deg C	-	5.5	15.4	13.2	7.8	7.9
Turbidity, Field	NTU	-	2.5	7.18	7.33	0.14	2.27
Dissolved Oxygen, Field	mg/L	-	12.5	9.52	10.85	8.9	11.53
Dissolved Oxygen, Percent, Field	%	-	99.1	95.3	103.1	74.9	97.1
Visible Sheen, Field	None	-	-	No Visible Sheen	No Visible Sheen	No Visible Sheen	No Visible Sheen
pH, Lab	pH units	-	7.49	7.86	7.84	7.8	7.8
Total Dissolved Solids	mg/L	-	136	353	127	355	118
Total Suspended Solids	mg/L	See note[1]	2.5	5.1	3.8	10.3	< 1.2

Notes:

Bold highlight indicate results that were greater than the applicable water quality screening criteria.

Flow diversion and fish exclusion barriers were erected on June 24th precluding the requirement to perform in stream water quality monitoring until their removal on June 29th.

[1] When upstream TSS concentrations are less than 250 mg/L, a potential Project related change is defined as a greater than 50 mg/L increase in the downstream concentration. Where concentrations are greater than 250 mg/L in the upstream sample, a potential Project related change is defined as a greater than 20% increase in the downstream sample.

Reference: Roads Management Plan (BIM-5200-PLA-0027)

Table 2.1: In Stream Construction Water Quality Monitoring - CV-187-US

		Location Name	CV-187-US	CV-187-DS	CV-187-US	CV-187-DS	CV-187-DS	CV-187-DS
		ALS Laboratory Work Order	BF2500097	BF2500097	BF2500105	BF2500105	BF2500105	BF2500105
		Sample Date & Time	2025-06-22 13:01	2025-06-22 13:08	2025-06-23 06:27	2025-06-23 06:41	2025-06-23 15:45	2025-06-23 15:52
Analyte	**Units**	**Criteria**						
pH, Field	pH units	-	7.95	8.4	7.47	7.78	8.34	8.26
Specific Conductivity, Field	us/cm	-	589	199	603	194.7	623	194.9
Temperature, Field	deg C	-	15.5	13.4	8.3	9	18	12.5
Turbidity, Field	NTU	-	1.23	3.01	2.4	3.5	2.85	2.85
Dissolved Oxygen, Field	mg/L	-	9.49	10.95	7.86	11.05	8.41	10.56
Dissolved Oxygen, Percent, Field	%	-	95.2	104.9	67	95.6	89	99.1
Visible Sheen, Field	None	-	No Visible Sheen	No Visible Sheen	-	-	No Visible Sheen	No Visible Sheen
pH, Lab	pH units	-	7.79	7.88	7.5	7.72	7.61	7.76
Total Dissolved Solids	mg/L	-	363	124	369	108	384	104
Total Suspended Solids	mg/L	See note[1]	5.4	< 1.1	13.3	< 1	2.8	1.3

Notes:

Bold highlight indicate results that were greater than the applicable water quality screening criteria.

Flow diversion and fish exclusion barriers were erected on June 24th precluding the requirement to perform in stream water quality monitoring until their removal on June 29th.

[1] When upstream TSS concentrations are less than 250 mg/L, a potential Project related change is defined as a greater than 50 mg/L increase in the downstream concentration. Where concentrations are greater than 250 mg/L in the upstream sample, a potential Project related change is defined as a greater than 20% increase in the downstream sample.

Reference: Roads Management Plan (BIM-5200-PLA-0027)

Table 2.1: In Stream Construction Water Quality Monitoring - CV-187-US

		Location Name	CV-187-US	CV-187-DS	CV-187-US	CV-187-DS	CV-187-US	CV-187-DS
		ALS Laboratory Work Order	BF2500106	BF2500106	BF2500106	BF2500106	BF2500113	BF2500113
		Sample Date & Time	2025-06-24 06:35	2025-06-24 06:45	2025-06-24 14:25	2025-06-24 14:35	2025-06-29 10:30	2025-06-29 10:40
Analyte	**Units**	**Criteria**						
pH, Field	pH units	-	7.54	8.19	7.92	8.31	7.72	8..26
Specific Conductivity, Field	us/cm	-	606	188	627	187.1	704	204.9
Temperature, Field	deg C	-	10.3	10.6	17.8	17.8	15.6	13.6
Turbidity, Field	NTU	-	1.35	2.48	3.26	3.18	6.91	3.56
Dissolved Oxygen, Field	mg/L	-	8.72	10.92	8.39	10.16	9.27	10.15
Dissolved Oxygen, Percent, Field	%	-	77.9	98.2	88.5	100.3	93.4	97.7
Visible Sheen, Field	None	-	No Visible Sheen	No Visible Sheen	No Visible Sheen	No Visible Sheen	No Visible Sheen	No Visible Sheen
pH, Lab	pH units	-	7.58	7.77	7.8	7.67	7.54	7.83
Total Dissolved Solids	mg/L	-	393	112	104	382	448	126
Total Suspended Solids	mg/L	See note[1]	2.5	< 1	< 1	3.2	1.2	2.1

Notes:

Bold highlight indicate results that were greater than the applicable water quality screening criteria.

Flow diversion and fish exclusion barriers were erected on June 24th precluding the requirement to perform in stream water quality monitoring until their removal on June 29th.

[1] When upstream TSS concentrations are less than 250 mg/L, a potential Project related change is defined as a greater than 50 mg/L increase in the downstream concentration. Where concentrations are greater than 250 mg/L in the upstream sample, a potential Project related change is defined as a greater than 20% increase in the downstream sample.

Reference: Roads Management Plan (BIM-5200-PLA-0027)

Table 2.2: Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-025 (CV128)

Parameters	Units	2025 LOR	CCME Guideline	Date											
				2006			2015				2016			
				14-Jun-06	03-Aug-06	08-Sep-06	03-Jul-15	03-Jul-15	12-Aug-15	12-Aug-15	30-Jun-16	30-Jun-16	25-Aug-16	25-Aug-16
							US	DS	US	DS	US	DS	DS	US
In Situ Parameters														
Temperature	ºC	-	-	0.32	10.41	3.66	-	-	7.2	7.2	6.1	7.7	9.6	9.2
Specific Conductance	µS/cm	-	-	0.133	0.12	0.16	0.53	0.58	0.139	0.139	0.390	0.800	0.169	0.116
Dissolved Oxygen	mg/L	-	< 9.5	13.02	11.71	13.03	-	-	-	-	-	-	-	-
Dissolved Oxygen	%	-	-	-	-	-	-	-	105.9	105.1	103.5	106.2	101.6	103.7
pH	pH units	-	6.5 - 9.0	8.18	8.12	8.21	8.33	8.14	8.3	8.2	7.9	8.3	8.09	8.05
Wetted Width	m	-	-	76	120	99	-	-	50	50	-	-	-	-
Average Depth	m	-	-	too much ice	0.3	0.6	-	-	0.5	0.5	-	-	-	-
Flow Rate	m^3/s	-	-	-	26.73	-	-	-	-	-	-	-	-	-
Physical Parameters														
pH	pH units	0.10	6.5 - 9.0	7.85	7.37	7.51	7.79	7.84	8.16	8.04	8.11	8.15	8.08	8.20
Conductivity	µS/cm	1.0	-	145	125.00	166	-	-	-	-	-	-	-	-
Turbidity	NTU	0.10	-	0.6	0.70	-	1.1	1.19	0.45	0.45	10.2	10.8	0.28	0.28
Hardness	mg/L as $CaCO_3$	0.50	-	73	65.0	85	42	42.0	63.0	62.0	58	53	84.0	84.0
Total Suspended Solids	mg/L	1.0 - 1.3	Variable [g]	-	-	-	<2.0	<2.0	<2.0	<2.0	54.8	44.4	<2.0	7.9
Total Dissolved Solids	mg/L	17 - 19	-	94	81	108	77	67	72 *	67 *	50	240	78	79
Dissolved Anions														
Alkalinity	mg/L as $CaCO_3$	2.0	-	72	67	86	37	41	61	61	42	38	84	84
Bromide	mg/L	-	-	<0.05	<0.05	<0.05	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	1	<1	1	0.53	0.54	0.85	0.89	0.62	0.60	1.46	1.49
Fluoride	mg/L	-	-	-	-	-			-	-	<0.020	<0.020	<0.020	<0.020
Sulfate	mg/L	-	-	2	<1	4	0.42	0.47	0.0039	0.0031	0.38	0.36	1.18	1.19
Nutrients														
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	0.1	0.03	0.08	<0.15	<0.15	<0.15	0.19	<0.15	<0.15	<0.15	<0.15
Nitrite	mg/L N	0.010	0.06	<0.005	<0.005	0.016	-	-	-	-	-	-	-	-
Nitrate	mg/L N	0.020	3	<0.10	<0.10	<0.10	<0.020	<0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Nitrate + Nitrite	mg/L N	-	-	<0.10	<0.10	<0.10	-	-	-	-	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	-	-	-	<0.050	<0.050	-	-	<0.020	<0.020	<0.020	<0.020
Total Phosphorus	mg/L	0.0020	0.01	<0.01	<0.01	0.03	0.0036	0.0044	0.0039	0.0031	0.0677	0.0354	0.0044	0.0085
Dissolved Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic Compounds														
Phenols	mg/L	-	0.004	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	-	-	-	1.7	1.60	1.7	1.6	<1.0	<1.0	1.8	1.6
Total Organic Carbon	mg/L	0.50	-	-	-	-	1.9	1.90	1.7	1.7	1.8	1.4	1.8	2.9
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	<0.015	<0.015	<0.15	0.19	<0.15	<0.15	<0.15	<0.15
Chlorophyll-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.2: Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-025 (CV128)

Parameters	Units	2025 LOR	CCME Guideline	Date											
				2006			2015				2016				
				14-Jun-06	03-Aug-06	08-Sep-06	03-Jul-15	03-Jul-15	12-Aug-15	12-Aug-15	30-Jun-16	30-Jun-16	25-Aug-16	25-Aug-16
							US	DS	US	DS	US	DS	DS	US
Total Metals and Non-Metals														
Aluminum	mg/L	0.0030	Variable [f]	0.006	0.01	0.101	0.029	0.029	0.022	<0.010	0.827	0.759	<0.010	0.014
Antimony	mg/L	0.00010	-	-	-	-	-	-			<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	mg/L	0.00010	0.005	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.00010	<0.00010	0.00023	0.00022	0.00011	<0.00010
Barium	mg/L	0.00010	-	<0.01	<0.01	<0.01	-	-	-	-	0.00801	0.00742	0.00663	0.00672
Berylium	mg/L	0.000020	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth	mg/L	0.000050	-	-	-	-	-	-	-	-	<0.000050	<0.000050	<0.000050	<0.000050
Boron	mg/L	0.010	1.5	<0.01	<0.01	<0.01	-	-	-	-	<0.010	<0.010	<0.010	<0.010
Cadmium	mg/L	0.0000050	Variable [c]	<0.0001	<0.0001	<0.0001	<0.000090	<0.000090	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Calcium	mg/L	0.050	-	17	16	20	9.47	9.42	15.0	15.2	12.5	11.6	19.1	19.4
Cesium	mg/L	0.000010	-	-	-	-	-	-	-	-	0.000062	0.000058	<0.000010	<0.000010
Chromium	mg/L	0.00050	-	<0.001	<0.001	<0.001	-	-	-	-	0.00125	0.00115	<0.00050	<0.00050
Cobalt	mg/L	0.00010	Variable [c]	<0.0002	<0.0002	<0.0002	-	-	-	-	0.00042	0.00038	<0.00010	<0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	0.0014	0.0013	<0.0010	<0.0010
Iron	mg/L	0.010	0.3	<0.03	<0.03	0.12	<0.050	<0.050	<0.050	<0.050	0.805	0.734	<0.050	<0.050
Lead	mg/L	0.000050	0.001 - 0.007 [c]	<0.001	<0.001	<0.001	<0.00050	<0.00050	<0.00010	<0.00010	0.00069	0.00061	<0.00010	<0.00010
Lithium	mg/L	0.0010	-	-	-	-	-	-	-	-	0.0016	0.0014	<0.0010	<0.0010
Magnesium	mg/L	0.0050	-	7	6	8	4.24	4.27	6.97	7.23	6.39	5.86	8.93	8.60
Manganese	mg/L	0.00010	Variable [c]	<0.01	<0.01	<0.01	0.0012	0.0013	0.00099	0.00061	0.0247	0.0215	0.00181	0.00265
Mercury	mg/L	0.0000050	0.000026	<0.0001	<0.0001	<0.0001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum	mg/L	0.000050	0.073	<0.005	<0.005	<0.005	<0.00050	<0.00050	<0.00050	<0.00050	0.000059	0.000062	0.000157	0.000164
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.005	<0.005	<0.005	<0.0010	<0.0010	<0.0010	<0.0010	0.00093	0.00085	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	0.054	<0.050	<0.050	<0.050
Potassium	mg/L	0.050	-	0.51	0.35	0.51	<1.0	<1.0	0.448	0.454	0.687	0.670	0.564	0.561
Rubidium	mg/L	0.00020	-	-	-	-					0.00235	0.00231	0.00121	0.00122
Selenium	mg/L	0.000050	0.001	<0.001	<0.001	<0.001	<0.00040	<0.00040	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon	mg/L	0.10	-	-	-	-	-		-	-	1.98	1.75	0.437	0.451
Silver	mg/L	0.000010	0.25	<0.0001	<0.0001	<0.0001	-	-	-	-	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	0.61	0.34	1.15	<0.50	<0.50	0.62	0.63	<0.50	<0.50	0.89	0.88
Strontium	mg/L	0.00020	0.25	0.012	0.01	0.015	-	-	-	-	0.0074	0.0070	0.0114	0.0116
Sulphur	mg/L	0.50	-	-	-	-	-		-	-	<0.50	<0.50	<0.50	0.64
Tellurium	mg/L	0.00020	-	-	-	-	-		-	-	<0.00020	<0.00020	<0.00020	<0.00020
Thallium	mg/L	0.000010	0.0008	-	-	-	<0.00030	<0.00030	<0.000010	<0.000010	0.000016	0.000014	<0.000010	<0.000010
Thorium	mg/L	0.00010	-	-	-	-	-		-	-	0.00138	0.00131	<0.00010	<0.00010
Tin	mg/L	0.00010	-	<0.01	<0.01	<0.01	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010
Titanium	mg/L	0.00030	-	-	-	-	-		-	-	0.0256	0.0238	<0.00030	0.00042
Tungsten	mg/L	0.00010	-	-	-	-	-		-	-	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	0.015	-	-	-	<0.0010	<0.0010	0.00135	0.00135	0.000505	0.000481	0.00212	0.00209
Vanadium	mg/L	0.00050	0.12	<0.001	<0.001	<0.001	-	-	-	-	0.00163	0.00149	<0.00050	<0.00050
Zinc	mg/L	0.0030	0.03	<0.01	<0.01	<0.01	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Zirconium	mg/L	0.00020	-	-	-	-	-	-	-	-	0.00083	0.00076	<0.00030	<0.00030

Table 2.2: Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-025 (CV128)

Parameters	Units	2025 LOR	CCME Guideline	Date											
				2006			2015				2016			
				14-Jun-06	03-Aug-06	08-Sep-06	03-Jul-15 US	03-Jul-15 DS	12-Aug-15 US	12-Aug-15 DS	30-Jun-16 US	30-Jun-16 DS	25-Aug-16 DS	25-Aug-16 US
Dissolved Metals and Non-Metals														
Aluminum	mg/L	0.0010	-	<0.005	<0.005	0.005	0.029	0.0108	0.0068	0.0122	-	-	-	-
Arsenic	mg/L	0.00010	-	<0.001	<0.001	<0.001	<0.00010	<0.00010	<0.00010	<0.00010	-	-	-	-
Barium	mg/L	0.00010	-	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-
Boron	mg/L	0.010	-	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-
Cadmium	mg/L	0.0000050	-	<0.0001	<0.0001	<0.0001	<0.000010	<0.000010	<0.000010	<0.000010	-	-	-	-
Calcium	mg/L	0.050	-	16	16	21	9.65	9.46	14.1	14.2	-	-	-	-
Chromium	mg/L	0.00050	-	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-
Cobalt	mg/L	0.00010	-	<0.0002	<0.0002	<0.0002	-	-	-	-	-	-	-	-
Copper	mg/L	0.00020	-	<0.001	<0.001	<0.001	0.00034	0.00033	0.00041	0.00043	-	-	-	-
Iron	mg/L	0.010	-	<0.03	<0.03	<0.03	0.030	0.015	<0.010	0.014	-	-	-	-
Lead	mg/L	0.000050	Variable [e]	<0.001	<0.001	<0.001	<0.000050	<0.000050	<0.000050	<0.000050	-	-	-	-
Magnesium	mg/L	0.0050	-	8	6	8	4.44	4.46	6.62	6.47	-	-	-	-
Manganese	mg/L	0.00010	-	<0.01	<0.01	<0.01	0.00102	0.00072	0.00064	0.00084	-	-	-	-
Mercury	mg/L	0.0000050	-	-	-	-	<0.000010	<0.000010	<0.000010	<0.000010	-	-	-	-
Molybdenum	mg/L	0.000050	-	<0.005	<0.005	<0.005	0.000059	0.000063	0.000123	0.000123	-	-	-	-
Nickel	mg/L	0.00050	-	<0.005	<0.005	<0.005	<0.00050	<0.00050	<0.00050	<0.00050	-	-	-	-
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	0.52	0.26	0.55	0.361	0.348	0.465	0.463	-	-	-	-
Selenium	mg/L	0.000050	-	<0.001	<0.001	<0.001	<0.000050	<0.000050	<0.000050	<0.000050	-	-	-	-
Silver	mg/L	0.000010	-	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-
Sodium	mg/L	0.050	-	0.64	0.28	0.6	<0.50	<0.50	0.62	0.62	-	-	-	-
Strontium	mg/L	0.00020	0.25	0.012	0.011	0.015	-	-	-	-	-	-	-	-
Thallium	mg/L	0.000010	-	-	-	-	<0.000010	<0.000010	<0.000010	<0.000010	-	-	-	-
Tin	mg/L	0.00010	-	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-
Uranium	mg/L	0.000010	-	-	-	-	0.000315	0.000317	0.00127	0.00127	-	-	-	-
Vanadium	mg/L	0.00050	-	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-
Zinc	mg/L	0.0010	Variable [e]	<0.01	<0.01	<0.01	0.0021	<0.0010	<0.0010	0.0011	-	-	-	-
Miscellaneous (Water)														
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.2: Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-025 (CV128)

Parameters	Units	2025 LOR	CCME Guideline	Date									
				2017		2018				2019			
				30-Jun-17	30-Jun-17	03-Jul-18	03-Jul-18	02-Sep-18	02-Sep-18	21-Jun-19	21-Jun-19	10-Aug-19	10-Aug-19
				US	DS	US	DS	US	DS	US	DS	US	DS
In Situ Parameters													
Temperature	ºC	-	-	3.3	3.6	5.9	5.9	4.9	4.9	6.1	6.0	14.5	14.2
Specific Conductance	µS/cm	-	-	0.147	0.1575	0.0786	0.0785	0.1357	0.1375	0.0756	0.0754	0.1712	0.1705
Dissolved Oxygen	mg/L	-	< 9.5	-	-	-	-	-	-	-	-	-	-
Dissolved Oxygen	%	-	-	102.4	102.3	97.9	97.8	102.2	98.5	102.2	101.3	107.3	105.4
pH	pH units	-	6.5 - 9.0	7.62	7.67	8.00	8.16	8.13	7.78	7.92	8.00	8.32	8.25
Wetted Width	m	-	-	30	30	~25	~25	~40	~35	-	-	-	-
Average Depth	m	-	-	5	5	-	-	-	-	-	-	-	-
Flow Rate	m^3/s	-	-	60	51	-	-	-	-	-	-	-	-
Physical Parameters													
pH	pH units	0.10	6.5 - 9.0	7.83	7.84	7.82	7.83	8.22	8.17	7.91	7.77	8.25	8.32
Conductivity	µS/cm	1.0	-	-	-	-	-	-	-	-	-	-	-
Turbidity	NTU	0.10	-	2.43	2.27	2.11	1.92	0.22	0.28	0.48	0.66	0.24	0.31
Hardness	mg/L as $CaCO_3$	0.50	-	38	42.0	40	41	81	79.0	44.7	45.1	85.6	85.9
Total Suspended Solids	mg/L	1.0 - 1.3	Variable [g]	8.4	13.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	17 - 19	-	37	44	51	51	85	85	49	54	112	108
Dissolved Anions													
Alkalinity	mg/L as $CaCO_3$	2.0	-	29	34	37	37	83	83	47	47	93	92
Bromide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	0.89	0.88	0.58	0.61	1.36	1.39	0.52	0.55	1.31	1.33
Fluoride	mg/L	-	-	<0.020	<0.020	<0.020	<0.020	0.025	0.026	-	-	-	-
Sulfate	mg/L	-	-	0.38	0.39	0.33	0.37	0.73	0.72	-	-	-	-
Nutrients													
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	0.16	<0.15	-	-	-	-	-	-	-	-
Nitrite	mg/L N	0.010	0.06	-	-	-	-	-	-	<0.010	<0.010	<0.010	<0.010
Nitrate	mg/L N	0.020	3	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Nitrate + Nitrite	mg/L N	-	-	-	-	-	-	-	-	<0.022	<0.022	<0.022	<0.022
Ammonia, total as N	mg/L	0.0050	Variable [a]	<0.020	<0.020	<0.020	<0.020	-	-	<0.010	<0.010	<0.010	<0.010
Total Phosphorus	mg/L	0.0020	0.01	0.0107	0.0102	0.0045	0.0046	<0.0030	<0.0030	0.0033	0.0033	<0.0030	<0.0030
Dissolved Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Organic Compounds													
Phenols	mg/L	-	0.004	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	1.84	1.79	1.37	1.33	2.04	0.62	1.72	1.74	1.67	1.96
Total Organic Carbon	mg/L	0.50	-	2.09	2.15	1.54	1.85	2.30	0.54	2.17	2.32	2.05	2.19
Total Kjeldahl Nitrogen	mg/L	-	-	0.16	<0.15	<0.15	<0.15	<0.15	<0.15	-	-	-	-
Chlorophyll-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.2: Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-025 (CV128)

Parameters	Units	2025 LOR	CCME Guideline	Date									
				2017		2018				2019			
				30-Jun-17	30-Jun-17	03-Jul-18	03-Jul-18	02-Sep-18	02-Sep-18	21-Jun-19	21-Jun-19	10-Aug-19	10-Aug-19
				US	DS	US	DS	US	DS	US	DS	US	DS
Total Metals and Non-Metals													
Aluminum	mg/L	0.0030	Variable [f]	0.123	0.129	0.047	0.0587	0.0085	0.0053	0.0279	0.0314	0.0078	0.0078
Antimony	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	mg/L	0.00010	0.005	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.0001
Barium	mg/L	0.00010	-	0.00378	0.00386	0.00315	0.00315	0.00589	0.00589	0.00352	0.00351	0.00728	0.00748
Berylium	mg/L	0.000020	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron	mg/L	0.010	1.5	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	mg/L	0.0000050	Variable [c]	<0.000010	<0.000010	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	0.050	-	8.61	9.76	9.45	9.66	18.6	18.6	9.54	10	20.1	19.9
Cesium	mg/L	0.000010	-	0.000019	0.000023	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium	mg/L	0.00050	-	0.00054	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	Variable [c]	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Iron	mg/L	0.010	0.3	0.133	0.147	0.036	0.049	0.012	0.012	0.022	0.030	0.016	0.15
Lead	mg/L	0.000050	0.001 - 0.007 [c]	0.000125	0.000158	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium	mg/L	0.0010	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium	mg/L	0.0050	-	4.12	4.18	4.04	4.19	8.41	7.96	4.62	4.60	8.6	8.45
Manganese	mg/L	0.00010	Variable [c]	0.00658	0.0065	0.00211	0.00223	0.00118	0.00122	0.00147	0.00173	0.00159	0.00129
Mercury	mg/L	0.0000050	0.000026	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.0000050	<0.0000050
Molybdenum	mg/L	0.000050	0.073	0.000059	0.000078	0.000057	0.000066	0.000122	0.000127	0.000058	0.000068	0.000166	0.000215
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.00050	<0.00050	0.00428	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50
Potassium	mg/L	0.050	-	0.452	0.455	0.326	0.330	0.491	0.491	0.329	0.325	0.558	0.555
Rubidium	mg/L	0.00020	-	0.00093	0.00093	0.00072	0.00074	0.00094	0.00095	0.00065	0.00062	0.0013	0.00125
Selenium	mg/L	0.000050	0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon	mg/L	0.10	-	0.54	0.54	0.32	0.33	0.41	0.4	0.31	0.33	0.54	0.55
Silver	mg/L	0.000010	0.25	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	0.53	0.520	0.332	0.341	0.75	0.737	0.324	0.334	0.788	0.788
Strontium	mg/L	0.00020	0.25	0.0047	0.0056	0.0057	0.0058	0.0125	0.0129	0.0055	0.0056	0.0127	0.013
Sulphur	mg/L	0.50	-	<0.50	<0.50	<0.50	<0.50	0.62	<0.50	<0.50	<0.50	<0.50	<0.50
Tellurium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium	mg/L	0.000010	0.0008	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium	mg/L	0.00010	-	0.00012	0.00015	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium	mg/L	0.00030	-	0.00399	0.0045	0.00145	0.00164	<0.00030	<0.00030	0.00083	0.00129	0.00032	<0.00030
Tungsten	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	0.015	0.000299	0.000353	0.000346	0.000347	0.00147	0.00154	0.000367	0.000381	0.00211	0.00219
Vanadium	mg/L	0.00050	0.12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0030	0.03	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Zirconium	mg/L	0.00020	-	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020

Table 2.2: Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-025 (CV128)

Parameters	Units	2025 LOR	CCME Guideline	Date									
				2017		2018				2019			
				30-Jun-17	30-Jun-17	03-Jul-18	03-Jul-18	02-Sep-18	02-Sep-18	21-Jun-19	21-Jun-19	10-Aug-19	10-Aug-19
				US	DS	US	DS	US	DS	US	DS	US	DS
Dissolved Metals and Non-Metals													
Aluminum	mg/L	0.0010	-	-	-	-	-	-	-	-	-	-	-
Arsenic	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-
Barium	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-
Boron	mg/L	0.010	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/L	0.0000050	-	-	-	-	-	-	-	-	-	-	-
Calcium	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-
Chromium	mg/L	0.00050	-	-	-	-	-	-	-	-	-	-	-
Cobalt	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-
Copper	mg/L	0.00020	-	-	-	-	-	-	-	-	-	-	-
Iron	mg/L	0.010	-	-	-	-	-	-	-	-	-	-	-
Lead	mg/L	0.000050	Variable [e]	-	-	-	-	-	-	-	-	-	-
Magnesium	mg/L	0.0050	-	-	-	-	-	-	-	-	-	-	-
Manganese	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-
Mercury	mg/L	0.0000050	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	mg/L	0.000050	-	-	-	-	-	-	-	-	-	-	-
Nickel	mg/L	0.00050	-	-	-	-	-	-	-	-	-	-	-
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-
Selenium	mg/L	0.000050	-	-	-	-	-	-	-	-	-	-	-
Silver	mg/L	0.000010	-	-	-	-	-	-	-	-	-	-	-
Sodium	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-
Strontium	mg/L	0.00020	0.25	-	-	-	-	-	-	-	-	-	-
Thallium	mg/L	0.000010	-	-	-	-	-	-	-	-	-	-	-
Tin	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-
Uranium	mg/L	0.000010	-	-	-	-	-	-	-	-	-	-	-
Vanadium	mg/L	0.00050	-	-	-	-	-	-	-	-	-	-	-
Zinc	mg/L	0.0010	Variable [e]	-	-	-	-	-	-	-	-	-	-
Miscellaneous (Water)													
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.2: Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-025 (CV128)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2020						2021				2022			
				22-Jun-20	22-Jun-20	19-Jul-20	19-Jul-20	14-Aug-20	14-Aug-20	15-Jun-21	15-Jun-21	16-Aug-21	16-Aug-21	20-Jun-22	20-Jun-22	29-Aug-22	29-Aug-22
				US	DS	US	DS	US	DS	DS	US	DS	US	DS	US	DS	US
In Situ Parameters																	
Temperature	ºC	-	-	6.4	8.1	16.5	17.1	12.3	13.5	4.5	4.8	7.3	10.4	12.9	5.7	6.2	6.6
Specific Conductance	µS/cm	-	-	0.107	0.1193	0.2385	0.2533	0.2531	0.2825	102.7	105.1	164.8	164.8	141.7	78.5	157.0	165.3
Dissolved Oxygen	mg/L	-	< 9.5	12.41	12.49	10.46	11.02	100.6	124.2	12.77	12.66	11.95	11.99	11.55	11.38	12.99	13.03
Dissolved Oxygen	%	-	-	100.8	105.5	106.8	114.7	10.82	12.95	99.1	99.2	100.6	101.2	110.5	96.8	105.3	107.0
pH	pH units	-	6.5 - 9.0	7.91	8.04	8.38	8.4	8.28	8.36	7.90	8.09	8.29	8.27	8.17	7.81	8.28	8.33
Wetted Width	m	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-
Average Depth	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flow Rate	m^3/s	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physical Parameters																	
pH	pH units	0.10	6.5 - 9.0	7.78	7.89	8.29	8.29	8.21	8.32	7.91	7.97	7.81	7.85	8.10	7.60	8.10	8.14
Conductivity	µS/cm	1.0	-	111	124	249	269	257	298	108	108	173	173	145	78	159	158
Turbidity	NTU	0.10	-	0.85	1.2	0.52	1.08	0.73	1.34	1.41	2.07	0.59	0.48	13.90	2.76	<1.0	<1.0
Hardness	mg/L as $CaCO_3$	0.50	-	58	63.8	129	138	137	158	52.6	53.4	86.1	87.8	74.8	39.2	84.6	86.6
Total Suspended Solids	mg/L	1.0 - 1.3	Variable [g]	<2.0	2.7	<2.0	<2.0	2.2	<2.0	1.4	5.2	2.3	<2.0	13.2	7.1	<3.0	<3.0
Total Dissolved Solids	mg/L	17 - 19	-	56	68	173	148	159	184	43	53	92	89	100	48	77	77
Dissolved Anions																	
Alkalinity	mg/L as $CaCO_3$	2.0	-	52	56	123	494	125	129	64.6	67.5	88.6	88.7	69.0	37.8	77.4	75.5
Bromide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	3.11	4.29	7.62	12.4	8.83	19.7	1.93	1.93	1.83	1.79	4.64	2.52	1.68	1.69
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nutrients																	
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite	mg/L N	0.010	0.06	<0.010	<0.010	<0.010	<0.010	<0.0010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate	mg/L N	0.020	3	0.021	<0.020	<0.020	<0.020	0.109	0.0961	0.028	0.027	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Nitrate + Nitrite	mg/L N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	0.016	<0.010	<0.010	0.011	0.0073	0.0086	0.020	<0.010	<0.010	<0.010	0.019	0.019	<0.010	<0.010
Total Phosphorus	mg/L	0.0020	0.01	0.0031	0.0067	0.0047	0.0092	0.0038	0.0052	0.0048	0.0061	<0.0030	<0.0030	0.0049	0.0046	0.0059	<0.0030
Dissolved Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.050	<0.050	<0.050	<0.050
Organic Compounds																	
Phenols	mg/L	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	3.93	3.91	5.74	5.6	5.6	5.36	3.88	3.37	3.04	3.05	3.64	2.82	1.54	2.20
Total Organic Carbon	mg/L	0.50	-	3.92	3.95	6.16	6.05	5.44	5.17	3.61	3.51	5.33	5.13	3.43	3.01	2.01	1.96
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	-	-	0.220	0.260	0.130	0.110	0.233	0.188	0.067	0.055
Chlorophyll-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.2: Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-025 (CV128)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2020						2021				2022			
				22-Jun-20	22-Jun-20	19-Jul-20	19-Jul-20	14-Aug-20	14-Aug-20	15-Jun-21	15-Jun-21	16-Aug-21	16-Aug-21	20-Jun-22	20-Jun-22	29-Aug-22	29-Aug-22
				US	DS	US	DS	US	DS	DS	US	DS	US	DS	US	DS	US
Total Metals and Non-Metals																	
Aluminum	mg/L	0.0030	Variable [f]	0.0298	0.071	0.0103	0.0233	0.0049	0.0208	0.0599	0.0418	0.0364	0.0236	0.5530	0.0696	0.0052	<0.0050
Antimony	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	mg/L	0.00010	0.005	<0.00010	<0.00010	0.0001	0.00011	0.00015	0.00017	0.00012	0.00012	<0.00010	<0.00010	0.00013	<0.00010	<0.00010	<0.00010
Barium	mg/L	0.00010	-	0.00322	0.0051	0.00559	0.00792	0.00606	0.00928	0.00483	0.00466	0.00683	0.00680	0.01030	0.00264	0.00597	0.00587
Berylium	mg/L	0.000020	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron	mg/L	0.010	1.5	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	mg/L	0.0000050	Variable [c]	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	0.050	-	13.8	15.1	30.1	32.3	31.5	35.6	12.0	12.1	19.2	19.3	18.6	8.7	18.3	17.1
Cesium	mg/L	0.000010	-	<0.000010	0.000012	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000108	0.000013	<0.000010	<0.000010
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00010	<0.00010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	Variable [c]	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00019	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00073	<0.00050	<0.00050	0.00060	0.00059	0.00146	<0.00050	<0.00050	<0.00050
Iron	mg/L	0.010	0.3	0.124	0.127	0.128	0.241	0.184	0.257	0.060	0.040	0.049	0.031	0.487	0.101	0.011	0.010
Lead	mg/L	0.000050	0.001 - 0.007 [c]	0.000055	0.000083	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000137	<0.000050	0.000061	0.000616	0.000077	<0.000050	<0.000050
Lithium	mg/L	0.0010	-	<0.0010	<0.0010	0.0012	0.0014	0.0014	0.0016	<0.0010	<0.0010	<0.0010	<0.0010	0.0028	<0.0010	<0.0010	<0.0010
Magnesium	mg/L	0.0050	-	5.7	6.26	13.9	14.2	14.9	16.1	5.88	5.85	9.23	9.29	7.67	4.18	9.68	9.37
Manganese	mg/L	0.00010	Variable [c]	0.00425	0.00938	0.00467	0.0222	0.00765	0.0149	0.00381	0.00259	0.00265	0.00200	0.03270	0.01120	0.00097	0.00095
Mercury	mg/L	0.0000050	0.000026	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	mg/L	0.000050	0.073	0.000096	0.00015	0.000116	0.000154	0.000148	0.000189	0.000079	0.000086	0.000156	0.000156	0.000204	0.000068	0.000159	0.000152
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium	mg/L	0.050	-	0.424	0.657	0.677	0.756	0.697	0.766	0.632	0.636	0.612	0.601	0.981	0.358	0.544	0.536
Rubidium	mg/L	0.00020	-	0.00085	0.00138	0.00125	0.00158	0.00141	0.00166	0.00106	0.00099	0.00119	0.00113	0.00280	0.00070	0.00107	0.00105
Selenium	mg/L	0.000050	0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon	mg/L	0.10	-	0.39	0.51	0.54	0.54	0.52	0.45	0.60	0.59	0.58	0.56	1.34	0.39	0.35	0.34
Silver	mg/L	0.000010	0.25	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	0.528	0.799	0.894	1.04	1.01	1.13	0.925	0.915	1.17	1.20	1.110	0.403	1.13	1.14
Strontium	mg/L	0.00020	0.25	0.0095	0.0164	0.021	0.0264	0.0253	0.0289	0.0076	0.0076	0.0122	0.0122	0.0233	0.0073	0.0116	0.0112
Sulphur	mg/L	0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.64	0.63	<0.50	<0.50	0.56	0.55
Tellurium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium	mg/L	0.000010	0.0008	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000012	<0.000010	<0.000010	<0.000010
Thorium	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00025	<0.00010	<0.00010	<0.00010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium	mg/L	0.00030	-	0.00104	0.00227	0.00044	0.00061	<0.00030	0.00057	0.00213	0.00191	0.00158	0.00086	0.01560	0.00185	<0.00030	<0.00030
Tungsten	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00019	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	0.015	0.000507	0.00105	0.0011	0.00168	0.00112	0.00188	0.000715	0.000731	0.00220	0.00221	0.002100	0.000383	0.00236	0.00234
Vanadium	mg/L	0.00050	0.12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0030	0.03	0.0032	<0.0030	<0.0030	0.0038	<0.0030	0.0036	<0.0030	<0.0030	<0.0030	<0.0030	0.0044	<0.0030	<0.0030	<0.0030
Zirconium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00033	<0.00020	<0.00020	<0.00020	<0.00020	0.00036	<0.00020	<0.00020	<0.00020

Table 2.2: Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-025 (CV128)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2020						2021				2022			
				22-Jun-20	22-Jun-20	19-Jul-20	19-Jul-20	14-Aug-20	14-Aug-20	15-Jun-21	15-Jun-21	16-Aug-21	16-Aug-21	20-Jun-22	20-Jun-22	29-Aug-22	29-Aug-22
				US	DS	US	DS	US	DS	DS	US	DS	US	DS	US	DS	US
Dissolved Metals and Non-Metals																	
Aluminum	mg/L	0.0010	-	0.0077	0.0169	<0.0050	0.0069	0.003	0.0065	0.0099	0.0121	<0.0050	<0.0050	0.0265	0.0074	<0.0050	<0.0050
Arsenic	mg/L	0.00010	-	<0.00010	<0.00010	0.00012	0.00013	<0.00010	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Barium	mg/L	0.00010	-	0.00298	0.00462	0.00566	0.00783	0.00642	0.00859	0.00428	0.00440	0.00688	0.00696	0.00673	0.00245	0.00611	0.00629
Boron	mg/L	0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	mg/L	0.0000050	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	0.050	-	13.6	14.8	29	31.8	30.2	37	11.7	11.9	19.0	19.5	18.9	9.36	18.40	18.60
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00010	<0.00010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00020	-	0.00033	0.00051	0.0003	0.00035	0.0004	0.00067	0.00039	0.00040	0.00052	0.00054	0.00048	<0.00020	0.00043	0.00044
Iron	mg/L	0.010	-	0.063	0.053	0.075	0.105	0.097	0.099	0.017	0.018	<0.010	<0.010	0.046	0.032	<0.010	<0.010
Lead	mg/L	0.000050	Variable [e]	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000078	<0.000050	<0.000050	<0.000050
Magnesium	mg/L	0.0050	-	5.84	6.53	13.6	14.3	14.9	15.8	5.67	5.75	9.38	9.53	6.68	3.85	9.39	9.75
Manganese	mg/L	0.00010	-	0.00215	0.00383	0.00376	0.0201	0.00701	0.0122	0.00284	0.00303	0.00089	0.00082	0.01580	0.00960	0.00073	0.00082
Mercury	mg/L	0.0000050	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	mg/L	0.000050	-	0.000096	0.00014	0.00012	0.00016	0.000141	0.000195	0.000083	0.000078	0.000150	0.000150	0.000188	0.000057	0.000157	0.000153
Nickel	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	0.412	0.65	0.674	0.757	0.796	0.834	0.583	0.598	0.630	0.633	0.790	0.350	0.551	0.562
Selenium	mg/L	0.000050	-	<0.000050	0.00125	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silver	mg/L	0.000010	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	0.534	0.793	0.878	1.03	0.942	1.13	0.888	0.903	1.23	1.22	0.954	0.397	1.11	1.17
Strontium	mg/L	0.00020	0.25	0.0091	0.0154	0.0212	0.0272	0.0221	0.0247	0.0072	0.0074	0.0121	0.0122	0.0215	0.0075	0.0121	0.0119
Thallium	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	-	0.000454	0.000916	0.00111	0.00167	0.00107	0.0018	0.000674	0.000691	0.00211	0.00214	0.001920	0.000366	0.00210	0.00223
Vanadium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0010	Variable [e]	0.0021	0.0027	<0.0010	0.0028	<0.0010	0.0029	<0.0010	<0.0010	<0.0010	<0.0010	0.0025	0.0017	<0.0010	<0.0010
Miscellaneous (Water)																	
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020

Table 2.2: Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-025 (CV128)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2023						2024				2025			
				25-Jun-23	25-Jun-23	16-Jul-23	16-Jul-23	21-Aug-23	21-Aug-23	23-Jul-24	23-Jul-24	18-Aug-24	18-Aug-24	30-Jun-25	30-Jun-25	19-Aug-25	19-Aug-25
				DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
In Situ Parameters																	
Temperature	ºC	-	-	0.2	0.4	6.5	6.7	8.0	8.2	4.2	3.2	7.1	7.1	6.2	6.3	7.2	7.2
Specific Conductance	µS/cm	-	-	121.3	121	66.82	66.7	136.9	137.5	79.3	77.8	144.6	144.7	77.8	77.7	163.6	165.2
Dissolved Oxygen	mg/L	-	< 9.5	13.08	13.11	12.22	12.23	11.34	11.19	12.59	12.98	11.19	11.30	11.56	11.98	11.46	11.85
Dissolved Oxygen	%	-	-	92.0	92.8	101.1	101.4	98.2	97.4	97.0	97.0	92.5	93.3	93.3	97.1	94.9	98.2
pH	pH units	-	6.5 - 9.0	7.88	7.88	8.04	7.84	8.24	8.21	7.65	7.61	7.39	7.98	7.96	8.00	8.26	8.14
Wetted Width	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average Depth	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flow Rate	m^3/s	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physical Parameters																	
pH	pH units	0.10	6.5 - 9.0	7.93	7.91	7.91	7.76	8.16	8.15	7.47	7.35	8.06	8.07	7.41	7.34	8.12	8.13
Conductivity	µS/cm	1.0	-	123	128	69.5	69.3	141	141	99.5	82.9	159	157	81.2	81.2	185	184
Turbidity	NTU	0.10	-	1.14	0.88	3.41	3.47	0.55	0.5	1.25	1.38	0.30	0.29	1.10	1.07	0.58	0.5
Hardness	mg/L as $CaCO_3$	0.50	-	64.1	65.8	34.2	34.5	71.7	73.9	44.3	43.0	82.1	82.0	43.8	44.00	94.3	95.4
Total Suspended Solids	mg/L	1.0 - 1.3	Variable [g]	7.8	3.2	3.8	2.3	1.2	1.2	2.5	1.4	< 1.0	< 1.0	< 1.0	< 1.0	< 1.3	< 1.0
Total Dissolved Solids	mg/L	17 - 19	-	59	65	38	43	45	63	50	58	77	78	40	30	93	91
Dissolved Anions																	
Alkalinity	mg/L as $CaCO_3$	2.0	-	81.1	87.1	54.5	34.7	71.2	71.6	48.3	40.6	78.4	78.9	41.5	41.2	84.2	84.6
Bromide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	2.2	3.37	0.55	0.56	1.25	1.26	0.98	1.03	1.02	0.94	0.5	< 0.5	1.05	0.96
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nutrients																	
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite	mg/L N	0.010	0.06	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Nitrate	mg/L N	0.020	3	0.031	0.025	<0.020	<0.020	<0.020	<0.020	0.023	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Nitrate + Nitrite	mg/L N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	0.0059	0.0063	<0.0050	<0.0050	0.0116	0.0054	< 0.0050	0.0086	< 0.0050	< 0.0050	0.0186	< 0.0050	< 0.0050	< 0.0050
Total Phosphorus	mg/L	0.0020	0.01	0.0056	0.0066	0.0051	0.0051	0.0029	0.0031	0.0058	0.0062	0.0023	0.002	0.0027	0.0030	0.0069	< 0.0020
Dissolved Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic Compounds																	
Phenols	mg/L	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	3.27	3.47	1.08	1.11	1.7	1.58	24.2	17.2	1.97	3.01	1.36	1.48	2.39	1.72
Total Organic Carbon	mg/L	0.50	-	3.19	3.29	1.54	1.56	1.82	2.08	2.70	2.74	1.81	2.06	1.42	1.44	2.05	2.36
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorophyll-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.2: Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-025 (CV128)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2023						2024				2025			
				25-Jun-23	25-Jun-23	16-Jul-23	16-Jul-23	21-Aug-23	21-Aug-23	23-Jul-24	23-Jul-24	18-Aug-24	18-Aug-24	30-Jun-25	30-Jun-25	19-Aug-25	19-Aug-25
				DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
Total Metals and Non-Metals																	
Aluminum	mg/L	0.0030	Variable [f]	0.0342	0.0424	0.0564	0.0617	0.021	0.0148	0.0379	0.0607	0.0058	0.0076	0.0206	0.035	0.0104	0.0093
Antimony	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Arsenic	mg/L	0.00010	0.005	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Barium	mg/L	0.00010	-	0.00499	0.00539	0.00314	0.00326	0.00617	0.00578	0.00365	0.00401	0.00629	0.00641	0.00354	0.00361	0.00735	0.00727
Berylium	mg/L	0.000020	-	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
Bismuth	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Boron	mg/L	0.010	1.5	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Cadmium	mg/L	0.0000050	Variable [c]	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Calcium	mg/L	0.050	-	13.4	14	7.68	7.66	15.2	15.8	9.85	10.0	17.5	17.9	9.61	9.74	21.1	21.2
Cesium	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	< 0.000010	0.000012	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	0.00113	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Cobalt	mg/L	0.00010	Variable [c]	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	<0.00050	0.00054	<0.00050	0.00243	0.00059	0.00053	< 0.00050	0.00069	0.00053	< 0.00050	< 0.00050	< 0.00050	0.00080	0.00071
Iron	mg/L	0.010	0.3	0.063	0.076	0.060	0.062	0.033	0.024	0.042	0.070	0.010	< 0.010	0.026	0.033	0.017	0.016
Lead	mg/L	0.000050	0.001 - 0.007 [c]	<0.000050	0.000055	0.000074	0.000137	<0.000050	<0.000050	< 0.000050	0.000065	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Lithium	mg/L	0.0010	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Magnesium	mg/L	0.0050	-	7.54	7.34	3.66	3.68	7.78	7.83	5.00	5.16	8.87	9.11	4.41	4.53	10.2	10.3
Manganese	mg/L	0.00010	Variable [c]	0.0127	0.0136	0.00261	0.00302	0.00223	0.00201	0.00341	0.00433	0.00090	0.00070	0.00124	0.00131	0.00108	0.00123
Mercury	mg/L	0.0000050	0.000026	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Molybdenum	mg/L	0.000050	0.073	0.000081	0.000079	0.000054	<0.000050	0.000131	0.000139	0.000071	0.000086	0.000132	0.000148	0.000081	0.000065	0.000159	0.000155
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Phosphorus	mg/L	0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Potassium	mg/L	0.050	-	0.626	0.611	0.280	0.285	0.486	0.481	0.503	0.523	0.550	0.569	0.332	0.338	0.592	0.596
Rubidium	mg/L	0.00020	-	0.00105	0.00109	0.00064	0.00068	0.00107	0.00104	0.00073	0.00092	0.00113	0.00110	0.00062	0.00065	0.00116	0.00124
Selenium	mg/L	0.000050	0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Silicon	mg/L	0.10	-	0.68	0.72	0.39	0.39	0.55	0.54	0.48	0.50	0.46	0.47	0.31	0.34	0.54	0.54
Silver	mg/L	0.000010	0.25	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Sodium	mg/L	0.050	-	0.927	0.910	0.331	0.333	0.853	0.839	0.512	0.539	0.812	0.819	0.339	0.344	0.786	0.792
Strontium	mg/L	0.00020	0.25	0.00810	0.00798	0.00450	0.00462	0.00977	0.00986	0.00557	0.0060	0.0110	0.0111	0.00529	0.00528	0.0121	0.0120
Sulphur	mg/L	0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Tellurium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020
Thallium	mg/L	0.000010	0.0008	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Thorium	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Titanium	mg/L	0.00030	-	0.00122	0.00167	0.00196	0.00217	0.00101	0.00047	0.00149	0.00225	< 0.00030	< 0.00030	0.00073	0.00105	< 0.00030	0.00032
Tungsten	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Uranium	mg/L	0.000010	0.015	0.000957	0.000962	0.000283	0.000276	0.00152	0.00154	0.000377	0.000385	0.00185	0.00189	0.000361	0.000356	0.00195	0.00193
Vanadium	mg/L	0.00050	0.12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Zinc	mg/L	0.0030	0.03	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	< 0.0030	0.0044	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030
Zirconium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	0.00055	<0.00020	<0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020

Table 2.2: Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-025 (CV128)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2023						2024				2025			
				25-Jun-23	25-Jun-23	16-Jul-23	16-Jul-23	21-Aug-23	21-Aug-23	23-Jul-24	23-Jul-24	18-Aug-24	18-Aug-24	30-Jun-25	30-Jun-25	19-Aug-25	19-Aug-25
				DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
Dissolved Metals and Non-Metals																	
Aluminum	mg/L	0.0010	-	0.0052	0.0160	0.0069	0.0050	0.0034	0.0030	0.0312	0.0319	0.0030	0.0024	0.0048	0.0076	0.0031	0.0029
Arsenic	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Barium	mg/L	0.00010	-	0.00497	0.00483	0.00294	0.00286	0.00572	0.00571	0.00378	0.00378	0.00601	0.00608	0.00335	0.00337	0.00726	0.00730
Boron	mg/L	0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Cadmium	mg/L	0.0000050	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Calcium	mg/L	0.050	-	13.8	14.3	7.69	7.78	15.3	16.0	9.72	9.08	17.7	17.6	9.67	9.69	20.6	20.9
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Cobalt	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Copper	mg/L	0.00020	-	0.00038	0.00040	0.00032	0.00037	0.00044	0.00047	0.00040	0.00045	0.00072	0.00051	0.0005	0.00039	0.00051	0.00056
Iron	mg/L	0.010	-	0.020	0.021	<0.010	<0.010	<0.010	<0.010	0.037	0.039	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Lead	mg/L	0.000050	Variable [e]	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Magnesium	mg/L	0.0050	-	7.14	7.24	3.60	3.62	7.97	8.17	4.87	4.95	9.21	9.25	4.78	4.82	10.4	10.5
Manganese	mg/L	0.00010	-	0.0101	0.0110	0.00091	0.00094	0.00074	0.00075	0.00331	0.00335	0.00055	0.00073	0.00062	0.00064	0.00069	0.0008
Mercury	mg/L	0.0000050	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Molybdenum	mg/L	0.000050	-	0.000071	0.000089	0.000053	0.000055	0.000138	0.000131	0.000067	0.000055	0.000129	0.000152	0.000069	0.000064	0.00015	0.000146
Nickel	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Phosphorus	mg/L	0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Potassium	mg/L	0.050	-	0.625	0.643	0.301	0.309	0.466	0.466	0.488	0.492	0.512	0.529	0.334	0.335	0.583	0.588
Selenium	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Silver	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Sodium	mg/L	0.050	-	0.934	0.939	0.348	0.354	0.846	0.848	0.479	0.477	0.823	0.830	0.359	0.358	0.826	0.821
Strontium	mg/L	0.00020	0.25	0.00786	0.00839	0.00476	0.00481	0.00974	0.00986	0.0054	0.0054	0.0106	0.0106	0.00498	0.00499	0.012	0.0121
Thallium	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Uranium	mg/L	0.000010	-	0.000882	0.000906	0.000261	0.000259	0.00145	0.00151	0.000338	0.000348	0.00171	0.00165	0.000365	0.000361	0.00175	0.00176
Vanadium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Zinc	mg/L	0.0010	Variable [e]	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	0.0048	0.0491	< 0.0010	0.0018	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Miscellaneous (Water)																	
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.3 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-050 (CV099)

Parameters	Units	2025 LOR	CCME Guideline	Date									
				2005			2006			2015			
				13-Jun-05	06-Aug-05	09-Sep-05	14-Jun-06	03-Aug-06	08-Sep-06	03-Jul-15 US	03-Jul-15 DS	12-Aug-15 US	12-Aug-15 DS
In Situ Parameters													
Temperature	ºC	-	-	0.11	9.36	4.13	0.04	8.31	2.74	-	-	9.3	8.2
Specific Conductance	µS/cm	-	-	0.104	0.220	0.308	0.112	0.254	0.305	0.112	0.111	0.337	0.338
Dissolved Oxygen	mg/L	-	< 9.5	13.69	10.95	12.74	13.80	12.02	13.37	-	-	-	-
Dissolved Oxygen	%	-	-	-	-	-	-	-	-	-	-	103.5	101.7
pH	pH units	-	6.5 - 9.0	7.54	8.31	8.07	8.17	8.36	8.55	8.27	8.28	8.55	8.53
Wetted Width	m	-	-	-	-	-	ice	11	12	6	6	2	2
Average Depth	m	-	-	-	-	-	0.1	0.15	0.3	0.1	0.1	0.15	0.15
Flow Rate	m^3/s	-	-	-	-	-	-	0.82	1.88	-	-	-	-
Physical Parameters													
pH	pH units	0.10	6.5 - 9.0	-	-	-	7.68	8.14	8.13	8.13	8.13	8.37	8.36
Conductivity	µS/cm	1.0	-	105	235	296	122	259	315	-	-	-	-
Turbidity	NTU	0.10	-	0.84	0.23	<0.10	0.9	0.2	-	0.32	0.48	1.07	0.12
Hardness	mg/L as $CaCO_3$	0.50	-	54.2	128	177	62	144	162	81	80	157	156
Total Suspended Solids	mg/L	1.0	Variable [g]	-	-	-	-	-	-	<2.0	2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	16 - 19	-	57	123	170	79	168	205	93	77	168	157
Dissolved Anions													
Alkalinity	mg/L as $CaCO_3$	2.0	-	52	134	156	61	141	163	80	81	161	160
Bromide	mg/L	-	-	<0.3	<0.3	<0.3	<0.05	<0.05	<0.05	-	-	-	-
Chloride	mg/L	0.50	120	1.1	0.6	1.9	<1	1	3	1.2	1.22	4.14	4.15
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Sulfate	mg/L	-	-	0.6	1.1	2.5	2.0	2.0	6.0	1.1	1.2	4.80	5.12
Nutrients													
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	0.3	0.2	0.6	0.09	0.04	<0.02	<0.15	<0.15	0.23	0.17
Nitrite	mg/L N	0.010	0.06	<0.06	<0.06	<0.06	<0.005	<0.005	0.017	-	-	-	-
Nitrate	mg/L N	0.020	3	<0.05	<0.05	<0.05	<0.10	<0.10	<0.10	<0.020	<0.020	0.031	0.037
Nitrate + Nitrite	mg/L N	-	-	<0.06	<0.06	<0.06	<0.10	<0.10	<0.10	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	-	-	-	-	-	-	-	-	-	-
Total Phosphorus	mg/L	0.0020	0.01	<0.02	<0.02	<0.10	<0.01	<0.01	<0.01	<0.0030	<0.0030	<0.0030	0.0034
Dissolved Phosphorus	mg/L	-	-	<0.02	<0.02	<0.10	-	-	-	-	-	-	-
Organic Compounds													
Phenols	mg/L	-	0.004	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	-	-	-	-	-	-	1.8	1.7	2.7	2.8
Total Organic Carbon	mg/L	0.50	-	-	-	-	-	-	-	1.8	1.8	2.7	2.8
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	-	-	<0.15	0.23	0.23	0.17
Chlorophyll-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.3 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-050 (CV099)

Parameters	Units	2025 LOR	CCME Guideline	Date									
				2005			2006			2015			
				13-Jun-05	06-Aug-05	09-Sep-05	14-Jun-06	03-Aug-06	08-Sep-06	03-Jul-15 US	03-Jul-15 DS	12-Aug-15 US	12-Aug-15 DS
Total Metals and Non-Metals													
Aluminum	mg/L	0.0030	Variable [f]	0.026	0.005	<0.004	0.015	<0.005	<0.005	0.012	0.014	<0.010	<0.010
Antimony	mg/L	0.00010	-	<0.0004	<0.0004	<0.0004	-	-	-	-	-	-	-
Arsenic	mg/L	0.00010	0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.00010	0.00011
Barium	mg/L	0.00010	-	0.002	0.004	0.005	<0.01	<0.01	<0.01	-	-	-	-
Beryllium	mg/L	0.000020	-	<0.005	<0.005	<0.005	-	-	-	-	-	-	-
Bismuth	mg/L	0.000050	-	<0.0003	<0.0003	<0.0003	-	-	-	-	-	-	-
Boron	mg/L	0.010	1.5	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-
Cadmium	mg/L	0.0000050	Variable [c]	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.000090	<0.000090	<0.000010	<0.000010
Calcium	mg/L	0.050	-	13.0	29.3	39.8	16	34	37	17.6	18	35.9	34.9
Cesium	mg/L	0.000010	-	-	-	-	-	-	-	-	-	-	-
Chromium	mg/L	0.00050	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Cobalt	mg/L	0.00010	Variable [c]	<0.0003	<0.0003	<0.0003	<0.0002	<0.0002	<0.0002	-	-	-	-
Copper	mg/L	0.00050	0.002 - 0.004 [c]	<0.0008	<0.0008	<0.0008	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
Iron	mg/L	0.010	0.3	<0.05	<0.02	<0.02	<0.03	<0.03	<0.03	<0.050	<0.050	<0.050	<0.050
Lead	mg/L	0.000050	0.001 - 0.007 [c]	<0.0002	<0.0002	<0.0002	<0.001	<0.001	<0.001	<0.00050	<0.00050	<0.00010	<0.00010
Lithium	mg/L	0.0010	-	-	-	-	-	-	-	-	-	-	-
Magnesium	mg/L	0.0050	-	5.29	13.2	18.7	6	15	17	8.01	7.96	19	18.4
Manganese	mg/L	0.00010	Variable [c]	0.0079	<0.0007	<0.0007	<0.01	<0.01	<0.01	<0.0010	<0.0010	<0.00050	<0.00050
Mercury	mg/L	0.0000050	0.000026	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum	mg/L	0.000050	0.073	<0.0003	<0.0003	<0.0003	<0.005	<0.005	<0.005	<0.00050	<0.00050	<0.00050	<0.00050
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	0.53	0.45	0.54	0.52	0.34	0.52	<1.0	<1.0	0.614	0.626
Rubidium	mg/L	0.00020	-	-	-	-	-	-	-	-	-	-	-
Selenium	mg/L	0.000050	0.001	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.00040	<0.00040	<0.000050	<0.000050
Silicon	mg/L	0.10	-	-	-	-	-	-	-	-	-	-	-
Silver	mg/L	0.000010	0.25	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-
Sodium	mg/L	0.050	-	0.39	0.67	1.15	0.37	0.67	1.61	0.76	0.75	2.64	2.55
Strontium	mg/L	0.00020	0.25	0.0068	0.0140	0.0198	0.010	0.018	0.022	-	-	-	-
Sulfur	mg/L	0.50	-	-	-	-	-	-	-	-	-	-	-
Tellurium	mg/L	0.00020	-	-	-	-	-	-	-	-	-	-	-
Thallium	mg/L	0.000010	0.0008	<0.0002	<0.0002	<0.0002	-	-	-	<0.00030	<0.00030	<0.000010	<0.000010
Thorium	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-
Tin	mg/L	0.00010	-	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	-	-	-	-
Titanium	mg/L	0.00030	-	<0.003	<0.003	<0.003	-	-	-	-	-	-	-
Tungsten	mg/L	0.00010	-	-	-	-				-	-	-	-
Uranium	mg/L	0.000010	0.015	-	-	-				<0.0010	<0.0010	0.000982	0.001040
Vanadium	mg/L	0.00050	0.12	<0.0009	<0.0009	<0.0009	<0.001	<0.001	0.001	-	-	-	-
Zinc	mg/L	0.0030	0.03	0.002	<0.001	<0.001	<0.01	<0.01	<0.01	<0.0030	0.0044	<0.0030	0.0193
Zirconium	mg/L	0.00020	-	-	-	-	-	-	-	-	-	-	-

Table 2.3 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-050 (CV099)

Parameters	Units	2025 LOR	CCME Guideline	Date									
				2005			2006			2015			
				13-Jun-05	06-Aug-05	09-Sep-05	14-Jun-06	03-Aug-06	08-Sep-06	03-Jul-15 US	03-Jul-15 DS	12-Aug-15 US	12-Aug-15 DS
Dissolved Metals and Non-Metals													
Aluminum	mg/L	0.0010	-	0.004	<0.004	<0.004	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.0050	<0.0050
Arsenic	mg/L	0.00010	-	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.00010	<0.00010	0.00011	0.00010
Barium	mg/L	0.00010	-	0.002	0.004	0.005	<0.01	<0.01	<0.01	-	-	-	-
Boron	mg/L	0.010	-	<0.05	0.02	<0.01	<0.01	<0.01	<0.01	-	-	-	-
Cadmium	mg/L	0.0000050	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.000010	<0.000010	<0.000010	<0.000010
Calcium	mg/L	0.050	-	12.3	29.7	37.4	15	33	37	18.4	18.8	34.7	34.7
Chromium	mg/L	0.00050	-	<0.001	0.002	0.002	<0.001	<0.001	<0.001	-	-	-	-
Cobalt	mg/L	0.00010	-	<0.0003	<0.0003	<0.0003	<0.0002	<0.0002	<0.0002	-	-	-	-
Copper	mg/L	0.00020	-	<0.0008	<0.0008	<0.0008	<0.001	<0.001	<0.001	0.00030	0.00031	0.00050	0.00055
Iron	mg/L	0.010	-	<0.05	<0.02	<0.02	<0.03	<0.03	<0.03	<0.010	<0.010	<0.010	<0.010
Lead	mg/L	0.000050	Variable [e]	<0.0002	<0.0002	<0.0002	<0.001	<0.001	<0.001	<0.000050	<0.000050	<0.000050	<0.000050
Magnesium	mg/L	0.0050	-	5.67	13.3	17.3	6	15	17	8.59	7.92	17.1	17
Manganese	mg/L	0.00010	-	0.0060	<0.0007	<0.0007	<0.01	<0.01	<0.01	<0.00050	<0.00050	<0.00050	<0.00050
Mercury	mg/L	0.0000050	-	-	-	-	-	-	-	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum	mg/L	0.000050	-	<0.0003	<0.0003	<0.0003	<0.005	<0.005	<0.005	<0.000010	<0.000010	0.000107	0.000112
Nickel	mg/L	0.00050	-	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.000050	0.000059	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	0.52	0.44	0.52	0.52	0.34	0.53	<0.00050	<0.00050	0.616	0.631
Selenium	mg/L	0.000050	-	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	0.386	0.360	<0.000050	<0.000050
Silver	mg/L	0.000010	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.000050	<0.000050	-	-
Sodium	mg/L	0.050	-	0.42	0.67	1.10	0.34	0.68	1.61	0.76	0.73	2.41	2.39
Strontium	mg/L	0.00020	0.25	0.0070	0.0147	0.0188	0.009	0.019	0.023	-	-	-	-
Thallium	mg/L	0.000010	-	<0.0002	<0.0002	<0.0002	-	-	-	<0.000010	<0.000010	<0.000010	<0.000010
Tin	mg/L	0.00010	-	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	-	-	-	-
Uranium	mg/L	0.000010	-	-	-	-	-	-	-	0.00023	0.000251	0.000911	0.000966
Vanadium	mg/L	0.00050	-	<0.0009	0.0046	0.0046	<0.001	<0.001	0.001	-	-	-	-
Zinc	mg/L	0.0010	Variable [e]	0.009	0.002	0.002	<0.01	<0.01	<0.01	0.0017	0.0044	<0.0010	0.0182
Miscellaneous (Water)													
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.3 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-050 (CV099)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2016				2017		2018				2019			
				30-Jun-16	30-Jun-16	25-Aug-16	25-Aug-16	29-Jun-17	29-Jun-17	03-Jul-18	03-Jul-18	02-Sep-18	02-Sep-18	21-Jun-19	21-Jun-19	11-Aug-19	11-Aug-19
				DS	US	DS	US	US	DS	US	DS	US	DS	US	DS	US	DS
In Situ Parameters																	
Temperature	ºC	-	-	10.83	12.19	9	9.1	1.6	2.2	6.1	6.2	5.10	4.50	7.00	7.10	12.4	11.9
Specific Conductance	µS/cm	-	-	-	-	0.347	0.353	0.136	0.1489	0.1536	0.1518	0.2694	0.2699	0.1631	0.1634	0.3530	0.3534
Dissolved Oxygen	mg/L	-	< 9.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Oxygen	%	-	-	97.4	97	102.5	107.5	101.6	103.3	98.10	98.20	99.30	98.30	98.90	98.70	100.5	98.6
pH	pH units	-	6.5 - 9.0	7.97	7.93	8.24	8.3	7.77	7.81	8.12	8.09	8.38	8.33	8.26	8.28	8.37	8.37
Wetted Width	m	-	-	-	-	-	-	2	2	~15	~20	7.80	4.60	-	-	-	-
Average Depth	m	-	-	-	-	-	-	0.3	2	-	-	0.09	0.12	-	-	-	-
Flow Rate	m^3/s	-	-	-	-	-	-	0.396	3.4	-	-	0.13	0.11	-	-	-	-
Physical Parameters																	
pH	pH units	0.10	6.5 - 9.0	8.09	8.08	8.42	8.46	7.8	7.8	8.11	8.10	8.43	8.40	8.24	8.21	8.48	8.46
Conductivity	µS/cm	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity	NTU	0.10	-	0.42	0.47	0.13	0.16	1.93	2.43	0.92	0.69	0.12	0.11	0.20	0.19	0.15	0.12
Hardness	mg/L as $CaCO_3$	0.50	-	59	60	185	187	36	34	82	81	166	166	100	98	173	179
Total Suspended Solids	mg/L	1.0	Variable [g]	<2.0	<2.0	<2.0	<2.0	11.3	13.6	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	16 - 19	-	70	65	176	178	36	38	99	95	160	165	102	100	196	230
Dissolved Anions																	
Alkalinity	mg/L as $CaCO_3$	2.0	-	60	61	176	179	31	30	75	77	154	160	95	96	183	184
Bromide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	1.16	1.06	8.54	8.68	<0.50	<0.50	1.18	1.20	4.05	4.14	1.32	1.39	7.96	8.05
Fluoride	mg/L	-	-	0.021	<0.020	0.03	0.029	<0.020	<0.020	0.021	0.021	0.042	0.042	-	-	-	-
Sulfate	mg/L	-	-	1.03	0.84	7.13	6.77	<0.30	<0.30	0.87	0.87	3.72	3.81	-	-	-	-
Nutrients																	
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	<0.15	<0.15	<0.15	0.16	<0.15	<0.15	-	-	-	-	-	-	-	-
Nitrite	mg/L N	0.010	0.06	-	-	-	-	-	-	-	-	-	-	<0.010	<0.010	<0.010	<0.010
Nitrate	mg/L N	0.020	3	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Nitrate + Nitrite	mg/L N	-	-	-	-	-	-	-	-	-	-	-	-	<0.022	<0.022	<0.022	<0.022
Ammonia, total as N	mg/L	0.0050	Variable [a]	<0.020	<0.020	<0.020	0.048	<0.020	<0.020	<0.020	<0.020	-	-	<0.010	<0.010	<0.010	<0.010
Total Phosphorus	mg/L	0.0020	0.01	0.0051	0.0037	0.0041	0.0137	0.0114	0.014	0.0040	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Dissolved Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic Compounds																	
Phenols	mg/L	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	1.3	1.3	2.5	2.5	2.13	2.16	2.45	2.33	2.81	2.90	2.80	2.60	2.69	2.75
Total Organic Carbon	mg/L	0.50	-	1.4	1.5	2.6	2.8	2.43	1.27	2.66	2.56	3.39	2.44	3.23	3.47	3.11	3.15
Total Kjeldahl Nitrogen	mg/L	-	-	<0.15	<0.15	<0.15	0.16	0.15	<0.15	<0.15	<0.15	<0.15	<0.15	-	-	-	-
Chlorophyll-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.3 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-050 (CV099)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2016				2017		2018				2019			
				30-Jun-16	30-Jun-16	25-Aug-16	25-Aug-16	29-Jun-17	29-Jun-17	03-Jul-18	03-Jul-18	02-Sep-18	02-Sep-18	21-Jun-19	21-Jun-19	11-Aug-19	11-Aug-19
				DS	US	DS	US	US	DS	US	DS	US	DS	US	DS	US	DS
Total Metals and Non-Metals																	
Aluminum	mg/L	0.0030	Variable [f]	0.021	0.015	<0.010	<0.010	0.111	0.108	0.0086	0.0208	<0.0050	<0.0050	0.0148	0.01	<0.0050	0.0071
Antimony	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	mg/L	0.00010	0.005	<0.00010	<0.00010	0.00014	0.00014	<0.00010	<0.00010	<0.00010	<0.00010	0.00012	<0.00010	<0.00010	<0.00010	0.00015	0.00015
Barium	mg/L	0.00010	-	0.00241	0.00253	0.0066	0.0068	0.00186	0.00175	0.00271	0.00278	0.00555	0.00565	0.00347	0.00335	0.00753	0.00765
Beryllium	mg/L	0.000020	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron	mg/L	0.010	1.5	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	mg/L	0.0000050	Variable [c]	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	0.050	-	13.7	13.2	41.3	41.2	8.06	7.67	19.10	18.9	37.80	38.50	22.40	21.90	38.2	40.8
Cesium	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	0.000014	0.000013	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	Variable [c]	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Iron	mg/L	0.010	0.3	<0.050	<0.050	<0.050	<0.050	0.124	0.111	<0.010	0.014	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Lead	mg/L	0.000050	0.001 - 0.007 [c]	<0.00010	<0.00010	<0.00010	<0.00010	0.000128	0.000144	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium	mg/L	0.0010	-	<0.0010	<0.0010	0.0021	0.0021	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	0.0011	0.0010	0.0011	0.0017	0.0019
Magnesium	mg/L	0.0050	-	6.04	6.63	19.9	20.5	3.76	3.59	8.33	8.14	17.30	16.90	9.50	9.85	18.3	18.6
Manganese	mg/L	0.00010	Variable [c]	0.00056	<0.00050	<0.00050	<0.00050	0.00406	0.00406	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Mercury	mg/L	0.0000050	0.000026	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.0000050	<0.0000050
Molybdenum	mg/L	0.000050	0.073	<0.000050	<0.000050	0.000131	0.000141	<0.000050	<0.000050	<0.000050	<0.000050	0.0001	0.0001	<0.000050	<0.000050	0.000132	0.000133
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium	mg/L	0.050	-	0.339	0.389	0.69	0.686	0.337	0.325	0.334	0.332	0.544	0.54	0.410	0.40	0.671	0.675
Rubidium	mg/L	0.00020	-	0.00033	0.00036	0.00057	0.00061	0.0005	0.00048	0.00	0.00033	0.00045	0.00045	0.00034	0.00039	0.00067	0.00067
Selenium	mg/L	0.000050	0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon	mg/L	0.10	-	0.501	0.471	0.709	0.945	0.4	0.4	0.53	0.52	0.81	0.83	0.60	0.60	0.74	0.75
Silver	mg/L	0.000010	0.25	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	0.66	0.71	4.03	4.02	<0.50	<0.50	0.63	0.63	2.29	2.23	0.839	0.83	3.36	3.38
Strontium	mg/L	0.00020	0.25	0.0074	0.0072	0.0242	0.0242	0.0041	0.0038	0.0108	0.0105	0.0225	0.02	0.0118	0.01	0.0269	0.0269
Sulfur	mg/L	0.50	-	0.59	<0.50	2.79	3.04	<0.50	<0.50	<0.50	0.52	1.77	1.63	0.63	0.58	1.78	1.97
Tellurium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium	mg/L	0.000010	0.0008	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium	mg/L	0.00030	-	0.0009	0.0007	<0.00030	0.00033	0.00499	0.00417	<0.00030	0.000630	<0.00030	<0.00030	<0.00030	0.000490	<0.00030	<0.00030
Tungsten	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	0.015	0.000173	0.000137	0.00122	0.00117	0.000046	0.000064	0.000291	0.000318	0.001010	0.000998	0.000381	0.000391	0.0012	0.00124
Vanadium	mg/L	0.00050	0.12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0030	0.03	0.0045	<0.0030	0.007	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.0037	<0.0030	<0.0030	<0.0030
Zirconium	mg/L	0.00020	-	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00020	<0.00020	0.00024	0.00025

Table 2.3 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-050 (CV099)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2016				2017		2018				2019			
				30-Jun-16	30-Jun-16	25-Aug-16	25-Aug-16	29-Jun-17	29-Jun-17	03-Jul-18	03-Jul-18	02-Sep-18	02-Sep-18	21-Jun-19	21-Jun-19	11-Aug-19	11-Aug-19
				DS	US	DS	US	US	DS	US	DS	US	DS	US	DS	US	DS
Dissolved Metals and Non-Metals																	
Aluminum	mg/L	0.0010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron	mg/L	0.010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/L	0.0000050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	mg/L	0.00050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper	mg/L	0.00020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron	mg/L	0.010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	mg/L	0.000050	Variable [e]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium	mg/L	0.0050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury	mg/L	0.0000050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	mg/L	0.000050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel	mg/L	0.00050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium	mg/L	0.000050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver	mg/L	0.000010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium	mg/L	0.00020	0.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	mg/L	0.000010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	mg/L	0.000010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	mg/L	0.00050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	mg/L	0.0010	Variable [e]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Miscellaneous (Water)																	
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.3 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-050 (CV099)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2020						2021				2022			
				22-Jun-20	22-Jun-20	20-Jul-20	20-Jul-20	14-Aug-20	14-Aug-20	14-Jun-21	14-Jun-21	16-Aug-21	16-Aug-21	20-Jun-22	20-Jun-22	29-Aug-22	29-Aug-22
				US	DS	US	DS	US	DS	DS	US	DS	US	DS	US	DS	US
In Situ Parameters																	
Temperature	ºC	-	-	1.60	1.7	13.80	13.50	9.30	9.00	0.5	0.4	7.5	7.6	2.3	1.1	7.0	6.7
Specific Conductance	µS/cm	-	-	0.0672	0.0681	0.2853	0.2816	0.3798	0.3798	57.2	57.6	303	302	92.4	88.3	358.4	357.7
Dissolved Oxygen	mg/L	-	< 9.5	13.83	13.8	10.23	10.49	98.80	100.90	14.36	14.27	11.82	11.77	13.59	13.94	12.69	12.82
Dissolved Oxygen	%	-	-	98.80	99.1	98.50	100.60	11.37	11.65	100.2	99.2	100.7	100.5	99.2	98.4	105.5	106.1
pH	pH units	-	6.5 - 9.0	7.69	7.81	8.35	8.45	8.52	8.50	7.69	7.72	8.45	8.55	7.86	7.77	8.33	8.44
Wetted Width	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average Depth	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flow Rate	m^3/s	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physical Parameters																	
pH	pH units	0.10	6.5 - 9.0	7.68	7.65	8.41	8.42	8.55	-	7.68	7.69	8.30	8.33	7.82	7.83	8.46	8.47
Conductivity	µS/cm	1.0	-	70.00	70.70	293.00	293.00	389.00	390.00	67.2	66.9	318	317	94.2	90.0	362	360
Turbidity	NTU	0.10	-	0.65	0.69	0.13	<0.10	<0.10	<0.10	4.20	5.42	0.10	0.11	4.06	5.70	<1.0	<1.0
Hardness	mg/L as $CaCO_3$	0.50	-	37.3	37.7	150	150	208	203	31.4	30.9	169	168	48.5	45.6	199	196
Total Suspended Solids	mg/L	1.0	Variable [g]	<2.0	2.00	<2.0	<2.0	<2.0	<2.0	20.7	25.3	<1.0	1.0	11.4	10.8	<3.0	<3.0
Total Dissolved Solids	mg/L	16 - 19	-	32	44	153	158	216	221	45	28	166	160	61	68	190	184
Dissolved Anions																	
Alkalinity	mg/L as $CaCO_3$	2.0	-	35	35	145	145	185	183	44.7	43.6	165	165	49.3	45.6	170.0	170.0
Bromide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	0.61	0.62	6.84	7.10	13.80	13.80	1.03	1.06	4.67	4.59	1.07	1.08	9.87	9.65
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nutrients																	
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite	mg/L N	0.010	0.06	<0.010	<0.010	<0.010	<0.010	<0.0010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate	mg/L N	0.020	3	<0.020	<0.020	<0.020	<0.020	<0.0050	0.01	<0.020	0.022	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Nitrate + Nitrite	mg/L N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.0050	<0.010	<0.010	<0.10	<0.010	<0.010	<0.010	<0.010	<0.010
Total Phosphorus	mg/L	0.0020	0.01	0.01	0.01	<0.0030	<0.0030	<0.0020	0.0020	0.0309	0.0209	<0.0030	<0.0030	0.0130	0.0098	0.0094	<0.0030
Dissolved Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.050	<0.050	<0.050	<0.050
Organic Compounds																	
Phenols	mg/L	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	2.80	2.92	3.19	3.41	2.97	2.98	3.51	3.86	5.96	4.30	3.40	4.17	3.73	2.76
Total Organic Carbon	mg/L	0.50	-	3.14	3.17	3.62	3.71	2.92	2.93	3.77	3.81	6.18	6.25	3.56	3.73	3.06	2.99
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	-	-	0.230	0.250	0.160	0.170	0.282	0.247	0.144	0.118
Chlorophyll-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.3 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-050 (CV099)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2020						2021				2022			
				22-Jun-20	22-Jun-20	20-Jul-20	20-Jul-20	14-Aug-20	14-Aug-20	14-Jun-21	14-Jun-21	16-Aug-21	16-Aug-21	20-Jun-22	20-Jun-22	29-Aug-22	29-Aug-22
				US	DS	US	DS	US	DS	DS	US	DS	US	DS	US	DS	US
Total Metals and Non-Metals																	
Aluminum	mg/L	0.0030	Variable [f]	0.0472	0.0419	<0.0050	0.00550	<0.0030	<0.0030	0.120	0.122	<0.0050	0.0053	0.145	0.105	<0.0050	<0.0050
Antimony	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	mg/L	0.00010	0.005	<0.00010	<0.00010	<0.00010	0.000110	0.00017	0.00015	0.00011	<0.00010	0.00010	0.00012	<0.00010	<0.00010	0.00011	0.00011
Barium	mg/L	0.00010	-	0.00330	0.00162	0.00616	0.00601	0.00712	0.00701	0.00197	0.00189	0.00583	0.00586	0.00263	0.00241	0.00646	0.00641
Beryllium	mg/L	0.000020	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron	mg/L	0.010	1.5	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	mg/L	0.0000050	Variable [c]	0.00001520	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	0.050	-	8.77	9.03	34.10	34.50	43.80	44.00	8.09	7.96	36.9	36.6	12.1	10.7	40.5	41.3
Cesium	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000014	0.000014	<0.000010	<0.000010	0.000020	0.000013	<0.000010	<0.000010
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	0.00	<0.00010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	Variable [c]	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00011	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	0.003740	<0.00050	0.000580	0.000590	0.000560	0.000560	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00052	0.00052
Iron	mg/L	0.010	0.3	0.0490	0.0430	<0.010	<0.010	<0.010	<0.010	0.121	0.120	<0.010	<0.010	0.186	0.156	<0.010	<0.010
Lead	mg/L	0.000050	0.001 - 0.007 [c]	0.0001220	0.0000570	<0.000050	<0.000050	<0.000050	<0.000050	0.000134	0.000134	<0.000050	<0.000050	0.000149	0.000116	<0.000050	<0.000050
Lithium	mg/L	0.0010	-	<0.0010	<0.0010	0.0019	0.0018	0.0024	0.0024	<0.0010	<0.0010	0.0016	0.0016	<0.0010	<0.0010	0.002	0.0021
Magnesium	mg/L	0.0050	-	4.03	3.93	16.10	16.20	22.30	22.00	3.56	3.55	17.6	18.2	5.51	5.37	22.80	24.00
Manganese	mg/L	0.00010	Variable [c]	0.002820	0.002310	<0.00050	<0.00050	0.000110	0.000140	0.00526	0.00503	<0.00050	<0.00050	0.0168	0.0167	<0.00050	<0.00050
Mercury	mg/L	0.0000050	0.000026	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	mg/L	0.000050	0.073	<0.000050	<0.000050	0.0001	0.0001	0.0001	0.0001	<0.000050	<0.000050	0.000070	0.000063	0.000053	<0.000050	0.000147	0.000138
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium	mg/L	0.050	-	0.298	0.242	0.659	0.648	0.721	0.686	0.419	0.428	0.626	0.642	0.549	0.519	0.684	0.710
Rubidium	mg/L	0.00020	-	0.00034	0.00028	0.00058	0.00063	0.00056	0.00062	0.00060	0.00064	0.00052	0.00056	0.00087	0.00074	0.00055	0.00055
Selenium	mg/L	0.000050	0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon	mg/L	0.10	-	0.29	0.30	0.85	0.81	1.00	0.96	0.47	0.49	1.14	1.15	0.60	0.51	0.62	0.63
Silver	mg/L	0.000010	0.25	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	0.438	0.321	3.160	3.27	5.680	5.580	0.414	0.414	2.33	2.44	0.526	0.538	4.52	4.65
Strontium	mg/L	0.00020	0.25	0.0047	0.0046	0.0215	0.02	0.0296	0.0277	0.0047	0.0045	0.0222	0.0214	0.0077	0.0064	0.0267	0.0259
Sulfur	mg/L	0.50	-	<0.50	<0.50	1.94	1.82	3.55	3.83	<0.50	<0.50	1.61	1.55	<0.50	<0.50	2.87	2.65
Tellurium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium	mg/L	0.000010	0.0008	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin	mg/L	0.00010	-	0.00	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium	mg/L	0.00030	-	0.00188	0.00172	<0.00030	<0.00030	<0.00030	<0.00030	0.00567	0.00542	<0.00030	<0.00030	0.00546	0.00375	<0.00030	<0.00030
Tungsten	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	0.015	0.000065	0.000070	0.000803	0.000842	0.001390	0.001450	0.000072	0.000057	0.000977	0.000962	0.000120	0.000075	0.00140	0.00126
Vanadium	mg/L	0.00050	0.12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0030	0.03	0.00910	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Zirconium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	0.000220	0.000210	0.00027	0.00024	<0.00020	<0.00020	<0.00020	<0.00020	0.00021	0.00022

Table 2.3 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-050 (CV099)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2020						2021				2022			
				22-Jun-20	22-Jun-20	20-Jul-20	20-Jul-20	14-Aug-20	14-Aug-20	14-Jun-21	14-Jun-21	16-Aug-21	16-Aug-21	20-Jun-22	20-Jun-22	29-Aug-22	29-Aug-22
				US	DS	US	DS	US	DS	DS	US	DS	US	DS	US	DS	US
Dissolved Metals and Non-Metals																	
Aluminum	mg/L	0.0010	-	0.008	0.008	<0.0050	<0.0050	<0.0010	<0.0010	0.0146	0.0152	<0.0050	<0.0050	0.0060	0.0084	<0.0050	<0.0050
Arsenic	mg/L	0.00010	-	<0.00010	<0.00010	0.000	0.000	0.000	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	0.00010	0.00011
Barium	mg/L	0.00010	-	0.001	0.001	0.006	0.006	0.007	0.007	0.00140	0.00139	0.00612	0.00611	0.00217	0.00203	0.00662	0.00644
Boron	mg/L	0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	mg/L	0.0000050	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000055	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	0.050	-	8.410	8.630	33.400	33.400	46.600	44.500	7.23	6.98	37.1	36.9	11.7	10.5	40.7	39.80000
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00010	<0.00010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00020	-	<0.00020	0.000	0.001	0.001	0.001	0.001	<0.00020	<0.00020	0.00043	0.00047	0.00036	<0.00020	0.00	0.00
Iron	mg/L	0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.016	0.016	<0.010	<0.010	0.016	0.018	<0.010	<0.010
Lead	mg/L	0.000050	Variable [e]	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Magnesium	mg/L	0.0050	-	3.960	3.920	16.100	16.200	22.300	22.400	3.26	3.27	18.6	18.4	4.70	4.74	23.600000	23.5
Manganese	mg/L	0.00010	-	0.001	0.001	<0.00050	<0.00050	<0.00010	<0.00010	0.00392	0.00406	<0.00050	<0.00050	0.0105	0.0110	<0.00050	<0.00050
Mercury	mg/L	0.0000050	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	mg/L	0.000050	-	<0.000050	<0.000050	0.000	0.000	0.000	0.000	<0.000050	<0.000050	0.000058	0.000056	0.000055	<0.000050	0.000127	0.000137
Nickel	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	0.234	0.240	0.704	0.682	0.789	0.771	0.359	0.350	0.653	0.658	0.453	0.464	0.7170	0.714
Selenium	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silver	mg/L	0.000010	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	0.342	0.361	3.250	3.260	5.660	5.510	0.409	0.411	2.41	2.44	0.56	0.514	4.52	4.64
Strontium	mg/L	0.00020	0.25	0.004	0.005	0.022	0.022	0.026	0.026	0.0042	0.0039	0.0224	0.0220	0.0073	0.0060	0.02600	0.02690
Thallium	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	-	0.000	0.000	0.001	0.001	0.001	0.001	0.000066	0.000046	0.000949	0.000946	0.000103	0.0000630	0.00128	0.00124
Vanadium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0010	Variable [e]	<0.0010	0.003	<0.0010	0.001	<0.0010	<0.0010	<0.0010	<0.0010	0.0012	<0.0010	0.0019	0.0015	0.0016	<0.0010
Miscellaneous (Water)																	
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020

Table 2.3 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-050 (CV099)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2023						2024				2025			
				25-Jun-23	25-Jun-23	16-Jul-23	16-Jul-23	21-Aug-23	21-Aug-23	23-Jun-24	23-Jun-24	18-Aug-24	18-Aug-24	30-Jun-25	30-Jun-25	19-Aug-25	19-Aug-25
				DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
In Situ Parameters																	
Temperature	ºC	-	-	1.3	1.3	7.7	7.4	6.2	6.3	2.7	2.8	5.4	5.5	8.2	8.6	6.1	6.4
Specific Conductance	µS/cm	-	-	76.7	69.1	133	131	271.0	269.1	57.2	55.3	304.6	304.3	157.9	158.6	324.6	323.6
Dissolved Oxygen	mg/L	-	< 9.5	13.12	13.30	11.53	11.68	11.88	11.83	13.04	13.26	11.91	11.66	11.45	11.30	12.24	12.05
Dissolved Oxygen	%	-	-	95.7	96.9	99.0	99.4	99.0	98.7	96.4	98.2	94.3	92.6	97.3	96.9	98.8	97.8
pH	pH units	-	6.5 - 9.0	7.81	7.82	8.11	8.09	8.47	8.40	7.76	7.61	8.31	8.30	8.25	8.25	8.38	8.45
Wetted Width	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average Depth	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flow Rate	m^3/s	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physical Parameters																	
pH	pH units	0.10	6.5 - 9.0	7.76	7.73	8.05	8.02	8.34	8.35	7.50	7.03	8.30	8.34	7.70	7.72	8.35	8.32
Conductivity	µS/cm	1.0	-	79.3	71.7	140	138	280	276	67.8	59.1	326	323	164	165	365	360
Turbidity	NTU	0.10	-	0.76	0.76	1.31	0.9	0.35	0.35	0.96	0.88	0.13	< 0.10	0.5	0.38	0.1	0.1
Hardness	mg/L as $CaCO_3$	0.50	-	41.4	36.6	70.0	69.3	148.0	149.1	30.7	30.9	175	170	89.6	90.0	191	190
Total Suspended Solids	mg/L	1.0	Variable [g]	3.7	2.8	1.3	<1.0	<1.0	<1.0	2.8	2.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Dissolved Solids	mg/L	16 - 19	-	40	36	71	72	106	109	40	39	171	162	91	94	177	180
Dissolved Anions																	
Alkalinity	mg/L as $CaCO_3$	2.0	-	67.1	57.9	70.3	72.4	143	141	35.3	29.4	166	166	83.3	84.1	167	165
Bromide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	0.7	0.63	1.2	1.2	3.77	3.98	0.71	< 0.50	4.73	4.68	1.31	1.26	4.44	4.35
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nutrients																	
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite	mg/L N	0.010	0.06	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Nitrate	mg/L N	0.020	3	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Nitrate + Nitrite	mg/L N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	<0.0050	<0.0050	<0.0050	<0.0050	0.0072	0.0084	< 0.0050	< 0.0050	0.0079	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Total Phosphorus	mg/L	0.0020	0.01	0.0072	0.0075	0.0037	0.004	0.0029	0.0027	0.0093	0.0042	< 0.0020	< 0.0020	0.0023	0.0023	< 0.0020	0.0035
Dissolved Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic Compounds																	
Phenols	mg/L	-	0.004	-	-	-	-	-	-	-	-	-	-			-	-
Dissolved Organic Carbon	mg/L	0.50	-	3.28	3.34	1.7	1.78	3.83	18.4	2.56	2.61	3.27	3.37	2.22	2.03	2.96	2.52
Total Organic Carbon	mg/L	0.50	-	3.53	3.49	2.23	2.22	3.75	3.82	2.63	2.43	3.03	3.11	2.03	2.16	3.63	3.72
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	-	-	-	-	-	-			-	-
Chlorophyll-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-			-	-
Pheophytin-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-			-	-

Table 2.3 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-050 (CV099)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2023						2024				2025			
				25-Jun-23	25-Jun-23	16-Jul-23	16-Jul-23	21-Aug-23	21-Aug-23	23-Jun-24	23-Jun-24	18-Aug-24	18-Aug-24	30-Jun-25	30-Jun-25	19-Aug-25	19-Aug-25
				DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
Total Metals and Non-Metals																	
Aluminum	mg/L	0.0030	Variable [f]	0.043	0.0422	0.018	0.0122	0.0102	0.0131	0.0427	0.0271	< 0.0030	< 0.0030	0.0194	0.0139	0.0065	0.0034
Antimony	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Arsenic	mg/L	0.00010	0.005	<0.00010	<0.00010	<0.00010	<0.00010	0.00011	<0.00010	< 0.00010	< 0.00010	0.00013	0.00013	< 0.00010	< 0.00010	0.00011	0.00011
Barium	mg/L	0.00010	-	0.00159	0.00144	0.0029	0.0027	0.00493	0.00493	0.00153	0.00134	0.00592	0.00601	0.00336	0.00336	0.00615	0.00622
Beryllium	mg/L	0.000020	-	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
Bismuth	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Boron	mg/L	0.010	1.5	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Cadmium	mg/L	0.0000050	Variable [c]	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Calcium	mg/L	0.050	-	10.5	8.66	15.8	15.2	32.4	31.9	7.23	7.16	37.6	37.7	20.0	19.9	42.0	42.0
Cesium	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00359	0.00069	< 0.00050	< 0.00050	0.00061	0.00477	< 0.00050	< 0.00050
Cobalt	mg/L	0.00010	Variable [c]	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	<0.00050	<0.00050	0.00103	<0.00050	0.00052	<0.00050	< 0.00050	< 0.00050	0.00052	0.00060	0.00061	0.00073	0.00066	0.00061
Iron	mg/L	0.010	0.3	0.046	0.046	0.019	0.012	0.016	0.02	0.067	0.033	< 0.010	< 0.010	0.022	0.030	< 0.010	< 0.010
Lead	mg/L	0.000050	0.001 - 0.007 [c]	0.000055	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000066	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Lithium	mg/L	0.0010	-	<0.0010	<0.0010	<0.0010	<0.0010	0.0016	0.0016	< 0.0010	< 0.0010	0.0016	0.0016	< 0.0010	< 0.0010	0.0021	0.0021
Magnesium	mg/L	0.0050	-	4.23	4.38	7.42	7.45	16.2	16	3.20	3.59	19.5	19.6	9.01	8.99	20.5	20.8
Manganese	mg/L	0.00010	Variable [c]	0.00427	0.00491	0.00097	0.00047	0.00045	0.00057	0.00292	0.00233	< 0.00010	< 0.00010	0.00057	0.00060	0.00012	< 0.00010
Mercury	mg/L	0.0000050	0.000026	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Molybdenum	mg/L	0.000050	0.073	<0.000050	<0.000050	<0.000050	<0.000050	0.000052	0.000054	< 0.000050	0.000064	0.000103	0.000099	0.000065	0.000058	0.000125	0.000110
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.00050	<0.00050	<0.00050	0.00073	<0.00050	<0.00050	0.00169	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Phosphorus	mg/L	0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Potassium	mg/L	0.050	-	0.334	0.34	0.336	0.334	0.52	0.516	0.290	0.287	0.620	0.623	0.423	0.412	0.638	0.646
Rubidium	mg/L	0.00020	-	0.00047	0.00041	0.00032	0.0003	0.00041	0.00042	0.00035	0.00029	0.00051	0.00049	0.00046	0.00038	0.00051	0.00057
Selenium	mg/L	0.000050	0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Silicon	mg/L	0.10	-	0.37	0.34	0.55	0.52	1.22	1.22	0.28	0.26	0.94	0.97	0.57	0.54	0.98	0.99
Silver	mg/L	0.000010	0.25	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Sodium	mg/L	0.050	-	0.296	0.312	0.634	0.627	2.07	2.06	1.16	0.268	3.06	3.08	1.00	0.995	2.78	2.79
Strontium	mg/L	0.00020	0.25	0.00571	0.00422	0.00847	0.00795	0.0185	0.0182	0.00377	0.00361	0.0234	0.0231	0.0106	0.0104	0.0236	0.0233
Sulfur	mg/L	0.50	-	<0.50	<0.50	<0.50	<0.50	1.25	1.22	< 0.50	< 0.50	1.46	1.62	< 0.5	< 0.5	1.39	1.35
Tellurium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020
Thallium	mg/L	0.000010	0.0008	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Thorium	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	0.00012	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Titanium	mg/L	0.00030	-	0.0014	0.00149	0.00076	0.00037	0.00051	0.00051	0.00156	0.00121	< 0.00030	< 0.00030	0.00067	0.00036	< 0.00030	< 0.00030
Tungsten	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Uranium	mg/L	0.000010	0.015	0.000083	0.000046	0.000228	0.000224	0.000779	0.000737	0.000043	0.000038	0.00100	0.000988	0.000306	0.000281	0.00104	0.00103
Vanadium	mg/L	0.00050	0.12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Zinc	mg/L	0.0030	0.03	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.0041	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030
Zirconium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	< 0.00020	< 0.00020	0.00020	0.00021	0.00026	0.00137	0.00025	0.00025

Table 2.3 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-050 (CV099)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2023						2024				2025			
				25-Jun-23	25-Jun-23	16-Jul-23	16-Jul-23	21-Aug-23	21-Aug-23	23-Jun-24	23-Jun-24	18-Aug-24	18-Aug-24	30-Jun-25	30-Jun-25	19-Aug-25	19-Aug-25
				DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
Dissolved Metals and Non-Metals																	
Aluminum	mg/L	0.0010	-	0.0054	0.0046	0.0027	0.0022	0.002	0.0021	0.0057	0.0044	0.0052	< 0.0010	0.0027	0.0028	0.0012	< 0.0010
Arsenic	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Barium	mg/L	0.00010	-	0.00134	0.00136	0.00272	0.00261	0.00498	0.00506	0.00123	0.00113	0.00572	0.00568	0.00316	0.00318	0.00633	0.00637
Boron	mg/L	0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Cadmium	mg/L	0.0000050	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Calcium	mg/L	0.050	-	9.99	8.26	15.8	15.7	32.3	31.9	7.02	6.80	37.7	35.9	20.0	20.1	41.4	41.1
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Cobalt	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Copper	mg/L	0.00020	-	0.00024	<0.00020	0.00036	0.00027	0.00046	0.00046	0.00020	< 0.00020	0.00054	0.00049	0.00042	0.00038	0.00054	0.00049
Iron	mg/L	0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Lead	mg/L	0.000050	Variable [e]	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Magnesium	mg/L	0.0050	-	3.95	3.85	7.34	7.24	16.2	16.7	3.19	3.38	19.6	19.5	9.62	9.68	21.3	21.1
Manganese	mg/L	0.00010	-	0.0027	0.0032	0.00021	0.00014	0.00017	0.00022	0.00141	0.00136	< 0.00010	< 0.00010	0.00015	0.00011	< 0.00010	< 0.00010
Mercury	mg/L	0.0000050	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Molybdenum	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	0.000121	0.000053	< 0.000050	< 0.000050	0.000096	0.000086	0.000051	0.000052	0.000101	0.000108
Nickel	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Phosphorus	mg/L	0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Potassium	mg/L	0.050	-	0.33	0.32	0.38	0.369	0.507	0.506	0.262	0.275	0.581	0.579	0.424	0.423	0.647	0.634
Selenium	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Silver	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Sodium	mg/L	0.050	-	0.324	0.297	0.661	0.655	2.1	2.05	0.245	0.245	2.99	3.03	1.06	1.03	2.84	2.80
Strontium	mg/L	0.00020	0.25	0.00558	0.00408	0.0087	0.00863	0.0191	0.0176	0.00355	0.00341	0.0229	0.0232	0.0108	0.0106	0.0239	0.0236
Thallium	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Uranium	mg/L	0.000010	-	0.00007	0.000041	0.000224	0.00021	0.000764	0.000712	0.000037	0.000029	0.000946	0.000947	0.000297	0.000286	0.000938	0.000912
Vanadium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Zinc	mg/L	0.0010	Variable [e]	0.0018	<0.0010	0.0022	<0.0010	0.0013	<0.0010	0.0023	< 0.0010	0.0015	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Miscellaneous (Water)																	
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.4 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-053 (CV093)

Parameters	Units	2025 LOR	CCME Guideline	Date											
				2006			2015		2016		2017		2018	
				14-Jun-06	03-Aug-06	08-Sep-06	12-Aug-15 US	12-Aug-15 DS	30-Jun-16 DS	30-Jun-16 US	29-Jun-17 US	29-Jun-17 DS	03-Jul-18 US	03-Jul-18 DS
In Situ Parameters														
Temperature	ºC	-	-	-0.08	9.96	5.77	5.5	5.9	11.3	5.6	3.2	3.8	0.5	2.2
Specific Conductance	µS/cm	-	-	0.148	0.160	0.182	0.340	0.320	11.570	11.570	0.197	0.182	0.211	0.197
Dissolved Oxygen	mg/L	-	<9.5	13.70	10.81	12.46	-	-	-	-	-	-	-	-
Dissolved Oxygen	%	-	-	-	-	-	99.4	101.1	99.4	99.0	101.8	102.0	97.4	98.1
pH	pH units	-	6.5 - 9.0	8.32	8.15	8.24	8.42	8.43	8.02	7.99	7.90	7.85	8.12	8.12
Wetted Width	m	-	-	20	33	28	2.5	2.5	-	-	1.3	3.8	0.2	1.1
Average Depth	m	-	-	0.15	0.20	0.20	0.50	0.50	-	-	0.09	0.06	0.04	0.03
Flow Rate	m^3/s	-	-	2	4.62	6.85	-	-	-	-	0.02223	0.10944	0.002	0.015
Physical Parameters														
pH	pH units	0.10	6.5 - 9.0	7.91	7.84	7.64	8.36	8.26	8.27	8.2	8.13	8.15	8.15	8.17
Conductivity	µS/cm	1.0	-	161	165	190	-	-	-	-	-	-	-	-
Turbidity	NTU	0.10	-	0.5	0.2	-	0.19	1.22	0.92	1.31	0.31	1.74	0.66	0.99
Hardness	mg/L as $CaCO_3$	0.50	-	85	86	95	152	158	99	100	81	84	112	108
Total Suspended Solids	mg/L	1.0	Variable [g]	-	-	-	<2.0	2.0	<2.0	4.4	2.1	5.5	<2.0	<2.0
Total Dissolved Solids	mg/L	16 - 19	-	105	107	123	147	159	115	105	89	86	128	116
Dissolved Anions														
Alkalinity	mg/L as $CaCO_3$	2.0	-	80	85	93	155	163	103	99	77	81	99	98
Bromide	mg/L	-	-	<0.05	<0.05	<0.05	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	<1	<1	<1	0.74	3.07	0.61	0.57	<0.50	0.6	1.10	1.95
Fluoride	mg/L	-	-	-	-	-	-	-	0.036	0.03	0.028	0.027	0.053	0.035
Sulfate	mg/L	-	-	3	2	7	2.66	3.9	1.22	1.24	0.62	1	3.02	2.04
Nutrients														
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	0.04	<0.02	<0.02	0.23	<0.15	<0.15	<0.15	-	-	-	-
Nitrite	mg/L N	0.010	0.060	<0.005	<0.005	0.015	-	-	-	-	-	-	-	-
Nitrate	mg/L N	0.020	3.0	<0.10	<0.10	<0.10	0.023	0.026	<0.020	0.023	<0.020	<0.020	0.054	0040
Nitrate + Nitrite	mg/L N	-	-	<0.10	<0.10	<0.10	-	-	-	-	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	-	-	-	-	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total Phosphorus	mg/L	0.0020	0.01	<0.01	<0.01	<0.01	<0.0030	0.0037	0.0216	0.0657	0.0042	0.0046	<0.0030	<0.0030
Dissolved Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic Compounds														
Phenols	mg/L	-	0.004	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	-	-	-	1.8	2.4	<1.0	<1.0	1.18	1.05	1.17	1.34
Total Organic Carbon	mg/L	0.50	-	-	-	-	1.8	2.1	1.2	<1.0	1.41	2.72	1.49	1.46
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	0.23	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Chlorophyll-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.4 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-053 (CV093)

Parameters	Units	2025 LOR	CCME Guideline	Date											
				2006			2015		2016		2017		2018	
				14-Jun-06	03-Aug-06	08-Sep-06	12-Aug-15	12-Aug-15	30-Jun-16	30-Jun-16	29-Jun-17	29-Jun-17	03-Jul-18	03-Jul-18
							US	DS	DS	US	US	DS	US	DS
Total Metals and Non-Metals														
Aluminum	mg/L	0.0030	Variable [f]	<0.005	<0.005	0.007	0.018	0.012	0.025	0.139	0.0133	0.048	0.0315	0.0346
Antimony	mg/L	0.00010	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	mg/L	0.00010	0.005	<0.001	<0.001	<0.001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Barium	mg/L	0.00010	-	<0.01	<0.01	<0.01	-	-	0.00459	0.00434	0.00172	0.00297	0.0019	0.00283
Beryllium	mg/L	0.000020	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth	mg/L	0.000050	-	-	-	-	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron	mg/L	0.010	1.5	<0.01	<0.01	<0.01	-	-	<0.010	<0.010	<0.010	<0.010	0.011	<0.010
Cadmium	mg/L	0.0000050	Variable [c]	<0.0001	<0.0001	<0.0001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.0000050	<0.0000050
Calcium	mg/L	0.050	-	24	25	27	44	43.6	31.2	31.6	26.8	26.9	35.4	34.8
Cesium	mg/L	0.000010	-	-	-	-			<0.000010	0.000018	<0.000010	<0.000010	<0.000010	<0.000010
Chromium	mg/L	0.00050	-	<0.001	<0.001	<0.001	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	Variable [c]	<0.0002	<0.0002	<0.0002	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Iron	mg/L	0.010	0.300	<0.03	<0.03	<0.03	<0.050	<0.050	<0.050	0.179	<0.050	0.057	0.022	0.026
Lead	mg/L	0.000050	0.001 - 0.007 [c]	<0.001	<0.001	<0.001	<0.00010	<0.00010	<0.00010	<0.00010	<0.000050	<0.000050	<0.000050	<0.000050
Lithium	mg/L	0.0010	-	-	-	-	-	-	<0.0010	<0.0010	<0.0010	<0.0010	0.002	0.0014
Magnesium	mg/L	0.0050	-	6.0	5.0	6.0	11.8	13.8	5.02	5.19	3.5	4.13	5.74	5.15
Manganese	mg/L	0.00010	Variable [c]	<0.01	<0.01	<0.01	<0.00050	<0.00050	0.00058	0.00362	<0.00050	0.00128	<0.00050	0.00074
Mercury	mg/L	0.0000050	0.000026	<0.0001	<0.0001	<0.0001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum	mg/L	0.000050	0.073	<0.005	<0.005	<0.005	<0.00050	<0.00050	0.000093	0.000091	<0.000050	0.000068	0.000118	0.000094
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.005	<0.005	<0.005	<0.0010	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	-	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium	mg/L	0.050	-	0.24	0.15	0.23	0.339	0.515	0.618	0.539	0.299	0.475	0.383	0.437
Rubidium	mg/L	0.00020	-	-	-	-	-	-	0.00122	0.00107	0.00023	0.00064	<0.00020	0.0006
Selenium	mg/L	0.000050	0.001	<0.001	<0.001	<0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon	mg/L	0.10	-	<0.0001	<0.0001	<0.0001	-	-	0.643	0.846	0.44	0.59	0.79	0.64
Silver	mg/L	0.000010	0.25	-	-	-	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	0.34	0.23	0.58	0.61	1.75	<0.50	<0.50	<0.50	<0.50	0.234	0.232
Strontium	mg/L	0.00020	0.25	0.019	0.018	0.022	-	-	0.0295	0.0284	0.0216	0.0242	0.0337	0.0336
Sulfur	mg/L	0.50	-	-	-	-	-	-	0.74	<0.50	<0.50	0.66	1.2	0.9
Tellurium	mg/L	0.00020	-	-	-	-	-	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium	mg/L	0.000010	0.0008	-	-	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium	mg/L	0.00010	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin	mg/L	0.00010	-	<0.01	<0.01	<0.01	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium	mg/L	0.00030	-	-	-	-	-	-	0.00097	0.00745	0.00043	0.00305	<0.0020	0.00136
Tungsten	mg/L	0.00010	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	0.015	-	-	-	0.000422	0.00059	0.000159	0.000159	0.000082	0.000125	0.000174	0.000193
Vanadium	mg/L	0.00050	0.12	<0.001	<0.001	<0.001	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0030	0.03	<0.01	<0.01	<0.01	<0.0030	0.0033	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Zirconium	mg/L	0.00020	-	-	-	-	-	-	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

Table 2.4 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-053 (CV093)

Parameters	Units	2025 LOR	CCME Guideline	Date											
				2006			2015		2016		2017		2018	
				14-Jun-06	03-Aug-06	08-Sep-06	12-Aug-15	12-Aug-15	30-Jun-16	30-Jun-16	29-Jun-17	29-Jun-17	03-Jul-18	03-Jul-18
							US	DS	DS	US	US	DS	US	DS
Dissolved Metals and Non-Metals														
Aluminum	mg/L	0.0010	-	<0.005	<0.005	<0.005	<0.0050	0.0412	-	-	-	-	-	-
Arsenic	mg/L	0.00010	-	<0.001	<0.001	<0.001	<0.00010	<0.00010	-	-	-	-	-	-
Barium	mg/L	0.00010	-	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-
Boron	mg/L	0.010	-	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-
Cadmium	mg/L	0.0000050	-	<0.0001	<0.0001	<0.0001	<0.000010	<0.000010	-	-	-	-	-	-
Calcium	mg/L	0.050	-	24	26	28	43	41.9	-	-	-	-	-	-
Chromium	mg/L	0.00050	-	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-
Cobalt	mg/L	0.00010	-	<0.0002	<0.0002	<0.0002	-	-	-	-	-	-	-	-
Copper	mg/L	0.00020	-	<0.001	<0.001	<0.001	0.00024	0.00038	-	-	-	-	-	-
Iron	mg/L	0.010	-	<0.03	<0.03	<0.03	<0.010	0.03	-	-	-	-	-	-
Lead	mg/L	0.000050	Variable [e]	<0.001	<0.001	<0.001	<0.000050	<0.000050	-	-	-	-	-	-
Magnesium	mg/L	0.0050	-	6	5	6	10.9	13	-	-	-	-	-	-
Manganese	mg/L	0.00010	-	<0.01	<0.01	<0.01	<0.00050	0.00051	-	-	-	-	-	-
Mercury	mg/L	0.0000050	-	-	-	-	<0.000010	<0.000010	-	-	-	-	-	-
Molybdenum	mg/L	0.000050	-	<0.005	<0.005	<0.005	0.000076	0.000118	-	-	-	-	-	-
Nickel	mg/L	0.00050	-	<0.005	<0.005	<0.005	<0.00050	<0.00050	-	-	-	-	-	-
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	0.24	0.15	0.25	0.344	0.538	-	-	-	-	-	-
Selenium	mg/L	0.000050	-	<0.001	<0.001	<0.001	<0.000050	<0.000050	-	-	-	-	-	-
Silver	mg/L	0.000010	-	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-
Sodium	mg/L	0.050	-	0.32	0.24	0.4	0.6	1.61	-	-	-	-	-	-
Strontium	mg/L	0.00020	0.25	0.018	0.019	0.022	-	-	-	-	-	-	-	-
Thallium	mg/L	0.000010	-	-	-	-	<0.000010	<0.000010	-	-	-	-	-	-
Tin	mg/L	0.00010	-	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-
Uranium	mg/L	0.000010	-	-	-	-	0.000414	0.000573	-	-	-	-	-	-
Vanadium	mg/L	0.00050	-	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-
Zinc	mg/L	0.0010	Variable [e]	<0.01	<0.01	<0.01	<0.0010	0.0025	-	-	-	-	-	-
Miscellaneous (Water)														
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-		-	-	-	-

Notes:
The CV-093 watercourse was dry for the entirety of the 2025 field season

Table 2.4 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-053 (CV093)

Parameters	Units	2025 LOR	CCME Guideline	Date											
				2019				2020		2021				2022	
				21-Jun-19	21-Jun-19	27-Jul-19	27-Jul-19	28-Jun-20	28-Jun-20	14-Jun-21	14-Jun-21	16-Aug-21	16-Aug-21	20-Jun-22	20-Jun-22
				US	DS	US	DS	US	DS	DS	US	DS	US	DS	US
In Situ Parameters															
Temperature	ºC	-	-	3.4	7.6	4.8	8.9	3.9	8.0	3.5	0.3	4.9	3.7	5.4	3.6
Specific Conductance	µS/cm	-	-	0.2043	0.2032	0.2934	0.2754	0.1997	0.2005	147.2	125.8	274.1	278.1	150.5	141.5
Dissolved Oxygen	mg/L	-	<9.5	-	-	-	-	13.1	11.9	13.44	14.34	12.46	12.75	12.48	12.69
Dissolved Oxygen	%	-	-	100.8	99.8	97.5	99.2	99.8	100.6	102.3	100.0	99.7	97.1	98.7	95.2
pH	pH units	-	6.5 - 9.0	8.22	8.40	8.21	8.40	8.05	8.07	8.05	8.14	8.25	8.40	8.09	8.07
Wetted Width	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average Depth	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flow Rate	m^3/s	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physical Parameters															
pH	pH units	0.10	6.5 - 9.0	8.2	8.36	8.08	8.31	8.16	8.28	8.13	8.09	8.16	8.05	8.09	8.08
Conductivity	µS/cm	1.0	-	-	-	-	-	-	-	154	134	287	288	151	142
Turbidity	NTU	0.10	-	0.23	0.74	0.20	2.20	0.18	0.93	15.6	2.53	0.35	0.19	4.12	4.90
Hardness	mg/L as $CaCO_3$	0.50	-	128	123	-	-	-	-	77.2	66.9	150	151	82.8	75.6
Total Suspended Solids	mg/L	1.0	Variable [g]	<2.0	<2.0	<2.0	2.0	<2.0	2.6	25.8	2.8	1.5	<2.0	5.7	5.7
Total Dissolved Solids	mg/L	16 - 19	-	143	139	138	149	138	121	90	82	154	151	97	93
Dissolved Anions															
Alkalinity	mg/L as $CaCO_3$	2.0	-	117	115	-	-	-	-	90.8	80.8	143	147	77.4	75.0
Bromide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	1.16	2.72	-	-	-	-	2.10	1.14	1.71	1.65	1.78	0.85
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nutrients															
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite	mg/L N	0.010	0.060	<0.010	<0.010	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate	mg/L N	0.020	3.0	0.038	0.032	-	-	-	-	0.038	0.020	<0.020	<0.020	0.023	<0.020
Nitrate + Nitrite	mg/L N	-	-	0.038	0.032	-	-	-	-	-	-	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	<0.010	0.010	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Total Phosphorus	mg/L	0.0020	0.01	<0.0030	<0.0030	-	-	-	-	0.0090	0.0037	<0.0030	<0.0030	<0.0030	<0.0030
Dissolved Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.050	<0.050
Organic Compounds															
Phenols	mg/L	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	1.71	1.74	-	-	-	-	2.54	2.13	2.65	2.21	1.78	1.69
Total Organic Carbon	mg/L	0.50	-	2.28	2.63	-	-	-	-	2.36	1.98	4.85	5.31	1.66	1.49
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	-	-	0.120	0.100	0.060	0.100	0.068	0.064
Chlorophyll-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.4 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-053 (CV093)

Parameters	Units	2025 LOR	CCME Guideline	Date											
				2019				2020		2021				2022	
				21-Jun-19	21-Jun-19	27-Jul-19	27-Jul-19	28-Jun-20	28-Jun-20	14-Jun-21	14-Jun-21	16-Aug-21	16-Aug-21	20-Jun-22	20-Jun-22
				US	DS	US	DS	US	DS	DS	US	DS	US	DS	US
Total Metals and Non-Metals															
Aluminum	mg/L	0.0030	Variable [f]	0.0211	0.0332	-	-	-	-	0.224	0.0703	0.0173	0.0206	0.1250	0.0340
Antimony	mg/L	0.00010	-	<0.00010	<0.00010	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	mg/L	0.00010	0.005	<0.00010	<0.00010	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Barium	mg/L	0.00010	-	0.00229	0.00415	-	-	-	-	0.00397	0.00222	0.00310	0.00274	0.00286	0.00165
Beryllium	mg/L	0.000020	-	<0.00010	<0.00010	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth	mg/L	0.000050	-	<0.000050	<0.000050	-	-	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron	mg/L	0.010	1.5	<0.010	<0.010	-	-	-	-	<0.010	<0.010	0.013	0.015	<0.010	<0.010
Cadmium	mg/L	0.0000050	Variable [c]	<0.0000050	<0.0000050	-	-	-	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	0.050	-	38.4	37.7	-	-	-	-	26.4	23.0	45.5	45.6	25.7	24.1
Cesium	mg/L	0.000010	-	<0.000010	<0.000010	-	-	-	-	0.000042	0.000014	<0.000010	<0.000010	0.000028	<0.000010
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	Variable [c]	<0.00010	<0.00010	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	<0.0010	<0.0010	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron	mg/L	0.010	0.300	0.021	0.023	-	-	-	-	0.173	0.049	0.015	0.023	0.121	0.033
Lead	mg/L	0.000050	0.001 - 0.007 [c]	<0.000050	<0.000050	-	-	-	-	0.000217	0.000061	<0.000050	<0.000050	0.00015	<0.000050
Lithium	mg/L	0.0010	-	0.0026	0.0024	-	-	-	-	0.0019	<0.0010	0.0031	0.0034	0.0019	0.001
Magnesium	mg/L	0.0050	-	6.60	6.10	-	-	-	-	3.92	3.14	8.56	8.60	4.15	3.45
Manganese	mg/L	0.00010	Variable [c]	0.00053	0.00085	-	-	-	-	0.00465	0.00148	0.00069	0.00064	0.00370	0.00102
Mercury	mg/L	0.0000050	0.000026	<0.000010	<0.000010	-	-	-	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	mg/L	0.000050	0.073	0.000127	0.000130	-	-	-	-	0.000122	0.000064	0.000223	0.000209	0.000094	0.000055
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.00050	<0.00050	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	<0.050	<0.050	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium	mg/L	0.050	-	0.443	0.682	-	-	-	-	0.631	0.326	0.564	0.558	0.510	0.306
Rubidium	mg/L	0.00020	-	0.00021	0.00112	-	-	-	-	0.00129	0.00050	0.00043	0.00021	0.00081	0.00028
Selenium	mg/L	0.000050	0.001	<0.000050	<0.000050	-	-	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon	mg/L	0.10	-	0.87	0.75	-	-	-	-	1.03	0.52	1.14	1.21	0.66	0.40
Sllver	mg/L	0.000010	0.25	<0.000050	<0.000050	-	-	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	0.251	0.275	-	-	-	-	0.313	0.241	0.331	0.310	0.316	0.272
Strontium	mg/L	0.00020	0.25	0.0369	0.0434	-	-	-	-	0.0299	0.0227	0.0462	0.0453	0.0293	0.0229
Sulfur	mg/L	0.50	-	2.10	1.27	-	-	-	-	0.52	<0.50	3.29	2.70	0.53	<0.50
Tellurium	mg/L	0.00020	-	<0.00020	<0.00020	-	-	-	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium	mg/L	0.000010	0.0008	<0.000010	<0.000010	-	-	-	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium	mg/L	0.00010	-	<0.00010	<0.00010	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium	mg/L	0.00030	-	0.00103	0.00113	-	-	-	-	0.00774	0.00192	<0.0070	0.00110	0.00469	0.00125
Tungsten	mg/L	0.00010	-	<0.00010	<0.00010	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	0.015	0.000196	0.000347	-	-	-	-	0.000544	0.000164	0.000464	0.000299	0.000625	0.000128
Vanadium	mg/L	0.00050	0.12	<0.00050	<0.00050	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0030	0.03	<0.0030	0.0032	-	-	-	-	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Zirconium	mg/L	0.00020	-	<0.00020	<0.00020	-	-	-	-	0.00021	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

Table 2.4 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-053 (CV093)

Parameters	Units	2025 LOR	CCME Guideline	Date											
				2019				2020		2021				2022	
				21-Jun-19	21-Jun-19	27-Jul-19	27-Jul-19	28-Jun-20	28-Jun-20	14-Jun-21	14-Jun-21	16-Aug-21	16-Aug-21	20-Jun-22	20-Jun-22
				US	DS	US	DS	US	DS	DS	US	DS	US	DS	US
Dissolved Metals and Non-Metals															
Aluminum	mg/L	0.0010	-	-	-	-	-	-	-	0.0151	0.0080	<0.0050	<0.0050	0.0110	0.0056
Arsenic	mg/L	0.00010	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Barium	mg/L	0.00010	-	-	-	-	-	-	-	0.00236	0.00171	0.00320	0.00272	0.00241	0.00176
Boron	mg/L	0.010	-	-	-	-	-	-	-	<0.010	<0.010	0.013	0.014	<0.010	<0.010
Cadmium	mg/L	0.0000050	-	-	-	-	-	-	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	0.050	-	-	-	-	-	-	-	24.8	21.9	45.6	45.9	27.1	25.1
Chromium	mg/L	0.00050	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00020	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Iron	mg/L	0.010	-	-	-	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Lead	mg/L	0.000050	Variable [e]	-	-	-	-	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Magnesium	mg/L	0.0050	-	-	-	-	-	-	-	3.69	2.98	8.71	8.92	3.660000	3.120000
Manganese	mg/L	0.00010	-	-	-	-	-	-	-	0.00128	0.00093	<0.00050	<0.00050	0.00068	<0.00050
Mercury	mg/L	0.0000050	-	-	-	-	-	-	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	mg/L	0.000050	-	-	-	-	-	-	-	0.000110	0.000056	0.000218	0.000199	0.000099	<0.000050
Nickel	mg/L	0.00050	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	-	-	-	-	-	-	0.503	0.294	0.585	0.552	0.481	0.324
Selenium	mg/L	0.000050	-	-	-	-	-	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silver	mg/L	0.000010	-	-	-	-	-	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	-	-	-	-	-	-	0.279	0.221	0.341	0.324	0.317	0.273
Strontium	mg/L	0.00020	0.25	-	-	-	-	-	-	0.0277	0.0216	0.0466	0.0461	0.0316	0.0235
Thallium	mg/L	0.000010	-	-	-	-	-	-	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin	mg/L	0.00010	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	-	-	-	-	-	-	-	0.000447	0.000145	0.000445	0.000277	0.000558	0.000132
Vanadium	mg/L	0.00050	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0010	Variable [e]	-	-	-	-	-	-	<0.0010	<0.0010	0.0022	<0.0010	0.0022	0.0015
Miscellaneous (Water)															
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
The CV-093 watercourse was dry for the entirety of the 2025 field season

Table 2.4 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-053 (CV093)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2023						2024				2025			
				25-Jun-23	25-Jun-23	16-Jul-23	16-Jul-23	21-Aug-23	21-Aug-23	23-Jun-24	23-Jun-24	18-Aug-24	18-Aug-24	30-Jun-25	30-Jun-25	19-Aug-25	19-Aug-25
				DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
In Situ Parameters																	
Temperature	ºC	-	-	-	-	-	-	5.0	5.6	6.3	4.7	-	-	-	-	-	-
Specific Conductance	µS/cm	-	-	-	-	-	-	275.5	279.7	158.3	157.3	-	-	-	-	-	-
Dissolved Oxygen	mg/L	-	<9.5	-	-	-	-	12.08	12.06	12.5	12.7	-	-	-	-	-	-
Dissolved Oxygen	%	-	-	-	-	-	-	97.9	99.3	101.1	99.2	-	-	-	-	-	-
pH	pH units	-	6.5 - 9.0	-	-	-	-	8.19	8.21	8.0	8.0	-	-	-	-	-	-
Wetted Width	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average Depth	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flow Rate	m^3/s	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physical Parameters																	
pH	pH units	0.10	6.5 - 9.0	-	-	-	-	8.33	8.38	7.85	7.98	-	-	-	-	-	-
Conductivity	µS/cm	1.0	-	-	-	-	-	281	299	166	163	-	-	-	-	-	-
Turbidity	NTU	0.10	-	-	-	-	-	1.4	0.8	3.14	0.28	-	-	-	-	-	-
Hardness	mg/L as $CaCO_3$	0.50	-	-	-	-	-	148	149	87.7	89.2	-	-	-	-	-	-
Total Suspended Solids	mg/L	1.0	Variable [g]	-	-	-	-	9.4	1.7	6.8	3.5	-	-	-	-	-	-
Total Dissolved Solids	mg/L	16 - 19	-	-	-	-	-	126	121	105	102	-	-	-	-	-	-
Dissolved Anions																	
Alkalinity	mg/L as $CaCO_3$	2.0	-	-	-	-	-	138	141	86.8	81.3	-	-	-	-	-	-
Bromide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	-	-	-	-	1.4	1.4	0.92	< 0.50	-	-	-	-	-	-
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nutrients																	
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite	mg/L N	0.010	0.060	-	-	-	-	<0.010	<0.010	< 0.010	< 0.010	-	-	-	-	-	-
Nitrate	mg/L N	0.020	3.0	-	-	-	-	<0.020	<0.020	0.023	< 0.020	-	-	-	-	-	-
Nitrate + Nitrite	mg/L N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	-	-	-	-	<0.0050	<0.0050	0.0057	< 0.0050	-	-	-	-	-	-
Total Phosphorus	mg/L	0.0020	0.01	-	-	-	-	0.003	0.0048	0.0020	0.0027	-	-	-	-	-	-
Dissolved Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic Compounds																	
Phenols	mg/L	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	-	-	-	-	2.31	2.03	1.97	1.85	-	-	-	-	-	-
Total Organic Carbon	mg/L	0.50	-	-	-	-	-	1.88	1.82	1.60	1.62	-	-	-	-	-	-
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorophyll-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.4 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-053 (CV093)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2023						2024				2025			
				25-Jun-23	25-Jun-23	16-Jul-23	16-Jul-23	21-Aug-23	21-Aug-23	23-Jun-24	23-Jun-24	18-Aug-24	18-Aug-24	30-Jun-25	30-Jun-25	19-Aug-25	19-Aug-25
				DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
Total Metals and Non-Metals																	
Aluminum	mg/L	0.0030	Variable [f]	-	-	-	-	0.0329	0.0306	0.0460	0.0331	-	-	-	-	-	-
Antimony	mg/L	0.00010	-	-	-	-	-	<0.00010	<0.00010	< 0.00010	< 0.00010	-	-	-	-	-	-
Arsenic	mg/L	0.00010	0.005	-	-	-	-	<0.00010	<0.00010	< 0.00010	< 0.00010	-	-	-	-	-	-
Barium	mg/L	0.00010	-	-	-	-	-	0.00317	0.00301	0.00227	0.00176	-	-	-	-	-	-
Beryllium	mg/L	0.000020	-	-	-	-	-	<0.000020	<0.000020	< 0.000020	< 0.000020	-	-	-	-	-	-
Bismuth	mg/L	0.000050	-	-	-	-	-	<0.000050	<0.000050	< 0.000050	< 0.000050	-	-	-	-	-	-
Boron	mg/L	0.010	1.5	-	-	-	-	0.014	0.014	< 0.010	< 0.010	-	-	-	-	-	-
Cadmium	mg/L	0.0000050	Variable [c]	-	-	-	-	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	-	-	-	-	-	-
Calcium	mg/L	0.050	-	-	-	-	-	47.1	46.7	28.1	30.0	-	-	-	-	-	-
Cesium	mg/L	0.000010	-	-	-	-	-	<0.000010	<0.000010	0.000012	< 0.000010	-	-	-	-	-	-
Chromium	mg/L	0.00050	-	-	-	-	-	<0.00050	<0.00050	< 0.00050	< 0.00050	-	-	-	-	-	-
Cobalt	mg/L	0.00010	Variable [c]	-	-	-	-	<0.00010	<0.00010	< 0.00010	< 0.00010	-	-	-	-	-	-
Copper	mg/L	0.00050	0.002 - 0.004 [c]	-	-	-	-	<0.00050	0.00059	< 0.00050	< 0.00050	-	-	-	-	-	-
Iron	mg/L	0.010	0.300	-	-	-	-	0.037	0.039	0.038	0.032	-	-	-	-	-	-
Lead	mg/L	0.000050	0.001 - 0.007 [c]	-	-	-	-	<0.000050	<0.000050	< 0.000050	< 0.000050	-	-	-	-	-	-
Lithium	mg/L	0.0010	-	-	-	-	-	0.0034	0.0031	0.0011	< 0.0010	-	-	-	-	-	-
Magnesium	mg/L	0.0050	-	-	-	-	-	8.41	8.52	4.24	4.49	-	-	-	-	-	-
Manganese	mg/L	0.00010	Variable [c]	-	-	-	-	0.00094	0.00099	0.00127	0.00092	-	-	-	-	-	-
Mercury	mg/L	0.0000050	0.000026	-	-	-	-	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	-	-	-	-	-	-
Molybdenum	mg/L	0.000050	0.073	-	-	-	-	0.000216	0.000204	0.000083	0.000054	-	-	-	-	-	-
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	-	-	-	-	<0.00050	<0.00050	< 0.00050	< 0.00050	-	-	-	-	-	-
Phosphorus	mg/L	0.050	-	-	-	-	-	<0.050	<0.050	< 0.050	< 0.050	-	-	-	-	-	-
Potassium	mg/L	0.050	-	-	-	-	-	0.548	0.479	0.406	0.296	-	-	-	-	-	-
Rubidium	mg/L	0.00020	-	-	-	-	-	0.00046	0.00036	0.00045	0.00025	-	-	-	-	-	-
Selenium	mg/L	0.000050	0.001	-	-	-	-	<0.000050	<0.000050	< 0.000050	< 0.000050	-	-	-	-	-	-
Silicon	mg/L	0.10	-	-	-	-	-	1.12	1.11	0.61	0.55	-	-	-	-	-	-
Silver	mg/L	0.000010	0.25	-	-	-	-	<0.000010	<0.000010	< 0.000010	< 0.000010	-	-	-	-	-	-
Sodium	mg/L	0.050	-	-	-	-	-	0.322	0.331	0.237	0.208	-	-	-	-	-	-
Strontium	mg/L	0.00020	0.25	-	-	-	-	0.0454	0.0448	0.0294	0.0268	-	-	-	-	-	-
Sulfur	mg/L	0.50	-	-	-	-	-	3.63	3.34	< 0.50	< 0.50	-	-	-	-	-	-
Tellurium	mg/L	0.00020	-	-	-	-	-	<0.00020	<0.00020	< 0.00020	< 0.00020	-	-	-	-	-	-
Thallium	mg/L	0.000010	0.0008	-	-	-	-	<0.000010	<0.000010	< 0.000010	< 0.000010	-	-	-	-	-	-
Thorium	mg/L	0.00010	-	-	-	-	-	<0.00010	<0.00010	< 0.00010	< 0.00010	-	-	-	-	-	-
Tin	mg/L	0.00010	-	-	-	-	-	<0.00010	<0.00010	< 0.00010	< 0.00010	-	-	-	-	-	-
Titanium	mg/L	0.00030	-	-	-	-	-	0.00167	0.0015	< 0.00200	0.00162	-	-	-	-	-	-
Tungsten	mg/L	0.00010	-	-	-	-	-	<0.00010	<0.00010	< 0.00010	< 0.00010	-	-	-	-	-	-
Uranium	mg/L	0.000010	0.015	-	-	-	-	0.000453	0.000286	0.000272	0.000124	-	-	-	-	-	-
Vanadium	mg/L	0.00050	0.12	-	-	-	-	<0.00050	<0.00050	< 0.00050	< 0.00050	-	-	-	-	-	-
Zinc	mg/L	0.0030	0.03	-	-	-	-	<0.0030	<0.0030	0.0050	< 0.0030	-	-	-	-	-	-
Zirconium	mg/L	0.00020	-	-	-	-	-	<0.00020	<0.00020	< 0.00020	< 0.00020	-	-	-	-	-	-

Table 2.4 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-053 (CV093)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2023						2024				2025			
				25-Jun-23	25-Jun-23	16-Jul-23	16-Jul-23	21-Aug-23	21-Aug-23	23-Jun-24	23-Jun-24	18-Aug-24	18-Aug-24	30-Jun-25	30-Jun-25	19-Aug-25	19-Aug-25
				DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
Dissolved Metals and Non-Metals																	
Aluminum	mg/L	0.0010	-	-	-	-	-	0.0063	0.0027	0.0356	0.0066	-	-	-	-	-	-
Arsenic	mg/L	0.00010	-	-	-	-	-	<0.00010	<0.00010	< 0.00010	< 0.00010	-	-	-	-	-	-
Barium	mg/L	0.00010	-	-	-	-	-	0.00308	0.00278	0.00213	0.00168	-	-	-	-	-	-
Boron	mg/L	0.010	-	-	-	-	-	0.012	0.011	< 0.010	< 0.010	-	-	-	-	-	-
Cadmium	mg/L	0.0000050	-	-	-	-	-	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	-	-	-	-	-	-
Calcium	mg/L	0.050	-	-	-	-	-	45.4	45.5	28.0	28.6	-	-	-	-	-	-
Chromium	mg/L	0.00050	-	-	-	-	-	<0.00050	<0.00050	< 0.00050	< 0.00050	-	-	-	-	-	-
Cobalt	mg/L	0.00010	-	-	-	-	-	<0.00010	<0.00010	< 0.00010	< 0.00010	-	-	-	-	-	-
Copper	mg/L	0.00020	-	-	-	-	-	0.00029	<0.00020	0.00020	< 0.00020	-	-	-	-	-	-
Iron	mg/L	0.010	-	-	-	-	-	<0.010	<0.010	0.0190	< 0.010	-	-	-	-	-	-
Lead	mg/L	0.000050	Variable [e]	-	-	-	-	<0.000050	<0.000050	< 0.000050	< 0.000050	-	-	-	-	-	-
Magnesium	mg/L	0.0050	-	-	-	-	-	8.3	8.58	4.31	4.32	-	-	-	-	-	-
Manganese	mg/L	0.00010	-	-	-	-	-	0.00037	<0.00010	0.00081	< 0.00010	-	-	-	-	-	-
Mercury	mg/L	0.0000050	-	-	-	-	-	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	-	-	-	-	-	-
Molybdenum	mg/L	0.000050	-	-	-	-	-	0.00022	0.000202	0.000068	0.000062	-	-	-	-	-	-
Nickel	mg/L	0.00050	-	-	-	-	-	<0.00050	<0.00050	< 0.00050	< 0.00050	-	-	-	-	-	-
Phosphorus	mg/L	0.050	-					<0.050	<0.050	< 0.050	< 0.050			-	-		
Potassium	mg/L	0.050	-	-	-	-	-	0.514	0.432	0.380	0.308	-	-	-	-	-	-
Selenium	mg/L	0.000050	-	-	-	-	-	<0.000050	<0.000050	< 0.000050	< 0.000050	-	-	-	-	-	-
Silver	mg/L	0.000010	-	-	-	-	-	<0.000010	<0.000010	< 0.000010	< 0.000010	-	-	-	-	-	-
Sodium	mg/L	0.050	-	-	-	-	-	0.315	0.316	0.226	0.267	-	-	-	-	-	-
Strontium	mg/L	0.00020	0.25	-	-	-	-	0.0455	0.0435	0.0294	0.0272	-	-	-	-	-	-
Thallium	mg/L	0.000010	-	-	-	-	-	<0.000010	<0.000010	< 0.000010	< 0.000010	-	-	-	-	-	-
Tin	mg/L	0.00010	-	-	-	-	-	<0.00010	<0.00010	< 0.00010	< 0.00010	-	-	-	-	-	-
Uranium	mg/L	0.000010	-	-	-	-	-	0.000438	0.000276	0.000266	0.000119	-	-	-	-	-	-
Vanadium	mg/L	0.00050	-	-	-	-	-	<0.00050	<0.00050	< 0.00050	< 0.00050	-	-	-	-	-	-
Zinc	mg/L	0.0010	Variable [e]	-	-	-	-	0.002	<0.0010	0.0036	< 0.0010	-	-	-	-	-	-
Miscellaneous (Water)																	
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
The CV-093 watercourse was dry for the entirety of the 2025 field season

Table 2.5 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-060 (CV078)

Parameters	Units	2025 LOR	CCME Guideline	Date															
				2005			2006			2011		2015		2016				2017	
				13-Jun-05	06-Aug-05	09-Sep-05	13-Jun-06	02-Aug-06	08-Sep-06	20-Jul-11	27-Aug-11	12-Aug-15	12-Aug-15	30-Jun-16	30-Jun-16	25-Aug-16	25-Aug-16	29-Jun-17	29-Jun-17
												US	DS	DS	US	DS	US	US	DS
In Situ Parameters																			
Temperature	ºC	-	-	0.22	9.28	4.02	-0.06	13.05	3.95	12.56	7.37	9.6	9.3	8.16	9.36	9.8	10	3.8	4.4
Specific Conductance	µS/cm	-	-	0.079	0.222	0.284	0.097	0.237	0.267	0.247	0.326	0.314	0.315	7.264	7.264	0.299	0.297	0.154	0.123
Dissolved Oxygen	mg/L	-	< 9.5	13.48	10.95	12.72	14.17	11.43	12.55	-	11.92	-	-	-	-	-	-	-	-
Dissolved Oxygen	%	-	-	-	-	-	-	-	-	95.3	99.3	102.7	102.3	100.4	100.1	102.5	103.8	102.20	102.80
pH	pH units	-	6.5 - 9.0	7.36	8.30	7.96	8.22	8.26	8.36	8.15	8.34	8.53	8.48	7.81	7.93	8.24	8.25	7.65	7.87
Wetted Width	m	-	-	-	-	-	ice	9	9	3	7.3	3	3	-	-	-	-	11	10
Average Depth	m	-	-	-	-	-	0.15	0.25	0.2	0.2	0.3	0.1	0.1	-	-	-	-	2	0.19
Flow Rate	m^3/s	-	-	-	-	-	-	0.74	0.96	-	-	-	-	-	-	-	-	2.90	2.78
Physical Parameters																			
pH	pH units	0.10	6.5 - 9.0	-	-	-	7.56	8.10	8.10	8.15	8.22	8.16	8.32	8.09	8.09	8.42	8.42	7.93	7.91
Conductivity	µS/cm	1.0	-	83	234	269	104	244	277	245	333	-	-	-	-	-	-	-	-
Turbidity	NTU	0.10	-	0.40	<0.10	<0.10	0.5	<0.10	-	H.T.E	9D	1.45	0.24	0.26	0.17	0.13	0.14	0.5	0.37
Hardness	mg/L as $CaCO_3$	0.50	-	41.0	124	160	52	137	141	141	192	156	152	60	59	165	163	46	44
Total Suspended Solids	mg/L	1.0	Variable [g]	-	-	-	-	-	-	<2	<2	2.4	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	17 - 18	-	63	123	120	68	159	180	159	216	159 *	143 *	65	70	152	148	50	56
Dissolved Anions																			
Alkalinity	mg/L as $CaCO_3$	2.0	-	40	120	141	51	132	146	132	170	158	152	61	64	161	158	41	43
Bromide	mg/L	-	-	<0.3	<0.3	<0.3	<0.05	<0.05	<0.05	<0.25	<0.25	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	0.9	0.2	0.6	<1	<1	<1	2	3	3.08	0.79	<0.50	<0.50	1.19	1.19	<0.50	<0.50
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.020	<0.020	0.023	0.024	<0.020	<0.020
Sulfate	mg/L	-	-	0.6	0.8	1.9	2.0	1.0	5.0	4	12	3.84	2.68	<0.30	0.31	3.37	3.35	<0.30	<0.30
Nutrients																			
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	0.2	0.6	0.8	<0.02	<0.02	<0.02	0.02	0.04	0.24	0.25	<0.15	<0.15	<0.15	<0.15	-	-
Nitrite	mg/L N	0.010	0.06	<0.06	<0.06	<0.06	<0.005	<0.005	0.018	<0.10	<0.005	-	-	-	-	-	-	-	-
Nitrate	mg/L N	0.020	3	<0.05	<0.05	<0.05	<0.10	<0.10	<0.10	<0.10	0.18	0.030	0.026	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Nitrate + Nitrite	mg/L N	-	-	<0.06	<0.06	<0.06	<0.10	<0.10	<0.10	<0.10	0.18	-	-	-	-	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	-	-	-	-	-	-	-	-	<0.050	<0.050	0.021	<0.020	0.027	0.041	<0.020	<0.020
Total Phosphorus	mg/L	0.0020	0.01	<0.02	<0.02	<0.10	<0.01	<0.01	<0.01	0.003	<0.003	0.0044	<0.0030	0.0193	0.0282	0.01	0.0139	0.0085	0.0304
Dissolved Phosphorus	mg/L	-	-	<0.02	<0.02	<0.10	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic Compounds																			
Phenols	mg/L	-	0.004	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	-	-	-	-	-	-	1.7	0.8	2.4	1.9	1	<1.0	1.5	1.5	1.75	1.78
Total Organic Carbon	mg/L	0.50	-	-	-	-	-	-	-	1.5	1.7	2.2	1.8	1.1	1.0	1.6	1.6	2.24	2.13
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	-	-	0.16	<0.10	0.24	0.25	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Chlorophyll-a	mg/m3	-	-	-	-	-	-	-	-	0.5	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m3	-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-	-	-

Table 2.5 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-060 (CV078)

Parameters	Units	2025 LOR	CCME Guideline	Date															
				2005			2006			2011		2015		2016				2017	
				13-Jun-05	06-Aug-05	09-Sep-05	13-Jun-06	02-Aug-06	08-Sep-06	20-Jul-11	27-Aug-11	12-Aug-15	12-Aug-15	30-Jun-16	30-Jun-16	25-Aug-16	25-Aug-16	29-Jun-17	29-Jun-17
												US	DS	DS	US	DS	US	US	DS
Total Metals and Non-Metals																			
Aluminum	mg/L	0.0030	Variable [f]	0.006	<0.004	<0.004	0.006	<0.005	<0.005	<0.003	<0.003	0.059	0.016	0.011	0.016	<0.010	<0.010	0.0271	0.024
Antimony	mg/L	0.00010	-	<0.0004	<0.0004	<0.0004	-	-	-	<0.0001	<0.0001	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	mg/L	0.00010	0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	0.0001	<0.0001	0.00011	<0.00010	<0.00010	<0.00010	0.0001	<0.00010	<0.00010	<0.00010
Barium	mg/L	0.00010	-	<0.001	0.002	0.003	<0.01	<0.01	<0.01	0.0035	0.00429	-	-	0.00166	0.0019	0.00389	0.00385	0.00131	0.00128
Beryllium	mg/L	0.000020	-	<0.005	<0.005	<0.005	-	-	-	<0.0005	<0.0005	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth	mg/L	0.000050	-	<0.0003	<0.0003	<0.0003	-	-	-	<0.0005	<0.0005	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron	mg/L	0.010	1.5	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	0.013	0.012	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	mg/L	0.0000050	Variable [c]	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.00001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Calcium	mg/L	0.050	-	13.2	35.5	44.7	17	41	41	40	53.8	45	43.1	17.4	16.8	45.9	45.6	12.6	12.1
Cesium	mg/L	0.000010	-	-	-	-	-	-	-	-	-			<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium	mg/L	0.00050	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	Variable [c]	<0.0003	<0.0003	<0.0003	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	<0.0008	<0.0008	<0.0008	<0.001	<0.001	<0.001	<0.0005	<0.0005	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Iron	mg/L	0.010	0.3	<0.05	<0.02	<0.02	<0.03	<0.03	<0.03	<0.03	<0.03	0.053	<0.050	<0.050	<0.050	<0.050	<0.050	0.075	<0.050
Lead	mg/L	0.000050	0.001 - 0.007 [c]	<0.0002	<0.0002	<0.0002	<0.001	<0.001	<0.001	<0.00005	<0.00005	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000050	<0.000050
Lithium	mg/L	0.0010	-	-	-	-	-	-	-	<0.005	<0.005	-	-	<0.0010	<0.0010	0.0015	0.0016	<0.0010	<0.0010
Magnesium	mg/L	0.0050	-	1.91	8.74	11.7	3	9	11	9.85	14	14	11.7	3.94	4.03	12.2	11.9	3.44	3.4
Manganese	mg/L	0.00010	Variable [c]	0.0016	<0.0007	<0.0007	<0.01	<0.01	<0.01	0.000078	<0.00005	0.000850	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00113	0.00096
Mercury	mg/L	0.0000050	0.000026	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.00001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum	mg/L	0.000050	0.073	<0.0003	<0.0003	<0.0003	<0.005	<0.005	<0.005	0.000082	0.000121	<0.00050	<0.00050	<0.000050	<0.000050	0.000093	0.000091	<0.000050	<0.000050
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	0.00052	<0.0005	<0.0010	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium	mg/L	0.050	-	0.26	0.26	0.27	0.22	0.28	0.30	0.382	0.37	0.508	0.355	0.21	0.216	0.344	0.355	0.24	0.245
Rubidium	mg/L	0.00020	-	-	-	-	-	-	-	-	-	-	-	<0.00020	0.00022	0.00032	0.00034	0.00021	0.00022
Selenium	mg/L	0.000050	0.001	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon	mg/L	0.10	-	-	-	-	-	-	-	0.73	0.67	-	-	0.368	0.385	0.789	0.749	0.3	0.29
Silver	mg/L	0.000010	0.25	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.000001	<0.000001	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	0.31	0.27	0.36	0.31	0.31	0.47	0.746	1.06	1.71	0.61	<0.50	<0.50	0.72	0.7	<0.50	<0.50
Strontium	mg/L	0.00020	0.25	0.0098	0.0226	0.0293	0.013	0.029	0.030	0.0283	0.039	-	-	0.0123	0.0121	0.035	0.0337	0.0078	0.0079
Sulfur	mg/L	0.50	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	1.52	1.46	<0.50	<0.50
Tellurium	mg/L	0.00020	-	-	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium	mg/L	0.000010	0.0008	<0.0002	<0.0002	<0.0002	-	-	-	<0.0001	<0.0001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin	mg/L	0.00010	-	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.0001	<0.0001	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium	mg/L	0.00030	-	<0.003	<0.003	<0.003	-	-	-	<0.01	<0.01	-	-	0.0006	0.00083	<0.00030	0.00032	0.00091	0.00087
Tungstun	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	0.015	-	-	-	-	-	-	0.000331	0.000562	0.000577	0.000403	0.000072	0.000073	0.000468	0.000458	0.000047	0.000039
Vanadium	mg/L	0.00050	0.12	<0.0009	<0.0009	<0.0009	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0030	0.03	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.003	<0.003	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Zirconium	mg/L	0.00020	-	-	-	-	-	-	-	-	-	-	-	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

Table 2.5 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-060 (CV078)

Parameters	Units	2025 LOR	CCME Guideline	Date															
				2005			2006			2011		2015		2016				2017	
				13-Jun-05	06-Aug-05	09-Sep-05	13-Jun-06	02-Aug-06	08-Sep-06	20-Jul-11	27-Aug-11	12-Aug-15	12-Aug-15	30-Jun-16	30-Jun-16	25-Aug-16	25-Aug-16	29-Jun-17	29-Jun-17
												US	DS	DS	US	DS	US	US	DS
Dissolved Metals and Non-Metals																			
Aluminum	mg/L	0.0010	-	<0.004	<0.004	<0.004	<0.005	<0.005	<0.005	<0.003	<0.003	<0.0050	<0.0050	-	-	-	-	-	-
Arsenic	mg/L	0.00010	-	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.0001	<0.0001	<0.00010	<0.00010	-	-	-	-	-	-
Barium	mg/L	0.00010	-	<0.001	0.002	0.003	<0.01	<0.01	<0.01	0.00334	0.00408	-	-	-	-	-	-	-	-
Boron	mg/L	0.010	-	<0.05	0.02	<0.01	<0.01	<0.01	<0.01	0.015	<0.01	-	-	-	-	-	-	-	-
Cadmium	mg/L	0.0000050	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.00001	<0.00001	<0.000010	<0.000010	-	-	-	-	-	-
Calcium	mg/L	0.050	-	13.1	37.5	42.4	16	40	40	39.4	52.5	41.3	42.8	-	-	-	-	-	-
Chromium	mg/L	0.00050	-	<0.001	0.002	0.001	<0.001	<0.001	<0.001	<0.0005	<0.0005	-	-	-	-	-	-	-	-
Cobalt	mg/L	0.00010	-	<0.0003	0.0004	<0.0003	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	-	-	-	-	-	-	-	-
Copper	mg/L	0.00020	-	<0.0008	<0.0008	<0.0008	<0.001	<0.001	<0.001	<0.0005	<0.0005	0.00034	0.00024	-	-	-	-	-	-
Iron	mg/L	0.010	-	<0.05	<0.02	<0.02	<0.03	<0.03	<0.03	<0.03	<0.03	<0.010	<0.010	-	-	-	-	-	-
Lead	mg/L	0.000050	Variable [e]	<0.0002	<0.0002	<0.0002	<0.001	<0.001	<0.001	<0.00005	<0.00005	<0.000050	<0.000050	-	-	-	-	-	-
Magnesium	mg/L	0.0050	-	2.09	9.19	11.0	3	9	10	9.47	13.6	12.8	10.9	-	-	-	-	-	-
Manganese	mg/L	0.00010	-	0.0013	<0.0007	<0.0007	<0.01	<0.01	<0.01	0.000135	<0.00005	<0.00050	<0.00050	-	-	-	-	-	-
Mercury	mg/L	0.0000050	-	-	-	-	-	-	-	<0.00001	<0.00001	<0.000010	<0.000010	-	-	-	-	-	-
Molybdenum	mg/L	0.000050	-	<0.0003	<0.0003	<0.0003	<0.005	<0.005	<0.005	0.000068	0.000107	0.000125	0.000086	-	-	-	-	-	-
Nickel	mg/L	0.00050	-	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.0005	<0.0005	<0.00050	<0.00050	-	-	-	-	-	-
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	0.26	0.28	0.26	0.20	0.27	0.28	0.357	0.356	0.488	0.361	-	-	-	-	-	-
Selenium	mg/L	0.000050	-	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.000050	<0.000050	-	-	-	-	-	-
Silver	mg/L	0.000010	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.000001	<0.000001	1.61	0.61	-	-	-	-	-	-
Sodium	mg/L	0.050	-	0.30	0.28	0.34	0.30	0.30	0.46	0.696	1.01	-	-	-	-	-	-	-	-
Strontium	mg/L	0.00020	0.25	0.0099	0.0247	0.0281	0.012	0.028	0.030	0.026	0.0365	-	-	-	-	-	-	-	-
Thallium	mg/L	0.000010	-	<0.0002	<0.0002	<0.0002	-	-	-	<0.0001	<0.0001	<0.000010	<0.000010	-	-	-	-	-	-
Tin	mg/L	0.00010	-	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.0001	<0.0001	-	-	-	-	-	-	-	-
Uranium	mg/L	0.000010	-	-	-	-	-	-	-	0.000296	0.000531	0.000549	0.000409	-	-	-	-	-	-
Vanadium	mg/L	0.00050	-	<0.0009	0.0043	0.0042	<0.001	<0.001	0.002	<0.001	<0.001	-	-	-	-	-	-	-	-
Zinc	mg/L	0.0010	Variable [e]	<0.001	0.001	0.002	<0.01	<0.01	<0.01	<0.003	<0.003	<0.0010	0.0026	-	-	-	-	-	-
Miscellaneous (Water)																			
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.5 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-060 (CV078)

Parameters	Units	2025 LOR	CCME Guideline	Date																	
				2018				2019				2020						2021			
				03-Jul-18	03-Jul-18	02-Sep-18	02-Sep-18	22-Jun-19	22-Jun-19	11-Aug-19	11-Aug-19	22-Jun-20	22-Jun-20	20-Jul-20	20-Jul-20	14-Aug-20	14-Aug-20	14-Jun-21	14-Jun-21	16-Aug-21	16-Aug-21
				US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	DS	US	DS	US
In Situ Parameters																					
Temperature	ºC	-	-	5.2	5.5	6.0	5.6	4.3	3.9	13.6	13.6	1.9	1.9	15.6	15.2	8.5	8.3	1.2	1.0	7.3	7.3
Specific Conductance	µS/cm	-	-	0.1668	0.1668	0.237	0.2371	0.1616	0.1619	0.3037	0.3044	0.0960	0.0966	0.257	0.2582	0.3185	0.3189	72.4	72	274.5	274.1
Dissolved Oxygen	mg/L	-	< 9.5	-	-	-	-	-	-	-	-	13.57	13.63	9.93	9.0	100.4	99.6	13.34	14.18	11.83	11.80
Dissolved Oxygen	%	-	-	97.70	97.60	99.30	96.30	99.30	98.60	98.7	99.8	13.57	98.10	99.4	98.50	11.75	11.72	99.6	99.8	100.8	100.6
pH	pH units	-	6.5 - 9.0	8.19	8.18	8.39	8.3	8.22	8.23	8.26	8.36	7.98	7.97	8.39	8.4	8.45	8.39	7.69	7.72	8.48	8.43
Wetted Width	m	-	-	12.4	12.7	4.5	4.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average Depth	m	-	-	0.1	0.12	0.08	0.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flow Rate	m^3/s	-	-	1.11	0.75	0.10	0.08	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physical Parameters																					
pH	pH units	0.10	6.5 - 9.0	8.18	8.17	8.42	8.41	8.24	8.22	8.39	8.46	7.84	7.81	8.38	8.36	8.49	8.46	7.79	7.79	8.28	8.29
Conductivity	µS/cm	1.0	-	-	-	-	-	-	-	-	-	99.4	100	266	268	326	329	78.4	77.3	286	286
Turbidity	NTU	0.10	-	0.29	0.56	<0.10	<0.10	0.13	0.14	0.15	0.21	0.36	0.45	<0.10	<0.10	<0.10	<0.10	4.18	2.24	<0.10	0.23
Hardness	mg/L as $CaCO_3$	0.50	-	91	90	146	147	106	105	153	156	53	53.3	143	143	183	181	37.7	37.3	155	154
Total Suspended Solids	mg/L	1.0	Variable [g]	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	12.8	8.1	<1.0	<1.0
Total Dissolved Solids	mg/L	17 - 18	-	102	101	140	155	99	103	163	166	55	53	138	154	194	183	46	49	147	152
Dissolved Anions																					
Alkalinity	mg/L as $CaCO_3$	2.0	-	85	82	149	149	103	104	166	171	50	50	142	143	170	168	49.6	53.1	154	154
Bromide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	0.69	0.7	0.98	1.16	0.59	0.64	1.21	1.41	<0.50	0.61	1.44	1.8	2.57	2.79	0.98	0.86	1.87	1.90
Fluoride	mg/L	-	-	0.023	0.023	0.037	0.037	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfate	mg/L	-	-	0.62	0.62	2.02	2.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nutrients																					
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-
Nitrite	mg/L N	0.010	0.06	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0010	<0.0010	<0.010	<0.010	<0.010	<0.010
Nitrate	mg/L N	0.020	3	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.027	0.041	0.0362	0.0371	<0.020	<0.020	<0.020	<0.020
Nitrate + Nitrite	mg/L N	-	-	-	-	-	-	<0.022	<0.022	<0.022	<0.022	-	-	-	-	-	-	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	<0.020	<0.020	-	-	<0.010	<0.010	0.014	<0.010	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010
Total Phosphorus	mg/L	0.0020	0.01	<0.0030	<0.0030	0.015	<0.0030	<0.0030	<0.0030	0.012	<0.0030	0.0132	0.0034	<0.0030	<0.0030	<0.0020	<0.0020	0.0096	0.0085	<0.0030	<0.0030
Dissolved Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic Compounds																					
Phenols	mg/L	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	1.75	1.74	1.72	1.72	1.73	1.81	1.62	1.7	2.93	2.83	2.47	2.28	1.92	2	3.08	3.08	3.12	3.15
Total Organic Carbon	mg/L	0.50	-	2.13	1.76	2.01	2.62	2.34	2.54	3.39	2.23	3.04	3.24	2.74	2.77	1.55	1.81	3.08	3.09	5.34	5.22
Total Kjeldahl Nitrogen	mg/L	-	-	<0.15	<0.15	<0.15	<0.15	-	-	-	-	-	-	-	-	-	-	0.190	0.180	0.150	0.190
Chlorophyll-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.5 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-060 (CV078)

Parameters	Units	2025 LOR	CCME Guideline	Date																	
				2018				2019				2020						2021			
				03-Jul-18	03-Jul-18	02-Sep-18	02-Sep-18	22-Jun-19	22-Jun-19	11-Aug-19	11-Aug-19	22-Jun-20	22-Jun-20	20-Jul-20	20-Jul-20	14-Aug-20	14-Aug-20	14-Jun-21	14-Jun-21	16-Aug-21	16-Aug-21
				US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	DS	US	DS	US
Total Metals and Non-Metals																					
Aluminum	mg/L	0.0030	Variable [f]	<0.0050	<0.0050	<0.0050	<0.0050	0.009	0.0097	0.0053	0.0074	0.0164	0.0277	<0.0050	0.0067	<0.0030	0.0033	0.0752	0.0329	<0.0050	<0.0050
Antimony	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	mg/L	0.00010	0.005	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00012	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	0.00012	0.00013	<0.00010	<0.00010	<0.00010	<0.00010
Barium	mg/L	0.00010	-	0.00202	0.00213	0.00349	0.00351	0.00236	0.00260	0.00459	0.0045	0.00153	0.00216	0.00383	0.00418	0.00428	0.00442	0.00175	0.00129	0.00389	0.00388
Beryllium	mg/L	0.000020	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron	mg/L	0.010	1.5	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	mg/L	0.0000050	Variable [c]	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000075	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	0.050	-	26	25.3	41.4	41.1	30.4	29.1	44.1	42.8	15.2	14.3	41	40	48	49.5	11.8	11.2	39.9	40.1
Cesium	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	<0.000010	<0.000010	<0.000010
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00010	<0.00010	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	Variable [c]	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	0.00097	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron	mg/L	0.010	0.3	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.017	0.034	<0.010	<0.010	<0.010	<0.010	0.069	0.033	<0.010	<0.010
Lead	mg/L	0.000050	0.001 - 0.007 [c]	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000051	0.000085	<0.000050	0.000051	<0.000050	<0.000050	0.000075	<0.000050	<0.000050	<0.000050
Lithium	mg/L	0.0010	-	<0.0010	<0.0010	<0.0010	<0.0010	0.001	<0.0010	0.0012	0.0012	<0.0010	<0.0010	0.0015	0.0014	0.0017	0.0017	<0.0010	<0.0010	0.0011	0.0012
Magnesium	mg/L	0.0050	-	6.38	6.53	10.3	10.7	7.61	7.79	11.5	11.2	3.6	3.45	9.96	10	13.7	13.7	2.81	2.68	12.4	12.4
Manganese	mg/L	0.00010	Variable [c]	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00098	0.00192	<0.00050	<0.00050	<0.00010	0.00016	0.00375	0.00295	<0.00050	<0.00050
Mercury	mg/L	0.0000050	0.000026	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	mg/L	0.000050	0.073	<0.000050	<0.000050	0.000078	0.000067	<0.000050	<0.000050	0.000105	0.000091	<0.000050	<0.000050	0.000069	0.000068	0.000093	0.000098	<0.000050	<0.000050	0.000071	0.000066
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00070	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium	mg/L	0.050	-	0.227	0.234	0.301	0.304	0.252	0.262	0.365	0.368	0.229	0.338	0.366	0.389	0.346	0.351	0.308	0.275	0.382	0.380
Rubidium	mg/L	0.00020	-	<0.00020	<0.00020	0.00022	0.00026	0.00021	0.00023	0.00035	0.00042	<0.00020	0.00034	0.00035	0.00043	0.00029	0.00031	0.00048	0.00027	0.00036	0.00031
Selenium	mg/L	0.000050	0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon	mg/L	0.10	-	0.44	0.45	0.65	0.65	0.52	0.52	0.68	0.65	0.28	0.3	0.88	0.88	0.88	0.87	0.36	0.28	1.00	1.01
Silver	mg/L	0.000010	0.25	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	0.338	0.34	0.584	0.581	0.355	0.356	0.67	0.661	0.275	0.437	0.795	0.812	1.19	1.18	0.351	0.360	0.986	0.995
Strontium	mg/L	0.00020	0.25	0.0178	0.0179	0.0311	0.0313	0.0207	0.0214	0.0367	0.0361	0.0102	0.0097	0.0307	0.0309	0.0407	0.0413	0.0093	0.0085	0.0302	0.0300
Sulfur	mg/L	0.50	-	<0.50	<0.50	1.05	1.02	<0.50	0.53	2.67	1.23	<0.50	<0.50	1.16	1.27	2.29	2.23	<0.50	<0.50	1.19	1.18
Tellurium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium	mg/L	0.000010	0.0008	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00012	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00013	<0.00010	<0.00010
Titanium	mg/L	0.00030	-	<0.00030	<0.00030	<0.00030	<0.00030	0.00049	<0.00030	<0.00030	0.00038	0.00053	0.00093	<0.00030	<0.00030	<0.00030	<0.00030	0.00241	0.00099	<0.00030	<0.00030
Tungstun	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	0.015	0.000181	0.000185	0.000432	0.000421	0.000200	0.000223	0.000521	0.00049	0.000062	0.000079	0.000333	0.000369	0.00056	0.000577	0.000080	0.000045	0.000495	0.000479
Vanadium	mg/L	0.00050	0.12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0030	0.03	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.01	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Zirconium	mg/L	0.00020	-	<0.00030	<0.00030	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

Table 2.5 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-060 (CV078)

Parameters	Units	2025 LOR	CCME Guideline	Date																	
				2018				2019				2020						2021			
				03-Jul-18	03-Jul-18	02-Sep-18	02-Sep-18	22-Jun-19	22-Jun-19	11-Aug-19	11-Aug-19	22-Jun-20	22-Jun-20	20-Jul-20	20-Jul-20	14-Aug-20	14-Aug-20	14-Jun-21	14-Jun-21	16-Aug-21	16-Aug-21
				US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	DS	US	DS	US
Dissolved Metals and Non-Metals																					
Aluminum	mg/L	0.0010	-	-	-	-	-	-	-	-	-	0.00830	0.0065	0.0089	<0.0050	0.0011	<0.0010	0.0077	0.0074	<0.0050	<0.0050
Arsenic	mg/L	0.00010	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	0.00011	0	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Barium	mg/L	0.00010	-	-	-	-	-	-	-	-	-	0.00151	0.00152	0.00415	0	0.00436	0.00419	0.00140	0.00114	0.00411	0.00421
Boron	mg/L	0.010	-	-	-	-	-	-	-	-	-	<0.010	<0.010	0.011	0	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	mg/L	0.0000050	-	-	-	-	-	-	-	-	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	0.050	-	-	-	-	-	-	-	-	-	15.10000	15	40	40	50.4	50.8	10.9	10.7	40.7	40.5
Chromium	mg/L	0.00050	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00010	<0.00010	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00020	-	-	-	-	-	-	-	-	-	0.00031	0.00033	0.0003	0	0.0003	0.00027	<0.00020	<0.00020	0.00026	0.00026
Iron	mg/L	0.010	-	-	-	-	-	-	-	-	-	0.01100	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010
Lead	mg/L	0.000050	Variable [e]	-	-	-	-	-	-	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Magnesium	mg/L	0.0050	-	-	-	-	-	-	-	-	-	3.73000	3.84	10.4	10	13.9	13.2	2.57	2.60	12.8	12.8
Manganese	mg/L	0.00010	-	-	-	-	-	-	-	-	-	0.00092	0.00077	<0.00050	<0.00050	<0.00010	<0.00010	0.00442	0.00450	<0.00050	<0.00050
Mercury	mg/L	0.0000050	-	-	-	-	-	-	-	-	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	mg/L	0.000050	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050	0.000074	0	0.000095	0.000112	<0.000050	<0.000050	0.000066	0.000072
Nickel	mg/L	0.00050	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	-	-	-	-	-	-	-	-	0.22600	0.227	0.404	0	0.494	0.422	0.260	0.254	0.411	0.404
Selenium	mg/L	0.000050	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silver	mg/L	0.000010	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	-	-	-	-	-	-	-	-	0.28600	0.286	0.851	1	1.23	1.18	0.339	0.342	1.03	1.02
Strontium	mg/L	0.00020	0.25	-	-	-	-	-	-	-	-	0.00960	0.0097	0.0328	0	0.0381	0.0385	0.0084	0.0080	0.0306	0.0312
Thallium	mg/L	0.000010	-	-	-	-	-	-	-	-	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin	mg/L	0.00010	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	-	-	-	-	-	-	-	-	-	0.00006	0.000061	0.000331	0	0.000537	0.000548	0.000065	0.000037	0.000466	0.000456
Vanadium	mg/L	0.00050	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0010	Variable [e]	-	-	-	-	-	-	-	-	0.00250	0.0029	0.0028	0	0.0011	0.0018	<0.0010	<0.0010	<0.0010	<0.0010
Miscellaneous (Water)																					
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.5 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-060 (CV078)

Parameters	Units	2025 LOR	CCME Guideline	Date															
				2022				2023						2024				2025			
				20-Jun-22	20-Jun-22	29-Aug-22	29-Aug-22	25-Jun-23	25-Jun-23	16-Jul-23	16-Jul-23	21-Aug-23	21-Aug-23	23-Jul-24	23-Jul-24	18-Aug-24	18-Aug-24	30-Jun-25	30-Jun-25	19-Aug-25	19-Aug-25
				DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
In Situ Parameters																					
Temperature	ºC	-	-	1.7	0.7	6.9	6.9	0.9	0.3	9.7	9.5	6.3	6.3	5.6	4.6	6.1	6	9.8	9.7	6.6	6.6
Specific Conductance	µS/cm	-	-	70.8	67.5	317	326.5	55.1	54	159	157.4	267.3	264.5	73.9	74.2	276.1	274	181.4	180.7	293.1	292.3
Dissolved Oxygen	mg/L	-	< 9.5	13.58	13.66	13.50	13.24	13.02	12.73	11.16	11.14	11.70	11.65	12.78	12.67	11.68	11.75	10.98	10.87	11.67	11.86
Dissolved Oxygen	%	-	-	97.3	95.1	112.8	110.6	94.8	91.2	100.8	100.5	97.7	98.2	102.0	99.0	94.2	94.5	96.8	95.7	95.6	97
pH	pH units	-	6.5 - 9.0	7.83	7.76	8.31	8.33	7.96	7.84	8.10	8.13	8.37	8.39	7.92	7.80	8.23	8.3	8.29	8.31	8.42	8.45
Wetted Width	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average Depth	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flow Rate	m^3/s	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physical Parameters																					
pH	pH units	0.10	6.5 - 9.0	7.75	7.75	8.42	8.39	7.59	7.39	8.09	8.05	8.46	8.38	7.91	7.76	8.29	8.28	7.80	7.82	8.27	8.24
Conductivity	µS/cm	1.0	-	71.6	70.2	317	316	58.5	57.3	167	165	273	272	79.2	79.0	294	294	185	188	324	322
Turbidity	NTU	0.10	-	2.55	2.20	<1.0	<1.0	1.68	0.61	0.29	1.29	0.27	<0.10	0.59	0.51	< 0.10	0.24	0.11	< 0.10	< 0.10	0.15
Hardness	mg/L as $CaCO_3$	0.50	-	36	34.6	178	178	28.86	27.51	84.64	83.85	145.55	142.72	41.6	41.9	157	158	104	103	171	172
Total Suspended Solids	mg/L	1.0	Variable [g]	2.5	3.8	<3.0	<3.0	7.6	2.5	<1.0	<1.2	<1.0	<1.0	< 1.0	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Dissolved Solids	mg/L	17 - 18	-	51	55	168	169	27	28	91	86	132	136	49	50	164	164	102	100	160	151
Dissolved Anions																					
Alkalinity	mg/L as $CaCO_3$	2.0	-	38.8	37.5	161.0	162.0	35.2	48.8	88.5	87.2	141	142	39.4	39.7	154	154	96.7	97.3	153	153
Bromide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	0.74	0.66	1.89	1.73	<0.50	<0.50	0.76	0.74	1.86	1.63	< 0.50	< 0.50	1.62	1.15	0.62	0.58	1.27	1.10
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nutrients																					
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite	mg/L N	0.010	0.06	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Nitrate	mg/L N	0.020	3	0.023	0.021	0.046	0.043	0.035	0.044	<0.020	<0.020	<0.020	<0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Nitrate + Nitrite	mg/L N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	<0.010	0.013	<0.010	<0.010	<0.0050	0.0064	<0.0050	0.0073	0.0057	<0.0050	< 0.0050	0.0095	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Total Phosphorus	mg/L	0.0020	0.01	0.0034	0.0138	<0.0030	<0.0030	0.0035	0.0038	0.0022	0.0025	0.0033	<0.0020	0.0054	0.0049	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Dissolved Phosphorus	mg/L	-	-	<0.050	<0.050	<0.050	<0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic Compounds																					
Phenols	mg/L	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-			-	-
Dissolved Organic Carbon	mg/L	0.50	-	2.44	2.13	2.31	1.80	2.89	1.83	1.36	1.29	2.25	2.20	2.56	2.37	2.84	2.12	1.37	1.32	1.39	1.34
Total Organic Carbon	mg/L	0.50	-	2.19	2.11	1.93	1.88	1.81	2.08	1.85	1.82	2.68	2.48	2.02	2.25	1.89	1.87	1.84	1.68	1.95	1.82
Total Kjeldahl Nitrogen	mg/L	-	-	0.160	0.186	0.060	0.070	-	-	-	-	-	-	-	-	-	-			-	-
Chlorophyll-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			-	-
Pheophytin-a	mg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			-	-

Table 2.5 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-060 (CV078)

Parameters	Units	2025 LOR	CCME Guideline	Date																	
				2022				2023						2024				2025			
				20-Jun-22	20-Jun-22	29-Aug-22	29-Aug-22	25-Jun-23	25-Jun-23	16-Jul-23	16-Jul-23	21-Aug-23	21-Aug-23	23-Jul-24	23-Jul-24	18-Aug-24	18-Aug-24	30-Jun-25	30-Jun-25	19-Aug-25	19-Aug-25
				DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
Total Metals and Non-Metals																					
Aluminum	mg/L	0.0030	Variable [f]	0.1210	0.0688	<0.0050	<0.0050	0.0617	0.0336	0.0055	0.0061	0.0047	0.0045	0.0202	0.0197	0.0037	< 0.0030	0.0087	0.0037	0.0066	< 0.0030
Antimony	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Arsenic	mg/L	0.00010	0.005	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Barium	mg/L	0.00010	-	0.00174	0.00118	0.00418	0.00398	0.00128	0.00085	0.00224	0.00220	0.00353	0.00338	0.00128	0.00133	0.00404	0.00382	0.00276	0.00268	0.00414	0.00404
Beryllium	mg/L	0.000020	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
Bismuth	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Boron	mg/L	0.010	1.5	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Cadmium	mg/L	0.0000050	Variable [c]	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Calcium	mg/L	0.050	-	12.3	11.4	46.3	47.2	9.40	9.06	23.1	22.8	38.1	37.9	12.4	12.1	43.2	43.0	28.4	28.3	47.9	46.8
Cesium	mg/L	0.000010	-	0.000024	0.000011	<0.000010	<0.000010	0.000012	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	0.00065	0.00073	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Cobalt	mg/L	0.00010	Variable [c]	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00058	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Iron	mg/L	0.010	0.3	0.119	0.065	<0.010	<0.010	0.062	0.036	<0.010	<0.010	<0.010	<0.010	0.021	0.022	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Lead	mg/L	0.000050	0.001 - 0.007 [c]	0.000124	0.000061	<0.000050	<0.000050	0.000078	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Lithium	mg/L	0.0010	-	<0.0010	<0.0010	0.0014	0.0015	<0.0010	<0.0010	<0.0010	<0.0010	0.0011	0.0010	< 0.0010	< 0.0010	0.0013	0.0013	< 0.0010	< 0.0010	0.0017	0.0016
Magnesium	mg/L	0.0050	-	2.27	2.18	14.40	14.60	1.69	1.65	6.50	6.39	11.6	11.9	2.91	2.97	12.6	12.5	7.20	7.30	13.7	13.6
Manganese	mg/L	0.00010	Variable [c]	0.00525	0.00462	<0.00050	<0.00050	0.00308	0.00303	0.00018	0.00021	0.00025	0.00020	0.00175	0.00167	0.00016	< 0.00010	0.00025	0.00016	0.00017	< 0.00010
Mercury	mg/L	0.0000050	0.000026	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Molybdenum	mg/L	0.000050	0.073	<0.000050	<0.000050	0.000112	0.000104	<0.000050	<0.000050	<0.000050	<0.000050	0.000056	0.000063	< 0.000050	< 0.000050	0.000101	0.000098	0.000056	< 0.000050	0.000106	0.000107
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	0.00054	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Phosphorus	mg/L	0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Potassium	mg/L	0.050	-	0.315	0.280	0.372	0.370	0.214	0.203	0.240	0.240	0.308	0.308	0.228	0.238	0.373	0.339	0.304	0.296	0.385	0.366
Rubidium	mg/L	0.00020	-	0.00062	0.00041	0.00034	0.00026	0.00037	0.00031	0.00023	<0.00020	0.00029	0.00027	0.00023	0.00023	0.00032	0.00025	0.00033	0.00026	0.00036	0.00034
Selenium	mg/L	0.000050	0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Silicon	mg/L	0.10	-	0.39	0.29	0.79	0.82	0.26	0.20	0.55	0.55	1.06	1.07	0.27	0.28	0.80	0.80	0.58	0.56	0.73	0.73
Silver	mg/L	0.000010	0.25	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Sodium	mg/L	0.050	-	0.304	0.298	1.08	1.09	0.199	0.196	0.365	0.364	0.856	0.861	0.207	0.233	0.809	0.794	0.406	0.482	0.817	0.796
Strontium	mg/L	0.00020	0.25	0.0099	0.0090	0.0387	0.0370	0.00645	0.00608	0.0150	0.0152	0.0292	0.0292	0.00822	0.00850	0.0343	0.0337	0.0198	0.0196	0.0346	0.0336
Sulfur	mg/L	0.50	-	<0.50	<0.50	2.23	2.08	<0.50	<0.50	<0.50	<0.50	1.16	1.04	< 0.50	< 0.50	1.10	1.01	< 0.50	< 0.50	1.26	1.17
Tellurium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.0002	< 0.0002	< 0.0002
Thallium	mg/L	0.000010	0.0008	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.00001	< 0.00001	< 0.00001
Thorium	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.0001	< 0.0001	< 0.0001
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.0001	< 0.0001	< 0.0001
Titanium	mg/L	0.00030	-	0.00417	0.00186	<0.00030	<0.00030	0.00248	0.00121	<0.00030	<0.00030	<0.00030	<0.00030	0.00079	0.00079	< 0.00030	< 0.00030	< 0.00030	< 0.0003	< 0.0003	< 0.0003
Tungstun	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.0001	< 0.0001	< 0.0001
Uranium	mg/L	0.000010	0.015	0.000099	0.000044	0.000561	0.000552	0.000069	0.000031	0.000166	0.000163	0.000422	0.000421	0.000040	0.000041	0.000492	0.000461	0.000196	0.000183	0.000531	0.000511
Vanadium	mg/L	0.00050	0.12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Zinc	mg/L	0.0030	0.03	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030
Zirconium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020

Table 2.5 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-060 (CV078)

Parameters	Units	2025 LOR	CCME Guideline	Date																	
				2022				2023						2024				2025			
				20-Jun-22	20-Jun-22	29-Aug-22	29-Aug-22	25-Jun-23	25-Jun-23	16-Jul-23	16-Jul-23	21-Aug-23	21-Aug-23	23-Jul-24	23-Jul-24	18-Aug-24	18-Aug-24	30-Jun-25	30-Jun-25	19-Aug-25	19-Aug-25
				DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
Dissolved Metals and Non-Metals																					
Aluminum	mg/L	0.0010	-	0.0084	0.0087	<0.0050	<0.0050	0.0090	0.0038	0.0019	0.0016	0.0018	0.0012	0.0033	0.0047	0.0026	< 0.0010	0.0021	0.0016	0.0014	0.0010
Arsenic	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Barium	mg/L	0.00010	-	0.00116	0.00105	0.0041	0.0041	0.00102	0.00070	0.00236	0.00225	0.00351	0.00349	0.00112	0.00111	0.00381	0.00355	0.00271	0.00258	0.00420	0.00424
Boron	mg/L	0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Cadmium	mg/L	0.0000050	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Calcium	mg/L	0.050	-	11.50000	10.90000	47.30000	47.10000	9.02	8.63	23.2	23.0	37.8	37.5	11.8	12.1	42.6	42.1	28.9	28.7	46.2	46.2
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Cobalt	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Copper	mg/L	0.00020	-	<0.00020	<0.00020	0.00	0.000240	<0.00020	<0.00020	0.00024	0.00020	0.00030	0.00027	< 0.00020	< 0.00020	0.00031	0.00027	0.00026	0.00024	0.00022	0.00021
Iron	mg/L	0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Lead	mg/L	0.000050	Variable [e]	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Magnesium	mg/L	0.0050	-	1.790000	1.760000	14.600000	14.600000	1.52	1.43	6.42	6.35	12.3	11.8	2.94	2.84	12.4	12.9	7.80	7.68	13.6	13.8
Manganese	mg/L	0.00010	-	0.00247	0.00297	<0.00050	<0.00050	0.00176	0.00150	<0.00010	<0.00010	<0.00010	<0.00010	0.00102	0.00117	< 0.00010	< 0.00010	0.00013	< 0.00010	< 0.00010	< 0.00010
Mercury	mg/L	0.0000050	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Molybdenum	mg/L	0.000050	-	<0.000050	<0.000050	0.000101	0.000108	<0.000050	<0.000050	<0.000050	<0.000050	0.000061	0.000057	< 0.000050	< 0.000050	0.000090	0.000091	0.000055	< 0.00005	0.000100	0.000099
Nickel	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Phosphorus	mg/L	0.050	-	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Potassium	mg/L	0.050	-	0.264	0.250	0.37900	0.37700	0.209	0.180	0.279	0.276	0.304	0.295	0.220	0.221	0.345	0.323	0.313	0.303	0.372	0.370
Selenium	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Silver	mg/L	0.000010	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Sodium	mg/L	0.050	-	0.314	0.305	1.08	1.0700	0.225	0.184	0.398	0.388	0.856	0.830	0.202	0.206	0.781	0.785	0.428	0.421	0.829	0.840
Strontium	mg/L	0.00020	0.25	0.009800	0.008900	0.03760	0.03920	0.00638	0.00586	0.0162	0.0164	0.0295	0.0292	0.00802	0.00818	0.0354	0.0345	0.0203	0.0198	0.0344	0.0342
Thallium	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Uranium	mg/L	0.000010	-	0.000058	0.000032	0.000551	0.000526	0.000069	0.000026	0.000164	0.000158	0.000405	0.000392	0.000036	0.000036	0.000463	0.000442	0.000196	0.000183	0.000480	0.000468
Vanadium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Zinc	mg/L	0.0010	Variable [e]	0.0031	<0.0010	0.0020	<0.0010	<0.0010	<0.0010	0.0016	<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	0.0011	< 0.0010	0.0012	< 0.0010	< 0.0010	< 0.0010
Miscellaneous (Water)																					
6PPD-Quinone	ug/L	-	-	-	-	<0.0020	<0.0020	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.6 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-070 (BG50)

Parameters	Units	2025 LOR	CCME Guideline	Date									
				2005			2006			2015			
				07-Jun-05	06-Aug-05	09-Sep-05	13-Jun-06	02-Aug-06	08-Sep-06	03-Jul-15	03-Jul-15	11-Aug-15	11-Aug-15
										US	DS	US	DS
In Situ Parameters													
Temperature	ºC	-	-	0.26	9.75	6.05	-0.05	13.74	6.53	-	-	11.4	11.3
Specific Conductance	µS/cm	-	-	0.067	0.139	0.145	0.112	0.137	0.152	0.130	0.084	0.183	0.180
Dissolved Oxygen	mg/L	-	< 9.5	13.06	10.71	11.89	13.58	10.32	-	-	-	-	-
Dissolved Oxygen	%	-	-	-	-	-	-	-	-	-	-	101.5	101.9
pH	pH units	-	6.5 - 9.0	7.58	8.03	7.70	8.02	8.1	8.16	8.20	8.17	8.42	8.42
Wetted Width	m	-	-	-	-	-	52	42	38	-	-	6	6
Average Depth	m	-	-	-	-	-	-	0.3	0.3	-	-	0.2	0.2
	m^3/s	-	-	-	-	-	-	4.09	-	-	-	-	-
Physical Parameters													
pH	pH units	0.10	6.5 - 9.0	-	-	-	7.7	7.61	7.64	7.98	7.99	8.20	8.17
Conductivity	µS/cm	1.0	-	72	149	143	124	140	171	-	-	-	-
Turbidity	NTU	0.10	-	0.33	0.25	0.16	0.5	0.3	-	0.29	0.28	0.2	0.2
Hardness	mg/L as $CaCO_3$	0.50	-	32.4	79.5	82.0	61	75	80	63	62	80	81
Total Suspended Solids	mg/L	1.0	Variable [g]	-	-	-	-	-	-	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	17 - 18	-	54	74	86	81	91	111	70	73	86 *	84 *
Dissolved Anions													
Alkalinity	mg/L as $CaCO_3$	2.0	-	33	74	71	62	74	87	63	63	82	80
Bromide	mg/L	-	-	<0.3	<0.3	<0.3	<0.05	<0.05	<0.05	-	-	-	-
Chloride	mg/L	0.50	120	0.9	0.8	0.9	<1	<1	2	1.29	1.30	2.06	2.20
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-
Sulfate	mg/L	-	-	0.7	0.5	0.6	2	<1	3	0.82	1.03	1.55	2.28
Nutrients													
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	0.20	0.10	<0.10	0.04	0.11	<0.02	<0.15	<0.15	0.28	0.22
Nitrite	mg/L N	0.010	0.06	<0.06	<0.06	<0.06	<0.005	<0.005	0.013	-	-	-	-
Nitrate	mg/L N	0.020	3	0.06	<0.05	<0.05	<0.10	<0.10	<0.10	<0.020	0.035	<0.020	0.052
Nitrate + Nitrite	mg/L N	-	-	0.06	<0.06	<0.06	<0.10	<0.10	<0.10	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	-	-	-	-	-	-	-	-	-	-
Total Phosphorus	mg/L	0.0020	0.01	<0.02	<0.02	<0.10	<0.01	<0.01	<0.01	0.0043	0.0058	0.0040	0.0038
Dissolved Phosphorus	mg/L	-	-	<0.02	<0.02	<0.10	-	-	-	-	-	-	-
Organic Compounds													
Phenols	mg/L	-	0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	-	-	-	-	-	-	2.1	2.1	2.5	2.6
Total Organic Carbon	mg/L	0.50	-	-	-	-	-	-	-	2.1	1.9	2.7	2.6
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	-	-	<0.15	<0.15	0.28	0.22
Chlorophyll-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m_3	-	-							-	-	-	-

Table 2.6 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-070 (BG50)

Parameters	Units	2025 LOR	CCME Guideline	Date									
				2005			2006			2015			
				07-Jun-05	06-Aug-05	09-Sep-05	13-Jun-06	02-Aug-06	08-Sep-06	03-Jul-15 US	03-Jul-15 DS	11-Aug-15 US	11-Aug-15 DS
Total Metals and Non-Metals													
Aluminum	mg/L	0.0030	Variable [f]	0.008	<0.004	<0.004	<0.005	<0.005	0.006	<0.010	<0.010	<0.010	<0.010
Antimony	mg/L	0.00010	-	<0.0004	<0.0004	<0.0004	-	-	-	-	-		
Arsenic	mg/L	0.00010	0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.00010	<0.00010
Barium	mg/L	0.00010	-	0.001	0.004	0.004	<0.01	<0.01	<0.01	-	-	-	-
Beryllium	mg/L	0.000020	-	<0.005	<0.005	<0.005	-	-	-	-	-	-	-
Bismuth	mg/L	0.000050	-	<0.0003	<0.0003	<0.0003	-	-	-	-	-	-	-
Boron	mg/L	0.010	1.5	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-
Cadmium	mg/L	0.0000050	Variable [c]	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.000090	<0.000090	<0.000010	<0.000010
Calcium	mg/L	0.050	-	8.86	18.3	18.5	14	17	19	14.1	13.9	20.2	19.2
Cesium	mg/L	0.000010	-	-	-	-	-	-	-	-	-	-	-
Chromium	mg/L	0.00050	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Cobalt	mg/L	0.00010	Variable [c]	<0.0003	<0.0003	<0.0003	<0.0002	<0.0002	<0.0002	-	-	-	-
Copper	mg/L	0.00050	0.002 - 0.004 [c]	<0.0008	0.0009	<0.0008	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010
Iron	mg/L	0.010	0.3	<0.02	<0.02	<0.02	<0.03	<0.03	<0.03	<0.050	<0.050	<0.050	<0.050
Lead	mg/L	0.000050	0.001 - 0.007 [c]	<0.0002	<0.0002	<0.0002	<0.001	<0.001	<0.001	<0.00050	<0.00050	<0.00010	<0.00010
Lithium	mg/L	0.0010	-	-	-	-	-	-	-	-	-	-	-
Magnesium	mg/L	0.0050	-	2.49	8.23	8.71	7	8	8	6.28	6.36	9.52	9.21
Manganese	mg/L	0.00010	Variable [c]	0.0071	0.0010	0.0009	<0.01	<0.01	<0.01	<0.0010	<0.0010	<0.00050	0.00118
Mercury	mg/L	0.0000050	0.000026	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum	mg/L	0.000050	0.073	<0.0003	<0.0003	<0.0003	<0.005	<0.005	<0.005	<0.00050	<0.00050	<0.00050	<0.00050
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	0.49	0.47	0.50	0.62	0.45	0.51	<1.0	<1.0	0.669	0.665
Rubidium	mg/L	0.00020	-	-	-	-	-	-	-	-	-	-	-
Selenium	mg/L	0.000050	0.001	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.00040	<0.00040	<0.000050	<0.000050
Silicon	mg/L	0.10	-	-	-	-	-	-	-	-	-	-	-
Silver	mg/L	0.000010	0.25	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-
Sodium	mg/L	0.050	-	0.30	0.52	0.54	0.5	0.53	0.94	0.89	0.91	1.57	1.56
Sulfur	mg/L	0.00020	0.25	-	-	-	-	-	-	-	-	-	-
Tellurium	mg/L	0.50	-	-	-	-	-	-	-	-	-	-	-
Strontium	mg/L	0.00020	-	0.0057	0.0094	0.0098	0.009	0.01	0.014	-	-	-	-
Thallium	mg/L	0.000010	0.0008	<0.0002	<0.0002	<0.0002	-	-	-	<0.00030	<0.00030	<0.000010	<0.000010
Thorium	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-
Tin	mg/L	0.00010	-	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	-	-	-	-
Titanium	mg/L	0.00030	-	<0.003	<0.003	<0.003	-	-	-	-	-	-	-
Tungsten	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-
Uranium	mg/L	0.000010	0.015	-	-	-	-	-	-	<0.0010	<0.0010	0.000460	0.000435
Vanadium	mg/L	0.00050	0.12	<0.0009	<0.0009	<0.0009	<0.001	<0.001	<0.001	-	-	-	-
Zinc	mg/L	0.0030	0.03	0.0010	<0.001	<0.001	<0.01	<0.01	<0.01	<0.0030	<0.0030	<0.0030	0.00380
Zirconium	mg/L	0.00020	-	-	-	-	-	-	-	-	-	-	-

Table 2.6 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-070 (BG50)

Parameters	Units	2025 LOR	CCME Guideline	Date									
				2005			2006			2015			
				07-Jun-05	06-Aug-05	09-Sep-05	13-Jun-06	02-Aug-06	08-Sep-06	03-Jul-15	03-Jul-15	11-Aug-15	11-Aug-15
										US	DS	US	DS
Dissolved Metals and Non-Metals													
Aluminum	mg/L	0.0010	-	<0.004	<0.004	<0.004	<0.005	<0.005	<0.005	0.0056	<0.0050	<0.0050	<0.0050
Arsenic	mg/L	0.00010	-	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.00010	<0.00010	<0.00010	<0.00010
Barium	mg/L	0.00010	-	0.001	0.004	0.004	<0.01	<0.01	<0.01	-	-	-	-
Boron	mg/L	0.010	-	<0.05	0.02	<0.01	<0.01	<0.01	<0.01	-	-	-	-
Cadmium	mg/L	0.0000050	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.000011	<0.000010	<0.000010	<0.000010
Calcium	mg/L	0.050	-	9.62	18.3	17.2	13	17	19	14.9	13.9	17.9	18.1
Chromium	mg/L	0.00050	-	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Cobalt	mg/L	0.00010	-	<0.0003	<0.0003	<0.0003	<0.0002	<0.0002	<0.0002	-	-	-	-
Copper	mg/L	0.00020	-	<0.0008	<0.0008	<0.0008	<0.001	<0.001	<0.001	0.001	0.00041	0.00072	0.00045
Iron	mg/L	0.010	-	<0.02	0.02	<0.02	<0.03	<0.03	<0.03	0.052	<0.010	0.017	<0.010
Lead	mg/L	0.000050	Variable [e]	<0.0002	<0.0002	<0.0002	<0.001	<0.001	<0.001	0.000085	<0.000050	<0.000050	<0.000050
Magnesium	mg/L	0.0050	-	2.67	8.24	7.80	7	8	8	6.24	6.64	8.57	8.60
Manganese	mg/L	0.00010	-	0.0068	<0.0007	<0.0007	<0.01	<0.01	<0.01	0.00271	<0.00050	0.00105	<0.00050
Mercury	mg/L	0.0000050	-	-	-	-	-	-	-	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum	mg/L	0.000050	-	<0.0003	<0.0003	<0.0003	<0.005	<0.005	<0.005	0.00008	0.000055	0.000067	0.000072
Nickel	mg/L	0.00050	-	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	0.52	0.48	0.49	0.61	0.46	0.49	0.589	0.58	0.672	0.688
Selenium	mg/L	0.000050	-	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.000050	<0.000050	<0.000050	<0.000050
Silver	mg/L	0.000010	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-		
Sodium	mg/L	0.050	-	0.34	0.52	0.51	0.49	0.52	0.9	0.97	0.91	1.42	1.44
Strontium	mg/L	0.00020	0.25	0.0061	0.0100	0.0092	0.008	0.01	0.014	-	-		
Thallium	mg/L	0.000010	-	<0.0002	<0.0002	<0.0002	-	-	-	<0.000010	<0.000010	<0.000010	<0.000010
Tin	mg/L	0.00010	-	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	-	-		
Uranium	mg/L	0.000010	-	-	-	-	-	-	-	0.000244	0.000314	0.000398	0.000411
Vanadium	mg/L	0.00050	-	<0.0009	0.0027	0.0022	<0.001	<0.001	<0.001	-	-		
Zinc	mg/L	0.0010	Variable [e]	0.003	0.002	0.009	<0.01	<0.01	<0.01	0.00750	0.0013	<0.0010	0.0039
Miscellaneous (Water)													
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.6 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-070 (BG50)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2016				2017		2018				2019			
				30-Jun-16	30-Jun-16	25-Aug-16	25-Aug-16	29-Jun-17	29-Jun-17	03-Jul-18	03-Jul-18	02-Sep-18	02-Sep-18	22-Jun-19	22-Jun-19	09-Aug-19	09-Aug-19
				DS	US	DS	US	US	DS	US	DS	US	DS	US	DS	US	DS
In Situ Parameters																	
Temperature	ºC	-	-	10.4	7.2	11.5	11.3	5.9	8.5	6.3	6.5	7.9	7.9	3.1	3.1	15.6	15.6
Specific Conductance	µS/cm	-	-	6.109	6.213	0.175	0.175	0.126	0.171	0.104	0.1041	0.1394	0.1418	0.1177	0.1177	0.1707	0.1736
Dissolved Oxygen	mg/L	-	< 9.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Oxygen	%	-	-	98.5	99.4	101.4	100.5	102.4	111.7	96.1	96.6	100.4	101.2	99.0	99.1	102.5	102.7
pH	pH units	-	6.5 - 9.0	6.21	7.47	8.22	8.15	7.78	7.76	8.17	8.06	8.37	8.40	8.16	8.12	8.31	8.36
Wetted Width	m	-	-	-	-	-	-	5	10.6	-	7.9	-	-	-	-	-	-
Average Depth	m	-	-	-	-	-	-	2	0.19	-	0.09	-	-	-	-	-	-
	m^3/s	-	-	-	-	-	-	3.8	1.06742	-	0.244	-	-	-	-	-	-
Physical Parameters																	
pH	pH units	0.10	6.5 - 9.0	7.86	7.94	8.32	8.28	7.94	7.92	7.97	7.99	8.34	8.39	8.09	8.11	8.14	7.78
Conductivity	µS/cm	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity	NTU	0.10	-	0.6	0.46	0.28	0.26	0.44	0.72	0.63	0.6	0.24	0.23	0.23	0.25	0.30	0.37
Hardness	mg/L as $CaCO_3$	0.50	-	48	48	85	93	55	55	52	53	81	85	74	74.2	84.8	87.4
Total Suspended Solids	mg/L	1.0	Variable [g]	<2.0	2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	17 - 18	-	60	65	83	84	66	66	68	55	90	95	77	80	104	112
Dissolved Anions																	
Alkalinity	mg/L as $CaCO_3$	2.0	-	47	50	84	89	51	50	43	47	83	85	73	74	89	83
Bromide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	1.26	1.26	1.89	1.88	1.29	1.3	1.12	1.16	1.55	1.76	1.46	1.45	1.62	2.20
Fluoride	mg/L	-	-	<0.020	<0.020	0.024	0.025	<0.020	<0.020	<0.020	<0.020	0.03	0.029	-	-	-	-
Sulfate	mg/L	-	-	0.65	0.62	1.25	1.21	0.64	0.61	0.58	0.6	0.84	0.91	-	-	-	-
Nutrients																	
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	<0.15	<0.15	0.2	<0.15	-	-	-	-	-	-	-	-	-	-
Nitrite	mg/L N	0.010	0.06	-	-	-	-	-	-	-	-	-	-	<0.010	<0.010	<0.010	<0.010
Nitrate	mg/L N	0.020	3	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.154	2.62
Nitrate + Nitrite	mg/L N	-	-					-	-	-	-	-	-	<0.022	<0.022	0.154	2.62
Ammonia, total as N	mg/L	0.0050	Variable [a]	<0.020	0.054	0.061	<0.020	<0.020	<0.020	<0.020	<0.020	-	-	<0.010	<0.010	<0.010	<0.010
Total Phosphorus	mg/L	0.0020	0.01	0.0044	0.0032	0.0231	0.0088	0.0061	0.0066	0.004	0.004	<0.0030	<0.0030	0.0119	0.0033	0.0049	<0.0030
Dissolved Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic Compounds																	
Phenols	mg/L	-	0.004	-	-	-		-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	2.1	1.9	2.1	2.3	2.24	2.14	1.9	1.87	2.48	2.41	2.68	2.79	2.33	2.44
Total Organic Carbon	mg/L	0.50	-	2.3	2.2	2.5	2.2	2.48	2.79	2.16	2.08	3.19	3.00	3.39	3.27	2.79	2.64
Total Kjeldahl Nitrogen	mg/L	-	-	<0.15	<0.15	0.2	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	-	-	-	-
Chlorophyll-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.6 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-070 (BG50)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2016				2017		2018				2019			
				30-Jun-16	30-Jun-16	25-Aug-16	25-Aug-16	29-Jun-17	29-Jun-17	03-Jul-18	03-Jul-18	02-Sep-18	02-Sep-18	22-Jun-19	22-Jun-19	09-Aug-19	09-Aug-19
				DS	US	DS	US	US	DS	US	DS	US	DS	US	DS	US	DS
Total Metals and Non-Metals																	
Aluminum	mg/L	0.0030	Variable [f]	0.018	0.014	<0.010	<0.010	0.0282	0.0269	0.0063	0.0085	<0.0050	0.0058	0.0183	0.0086	0.0101	0.0503
Antimony	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	mg/L	0.00010	0.005	<0.00010	<0.00010	0.00011	0.00012	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	0.00013
Barium	mg/L	0.00010	-	0.00347	0.0034	0.00545	0.00569	0.00391	0.00394	0.00328	0.00336	0.00532	0.00527	0.00484	0.00471	0.00594	0.0069
Beryllium	mg/L	0.000020	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron	mg/L	0.010	1.5	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	mg/L	0.0000050	Variable [c]	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000123
Calcium	mg/L	0.050	-	10.5	10.6	19	21.2	12.3	12.5	12.1	12.2	18.9	20.5	16.3	16.5	19.1	20.6
Cesium	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000012
Chromium	mg/L	0.00050	-	0.0008	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	Variable [c]	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0012
Iron	mg/L	0.010	0.3	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.016	0.018	0.021	0.019	0.027	0.016	0.035	0.081
Lead	mg/L	0.000050	0.001 - 0.007 [c]	<0.00010	<0.00010	<0.00010	<0.00010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000117
Lithium	mg/L	0.0010	-	<0.0010	<0.0010	0.0012	0.0013	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0012	<0.0010	<0.0010
Magnesium	mg/L	0.0050	-	5.19	5.14	9.19	9.72	5.89	5.87	5.37	5.41	8.21	8.16	7.88	8.26	8.41	8.47
Manganese	mg/L	0.00010	Variable [c]	0.00154	0.00144	0.00101	0.00106	0.00222	0.00208	0.00089	0.00093	0.00073	0.00078	0.00131	0.00091	0.00125	0.00264
Mercury	mg/L	0.0000050	0.000026	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.0000050	<0.0000050
Molybdenum	mg/L	0.000050	0.073	0.000063	0.000054	0.000067	0.000065	0.000054	0.00006	<0.000050	0.000071	0.000066	0.000076	0.000056	0.000064	0.000097	0.000114
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	0.00071	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium	mg/L	0.050	-	0.482	0.475	0.639	0.68	0.557	0.563	0.443	0.445	0.583	0.578	0.581	0.557	0.609	0.719
Rubidium	mg/L	0.00020	-	0.00053	0.00051	0.00075	0.00073	0.00062	0.00058	0.00049	0.00045	0.00065	0.00064	0.00065	0.00064	0.00074	0.00108
Selenium	mg/L	0.000050	0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon	mg/L	0.10	-	0.4	0.393	0.545	0.567	0.48	0.47	0.37	0.37	0.4	0.4	0.50	0.50	0.56	0.61
Silver	mg/L	0.000010	0.25	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	0.85	0.84	1.41	1.52	0.96	0.95	0.745	0.749	1.08	1.1	0.958	0.939	1.08	1.20
Sulfur	mg/L	0.00020	0.25	0.0073	0.007	0.0128	0.0134	0.0077	0.0083	0.0081	0.0083	0.0125	0.013	0.0103	0.0102	0.0136	0.0147
Tellurium	mg/L	0.50	-	<0.50	<0.50	0.59	0.66	0.53	<0.50	<0.50	<0.50	0.57	0.55	<0.50	<0.50	<0.50	<0.50
Strontium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium	mg/L	0.000010	0.0008	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium	mg/L	0.00030	-	0.00076	0.00049	0.00038	<0.00030	0.00106	<0.0015	<0.00030	<0.00030	<0.00030	<0.00030	0.00081	0.00033	0.00049	0.00266
Tungsten	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	0.015	0.000216	0.000211	0.000419	0.000445	0.000233	0.000233	0.000223	0.00023	0.000415	0.000433	0.000331	0.000322	0.000442	0.000487
Vanadium	mg/L	0.00050	0.12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0030	0.03	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.0088
Zirconium	mg/L	0.00020	-	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020

Table 2.6 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-070 (BG50)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2016				2017		2018				2019			
				30-Jun-16	30-Jun-16	25-Aug-16	25-Aug-16	29-Jun-17	29-Jun-17	03-Jul-18	03-Jul-18	02-Sep-18	02-Sep-18	22-Jun-19	22-Jun-19	09-Aug-19	09-Aug-19
				DS	US	DS	US	US	DS	US	DS	US	DS	US	DS	US	DS
Dissolved Metals and Non-Metals																	
Aluminum	mg/L	0.0010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron	mg/L	0.010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/L	0.0000050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	mg/L	0.00050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper	mg/L	0.00020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron	mg/L	0.010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	mg/L	0.000050	Variable [e]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium	mg/L	0.0050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury	mg/L	0.0000050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	mg/L	0.000050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel	mg/L	0.00050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium	mg/L	0.000050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver	mg/L	0.000010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium	mg/L	0.00020	0.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	mg/L	0.000010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	mg/L	0.000010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	mg/L	0.00050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	mg/L	0.0010	Variable [e]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Miscellaneous (Water)																	
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.6 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-070 (BG50)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2020						2021				2022			
				22-Jun-20	22-Jun-20	20-Jul-20	20-Jul-20	14-Aug-20	14-Aug-20	14-Jun-21	14-Jun-21	17-Aug-21	17-Aug-21	19-Jun-22	19-Jun-22	29-Aug-22	29-Aug-22
				US	DS	US	DS	US	DS	DS	US	DS	US	DS	US	DS	US
In Situ Parameters																	
Temperature	ºC	-	-	2.3	2.4	14.2	14.3	8.5	9	3.5	3.3	6.5	6.6	0.90	0.2	9.0	8.6
Specific Conductance	µS/cm	-	-	0.1194	0.1192	0.1618	0.1629	0.1988	0.2003	129.9	130	176	175.3	132.8	128.7	200	180
Dissolved Oxygen	mg/L	-	< 9.5	13.58	13.49	10.16	10.19	99.9	101.3	13.39	13.17	12.17	12.20	13.58	13.62	12.62	12.32
Dissolved Oxygen	%	-	-	99	98.4	98.8	99.5	11.73	11.72	101.6	99.6	100.8	101.4	95.2	93.5	110.6	107.2
pH	pH units	-	6.5 - 9.0	7.91	7.89	8.2	8.24	8.37	8.38	7.88	7.75	8.36	8.34	7.87	7.83	8.41	8.32
Wetted Width	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average Depth	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	m^3/s	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physical Parameters																	
pH	pH units	0.10	6.5 - 9.0	7.81	7.8	8.24	8.23	8.39	8.4	8.01	7.90	7.97	8.00	7.93	7.83	8.19	8.23
Conductivity	µS/cm	1.0	-	123	123	172	170	203	206	135	136	185	183	135	129	191	183
Turbidity	NTU	0.10	-	0.52	0.59	0.15	0.17	0.22	0.21	1.18	1.12	0.27	0.23	10.10	1.28	<1.0	<1.0
Hardness	mg/L as $CaCO_3$	0.50	-	62.3	62.5	77.8	83.7	102	105	66.2	65.3	92.4	91.4	66.4	65.5	102	96.5
Total Suspended Solids	mg/L	1.0	Variable [g]	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	1.3	1.4	<2.0	1.0	33.5	6.5	<3.0	<3.0
Total Dissolved Solids	mg/L	17 - 18	-	92	93	94	95	131	128	84	77	96	97	68	67	98	87
Dissolved Anions																	
Alkalinity	mg/L as $CaCO_3$	2.0	-	58	58	77	83	99	100	82.4	76.7	91.4	92.1	64.6	62.7	104.0	87.8
Bromide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	3.12	2.67	3.46	3.52	4.87	5.04	3.23	3.27	3.69	3.41	2.73	2.64	4.11	3.26
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nutrients																	
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite	mg/L N	0.010	0.06	<0.010	<0.010	<0.010	<0.010	<0.0010	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate	mg/L N	0.020	3	0.031	0.03	<0.020	<0.020	<0.0050	0.01	0.026	0.024	<0.020	<0.020	0.022	0.020	0.021	<0.020
Nitrate + Nitrite	mg/L N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	0.012	<0.010	<0.010	<0.010
Total Phosphorus	mg/L	0.0020	0.01	0.0056	0.0071	<0.0030	0.0033	0.0036	0.0038	0.0044	0.0081	<0.0030	<0.0030	0.0060	0.0044	<0.0030	<0.0030
Dissolved Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.050	<0.050	<0.050	<0.050
Organic Compounds																	
Phenols	mg/L	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	3.47	3.42	2.99	3.36	2.53	2.54	3.67	4.09	3.58	3.52	2.81	2.71	2.38	2.80
Total Organic Carbon	mg/L	0.50	-	3.69	3.77	3.34	3.54	2.44	2.38	4.06	3.82	5.83	5.91	2.74	2.84	2.54	2.51
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	-	-	0.190	0.250	0.160	0.150	0.211	0.192	0.092	0.086
Chlorophyll-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.6 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-070 (BG50)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2020						2021				2022			
				22-Jun-20	22-Jun-20	20-Jul-20	20-Jul-20	14-Aug-20	14-Aug-20	14-Jun-21	14-Jun-21	17-Aug-21	17-Aug-21	19-Jun-22	19-Jun-22	29-Aug-22	29-Aug-22
				US	DS	US	DS	US	DS	DS	US	DS	US	DS	US	DS	US
Total Metals and Non-Metals																	
Aluminum	mg/L	0.0030	Variable [f]	0.0262	0.0441	0.0057	0.0098	0.0033	0.009	0.0191	0.0119	0.0078	<0.0050	0.539	0.0827	0.0186	<0.0050
Antimony	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	mg/L	0.00010	0.005	<0.00010	<0.00010	0.00010	<0.00010	0.00014	0.00012	0.00012	0.00010	<0.00010	<0.00010	0.00017	<0.00010	<0.00010	<0.00010
Barium	mg/L	0.00010	-	0.00469	0.00468	0.00534	0.00542	0.00603	0.00607	0.00533	0.00502	0.00570	0.00569	0.00952	0.00629	0.00587	0.00523
Beryllium	mg/L	0.000020	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron	mg/L	0.010	1.5	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	mg/L	0.0000050	Variable [c]	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	0.050	-	13.5	13.7	19	19.4	24.9	25	14.5	14.7	20.2	20.1	15.3	14.4	21.7	20.2
Cesium	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000119	0.000018	<0.000010	<0.000010
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00010	<0.00010	<0.00050	<0.00050	<0.00050	<0.00050	0.00064	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	Variable [c]	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00022	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	<0.00050	0.00063	<0.00050	0.00055	<0.00050	0.00051	<0.00050	<0.00050	0.00055	0.00055	0.00121	0.00066	<0.00050	<0.00050
Iron	mg/L	0.010	0.3	0.042	0.043	0.020	0.025	0.030	0.029	0.039	0.030	0.018	0.014	0.613	0.104	0.025	0.027
Lead	mg/L	0.000050	0.001 - 0.007 [c]	<0.000050	0.00006	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000588	0.000093	<0.000050	<0.000050
Lithium	mg/L	0.0010	-	<0.0010	<0.0010	<0.0010	0.0011	0.0014	0.0015	<0.0010	<0.0010	<0.0010	<0.0010	0.0026	0.0014	0.0012	<0.0010
Magnesium	mg/L	0.0050	-	6.86	6.65	9.21	8.79	10.9	10.7	7.44	7.22	9.51	9.65	8.17	7.48	10.60	10.30
Manganese	mg/L	0.00010	Variable [c]	0.00327	0.00331	0.00113	0.00132	0.00088	0.00081	0.00331	0.00222	0.00114	0.00106	0.02030	0.00921	0.00063	0.00104
Mercury	mg/L	0.0000050	0.000026	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	mg/L	0.000050	0.073	0.000064	0.000083	0.00006	0.000073	0.000085	0.000075	0.000074	0.000074	0.000082	0.000074	0.000115	0.000078	0.000096	0.000083
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.00050	0.00077	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00076	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium	mg/L	0.050	-	0.6	0.581	0.636	0.611	0.627	0.654	0.819	0.791	0.687	0.687	1.010	0.767	0.714	0.618
Rubidium	mg/L	0.00020	-	0.00061	0.00069	0.00066	0.00073	0.00076	0.00079	0.00091	0.00076	0.00074	0.00069	0.00272	0.00106	0.00096	0.00068
Selenium	mg/L	0.000050	0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon	mg/L	0.10	-	0.57	0.57	0.61	0.59	0.66	0.63	0.63	0.62	0.62	0.62	1.31	0.63	0.46	0.43
Silver	mg/L	0.000010	0.25	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	1.37	1.35	2.06	2.05	2.73	2.66	1.75	1.73	2.27	2.30	1.930	1.800	2.33	2.37
Sulfur	mg/L	0.00020	0.25	0.0088	0.0093	0.0129	0.0122	0.0163	0.0163	0.0102	0.0102	0.0142	0.0141	0.0124	0.0095	0.0165	0.0160
Tellurium	mg/L	0.50	-	0.64	0.6	0.86	0.84	0.93	1.1	0.53	0.60	0.90	0.89	0.78	0.81	0.72	0.68
Strontium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium	mg/L	0.000010	0.0008	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000015	<0.000010	<0.000010	<0.000010
Thorium	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00012	<0.00010	<0.00010	<0.00010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium	mg/L	0.00030	-	0.00076	0.00079	<0.00030	0.0005	<0.00030	<0.00030	<0.00070	0.00033	0.00033	<0.00030	0.02700	0.00377	0.00063	<0.00030
Tungsten	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00019	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	0.015	0.000381	0.000387	0.000452	0.000463	0.000595	0.000608	0.000446	0.000433	0.000538	0.000530	0.000945	0.000407	0.00063	0.00052
Vanadium	mg/L	0.00050	0.12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00064	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0030	0.03	<0.0030	0.108	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.0045	<0.0030	<0.0030	<0.0030
Zirconium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

Table 2.6 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-070 (BG50)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2020						2021				2022			
				22-Jun-20	22-Jun-20	20-Jul-20	20-Jul-20	14-Aug-20	14-Aug-20	14-Jun-21	14-Jun-21	17-Aug-21	17-Aug-21	19-Jun-22	19-Jun-22	29-Aug-22	29-Aug-22
				US	DS	US	DS	US	DS	DS	US	DS	US	DS	US	DS	US
Dissolved Metals and Non-Metals																	
Aluminum	mg/L	0.0010	-	0.0059	0.0074	<0.0050	<0.0050	0.0013	0.0028	<0.0050	<0.0050	<0.0050	<0.0050	0.0125	0.0058	0.0053	<0.0050
Arsenic	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010
Barium	mg/L	0.00010	-	0.00451	0.00471	0.00496	0.00566	0.0061	0.00633	0.00493	0.00489	0.00584	0.00581	0.00605	0.00547	0.00602	0.0053
Boron	mg/L	0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	mg/L	0.0000050	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	0.050	-	13.5	13.7	17.6	18.5	22.7	23.4	14.3	14.2	20.8	20.4	14.50000	14.70000	23.0	21.1
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00010	<0.00010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00020	-	0.00042	0.00047	0.00046	0.00048	0.0005	0.00051	0.00041	0.00040	0.00048	0.00049	0.00050	0.000480	0.00	0.00
Iron	mg/L	0.010	-	0.018	0.02	0.015	0.014	0.019	0.018	0.019	0.020	<0.010	<0.010	<0.010	<0.010	0.01000	0.01600
Lead	mg/L	0.000050	Variable [e]	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Magnesium	mg/L	0.0050	-	6.95	6.88	8.2	9.1	10.9	11.3	7.39	7.23	9.82	9.79	7.330000	7.020000	10.7	10.6
Manganese	mg/L	0.00010	-	0.00217	0.00236	<0.00050	0.00063	0.00032	0.00035	0.00347	0.00346	<0.00050	<0.00050	0.00576	0.00623	<0.00050	<0.00050
Mercury	mg/L	0.0000050	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	mg/L	0.000050	-	0.000057	0.00007	0.000063	0.000081	0.000082	0.000085	0.000074	0.000078	0.000072	0.000072	0.000097	0.000073	0.000091	0.000076
Nickel	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	0.589	0.597	0.552	0.642	0.71	0.748	0.794	0.771	0.722	0.702	0.796	0.733	0.71	0.63
Selenium	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silver	mg/L	0.000010	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	1.45	1.46	1.91	2.06	2.88	3.06	1.73	1.73	2.29	2.32	1.8	1.84	2.33	2.4
Strontium	mg/L	0.00020	0.25	0.0086	0.0086	0.0118	0.0129	0.0148	0.015	0.0099	0.0100	0.0146	0.0143	0.011000	0.010000	0.01590	0.01530
Thallium	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	-	0.000355	0.00035	0.000424	0.00043	0.000542	0.00057	0.000422	0.000407	0.000521	0.000514	0.000745	0.000394	0.000564	0.000466
Vanadium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0010	Variable [e]	<0.0010	0.0017	<0.0010	0.0014	<0.0010	0.0013	<0.0010	<0.0010	<0.0010	<0.0010	0.0018	<0.0010	<0.0010	<0.0010
Miscellaneous (Water)																	
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020

Table 2.6 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-070 (BG50)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2023						2024				2025			
				25-Jun-23	25-Jun-23	17-Jul-23	17-Jul-23	20-Aug-23	20-Aug-23	23-Jun-24	23-Jun-24	18-Aug-24	18-Aug-24	30-Jun-25	30-Jun-25	20-Aug-25	20-Aug-25
				DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
In Situ Parameters																	
Temperature	ºC	-	-	0.9	0.9	7.3	7.3	8.3	8.2	6.2	4.7	8.1	7.9	9.6	9.8	6.3	6.3
Specific Conductance	µS/cm	-	-	94	94	82.7	82.1	147.5	144	90.2	90	149	147	111.2	109.0	175.7	174.4
Dissolved Oxygen	mg/L	-	< 9.5	13.09	13.09	11.37	11.87	11.24	11.28	12.26	12.26	11.04	11.03	11.17	10.84	11.35	11.57
Dissolved Oxygen	%	-	-	94.7	94.7	100.6	100.7	98.9	99.1	99.3	97	93.5	92.9	98.0	95.8	91.8	93.8
pH	pH units	-	6.5 - 9.0	7.78	7.78	7.96	7.92	8.26	8.23	7.72	7.74	8.18	8.14	8.16	8.15	8.30	8.18
Wetted Width	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average Depth	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	m^3/s	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physical Parameters																	
pH	pH units	0.10	6.5 - 9.0	7.69	7.76	7.83	7.78	8.17	8.17	7.68	7.62	8.21	8.14	7.69	7.63	8.09	8.10
Conductivity	µS/cm	1.0	-	97.6	97.7	86.3	85.4	155	158	97.1	94.8	162	160	115	113	197	195
Turbidity	NTU	0.10	-	1.52	1.22	0.72	1.01	1.17	0.57	0.98	0.49	0.26	0.28	0.33	0.33	5.34	0.27
Hardness	mg/L as $CaCO_3$	0.50	-	49.1	48.6	42.1	41.3	76.0	74.5	50.2	47.9	83.3	82.3	61.3	59.1	97.6	97.3
Total Suspended Solids	mg/L	1.0	Variable [g]	3.1	3.2	<1.0	<1.0	1.8	1.2	1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	3.8	< 1.0
Total Dissolved Solids	mg/L	17 - 18	-	44	46	48	53	64	76	54	52	90	78	66	65	97	92
Dissolved Anions																	
Alkalinity	mg/L as $CaCO_3$	2.0	-	81.1	70.4	48.9	48.7	86.6	75.4	47.6	48.1	80.1	79.6	54.4	54.6	87.3	88.5
Bromide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	1.57	1.55	1.47	1.03	2.72	2.23	1.05	1.23	2.13	2.01	1.29	1.25	2.63	2.05
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nutrients																	
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite	mg/L N	0.010	0.06	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Nitrate	mg/L N	0.020	3	0.028	0.026	<0.020	<0.020	<0.020	<0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	0.020	< 0.020
Nitrate + Nitrite	mg/L N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	0.012	0.0195	0.0064	0.0187	0.0074	0.0072	< 0.0050	< 0.0050	0.0139	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Total Phosphorus	mg/L	0.0020	0.01	0.0057	0.0053	0.0033	0.0036	0.0021	0.0027	0.0054	0.0039	0.0030	0.0026	0.0023	0.0030	0.0029	< 0.0020
Dissolved Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic Compounds																	
Phenols	mg/L	-	0.004	-	-	-	-	-	-	-	-	-	-			-	-
Dissolved Organic Carbon	mg/L	0.50	-	2.56	2.65	1.7	1.85	2.34	1.96	2.88	3.82	3.41	3.50	1.91	1.85	2.39	2.22
Total Organic Carbon	mg/L	0.50	-	2.52	2.66	1.98	1.94	2.25	2.19	2.78	2.82	2.48	2.53	2.02	2.00	2.88	2.67
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	-	-	-	-	-	-			-	-
Chlorophyll-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-			-	-
Pheophytin-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-			-	-

Table 2.6 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-070 (BG50)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2023						2024				2025			
				25-Jun-23	25-Jun-23	17-Jul-23	17-Jul-23	20-Aug-23	20-Aug-23	23-Jun-24	23-Jun-24	18-Aug-24	18-Aug-24	30-Jun-25	30-Jun-25	20-Aug-25	20-Aug-25
				DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
Total Metals and Non-Metals																	
Aluminum	mg/L	0.0030	Variable [f]	0.0697	0.0629	0.0114	0.0074	0.0238	0.0058	0.0429	0.0164	0.0187	0.0061	0.0130	0.0099	0.0974	0.0056
Antimony	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Arsenic	mg/L	0.00010	0.005	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	0.00011	< 0.00010
Barium	mg/L	0.00010	-	0.004	0.00384	0.00304	0.00284	0.00476	0.00459	0.00406	0.00368	0.00526	0.00507	0.00408	0.00383	0.00735	0.00596
Beryllium	mg/L	0.000020	-	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
Bismuth	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Boron	mg/L	0.010	1.5	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Cadmium	mg/L	0.0000050	Variable [c]	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Calcium	mg/L	0.050	-	10.5	10.6	9.33	9.12	17.1	16.4	11.2	10.2	18.1	18.1	13.2	13.1	22.3	22.0
Cesium	mg/L	0.000010	-	0.000012	0.000012	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00099	< 0.00050	0.00065	< 0.00050	0.00079	< 0.00050	< 0.00050	< 0.00050
Cobalt	mg/L	0.00010	Variable [c]	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	0.00053	0.00058	<0.00050	<0.00050	<0.00050	<0.00050	0.00083	< 0.00050	0.00064	0.00069	0.00071	< 0.00050	0.00075	0.00065
Iron	mg/L	0.010	0.3	0.117	0.118	0.021	0.019	0.046	0.025	0.057	0.028	0.038	0.019	0.026	0.020	0.130	0.030
Lead	mg/L	0.000050	0.001 - 0.007 [c]	0.000088	0.000074	0.000225	<0.000050	<0.000050	<0.000050	0.000068	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	0.000080	< 0.000050
Lithium	mg/L	0.0010	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	0.0016	0.0012
Magnesium	mg/L	0.0050	-	5.76	5.58	4.44	4.48	8.14	8.32	5.72	5.17	8.89	9.01	6.28	6.28	10.7	10.4
Manganese	mg/L	0.00010	Variable [c]	0.00942	0.00958	0.00113	0.00111	0.00185	0.00136	0.00366	0.00293	0.00112	0.00089	0.00088	0.00085	0.00282	0.00123
Mercury	mg/L	0.0000050	0.000026	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Molybdenum	mg/L	0.000050	0.073	0.000059	0.000061	<0.000050	<0.000050	0.00007	0.000068	0.000070	0.000058	0.000096	0.000076	0.000065	0.000052	0.000102	0.000080
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00078	< 0.00050	< 0.00050	< 0.00050	0.00080	< 0.00050	< 0.00050	< 0.00050
Phosphorus	mg/L	0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Potassium	mg/L	0.050	-	0.535	0.523	0.367	0.365	0.546	0.526	0.579	0.557	0.641	0.635	0.478	0.467	0.806	0.637
Rubidium	mg/L	0.00020	-	0.00081	0.0007	0.00046	0.00038	0.00065	0.00058	0.00072	0.00055	0.00074	0.00066	0.00052	0.00047	0.00095	0.00069
Selenium	mg/L	0.000050	0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Silicon	mg/L	0.10	-	0.5	0.48	0.34	0.33	0.56	0.54	0.50	0.46	0.51	0.51	0.42	0.40	0.81	0.66
Silver	mg/L	0.000010	0.25	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Sodium	mg/L	0.050	-	1.01	0.995	0.677	0.676	1.66	1.64	0.924	0.835	1.40	1.42	0.882	0.857	1.53	1.46
Sulfur	mg/L	0.00020	0.25	0.0065	0.00652	0.00589	0.00569	0.0122	0.0115	0.00746	0.00695	0.0126	0.0122	0.00813	0.00792	0.0150	0.0135
Tellurium	mg/L	0.50	-	<0.50	<0.50	<0.50	<0.50	0.52	<0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.51
Strontium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020
Thallium	mg/L	0.000010	0.0008	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Thorium	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	0.00011	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Titanium	mg/L	0.00030	-	0.00310	0.00308	0.00031	<0.00030	0.00122	<0.00030	0.00191	0.00041	0.00071	< 0.00030	0.00037	< 0.00030	0.00554	< 0.00030
Tungsten	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Uranium	mg/L	0.000010	0.015	0.000292	0.000268	0.000172	0.000160	0.000391	0.000349	0.000251	0.000216	0.000417	0.000392	0.000261	0.000256	0.000539	0.000476
Vanadium	mg/L	0.00050	0.12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Zinc	mg/L	0.0030	0.03	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030
Zirconium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020

Table 2.6 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-070 (BG50)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2023						2024				2025			
				25-Jun-23	25-Jun-23	17-Jul-23	17-Jul-23	20-Aug-23	20-Aug-23	23-Jun-24	23-Jun-24	18-Aug-24	18-Aug-24	30-Jun-25	30-Jun-25	20-Aug-25	20-Aug-25
				DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
Dissolved Metals and Non-Metals																	
Aluminum	mg/L	0.0010	-	0.0050	0.0038	0.0036	0.0026	0.0026	0.0025	0.0058	0.0050	0.0045	0.0468	0.0049	0.0036	0.0091	0.0020
Arsenic	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Barium	mg/L	0.00010	-	0.00357	0.00334	0.00309	0.00299	0.00455	0.00445	0.00357	0.00364	0.00497	0.00476	0.00389	0.00370	0.00651	0.00613
Boron	mg/L	0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Cadmium	mg/L	0.0000050	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Calcium	mg/L	0.050	-	10.4	10.2	9.45	9.23	16.7	16.3	10.9	10.6	18.3	17.8	13.5	13.0	21.6	21.5
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00054	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Cobalt	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Copper	mg/L	0.00020	-	0.00048	0.00032	0.00035	0.00034	0.00044	0.00040	0.00046	0.00034	0.00051	0.00072	0.00045	0.00041	0.00056	0.00046
Iron	mg/L	0.010	-	0.021	0.020	0.011	0.011	0.014	0.013	0.017	0.013	0.013	0.017	0.012	0.011	0.019	0.018
Lead	mg/L	0.000050	Variable [e]	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Magnesium	mg/L	0.0050	-	5.56	5.56	4.46	4.38	8.24	8.13	5.59	5.21	9.13	9.19	6.70	6.46	10.6	10.6
Manganese	mg/L	0.00010	-	0.00673	0.00722	0.00048	0.00046	0.00045	0.00046	0.00200	0.00191	0.00033	0.00076	0.00040	0.00040	0.00054	0.00045
Mercury	mg/L	0.0000050	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Molybdenum	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	0.000068	0.000060	0.000053	0.000050	0.000080	0.000067	0.000063	0.000057	0.000098	0.000074
Nickel	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00052	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Phosphorus	mg/L	0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Potassium	mg/L	0.050	-	0.532	0.518	0.423	0.406	0.545	0.507	0.552	0.526	0.598	0.595	0.489	0.475	0.765	0.625
Selenium	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Silver	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Sodium	mg/L	0.050	-	0.982	0.961	0.710	0.702	1.67	1.62	0.870	0.851	1.40	1.45	0.891	0.869	1.54	1.47
Strontium	mg/L	0.00020	0.25	0.00651	0.00648	0.00642	0.00621	0.0123	0.0117	0.00703	0.00678	0.0122	0.0118	0.00780	0.00736	0.0152	0.0137
Thallium	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Uranium	mg/L	0.000010	-	0.000257	0.000233	0.000164	0.000146	0.000365	0.000346	0.000233	0.000210	0.000372	0.000356	0.000265	0.000259	0.000467	0.000437
Vanadium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Zinc	mg/L	0.0010	Variable [e]	<0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	0.0012	< 0.0010	0.0018	< 0.0010	0.0013	< 0.0010	0.0017	< 0.0010
Miscellaneous (Water)																	
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-			-	-

Table 2.7 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-080 (CV040)

Parameters	Units	2025 LOR	CCME Guideline	Date										
				2005			2006				2015			
				13-Jun-05	06-Aug-05	09-Sep-05	13-Jun-06	13-Jun-06	02-Aug-06	08-Sep-06	03-Jul-15	03-Jul-15	11-Aug-15	11-Aug-15
											US	DS	US	DS
In Situ Parameters														
Temperature	ºC	-	-	0.07	10.80	4.78	-0.1	-0.1	14.96	4.91	-	-	12.8	12.7
Specific Conductance	µS/cm	-	-	0.047	0.243	0.318	0.084	0.084	0.264	0.306	0.130	0.125	0.387	0.390
Dissolved Oxygen	mg/L	-	< 9.5	13.48	10.39	12.74	13.65	13.65	10.46	-	-	-	-	-
Dissolved Oxygen	%	-	-	-	-	-	-	-	-	-	-	-	101.7	102.3
pH	pH units	-	6.5 - 9.0	6.99	8.39	8.05	7.97	7.97	8.37	8.50	8.32	8.16	8.61	8.65
Wetted Width	m	-	-	-	-	-	ice	-	3	4	-	-	7	7
Average Depth	m	-	-	-	-	-	-	-	0.25	0.2	-	-	0.2	0.2
Flow Rate	m^3/s	-	-	-	-	-	-	-	0.28	-	-	-	0	0
Physical Parameters														
pH	pH units	0.10	6.5 - 9.0	-	-	-	7.40	7.47	8.22	8.18	8.18	8.19	8.53	8.50
Conductivity	µS/cm	1.0	-	54	257	303	92	93	273	321	-	-	-	-
Turbidity	NTU	0.10	-	0.37	0.13	<0.10	0.6	0.5	0.2	-	0.44	0.54	0.19	0.15
Hardness	mg/L as $CaCO_3$	0.50	-	25.1	138	178	48	48	153	159	95	94	168	169
Total Suspended Solids	mg/L	1.0 - 1.2	Variable [g]	-	-	-	-	-	-	-	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	17	-	46	126	200	60	61	177	209	77	90	178 *	170 *
Dissolved Anions														
Alkalinity	mg/L as $CaCO_3$	2.0	-	24	130	167	45	45	147	167	112	99	175	177
Bromide	mg/L	-	-	<0.3	<0.3	<0.3	<0.05	<0.05	<0.05	<0.05	-	-	-	-
Chloride	mg/L	0.50	120	0.9	0.7	2.4	<1	<1	1	5	2.48	2.28	8.34	8.66
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfate	mg/L	-	-	0.6	0.8	2.1	2	2	<1	4.00	1.58	1.47	4.81	5.36
Nutrients														
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	0.2	0.5	0.6	0.05	0.09	0.04	<0.02	0.17	<0.15	0.37	0.28
Nitrite	mg/L N	0.010	0.06	<0.06	<0.06	<0.06	<0.005	<0.005	<0.005	0.015	-	-	-	-
Nitrate	mg/L N	0.020	3	<0.05	<0.05	<0.05	<0.10	<0.10	<0.10	<0.10	<0.020	<0.020	<0.020	<0.020
Nitrate + Nitrite	mg/L N	-	-	<0.06	<0.06	<0.06	<0.10	<0.10	<0.10	<0.10	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	-	-	-	-	-	-	-	<0.050	<0.050	<0.050	<0.050
Total Phosphorus	mg/L	0.0020	0.01	0.030	<0.02	<0.10	<0.01	<0.01	<0.01	<0.01	0.0040	0.0032	<0.0030	<0.0030
Dissolved Phosphorus	mg/L	-	-	<0.02	<0.02	<0.10	-	-	-	-	-	-	-	-
Organic Compounds														
Phenols	mg/L	-	0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	-	-	-	-	-	-	-	2.2	2.2	3.4	3.5
Total Organic Carbon	mg/L	0.50	-	-	-	-	-	-	-	-	2.4	2.5	3.6	3.5
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	-	-	-	0.17	<0.15	0.37	0.28
Chlorophyll-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.7 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-080 (CV040)

Parameters	Units	2025 LOR	CCME Guideline	Date											
				2005			2006				2015			
				13-Jun-05	06-Aug-05	09-Sep-05	13-Jun-06	13-Jun-06	02-Aug-06	08-Sep-06	03-Jul-15	03-Jul-15	11-Aug-15	11-Aug-15
											US	DS	US	DS
Total Metals and Non-Metals														
Aluminum	mg/L	0.0030	Variable [f]	0.005	<0.004	<0.004	0.006	0.005	<0.005	<0.005	0.019	0.025	0.011	<0.010
Antimony	mg/L	0.00010	-	<0.0004	<0.0004	<0.0004	-	-	-	-	-	-	-	-
Arsenic	mg/L	0.00010	0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	0.00010	<0.00010
Barium	mg/L	0.00010	-	0.001	0.006	0.007	<0.01	<0.01	<0.01	<0.01	-	-	-	-
Beryllium	mg/L	0.000020	-	<0.005	<0.005	<0.005	-	-	-	-	-	-	-	-
Bismuth	mg/L	0.000050	-	<0.0003	<0.0003	<0.0003	-	-	-	-	-	-	-	-
Boron	mg/L	0.010	1.5	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-
Cadmium	mg/L	0.0000050	Variable [c]	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0010	<0.0010	<0.000010	<0.000010
Calcium	mg/L	0.050	-	6.07	33.9	42.9	11	11	38	40	-	-	42.3	40.5
Cesium	mg/L	0.000010	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	mg/L	0.00050	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Cobalt	mg/L	0.00010	Variable [c]	<0.0003	<0.0003	<0.0003	<0.0002	<0.0002	<0.0002	<0.0002	-	-	-	-
Copper	mg/L	0.00050	0.002 - 0.004 [c]	<0.0008	<0.0008	0.0008	<0.001	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	0.0025
Iron	mg/L	0.010	0.3	<0.05	<0.02	<0.02	<0.03	<0.03	<0.03	<0.03	<0.050	<0.050	<0.050	<0.050
Lead	mg/L	0.000050	0.001 - 0.007 [c]	<0.0002	<0.0002	<0.0002	<0.001	<0.001	<0.001	<0.001	<0.00050	<0.00050	<0.00010	<0.00010
Lithium	mg/L	0.0010	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium	mg/L	0.0050	-	2.41	12.9	17.2	5	5	14	15	9.67	9.14	19.6	19.6
Manganese	mg/L	0.00010	Variable [c]	0.0029	<0.0007	<0.0007	<0.01	<0.01	<0.01	<0.01	<0.0010	<0.0010	<0.00050	0.00187
Mercury	mg/L	0.0000050	0.000026	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum	mg/L	0.000050	0.073	<0.0003	<0.0003	<0.0003	<0.005	<0.005	<0.005	<0.005	<0.00050	<0.00050	<0.00050	<0.00050
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	0.39	0.69	0.78	0.60	0.60	0.70	0.78	<1.0	<1.0	1.23	1.23
Rubidium	mg/L	0.00020	-	-	-	-	-	-	-	-	-	-	-	-
Selenium	mg/L	0.000050	0.001	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.00040	<0.00040	<0.000050	<0.000050
Silicon	mg/L	0.10	-	-	-	-	-	-	-	-	-	-	-	-
Silver	mg/L	0.000010	0.25	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-
Sodium	mg/L	0.050	-	0.31	1.20	2.04	0.41	0.42	1.42	3.45	2.52	2.30	7.72	7.27
Strontium	mg/L	0.00020	0.25	0.0027	0.0187	0.0235	0.005	0.005	0.023	0.027	-	-	-	-
Sulfur	mg/L	0.50	-	-	-	-	-	-	-	-	-	-	-	-
Tellurium	mg/L	0.00020	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	mg/L	0.000010	0.0008	<0.0002	<0.0002	<0.0002	-	-	-	-	<0.00030	<0.00030	<0.000010	<0.000010
Thorium	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-	-
Tin	mg/L	0.00010	-	<0.001	0.001	<0.001	<0.01	<0.01	<0.01	<0.01	-	-	-	-
Titanium	mg/L	0.00030	-	<0.003	<0.003	<0.003	-	-	-	-	-	-	-	-
Tungsten	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	mg/L	0.000010	0.015	-	-	-	-	-	-	-	0.0011	0.0010	0.00326	0.00293
Vanadium	mg/L	0.00050	0.12	<0.0009	<0.0009	<0.0009	<0.001	<0.001	0.001	<0.001	-	-	-	-
Zinc	mg/L	0.0030	0.03	<0.001	0.0010	<0.001	<0.01	<0.01	<0.01	<0.01	<0.0030	<0.0030	<0.0030	0.0043
Zirconium	mg/L	0.00020	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.7 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-080 (CV040)

Parameters	Units	2025 LOR	CCME Guideline	Date										
				2005			2006				2015			
				13-Jun-05	06-Aug-05	09-Sep-05	13-Jun-06	13-Jun-06	02-Aug-06	08-Sep-06	03-Jul-15	03-Jul-15	11-Aug-15	11-Aug-15
											US	DS	US	DS
Dissolved Metals and Non-Metals														
Aluminum	mg/L	0.0010	-	<0.004	<0.004	<0.004	<0.005	<0.005	<0.005	<0.005	<0.0050	<0.0050	<0.0050	0.0101
Arsenic	mg/L	0.00010	-	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.00010	<0.00010	0.00010	<0.00010
Barium	mg/L	0.00010	-	<0.001	0.005	0.007	<0.01	<0.01	<0.01	<0.01	-	-	-	-
Boron	mg/L	0.010	-	<0.05	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	-	-
Cadmium	mg/L	0.0000050	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.000010	<0.000010	<0.000010	<0.000010
Calcium	mg/L	0.050	-	6.06	35.0	40.5	11	11	38	39	22.5	22.3	37.9	39.6
Chromium	mg/L	0.00050	-	<0.001	0.002	0.002	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Cobalt	mg/L	0.00010	-	<0.0003	<0.0003	<0.0003	<0.0002	<0.0002	<0.0002	<0.0002	-	-	-	-
Copper	mg/L	0.00020	-	<0.0008	<0.0008	<0.0008	<0.001	<0.001	<0.001	<0.001	0.00057	0.00054	0.00076	0.00077
Iron	mg/L	0.010	-	<0.05	<0.02	<0.02	<0.03	<0.03	<0.03	<0.03	<0.010	<0.010	<0.010	0.014
Lead	mg/L	0.000050	Variable [e]	<0.0002	<0.0002	<0.0002	<0.001	<0.001	<0.001	<0.001	<0.000050	<0.000050	<0.000050	<0.000050
Magnesium	mg/L	0.0050	-	2.50	13.3	16.0	5	5	14	15	9.49	9.32	17.8	17
Manganese	mg/L	0.00010	-	0.0022	<0.0007	<0.0007	<0.01	<0.01	<0.01	<0.01	<0.00050	<0.00050	<0.00050	0.00118
Mercury	mg/L	0.0000050	-	-	-	-	-	-	-	-	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum	mg/L	0.000050	-	<0.0003	<0.0003	<0.0003	<0.005	<0.005	<0.005	<0.005	0.000067	0.000073	0.000176	0.000174
Nickel	mg/L	0.00050	-	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.005	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	0.39	0.72	0.76	0.61	0.60	0.73	0.80	0.644	0.607	1.24	1.24
Selenium	mg/L	0.000050	-	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.001	<0.000050	<0.000050	<0.000050	<0.000050
Silver	mg/L	0.000010	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-
Sodium	mg/L	0.050	-	0.29	1.25	1.96	0.42	0.46	1.38	3.12	2.54	2.41	7.10	6.67
Strontium	mg/L	0.00020	0.25	0.0027	0.0192	0.0224	0.005	0.005	0.023	0.026	-	-	-	-
Thallium	mg/L	0.000010	-	<0.0002	<0.0002	<0.0002	-	-	-	-	<0.000010	<0.000010	<0.000010	<0.000010
Tin	mg/L	0.00010	-	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	<0.01	-	-	-	-
Uranium	mg/L	0.000010	-	-	-	-	-	-	-	-	0.00101	0.00096	0.00300	0.00288
Vanadium	mg/L	0.00050	-	<0.0009	0.0047	0.0045	<0.001	<0.001	<0.001	<0.001	-	-	-	-
Zinc	mg/L	0.0010	Variable [e]	0.001	0.002	0.002	<0.01	<0.01	<0.01	<0.01	0.0025	0.0037	<0.0010	0.0029
Miscellaneous (Water)														
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.7 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-080 (CV040)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2016				2017		2018				2019			
				29-Jun-16	29-Jun-16	25-Aug-16	25-Aug-16	29-Jun-17	29-Jun-17	04-Jul-18	04-Jul-18	03-Sep-18	03-Sep-18	22-Jun-19	22-Jun-19	09-Aug-19	09-Aug-19
				DS	US	DS	US	US	DS	US	DS	US	DS	US	DS	US	DS
In Situ Parameters																	
Temperature	ºC	-	-	15.7	16	-	11.1	3.8	2.4	8.1	8.5	3.4	3.3	2.70	2.50	17	16.2
Specific Conductance	µS/cm	-	-	0.151	0.151	-	0.391	0.177	0.101	0.2026	0.1968	0.3137	0.3133	0.1952	0.19	0.3854	0.3800
Dissolved Oxygen	mg/L	-	< 9.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Oxygen	%	-	-	99.8	103.6	-	99.8	109.2	100.8	94.1	94.4	96.3	95.3	97.40	97.10	101.8	100
pH	pH units	-	6.5 - 9.0	8.19	8.23	-	8.36	7.64	7.84	8.24	8.24	8.27	8.24	8.26	8.23	8.48	8.37
Wetted Width	m	-	-	-	-	-	-	12.1	30.8	9.2	7.7	9.2	7.3	-	-	-	-
Average Depth	m	-	-	-	-	-	-	0.14	0.12	0.06	0.08	0.10	-	-	-	-	-
Flow Rate	m^3/s	-	-	-	-	-	-	1.13	1.55	0.07	0.133	.052	.144	-	-	-	-
Physical Parameters																	
pH	pH units	0.10	6.5 - 9.0	8.1	8.19	8.47	8.51	7.73	7.75	8.24	8.24	8.43	8.37	8.26	8.26	8.21	8.41
Conductivity	µS/cm	1.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity	NTU	0.10	-	1.48	1.05	0.28	0.33	0.77	0.71	0.62	0.64	0.5	0.27	0.17	0.22	0.33	0.44
Hardness	mg/L as $CaCO_3$	0.50	-	68	69	193	202	35	37	106	102	176	182	121	121	180	187
Total Suspended Solids	mg/L	1.0 - 1.2	Variable [g]	2.0	<2.0	<2.0	<2.0	<2.0	5.1	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	17	-	65	65	208	201	44	46	112	118	195	205	133	127	208	204
Dissolved Anions																	
Alkalinity	mg/L as $CaCO_3$	2.0	-	68	75	187	191	32	27	103	100	171	168	120	118	182	188
Bromide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	1.81	1.84	13.5	13.8	0.57	0.57	3.16	2.91	13.5	13.8	4.08	4.52	16.8	14.4
Fluoride	mg/L	-	-	<0.020	<0.020	0.026	0.027	<0.020	<0.020	0.031	0.024	0.042	0.041	-	-	-	-
Sulfate	mg/L	-	-	0.76	0.84	6.03	6.52	0.3	<0.30	1.3	0.89	3.62	3.52	-	-	-	-
Nutrients																	
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	<0.15	<0.15	0.24	0.17	-	-	-	-	-	-	-	-	-	-
Nitrite	mg/L N	0.010	0.06	-	-	-	-	-	-	-	-	-	-	<0.010	<0.010	<0.010	<0.010
Nitrate	mg/L N	0.020	3	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	2.2	<0.020
Nitrate + Nitrite	mg/L N	-	-	-	-	<0.020	0.085	-	-	-	-	-	-	<0.022	<0.022	2.2	0.022
Ammonia, total as N	mg/L	0.0050	Variable [a]	<0.020	<0.020	-	-	<0.020	<0.020	<0.020	<0.020	-	-	<0.010	<0.010	<0.010	<0.010
Total Phosphorus	mg/L	0.0020	0.01	0.0067	0.0038	0.0048	0.0034	0.0158	0.0159	<0.0030	0.0031	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Dissolved Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic Compounds																	
Phenols	mg/L	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	1.6	1.4	3.2	3	3.93	3.56	3.2	3.05	3.27	3.16	3.00	3	3.34	3.1
Total Organic Carbon	mg/L	0.50	-	1.9	2.1	3.6	3.3	4.45	4.17	3.4	3.28	4.01	3.61	4.10	3.85	3.83	3.73
Total Kjeldahl Nitrogen	mg/L	-	-	<0.15	<0.15	0.24	0.17	0.29	0.26	<0.15	<0.15	0.18	0.27	-	-	-	-
Chlorophyll-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.7 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-080 (CV040)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2016				2017		2018				2019			
				29-Jun-16	29-Jun-16	25-Aug-16	25-Aug-16	29-Jun-17	29-Jun-17	04-Jul-18	04-Jul-18	03-Sep-18	03-Sep-18	22-Jun-19	22-Jun-19	09-Aug-19	09-Aug-19
				DS	US	DS	US	US	DS	US	DS	US	DS	US	DS	US	DS
Total Metals and Non-Metals																	
Aluminum	mg/L	0.0030	Variable [f]	0.096	0.042	0.024	0.02	0.0527	0.065	0.0092	0.0121	0.0239	0.011	0.0067	0.0113	0.0224	0.0225
Antimony	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	mg/L	0.00010	0.005	<0.00010	<0.00010	0.00014	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00013	0.00012
Barium	mg/L	0.00010	-	0.0055	0.00502	0.0119	0.0118	0.00266	0.00274	0.00574	0.00561	0.0101	0.0104	0.00634	0.00648	0.0123	0.0125
Beryllium	mg/L	0.000020	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron	mg/L	0.010	1.5	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	mg/L	0.0000050	Variable [c]	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	0.050	-	16.9	16.8	44.7	46.1	8.08	8.64	25.1	24.6	41.2	43.6	27.9	28.5	42.4	46.1
Cesium	mg/L	0.000010	-	0.000012	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000011	0.000013
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	Variable [c]	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Iron	mg/L	0.010	0.3	0.11	<0.050	<0.050	<0.050	0.056	0.068	0.01	0.014	0.031	0.023	<0.010	0.013	0.033	0.027
Lead	mg/L	0.000050	0.001 - 0.007 [c]	<0.00010	<0.00010	<0.00010	<0.00010	0.000081	0.00009	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium	mg/L	0.0010	-	<0.0010	<0.0010	0.0022	0.0023	<0.0010	<0.0010	<0.0010	<0.0010	0.0012	0.0011	0.0012	0.0012	0.0018	0.0015
Magnesium	mg/L	0.0050	-	6.2	6.64	19.8	21.1	3.65	3.65	10.6	9.91	17.8	17.8	12.0	11.7	18.1	15.7
Manganese	mg/L	0.00010	Variable [c]	0.00217	0.00082	0.00172	0.00115	0.00244	0.00296	0.0005	0.00086	0.00112	0.00162	<0.00050	0.00156	0.00139	0.00279
Mercury	mg/L	0.0000050	0.000026	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.0000050	<0.0000050
Molybdenum	mg/L	0.000050	0.073	0.00007	0.000073	0.000203	0.000224	<0.000050	<0.000050	0.000068	0.000089	0.000208	0.000219	0.000092	0.000131	0.000259	0.000272
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.00050	<0.00050	<0.00050	<0.00050	0.00342	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium	mg/L	0.050	-	0.745	0.706	1.31	1.34	0.503	0.506	0.716	0.68	0.992	1	0.724	0.754	1.26	1.22
Rubidium	mg/L	0.00020	-	0.00127	0.00097	0.00156	0.00133	0.00058	0.00062	0.00082	0.00086	0.0009	0.00092	0.00086	0.00094	0.00144	0.00185
Selenium	mg/L	0.000050	0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon	mg/L	0.10	-	0.731	0.71	1.38	1.41	0.37	0.4	0.79	0.75	1.3	1.32	0.84	0.83	1.3	1.34
Silver	mg/L	0.000010	0.25	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	1.54	1.69	8.73	9.23	<0.50	<0.50	2.06	1.98	6.08	5.98	2.81	2.67	6.61	5.03
Strontium	mg/L	0.00020	0.25	0.0101	0.0102	0.0308	0.0295	0.0047	0.005	0.0156	0.0154	0.0274	0.0303	0.0177	0.0181	0.0328	0.039
Sulfur	mg/L	0.50	-	<0.50	0.55	2.56	2.87	<0.50	<0.50	0.57	<0.50	1.6	1.63	0.70	0.62	1.22	0.87
Tellurium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium	mg/L	0.000010	0.0008	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium	mg/L	0.00030	-	0.00455	0.00162	0.00166	0.00112	0.00245	0.00325	0.00041	0.00053	0.0013	0.00059	<0.00030	0.00065	0.00130	0.00107
Tungsten	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	0.015	0.000507	0.000533	0.00361	0.00367	0.000129	0.000132	0.00135	0.00123	0.00317	0.00306	0.00157	0.00148	0.00354	0.00284
Vanadium	mg/L	0.00050	0.12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0030	0.03	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.0042	<0.0030	0.007	<0.0030	0.0056	<0.0030	0.0053
Zirconium	mg/L	0.00020	-	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00020	<0.00020	0.00022	0.00024

Table 2.7 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-080 (CV040)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2016				2017		2018				2019			
				29-Jun-16	29-Jun-16	25-Aug-16	25-Aug-16	29-Jun-17	29-Jun-17	04-Jul-18	04-Jul-18	03-Sep-18	03-Sep-18	22-Jun-19	22-Jun-19	09-Aug-19	09-Aug-19
				DS	US	DS	US	US	DS	US	DS	US	DS	US	DS	US	DS
Dissolved Metals and Non-Metals																	
Aluminum	mg/L	0.0010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arsenic	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barium	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Boron	mg/L	0.010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/L	0.0000050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Calcium	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	mg/L	0.00050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper	mg/L	0.00020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Iron	mg/L	0.010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lead	mg/L	0.000050	Variable [e]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium	mg/L	0.0050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manganese	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mercury	mg/L	0.0000050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	mg/L	0.000050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel	mg/L	0.00050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Selenium	mg/L	0.000050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver	mg/L	0.000010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Strontium	mg/L	0.00020	0.25	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	mg/L	0.000010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tin	mg/L	0.00010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	mg/L	0.000010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	mg/L	0.00050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	mg/L	0.0010	Variable [e]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Miscellaneous (Water)																	
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.7 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-080 (CV040)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2020						2021				2022			
				22-Jun-20	22-Jun-20	21-Jul-20	21-Jul-20	14-Aug-20	14-Aug-20	14-Jun-21	14-Jun-21	17-Aug-21	17-Aug-21	24-Jun-22	24-Jun-22	29-Aug-22	29-Aug-22
				US	DS	US	DS	US	DS	DS	US	DS	US	DS	US	DS	US
In Situ Parameters																	
Temperature	ºC	-	-	1.3	1.4	14.1	13.80	8.2	7.90	1.1	1.2	8.7	6.8	1.2	0.8	7.5	8.9
Specific Conductance	µS/cm	-	-	0.0786	0.0764	0.3699	0.36	461.2	457.3	39.9	40.1	325.9	336.1	19.1	20.2	434	433.1
Dissolved Oxygen	mg/L	-	< 9.5	13.72	13.58	10.31	10.08	11.82	11.72	13.96	14.11	11.92	11.96	13.08	13.26	12.38	12.18
Dissolved Oxygen	%	-	-	97.2	96.4	100.2	97.40	100.2	98.9	100.5	102.0	100.4	101.2	92.1	92.2	106.1	108.0
pH	pH units	-	6.5 - 9.0	7.86	7.89	8.42	8.37	8.46	8.44	7.60	7.40	8.52	8.49	7.32	7.60	8.34	8.36
Wetted Width	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average Depth	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flow Rate	m^3/s	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physical Parameters																	
pH	pH units	0.10	6.5 - 9.0	7.62	7.65	8.43	8.38	8.53	8.5	7.44	7.50	8.31	8.36	7.39	7.14	8.45	8.48
Conductivity	µS/cm	1.0	-	81.4	79.7	390	378	473	468	43.8	44.3	333	352	25.70	22.50	436	443
Turbidity	NTU	0.10	-	0.5	0.64	0.12	0.26	0.55	0.31	5.10	6.82	0.22	0.17	1.06	0.99	<1.0	<1.0
Hardness	mg/L as $CaCO_3$	0.50	-	43.5	41.6	181	177	234	234	19.8	19.8	172	178	10.7	9.75	219	226
Total Suspended Solids	mg/L	1.0 - 1.2	Variable [g]	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	12.9	17.0	<1.0	<1.0	8.5	5.7	<3.0	<3.0
Total Dissolved Solids	mg/L	17	-	49	49	207	200	257	258	35	37	123	187	<10	<10	229	226
Dissolved Anions																	
Alkalinity	mg/L as $CaCO_3$	2.0	-	40	39	170	166	202	204	22.5	22.8	169	175	11.4	9.5	192.0	192.0
Bromide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	1.02	0.94	17	15.2	31.3	29.6	1.08	1.28	8.12	10.9	0.65	0.60	21.30	22.50
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nutrients																	
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite	mg/L N	0.010	0.06	<0.010	<0.010	<0.010	<0.010	0.001	<0.0010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate	mg/L N	0.020	3	<0.020	<0.020	<0.020	<0.020	0.0165	0.0172	<0.020	0.024	0.057	<0.020	0.023	0.024	0.020	<0.020
Nitrate + Nitrite	mg/L N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	<0.010	<0.010	<0.010	<0.010	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010	0.01	0.011	<0.010	<0.010
Total Phosphorus	mg/L	0.0020	0.01	0.0113	0.0133	<0.0030	0.0039	0.0039	0.0023	0.0125	0.0134	<0.0030	<0.0030	0.0045	0.0036	<0.0030	<0.0030
Dissolved Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	<0.050	<0.050	<0.050	<0.050
Organic Compounds																	
Phenols	mg/L	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	4.71	4.61	4.41	4.67	3.8	3.98	3.31	3.53	4.89	4.68	3.05	2.30	3.47	3.71
Total Organic Carbon	mg/L	0.50	-	5.15	5.21	4.9	4.92	3.45	3.7	3.60	3.61	7.11	6.80	2.00	1.58	3.62	3.70
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	-	-	0.170	0.190	0.190	0.180	0.182	0.152	0.178	0.146
Chlorophyll-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.7 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-080 (CV040)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2020						2021				2022			
				22-Jun-20	22-Jun-20	21-Jul-20	21-Jul-20	14-Aug-20	14-Aug-20	14-Jun-21	14-Jun-21	17-Aug-21	17-Aug-21	24-Jun-22	24-Jun-22	29-Aug-22	29-Aug-22
				US	DS	US	DS	US	DS	DS	US	DS	US	DS	US	DS	US
Total Metals and Non-Metals																	
Aluminum	mg/L	0.0030	Variable [f]	0.0351	0.0558	0.0075	0.0154	0.0033	0.0155	0.186	0.223	0.0127	0.0101	0.1440	0.1130	0.0178	<0.0050
Antimony	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	mg/L	0.00010	0.005	<0.00010	<0.00010	0.00013	0.00012	0.00014	0.00015	<0.00010	<0.00010	0.00011	0.00010	<0.00010	<0.00010	0.00010	<0.00010
Barium	mg/L	0.00010	-	0.00296	0.00282	0.0114	0.0114	0.0126	0.0123	0.00285	0.00330	0.00880	0.00916	0.00183	0.00165	0.01120	0.01120
Beryllium	mg/L	0.000020	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron	mg/L	0.010	1.5	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	mg/L	0.0000050	Variable [c]	<0.0000050	0.0000055	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	0.050	-	10.3	10.2	43.7	45	52.1	53.9	5.33	5.42	42.4	40.2	2.91	2.57	47.5	47.1
Cesium	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000032	0.000046	<0.000010	<0.000010	0.000038	0.000028	<0.000010	<0.000010
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00010	<0.00010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	Variable [c]	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	0.00053	<0.00050	0.00089	0.00098	0.0008	0.0008	<0.00050	<0.00050	0.00082	0.00078	<0.00050	<0.00050	0.00078	0.00074
Iron	mg/L	0.010	0.3	0.04	0.065	<0.010	0.042	<0.010	0.028	0.197	0.229	0.016	0.013	0.165	0.117	0.026	<0.010
Lead	mg/L	0.000050	0.001 - 0.007 [c]	0.000066	0.000081	<0.000050	<0.000050	<0.000050	<0.000050	0.000227	0.000265	<0.000050	<0.000050	0.000217	0.000164	<0.000050	<0.000050
Lithium	mg/L	0.0010	-	<0.0010	<0.0010	0.0019	0.0019	0.0025	0.0026	<0.0010	<0.0010	0.0014	0.0016	<0.0010	<0.0010	0.0022	0.0021
Magnesium	mg/L	0.0050	-	4.29	4.11	20	18.9	24.8	24.3	2.18	2.15	16.2	18.6	1.100	0.977	24.40	24.90
Manganese	mg/L	0.00010	Variable [c]	0.00332	0.00428	0.00087	0.00568	0.00144	0.00591	0.00766	0.00803	0.00243	0.00179	0.00945	0.00790	0.00210	0.00097
Mercury	mg/L	0.0000050	0.000026	0.000007	0.0000055	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	mg/L	0.000050	0.073	<0.000050	0.000056	0.000159	0.000183	0.00022	0.000229	0.000053	<0.000050	0.000169	0.000166	<0.000050	<0.000050	0.000208	0.000212
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.00050	<0.00050	<0.00050	0.00054	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium	mg/L	0.050	-	0.484	0.453	1.28	1.27	1.22	1.25	0.450	0.462	0.948	1.03	0.254	0.237	1.170	1.200
Rubidium	mg/L	0.00020	-	0.00063	0.00067	0.00143	0.00164	0.00102	0.00119	0.00105	0.00130	0.00109	0.00087	0.00088	0.00071	0.00109	0.00096
Selenium	mg/L	0.000050	0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon	mg/L	0.10	-	0.38	0.41	1.38	1.41	1.57	1.61	0.55	0.65	1.48	1.58	0.31	0.27	1.59	1.55
Silver	mg/L	0.000010	0.25	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	0.564	0.447	7.9	7	11.5	10.9	0.427	0.404	3.96	5.69	0.257	0.251	10.400	11.10
Strontium	mg/L	0.00020	0.25	0.0055	0.0054	0.0293	0.0311	0.0365	0.0386	0.0036	0.0037	0.0312	0.0273	0.0024	0.0020	0.0365	0.0358
Sulfur	mg/L	0.50	-	0.99	<0.50	1.71	1.63	3.01	3	<0.50	<0.50	1.22	1.44	<0.50	<0.50	2.42	2.54
Tellurium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium	mg/L	0.000010	0.0008	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium	mg/L	0.00030	-	0.00154	0.00274	0.00032	0.0007	<0.00030	0.00083	0.00841	<0.020	0.00061	<0.00050	0.0072	0.00519	0.00096	<0.00030
Tungsten	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	0.015	0.000197	0.000208	0.00288	0.0027	0.0040	0.00381	0.000187	0.000183	0.00227	0.00269	0.00016	0.00013	0.003940	0.00413
Vanadium	mg/L	0.00050	0.12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00051	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0030	0.03	<0.0030	<0.0030	<0.0030	0.0052	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Zirconium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	0.0002	<0.00020	0.00029	<0.00020	0.00020	0.00022	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

Table 2.7 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-080 (CV040)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2020						2021				2022			
				22-Jun-20	22-Jun-20	21-Jul-20	21-Jul-20	14-Aug-20	14-Aug-20	14-Jun-21	14-Jun-21	17-Aug-21	17-Aug-21	24-Jun-22	24-Jun-22	29-Aug-22	29-Aug-22
				US	DS	US	DS	US	DS	DS	US	DS	US	DS	US	DS	US
Dissolved Metals and Non-Metals																	
Aluminum	mg/L	0.0010	-	0.0096	0.011	<0.0050	0.006	0.0024	0.002	0.0109	0.0141	<0.0050	<0.0050	0.0089	0.0061	<0.0050	<0.0050
Arsenic	mg/L	0.00010	-	<0.00010	<0.00010	0.00011	0.000	<0.00010	0.000	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010
Barium	mg/L	0.00010	-	0.00267	0.0024	0.0107	0.011	0.013	0.012	0.00147	0.00149	0.00892	0.00955	0.00093	0.00083	0.0114	0.0119
Boron	mg/L	0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	mg/L	0.0000050	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	0.050	-	10.2	9.86	41.1	41.800	53.2	54.300	4.72	4.67	42.6	40.4	2.650	2.410	48.30	48.50
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00010	0.000	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00020	-	0.00036	0.00031	0.00088	0.001	0.00078	0.001	<0.00020	0.00021	0.00078	0.00075	<0.00020	<0.00020	0.000730	0.000740
Iron	mg/L	0.010	-	0.013	0.012	<0.010	0.013	<0.010	<0.010	0.012	0.017	<0.010	<0.010	0.012	<0.010	<0.010	<0.010
Lead	mg/L	0.000050	Variable [e]	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Magnesium	mg/L	0.0050	-	4.37	4.12	19	17.600	24.5	23.800	1.95	1.97	15.9	18.7	0.996	0.908	23.90	25.40
Manganese	mg/L	0.00010	-	0.00252	0.00256	0.00072	0.005	0.0013	0.005	0.00633	0.00665	0.00194	0.00160	0.00587	0.00505	0.00179	0.00083
Mercury	mg/L	0.0000050	-	<0.0000050	0.0000063	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	mg/L	0.000050	-	<0.000050	<0.000050	0.000165	0.000	0.00019	0.000	<0.000050	<0.000050	0.000153	0.000148	<0.000050	<0.000050	0.000216	0.000206
Nickel	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	0.449	0.425	1.13	1.150	1.39	1.360	0.338	0.343	0.945	1.03	0.211	0.197	1.190	1.24
Selenium	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	0.000	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silver	mg/L	0.000010	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	0.532	0.457	7.44	6.550	12.1	10.900	0.384	0.427	3.74	5.69	0.255	0.241	10.2	11.8
Strontium	mg/L	0.00020	0.25	0.0053	0.0051	0.0284	0.032	0.0346	0.036	0.0030	0.0030	0.0326	0.0275	0.0021	0.0018	0.0368	0.0357
Thallium	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	-	0.000168	0.000167	0.00272	0.003	0.00384	0.004	0.000116	0.000117	0.00209	0.00259	0.00010	0.00007	0.0036	0.00393
Vanadium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0010	Variable [e]	0.0029	0.0028	<0.0010	0.004	<0.0010	0.002	<0.0010	<0.0010	0.0016	<0.0010	0.0017	<0.0010	0.0023	<0.0010
Miscellaneous (Water)																	
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0020	<0.0020

Table 2.7 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-080 (CV040)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2023						2024				2025			
				25-Jun-23	25-Jun-23	17-Jul-23	17-Jul-23	20-Aug-23	20-Aug-23	23-Jun-24	23-Jun-24	18-Aug-24	18-Aug-24	30-Jun-25	30-Jun-25	21-Aug-25	21-Aug-25
				DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
In Situ Parameters																	
Temperature	ºC	-	-	1.3	0.7	9.3	9.1	7.36	7.4	4.2	3.5	8.1	8.3	13.3	13.1	4.7	4.8
Specific Conductance	µS/cm	-	-	49.9	42.6	164.1	169.5	360.4	361.4	46.5	50	357.9	360.6	213.6	217.5	361.2	359.5
Dissolved Oxygen	mg/L	-	< 9.5	12.71	12.13	11.22	11.2	11.36	11.42	12.31	12.56	10.94	11.13	10.01	10.18	11.98	12.2
Dissolved Oxygen	%	-	-	94.5	84.8	101.8	100.4	99.5	99.6	94.7	95.1	92.7	94.9	95.5	97.0	93.4	95.2
pH	pH units	-	6.5 - 9.0	7.75	7.85	8.07	8.15	8.45	8.45	7.85	7.56	8.3	8.35	8.34	8.36	8.41	8.41
Wetted Width	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average Depth	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flow Rate	m^3/s	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physical Parameters																	
pH	pH units	0.10	6.5 - 9.0	7.49	7.46	8.05	8.1	8.45	8.5	7.18	7.27	8.35	8.40	7.92	7.96	8.27	8.28
Conductivity	µS/cm	1.0	-	53.7	48.4	176	180	364	383	49.0	55.4	384	387	219	224	360	356
Turbidity	NTU	0.10	-	20	15.6	0.43	0.44	1.07	0.22	1.39	1.81	0.32	0.18	0.37	0.19	0.28	0.20
Hardness	mg/L as $CaCO_3$	0.50	-	25.0	20.3	85.6	87.7	189.7	189.0	24.0	27.5	193	188	114	116	203	199
Total Suspended Solids	mg/L	1.0 - 1.2	Variable [g]	76.1	72.4	<1.0	<1.0	1.9	<1.0	4.0	10.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.2
Total Dissolved Solids	mg/L	17	-	30	24	100	98	193	206	50	36	204	207	118	124	204	199
Dissolved Anions																	
Alkalinity	mg/L as $CaCO_3$	2.0	-	36.5	27.4	85.1	92.4	178	182	25.5	27.5	182	180	104	106	171	176
Bromide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	1.56	1.32	3.27	3.48	9.77	13.1	0.57	0.81	14.1	14.4	5.26	5.7	10.1	9.96
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nutrients																	
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite	mg/L N	0.010	0.06	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Nitrate	mg/L N	0.020	3	0.042	0.043	<0.020	<0.020	0.025	<0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Nitrate + Nitrite	mg/L N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	0.0149	0.0118	<0.0050	<0.0050	0.0088	0.0148	< 0.0050	< 0.0050	< 0.0050	0.0120	0.0068	< 0.0050	< 0.0050	0.0244
Total Phosphorus	mg/L	0.0020	0.01	0.0192	0.0152	0.0063	0.0036	0.0021	0.0027	0.0083	0.0086	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
Dissolved Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic Compounds																	
Phenols	mg/L	-	0.004	-	-	-	-	-	-	-	-	-	-			-	-
Dissolved Organic Carbon	mg/L	0.50	-	3.14	2.8	2.12	2.2	4.07	3.45	3.63	3.48	4.05	3.55	1.78	1.90	3.28	3.27
Total Organic Carbon	mg/L	0.50	-	3.2	3	2.21	2.44	4.2	3.69	3.46	3.50	3.54	3.49	2.43	2.66	4.30	3.98
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	-	-	-	-	-	-			-	-
Chlorophyll-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-			-	-
Pheophytin-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-			-	-

Table 2.7 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-080 (CV040)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2023						2024				2025			
				25-Jun-23	25-Jun-23	17-Jul-23	17-Jul-23	20-Aug-23	20-Aug-23	23-Jun-24	23-Jun-24	18-Aug-24	18-Aug-24	30-Jun-25	30-Jun-25	21-Aug-25	21-Aug-25
				DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
Total Metals and Non-Metals																	
Aluminum	mg/L	0.0030	Variable [f]	0.696	0.531	0.0088	0.0094	0.0304	0.0111	0.0588	0.0818	0.0062	0.0036	0.0256	0.0170	0.0155	0.0103
Antimony	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Arsenic	mg/L	0.00010	0.005	0.00014	0.00011	<0.00010	<0.00010	0.0001	0.0001	< 0.00010	< 0.00010	0.00011	0.00012	< 0.00010	< 0.00010	< 0.00010	0.00011
Barium	mg/L	0.00010	-	0.00725	0.00583	0.00498	0.00499	0.00974	0.0109	0.00205	0.00237	0.0107	0.0105	0.00793	0.00703	0.00969	0.00971
Beryllium	mg/L	0.000020	-	0.000034	0.000021	<0.000020	<0.000020	<0.000020	<0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
Bismuth	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Boron	mg/L	0.010	1.5	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.01	< 0.01	< 0.010	< 0.010
Cadmium	mg/L	0.0000050	Variable [c]	0.000005	0.0000059	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Calcium	mg/L	0.050	-	7.6	6.28	20.1	20.4	45.9	42.2	5.68	6.96	43.5	43.2	28.4	26.9	43.6	42.8
Cesium	mg/L	0.000010	-	0.000136	0.000109	<0.000010	<0.000010	0.000015	<0.000010	0.000011	0.000019	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Chromium	mg/L	0.00050	-	0.00115	0.0007	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	0.00066	< 0.00050	< 0.00050	0.00192	< 0.00050	< 0.00050
Cobalt	mg/L	0.00010	Variable [c]	0.00036	0.00023	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	0.00107	0.00098	0.00065	<0.00050	0.00081	0.00076	0.00121	< 0.00050	0.00080	0.00081	0.00119	0.00077	0.00076	0.00083
Iron	mg/L	0.010	0.3	0.776	0.572	0.015	0.016	0.036	0.016	0.057	0.087	0.015	< 0.010	0.029	0.028	0.027	0.018
Lead	mg/L	0.000050	0.001 - 0.007 [c]	0.00108	0.000801	<0.000050	<0.000050	<0.000050	<0.000050	0.000115	0.000109	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Lithium	mg/L	0.0010	-	0.0022	0.0017	<0.0010	<0.0010	0.0015	0.0018	< 0.0010	< 0.0010	0.0018	0.0019	< 0.0010	< 0.0010	0.0015	0.0015
Magnesium	mg/L	0.0050	-	3.4	2.89	8.41	8.66	16.8	20.3	2.48	3.09	19.9	20.8	10.0	10.9	19.8	19.9
Manganese	mg/L	0.00010	Variable [c]	0.0268	0.0223	0.00152	0.00147	0.00267	0.00168	0.00489	0.00730	0.00154	0.00059	0.00150	0.00097	0.00304	0.00164
Mercury	mg/L	0.0000050	0.000026	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Molybdenum	mg/L	0.000050	0.073	0.000138	0.000114	0.000069	0.000062	0.000157	0.000159	< 0.000050	< 0.000050	0.000226	0.000208	0.000150	0.000152	0.000206	0.000188
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	0.00078	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	0.00069	< 0.00050	< 0.00050
Phosphorus	mg/L	0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Potassium	mg/L	0.050	-	0.785	0.635	0.515	0.534	0.944	1.05	0.436	0.482	1.17	1.20	0.928	0.900	1.07	1.04
Rubidium	mg/L	0.00020	-	0.00312	0.00254	0.00065	0.00057	0.00118	0.00091	0.00059	0.00083	0.00105	0.00094	0.00159	0.00118	0.00094	0.00082
Selenium	mg/L	0.000050	0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Silicon	mg/L	0.10	-	1.51	1.16	0.72	0.8	1.7	1.96	0.32	0.40	1.58	1.63	0.97	0.98	1.72	1.75
Silver	mg/L	0.000010	0.25	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Sodium	mg/L	0.050	-	0.642	0.551	1.92	2.03	4.54	7.72	0.263	0.358	7.61	8.27	3.44	4.14	5.24	5.32
Strontium	mg/L	0.00020	0.25	0.00682	0.00527	0.0124	0.0118	0.0376	0.031	0.00314	0.00389	0.0326	0.0312	0.0208	0.0171	0.0306	0.0278
Sulfur	mg/L	0.50	-	<0.50	<0.50	<0.50	<0.50	1.15	1.68	< 0.50	< 0.50	1.57	1.59	< 0.50	0.51	1.04	1.08
Tellurium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020
Thallium	mg/L	0.000010	0.0008	0.000019	0.000016	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Thorium	mg/L	0.00010	-	0.00028	0.0002	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Titanium	mg/L	0.00030	-	0.0354	0.0251	0.00045	0.00052	0.00158	0.00051	0.00229	0.00391	0.00030	< 0.00030	0.00096	0.00059	0.00076	0.00059
Tungsten	mg/L	0.00010	-	0.0002	0.00018	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.0001	< 0.0001	< 0.00010	< 0.00010
Uranium	mg/L	0.000010	0.015	0.000958	0.000534	0.000846	0.000852	0.00255	0.00318	0.000100	0.000107	0.00326	0.00332	0.00133	0.00128	0.00326	0.00316
Vanadium	mg/L	0.00050	0.12	0.00103	0.00064	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.0005	< 0.0005	< 0.00050	< 0.00050
Zinc	mg/L	0.0030	0.03	0.0045	0.0036	<0.0030	<0.0030	<0.0030	<0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030
Zirconium	mg/L	0.00020	-	0.00036	0.00026	<0.00020	<0.00020	0.00024	0.00023	< 0.00020	< 0.00020	0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020

Table 2.7 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-080 (CV040)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2023						2024				2025			
				25-Jun-23	25-Jun-23	17-Jul-23	17-Jul-23	20-Aug-23	20-Aug-23	23-Jun-24	23-Jun-24	18-Aug-24	18-Aug-24	30-Jun-25	30-Jun-25	21-Aug-25	21-Aug-25
				DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
Dissolved Metals and Non-Metals																	
Aluminum	mg/L	0.0010	-	0.0252	0.0157	0.0026	0.0034	0.0046	0.0019	0.0069	0.0069	0.0029	0.0018	0.0061	0.0052	0.0070	0.0018
Arsenic	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00011	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	0.00010	0.00010
Barium	mg/L	0.00010	-	0.00205	0.00166	0.00497	0.00499	0.00995	0.00992	0.00160	0.00165	0.00988	0.00971	0.00760	0.00701	0.0104	0.00996
Boron	mg/L	0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Cadmium	mg/L	0.0000050	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Calcium	mg/L	0.050	-	5.89	4.84	20.5	20.5	46.5	40.7	5.60	6.26	43.0	41.0	28.2	27.2	45.5	44.1
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Cobalt	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Copper	mg/L	0.00020	-	0.00023	0.00022	0.00059	0.00048	0.00095	0.00072	< 0.00020	0.00025	0.00081	0.00082	0.00064	0.00067	0.00067	0.00060
Iron	mg/L	0.010	-	0.021	0.013	0.011	<0.010	<0.010	<0.010	< 0.010	0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.010	< 0.010
Lead	mg/L	0.000050	Variable [e]	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Magnesium	mg/L	0.0050	-	2.47	1.97	8.28	8.78	17.7	20.3	2.44	2.88	20.8	20.7	10.5	11.6	21.8	21.7
Manganese	mg/L	0.00010	-	0.00985	0.00862	0.0022	0.00118	0.00174	0.00126	0.00304	0.00370	0.00136	0.00047	0.00100	0.00035	0.00266	0.00132
Mercury	mg/L	0.0000050	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Molybdenum	mg/L	0.000050	-	0.00012	0.000082	0.000074	0.000071	0.00014	0.000154	< 0.000050	< 0.000050	0.000207	0.000194	0.000151	0.000137	0.000182	0.000162
Nickel	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Phosphorus	mg/L	0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Potassium	mg/L	0.050	-	0.534	0.415	0.598	0.614	0.96	1.02	0.423	0.428	1.11	1.10	0.961	0.934	1.07	1.03
Selenium	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Silver	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Sodium	mg/L	0.050	-	0.63	0.449	1.88	2.09	4.81	7.47	0.257	0.315	7.60	8.05	3.56	4.27	5.36	5.54
Strontium	mg/L	0.00020	0.25	0.00545	0.00373	0.0129	0.0126	0.0377	0.0298	0.00309	0.00350	0.0326	0.0303	0.0209	0.0175	0.0297	0.0280
Thallium	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Uranium	mg/L	0.000010	-	0.000697	0.000264	0.000803	0.000832	0.00231	0.00301	0.000082	0.000073	0.00304	0.00306	0.00130	0.00130	0.00282	0.00273
Vanadium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Zinc	mg/L	0.0010	Variable [e]	<0.0010	0.0012	0.0019	<0.0010	0.0023	<0.0010	< 0.0010	< 0.0010	0.0016	< 0.0010	0.0021	< 0.001	0.0014	< 0.0010
Miscellaneous (Water)																	
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.8 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-100 (CV217)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2005			2006			2015		2016				2017	
				07-Jun-05	06-Aug-05	09-Sep-05	13-Jun-06	29-Jul-06	10-Sep-06	12-Aug-15	12-Aug-15	29-Jun-16	29-Jun-16	25-Aug-16	25-Aug-16	29-Jun-17	29-Jun-17
										US	DS	US	DS	DS	US	US	DS
In Situ Parameters																	
Temperature	ºC	-	-	0.74	9.35	6.59	1.56	7.36	3.02	9.6	9.4	5.6	6.4	8.7	10.7	4.4	3.2
Specific Conductance	µS/cm	-	-	0.019	0.081	0.088	0.031	0.083	0.091	0.100	0.101	0.640	0.800	0.102	0.095	0.166	0.125
Dissolved Oxygen	mg/L	-	< 9.5	12.14	11.62	12.82	12.71	13.40	-	-	-	-	-	-	-	-	-
Dissolved Oxygen	%	-	-	-	-	-	-	-	-	102.30	102.8	107.4	109.5	94.1	100.0	107.1	101.9
pH	pH units	-	6.5 - 9.0	7.20	7.60	7.02	7.38	7.59	7.92	8.08	8.07	7.74	8.36	8.19	8.11	7.45	7.71
Wetted Width	m	-	-	-	-	-	-	54	59	-	-	-	-	-	-	-	15.4
Average Depth	m	-	-	-	-	-	-	5	2.5	-	-	-	-	-	-	-	0.7
Flow Rate	m^3/s	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.5276
Physical Parameters																	
pH	pH units	0.10	6.5 - 9.0	-	-	-	6.97	7.03	6.97	7.80	7.81	7.42	7.41	8.08	7.96	7.65	7.72
Conductivity	µS/cm	1.0	-	27	90	93	38	86	97	-	-	-	-	-	-	-	-
Turbidity	NTU	0.10	-	0.50	0.99	0.55	0.7	1.1	1.4	1.0	1.1	1.1	1.1	2.0	1.0	1.06	1.01
Hardness	mg/L as $CaCO_3$	0.50	-	8.57	42.0	46.3	16	41	43	37	38	27	29	42	38	28	33
Total Suspended Solids	mg/L	1.0	Variable [g]	-	-	-	-	-	-	2	2	<2.0	<2.0	<2.0	<2.0	<2.0	2.0
Total Dissolved Solids	mg/L	18 - 19	-	31	<30	<30	25	56	63	50 *	46 *	40	25	52	38	34	41
Dissolved Anions																	
Alkalinity	mg/L as $CaCO_3$	2.0	-	8	43	45	16	44	47	38	35	30	31	41	35	17	27
Bromide	mg/L	-	-	<0.3	<0.3	<0.3	<0.05	<0.05	<0.05	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	0.8	1.0	1.2	<1	1	2	4.96	5.29	2.44	2.49	3.87	3.79	2.50	3.74
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Sulfate	mg/L	-	-	0.7	0.6	0.7	2	2	3	1.30	1.35	0.70	0.72	1.15	0.97	0.71	1.06
Nutrients																	
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	0.5	<0.10	0.4	0.04	0.05	0.04	0.27	0.28	<0.15	<0.15	<0.15	<0.15	-	-
Nitrite	mg/L N	0.010	0.06	<0.06	<0.06	<0.06	<0.005	0.018	0.008	-	-	-	-	-	-	-	-
Nitrate	mg/L N	0.020	3	<0.05	<0.05	<0.05	<0.10	<0.10	<0.10	<0.020	<0.020	<0.020	<0.020	0.03	<0.020	<0.020	<0.020
Nitrate + Nitrite	mg/L N	-	-	<0.06	<0.06	<0.06	<0.10	<0.10	<0.10	-	-	-	-	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	-	-	-	-	-	-	<0.050	<0.050	<0.020	0.05	<0.020	<0.020	0.029	<0.020
Total Phosphorus	mg/L	0.0020	0.01	<0.02	<0.02	<0.10	<0.01	<0.01	0.02	0.0080	0.0058	0.0068	<0.0030	0.0071	0.0095	0.0084	0.0087
Dissolved Phosphorus	mg/L	-	-	<0.02	<0.02	<0.10	-	-	-	-	-	-	-	-	-	-	-
Organic Compounds																	
Phenols	mg/L	-	0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	-	-	-	-	-	-	2.2	2.2	1.8	1.9	2.3	1.9	2.01	1.88
Total Organic Carbon	mg/L	0.50	-	-	-	-	-	-	-	2.3	2.3	1.9	1.8	2.3	2.0	2.24	2.17
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	-	-	0.27	0.28	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Chlorophyll-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.8 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-100 (CV217)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2005			2006			2015		2016				2017	
				07-Jun-05	06-Aug-05	09-Sep-05	13-Jun-06	29-Jul-06	10-Sep-06	12-Aug-15	12-Aug-15	29-Jun-16	29-Jun-16	25-Aug-16	25-Aug-16	29-Jun-17	29-Jun-17
										US	DS	US	DS	DS	US	US	DS
Total Metals and Non-Metals																	
Aluminum	mg/L	0.0030	Variable [f]	0.025	0.039	0.020	0.023	0.043	0.066	0.091	<0.010	0.042	0.150	0.052	0.037	0.033	0.071
Antimony	mg/L	0.00010	-	<0.0004	<0.0004	<0.0004	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	mg/L	0.00010	0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Barium	mg/L	0.00010	-	0.002	0.004	0.005	<0.01	<0.01	<0.01	-	-	0.00368	0.00433	0.00576	0.00502	0.00389	0.00457
Beryllium	mg/L	0.000020	-	<0.005	<0.005	<0.005	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth	mg/L	0.000050	-	<0.0003	<0.0003	<0.0003	-	-	-	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron	mg/L	0.010	1.5	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	mg/L	0.0000050	Variable [c]	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Calcium	mg/L	0.050	-	1.51	8.62	9.34	3.0	8.0	9.0	7.76	7.77	5.19	5.58	8.32	7.66	5.61	6.66
Cesium	mg/L	0.000010	-	-	-	-	-	-	-	-	-	<0.000010	0.000016	<0.000010	<0.000010	<0.000010	<0.000010
Chromium	mg/L	0.00050	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	Variable [c]	<0.0003	<0.0003	<0.0003	<0.0002	<0.0002	<0.0002	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	0.0009	0.0010	0.0008	<0.001	<0.001	0.001	<0.0010	<0.0010	<0.0010	0.0011	0.0010	<0.0010	<0.0010	<0.0010
Iron	mg/L	0.010	0.3	0.05	0.03	0.02	0.07	0.04	0.04	0.121	<0.050	0.052	0.186	0.058	<0.050	0.058	0.10
Lead	mg/L	0.000050	0.001 - 0.007 [c]	<0.0002	<0.0002	<0.0002	<0.001	<0.001	<0.001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000050	0.00010
Lithium	mg/L	0.0010	-	-	-	-	-	-	-	-	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium	mg/L	0.0050	-	1.16	4.97	5.59	2.0	5.0	5.0	5.07	4.94	3.30	3.59	5.04	4.71	3.48	4.08
Manganese	mg/L	0.00010	Variable [c]	0.0183	0.0012	0.0009	<0.01	<0.01	<0.01	0.00319	0.00084	0.00201	0.00408	0.00217	0.00159	0.00400	0.00380
Mercury	mg/L	0.0000050	0.000026	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum	mg/L	0.000050	0.073	<0.0003	<0.0003	<0.0003	<0.005	<0.005	<0.005	0.000650	0.000850	0.000065	0.000069	0.000099	0.000075	0.000063	0.000078
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.0010	<0.0010	0.00077	0.00054	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium	mg/L	0.050	-	0.81	0.58	0.60	0.49	0.58	0.57	0.631	0.627	0.516	0.580	0.717	0.645	0.613	0.688
Rubidium	mg/L	0.00020	-	-	-	-	-	-	-	-	-	0.00073	0.00109	0.00138	0.00110	0.00082	0.00101
Selenium	mg/L	0.000050	0.001	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon	mg/L	0.10	-	-	-	-	-	-	-	-	-	0.390	0.603	0.636	0.525	0.470	0.520
Silver	mg/L	0.000010	0.25	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	0.34	0.68	0.70	0.31	0.72	0.93	2.81	2.91	1.40	1.49	2.25	2.39	1.55	2.09
Strontium	mg/L	0.00020	0.25	0.0012	0.0049	0.0054	0.002	0.006	0.007	-	-	0.0046	0.0048	0.0079	0.0074	0.0049	0.0060
Sulfur	mg/L	0.50	-	-	-	-	-	-	-	-	-	<0.50	<0.50	<0.50	0.53	0.51	<0.50
Tellurium	mg/L	0.00020	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium	mg/L	0.000010	0.0008	<0.0002	<0.0002	<0.0002	-	-	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium	mg/L	0.00010	-	-	-	-	-	-	-	-	-	<0.00010	0.00012	<0.00010	<0.00010	<0.00010	<0.00010
Tin	mg/L	0.00010	-	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium	mg/L	0.00030	-	<0.003	<0.003	<0.003	-	-	-	-	-	<0.0020 *	0.00821	0.00203	0.00165	<0.0015	0.00388
Tungsten	mg/L	0.00010	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	0.015	-	-	-	-	-	-	0.000319	0.000324	0.000210	0.000238	0.000368	0.000319	0.000193	0.000261
Vanadium	mg/L	0.00050	0.12	<0.0009	<0.0009	<0.0009	<0.001	<0.001	<0.001	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0030	0.03	0.0020	0.0020	<0.001	<0.01	<0.01	<0.01	<0.0030	<0.0030	<0.0030	<0.0030	0.0053	<0.0030	<0.0030	<0.0030
Zirconium	mg/L	0.00020	-	-	-	-	-	-	-	-	-	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

Table 2.8 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-100 (CV217)

Parameters	Units	2025 LOR	CCME Guideline	Date													
				2005			2006			2015		2016				2017	
				07-Jun-05	06-Aug-05	09-Sep-05	13-Jun-06	29-Jul-06	10-Sep-06	12-Aug-15	12-Aug-15	29-Jun-16	29-Jun-16	25-Aug-16	25-Aug-16	29-Jun-17	29-Jun-17
										US	DS	US	DS	DS	US	US	DS
Dissolved Metals and Non-Metals																	
Aluminum	mg/L	0.0010	-	0.013	0.006	0.004	0.009	<0.005	0.007	<0.0050	0.090	-	-	-	-	-	-
Arsenic	mg/L	0.00010	-	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.00010	<0.00010	-	-	-	-	-	-
Barium	mg/L	0.00010	-	0.002	0.004	0.005	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-
Boron	mg/L	0.010	-	<0.05	0.02	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-
Cadmium	mg/L	0.0000050	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.000010	<0.000010	-	-	-	-	-	-
Calcium	mg/L	0.050	-	1.60	9.05	8.60	3	8	9	7.39	7.78	-	-	-	-	-	-
Chromium	mg/L	0.00050	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-
Cobalt	mg/L	0.00010	-	<0.0003	<0.0003	<0.0003	<0.0002	<0.0002	<0.0002	-	-	-	-	-	-	-	-
Copper	mg/L	0.00020	-	<0.0008	0.0009	0.0010	<0.001	<0.001	<0.001	0.00066	0.00080	-	-	-	-	-	-
Iron	mg/L	0.010	-	0.04	<0.02	<0.02	0.06	<0.03	<0.03	<0.010	0.107	-	-	-	-	-	-
Lead	mg/L	0.000050	Variable [e]	<0.0002	<0.0002	<0.0002	<0.001	<0.001	<0.001	<0.000050	<0.000050	-	-	-	-	-	-
Magnesium	mg/L	0.0050	-	1.24	5.23	5.12	2	5	5	4.40	4.56	-	-	-	-	-	-
Manganese	mg/L	0.00010	-	0.0175	<0.0007	<0.0007	<0.01	<0.01	<0.01	0.00058	0.00181	-	-	-	-	-	-
Mercury	mg/L	0.0000050	-	-	-	-	-	-	-	<0.000010	<0.000010	-	-	-	-	-	-
Molybdenum	mg/L	0.000050	-	<0.0003	<0.0003	<0.0003	<0.005	<0.005	<0.005	0.000065	0.000080	-	-	-	-	-	-
Nickel	mg/L	0.00050	-	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.00050	<0.00050	-	-	-	-	-	-
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	0.85	0.61	0.58	0.48	0.54	0.57	0.599	0.680	-	-	-	-	-	-
Selenium	mg/L	0.000050	-	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.000050	<0.000050	-	-	-	-	-	-
Silver	mg/L	0.000010	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-
Sodium	mg/L	0.050	-	0.37	0.72	0.68	0.31	0.72	1.02	2.68	2.82	-	-	-	-	-	-
Strontium	mg/L	0.00020	0.25	0.0013	0.0052	0.0049	0.002	0.006	0.007	-	-	-	-	-	-	-	-
Thallium	mg/L	0.000010	-	<0.0002	<0.0002	<0.0002	-	-	-	<0.000010	<0.000010	-	-	-	-	-	-
Tin	mg/L	0.00010	-	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-
Uranium	mg/L	0.000010	-	-	-	-	-	-	-	0.000296	0.000329	-	-	-	-	-	-
Vanadium	mg/L	0.00050	-	<0.0009	0.0015	<0.0009	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-
Zinc	mg/L	0.0010	Variable [e]	0.002	0.002	0.001	<0.01	<0.01	<0.01	<0.0010	0.0029	-	-	-	-	-	-
Miscellaneous (Water)																	
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.8 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-100 (CV217)

Parameters	Units	2025 LOR	CCME Guideline	Date																	
				2018				2019				2020						2021			
				04-Jul-18	04-Jul-18	02-Sep-18	02-Sep-18	22-Jun-19	22-Jun-19	09-Aug-19	09-Aug-19	22-Jun-20	22-Jun-20	21-Jul-20	21-Jul-20	13-Sep-20	13-Sep-20	13-Jun-21	13-Jun-21	17-Aug-21	17-Aug-21
				US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	DS	US	DS	US
In Situ Parameters																					
Temperature	ºC	-	-	2.7	2.6	8.0	8.7	2.7	2.6	15.8	15.2	2.6	2.0	13.0	12.1	4.17	4.00	2.0	4.2	7.6	8.2
Specific Conductance	µS/cm	-	-	0.0826	0.0824	0.0723	0.0904	0.0691	0.0695	0.0894	0.0852	0.0578	0.0593	0.0944	0.0921	126.4	152.1	68.9	62	95.4	96.7
Dissolved Oxygen	mg/L	-	< 9.5	-	-	-	-	-	-	-	-	13.4	13.8	11.54	11.45	12.16	12.40	13.52	13.23	12.04	11.83
Dissolved Oxygen	%	-	-	93.5	93.5	102.8	103.3	97.6	97.3	105.2	105	98.7	99.3	108.4	104.9	94.5	94.8	99.1	102.6	102.8	102.6
pH	pH units	-	6.5 - 9.0	7.76	7.92	8.23	8.30	7.97	8.08	8.45	8.17	7.74	7.64	7.95	7.91	7.92	7.97	7.55	7.83	8.45	8.20
Wetted Width	m	-	-	50	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average Depth	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flow Rate	m^3/s	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physical Parameters																					
pH	pH units	0.10	6.5 - 9.0	7.65	7.67	7.97	7.95	7.64	7.68	7.63	7.75	7.52	7.49	7.75	7.81	7.83	7.81	7.60	7.55	7.54	7.81
Conductivity	µS/cm	1.0	-	-	-	-	-	-	-	-	-	60	62	98	98	133	165	71.4	65.1	101	107
Turbidity	NTU	0.10	-	0.72	1.88	0.75	0.69	0.57	0.66	0.61	0.68	1.33	0.86	1.19	1.13	0.24	2.14	1.66	1.56	0.46	0.46
Hardness	mg/L as $CaCO_3$	0.50	-	34	34	34	37.0	36.9	37.5	36.6	37.9	26.2	27.1	39.6	39.0	46	52	28.5	26.6	40.6	42.8
Total Suspended Solids	mg/L	1.0	Variable [g]	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	1.5	2.1	1.0	<2.0
Total Dissolved Solids	mg/L	18 - 19	-	48	53	65	67	47	53	41	43	54	55	64	58	70	78	43	45	57	58
Dissolved Anions																					
Alkalinity	mg/L as $CaCO_3$	2.0	-	33	32	35	34	37	37	38	38	24	25	36	36	41	41	39.0	31.6	40.4	41.5
Bromide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	5.66	5.68	5.39	10.90	4.42	4.51	4.05	4.66	3.43	3.62	6.50	6.50	13.0	20.8	5.17	4.44	6.96	6.56
Fluoride	mg/L	-	-	<0.020	<0.020	<0.020	<0.020	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfate	mg/L	-	-	1.06	1.11	0.86	1.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nutrients																					
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite	mg/L N	0.010	0.06	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate	mg/L N	0.020	3	0.027	0.027	<0.020	<0.020	0.027	0.025	0.025	0.027	<0.020	0.02	0.23	<0.020	<0.020	0.032	0.032	0.031	<0.020	0.039
Nitrate + Nitrite	mg/L N	-	-	-	-	-	-	0.027	0.025	0.025	0.027	-	-	-	-	-	-	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	<0.020	<0.020	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Total Phosphorus	mg/L	0.0020	0.01	0.0041	0.0032	0.006	0.050	0.0043	0.0037	<0.0030	<0.0030	0.013	0.008	<0.0030	0.004	0.0033	<0.0030	0.0100	0.0062	0.0035	<0.0030
Dissolved Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic Compounds																					
Phenols	mg/L	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	1.92	1.97	2.17	2.22	2.45	2.43	2.15	2.07	3.46	3.21	2.64	2.96	2.92	3.82	3.71	4.18	2.75	3.00
Total Organic Carbon	mg/L	0.50	-	2.18	2.25	2.51	2.84	2.81	2.92	2.33	2.83	3.77	3.87	3.02	3.15	4.16	3.76	4.02	4.15	5.30	5.36
Total Kjeldahl Nitrogen	mg/L	-	-	<0.15	<0.15	<0.15	<0.15	-	-	-	-	-	-	-	-	<0.15	<0.15	0.240	0.180	0.110	0.110
Chlorophyll-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.8 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-100 (CV217)

Parameters	Units	2025 LOR	CCME Guideline	Date																	
				2018				2019				2020						2021			
				04-Jul-18	04-Jul-18	02-Sep-18	02-Sep-18	22-Jun-19	22-Jun-19	09-Aug-19	09-Aug-19	22-Jun-20	22-Jun-20	21-Jul-20	21-Jul-20	13-Sep-20	13-Sep-20	13-Jun-21	13-Jun-21	17-Aug-21	17-Aug-21
				US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	DS	US	DS	US
Total Metals and Non-Metals																					
Aluminum	mg/L	0.0030	Variable [f]	0.0189	0.018	0.0249	0.0204	0.0202	0.0391	0.0378	0.0367	0.0375	0.0436	0.0423	0.0452	0.0156	0.094	0.0416	0.0406	0.0214	0.0189
Antimony	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	mg/L	0.00010	0.005	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Barium	mg/L	0.00010	-	0.00410	0.00413	0.00438	0.00455	0.00446	0.00475	0.00526	0.00571	0.00352	0.00376	0.00540	0.00502	0.00531	0.00656	0.00422	0.00392	0.00498	0.00530
Beryllium	mg/L	0.000020	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron	mg/L	0.010	1.5	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	mg/L	0.0000050	Variable [c]	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	0.050	-	6.90	6.88	6.82	7.40	7.19	7.19	7.34	8.00	5.26	5.17	7.98	8.00	8.77	10.2	5.64	5.37	7.81	8.12
Cesium	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000016	<0.000010	<0.000010	<0.000010	<0.000010
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	Variable [c]	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0005	0.001	0.0010	0.001	0.00084	0.00115	0.00065	0.00063	0.00079	0.00089
Iron	mg/L	0.010	0.3	0.032	0.033	0.031	0.025	0.035	0.061	0.045	0.041	0.057	0.058	0.056	0.049	0.025	0.113	0.050	0.063	0.029	0.023
Lead	mg/L	0.000050	0.001 - 0.007 [c]	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000055	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000117	<0.000050	<0.000050	<0.000050	<0.000050
Lithium	mg/L	0.0010	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium	mg/L	0.0050	-	4.19	4.13	4.13	4.56	4.40	4.37	4.09	4.46	3.20	3.33	4.73	4.69	5.88	6.74	3.62	3.39	4.96	5.12
Manganese	mg/L	0.00010	Variable [c]	0.00264	0.00267	0.00115	0.00151	0.00383	0.00461	0.00179	0.00183	0.00505	0.00556	0.00284	0.00272	0.00157	0.00581	0.00399	0.00460	0.00159	0.00117
Mercury	mg/L	0.0000050	0.000026	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	mg/L	0.000050	0.073	0.000089	0.000080	0.000077	0.000086	0.000085	0.000073	0.000106	0.000115	0.000058	0.000071	0.000094	0.000102	0.000094	0.000134	0.000080	0.000067	0.000095	0.000089
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00057	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium	mg/L	0.050	-	0.594	0.598	0.581	0.639	0.628	0.628	0.585	0.624	0.601	0.609	0.682	0.666	0.751	0.900	0.866	0.837	0.711	0.736
Rubidium	mg/L	0.00020	-	0.00095	0.00098	0.00093	0.00097	0.00090	0.00102	0.00102	0.00131	0.00081	0.00084	0.00114	0.00110	0.00111	0.00150	0.00115	0.00106	0.00109	0.00113
Selenium	mg/L	0.000050	0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon	mg/L	0.10	-	0.470	0.480	0.380	0.380	0.440	0.500	0.48	0.5	0.450	0.430	0.620	0.610	0.52	0.70	0.50	0.51	0.51	0.55
Silver	mg/L	0.000010	0.25	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	2.70	2.85	2.60	5.10	2.34	2.21	1.95	1.99	1.54	1.74	3.36	3.37	6.65	9.95	2.45	2.15	3.65	3.55
Strontium	mg/L	0.00020	0.25	0.0081	0.0081	0.0079	0.0122	0.0072	0.0072	0.0079	0.0086	0.0048	0.0051	0.0090	0.0087	0.0133	0.0188	0.0068	0.0061	0.0094	0.0098
Sulfur	mg/L	0.50	-	0.52	0.51	0.53	0.64	<0.50	<0.50	<0.50	<0.50	0.56	<0.50	<0.50	0.56	0.71	1.11	<0.50	<0.50	0.68	0.94
Tellurium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium	mg/L	0.000010	0.0008	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00011	<0.00010	<0.00010	<0.00010	<0.00010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium	mg/L	0.00030	-	0.00051	0.00055	0.0008	0.00064	0.00086	0.00217	0.00184	0.00149	0.0012	0.00166	0.00199	0.00169	<0.00060	0.00478	0.00138	<0.0020	0.00062	0.00052
Tungsten	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	0.015	0.000263	0.000260	0.000279	0.000310	0.000262	0.000250	0.000333	0.000347	0.000235	0.000279	0.000460	0.000424	0.000537	0.000684	0.000333	0.000279	0.000446	0.000455
Vanadium	mg/L	0.00050	0.12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0030	0.03	0.0107	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Zirconium	mg/L	0.00020	-	<0.00030	<0.00030	<0.00030	<0.00030	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020

Table 2.8 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-100 (CV217)

Parameters	Units	2025 LOR	CCME Guideline	Date																	
				2018				2019				2020						2021			
				04-Jul-18	04-Jul-18	02-Sep-18	02-Sep-18	22-Jun-19	22-Jun-19	09-Aug-19	09-Aug-19	22-Jun-20	22-Jun-20	21-Jul-20	21-Jul-20	13-Sep-20	13-Sep-20	13-Jun-21	13-Jun-21	17-Aug-21	17-Aug-21
				US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	DS	US	DS	US
Dissolved Metals and Non-Metals																					
Aluminum	mg/L	0.0010	-	-	-	-	-	-	-	-	-	0.013	0.019	0.015	0.015	<0.0050	0.0196	0.0165	0.0144	0.0106	0.0068
Arsenic	mg/L	0.00010	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Barium	mg/L	0.00010	-	-	-	-	-	-	-	-	-	0.003	0.004	0.005	0.005	0.00541	0.00603	0.00401	0.00366	0.00522	0.00547
Boron	mg/L	0.010	-	-	-	-	-	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	mg/L	0.0000050	-	-	-	-	-	-	-	-	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	0.050	-	-	-	-	-	-	-	-	-	5.120	5.170	7.800	7.540	9.16	10.2	5.53	5.19	7.87	8.31
Chromium	mg/L	0.00050	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00020	-	-	-	-	-	-	-	-	-	0.001	0.001	0.001	0.001	0.0008	0.0009	0.00061	0.00057	0.00077	0.00085
Iron	mg/L	0.010	-	-	-	-	-	-	-	-	-	0.028	0.026	0.016	0.019	<0.010	0.023	0.024	0.026	<0.010	<0.010
Lead	mg/L	0.000050	Variable [e]	-	-	-	-	-	-	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Magnesium	mg/L	0.0050	-	-	-	-	-	-	-	-	-	3.270	3.440	4.890	4.890	5.64	6.46	3.56	3.31	5.09	5.36
Manganese	mg/L	0.00010	-	-	-	-	-	-	-	-	-	0.004	0.004	0.002	0.002	<0.00050	0.00282	0.00512	0.00590	<0.00050	<0.00050
Mercury	mg/L	0.0000050	-	-	-	-	-	-	-	-	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	mg/L	0.000050	-	-	-	-	-	-	-	-	-	0.000	0.000	0.000	0.000	0.000113	0.000128	0.000075	0.000068	0.000083	0.000090
Nickel	mg/L	0.00050	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	-	-	-	-	-	-	-	-	0.586	0.603	0.684	0.680	0.782	0.913	0.848	0.802	0.745	0.788
Selenium	mg/L	0.000050	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silver	mg/L	0.000010	-	-	-	-	-	-	-	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	-	-	-	-	-	-	-	-	1.590	1.890	3.370	3.390	6.24	9.34	2.41	2.10	3.73	3.67
Strontium	mg/L	0.00020	0.25	-	-	-	-	-	-	-	-	0.005	0.005	0.009	0.009	0.01500	0.02020	0.0065	0.0058	0.0096	0.0098
Thallium	mg/L	0.000010	-	-	-	-	-	-	-	-	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin	mg/L	0.00010	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00012	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	-	-	-	-	-	-	-	-	-	0.000	0.000	0.000	0.000	0.000519	0.000618	0.000318	0.000279	0.000424	0.000433
Vanadium	mg/L	0.00050	-	-	-	-	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0010	Variable [e]	-	-	-	-	-	-	-	-	0.0010	0.0010	<0.0010	0.0015	<0.0010	0.0014	<0.0010	<0.0010	0.0058	<0.0010
Miscellaneous (Water)																					
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.8 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-100 (CV217)

Parameters	Units	2025 LOR	CCME Guideline	Date																	
				2022				2023						2024				2025			
				19-Jun-22	19-Jun-22	29-Aug-22	29-Aug-22	25-Jun-23	25-Jun-23	16-Jul-23	16-Jul-23	20-Aug-23	20-Aug-23	23-Jun-24	23-Jun-24	18-Aug-24	18-Aug-24	01-Jul-25	01-Jul-25	20-Aug-25	20-Aug-25
				DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
In Situ Parameters																					
Temperature	ºC	-	-	2.7	4.4	7.3	7.4	2.1	1.0	7.5	15.4	7.0	7.2	4.0	5.6	8.3	9.2	3.9	3.5	7.1	7.3
Specific Conductance	µS/cm	-	-	90.7	36.6	86.5	89.3	56.5	32.5	45.4	53.9	78.5	77.2	47.2	41.6	77.0	86.4	81.3	58.0	93.3	83.6
Dissolved Oxygen	mg/L	-	< 9.5	13.58	12.65	11.40	11.83	12.81	12.68	12.07	12.06	11.55	11.65	13.20	13.20	11.38	11.40	12.01	11.90	11.97	11.93
Dissolved Oxygen	%	-	-	99.9	97.6	95.6	98.1	96.3	92.3	103.0	123.7	98.3	99.5	101.0	105.4	96.9	98.8	91.3	89.7	98.8	98.9
pH	pH units	-	6.5 - 9.0	7.46	7.83	7.96	7.95	7.75	7.89	7.73	7.94	8.20	7.80	7.49	7.31	7.83	7.83	7.81	7.62	8.10	8.26
Wetted Width	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average Depth	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flow Rate	m^3/s	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physical Parameters																					
pH	pH units	0.10	6.5 - 9.0	7.44	7.26	7.53	7.55	7.38	7.18	7.68	7.56	7.76	7.74	7.30	7.22	7.98	7.89	7.30	7.14	7.92	7.72
Conductivity	µS/cm	1.0	-	90.2	39.8	86.9	88.6	57.6	32.8	48.5	55.1	83.6	80.7	51.1	45.4	83.7	91.5	83.2	61.7	107	92.6
Turbidity	NTU	0.10	-	1.56	2.59	<1.0	<1.0	1.97	3	2.98	3.47	1.1	7.86	4.57	5.23	1.09	0.65	1.61	1.34	1.47	1.34
Hardness	mg/L as $CaCO_3$	0.50	-	36.3	18	37.6	39.7	24.58	14.41	20.62	26.37	35.66	34.59	22.8	20.1	36.5	38.7	37.9	27	42.5	39.8
Total Suspended Solids	mg/L	1.0	Variable [g]	3.1	3.3	<3.0	<3.0	14.1	10.8	<1.0	4.1	<1.0	24.2	2.7	27.3	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	1.0
Total Dissolved Solids	mg/L	18 - 19	-	50	<10	46	48	34	20	33	44	42	47	43	38	51	55	38	24	46	37
Dissolved Anions																					
Alkalinity	mg/L as $CaCO_3$	2.0	-	33.6	17.5	23.1	24.4	35.5	14.6	21.6	24.6	37.2	45.7	21.6	18.9	35.1	34.9	34.8	25.4	36.9	34.7
Bromide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	7.07	1.45	6.03	5.9	3.3	1.03	2.36	1.88	6.03	5.19	2.37	1.77	3.82	5.88	3.82	2.73	6.94	3.86
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nutrients																					
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite	mg/L N	0.010	0.06	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Nitrate	mg/L N	0.020	3	0.023	<0.020	<0.020	<0.020	0.028	<0.020	<0.020	0.034	0.035	<0.020	< 0.020	0.027	< 0.020	0.052	0.024	0.023	0.030	< 0.020
Nitrate + Nitrite	mg/L N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	<0.010	<0.010	<0.010	<0.010	<0.0050	0.0072	<0.0050	<0.0050	0.0066	0.0131	0.0065	0.0106	0.0156	0.0067	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Total Phosphorus	mg/L	0.0020	0.01	<0.0030	0.0041	<0.0030	<0.0030	0.0055	0.0087	0.0058	0.0162	0.0058	0.0074	0.0086	0.0050	0.0043	0.0035	0.0030	0.0024	0.0050	0.0025
Dissolved Phosphorus	mg/L	-	-	<0.050	<0.050	<0.050	<0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic Compounds																					
Phenols	mg/L	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	3.00	3.12	2.58	2.40	3.11	3.2	1.6	2.09	1.92	16.8	3.01	3.41	2.47	2.39	2.08	1.32	1.92	2.05
Total Organic Carbon	mg/L	0.50	-	3.01	2.84	2.34	2.44	3.32	2.92	2.12	2.36	2.04	14.6	2.65	2.64	2.50	2.20	2.34	1.83	2.58	2.64
Total Kjeldahl Nitrogen	mg/L	-	-	0.179	0.184	0.108	0.151	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorophyll-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.8 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-100 (CV217)

Parameters	Units	2025 LOR	CCME Guideline	Date																	
				2022				2023						2024				2025			
				19-Jun-22	19-Jun-22	29-Aug-22	29-Aug-22	25-Jun-23	25-Jun-23	16-Jul-23	16-Jul-23	20-Aug-23	20-Aug-23	23-Jun-24	23-Jun-24	18-Aug-24	18-Aug-24	01-Jul-25	01-Jul-25	20-Aug-25	20-Aug-25
				DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
Total Metals and Non-Metals																					
Aluminum	mg/L	0.0030	Variable [f]	0.0499	0.0804	0.0142	0.0092	0.0989	0.167	0.0694	0.045	0.0256	0.0355	0.153	0.147	0.0245	0.0205	0.0527	0.0342	0.0590	0.0406
Antimony	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Arsenic	mg/L	0.00010	0.005	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Barium	mg/L	0.00010	-	0.00480	0.00252	0.00438	0.00439	0.00373	0.0032	0.00327	0.00392	0.00447	0.00434	0.00406	0.00399	0.00452	0.00528	0.00496	0.00348	0.00555	0.00502
Beryllium	mg/L	0.000020	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.00002	< 0.00002	< 0.00002	< 0.00002
Bismuth	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Boron	mg/L	0.010	1.5	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.01
Cadmium	mg/L	0.0000050	Variable [c]	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Calcium	mg/L	0.050	-	6.96	3.67	6.73	7.32	4.52	3	3.9	4.86	6.7	6.41	4.48	4.04	7.19	7.69	7.19	4.93	8.62	7.96
Cesium	mg/L	0.000010	-	<0.000010	0.000012	<0.000010	<0.000010	0.000017	0.000035	0.000011	<0.000010	<0.000010	<0.000010	0.000022	0.000023	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00072	0.00148	<0.00050	<0.00050	<0.00050	0.00099	0.00056	< 0.00050	< 0.00050	0.00052	0.00211	< 0.0005	< 0.0005
Cobalt	mg/L	0.00010	Variable [c]	<0.00010	0.00010	<0.00010	<0.00010	<0.00010	0.00019	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	0.00077	<0.00050	0.00068	0.00075	0.00066	0.00067	0.00061	0.00078	0.00081	0.0008	0.00093	0.00099	0.00082	0.00076	0.00099	0.00090	0.00095	0.00126
Iron	mg/L	0.010	0.3	0.054	0.111	0.025	0.01	0.11	0.219	0.095	0.065	0.058	0.069	0.177	0.166	0.037	0.024	0.057	0.060	0.062	0.041
Lead	mg/L	0.000050	0.001 - 0.007 [c]	0.000056	0.000065	<0.000050	<0.000050	0.000116	0.000149	0.000068	<0.000050	<0.000050	<0.000050	0.000120	0.000117	< 0.000050	< 0.000050	< 0.000050	0.000091	< 0.000050	< 0.000050
Lithium	mg/L	0.0010	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Magnesium	mg/L	0.0050	-	4.92	2.38	5.05	5.24	3.12	1.8	2.47	2.98	4.37	4.22	3.09	2.80	4.54	4.93	4.83	3.28	5.44	4.92
Manganese	mg/L	0.00010	Variable [c]	0.00456	0.0149	0.00282	<0.00050	0.0062	0.0151	0.00355	0.00284	0.00433	0.00468	0.00640	0.00696	0.00217	0.00249	0.00239	0.00159	0.00493	0.00162
Mercury	mg/L	0.0000050	0.000026	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Molybdenum	mg/L	0.000050	0.073	0.000090	<0.000050	0.000092	0.000097	0.000068	<0.000050	0.000053	0.000084	0.000082	0.00008	0.000057	0.000054	0.000096	0.000102	0.000105	0.000103	0.000110	0.000098
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00209	<0.00050	<0.00050	0.00059	0.00080	0.00050	< 0.00050	< 0.00050	0.00121	0.00163	< 0.0005	< 0.0005
Phosphorus	mg/L	0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Potassium	mg/L	0.050	-	0.774	0.531	0.655	0.68	0.718	0.492	0.428	0.551	0.624	0.617	0.636	0.624	0.657	0.711	0.701	0.482	0.738	0.650
Rubidium	mg/L	0.00020	-	0.00111	0.00078	0.00101	0.001	0.00124	0.00154	0.00087	0.00098	0.00099	0.00105	0.00130	0.00123	0.00100	0.00120	0.00106	0.00071	0.00114	0.00104
Selenium	mg/L	0.000050	0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Silicon	mg/L	0.10	-	0.42	0.42	0.31	0.33	0.39	0.57	0.41	0.54	0.45	0.47	0.60	0.60	0.47	0.43	0.65	0.46	0.62	0.60
Silver	mg/L	0.000010	0.25	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Sodium	mg/L	0.050	-	3.70	0.748	3.47	3.47	1.72	0.592	1.24	0.971	2.76	2.78	1.40	1.22	2.24	2.42	2.23	1.50	3.27	2.02
Strontium	mg/L	0.00020	0.25	0.0101	0.0030	0.0093	0.0094	0.00547	0.0025	0.00394	0.00423	0.00792	0.00748	0.00465	0.00406	0.00759	0.00889	0.00760	0.00521	0.0103	0.00730
Sulfur	mg/L	0.50	-	0.72	<0.50	0.51	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Tellurium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020
Thallium	mg/L	0.000010	0.0008	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Thorium	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	0.00040	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Titanium	mg/L	0.00030	-	0.00170	0.00275	0.00036	<0.00030	0.004	0.0104	0.00291	0.00141	0.00097	0.00152	0.00723	0.00668	0.00086	0.00044	0.00181	0.00116	0.00204	0.00117
Tungsten	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Uranium	mg/L	0.000010	0.015	0.000415	0.000086	0.00039	0.000328	0.000298	0.000114	0.000197	0.000187	0.000329	0.000307	0.000237	0.000204	0.000329	0.000429	0.000365	0.000248	0.000448	0.000362
Vanadium	mg/L	0.00050	0.12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0006	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Zinc	mg/L	0.0030	0.03	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030
Zirconium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00048	<0.00020	<0.00020	<0.00020	<0.00020	< 0.00020	0.00022	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020

Table 2.8 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-100 (CV217)

Parameters	Units	2025 LOR	CCME Guideline	Date																	
				2022				2023						2024				2025			
				19-Jun-22	19-Jun-22	29-Aug-22	29-Aug-22	25-Jun-23	25-Jun-23	16-Jul-23	16-Jul-23	20-Aug-23	20-Aug-23	23-Jun-24	23-Jun-24	18-Aug-24	18-Aug-24	01-Jul-25	01-Jul-25	20-Aug-25	20-Aug-25
				DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
Dissolved Metals and Non-Metals																					
Aluminum	mg/L	0.0010	-	0.0081	0.0133	<0.0050	0.0134	0.0197	0.0267	0.013	0.0184	0.0064	0.011	0.0217	0.022	0.0055	0.0085	0.0075	0.0078	0.0154	0.0143
Arsenic	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Barium	mg/L	0.00010	-	0.00464	0.00233	0.00428	0.00451	0.0032	0.00208	0.00291	0.00402	0.00424	0.00402	0.00312	0.00291	0.00409	0.00463	0.00451	0.00335	0.00531	0.00499
Boron	mg/L	0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Cadmium	mg/L	0.0000050	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Calcium	mg/L	0.050	-	7.09	3.66	7.18000	7.3	4.52	2.99	4.08	5.4	6.71	6.53	4.26	3.85	6.88	7.32	7.07	5.06	8.21	7.66
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Cobalt	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Copper	mg/L	0.00020	-	0.00064	0.00023	0.00	0.0007	0.00066	0.00037	0.00052	0.00075	0.00067	0.00077	0.00056	0.00055	0.00074	0.00075	0.00083	0.00062	0.00077	0.00078
Iron	mg/L	0.010	-	0.012	0.035	<0.010	0.021	0.028	0.042	0.019	0.025	0.019	0.022	0.024	0.027	0.011	< 0.010	0.013	0.010	0.016	0.015
Lead	mg/L	0.000050	Variable [e]	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000051	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Magnesium	mg/L	0.0050	-	4.51	2.15	4.780000	5.21	3.2	1.67	2.51	3.1	4.55	4.4	2.96	2.54	4.69	4.96	4.92	3.50	5.34	5.02
Manganese	mg/L	0.00010	-	0.00331	0.01220	0.00088	0.00163	0.00422	0.0106	0.00142	0.00176	0.00171	0.00141	0.00191	0.00232	0.00040	0.00108	0.00146	0.00095	0.00274	0.00041
Mercury	mg/L	0.0000050	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Molybdenum	mg/L	0.000050	-	0.000082	<0.000050	0.000077	0.000088	0.000067	0.000051	<0.000050	0.000131	0.000083	0.000078	0.000055	0.000051	0.000077	0.000099	0.000087	0.000072	0.000097	0.000086
Nickel	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Phosphorus	mg/L	0.050	-	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Potassium	mg/L	0.050	-	0.757	0.499	0.66	0.688	0.661	0.431	0.474	0.658	0.623	0.621	0.573	0.548	0.600	0.638	0.657	0.470	0.690	0.647
Selenium	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Silver	mg/L	0.000010	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Sodium	mg/L	0.050	-	3.74	0.720	3.45	3.47	1.7	0.567	1.29	0.954	2.86	2.77	1.36	1.11	2.27	2.35	2.26	1.54	3.14	2.02
Strontium	mg/L	0.00020	0.25	0.0095	0.0029	0.00870	0.0089	0.00547	0.00228	0.00426	0.00481	0.00761	0.0075	0.00442	0.00375	0.00705	0.0083	0.00697	0.00492	0.00993	0.00745
Thallium	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	0.00030	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Uranium	mg/L	0.000010	-	0.000409	0.000072	0.000366	0.000368	0.000245	0.000083	0.000179	0.000197	0.000291	0.000293	0.000191	0.000163	0.000297	0.000376	0.000335	0.000220	0.000393	0.000322
Vanadium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Zinc	mg/L	0.0010	Variable [e]	<0.0010	0.0016	<0.0010	<0.0010	<0.0010	0.0018	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	0.0010	< 0.0010	0.0012	< 0.0010	0.0021	< 0.0010	0.0016
Miscellaneous (Water)																					
6PPD-Quinone	ug/L	-	-	-	-	<0.0020	<0.0020	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.9 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-110 (BG24)

Parameter	Units	2025 LOR	CCME Guideline	Date																	
				2005			2006			2015		2016				2017		2018			
				07-Jun-05	06-Aug-05	09-Sep-05	13-Jun-06	29-Jul-06	10-Sep-06	12-Aug-15	12-Aug-15	29-Jun-16	29-Jun-16	25-Aug-16	25-Aug-16	29-Jun-17	29-Jun-17	04-Jul-18	04-Jul-18	31-Aug-18	31-Aug-18
										US	DS	DS	US	DS	US	US	DS	US	DS	US	DS
In Situ Parameters																					
Temperature	ºC	-	-	3.76	9.54	7.0	1.99	7.11	4.35	6.8	6.9	5.1	5.0	4.5	5.1	1.8	3.5	2.4	2.5	3.6	3.9
Specific Conductance	µS/cm	-	-	0.019	0.079	0.082	0.075	0.076	0.095	0.05	0.05	0.112	0.114	0.371	0.367	0.116	0.105	0.132	0.134	0.2278	0.2352
Dissolved Oxygen	mg/L	-	< 9.5	10.4	10.91	11.71	12.8	13.55	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Oxygen	%	-	-	-	-	-	-	-	-	104.30	103.00	104.9	105.8	99.3	103.2	101.8	103.6	96.8	96.3	101.5	98.3
pH	pH units	-	6.5 - 9.0	8.07	7.58	7.02	7.55	7.51	7.88	8.58	8.51	7.75	7.84	7.91	7.97	7.41	7.68	8.02	7.83	8.33	7.29
Wetted Width	m	-	-	-	-	-	6	17	5	1.5	1.5	4.8	4.8	-	-	5.9	4.4	1.4	2.7	1.45	1.6
Average Depth	m	-	-	-	-	-	0.4	0.9	0.3	0.25	0.25	0.2	0.2	-	-	0.17	0.45	0.22	0.1	0.04	0.1
Flow Rate	m^3/s	-	-	-	-	-	1.1	3.64	0.39	-	-	-	-	-	-	0.71213	0.5148	0.111	0.097	0.012	0.021
Physical Parameters																					
pH	pH units	0.10	6.5 - 9.0	-	-	-	7.40	6.95	6.95	8.34	8.29	7.84	7.91	8.15	8.30	7.90	7.91	7.97	8.03	8.45	8.37
Conductivity	µS/cm	1.0	-	26	88	82	84	78	119	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity	NTU	0.10	-	0.42	3.64	1.93	0.5	2.3	4.9	0.16	0.27	0.41	0.39	0.34	0.22	0.49	0.42	0.73	0.84	0.20	0.43
Hardness	mg/L as $CaCO_3$	0.50	-	7.14	43.6	43.4	47	41	52	133	136	52	52	168	169	43	43	68	69	130	139
Total Suspended Solids	mg/L	1.0	Variable [g]	-	-	-	-	-	-	<2	<2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	17 - 18	-	<30	51	<30	55	51	77	146 *	139 *	45	45	183	183	42	40	75	65	130	155
Dissolved Anions																					
Alkalinity	mg/L as $CaCO_3$	2.0	-	5	43	41	41	40	53	135	141	51	53	152	149	41	42	49	65	126	131
Bromide	mg/L	-	-	<0.3	<0.3	<0.3	<0.05	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	1.3	0.6	0.7	1	<1	4	5.18	5.26	0.8	0.8	16.5	18.0	1.04	1.07	1.26	1.39	6.98	7.41
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	0.0	0.0	0.1	0.1	0.022	0.021	0.037	0.037	0.069	0.064
Sulfate	mg/L	-	-	1.2	<0.5	0.5	2	2	4	5.54	5.38	0.8	0.6	12.2	13.7	0.46	0.58	0.91	0.91	7.38	6.48
Nutrients																					
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	0.7	0.4	0.6	<0.02	<0.02	<0.02	0.24	0.29	<0.15	<0.15	<0.15	<0.15	-	-	-	-	-	-
Nitrite	mg/L N	0.010	0.060	<0.06	<0.06	<0.06	<0.005	0.017	0.009	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate	mg/L N	0.020	3	0.12	<0.05	<0.05	<0.10	<0.10	<0.10	0.03	0.03	<0.020	<0.020	0.07	0.08	<0.020	<0.020	0.02	<0.020	<0.020	<0.020
Nitrate + Nitrite	mg/L N	-	-	0.12	<0.06	<0.06	<0.10	<0.10	<0.10	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	-	-	-	-	-	-	<0.050	<0.050	0.07	0.07	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	-	-
Total Phosphorus	mg/L	0.0020	0.01	0.02	<0.02	<0.10	<0.01	<0.01	0.01	<0.0030	<0.0030	<0.0030	0.01	0.00	0.00	0.0086	0.0082	0.0060	0.0046	<0.0030	<0.0030
Dissolved Phosphorus	mg/L	-	-	<0.02	<0.02	<0.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic Compounds																					
Phenols	mg/L	-	0.004	0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	-	-	-	-	-	-	2.3	2.3	<1.0	<1.0	2.0	2.0	1.46	1.57	1.98	1.90	2.29	2.35
Total Organic Carbon	mg/L	0.50	-	-	-	-	-	-	-	2.3	2.4	<1.0	<1.0	2.2	2.1	1.64	1.76	2.38	2.27	2.70	4.32
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	-	-	0.24	0.29	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	0.15	<0.15
Chlorophyll-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.9 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-110 (BG24)

Parameter	Units	2025 LOR	CCME Guideline	Date																	
				2005			2006			2015		2016				2017		2018			
				07-Jun-05	06-Aug-05	09-Sep-05	13-Jun-06	29-Jul-06	10-Sep-06	12-Aug-15	12-Aug-15	29-Jun-16	29-Jun-16	25-Aug-16	25-Aug-16	29-Jun-17	29-Jun-17	04-Jul-18	04-Jul-18	31-Aug-18	31-Aug-18
										US	DS	DS	US	DS	US	US	DS	US	DS	US	DS
Total Metals and Non-Metals																					
Aluminum	mg/L	0.0030	Variable [f]	0.017	0.075	0.073	0.010	0.072	0.153	<0.010	0.018	0.022	0.015	0.011	<0.010	0.0214	0.0225	0.0219	0.0195	0.006	0.0137
Antimony	mg/L	0.00010	-	<0.0004	<0.0004	<0.0004	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	mg/L	0.00010	0.005	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.00010	<0.00010	<0.00010	<0.00010	0.0001	0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Barium	mg/L	0.00010	-	<0.001	0.004	0.004	<0.01	<0.01	<0.01	-	-	0.00197	0.00176	0.00778	0.00702	0.00165	0.0017	0.00228	0.00236	0.00485	0.00602
Beryllium	mg/L	0.000020	-	<0.005	<0.005	<0.005	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth	mg/L	0.000050	-	<0.0003	<0.0003	<0.0003	-	-	-	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron	mg/L	0.010	1.5	<0.05	<0.01	<0.01	<0.01	<0.01	<0.01	-	-	<0.010	<0.010	0.011	0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	mg/L	0.0000050	Variable [c]	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	0.050	-	1.43	9.01	8.72	8.0	8.0	12	29.9	32.2	10.9	10.8	35.3	35.8	8.82	8.83	14.7	14.8	28.4	30.1
Cesium	mg/L	0.000010	-	-	-	-	-	-	-	-	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium	mg/L	0.00050	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	0.00248	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	Variable [c]	<0.0003	<0.0003	<0.0003	<0.0002	<0.0002	<0.0002	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	<0.0008	0.0009	<0.0008	<0.001	<0.001	<0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Iron	mg/L	0.010	0.300	<0.02	0.05	0.06	0.03	0.05	0.08	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.017	0.016	<0.010	0.023
Lead	mg/L	0.000050	0.001 - 0.007 [c]	<0.0002	0.0004	<0.0002	<0.001	<0.001	<0.001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium	mg/L	0.0010	-	-	-	-	-	-	-	-	-	<0.0010	0.0013	0.0041	0.0044	<0.0010	<0.0010	0.0015	0.0015	0.0025	0.0024
Magnesium	mg/L	0.0050	-	0.868	5.12	5.24	5	5	7	16.4	17.4	5.94	5.95	19.3	19.3	4.99	5.12	7.71	7.78	14.4	15.4
Manganese	mg/L	0.00010	Variable [c]	0.0097	0.0024	0.0014	<0.01	<0.01	<0.01	0.00054	0.00335	0.00126	<0.00050	0.00526	0.0008	0.00062	0.00087	0.00052	0.00074	<0.00050	0.00383
Mercury	mg/L	0.0000050	0.000026	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum	mg/L	0.000050	0.073	<0.0003	<0.0003	<0.0003	<0.005	<0.005	<0.005	<0.00050	<0.00050	<0.000050	<0.000050	0.000109	0.000112	<0.000050	<0.000050	0.000057	0.000052	0.000102	0.000151
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.0010	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium	mg/L	0.050	-	0.77	0.48	0.51	0.50	0.51	0.50	0.565	0.649	0.297	0.269	0.818	0.731	0.308	0.317	0.294	0.31	0.584	0.7
Rubidium	mg/L	0.00020	-	-	-	-	-	-	-	-	-	0.00033	0.00024	0.00094	0.00046	0.00031	0.00032	0.00029	0.00034	0.00038	0.00074
Selenium	mg/L	0.000050	0.001	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon	mg/L	0.10	-	-	-	-	-	-	-	-	-	0.393	0.381	0.743	0.73	0.4	0.41	0.54	0.54	0.6	0.61
Silver	mg/L	0.000010	0.25	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	0.43	0.51	0.48	0.57	0.48	1.61	5.22	5.33	0.77	0.75	8.94	9.62	0.83	0.81	1.1	1.16	4.81	4.51
Strontium	mg/L	0.00020	0.25	0.0011	0.0049	0.0048	0.005	0.005	0.008	-	-	0.0056	0.0056	0.025	0.0262	0.0044	0.0045	0.0083	0.0085	0.0192	0.0205
Sulphur	mg/L	0.50	-	-	-	-	-	-	-	-	-	<0.50	<0.50	4.8	5.24	<0.50	<0.50	0.73	0.53	2.83	2.57
Tellurium	mg/L	0.00020	-	-	-	-	-	-	-	-	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium	mg/L	0.000010	0.0008	<0.0002	<0.0002	<0.0002	-	-	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium	mg/L	0.00010	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin	mg/L	0.00010	-	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium	mg/L	0.00030	-	<0.003	<0.003	<0.003	-	-	-	-	-	0.00087	0.00052	0.00055	<0.00030	0.00075	0.00088	0.00074	0.00071	<0.00030	0.00061
Tungsten	mg/L	0.00010	-	-	-	-	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	0.015	-	-	-	-	-	-	0.000941	0.000943	0.000116	0.000109	0.0012	0.00131	0.000068	0.000071	0.000217	0.000219	0.000954	0.000937
Vanadium	mg/L	0.00050	0.12	<0.0009	<0.0009	<0.0009	<0.001	<0.001	<0.001	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0030	0.03	0.0040	0.0010	0.0020	<0.01	<0.01	<0.01	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Zirconium	mg/L	0.00020	-	-	-	-	-	-	-	-	-	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030

Table 2.9 Water Quality Monitoring Of Baseline Fisheries Culverts Surface
Water Quality Summary For Sample Site N1-110 (BG24)

Parameter	Units	2025 LOR	CCME Guideline	Date																	
				2005			2006			2015		2016				2017		2018			
				07-Jun-05	06-Aug-05	09-Sep-05	13-Jun-06	29-Jul-06	10-Sep-06	12-Aug-15	12-Aug-15	29-Jun-16	29-Jun-16	25-Aug-16	25-Aug-16	29-Jun-17	29-Jun-17	04-Jul-18	04-Jul-18	31-Aug-18	31-Aug-18
										US	DS	DS	US	DS	US	US	DS	DS	US	US	DS
Dissolved Metals and Non-Metals																					
Aluminum	mg/L	0.0010	-	0.010	0.009	0.007	<0.005	<0.005	<0.005	<0.0050	<0.0050	-	-	-	-	-	-	-	-	-	-
Arsenic	mg/L	0.00010	-	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.00010	<0.00010	-	-	-	-	-	-	-	-	-	-
Barium	mg/L	0.00010	-	<0.001	0.003	0.004	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-	-
Boron	mg/L	0.010	-	<0.05	0.02	<0.01	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/L	0.0000050	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.000010	<0.000010	-	-	-	-	-	-	-	-	-	-
Calcium	mg/L	0.050	-	1.54	9.19	8.14	9	8	11	28.0	28.9	-	-	-	-	-	-	-	-	-	-
Chromium	mg/L	0.00050	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt	mg/L	0.00010	-	<0.0003	<0.0003	<0.0003	<0.0002	<0.0002	<0.0002	-	-	-	-	-	-	-	-	-	-	-	-
Copper	mg/L	0.00020	-	<0.0008	<0.0008	<0.0008	<0.001	<0.001	<0.001	0.00066	0.00063	-	-	-	-	-	-	-	-	-	-
Iron	mg/L	0.010	-	<0.02	0.02	<0.02	<0.03	<0.03	<0.03	<0.010	<0.010	-	-	-	-	-	-	-	-	-	-
Lead	mg/L	0.000050	Variable [e]	<0.0002	<0.0002	<0.0002	<0.001	<0.001	<0.001	<0.000050	<0.000050	-	-	-	-	-	-	-	-	-	-
Magnesium	mg/L	0.0050	-	0.933	5.30	4.87	6	5	6	15.4	15.6	-	-	-	-	-	-	-	-	-	-
Manganese	mg/L	0.00010	-	0.0092	0.0007	<0.0007	<0.01	<0.01	<0.01	<0.00050	0.00275	-	-	-	-	-	-	-	-	-	-
Mercury	mg/L	0.0000050	-	-	-	-	-	-	-	<0.000010	<0.000010	-	-	-	-	-	-	-	-	-	-
Molybdenum	mg/L	0.000050	-	<0.0003	<0.0003	<0.0003	<0.005	<0.005	<0.005	0.000093	0.0001	-	-	-	-	-	-	-	-	-	-
Nickel	mg/L	0.00050	-	<0.001	<0.001	<0.001	<0.005	<0.005	<0.005	<0.00050	<0.00050	-	-	-	-	-	-	-	-	-	-
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	0.83	0.51	0.49	0.52	0.50	0.50	0.577	0.635	-	-	-	-	-	-	-	-	-	-
Selenium	mg/L	0.000050	-	<0.005	<0.005	<0.005	<0.001	<0.001	<0.001	<0.000050	<0.000050	-	-	-	-	-	-	-	-	-	-
Silver	mg/L	0.000010	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	-	-	-	-	-	-	-	-	-	-	-	-
Sodium	mg/L	0.050	-	0.47	0.53	0.47	0.58	0.50	1.64	5.04	4.95	-	-	-	-	-	-	-	-	-	-
Strontium	mg/L	0.00020	0.25	0.0011	0.0045	0.0044	0.005	0.005	0.008	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	mg/L	0.000010	-	<0.0002	<0.0002	<0.0002	-	-	-	<0.000010	<0.000010	-	-	-	-	-	-	-	-	-	-
Tin	mg/L	0.00010	-	<0.001	<0.001	<0.001	<0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-	-
Uranium	mg/L	0.000010	-	-	-	-	-	-	-	0.000883	0.00088	-	-	-	-	-	-	-	-	-	-
Vanadium	mg/L	0.00050	-	<0.0009	0.0013	<0.0009	<0.001	<0.001	<0.001	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	mg/L	0.0010	Variable [e]	0.003	0.003	0.002	<0.01	<0.01	<0.01	<0.0010	0.0019	-	-	-	-	-	-	-	-	-	-
Miscellaneous (Water)																					
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.9 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-110 (BG24)

Parameter	Units	2025 LOR	CCME Guideline	Date														
				2019				2020							2021			
				22-Jun-19	22-Jun-19	09-Aug-19	09-Aug-19	22-Jun-20	22-Jun-20	21-Jul-20	21-Jul-20	14-Aug-20	14-Aug-20	14-Aug-20	13-Jun-21	13-Jun-21	17-Aug-21	17-Aug-21
				US	DS	US	DS	US	DS	US	DS	US	DS	DS Field Blank	DS	US	DS	US
In Situ Parameters																		
Temperature	ºC	-	-	1.9	2.0	6.8	7.2	0.9	1.0	8.9	10.2	3.1	3.4	3.4	1.3	0.9	3.9	3.6
Specific Conductance	µS/cm	-	-	0.1486	0.1513	0.4873	0.4753	0.093	0.0863	0.3193	0.3294	0.399	0.665	0.665	49.1	46.5	313.4	310
Dissolved Oxygen	mg/L	-	< 9.5	-	-	-	-	14.1	14.0	11.73	11.3	99.5	98.1	98.1	13.13	13.78	13.06	13.22
Dissolved Oxygen	%	-	-	98.5	97.6	101.9	100.3	98.7	98.1	100.6	91.2	13.36	13.08	13.08	94.1	98.0	101.6	101.9
pH	pH units	-	6.5 - 9.0	8.11	7.94	8.31	8.18	7.75	7.74	8.34	8.33	8.24	8.04	8.04	7.83	7.84	8.47	8.51
Wetted Width	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average Depth	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flow Rate	m^3/s	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physical Parameters																		
pH	pH units	0.10	6.5 - 9.0	8.13	8.15	8.25	8.29	7.62	7.74	8.31	8.26	8.30	8.26	6.47	7.68	7.61	8.29	8.30
Conductivity	µS/cm	1.0	-	-	-	-	-	86.5	91	322	347	694	674	<2.0	51.8	49.1	339	335
Turbidity	NTU	0.10	-	0.40	0.60	0.25	0.58	0.43	0.50	0.23	0.50	0.1	2.79	<0.10	3.40	2.38	0.62	0.41
Hardness	mg/L as $CaCO_3$	0.50	-	91.2	92.3	193	185	39.5	42	132	134	227	233	<0.50	22.8	21.3	131	129
Total Suspended Solids	mg/L	1.0	Variable [g]	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	7.6	5.1	1.3	1.1
Total Dissolved Solids	mg/L	17 - 18	-	102	106	269	267	66	64	175	186	378	392	10	32	29	176	172
Dissolved Anions																		
Alkalinity	mg/L as $CaCO_3$	2.0	-	90	91	148	151	37	40	111	116	158	163	<1.0	26.5	23.0	122	120
Bromide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	2.35	2.51	50.1	45.7	13.8	3.12	25.8	26.50	97.9	90.5	<0.50	2.08	1.88	21.0	20.9
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nutrients																		
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite	mg/L N	0.010	0.060	<0.010	<0.010	<0.010	<0.010	0.014	<0.010	<0.010	<0.010	<0.0050	<0.0050	<0.0010	<0.010	<0.010	<0.010	<0.010
Nitrate	mg/L N	0.020	3	0.025	0.026	0.047	0.038	1.55	0.37	0.054	0.04	0.369	0.321	<0.0050	0.021	0.022	<0.020	<0.020
Nitrate + Nitrite	mg/L N	-	-	0.025	0.026	0.047	0.038	-	-	-	-	-	-	-	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	0.017	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.0170	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.010	<0.010
Total Phosphorus	mg/L	0.0020	0.01	0.0064	0.0031	<0.0030	<0.0030	0.0095	0.0070	<0.0030	0.0033	0.0022	0.0041	<0.0020	0.0037	0.0071	<0.0030	<0.0030
Dissolved Phosphorus	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic Compounds																		
Phenols	mg/L	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	2.18	2.25	2.09	2.07	3.14	3.00	3.11	3.01	2.37	3.02	<0.50	3.58	3.00	3.48	3.98
Total Organic Carbon	mg/L	0.50	-	3.34	2.99	2.5	2.47	3.6	3.78	3.29	3.49	2.26	2.87	0.56	3.18	2.90	5.69	5.95
Total Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	0.280	0.230	0.140	0.140
Chlorophyll-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.9 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-110 (BG24)

Parameter	Units	2025 LOR	CCME Guideline	Date														
				2019				2020							2021			
				22-Jun-19	22-Jun-19	09-Aug-19	09-Aug-19	22-Jun-20	22-Jun-20	21-Jul-20	21-Jul-20	14-Aug-20	14-Aug-20	14-Aug-20	13-Jun-21	13-Jun-21	17-Aug-21	17-Aug-21
				US	DS	US	DS	US	DS	US	DS	US	DS	DS Field Blank	DS	US	DS	US
Total Metals and Non-Metals																		
Aluminum	mg/L	0.0030	Variable [f]	0.0248	0.0271	0.010	0.0244	0.03370	0.0382	0.0096	0.0247	0.0039	0.0819	<0.0030	0.0795	0.0439	0.0376	0.0214
Antimony	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	mg/L	0.00010	0.005	<0.00010	<0.00010	0.00012	0.00013	<0.00010	<0.00010	<0.00010	0.0001	0.00012	0.00012	<0.00010	<0.00010	<0.00010	0.00012	0.00012
Barium	mg/L	0.00010	-	0.00327	0.00353	0.00972	0.0101	0.00194	0.00193	0.00611	0.00687	0.0137	0.0141	<0.00010	0.00162	0.00127	0.00703	0.00621
Beryllium	mg/L	0.000020	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Bismuth	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron	mg/L	0.010	1.5	<0.010	<0.010	0.014	0.013	<0.010	<0.010	0.018	0.017	0.043	0.037	<0.010	<0.010	<0.010	0.016	0.016
Cadmium	mg/L	0.0000050	Variable [c]	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	0.050	-	19.0	19.1	40.8	41.3	8.56	8.99	27.3	28.2	45.9	45.6	<0.050	4.95	4.54	27.2	26.9
Cesium	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000022	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00010	0.00022	<0.00010	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	Variable [c]	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	<0.0010	<0.0010	<0.0010	0.0012	0.00059	<0.00050	0.00088	0.00083	0.00097	0.00099	<0.00050	0.00075	<0.00050	0.00107	0.00104
Iron	mg/L	0.010	0.300	0.018	0.024	<0.010	0.035	0.034	0.039	<0.010	0.026	<0.010	0.099	<0.010	0.079	0.046	0.031	0.018
Lead	mg/L	0.000050	0.001 - 0.007 [c]	<0.000050	<0.000050	<0.000050	<0.000050	0.000065	<0.000050	<0.000050	<0.000050	<0.000050	0.000128	<0.000050	0.000096	<0.000050	<0.000050	<0.000050
Lithium	mg/L	0.0010	-	0.0021	0.002	0.0046	0.0046	<0.0010	<0.0010	0.0043	0.0043	0.008	0.0072	<0.0010	<0.0010	<0.0010	0.0043	0.0045
Magnesium	mg/L	0.0050	-	10.2	10.5	20.9	20.3	4.76	4.82	14.6	15.4	25.2	25	<0.0050	2.82	2.62	15.2	14.9
Manganese	mg/L	0.00010	Variable [c]	<0.00050	0.00108	0.00065	0.0038	0.00122	0.0016	<0.00050	0.00287	0.00047	0.00639	<0.00010	0.00218	0.00128	0.00157	<0.00050
Mercury	mg/L	0.0000050	0.000026	<0.000010	<0.000010	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000070
Molybdenum	mg/L	0.000050	0.073	0.000066	0.000077	0.000159	0.000155	<0.000050	<0.000050	0.000114	0.000134	0.000168	0.000174	<0.000050	<0.000050	<0.000050	0.000137	0.000135
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium	mg/L	0.050	-	0.408	0.458	0.978	1.0	0.39	0.388	0.997	1.02	2.16	2.06	<0.050	0.444	0.392	1.11	1.08
Rubidium	mg/L	0.00020	-	0.00036	0.00055	0.0007	0.00111	0.00038	0.00041	0.00044	0.00078	0.00069	0.00127	<0.00020	0.00057	0.00044	0.00061	0.00047
Selenium	mg/L	0.000050	0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon	mg/L	0.10	-	0.59	0.58	0.74	0.76	0.42	0.42	0.68	0.69	1.17	1.25	<0.10	0.36	0.28	0.96	0.92
Silver	mg/L	0.000010	0.25	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	2.04	1.96	19.5	17.3	2.33	2.34	18.1	17.8	49.9	45.4	<0.050	1.37	1.18	16.0	16.0
Strontium	mg/L	0.00020	0.25	0.0112	0.0119	0.0345	0.0329	0.0062	0.006	0.0274	0.0262	0.0701	0.063	<0.00020	0.0040	0.0034	0.0283	0.0282
Sulphur	mg/L	0.50	-	0.97	1.02	11.9	10.7	0.68	0.63	5.32	5.28	17.9	16.4	<0.50	<0.50	<0.50	5.67	5.53
Tellurium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium	mg/L	0.000010	0.0008	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	0.0001	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium	mg/L	0.00030	-	0.00100	0.00114	0.00036	0.00127	0.0012	0.00162	0.00041	0.00103	<0.00030	0.00479	<0.00030	0.00303	0.00155	0.00149	<0.00080
Tungsten	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	0.015	0.000398	0.000437	0.00153	0.00148	0.000099	0.000115	0.000893	0.000936	0.0023	0.0022	<0.000010	0.000087	0.000050	0.000997	0.000970
Vanadium	mg/L	0.00050	0.12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0030	0.03	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Zirconium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00023	<0.00020	<0.00020	<0.00020	0.00021	<0.00020

Table 2.9 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-110 (BG24)

Parameter	Units	2025 LOR	CCME Guideline	Date														
				2019				2020							2021			
				22-Jun-19	22-Jun-19	09-Aug-19	09-Aug-19	22-Jun-20	22-Jun-20	21-Jul-20	21-Jul-20	14-Aug-20	14-Aug-20	14-Aug-20	13-Jun-21	13-Jun-21	17-Aug-21	17-Aug-21
				US	DS	US	DS	US	DS	US	DS	US	DS	DS Field Blank	DS	US	DS	US
Dissolved Metals and Non-Metals																		
Aluminum	mg/L	0.0010	-	-	-	-	-	0.009	0.012	<0.0050	0.006	0.0012	0.0048	<0.0010	0.0149	0.0128	0.0053	<0.0050
Arsenic	mg/L	0.00010	-	-	-	-	-	<0.00010	<0.00010	0.00011	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Barium	mg/L	0.00010	-	-	-	-	-	0.00171	0.00	0.00629	0.01	0.0147	0.0146	<0.00010	0.00121	0.00106	0.00703	0.00652
Boron	mg/L	0.010	-	-	-	-	-	<0.010	<0.010	0.019	0.02	0.043	0.038	<0.010	<0.010	<0.010	0.015	0.015
Cadmium	mg/L	0.0000050	-	-	-	-	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	mg/L	0.050	-	-	-	-	-	8.18	8.5700	27.9	28.0000	48.5	50.2	<0.050	4.71	4.38	27.4	26.9
Chromium	mg/L	0.00050	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00010	0.00014	<0.00010	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt	mg/L	0.00010	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00020	-	-	-	-	-	0.00038	0.000	0.00079	0.001	0.001	0.00094	<0.00020	0.00023	<0.00020	0.00101	0.00097
Iron	mg/L	0.010	-	-	-	-	-	0.011	0.01	<0.010	<0.010	<0.010	0.013	<0.010	0.016	0.014	<0.010	<0.010
Lead	mg/L	0.000050	Variable [e]	-	-	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Magnesium	mg/L	0.0050	-	-	-	-	-	4.62	5	15	15	25.8	26.3	<0.0050	2.69	2.51	15.2	15.0
Manganese	mg/L	0.00010	-	-	-	-	-	<0.00050	0.00	<0.00050	0.00	0.00041	0.00458	<0.00010	0.00132	0.00077	0.00112	<0.00050
Mercury	mg/L	0.0000050	-	-	-	-	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000061
Molybdenum	mg/L	0.000050	-	-	-	-	-	<0.000050	<0.000050	0.000129	0.000	0.000145	0.000173	<0.000050	<0.000050	<0.000050	0.000136	0.000114
Nickel	mg/L	0.00050	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus	mg/L	0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Potassium	mg/L	0.050	-	-	-	-	-	0.364	0.38	1.02	1.07	2.5	2.33	<0.050	0.390	0.361	1.10	1.09
Selenium	mg/L	0.000050	-	-	-	-	-	<0.000050	<0.000050	0.000054	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silver	mg/L	0.000010	-	-	-	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050
Sodium	mg/L	0.050	-	-	-	-	-	2.44	2.52	17.7	17.90	53.3	51.1	<0.050	1.34	1.15	15.9	15.8
Strontium	mg/L	0.00020	0.25	-	-	-	-	0.0059	0.006	0.0277	0.028	0.0672	0.063	<0.00020	0.0037	0.0032	0.0289	0.0285
Thallium	mg/L	0.000010	-	-	-	-	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin	mg/L	0.00010	-	-	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	mg/L	0.000010	-	-	-	-	-	0.000081	0.000086	0.000898	0.000933	0.00214	0.00215	<0.000010	0.000074	0.000048	0.000967	0.000922
Vanadium	mg/L	0.00050	-	-	-	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	mg/L	0.0010	Variable [e]	-	-	-	-	<0.0010	0.00	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Miscellaneous (Water)																		
6PPD-Quinone	ug/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.9 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-110 (BG24)

Parameter	Units	2025 LOR	CCME Guideline	Date																	
				2022					2023						2024				2025			
				19-Jun-22	19-Jun-22	28-Aug-22	28-Aug-22	28-Aug-22	26-Jun-23	26-Jun-23	16-Jul-23	16-Jul-23	20-Aug-23	20-Aug-23	23-Jun-24	23-Jun-24	18-Aug-24	18-Aug-24	01-Jul-25	01-Jul-25	18-Aug-25	18-Aug-25
				DS	US	DS	US	DS Travel Blan	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
In Situ Parameters																						
Temperature	ºC	-	-	3.4	1.7	6.9	5.4	-	0.3	0.1	5.7	5	4.0	3.7	4.0	2.7	6.3	6	4.5	7.7	6.5	7.2
Specific Conductance	µS/cm	-	-	8.1	82.8	487.5	493.5	-	66.4	62.8	128.1	122	247.7	241.7	49.1	48.2	292.7	283.1	196.8	239.0	409.9	399.4
Dissolved Oxygen	mg/L	-	< 9.5	13.45	13.52	13.02	13.8	-	13.18	13.4	12.10	12.15	12.17	12.4	12.82	13.04	11.87	11.6	12.50	11.24	11.68	11.08
Dissolved Oxygen	%	-	-	99.4	97.0	109.5	111.8	-	94.9	95.9	98.5	97.2	95.9	97.1	98.2	96.4	96.2	93.5	96.7	94.4	95.1	91.09
pH	pH units	-	6.5 - 9.0	7.72	7.65	8.29	8.31	-	7.57	7.62	7.96	7.95	8.27	8.33	7.40	7.48	8.22	8.3	8.20	8.09	8.41	7.91
Wetted Width	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Average Depth	m	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flow Rate	m^3/s	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Physical Parameters																						
pH	pH units	0.10	6.5 - 9.0	7.65	7.63	8.40	8.35	5.50	7.75	7.55	8.01	7.95	8.28	8.33	7.29	7.31	8.27	8.32	7.81	7.70	8.28	7.97
Conductivity	µS/cm	1.0	-	89.1	87.9	487	490	<1.0	101	65.2	136	131	260	254	54.2	50.9	312	301	202	249	455	438
Turbidity	NTU	0.10	-	6.04	2.74	<1.0	<1.0	<1.0	2.56	0.78	0.93	1.14	0.56	0.5	2.11	1.36	0.94	0.16	1.48	6.15	0.48	0.40
Hardness	mg/L as $CaCO_3$	0.50	-	38.8	38.1	200	197	<0.50	38.3	32.8	62.9	60.8	126.1	120.6	27.5	26.2	148	143	93.6	130	176	205
Total Suspended Solids	mg/L	1.0	Variable [g]	10.0	4.3	<3.0	<3.0	<3.0	3.8	4.1	<1.0	1.2	<1.0	<1.0	23.2	8.0	< 1.1	< 1.0	1.3	3.3	< 1.0	< 1.0
Total Dissolved Solids	mg/L	17 - 18	-	40	38	260	239	13	48	32	68	67	143	132	40	40	176	163	93	130	229	223
Dissolved Anions																						
Alkalinity	mg/L as $CaCO_3$	2.0	-	37.9	37.2	162.0	159	<1.0	74.3	55.9	71.9	62.8	116	114	26.3	26.3	137	134	81.1	121	139	174
Bromide	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloride	mg/L	0.50	120	3.60	3.51	41.70	43.7	<0.50	3.47	0.88	2.95	2.7	8.81	8.37	0.71	0.52	11.9	10.8	9.98	4.31	36.6	20.1
Fluoride	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfate	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nutrients																						
NH_3+NH_4	mg/L N	-	0.021 - 231 [a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrite	mg/L N	0.010	0.060	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Nitrate	mg/L N	0.020	3	0.033	0.032	0.116	0.138	<0.020	0.026	0.023	0.022	0.023	0.042	0.043	< 0.020	< 0.020	< 0.020	0.023	< 0.020	< 0.020	< 0.020	< 0.020
Nitrate + Nitrite	mg/L N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ammonia, total as N	mg/L	0.0050	Variable [a]	0.012	0.013	0.011	<0.010	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	0.0074	0.008	< 0.0050	< 0.0050	< 0.0050	0.0103	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Total Phosphorus	mg/L	0.0020	0.01	0.0054	0.0046	<0.0030	<0.0030	<0.0030	0.0049	0.0057	0.0036	0.006	0.002	0.0025	**0.0158**	0.0074	0.0033	< 0.0020	0.0031	**0.0116**	0.0021	< 0.002
Dissolved Phosphorus	mg/L	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Organic Compounds																						
Phenols	mg/L	-	0.004	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dissolved Organic Carbon	mg/L	0.50	-	3.00	2.65	1.80	1.71	<0.50	1.98	1.84	1.32	1.27	2.28	2.63	2.61	3.59	2.78	2.44	1.32	1.79	2.01	2.73
Total Organic Carbon	mg/L	0.50	-	2.86	2.54	3.21	2.70	0.57	2.14	1.98	1.09	1.26	2.41	2.57	2.60	2.60	2.32	2.28	1.91	2.39	2.31	2.9
Total Kjeldahl Nitrogen	mg/L	-	-	0.172	0.191	0.093	0.094	<0.050	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorophyll-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pheophytin-a	mg/m_3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2.9 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-110 (BG24)

Parameter	Units	2025 LOR	CCME Guideline	Date																	
				2022					2023						2024				2025			
				19-Jun-22	19-Jun-22	28-Aug-22	28-Aug-22	28-Aug-22	26-Jun-23	26-Jun-23	16-Jul-23	16-Jul-23	20-Aug-23	20-Aug-23	23-Jun-24	23-Jun-24	18-Aug-24	18-Aug-24	01-Jul-25	01-Jul-25	18-Aug-25	18-Aug-25
				DS	US	DS	US	DS Travel Blan	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
Total Metals and Non-Metals																						
Aluminum	mg/L	0.0030	Variable [f]	0.167	0.0929	0.0150	<0.0050	<0.0050	0.108	0.0278	0.021	0.0189	0.021	0.014	0.111	0.137	0.0121	0.0039	0.0522	**0.164**	0.0146	0.0057
Antimony	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Arsenic	mg/L	0.00010	0.005	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.0001	<0.00010	< 0.00010	< 0.00010	0.00011	0.00012	< 0.00010	0.00014	0.00011	0.00010
Barium	mg/L	0.00010	-	0.00299	0.00223	0.01070	0.0096	<0.00010	0.00547	0.00126	0.0027	0.00251	0.00576	0.00497	0.00211	0.00192	0.00797	0.00604	0.00506	0.00589	0.0113	0.00881
Beryllium	mg/L	0.000020	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
Bismuth	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Boron	mg/L	0.010	1.5	<0.010	<0.010	0.028	0.031	<0.010	<0.010	<0.010	<0.010	<0.010	0.012	0.012	< 0.010	< 0.010	0.017	0.017	0.011	< 0.010	0.024	0.016
Cadmium	mg/L	0.0000050	Variable [c]	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Calcium	mg/L	0.050	-	8.03	7.85	40.2	38.1	<0.050	9.9	6.83	13	12.6	25.9	23.7	6.36	6.30	29.8	28.3	18.5	27.0	37.3	43.7
Cesium	mg/L	0.000010	-	0.000032	0.000014	<0.000010	<0.000010	<0.000010	0.000018	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000022	0.000023	< 0.000010	< 0.000010	< 0.000010	0.000016	< 0.000010	< 0.000010
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	0.00145	< 0.00050	< 0.00050	0.00082	< 0.00050	0.0005
Cobalt	mg/L	0.00010	Variable [c]	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	0.00017	< 0.00010	< 0.00010
Copper	mg/L	0.00050	0.002 - 0.004 [c]	<0.00050	<0.00050	0.00080	0.00076	<0.00050	0.0022	<0.00050	0.0005	<0.00050	0.00082	0.00108	0.00052	< 0.00050	0.00092	0.00074	0.00081	0.00086	0.00100	0.00056
Iron	mg/L	0.010	0.300	0.161	0.099	0.032	<0.010	<0.010	0.11	0.029	0.021	0.02	0.019	0.014	0.136	0.178	0.032	< 0.010	0.054	0.195	0.050	0.033
Lead	mg/L	0.000050	0.001 - 0.007 [c]	0.000168	0.000098	<0.000050	<0.000050	<0.000050	0.00014	<0.000050	<0.000050	0.000054	<0.000050	<0.000050	0.000143	0.000154	< 0.000050	< 0.000050	0.000061	0.000354	< 0.00005	< 0.00005
Lithium	mg/L	0.0010	-	0.0013	0.0010	0.0051	0.0053	<0.0010	0.0011	<0.0010	0.0015	0.0014	0.0033	0.0033	< 0.0010	< 0.0010	0.0035	0.0037	0.0023	0.0028	0.0044	0.0034
Magnesium	mg/L	0.0050	-	4.99	4.79	24.20	23.5	<0.0050	6	4.14	7.38	7.31	14.4	13.9	3.74	3.48	17.2	16.6	10.5	14.7	20.6	23.1
Manganese	mg/L	0.00010	Variable [c]	0.00992	0.00697	0.00628	0.00062	<0.00050	0.00472	0.00123	0.00107	0.00093	0.00148	0.00043	0.00447	0.00440	0.00356	0.00022	0.00907	0.0194	0.0174	0.0311
Mercury	mg/L	0.0000050	0.000026	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Molybdenum	mg/L	0.000050	0.073	0.000071	0.000053	0.000165	0.000145	<0.000050	0.000136	<0.000050	0.000055	0.000054	0.000128	0.000141	< 0.000050	< 0.000050	0.000158	0.000123	0.000109	0.000058	0.000172	0.000088
Nickel	mg/L	0.00050	0.025 - 0.150 [c]	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0008	<0.00050	<0.00050	<0.00050	<0.00050	0.00056	< 0.00050	< 0.00050	0.00079	< 0.00050	< 0.00050	0.00118	< 0.00050	< 0.00050
Phosphorus	mg/L	0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Potassium	mg/L	0.050	-	0.580	0.490	1.580	1.63	<0.050	0.794	0.293	0.402	0.369	0.756	0.711	0.425	0.410	1.09	1.00	0.770	0.683	1.42	0.977
Rubidium	mg/L	0.00020	-	0.00097	0.00061	0.00079	0.0005	<0.00020	0.00153	0.00027	0.0004	0.00033	0.0005	0.00041	0.00077	0.00082	0.00069	0.00039	0.00056	0.00080	0.00087	0.00061
Selenium	mg/L	0.000050	0.001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Silicon	mg/L	0.10	-	0.53	0.42	0.93	1	3.28	0.6	0.26	0.56	0.54	1.11	1.12	0.52	0.56	0.91	0.89	0.67	0.95	0.72	1.08
Silver	mg/L	0.000010	0.25	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Sodium	mg/L	0.050	-	2.07	2.06	28.70	30.3	<0.050	1.81	0.514	2.71	2.49	8.12	7.82	0.468	0.371	9.35	9.08	7.02	3.46	22.1	12.9
Strontium	mg/L	0.00020	0.25	0.0075	0.0059	0.0478	0.0481	<0.0010	0.00908	0.00349	0.00944	0.0088	0.0222	0.0211	0.00416	0.00361	0.0314	0.0296	0.0180	0.0166	0.0390	0.0268
Sulphur	mg/L	0.50	-	<0.50	<0.50	8.25	8.65	<0.50	0.61	<0.50	0.69	0.64	2.52	2.63	< 0.50	< 0.50	3.34	3.43	1.82	0.81	6.11	3.19
Tellurium	mg/L	0.00020	-	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020
Thallium	mg/L	0.000010	0.0008	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Thorium	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Titanium	mg/L	0.00030	-	0.00603	0.00337	0.00050	<0.00030	<0.00030	0.00463	<0.00090	<0.00080	0.00089	0.00081	0.00046	0.00581	0.00673	0.00045	< 0.00030	0.00198	0.00576	0.00059	< 0.00030
Tungsten	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Uranium	mg/L	0.000010	0.015	0.000192	0.000095	0.00192	0.00195	<0.000010	0.000404	0.000047	0.000251	0.000228	0.000879	0.00083	0.000072	0.000049	0.00127	0.00122	0.000540	0.000388	0.00149	0.000810
Vanadium	mg/L	0.00050	0.12	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Zinc	mg/L	0.0030	0.03	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	< 0.0030	0.0083	< 0.0030
Zirconium	mg/L	0.00020	-	<0.00020	<0.00020	0.00028	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	0.00039	< 0.00020	< 0.00020

Table 2.9 Water Quality Monitoring Of Baseline Fisheries Culverts Surface Water Quality Summary For Sample Site N1-110 (BG24)

Parameter	Units	2025 LOR	CCME Guideline	Date																	
				2022					2023						2024				2025			
				19-Jun-22	19-Jun-22	28-Aug-22	28-Aug-22	28-Aug-22	26-Jun-23	26-Jun-23	16-Jul-23	16-Jul-23	20-Aug-23	20-Aug-23	23-Jun-24	23-Jun-24	18-Aug-24	18-Aug-24	01-Jul-25	01-Jul-25	18-Aug-25	18-Aug-25
				DS	US	DS	US	DS Travel Blan	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US	DS	US
Dissolved Metals and Non-Metals																						
Aluminum	mg/L	0.0010	-	0.0134	0.0067	<0.0050	<0.0050	<0.0050	0.0086	0.0059	0.0028	0.0028	0.0034	0.0028	0.0085	0.0203	0.0038	0.0023	0.0063	0.0034	0.0025	< 0.0010
Arsenic	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Barium	mg/L	0.00010	-	0.00217	0.00196	0.0107	0.0104	<0.00010	0.0022	0.00114	0.00263	0.00241	0.00551	0.00509	0.00137	0.00139	0.00736	0.00570	0.00461	0.00497	0.0114	0.00911
Boron	mg/L	0.010	-	<0.010	<0.010	0.027	0.030	<0.010	<0.010	<0.010	<0.010	<0.010	0.01	0.01	< 0.010	< 0.010	0.016	0.016	0.010	< 0.010	0.021	0.014
Cadmium	mg/L	0.0000050	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Calcium	mg/L	0.050	-	8.18	7.91	40.20000	38.7	<0.050	7.68	6.62	13	12.6	26.2	24.5	5.52	5.45	30.1	28.7	19.5	27.4	36.2	42.9
Chromium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Cobalt	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Copper	mg/L	0.00020	-	0.00027	0.00027	0.00	0.0007	<0.00020	0.00028	<0.00020	0.00039	0.0004	0.00083	0.00083	0.00027	0.00024	0.00104	0.00077	0.00055	0.00048	0.00074	0.00040
Iron	mg/L	0.010	-	0.017	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.022	0.030	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Lead	mg/L	0.000050	Variable [e]	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Magnesium	mg/L	0.0050	-	4.46	4.46	24.3	24.3	<0.0050	4.61	3.91	7.32	7.07	14.6	14.3	3.33	3.07	17.7	17.4	10.9	14.9	20.9	23.7
Manganese	mg/L	0.00010	-	0.00630	0.00438	0.00611	0.00061	<0.00050	0.00192	0.00057	0.00071	0.00013	0.00128	0.00013	0.00075	0.00063	0.00317	0.00019	0.00816	0.0148	0.0163	0.0308
Mercury	mg/L	0.0000050	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050	< 0.0000050
Molybdenum	mg/L	0.000050	-	0.000067	<0.000050	0.000154	0.00014	<0.000050	0.000055	<0.000050	0.000059	0.000056	0.000122	0.000105	< 0.000050	< 0.000050	0.000142	0.000126	0.000095	0.000055	0.000161	0.000064
Nickel	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Phosphorus	mg/L	0.050	-	-	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Potassium	mg/L	0.050	-	0.519	0.447	1.61	1.72	<0.050	0.482	0.285	0.439	0.414	0.75	0.73	0.348	0.334	1.02	0.943	0.726	0.583	1.40	0.986
Selenium	mg/L	0.000050	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Silver	mg/L	0.000010	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Sodium	mg/L	0.050	-	2.02	2.07	28.6	31.6	0.137	0.944	0.483	2.63	2.48	8.25	7.93	0.419	0.374	9.30	9.12	7.20	3.42	22.0	13.0
Strontium	mg/L	0.00020	0.25	0.0076	0.0058	0.04720	0.0511	<0.0010	0.00556	0.0035	0.01	0.00936	0.0234	0.0222	0.00368	0.00325	0.0322	0.0288	0.0181	0.0161	0.0391	0.0272
Thallium	mg/L	0.000010	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Tin	mg/L	0.00010	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Uranium	mg/L	0.000010	-	0.000151	0.000073	0.00185	0.00193	<0.000010	0.00015	0.000038	0.000233	0.000205	0.000804	0.000763	0.000049	0.000033	0.00121	0.00121	0.000486	0.000353	0.00133	0.000706
Vanadium	mg/L	0.00050	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Zinc	mg/L	0.0010	Variable [e]	0.0015	0.0012	0.0021	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Miscellaneous (Water)																						
6PPD-Quinone	ug/L	-	-	-	-	<0.0020	<0.0020	<0.0023	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 3. FISH-BEARING STREAM CROSSING SITES SURVEYED IN JULY 2025

Location ID	Authorization Type	UTM [1]		Culvert ID	Fish Habitat at Crossing (Y/N)	2025 Survey[2]				
		Easting	Northing			Date	DS Culvert Velocity	US Culvert Velocity	Perch	Water Temperature (°C)
CV-154a	HADD	507,625	7,970,076	-	Y	10-Jul	0.52	0.57	0.14	9.5
CV-129	HADD	512,381	7,966,783	-	Y	10-Jul	1.11	1.16	0.00	10.0
CV-128a	-	513,680	7,966,148	Left	Y	17-Jul	0.10	0.17	0.00	6.5
				Right	Y	17-Jul	0.09	0.18	0.00	6.5
CV-128	HADD	513,556	7,965,889	-	Y	17-Jul	NR	NR	NR	4.0
CV-115	LOA	519,222	7,958,135	-	Y	17-Jul	0.59	0.90	0.00	7.5
CV-114	HADD	520,278	7,956,528	Left	Y	10-Jul	0.89	0.69	0.05	8.0
				Right	Y	10-Jul	0.29	0.45	0.21	8.0
CV-112	LOA	521,033	7,954,935	Left	Y	10-Jul	0.20	0.32	0.00	9.0
				Centre	Y	10-Jul	0.46	0.46	0.00	9.0
				Right	Y	10-Jul	0.09	0.61	0.00	9.0
CV-111	HADD	521,355	7,954,524	-	Y	13-Jul	2.55	0.86	0.34	6.0
CV-106 [3]										
CV-104	HADD	521,732	7,952,788	Left	Y	17-Jul	1.24	0.68	0.08	8.0
				Right	Y	17-Jul	1.35	0.83	0.00	8.0
CV-102 [3]										
CV-099	HADD	521,886	7,948,843	Left	Y	17-Jul	NR	NR	0.20	8.0
				Right	Y	17-Jul	NR	NR	0.00	8.0
CV-085		523,877	7,940,904		Y	17-Jul	1.17	0.97	0.00	7.0
CV-079 [4]	HADD	525,538	7,937,314	Left/North Channel	Y	14-Jul	0.24	0.11	0.00	7.0
		525,562	7,937,276	Channel B Culvert	Y	14-Jul	0.77	0.28	0.00	7.0
		525,583	7,937,231	Channel C Culvert	Y	14-Jul	1.72	0.75	0.39	7.0
		525,622	7,937,170	Culvert D Culvert	Y	14-Jul	0.47	1.10	0.00	7.0

Location ID	Authorization Type	UTM [1]		Culvert ID	Fish Habitat at Crossing (Y/N)	2025 Survey[2]				
		Easting	Northing			Date	DS Culvert Velocity	US Culvert Velocity	Perch	Water Temperature (°C)
		525,644	7,937,131	Culvert E Culvert Left	Y	14-Jul	0.71	0.48	0.16	7.0
				Culvert E Culvert Left Centre	Y	14-Jul	1.62	0.52	0.32	7.0
				Culvert E Culvert Right Centre	Y	14-Jul	1.65	0.75	0.45	7.0
				Culvert E Culvert Right	Y	14-Jul	0.50	0.53	0.25	7.0
CV-078	HADD	525,852	7,936,787	Culvert A	Y	13-Jul	NR	NR	NR	7.0
		525,852	7,936,787	Culvert B	Y	13-Jul	NR	NR	NR	7.0
		525,852	7,936,787	Culvert C	Y	13-Jul	NR	NR	NR	7.0
		525,853	7,936,775	Culvert D	Y	13-Jul	NR	NR	NR	7.0
CV-076	LOA	526,586	7,935,498		Y	18-Jul	0.49	0.50	0.00	8.0
CV-072b [5]		526,885	7,934,609	Left	Y	14-Jul	1.56	1.57	0.26	5.0
				Right	Y	14-Jul	0.79	0.78	0.27	5.0
CV-072c [5]	HADD	526,897	7,934,576		Y	14-Jul	Dry	Dry	0.00	5.0
CV-061		527,263	7,931,366		Y	18-Jul	0.60	0.81	0.20	9.0
CV-061b		527,491	7,930,654	Left	Y	18-Jul	0.35	0.41	0.10	7.0
				Right	Y	18-Jul	0.46	0.37	0.28	7.0
CV-060	HADD	527,622	7,930,342	Left	Y	18-Jul	0.15	0.36	0.00	9.5
				Right	Y	18-Jul	0.17	0.46	0.00	9.5
CV-059 [3]										
CV-058	LOA	528,322	7,928,839		Y	18-Jul	0.11	0.23	0.00	NR
CV-057 [3]										
BG-50	HADD	529,294	7,926,852	Left	Y	15-Jul	1.89	No access	0.35	6.0
				Right	Y	15-Jul	1.97	No access	0.34	6.0
CV-049	HADD	529,654	7,926,545	Left	Y	18-Jul	NR	NR	0.00	NR
				Right	Y	18-Jul	NR	NR	0.00	NR
CV-040	HADD	535,168	7,920,326	Left	Y	18-Jul	0.08	Dry	0.00	11.0

Location ID	Authorization Type	UTM [1]		Culvert ID	Fish Habitat at Crossing (Y/N)	2025 Survey[2]				
		Easting	Northing			Date	DS Culvert Velocity	US Culvert Velocity	Perch	Water Temperature (°C)
				Right	Y	18-Jul	0.38	0.58	0.00	11.0
CV-211		536,479	7,920,007		Y	18-Jul	0.27	0.06	0.00	9.5
CV-212		537,470	7,920,270		Y	19-Jul	0.81	0.38	0.00	11.0
BG-33		539,720	7,921,082		Y	19-Jul	0.67	0.40	0.35	11.0
CV-030	LOA	540,123	7,921,310		Y	19-Jul	0.06	0.10	0.00	14.0
BG-32	HADD	540,729	7,921,597	Left	Y	19-Jul	0.49	1.20	0.00	NR
CV-214		541,317	7,921,923		Y	19-Jul	0.57	0.23	0.00	14.0
CV-215		541,956	7,922,174		Y	19-Jul	0.44	0.35	0.08	15.0
CV-217	HADD	542,321	7,922,189	Bridge	Y	19-Jul	NR	NR	NR	NR
CV-216 [3]										
BG-30	COMP	546,070	7,919,844		Y	16-Jul	1.07	0.98	0.00	7.0
BG-29	LOA	546,229	7,919,877		Y	16-Jul	0.59	0.39	0.00	5.0
CV-021		546,468	7,919,864		Y	16-Jul	0.49	NR	0.32	NR
BG-27	LOA	547,876	7,919,355	Left	Y	16-Jul	0.22	0.35	0.14	3.0
				Centre	Y	16-Jul	0.17	0.57	0.15	3.0
				Right	Y	16-Jul	1.26	NR	0.20	3.0
BG-24	HADD	548,766	7,918,878		Y	20-Jul	0.66	0.46	0.00	3.0
BG-17	HADD	550,703	7,917,643		Y	20-Jul	0.83	0.44	0.00	5.0
BG-04 [3]										
CV-001 [3]										
BG-03		554,719	7,915,020		Y	20-Jul	0.55	0.89	0.40	17.0
CV-223	HADD	555,705	7,914,676	Bridge	Y	20-Jul	NR	NR	NR	NR
CV-224	HADD	556,238	7,915,044	Left	Y	09-Jul	0.34	0.42	0.15	13.0
				Right	Y	09-Jul	0.29	0.04	0.24	13.0
CV-225	HADD	557,421	7,915,187	Left	Y	09-Jul	1.73	0.37	0.41	13.0

Location ID	Authorization Type	UTM [1]		Culvert ID	Fish Habitat at Crossing (Y/N)	2025 Survey[2]				
		Easting	Northing			Date	DS Culvert Velocity	US Culvert Velocity	Perch	Water Temperature (°C)
				Right	Y	09-Jul	1.68	0.68	0.43	13.0
BG-01	HADD	558,000	7,914,928		Y	09-Jul	2.26	0.46	0.05	13.0
CV-186	LOA	560,705	7,913,498	Left	Y	12-Jul	0.33	0.74	0.15	6.0
				Right	Y	12-Jul	0.62	1.81	0.10	6.0
CV-187	COMP	560,957	7,913,414		Y	12-Jul	0.48	0.31	0.00	6.0

Y = yes; N = no; NR = not recorded; DS = downstream; US = upstream

1 - NAD 83, Zone 17W

2 - Depths and velocities were recorded within the culvert at the inflow and outflow; DS = downstream end of culvert; US = upstream end of culvert. Velocities could not be collected at bridge crossings and some of the high-velocity culvert crossings: CV-128, CV-099, CV-078, BG-50 US, CV-217, and CV-223.

3 - This site is now part of the TRCCRM program. Results from monitoring at this site are presented in NSC (2026).

4 - Very high flows from a major rain event in fall 2024 caused road crossing failures at CV-078 and CV-049. Necessary repairs were completed prior to the July 2025 survey.

5 - Very high flows from a major rain event in fall 2024 caused a partial blockage of the culvert at CV-072c and a shift in the flow to a previously fishless channel in the system, CV-072b, approximately 30 m to the north of CV-072c.

TABLE 4. ARCTIC CHAR CATCH DATA FROM FISH-BEARING STREAM CROSSINGS ALONG THE TOTE ROAD, JULY AND AUGUST 2025.

Location ID	Transect [1]	Electrofishing Duration (s)	Total Catch [2]	CPUE [3]	Fork Length (mm) [4]					Weight (g)					Condition Factor				
					n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
CV-154a	DS	175	5	1.71	3	73.7	4.9	68	77	-	-	-	-	-	-	-	-	-	-
	US	157	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	332	5	0.90	3	73.7	4.9	68	77	-	-	-	-	-	-	-	-	-	-
CV-129 (July)	DS	345	2	0.35	2	101.5	23.3	85	118	2	9.9	6.2	5.5	14.3	2	0.88	0.02	0.87	0.90
	US	131	4	1.83	4	142.8	54.5	69	185	4	32.9	25.4	2.7	55.5	4	0.86	0.03	0.82	0.88
	Total	476	6	0.76	6	129.0	48.4	69	185	6	25.2	23.1	2.7	55.5	6	0.87	0.03	0.82	0.90
CV-129 (August)	DS	264	5	1.14	5	106.8	27.0	81	152	5	12.8	11.1	4.4	32.1	5	0.89	0.06	0.82	0.95
	US	223	5	1.35	5	130.2	25.6	114	175	5	22.5	16.0	12.8	50.7	5	0.92	0.09	0.79	1.03
	Total	487	10	1.23	10	118.5	27.7	81	175	10	17.6	13.9	4.4	50.7	10	0.90	0.07	0.79	1.03
CV-128a	DS	239	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	195	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	434	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-128 [5]	DS	Visual Only	Many	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	Visual Only	Many	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	Visual Only	Many	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-115	DS	295	1	0.20	1	57.0	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	205	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	500	1	0.12	1	57.0	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-114	DS	163	3	1.10	3	63.7	12.9	49	73	3	1.9	0.8	1.4	2.9	3	0.80	0.30	0.46	1.19
	US	149	1	0.40	1	116.0	-	-	-	1	12.0	-	-	-	1	0.77	-	-	-
	Total	312	4	0.77	4	76.8	28.2	49	116	4	4.5	5.1	1.4	12	4	0.79	0.30	0.46	1.19
CV-112	DS	181	13	4.31	13	66.9	24.3	46	114	-	-	-	-	-	-	-	-	-	-
	US	123	4	1.95	4	82.5	31.6	55	128	-	-	-	-	-	-	-	-	-	-
	Total	304	17	3.36	17	70.6	26.0	46	128	-	-	-	-	-	-	-	-	-	-

Location ID	Transect [1]	Electrofishing Duration (s)	Total Catch [2]	CPUE [3]	Fork Length (mm) [4]					Weight (g)					Condition Factor				
					n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
CV-111	DS	223	6	1.61	6	118.5	54.6	55	194	6	19.4	21.4	1.8	54.3	6	0.84	0.15	0.72	1.08
	US	165	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	388	6	0.93	6	118.5	54.6	55	194	6	19.4	21.4	1.8	54.3	6	0.84	0.15	0.72	1.08
CV-106 [6]																			
CV-104	DS	209	12	3.44	12	66.3	12.4	49	81	-	-	-	-	-	-	-	-	-	-
	US	151	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	360	12	2.00	12	66.3	12.4	49	81	-	-	-	-	-	-	-	-	-	-
CV-102 [6]																			
CV-099	DS	131	6	2.75	6	86.2	7.0	80	98	-	-	-	-	-	-	-	-	-	-
	US	124	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	255	6	1.41	6	86.2	7.0	80	98	-	-	-	-	-	-	-	-	-	-
CV-085	DS	138	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	146	2	0.82	2	114.0	8.5	108	120	-	-	-	-	-	-	-	-	-	-
	Total	284	2	0.42	2	114.0	8.5	108	120	-	-	-	-	-	-	-	-	-	-
CV-079 [7]	DS	273	8	1.76	4	81.8	25.8	57	105	-	-	-	-	-	-	-	-	-	-
	US	129	4	1.86	2	105.0	53.7	67	143	-	-	-	-	-	-	-	-	-	-
CV-079b	DS	200	14	4.20	14	99.6	25.8	61	141	-	-	-	-	-	-	-	-	-	-
	US	Shared with CV-079c			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-079c	DS	104	2	1.15	2	91.0	43.8	60	122	-	-	-	-	-	-	-	-	-	-
	US	179	2	0.67	2	189.5	64.3	144	235	-	-	-	-	-	-	-	-	-	-
CV-079d	DS	128	5	2.34	3	95.0	18.3	75	111	-	-	-	-	-	-	-	-	-	-
	US	Shared with CV-079e			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-079e	DS	Shared with CV-079d			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	120	1	0.50	1	149.0	-	-	-	-	-	-	-	-	-	-	-	-	-
All CV-079 Branches		1133	36	1.91	28	104.5	38.4	57	235	-	-	-	-	-	-	-	-	-	-

Location ID	Transect [1]	Electrofishing Duration (s)	Total Catch [2]	CPUE [3]	Fork Length (mm) [4]					Weight (g)					Condition Factor				
					n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
CV-078	DS	150	4	1.60	4	103.5	19.1	85	121	-	-	-	-	-	-	-	-	-	-
	US	179	2	0.67	2	94.0	21.2	79	109	-	-	-	-	-	-	-	-	-	-
	Total	329	6	1.09	6	100.3	18.3	79	121	-	-	-	-	-	-	-	-	-	-
CV-076	DS	273	16	3.52	10	65.6	12.8	46	92	-	-	-	-	-	-	-	-	-	-
	US	425	9	1.27	6	76.5	14.5	61	95	-	-	-	-	-	-	-	-	-	-
	Total	698	25	2.15	16	69.7	14.1	46	95	-	-	-	-	-	-	-	-	-	-
CV-072b [8] (July)	DS	314	14	2.68	14	110.9	22.2	72	164	-	-	-	-	-	-	-	-	-	-
	US	237	4	1.01	2	112.0	17.0	100	124	-	-	-	-	-	-	-	-	-	-
	Total	551	18	1.96	16	111.1	21.1	72	164	-	-	-	-	-	-	-	-	-	-
CV-072b [8] (August)	DS	454	18	2.38	18	94.1	35.2	57	200	18	13.9	26.3	1.8	116.2	18	0.97	0.14	0.81	1.45
	US	643	10	0.93	10	111.5	10.5	101	136	10	14.3	4.1	11.5	24.9	10	1.01	0.07	0.93	1.16
	Total	1097	28	1.53	28	100.3	29.8	57	200	28	14.0	21.0	1.8	116.2	28	0.99	0.12	0.81	1.45
CV-061	DS	163	9	3.31	9	76.4	16.1	57	105	-	-	-	-	-	-	-	-	-	-
	US	154	10	3.90	10	88.0	9.5	73	100	-	-	-	-	-	-	-	-	-	-
	Total	317	19	3.60	19	82.5	14.0	57	105	-	-	-	-	-	-	-	-	-	-
CV-061b	DS	188	10	3.19	10	70.8	18.9	52	105	-	-	-	-	-	-	-	-	-	-
	US	167	6	2.16	6	118.5	22.8	89	146	-	-	-	-	-	-	-	-	-	-
	Total	355	16	2.70	16	88.7	30.9	52	146	-	-	-	-	-	-	-	-	-	-
CV-060	DS	188	5	1.60	5	95.8	16.7	83	122	-	-	-	-	-	-	-	-	-	-
	US	209	10	2.87	2	78.5	9.2	72	85	-	-	-	-	-	-	-	-	-	-
	Total	397	15	2.27	7	90.9	16.5	72	122	-	-	-	-	-	-	-	-	-	-
CV-059 [6]																			
CV-058	DS	103	1	0.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	109	16	8.81	6	102.3	17.7	80	128	-	-	-	-	-	-	-	-	-	-
	Total	212	17	4.81	6	102.3	17.7	80	128	-	-	-	-	-	-	-	-	-	-

Location ID	Transect [1]	Electrofishing Duration (s)	Total Catch [2]	CPUE [3]	Fork Length (mm) [4]					Weight (g)					Condition Factor				
					n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
CV-057 [6]																			
BG-50 [5]	DS	Visual Only	Many	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	Visual Only	Many	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	Visual Only	Many	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-049 (July)	DS	121	4	1.98	4	125.8	31.9	96	170	-	-	-	-	-	-	-	-	-	-
	US	167	12	4.31	12	155.7	36.2	109	242	-	-	-	-	-	-	-	-	-	-
	Total	288	16	3.33	16	148.2	36.7	96	242	-	-	-	-	-	-	-	-	-	-
CV-049 (August)	DS	190	6	1.89	6	113.8	20.2	87	145	6	13.1	7.8	3.9	25.6	6	0.79	0.11	0.60	0.89
	US	190	11	3.47	11	126.5	25.3	99	180	11	19.3	12.6	9.5	51.8	11	0.87	0.10	0.71	1.08
	Total	380	17	2.68	17	122.1	23.8	87	180	17	17.1	11.3	3.9	51.8	17	0.99	0.12	0.81	1.45
CV-040	DS	157	1	0.38	1	201.0	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	145	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	302	1	0.20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-211	DS	132	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	121	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	253	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-212	DS	226	7	1.86	4	130.0	14.2	114	142	-	-	-	-	-	-	-	-	-	-
	US	144	1	0.42	1	121.0	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	370	8	1.30	5	128.2	13.0	114	142	-	-	-	-	-	-	-	-	-	-
BG-33	DS	243	7	1.73	7	106.7	21.8	69	139	-	-	-	-	-	-	-	-	-	-
	US	118	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	361	7	1.16	7	106.7	21.8	69	139	-	-	-	-	-	-	-	-	-	-
CV-030	DS	278	1	0.22	1	88.0	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	157	1	0.38	1	84.0	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	435	2	0.28	2	86.0	2.8	84	88	-	-	-	-	-	-	-	-	-	-

Location ID	Transect [1]	Electrofishing Duration (s)	Total Catch [2]	CPUE [3]	Fork Length (mm) [4]					Weight (g)					Condition Factor				
					n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
BG-32	DS	103	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	100	1	0.60	1	93.0	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	203	1	0.30	1	93.0	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-214	DS	134	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	160	1	0.38	1	43.0	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	294	1	0.20	1	43.0	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-215	DS	146	19	7.81	19	66.4	27.7	46	150	-	-	-	-	-	-	-	-	-	-
	US	130	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	276	19	4.13	19	66.4	27.7	46	150	-	-	-	-	-	-	-	-	-	-
CV-217 [5]	DS	Visual Only	Many	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	Visual Only	Many	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	Visual Only	Many	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-216 [6]																			
BG-30	DS	229	6	1.57	6	100.3	37.4	53	146	-	-	-	-	-	-	-	-	-	-
	US	231	1	0.26	1	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	460	7	0.91	7	100.3	34.1	53	146	-	-	-	-	-	-	-	-	-	-
BG-29	DS	223	3	0.81	3	93.3	26.1	74	123	-	-	-	-	-	-	-	-	-	-
	US	121	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	344	3	0.52	3	93.3	26.1	74	123	-	-	-	-	-	-	-	-	-	-
CV-021	DS	293	18	3.69	18	127.5	45.4	48	212	-	-	-	-	-	-	-	-	-	-
	US	299	2	0.40	2	144.0	35.4	119	169	-	-	-	-	-	-	-	-	-	-
	Total	592	20	2.03	20	129.2	44.0	48	212	-	-	-	-	-	-	-	-	-	-
BG-27	DS	156	3	1.15	3	102.0	50.9	55	156	-	-	-	-	-	-	-	-	-	-
	US	103	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	259	3	0.69	3	102.0	50.9	55	156	-	-	-	-	-	-	-	-	-	-

Location ID	Transect [1]	Electrofishing Duration (s)	Total Catch [2]	CPUE [3]	Fork Length (mm) [4]					Weight (g)					Condition Factor				
					n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
BG-24	DS	282	30	6.38	10	97.4	43.7	56	186	-	-	-	-	-	-	-	-	-	-
	US	218	2	0.55	2	97.0	11.3	89	105	-	-	-	-	-	-	-	-	-	-
	Total	500	32	3.84	12	97.3	39.7	56	186	-	-	-	-	-	-	-	-	-	-
BG-17	DS	237	6	1.52	6	63.7	7.8	54	73	-	-	-	-	-	-	-	-	-	-
	US	207	8	2.32	8	98.1	24.7	62	130	-	-	-	-	-	-	-	-	-	-
	Total	444	14	1.89	14	83.4	25.8	54	130	-	-	-	-	-	-	-	-	-	-
BG-04 [6]																			
CV-001 [6]																			
BG-03	DS	229	12	3.14	12	88.2	21.7	63	139	-	-	-	-	-	-	-	-	-	-
	US	125	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	354	12	2.03	12	88.2	21.7	63	139	-	-	-	-	-	-	-	-	-	-
CV-223 [5]	DS	Visual Only	Many	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	Visual Only	Many	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	Visual Only	Many	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-224	DS	156	24	9.23	24	82.6	32.3	32	127	24	6.7	5.7	0.3	18.6	24	0.85	0.13	0.59	1.22
	US	134	1	0.45	1	91.0	-	-	-	1	6.6	-	-	-	1	0.88	-	-	-
	Total	290	25	5.17	25	83.0	31.6	32	127	25	6.7	5.5	0.3	18.6	25	0.85	0.12	0.59	1.22
CV-225	DS	156	20	7.69	20	90.4	21.1	50	125	20	6.5	4.3	0.9	14.9	20	0.74	0.07	0.57	0.84
	US	220	4	1.09	4	129.8	19.4	112	148	4	21.4	9.8	13	31.9	4	0.92	0.05	0.88	0.98
	Total	376	24	3.83	24	96.9	25.3	50	148	24	8.9	7.8	0.9	31.9	24	0.77	0.10	0.57	0.98
BG-01	DS	321	21	3.93	21	87.8	13.9	71	112	21	5.8	2.7	2.6	12.4	21	0.8	0.1	0.66	1.20
	US	276	27	5.87	27	138.1	35.4	106	242	27	26.5	24.5	11	117.6	27	0.9	0.1	0.63	0.97
	Total	597	48	4.82	48	116.1	37.6	71	242	48	17.4	21.0	2.6	117.6	48	0.8	0.1	0.63	1.20
CV-186	DS	261	30	6.90	30	90.4	32.2	55	192	-	-	-	-	-	-	-	-	-	-
	US	254	3	0.71	3	103.3	14.2	88	116	-	-	-	-	-	-	-	-	-	-

Location ID	Transect [1]	Electrofishing Duration (s)	Total Catch [2]	CPUE [3]	Fork Length (mm) [4]					Weight (g)					Condition Factor				
					n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
	Total	515	33	3.84	33	91.5	31.1	55	192	-	-	-	-	-	-	-	-	-	-
CV-187	DS	110	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	143	4	1.68	4	108.8	14.4	98	130	-	-	-	-	-	-	-	-	-	-
	Total	253	4	0.95	4	108.8	14.4	98	130	-	-	-	-	-	-	-	-	-	-

DS = downstream; US = upstream; CPUE = catch-per-unit-effort; n = sample size; SD = standard deviation; Min = minimum; Max = maximum.

1 - DS = 50-m transect downstream of the Tote Road crossing; US = 50-m transect upstream of the Tote Road crossing.

2 - Includes fish that were observed while electrofishing but were not captured.

3 - CPUE = Catch-per-unit-effort (# fish/minute).

4 - n = number of fish measured for fork length or weight (may not equal total catch); SD = standard deviation.

5 - Observational survey only in spring 2025: bridge sites and larger streams (CV-128, BG-50, CV-217, CV-223) that were too fast, deep, and/or had challenging uneven substrate to effectively and safely electrofish.

6 - This site is now part of the TRCCRM program. Results from monitoring at this site are presented in NSC (2026).

7 - Very high flows from a major rain event in fall 2024 caused road crossing failures at CV-078 and CV-049. Necessary repairs were completed prior to the July 2025 survey.

8 - Very high flows from a major rain event in fall 2024 caused a partial blockage of the culvert at CV-072c and a shift in the flow to a previously fishless channel in the system, CV-072b, approximately 30 m to the north of CV-072c. All fishing in 2025 was conducted in the CV-072b channel.

Note: Site CV-054a was added to the list of surveyed sites in July 2025 at the request of BIM.

TABLE 5 NINESPINE STICKLEBACK CATCH DATA FROM FISH-BEARING STREAM CROSSINGS ALONG THE TOTE ROAD, JULY AND AUGUST 2025.

Location ID	Transect [1]	Electrofishing Duration (s)	Total Catch [2]	CPUE [3]	Fork Length (mm) [4]					Weight (g)					Condition Factor				
					n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
CV-154a	DS	175	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	157	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	332	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-129 (July)	DS	345	4	0.70	4	37.3	3.9	35	43	4	0.5	0.2	0.3	0.8	4	0.88	0.16	0.64	1.01
	US	131	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	476	4	0.50	4	37.3	3.9	35	43	4	0.5	0.2	0.3	0.8	4	0.88	0.16	0.64	1.01
CV-129 (August)	DS	264	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	223	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	487	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-128a	DS	239	2	0.50	2	34.0	2.8	32	36	-	-	-	-	-	-	-	-	-	-
	US	195	3	0.92	3	32.3	3.5	29	36	-	-	-	-	-	-	-	-	-	-
	Total	434	5	0.69	5	33.0	3.0	29	36	-	-	-	-	-	-	-	-	-	-
CV-128 [5]	DS	Visual Only	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	Visual Only	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	Visual Only	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-115	DS	295	1	0.20	1	56.0	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	205	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	500	1	0.12	1	56.0	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-114	DS	163	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	149	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	312	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-112	DS	181	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	123	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	304	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Location ID	Transect [1]	Electrofishing Duration (s)	Total Catch [2]	CPUE [3]	Fork Length (mm) [4]					Weight (g)					Condition Factor				
					n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
CV-111	DS	223	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	165	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	388	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-106 [6]																			
CV-104	DS	209	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	151	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	360	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-102 [6]																			
CV-099	DS	131	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	124	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	255	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-085	DS	138	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	146	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	284	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-079 [7]	DS	273	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	129	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-079b	DS	200	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	Shared with CV-079c			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-079c	DS	104	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	179	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-079d	DS	128	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	Shared with CV-079e			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-079e	DS	Shared with CV-079d			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	120	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All CV-079 Branches		1133	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Location ID	Transect [1]	Electrofishing Duration (s)	Total Catch [2]	CPUE [3]	Fork Length (mm) [4]					Weight (g)					Condition Factor				
					n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
CV-078	DS	150	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	179	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	329	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-076	DS	273	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	425	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	698	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-072b [8] (July)	DS	314	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	237	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	551	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-072b [8] (August)	DS	454	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	643	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	1097	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-061	DS	163	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	154	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	317	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-061b	DS	188	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	167	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	355	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-060	DS	188	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	209	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	397	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-059 [6]																			
CV-058	DS	103	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	109	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	212	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Location ID	Transect [1]	Electrofishing Duration (s)	Total Catch [2]	CPUE [3]	Fork Length (mm) [4]					Weight (g)					Condition Factor				
					n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
CV-057 [6]																			
BG-50 [5]	DS	Visual Only	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	Visual Only	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	Visual Only	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-049 (July)	DS	121	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	167	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	288	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-049 (August)	DS	190	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	190	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	380	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-040	DS	157	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	145	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	302	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-211	DS	132	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	121	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	253	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-212	DS	226	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	144	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	370	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BG-33	DS	243	1	0.25	1	49.0	-			-	-	-	-	-	-	-	-	-	-
	US	118	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	361	1	0.17	1	49.0	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-030	DS	278	13	2.81	13	34.9	4.8	29	46	-	-	-	-	-	-	-	-	-	-
	US	157	6	2.29	6	52.3	18.5	35	75	-	-	-	-	-	-	-	-	-	-
	Total	435	19	2.62	19	40.4	13.4	29	75	-	-	-	-	-	-	-	-	-	-

Location ID	Transect [1]	Electrofishing Duration (s)	Total Catch [2]	CPUE [3]	Fork Length (mm) [4]					Weight (g)					Condition Factor				
					n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
BG-32	DS	103	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	100	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	203	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-214	DS	134	4	1.79	4	36.3	3.3	33	40	-	-	-	-	-	-	-	-	-	-
	US	160	1	0.38	1	35.0	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	294	5	1.02	5	36.0	2.9	33	40	-	-	-	-	-	-	-	-	-	-
CV-215	DS	146	1	0.41	1	56.0	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	130	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	276	1	0.22	1	56.0	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-217 [5]	DS	Visual Only	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	Visual Only	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	Visual Only	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-216 [6]																			
BG-30	DS	229	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	231	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	460	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BG-29	DS	223	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	121	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	344	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-021	DS	293	4	0.82	4	61.3	9.4	48	70	-	-	-	-	-	-	-	-	-	-
	US	299	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	592	4	0.41	4	61.3	9.4	48	70	-	-	-	-	-	-	-	-	-	-
BG-27	DS	156	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	103	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	259	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Location ID	Transect [1]	Electrofishing Duration (s)	Total Catch [2]	CPUE [3]	Fork Length (mm) [4]					Weight (g)					Condition Factor				
					n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
BG-24	DS	282	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	218	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	500	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BG-17	DS	237	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	207	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	444	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BG-04 [6]																			
CV-001 [6]																			
BG-03	DS	229	4	1.05	4	60.8	6.6	53	68	-	-	-	-	-	-	-	-	-	-
	US	125	0	0.00						-	-	-	-	-	-	-	-	-	-
	Total	354	4	0.68	4	60.8	6.6	53	68	-	-	-	-	-	-	-	-	-	-
CV-223 [5]	DS	Visual Only	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	Visual Only	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	Visual Only	None	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-224	DS	156	6	2.31	6	43.3	7.7	34	54	6	0.7	0.4	0.3	1.3	6	0.75	0.14	0.62	0.99
	US	134	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	290	6	1.24	6	43.3	7.7	34	54	6	0.7	0.4	0.3	1.3	6	0.75	0.14	0.62	0.99
CV-225	DS	156	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	220	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	376	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BG-01	DS	321	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	276	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	597	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-186	DS	261	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	254	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Location ID	Transect [1]	Electrofishing Duration (s)	Total Catch [2]	CPUE [3]	Fork Length (mm) [4]					Weight (g)					Condition Factor				
					n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
	Total	515	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CV-187	DS	110	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	US	143	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	253	0	0.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

DS = downstream; US = upstream; CPUE = catch-per-unit-effort; n = sample size; SD = standard deviation; Min = minimum; Max = maximum.

1 - DS = 50-m transect downstream of the Tote Road crossing; US = 50-m transect upstream of the Tote Road crossing.

2 - Includes fish that were observed while electrofishing but were not captured.

3 - CPUE = Catch-per-unit-effort (# fish/minute).

4 - n = number of fish measured for fork length or weight (may not equal total catch); SD = standard deviation.

5 - Observational survey only in spring 2025: bridge sites and larger streams (CV-128, BG-50, CV-217, CV-223) that were too fast, deep, and/or had challenging uneven substrate to effectively and safely electrofish.

6 - This site is now part of the TRCCRM program. Results from monitoring at this site are presented in NSC (2026).

7 - Very high flows from a major rain event in fall 2024 caused road crossing failures at CV-078 and CV-049. Necessary repairs were completed prior to the July 2025 survey.

8 - Very high flows from a major rain event in fall 2024 caused a partial blockage of the culvert at CV-072c and a shift in the flow to a previously fishless channel in the system, CV-072b, approximately 30 m to the north of CV-072c. All fishing in 2025 was conducted in the CV-072b channel.

Note: Site CV-054a was added to the list of surveyed sites in July 2025 at the request of BIM

TABLE 6. SUMMARY OF FISH HABITAT STATUS, FISH PASSAGE, AND POTENTIAL REMEDIATION WORK ALONG THE TOTE ROAD IN 2025

Location ID	Fish Habitat at Crossing (Y/N)	Fish Captured / Observed DS in 2025	Fish Captured / Observed US in 2025	Potential Project-Related Fish Passage or Habitat Issues	Remediation Actions
CV-154a	Y	Y	N	POTENTIAL - Slight perch, not currently obstructing fish passage	Small perch, but site also becomes naturally inaccessible (dry) shortly after freshet.
CV-129	Y	Y	Y	YES - Slight perch; damaged culvert requires repair.	Small height of perch, not currently impeding fish passage but may in the future. Repair damaged culvert.
CV-128a	Y	Y	Y	NONE - Blockage of culvert under old road observed in previous years not an issue in 2024.	Recommend removing old road to avoid potential future blockages.
CV-128	Y	Y	Y	NONE	N/A
CV-115	Y	N	N	NONE	N/A
CV-114	Y	Y	N	YES - Both culverts perched slightly with some bank erosion.	Site to be remediated
CV-112	Y	Y	Y	NONE	Site to be remediated
CV-111	Y	Y	Y	YES - Culvert has a significant perch that is preventing upstream movements; however, fish may also access upstream habitat from an upstream lake	Site to be remediated
CV-106 [1]					
CV-104	Y	Y	N	POTENTIAL – slight perch that is not currently affecting fish passage	N/A
CV-102 [1]					
CV-099	Y	Y	Y	NONE – but some leakage under the road, similar to that observed in some previous years	Armouring the embankments may reduce the leakage
CV-085	Y	N	Y	NONE	N/A
CV-079	Y	Y	Y	NONE – A small perch at one of the fish-bearing channel crossings, but no current restrictions on upstream movements in the entire braided system	Site to be remediated in the future

Location ID	Fish Habitat at Crossing (Y/N)	Fish Captured / Observed DS in 2025	Fish Captured / Observed US in 2025	Potential Project-Related Fish Passage or Habitat Issues	Remediation Actions
CV-078	Y	Y	Y	NONE - Very high flows from a major rain event in fall 2024 caused a road crossing failure. No current fish passage issues.	Site to be remediated in the future
CV-076	Y	Y	Y	NONE	N/A
CV-072	Y	Y	Y	YES - Very high flows from a major rain event in fall 2024 caused a complete blockage of the culvert at CV-072c and a shift in the flow to another channel in the crossing, CV-072b, approximately 30 m to the north of CV-072c. Both culverts at CV-072b are slightly perched and fish can be periodically stranded upstream during periods of low flow when patches of subsurface flow occur downstream.	Attempt to restore flows to the original CV-072c channel
CV-061	Y	Y	Y	YES – Culvert becomes slightly perched as water levels decrease following freshet, though larger fish can still move upstream.	Road has redirected upstream overland flows from a large area into one culvert crossing, resulting in ponding upstream and creation of a channel downstream that were not there prior to road construction. If necessary, remove perching via rocky ramp or culvert reinstallation.
CV-061b	Y	Y	Y	YES – Culvert becomes slightly perched as water levels decrease following freshet, which may limit upstream passage to larger fish size classes.	Persistent perched culvert but upstream habitat would be non-existent without the road concentrating overland meltwater flows. Habitat downstream of the culvert is largely restricted to backwatering from Katiktok Lake in spring. If necessary, remove perching via rocky ramp or culvert reinstallation.
CV-060	Y	Y	Y	NONE	N/A
CV-059 [1]					
CV-058	Y	N	Y	NONE	N/A
CV-057 [1]					
BG-50	Y	Y	Y	YES - Culverts remain perched and impassable. Fish continue to use habitat in the channel downstream of these culverts and in the larger north channel spanned by a bridge.	N/A- bridge crossing adjacent

Location ID	Fish Habitat at Crossing (Y/N)	Fish Captured / Observed DS in 2025	Fish Captured / Observed US in 2025	Potential Project-Related Fish Passage or Habitat Issues	Remediation Actions
CV-049	Y	Y	Y	NONE - Very high flows from a major rain event in fall 2024 caused a road crossing failure at CV-049. Road repairs were completed prior to the July 2025 survey. No fish passage issues in July 2025.	The previous configuration at this site included two fish passage culverts and four small overflow culverts. The single culvert currently installed should be evaluated hydrotechnically for fish passage.
CV-040	Y	Y	N	NONE	N/A
CV-211	P	N	N	NONE	N/A
CV-212	Y	Y	Y	NONE	N/A
BG-33	Y	Y	N	YES - Upstream flow subsurface under aggregate placed for erosion control. Loss of step-pool connectivity at the downstream end of culvert persists in 2025.	Adjust upstream aggregate and adjust downstream step-pool to better withstand low water levels.
CV-030	Y	Y	Y	NONE	No passage issues, but erosion is especially prominent at this crossing
BG-32	Y	N	Y	NONE	N/A
CV-214	Y	Y	Y	POTENTIAL - Very low water levels can result in slight perch but fish passage appears to persist.	Monitor in case perch worsens.
CV-215	Y	Y	N	POTENTIAL - Very low water levels can result in slight perch as observed in July 2025.	Monitor in case perch worsens.
CV-217	Y	Y	Y	NONE	N/A
CV-216 [1]					
BG-30	Y	Y	Y	NONE	Site to be remediated in the future. Take care not to alter high quality downstream habitat.
BG-29	Y	Y	N	NONE	N/A
CV-021	Y	Y	Y	POTENTIAL - The step-pool approach to the culvert allows upstream passage, but could be susceptible to low water levels or structural alterations	Monitor step-pool for any changes
BG-27	Y	Y	N	YES – Two of three culverts badly damaged and all three are perched.	Site to be remediated in the future
BG-24	Y	Y	Y	POTENTIAL – The fish-bearing culvert has no issues, but the major rain event in the fall of 2024	Site to be remediated in the future

Location ID	Fish Habitat at Crossing (Y/N)	Fish Captured / Observed DS in 2025	Fish Captured / Observed US in 2025	Potential Project-Related Fish Passage or Habitat Issues	Remediation Actions
				resulted in substantial erosion upstream of the crossing with a large deposition of sediment in the vicinity of the upstream end of the culverts. This fine material is less suitable for char and could potentially affect fish use of upstream habitat.	
BG-17	Y	Y	Y	NONE	Site to be remediated in the future
BG-04 [1]					
CV-001 [1]					
BG-03	Y	Y	N	YES – Step-pool approach to culvert may not be suitable for fish use, particularly during periods of low water.	Adjustments could be made to the step-pool to enhance passage.
CV-223	Y	Y	Y	NONE	N/A
CV-224	Y	Y	Y	YES – Small perch at both culverts now.	Site to be remediated in the future
CV-225	Y	Y	Y	YES - Moderate to large perch at both culverts and high velocity flows are typical through the culverts in spring. Old road crossing embankments continue to obstruct flows to one of the downstream branches of this stream.	Site to be remediated in the future
BG-01	Y	Y	Y	POTENTIAL - Periodically high culvert velocities may restrict movements of smaller juvenile char.	Site to be remediated in the future
CV-186	Y	Y	Y	YES - Both culverts now badly damaged and perched at the downstream end. There is at least some obstruction to fish movements as numbers upstream are much lower than during previous surveys.	Site needs new culvert installation to restore fish passage and improve sediment and erosion control.
CV-187	Y	N	Y	NONE	N/A

1 - This site is now part of the TRCCRM program. Results from monitoring at this site are presented in NSC (2026).

TABLE 7. INSTALLATION SUMMARY OF REMAINING HADD AND HABITAT COMPENSATION SITES ALONG THE TOTE ROAD

Crossing ID	UTM[1]		Crossing Size Classification	Authorization (HADD or Compensation)[2]	Initial Work Completion Date[3]	Additional Work Completion Date[4]	Years Monitored	Additional Monitoring Required
	Easting	Northing						
CV-129	512381	7966783	Large	HADD	17-Sep-07	July 2011 Winter 2014/15 September 2019 September 2020	2008-2024	Continue monitoring of rocky ramp for successful passage and if any changes are made to the culverts
CV-128	513556	7965889	Extra-large	HADD	23-Sep-07	Winter 2013/14 March 2017	2009-2024	Routine Only
CV-114	520278	7956528	Medium	HADD	29-Sep-07	July 2011 September 2019 September 2020	2009-2024	Once alternative remediation is completed in winter 2024/2025, monitor success of measures
CV-111	521355	7954524	Medium	HADD	28-Sep-07	Winter 2018/19 September 2019	2009-2024	Once alternative remediation is completed in winter 2024/2025, monitor success of measures
CV-104	521732	7952788	Medium	HADD	01-Oct-07	November 2016	2009-2024	Routine Only
CV-099	521886	7948843	Large	HADD	04-Oct-07	Winter 2014/15 December 2017	2008-2024	Routine Only
CV-079	525538	7937314	Large	HADD	08-Jul-08	June 2018	2008-2024	Once alternative remediation is completed in winter 2024/2025, monitor success of measures
CV-078	525852	7936787	Large	HADD	09-Jul-08	N/A	2008-2024	Once alternative remediation is completed in winter 2024/2025, monitor success of measures
CV-072	526897	7934576	Large	HADD	05-Mar-08	N/A	2009-2024	Routine Only
CV-060	527622	7930342	Medium	HADD	27-Feb-08	N/A	2009-2024	Routine Only
BG-50	529294	7926852	Extra-large	HADD	30-Oct-07	Winter 2013/14 Winter 2014/15 November 2016 September 2019	2008-2024	Once alternative remediation is completed in winter 2024/2025, monitor success of measures

Crossing ID	UTM[1]		Crossing Size Classification	Authorization (HADD or Compensation)[2]	Initial Work Completion Date[3]	Additional Work Completion Date[4]	Years Monitored	Additional Monitoring Required
	Easting	Northing						
CV-049	529654	7926545	Large	HADD	10-Mar-08	N/A	2009-2024	Routine Only
BG-32	540729	7921597	Large	HADD	04-Apr-08	August 2012 September 2017	2009-2024	Routine Only
CV-217	542321	7922189	Extra-large	HADD	17-Apr-08	Winter 2013/14 Winter 2014/15 March 2017	2009-2024	Routine Only
CV-216	542764	7921724	Large	HADD	08-Jun-08	October 2017 September 2019 September 2020 Winter 2023/24	2009-2024	Site remediated in winter 2023/2024. Continue to monitor results.
BG-30	546070	7919844	Small	Compensation - RA	2012	August 2012	2010-2024	Routine monitoring and maintenance of constructed fishway
BG-24	548766	7918878	Medium	HADD	15-May-08	N/A	2008-2024	Once alternative remediation is completed in winter 2024/2025, monitor success of measures
BG-17	550703	7917643	Large	HADD	09-May-08	N/A	2009-2024	Once alternative remediation is completed in winter 2024/2025, monitor success of measures
BG-04	553250	7915100	Medium	HADD	05-May-08	August 2012 February 2018 June 2018 Winter 2023/24	2009-2024	Site remediated in winter 2023/2024. Continue to monitor results.
CV-001	553544	7914897	Small	Compensation - RH	08-May-08	Winter 2014/15 Winter 2023/24	2009-2024	Site remediated in winter 2023/2024. Continue to monitor results.
CV-223	555705	7914676	Extra-large	HADD	03-May-08	Winter 2013/14	2008-2024	Routine Only
CV-224	556238	7915044	Medium	HADD	04-May-08	January 2018	2008-2024	Once alternative remediation is completed in winter 2024/2025, monitor success of measures

Crossing ID	UTM[1]		Crossing Size Classification	Authorization (HADD or Compensation)[2]	Initial Work Completion Date[3]	Additional Work Completion Date[4]	Years Monitored	Additional Monitoring Required
	Easting	Northing						
CV-225	557421	7915187	Large	HADD	21-Sep-07	August 2010 Winter 2014/15 September 2019	2008-2024	Once alternative remediation is completed in winter 2024/2025, monitor success of measures
BG-01	558000	7914928	Medium	HADD	20-Sep-07	August 2010 October 2017 September 2019	2008-2024	Once alternative remediation is completed in winter 2024/2025, monitor success of measures
CV-187	560957	7913414	Small	Compensation - RH	14-Jun-08	N/A	2008-2024	Routine Only

1 - NAD 83, Zone 17

2 - Includes current HADD and compensation sites and not those eliminated from calculations following 2010 surveys; RA = restored access, RH = restored habitat

3 - Includes work outlined during the initial planning and construction phase

4 - Includes repair work, installation of fish access improvement structures, ERP upgrades, and remediation work

Note: erosion is an issue at all crossings

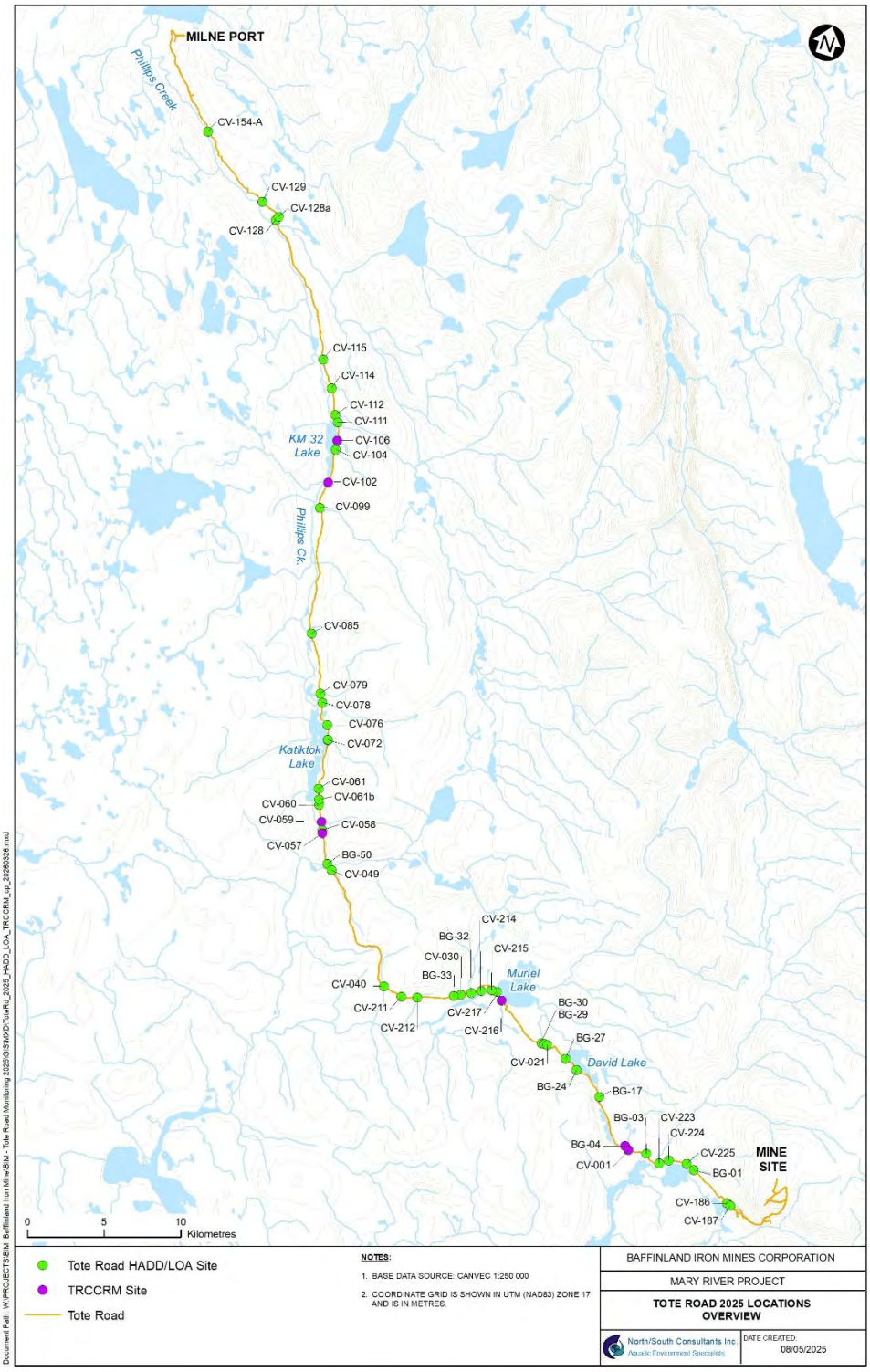


FIGURE 1. MAP OF TOTE ROAD SITES SURVEYED IN 2025 FISH AND FISH HABITAT ASSESSMENT FIELD PROGRAMS

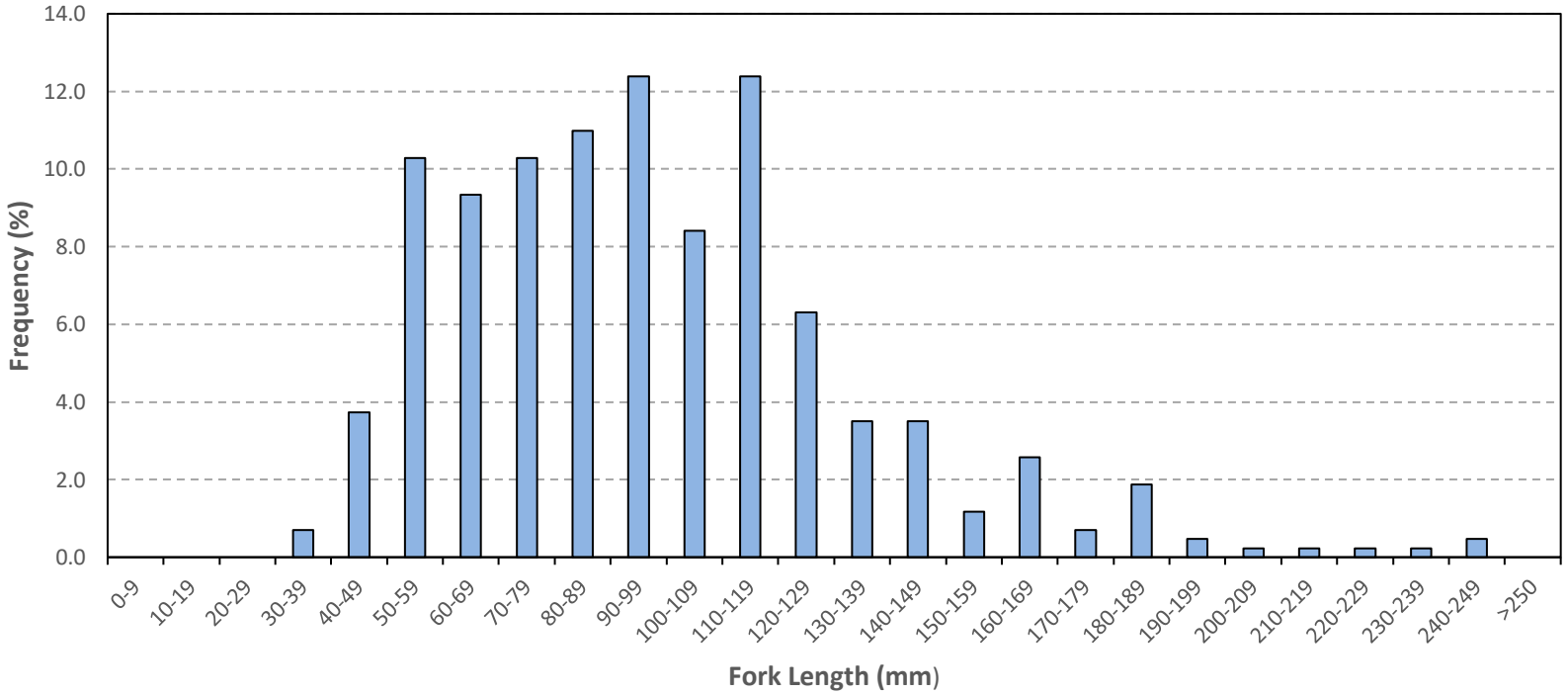


FIGURE 2. FORK LENGTH-FREQUENCY FOR ALL ARCTIC CHAR CAPTURED DURING JULY 2025 SURVEYS OF FISH-BEARING SITES ALONG THE TOTE ROAD

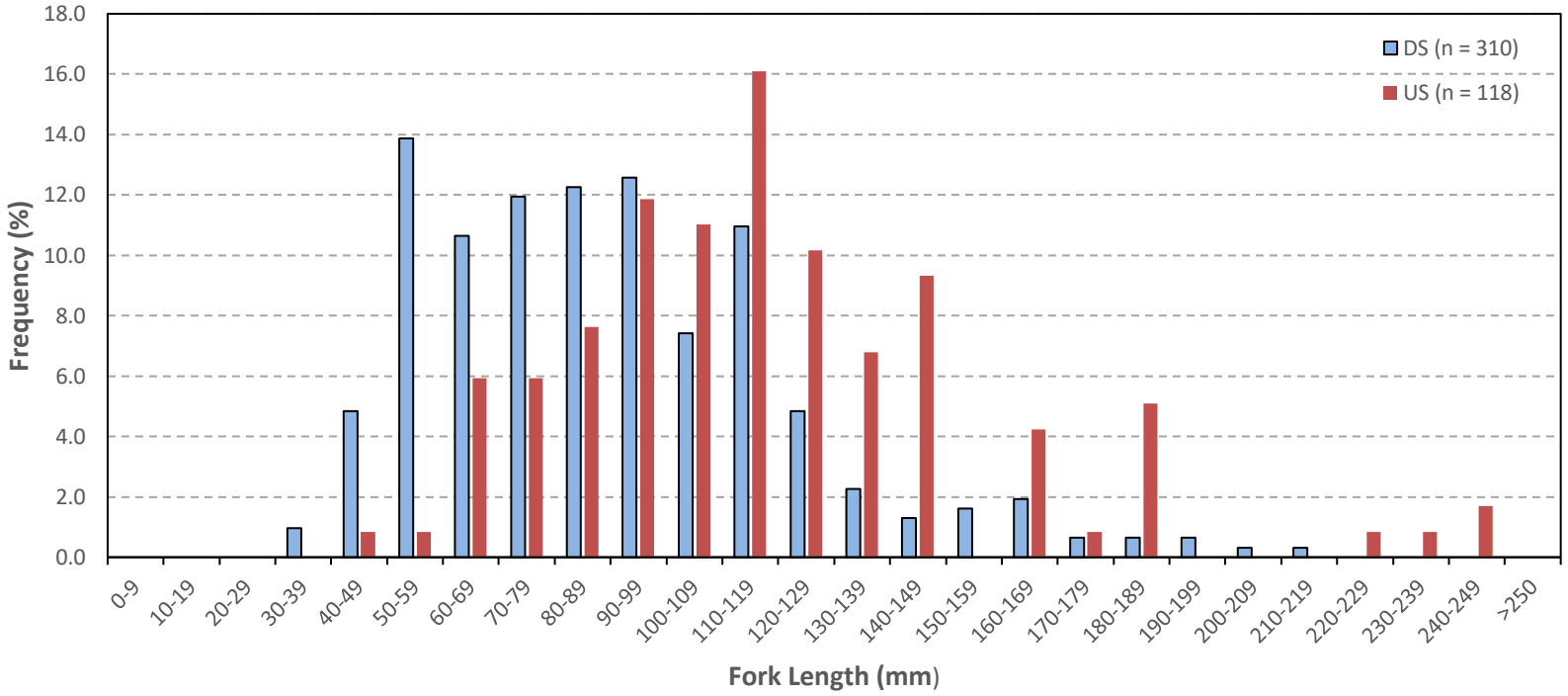


FIGURE 3. FORK LENGTH-FREQUENCY FOR ALL ARCTIC CHAR CAPTURED DOWNSTREAM AND UPSTREAM OF TOTE ROAD CROSSINGS DURING JULY 2025.

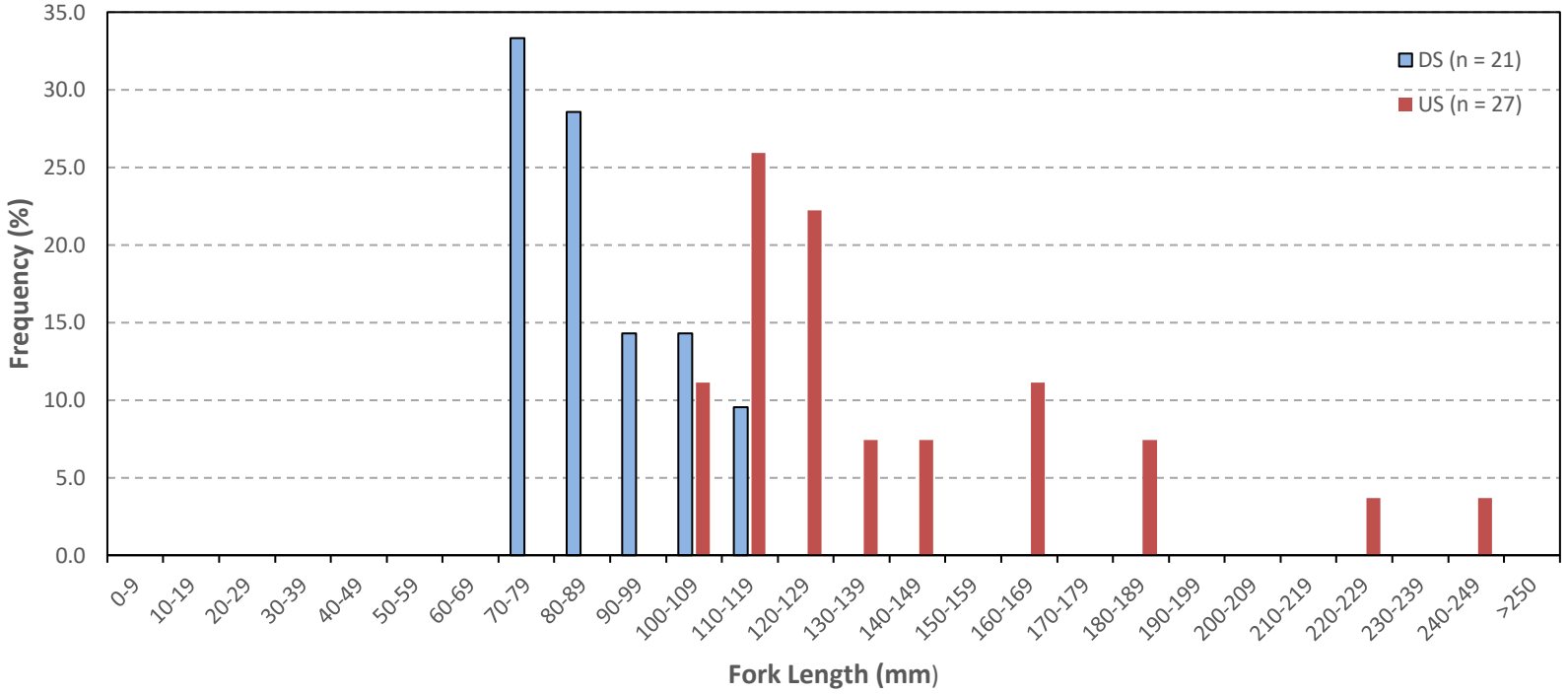


FIGURE 4. FORK LENGTH-FREQUENCY FOR ARCTIC CHAR CAPTURED DOWNSTREAM AND UPSTREAM OF TOTE ROAD CROSSING BG-01 DURING JULY 2025.

APPENDIX A: DFO AUTHORIZATIONS AND AMENDMENTS

Fisheries and Oceans Canada | Pêches et Océans Canada

301-5204 50th Avenue
Yellowknife, NT
X1A 1E2

our file *Votre référence*

September 20, 2013

Our file *Notre référence*
07-HCAA-CA7-00050

Oliver Curran
Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
Oakville, ON
L6H 0C3

Dear Mr. Curran:

Subject: Proposal not likely to result in impacts to fish and fish habitat.

Fisheries and Oceans Canada – Fisheries Protection Program (DFO) received your proposal on August 29, 2013. Please refer to the file number and title below:

DFO File No.: **07-HCAA-CA7-00050**
Title: **Mary River Iron Ore Project, Baffin Island (Baffinland), Nunavut**

You may be aware of changes to the *Fisheries Act*, however these have not affected the review of your project at this time. For more information on current changes to the *Fisheries Act* please refer to the DFO website at www.dfo-mpo.gc.ca/media/infocus-alaune/2012/habitat-eng.htm.

Your proposal has been reviewed to determine whether it is likely to result in impacts to fish and fish habitat which are prohibited by the habitat protection provisions of the *Fisheries Act* or those prohibitions of the *Species at Risk Act* that apply to aquatic species.*

Our review consisted of:

Changes to Culverts along the Tote Road, Submission dated August 29, 2013 from Oliver Curran - Baffinland Iron Mines Corporation

Freshwater Aquatic Baseline Synthesis Report 2005-2011 (January 2012), Baffinland Iron Mines Corporation, Mary River Project, Prepared by North/South Consultants Inc.

*Those sections most relevant to the review of development proposals include 20, 22, 32 and 35 of the *Fisheries Act* and sections 32, 33 and 58 of the *Species at Risk Act*. For more information please visit www.dfo-mpo.gc.ca.

We understand that you propose to carry out the following culvert upgrades along the Tote Road:

Culvert ID	Proposed Culvert Diameter (m)	Proposed Culvert Length (m)	Area of Rip Rap (m2)	Proposed Culvert Upgrate
BG31A	1.2	19.5	24.96	Extend 1m left & 2.5m right
BG30	1	22	17.33	Extend 7m right
BG29	1	31	0	Extend 7.5m left & 8.5m right
BG27B	0.5	31	4.33	Extend 5m left & 8m right
BG27C	0.5	31	0	Extend 5m left & 8m right
BG27A	0.5	31	0	Extend 4.5m left & 8.5m right
BG17A	1.2	36.5	24.96	Extend 8m left & 13.5m right
BG17B	1.2	37.5	24.96	Extend 15.5m left & 7m right
BG04A	1.2	24	0	Extend 5.5m left & 3.5m right
BG04B	1.2	24	0	Extend 5m left & 4m right
CV224A	1	26	0	Extend 6m left & 5m right
CV224B	1	26.5	0	Extend 6.5m left & 5m right
CV225B	1.2	18	0	Replace with new length of 18m
CV225A	1	18.5	17.33	Replace with new length of 18.5m
BG01C	1.2	37	24.96	Extend 11m left & 8m right
BG01A	1.2	36.5	24.96	Extend 11.5m left & 7m right
BG01B	1.2	37	24.96	Extend 12m left & 7m right
BG01D	0.5	10	0	New Culvert
BG01F	0.5	18	0	New Culvert
BG01E	1.0	10	0	New Culvert
BG01G	0.5	23	0	New Culvert
CV186	1	27	0	Extend 6m left
CV187A	0.5	20.5	0	Extend 6m left & 4.5m right
CV187B	0.5	16	0	New Culvert
CV166A	1	23.5	17.33	Extend 8.5m right
CV166B	0.5	22.5	0	Extent 7.5m right
CV115A	0.5	17.5	0	Extend 2.5m left
CV115B	1	17	0	Extend 2m left

Provided that your plans are implemented as described DFO has concluded that your proposal is not likely to result in impacts to fish and fish habitat.

You will not need to obtain a formal approval from DFO in order to proceed with your proposal.

.../3

If the plans have changed or if the description of your proposal is incomplete you should contact this office to determine if the advice in this letter still applies.

Please be advised that any unauthorized impacts to fish and fish habitat which result from a failure to implement this proposal as described could lead to corrective action such as enforcement.

If you have any questions please contact the undersigned at (867) 669-4927 or by email at Georgina.Williston@dfo-mpo.gc.ca.

Yours sincerely,

Georgina Williston

Georgina Williston
Fisheries Protection Biologist

cc. Stuart Niven- Fisheries and Oceans Canada
Jim Millard- Baffinland Iron Mines Corporation
Bevin LeDrew- Sikumiut Environmental Management Ltd.

Fisheries and Oceans Canada | Pêches et Océans Canada

301-5204 50th Ave
Yellowknife, NT
X1A 1E2

Our file *Notre référence*
NU-07-0050

December 16, 2013

Baffinland Iron Mines Corp.
275 Upper Middle Road East Suite 300
Oakville, ON L6H 0C3

Dear Mr. Curran:

Subject: Implementation of mitigation measures to avoid and mitigate serious harm to fish.

The Fisheries Protection Program (the Program) of Fisheries and Oceans Canada received your proposal on August 28, 2013.

Your proposal has been reviewed to determine whether it is likely to result in serious harm to fish which is prohibited under subsection 35(1) of the *Fisheries Act*.

Our review consisted of:

Baffinland Submission: Tote Road Upgrade-Four Seacan Bridge Replacements, Tote Road Upgrade- Fish Bearing Culvert submission, Attachments 1 &2, August 2013.

We understand that you propose to: Upgrade the following crossings along the Tote Road.

The following seacan crossings will be removed and replaced with clear span bridges

- STA 17 (CV 128)
- STA 62 (BG50)
- STA 80 (CV 217)
- STA 97 (CV223)

The following culvert crossings will be upgraded as follows:

Culvert ID	Proposed Culvert Diameter (m)	Proposed Culvert Length (m)	Area of Rip Rap (m2)	Proposed works to be completed
CV217B	1.2	16	24.96	Extend 1m right
CV217C	1.2	16	24.96	Extend 1m right
CV217A	1.2	16	24.96	Extend 1m right
CV217D	0.15		0	Abandon
CV216B	1.2	17.5	0	Extend 1.5m left & 1m right
CV216C	1.2	16.5	0	Extend 1.5m left
CV216A	1.2	18.5	0	Extend 1.5m left & 2m right
CV216D	0.5	14.5	0	Replace with new length of 14.5m
CV216E	0.5	14	0	Abandon and replace with new length of 14m
CV216F	0.5	12	0	Replace with new length of 12m
CV223B	1.2	28	24.96	Extend 13m left
CV223C	1.2	28	24.96	Extend 13m left
CV223D	1.2	29	24.96	Extend 14m left
CV223A	2	24	69.33	Extend 14m left
CV223E	1.2	19.5	0	Extend 4.5m left
CV223F	1.2	19	0	Extend 4m left
CV115C	0.5	15.5	0	Extend 3.5m right
CV115D	0.5	17	4.33	Extend 8m left
CV114A	1	15.5	17.33	Extend 0.5m right
CV114B	0.5	14	0	Extend 5m left
CV114C	0.5	11	4.33	Replace with new length of 11m
CV114D	0.5	11.5	4.33	Extend 2m left & 0.5m right
CV112A	1.2	17.5	24.96	Extend 2.5m right
CV112B	0.5	24	0	Extend 9m right
CV112C	0.5	21	4.33	Extend 9m left
CV111	1	24	17.33	Extend 4.5m left & 1.5m right
CV106	1	19	17.33	Extend 4m left
CV104A	1.2	19	24.96	Extend 4m left
CV104B	1.2	19	24.96	Extend 4m left
CV102A	1	22.5	17.33	Extend 7.5m left
CV102B	0.5	21.5	0	Extend 6.5m left
CV102C	0.5	21.5	0	Extend 6.5m left
CV102D	0.5	20.5	0	Extend 5.5m left
CV099B	1.2	17	24.96	Replace with new length of 17m

.../3

Culvert ID	Proposed Culvert Diameter (m)	Proposed Culvert Length (m)	Area of rip rap (m2)	Proposed works to be completed
CV099A	1.2		0	Remove culvert
CV099C	2	18.5	69.33	Replace with new length of 18.5m
CV099D	0.5		0	Remove culvert
CV099E	0.5		0	Remove culvert
CV099F	0.5	14	0	Extend 2m right
CV087B	1.2	19	24.96	Extend 6.5m left & 0.5m right
CV087A	1.2	18.5	24.96	Extend 6m left & 0.5m right
CV087C	0.5	18	0	Extend 6m right
CV079B	1.2	16.5	0	Extend 1.5m left
CV079A	1.2	16.5	0	Extend 1.5m left
CV079C	0.15		0	Remove culvert
CV079D	0.15		0	Remove culvert
CV078A	1.2	16.5	0	Extend 1.5m left
CV078B	1	19.5	0	Extend 1.5m left
CV078C	1	19.5	0	Extend 1.5m left
CV078D	2	22	0	Extend 2m right
CV076	1	11.5	0	Replace with new length of 11.5m
CV072B	1.2	17.5	0	Replace with new length of 17.5m
CV072C	1.2	17.5	0	Replace with new length of 17.5m
CV072A	1.2	17.5	0	Replace with new length of 17.5m
CV060A	1	16.5	0	Extend 1.5m left
CV060B	1	16.5	0	Extend 1.5m left
CV059B	0.5	16.5	0	Extend 3.5m left & 1m right
CV059A	0.5	16	0	Extend 3m left & 1m right
CV059C	0.5	16.5	0	Extend 4m left & 0.5m right
CV059D	0.5	16.5	0	Extend 4m left & 0.5m right
CV057B	0.5	16.5	0	Extend 1.5m left
CV057C	0.5	16.5	0	Extend 1.5m left
CV057A	0.5	16.5	0	Extend 1.5m left
BG50A	1.2	33.5	24.96	Extend 15.5m left
BG50B	1.2	32	24.96	Extend 14m left
CV049A	1.2	24.5	24.96	Extend 5.5m left & 4m right
CV049B	1.2	24.5	24.96	Extend 4.5m left & 5m right
CV030A	1	16	0	Extend 1m left
CV030B	0.5	16	0	Extend 1m left

.../4

To avoid the potential of serious harm to fish and their habitat, we are recommending that the following mitigation measures be included into your plans.

- If in-stream work is required during the open water season it should be completed in the dry by de-watering the work area and diverting and/or pumping flows around cofferdams placed at the limits of the work area.
- Existing stream flows should be maintained downstream of the de-watered work area without interruption, during all stages of the work.
- A fish stranding program should be implemented if necessary by a qualified fisheries person , who is experienced in this area, immediately following isolation and prior to de-watering to ensure that fish are removed from any dewatered area and released alive immediately downstream of the work area.
- Flow dissipaters and/or filter bags, or equivalent, should be placed at water discharge points to prevent erosion and sediment release.
- Silt or debris that has accumulated around the temporary cofferdams should be removed prior to their withdrawal.

Provided that these mitigation measures are incorporated into your plans, the Program is of the view that your proposal will not result in serious harm to fish. No formal approval is required from the Program under the *Fisheries Act* in order to proceed with your proposal.

If your plans have changed or if the description of your proposal is incomplete, or changes in the future, you should consult our website (http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html) or consult with a qualified environmental consultant to determine if further review is required by the Program.

Please notify this office at least 10 days before starting your project. A copy of this letter should be kept on site while the work is in progress.

If you have any questions, please contact Georgina Williston at our Yellowknife office at 867-669-4927, by fax at 867-669-4940 or by email at geogina.williston@dfo-mpo.gc.ca. Please refer to the file number referenced above when corresponding with the Program.

Yours sincerely,

Stu Niven
Senior Fisheries Protection Biologist
Fisheries and Oceans Canada

Georgina Williston- Fisheries and Oceans Canada
Bevin LeDrew- Sikumiut Environmental Management Ltd.
Tessa Mackay- Hatch

Fisheries and Oceans Canada | Pêches et Océans Canada

5204-50th Avenue
Yellowknife, NT
X1A 1E2

Your file *Votre référence*

December 9, 2014

Our file *Notre référence*
NU-07-0050

Baffinland Iron Mines Corp.
Attention: Jim Millard, Environmental Manager
2275 Upper Middle Road, Suite 300
Oakville, ON
L6H 0C3

Dear Mr. Millard:

Subject: Implementation of mitigation measures to avoid and mitigate impacts to fish and fish habitat and listed aquatic species at risk – Mary River Project

The Fisheries Protection Program (the Program) of Fisheries and Oceans Canada received your proposal on November 27, 2014.

Your proposal has been reviewed to determine whether it is likely to result in serious harm to fish which is prohibited under subsection 35(1) of the *Fisheries Act*.

Your proposal has also been reviewed to determine whether it will adversely impact listed aquatic species at risk and contravene sections 32, 33 or 58 of the *Species at Risk Act* (*SARA*).

Our review considered the following:

- Letter from Baffinland Iron Mines RE: Realignment of Tote Road at Culvert CV099. Dated November 27, 2014 and submitted by James Millard, with 1 attachment.
- Attachment 1- Mark up of proposed field change, Drawing H349000-3000-10-012-0052

We understand that you propose to:

- Realign the existing Tote Road and install one 2 metre diameter culvert in the stream bed and two 1.2 metre overflow culverts. Culverts will be approximately 27 metres in length.

Canada

.../2

- Install culverts during the winter months when the stream is frozen to bottom.
- Remove existing culverts along the old Tote Road alignment.

Since there are no *SARA* species or their habitats identified in the project area, no additional approvals under *SARA* will be required for your proposed activities.

To avoid the potential for serious harm to fish that is prohibited under the *Fisheries Act*, the mitigation measures set out in your project plans are to be followed.

Provided that you implement the required mitigation measures for your project, and follow the guidance available on the DFO website at http://www.dfo-mpo.gc.ca/pnw-ppe/measures/index-eng.html, the Program is of the view that your proposal should not result in serious harm to fish or contravene sections 32, 33 or 58 of the *Species at Risk Act*. No formal approval is required from the Program under the *Fisheries Act* or the *Species at Risk Act* in order to proceed with your proposal.

It remains your responsibility to ensure you avoid causing serious harm to fish in compliance with the *Fisheries Act*, and that you meet the requirements under the *Species at Risk Act* as it may apply to your project. If your plans have changed or if the description of your proposal is incomplete, or changes in the future, you should consult our website (http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html) or consult with a qualified environmental consultant to determine if further review is required by the Program.

Please be advised that it is also your *Duty to Notify* DFO if you have caused, or are about to cause, serious harm to fish that are part of or support a commercial, recreational or Aboriginal fishery. Such notifications should be directed to http://www.dfo-mpo.gc.ca/pnw-ppe/violation-infraction/index-eng.html.

A copy of this letter should be kept on site while the work is in progress. It remains your responsibility to meet all other federal or territorial requirements that apply to your project.

If you have any questions, please contact Georgina Williston at our Yellowknife office at 867-669-4927 or by email at Georgina.Williston@dfo-mpo.gc.ca. Please refer to the file number referenced above when corresponding with the Program.

Yours sincerely,

Julie Dahl
Regional Manager, Regulatory Reviews
Fisheries Protection Program

cc. Oliver Curran- Baffinland Iron Mines
Erik Madsen – Baffinland Iron Mines

Fisheries and Oceans Canada | Pêches et Océans Canada

5204-50th Avenue
Yellowknife, NT
X1A 1E2

Your file *Votre référence*

October 27, 2014

Our file *Notre référence*
NU-07-0050

Baffinland Iron Mines Corp.
Attention : Jim Millard, Environmental Manager
2275 Upper Middle Road, Suite 300
Oakville, ON
L6H 0C3

Dear Mr. Millard:

Subject: Implementation of mitigation measures to avoid and mitigate impacts to fish and fish habitat and listed aquatic species at risk – Mary River Project

The Fisheries Protection Program (the Program) of Fisheries and Oceans Canada received your proposal on October 17, 2014.

Your proposal has been reviewed to determine whether it is likely to result in serious harm to fish which is prohibited under subsection 35(1) of the *Fisheries Act*.

Your proposal has also been reviewed to determine whether it will adversely impact listed aquatic species at risk and contravene sections 32, 33 or 58 of the *Species at Risk Act* (*SARA*).

Our review considered the following:

- Letter from Baffinland Iron Mines RE: Realignment of Tote Road at Culvert CV225B. Dated October 16, 2014 and submitted by James Millard, with 2 attachments.
- Attachment 1- Mark of proposed field change, Drawing H349000-3000-10-012-0139
- Attachment 2- Project Wide, Civil Standard Drawing, Typical Culvert Detail, H349000-1000-10-041-0003

We understand that you propose to:

- Realign the existing Tote Road and install two new 1.2 metre culverts in the stream bed and one 1.0 metre culvert 45 m away as an overflow. Culverts will be approximately 27metres in length.

- Install culverts during the winter months when the stream is frozen to bottom.
- Remove the two existing 1.2m culverts along the old Tote Road alignment.

Since there are no *SARA* species or their habitats identified in the project area, no additional approvals under *SARA* will be required for your proposed activities.

To avoid the potential for serious harm to fish that is prohibited under the *Fisheries Act*, the mitigation measures set out in your project plans are to be followed.

Provided that you implement the required mitigation measures for your project, and follow the guidance available on the DFO website at http://www.dfo-mpo.gc.ca/pnw-ppe/measures/index-eng.html, the Program is of the view that your proposal should not result in serious harm to fish or contravene sections 32, 33 or 58 of the *Species at Risk Act*. No formal approval is required from the Program under the *Fisheries Act* or the *Species at Risk Act* in order to proceed with your proposal.

It remains your responsibility to ensure you avoid causing serious harm to fish in compliance with the *Fisheries Act*, and that you meet the requirements under the *Species at Risk Act* as it may apply to your project. If your plans have changed or if the description of your proposal is incomplete, or changes in the future, you should consult our website (http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html) or consult with a qualified environmental consultant to determine if further review is required by the Program.

Please be advised that it is also your *Duty to Notify* DFO if you have caused, or are about to cause, serious harm to fish that are part of or support a commercial, recreational or Aboriginal fishery. Such notifications should be directed to http://www.dfo-mpo.gc.ca/pnw-ppe/violation-infraction/index-eng.html.

A copy of this letter should be kept on site while the work is in progress. It remains your responsibility to meet all other federal or territorial requirements that apply to your project.

If you have any questions, please contact Georgina Williston at our Yellowknife office at 867-669-4927 or by email at Georgina.Williston@dfo-mpo.gc.ca. Please refer to the file number referenced above when corresponding with the Program.

Yours sincerely,

Julie Dahl
Regional Manager, Regulatory Reviews
Fisheries Protection Program

cc. Oliver Curran- Baffinland Iron Mines
Erik Madsen – Baffinland Iron Mines
Stu Niven – Fisheries and Oceans Canada

Fisheries and Oceans Canada | Pêches et Océans Canada

Suite 301 – 5204 59th Ave.
Yellowknife NT, X1A 1E2

Our file *Notre référence*
NU-07-0050

February 20, 2015

James Millard
Environmental Manager
Baffinland Iron Mines Corp.
275 Upper Middle Road East Suite 300
Oakville, ON L6H 0C3

Dear Mr. Millard:

Subject: Implementation of mitigation measures to avoid and mitigate serious harm to fish – Mary River Project, Tote Road Realignment.

The Fisheries Protection Program of Fisheries and Oceans Canada received your proposal on February15, 2015.

Your proposal has been reviewed to determine whether it is likely to result in serious harm to fish which is prohibited under subsection 35(1) of the *Fisheries Act*.

Your proposal has also been reviewed to determine whether it will adversely impact listed aquatic species at risk and contravene sections 32, 33 or 58 of the *Species at Risk Act* (*SARA*).

Our review considered the following:

- Letter from Baffinland Iron Mines Re: Mary River Project – Request for Advice on Realignment of Tote Road at Culvert CV076, Km 53 Tote Road, DFO File dated February 15, 2015 and submitted by James Millard with 1 attachment.
- Attachment 1 - Mark-up of proposed field change, Drawing H349000-3000-10-012-0073

We understand that you propose to:

- Realign the existing Tote Road at Culvert CV076, 160 meters upstream from the existing crossing and install one culvert which is 1.2m in diameter and 18 m in length.
- Install culverts during the winter months when the stream is frozen to bottom.
- Remove existing culvert from the old Tote Road alignment.

Since there are no *SARA* species or their habitats identified in the project area, no additional approvals under *SARA* will be required for your proposed activities.
To avoid the potential for serious harm to fish that is prohibited under the *Fisheries Act*, the mitigation measures set out in your project plans are to be followed.

Provided that you implement the required mitigation measures for your project, and follow the guidance available on the DFO website at http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/index-eng.html, the Program is of the view that your proposal should not result in serious harm to fish or contravene sections 32, 33 or 58 of the *Species at Risk Act*. No formal approval is required from the Program under the *Fisheries Act* or the *Species at Risk Act* in order to proceed with your proposal.

It remains your responsibility to ensure you avoid causing serious harm to fish in compliance with the *Fisheries Act*, and that you meet the requirements under the *Species at Risk Act* as it may apply to your project. If your plans have changed or if the description of your proposal is incomplete, or changes in the future, you should consult our website (http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html) or consult with a qualified environmental consultant to determine if further review is required by the Program.

Please be advised that it is also your *Duty to Notify* DFO if you have caused, or are about to cause, serious harm to fish that are part of or support a commercial, recreational or Aboriginal fishery. Such notifications should be directed to http://www.dfo-mpo.gc.ca/pnw-ppe/violation-infraction/index-eng.html.

A copy of this letter should be kept on site while the work is in progress. It remains your responsibility to meet all other federal or territorial requirements that apply to your project.

If you have any questions, please contact Georgina Williston at our Yellowknife office at (867) 669-4927, by fax at (867) 669-4940, or by email at georgina.williston@dfo-mpo.gc.ca. Please refer to the file number referenced above when corresponding with the Program.

Yours sincerely,

Julie Dahl
Regional Manager, Regulatory Reviews
Fisheries Protection Program

cc.
Georgina Williston- Fisheries and Oceans Canada
Oliver Curran-Baffinland Iron Mines Corp.
Erik Madsen-Baffinland Iron Mines Corp.

Canada

Fisheries and Oceans Canada | Pêches et Océans Canada

301-5204 50th Avenue
Yellowknife, Northwest Territories
X1A 1E2

November 3, 2025

Your file *Votre référence*

Our file *Notre référence*

25-HCAA-01876

Baffinland Iron Mines Corporation
Attention: Elisabeth Luther
360 Oakville Place Dr.
Suite 300
Oakville, ON
L6K 6K8

Subject: Amendment of Baffinland Iron Mines Corporation – CV-216 Emergency Bypass and Removal– Notice of Amendment

Dear Elisabeth Luther,

The Fish and Fish Habitat Protection Program of Fisheries and Oceans Canada (DFO) would like to acknowledge your request, pursuant to section 5 of the *Authorizations Concerning Fish and Fish Habitat Protection Regulations* (the Regulations), made on October 16th, 2025, to amend an authorization issued under paragraphs 34.4(2)(b) and 35(2)(b) of the *Fisheries Act*.

This letter is to notify you that your request for a two (2) month extension of Baffinland Iron Mines Corporation Fisheries Act Authorization (FAA) 25-HCAA-01876 has been granted and is effective upon receipt of this letter. The amendment to the authorization is described below:

The following section of your authorization has been deleted:

1. ***Conditions that relate to the period during which the work, undertaking or activity can be carried on:***

The work, undertaking or activity that is/are authorized to be carried on during the following period:

From Date of Issuance to October 31, 2025

The deleted section of your authorization has been replaced by the following:

1. ***Conditions that relate to the period during which the work, undertaking or activity can be carried on:***

The work, undertaking or activity that is/are authorized to be carried on during the following period:

From Date of Issuance to December 31, 2025

The amendment has changed the valid authorization period of this Fisheries Act Authorization from October 31, 2025 to December 31, 2025. This amendment is exclusive to the change in the valid authorization period described and does not affect any other terms and conditions set out in the original FAA.

Failure to comply with any of the terms or conditions of the authorization as amended may lead to prosecution under the *Fisheries Act*.

A copy of the original authorization, and this letter containing the amendments should be kept on site while the work is in progress and upon request be provided to relevant federal or provincial officials. The authorization holder is responsible for ensuring work crews are familiar with, and able to adhere to, the conditions.

If you, or anyone conducting work on your behalf have any questions please contact Nicholas Wasilik by email at nicholas.wasilik@dfo-mpo.gc.ca.

Sincerely,

José Audet-Lecouffe

José Audet-Lecouffe
a/Team Lead on behalf of Cal Wenghofer Director of Habitat
Arctic Region

cc:

Nicholas Wasilik (DFO)
Paul Harper (DFO)

Fisheries and Oceans Canada | Pêches et Océans Canada

Paragraphs 34.4(2)(b) and 35(2)(b) *Fisheries Act* Authorization (Emergency Situation)

Authorization issued to

Baffinland Iron Mines Corporation *(hereafter referred to as the "Proponent")*

Attention to: Elisabeth Luther
360 Oakville Place Dr.
Suite 300
Oakville, Ontario L6H 6K8

Location of Proposed Project

Nearest community (city, town, village): Pond Inlet
Municipality, district, township, county: Qikiqtani Region
Province: Nunavut
Name of watercourse, waterbody: Unnamed Tributary of the Muriel Lake Watershed
Longitude and latitude, UTM Coordinates: 71° 23' 37.83", -79° 47' 54.90"; 17W 42780.856m E, 7921747.914m N

Valid Authorization Period

This Authorization remains in force from the **Date of Issuance** until Fisheries and Oceans Canada (DFO) confirms to you in writing that all of the requirements of this Authorization have been met, in particular those requirements relating to monitoring, offsetting measures and contingency measures.

Please note that this Authorization may contain more specific timing requirements and limitations. These are set out in the Conditions of Authorization section.

Description of Proposed Project

The proposed project of which the work, undertaking or activity authorized is a part of involves:

A temporary road bypass will be constructed approximately 33m upstream of the existing CV-216 crossing due to excessive settlement of the existing road. The bypass will be constructed as a one-lane road with three barrel culverts that include two 1800mm corrugated steel pipes (CSP) and one center multi-plate CSP arch culvert with a 2440mm span and 1750mm rise.

The existing CV-216 infrastructure, including all culvert pipes and fill, will be removed from the watercourse.

Description of Authorized work(s), undertaking(s) or activity(ies) likely to result in the death of fish by means other than fishing:

The work(s), undertaking(s), or activity(ies) associated with the proposed project described above, that are likely to result in the death of fish by means other than fishing, are:

- Isolation of in-water work areas using temporary cofferdams.
- Dewatering of in-water work areas using pumps.
- Fish relocation activities.

Description of Authorized work(s), undertaking(s) or activity(ies) likely to result in the harmful alteration, disruption or destruction of fish habitat:

The work(s), undertaking(s), or activity(ies) associated with the proposed project described above, that are likely to result in the harmful alteration, disruption or destruction of fish habitat, are:

- Construction of the CV-216 temporary road bypass.
- Removal of the existing CV-216 culvert and associated road infrastructure.

The authorized work(s), undertaking(s), or activity(ies) are likely to result in the following impacts to fish and fish habitat:

- The harmful alteration, disruption, or destruction of 1,358 m^2 of aquatic habitat resulting from the installation of the CV-216 temporary road bypass.
- The harmful alteration, disruption, or destruction of 1,048 m^2 of aquatic habitat resulting from the removal of the existing CV-216 culverts and associated road infrastructure.

Conditions of Authorization

The above described work, undertaking or activity must be carried on in accordance with the following conditions.

1. **Conditions that relate to the period during which the work, undertaking or activity can be carried on**

   The work, undertaking or activity that is/are authorized to be carried on during the following period:

   From **Date of Issuance** to ~~**October 31, 2025**~~ **December 31, 2025**

   If the Proponent cannot complete the work, undertaking or activity during this period, Fisheries and Oceans Canada (DFO) must be notified in advance of the expiration of the above time period. An application for amendment, suspension or cancellation of the authorization should be submitted to DFO.

   The periods during which other conditions of this authorization must be complied with are provided in their respective sections below.

2. **Conditions that relate to measures and standards to avoid and mitigate impacts to fish and fish habitat, including impacts**

2.1 Erosion and sediment control: Erosion and sediment control measures must be in place and shall be upgraded and maintained, such that release of sediment is avoided at the location of the authorized work, undertaking, or activity.

2.1.1 Effective erosion and sediment control measures shall be in place prior to, during, and after construction activities and shall remain in place until revegetation or other mitigation measures are sufficient to control erosion.

2.1.2 Erosion and sediment control measures and structures shall be inspected and maintained on a daily basis during the course of construction by an experienced/qualified erosion and sediment control onsite inspector or Qualified Environmental Professional (QEP). Inspections shall occur more frequently prior to and during periods of heavy or persistent precipitation and during spring freshet. Structures shall be repaired or upgraded as required.

2.1.3 Measures for managing water flowing onto the site shall be implemented such that sediment is filtered out prior to the water entering a watercourse or waterbody.

2.1.4 Work that could result in sedimentation shall stop during periods of heavy or persistent precipitation.

2.1.5 All disturbed areas with potential for erosion or introduction of sediment into the watercourse shall be immediately stabilized using temporary erosion and sediment control measures that shall remain in place until vegetation or other long-term erosion and sediment control measures are fully established and functioning, at which point, all temporary, non-biodegradable materials shall be removed.

2.2 List of measures and standards to avoid and mitigate impacts to fish and fish habitat:

2.2.1 Standards to avoid and mitigate impacts to fish and fish habitat will be undertaken as outlined in section 6 of the "*CV-216 By-Pass Culvert Crossing Design Brief – Final Report"*, and in the memo *"Re: CV-216 Emergency Works"* both submitted to DFO on September 11, 2025.

2.2.2 A Qualified Environmental Professional (QEP) shall be on site at the onset of the authorized work(s), undertaking(s) and(or) activity(ies), and shall keep a record of the days and times they are onsite.

2.2.2.1 If the site is frozen and/or dry to the streambed, the QEP shall determine when their presence is required on site throughout the authorized works, undertakings and activities, and at a minimum shall: confirm channel conditions prior to onset of works; confirm site stability and appropriate erosion and sediment control measures immediately prior to project completion; remain readily available; and return to site as required by the Contractor. A summary of site conditions shall be submitted to DFO prior to any works taking place. The QEP shall keep a record of the days and times they are onsite.

2.2.2.2 The QEP shall have the authority to provide direction during in-water works and shall temporarily stop work if the potential for impacts to fish and fish habitat goes beyond the allowable impacts to fish and fish habitat that are authorized herein.

2.2.3 The crossing shall be constructed according to the design submitted to DFO in section 6 of the "*CV-216 By-Pass Culvert Crossing Design Brief – Final Report"*, submitted to DFO on September 11, 2025, and in such a manner as to ensure passage for fish 85mm or greater in the month of July and passage for fish 40mm or greater in the month of August.

2.2.4 If the waterway is not frozen and/or dry to the bed, all in-water activities, other than placement of bypass pumps and discharge diffusers, shall be undertaken in isolation (i.e., cofferdam) of open or flowing water to avoid introducing sediment into the watercourse in accordance with DFO's Interim standard: in-water site isolation. The pumps used for dewatering shall be equipped with appropriate screens according to DFO's Interim code of practice: End-of-pipe fish protection screens for small water intakes in freshwater. The outlet shall have a diffuser to dissipate energy or shall be placed in a location, outside of the channel, that is not subject to erosion from the outflow.

2.2.5 The fish rescue shall be conducted under the supervision of the QEP and by qualified individuals, and rescued fish shall be removed and placed downstream of the work(s),

undertaking(s), and(or), activity(ies) to minimize the possibility of stranding upstream of the worksite.

2.2.6 Temporary cofferdams shall consist of non-permeable material and only materials free of erodible material shall be used; earthen cofferdams shall not be used for this purpose.

2.2.7 Any riprap, cobble and gravel used for the project must be clean and free of fine sediments and shall not be taken from below the normal high-water mark of any waterbody.

2.2.8 Removal of natural woody debris, rocks, sand or other materials from the banks, shoreline, or the bed of the waterbody below the high-water mark shall be limited to the project area.

2.2.9 Impacts to riparian vegetation shall be limited to the area required to carry out the authorized works, undertakings and activities.

2.2.10 Stream morphology (i.e., the bed and banks, gradient and contour of the watercourse) shall be restored to the pre-disturbed shape and condition (i.e., the stream bed and banks, gradient and contour of the watercourse).

2.2.11 Any other disturbed habitat features shall be replaced and/or restored, and any areas impacted by the works, undertakings and activities shall be remediated.

2.2.12 Equipment shall arrive on site in a clean condition and be maintained free of fluid leaks, invasive species, deleterious diseases to aquatic flora and fauna, and noxious weeds.

2.2.13 Heavy equipment shall be operated from outside the high-water mark whenever possible.

2.2.14 Equipment operating in or near fish-frequented waters shall be operated, refuelled, and serviced in a manner that prevents spills, leaks, or wash water from entering fish-frequented waters.

2.2.15 Any building material used in the watercourse on a permanent basis (i.e., concrete, riprap) shall be handled and treated in a manner to prevent the release or leaching of substances that may be deleterious to fish into the water.

2.2.16 Any building material used in the watercourse on a temporary basis shall be removed upon completion of works below the ordinary high-water mark, and the bed and banks restored to their original contour and gradient.

2.2.17 Any excavated or stockpiled material shall be stored above the ordinary high-water mark and located and stabilized so that it cannot enter the watercourse.

2.2.18 A response plan shall be in place in the event of a sediment release or spill of a deleterious substance. A spill kit and spill containment provisions shall be kept on site at all times. Appropriate personnel at the worksite shall be familiar with the location and use of the spill kit and spill response plan.

2.3 Contingency measures: DFO shall be notified immediately, and contingency measures shall be put in place by the Proponent, if monitoring required in section 3 below indicates the measures and standards to avoid and mitigate impacts to fish and fish habitat are not successful. In the event of failed measures and standards to avoid and mitigate impacts to fish and fish habitat, the Proponent shall develop and implement contingency measures in consultation with, and to the satisfaction of, DFO to correct the situation and minimize the impact. Monitoring and regular reporting of the corrective actions taken shall be provided to DFO until the contingency measures are successful and the Proponent is in compliance.

2.4 Dates by which these measures and standards shall be implemented: Measures and standards to avoid and mitigate impacts to fish and fish shall be implemented **prior to** the initiation of works, undertakings or activities.

3. **Conditions that relate to monitoring and reporting of measures and standards to avoid and mitigate impacts to fish and fish habitat.**

3.1 Monitoring of avoidance and mitigation measures: The Proponent shall monitor the implementation of avoidance and mitigation measures referred to in section 2 of this authorization and report to DFO, by **December 31, 2025,** and indicate whether the measures and standards to avoid and mitigate impacts to fish and fish habitat were conducted according to the conditions of this authorization. This shall be done, by:

3.1.1 Demonstration of effective implementation and functioning: Providing dated photographs (including before and after photos of the site), inspection reports (including onsite hours for the QEP), and water quality data to demonstrate effective implementation and functioning of mitigation measures and standards described above to limit the impacts to fish and fish habitat to what is covered by this authorization.

3.1.2 Demonstration of effective implementation and functioning: Providing a report summarizing the fish rescue activities while they are conducted, including gear methods, species captured, and effort. A final Fish Rescue Report shall be submitted to DFO by **December 31, 2025** that summarizes the results and indicates the relative success of the fish rescue program.

3.1.3 Contingency measures: Providing details of any contingency measures that were followed, to prevent impacts greater than those covered by this authorization in the event that mitigation measures did not function as described.

3.1.4 A fish passage assessment shall be completed for the CV-216 road bypass

3.1.4.1 Fish passage assessments will be undertaken in the summer immediately following construction and annually until a permanent solution is implemented. Reports shall be submitted to DFO for review.

3.1.4.2 The fish passage assessment reports will include the following information obtained at the time of assessment: water velocities at the inlet and outlet of the culvert, slope of the culvert, embedded depth of the culvert, substrate composition within the culvert, inlet and outlet dimensions of the culvert, as-built drawings for each culvert, and photographs of the crossing site pre-construction, post-construction, and at the time of assessment.

4. **Conditions that relate to offsetting**

4.1 Letter of credit: The Proponent will be required to provide an irrevocable letter of credit once an offsetting/monitoring plan, in accordance with the Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act, dated March 2025, has been prepared and submitted to DFO. Once received, DFO may draw upon funds available to DFO as the beneficiary of the letter of credit provided to DFO as part of the application for this authorization, to cover the costs of implementing the offsetting measures required to be implemented under this authorization, including the associated monitoring and reporting measures included in section 5, in instances where the Proponent fails to implement these required measures.

4.1.1 The monetary value of the letter of credit shall be agreed to in writing by DFO.

4.1.2 The format of the letter of credit shall follow the template provided in Annex A of Applicant's Guide Supporting the "Authorizations Concerning Fish and Fish Habitat Protection Regulations."

4.2 Scale and description of offsetting measures:

4.2.1 The Proponent shall develop and submit an offsetting plan, and associated offsetting monitoring plan, to DFO for approval no later than **December 31, 2025**, that details offsetting measures that will be undertaken to counterbalance the unavoidable impacts to fish and fish habitat.
The offsetting plan must:

4.2.1.1 Be developed in accordance with the *Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act,* dated March 2025.

4.2.1.2 Include an analysis of the death of fish and the harmful alteration, disruption, and/or destruction of fish habitat to ensure the offsetting measures counterbalances these effects, to the satisfaction of DFO.

4.2.1.3 Include a detailed offsetting monitoring plan to assess the implementation and effectiveness of the offsetting measures.

4.3 Offsetting criteria to assess the implementation and effectiveness of the offsetting measures: All fish habitat offsetting measures shall be completed and functioning according to the criteria contained in the approved offsetting plan referenced in 4.2.

4.3.1 The Proponent shall not carry on any work, undertaking or activity that will adversely impact the offsetting measures.

5. **Conditions that relate to monitoring and reporting of implementation of offsetting measures (described in section 4):** Not applicable at this time. Details shall be provided as per section 4.2 of this Authorization.

Authorization Limitations and Application Conditions

The Proponent is solely responsible for plans and specifications relating to this authorization and for all design, safety and workmanship aspects of all the works associated with this authorization.

The holder of this authorization is hereby authorized under the authority of Paragraphs 34.4(2)(b) and 35(2)(b) of the *Fisheries Act*. R.S.C., 1985, c.F-14, to carry on the work(s), undertaking(s) and/or activity(ies) that are likely to result in impacts to fish and fish habitat as described herein.

This authorization does not purport to release the Proponent from any obligation to obtain permission from any private landowner or to comply with the requirements of any other regulatory agencies.

This authorization does not permit the deposit of a deleterious substance in water frequented by fish. Subsection 36(3) of the *Fisheries Act* prohibits the deposit of any deleterious substances into waters frequented by fish unless authorized by regulations made by Governor in Council.

This authorization does not permit the damage or destruction of residence of individuals of such species (s. 33 of the SARA).

It is also your *Duty to Notify* DFO if you have caused, or are about to cause, the unauthorized death of fish by means other than fishing and/or the harmful alteration, disruption or destruction of fish habitat. Such notifications should be directed to http://www.dfo-mpo.gc.ca/pnw-ppe/CONTACT-eng.html.

The failure to comply with any condition of this authorization constitutes an offence under Paragraph(s) 40(3)(a) of the *Fisheries Act*, and may result in charges being laid under said Act.

The Proponent shall notify DFO at least 10 days prior to starting any works by sending an email to the DFO assessor, Nicholas Wasilik at nicholas.wasilik@dfo-mpo.gc.ca, and the DFO Arctic Triage inbox at DFO.ARCEMTriage-TriageGEARC.MPO@dfo-mpo.gc.ca. The notification shall include the starting date of the works, undertakings, or activities as well as the name of the contractor(s) conducting the works and QEP overseeing the works.

A copy of this authorization will be kept on site while the work is in progress and upon request be provided to relevant federal or provincial officials. The authorization holder is responsible for ensuring work crews are familiar with, and able to adhere to, the conditions.

This authorization cannot be transferred or assigned to another party. If the work(s), undertaking(s) or activity(ies) authorized to be conducted pursuant to this authorization are expected to be sold or transferred, or other circumstances arise that are expected to result in a new Proponent taking over the work(s), undertaking(s) or activity(ies), the Proponent named in this authorization shall advise DFO in advance.

Date of Issuance: November 5, 2025

Approved by: José Audet-Lecouffe

José Audet-Lecouffe, FFHPP Team Lead
on behalf of Cal Wenghofer Director of FFHPP
Arctic Region

Fisheries and Oceans Canada | Pêches et Océans Canada

Paragraphs 34.4(2)(b) and 35(2)(b) *Fisheries Act* Authorization (Emergency Situation)

Authorization issued to

Baffinland Iron Mines Corporation *(hereafter referred to as the "Proponent")*

Attention to: Elisabeth Luther
360 Oakville Place Dr.
Suite 300
Oakville, Ontario L6H 6K8

Location of Proposed Project

Nearest community (city, town, village): Pond Inlet
Municipality, district, township, county: Qikiqtani Region
Province: Nunavut
Name of watercourse, waterbody: Unnamed Tributary of the Muriel Lake Watershed
Longitude and latitude, UTM Coordinates: 71° 23' 37.83", -79° 47' 54.90"; 17W 42780.856m E, 7921747.914m N

Valid Authorization Period

This Authorization remains in force from the **Date of Issuance** until Fisheries and Oceans Canada (DFO) confirms to you in writing that all of the requirements of this Authorization have been met, in particular those requirements relating to monitoring, offsetting measures and contingency measures.

Please note that this Authorization may contain more specific timing requirements and limitations. These are set out in the Conditions of Authorization section.

Description of Proposed Project

The proposed project of which the work, undertaking or activity authorized is a part of involves:

A temporary road bypass will be constructed approximately 33m upstream of the existing CV-216 crossing due to excessive settlement of the existing road. The bypass will be constructed as a one-lane road with three barrel culverts that include two 1800mm corrugated steel pipes (CSP) and one center multi-plate CSP arch culvert with a 2440mm span and 1750mm rise.

The existing CV-216 infrastructure, including all culvert pipes and fill, will be removed from the watercourse.

Description of Authorized work(s), undertaking(s) or activity(ies) likely to result in the death of fish by means other than fishing:

The work(s), undertaking(s), or activity(ies) associated with the proposed project described above, that are likely to result in the death of fish by means other than fishing, are:

- Isolation of in-water work areas using temporary cofferdams.
- Dewatering of in-water work areas using pumps.
- Fish relocation activities.

Description of Authorized work(s), undertaking(s) or activity(ies) likely to result in the harmful alteration, disruption or destruction of fish habitat:

The work(s), undertaking(s), or activity(ies) associated with the proposed project described above, that are likely to result in the harmful alteration, disruption or destruction of fish habitat, are:

- Construction of the CV-216 temporary road bypass.
- Removal of the existing CV-216 culvert and associated road infrastructure.

The authorized work(s), undertaking(s), or activity(ies) are likely to result in the following impacts to fish and fish habitat:

- The harmful alteration, disruption, or destruction of 1,358 m^2 of aquatic habitat resulting from the installation of the CV-216 temporary road bypass.
- The harmful alteration, disruption, or destruction of 1,048 m^2 of aquatic habitat resulting from the removal of the existing CV-216 culverts and associated road infrastructure.

Conditions of Authorization

The above described work, undertaking or activity must be carried on in accordance with the following conditions.

1. **Conditions that relate to the period during which the work, undertaking or activity can be carried on**

   The work, undertaking or activity that is/are authorized to be carried on during the following period:

   From **Date of Issuance** to ~~**October 31, 2025**~~ ~~**December 31, 2025**~~ **May 31, 2026**

   If the Proponent cannot complete the work, undertaking or activity during this period, Fisheries and Oceans Canada (DFO) must be notified in advance of the expiration of the above time period. An application for amendment, suspension or cancellation of the authorization should be submitted to DFO.

   The periods during which other conditions of this authorization must be complied with are provided in their respective sections below.

2. **Conditions that relate to measures and standards to avoid and mitigate impacts to fish and fish habitat, including impacts**

2.1 Erosion and sediment control: Erosion and sediment control measures must be in place and shall be upgraded and maintained, such that release of sediment is avoided at the location of the authorized work, undertaking, or activity.

2.1.1 Effective erosion and sediment control measures shall be in place prior to, during, and after construction activities and shall remain in place until revegetation or other mitigation measures are sufficient to control erosion.

2.1.2 Erosion and sediment control measures and structures shall be inspected and maintained on a daily basis during the course of construction by an experienced/qualified erosion and sediment control onsite inspector or Qualified Environmental Professional (QEP). Inspections shall occur more frequently prior to and during periods of heavy or persistent precipitation and during spring freshet. Structures shall be repaired or upgraded as required.

2.1.3 Measures for managing water flowing onto the site shall be implemented such that sediment is filtered out prior to the water entering a watercourse or waterbody.

2.1.4 Work that could result in sedimentation shall stop during periods of heavy or persistent precipitation.

2.1.5 All disturbed areas with potential for erosion or introduction of sediment into the watercourse shall be immediately stabilized using temporary erosion and sediment control measures that shall remain in place until vegetation or other long-term erosion and sediment control measures are fully established and functioning, at which point, all temporary, non-biodegradable materials shall be removed.

2.2 List of measures and standards to avoid and mitigate impacts to fish and fish habitat:

2.2.1 Standards to avoid and mitigate impacts to fish and fish habitat will be undertaken as outlined in section 6 of the "*CV-216 By-Pass Culvert Crossing Design Brief – Final Report"*, and in the memo *"Re: CV-216 Emergency Works"* both submitted to DFO on September 11, 2025.

2.2.2 A Qualified Environmental Professional (QEP) shall be on site at the onset of the authorized work(s), undertaking(s) and(or) activity(ies), and shall keep a record of the days and times they are onsite.

2.2.2.1 If the site is frozen and/or dry to the streambed, the QEP shall determine when their presence is required on site throughout the authorized works, undertakings and activities, and at a minimum shall: confirm channel conditions prior to onset of works; confirm site stability and appropriate erosion and sediment control measures immediately prior to project completion; remain readily available; and return to site as required by the Contractor. A summary of site conditions shall be submitted to DFO prior to any works taking place. The QEP shall keep a record of the days and times they are onsite.

2.2.2.2 The QEP shall have the authority to provide direction during in-water works and shall temporarily stop work if the potential for impacts to fish and fish habitat goes beyond the allowable impacts to fish and fish habitat that are authorized herein.

2.2.3 The crossing shall be constructed according to the design submitted to DFO in section 6 of the "*CV-216 By-Pass Culvert Crossing Design Brief – Final Report"*, submitted to DFO on September 11, 2025, and in such a manner as to ensure passage for fish 85mm or greater in the month of July and passage for fish 40mm or greater in the month of August.

2.2.4 If the waterway is not frozen and/or dry to the bed, all in-water activities, other than placement of bypass pumps and discharge diffusers, shall be undertaken in isolation (i.e., cofferdam) of open or flowing water to avoid introducing sediment into the watercourse in accordance with DFO's Interim standard: in-water site isolation. The pumps used for dewatering shall be equipped with appropriate screens according to DFO's Interim code of practice: End-of-pipe fish protection screens for small water intakes in freshwater. The outlet shall have a diffuser to dissipate energy or shall be placed in a location, outside of the channel, that is not subject to erosion from the outflow.

2.2.5 The fish rescue shall be conducted under the supervision of the QEP and by qualified individuals, and rescued fish shall be removed and placed downstream of the work(s),

undertaking(s), and(or), activity(ies) to minimize the possibility of stranding upstream of the worksite.

2.2.6 Temporary cofferdams shall consist of non-permeable material and only materials free of erodible material shall be used; earthen cofferdams shall not be used for this purpose.

2.2.7 Any riprap, cobble and gravel used for the project must be clean and free of fine sediments and shall not be taken from below the normal high-water mark of any waterbody.

2.2.8 Removal of natural woody debris, rocks, sand or other materials from the banks, shoreline, or the bed of the waterbody below the high-water mark shall be limited to the project area.

2.2.9 Impacts to riparian vegetation shall be limited to the area required to carry out the authorized works, undertakings and activities.

2.2.10 Stream morphology (i.e., the bed and banks, gradient and contour of the watercourse) shall be restored to the pre-disturbed shape and condition (i.e., the stream bed and banks, gradient and contour of the watercourse).

2.2.11 Any other disturbed habitat features shall be replaced and/or restored, and any areas impacted by the works, undertakings and activities shall be remediated.

2.2.12 Equipment shall arrive on site in a clean condition and be maintained free of fluid leaks, invasive species, deleterious diseases to aquatic flora and fauna, and noxious weeds.

2.2.13 Heavy equipment shall be operated from outside the high-water mark whenever possible.

2.2.14 Equipment operating in or near fish-frequented waters shall be operated, refuelled, and serviced in a manner that prevents spills, leaks, or wash water from entering fish-frequented waters.

2.2.15 Any building material used in the watercourse on a permanent basis (i.e., concrete, riprap) shall be handled and treated in a manner to prevent the release or leaching of substances that may be deleterious to fish into the water.

2.2.16 Any building material used in the watercourse on a temporary basis shall be removed upon completion of works below the ordinary high-water mark, and the bed and banks restored to their original contour and gradient.

2.2.17 Any excavated or stockpiled material shall be stored above the ordinary high-water mark and located and stabilized so that it cannot enter the watercourse.

2.2.18 A response plan shall be in place in the event of a sediment release or spill of a deleterious substance. A spill kit and spill containment provisions shall be kept on site at all times. Appropriate personnel at the worksite shall be familiar with the location and use of the spill kit and spill response plan.

2.3 Contingency measures: DFO shall be notified immediately, and contingency measures shall be put in place by the Proponent, if monitoring required in section 3 below indicates the measures and standards to avoid and mitigate impacts to fish and fish habitat are not successful. In the event of failed measures and standards to avoid and mitigate impacts to fish and fish habitat, the Proponent shall develop and implement contingency measures in consultation with, and to the satisfaction of, DFO to correct the situation and minimize the impact. Monitoring and regular reporting of the corrective actions taken shall be provided to DFO until the contingency measures are successful and the Proponent is in compliance.

2.4 Dates by which these measures and standards shall be implemented: Measures and standards to avoid and mitigate impacts to fish and fish shall be implemented **prior to** the initiation of works, undertakings or activities.

3. **Conditions that relate to monitoring and reporting of measures and standards to avoid and mitigate impacts to fish and fish habitat.**

3.1 Monitoring of avoidance and mitigation measures: The Proponent shall monitor the implementation of avoidance and mitigation measures referred to in section 2 of this authorization and report to DFO, by ~~**December 31, 2025**~~ **July 31, 2026,** and indicate whether the measures and standards to avoid and mitigate impacts to fish and fish habitat were conducted according to the conditions of this authorization. This shall be done, by:

3.1.1 Demonstration of effective implementation and functioning: Providing dated photographs (including before and after photos of the site), inspection reports (including onsite hours for the QEP), and water quality data to demonstrate effective implementation and functioning of mitigation measures and standards described above to limit the impacts to fish and fish habitat to what is covered by this authorization.

3.1.2 Demonstration of effective implementation and functioning: Providing a report summarizing the fish rescue activities while they are conducted, including gear methods, species captured, and effort. A final Fish Rescue Report shall be submitted to DFO by **December 31, 2025** that summarizes the results and indicates the relative success of the fish rescue program.

3.1.3 Contingency measures: Providing details of any contingency measures that were followed, to prevent impacts greater than those covered by this authorization in the event that mitigation measures did not function as described.

3.1.4 A fish passage assessment shall be completed for the CV-216 road bypass

3.1.4.1 Fish passage assessments will be undertaken in the summer immediately following construction and annually until a permanent solution is implemented. Reports shall be submitted to DFO for review.

3.1.4.2 The fish passage assessment reports will include the following information obtained at the time of assessment: water velocities at the inlet and outlet of the culvert, slope of the culvert, embedded depth of the culvert, substrate composition within the culvert, inlet and outlet dimensions of the culvert, as-built drawings for each culvert, and photographs of the crossing site pre-construction, post-construction, and at the time of assessment.

4. **Conditions that relate to offsetting**

4.1 Letter of credit: The Proponent will be required to provide an irrevocable letter of credit once an offsetting/monitoring plan, in accordance with the Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act, dated March 2025, has been prepared and submitted to DFO. Once received, DFO may draw upon funds available to DFO as the beneficiary of the letter of credit provided to DFO as part of the application for this authorization, to cover the costs of implementing the offsetting measures required to be implemented under this authorization, including the associated monitoring and reporting measures included in section 5, in instances where the Proponent fails to implement these required measures.

4.1.1 The monetary value of the letter of credit shall be agreed to in writing by DFO.

4.1.2 The format of the letter of credit shall follow the template provided in Annex A of Applicant's Guide Supporting the "Authorizations Concerning Fish and Fish Habitat Protection Regulations."

4.2 Scale and description of offsetting measures:

4.2.1 The Proponent shall develop and submit an offsetting plan, and associated offsetting monitoring plan, to DFO for approval no later than **December 31, 2025**, that details offsetting measures that will be undertaken to counterbalance the unavoidable impacts to fish and fish habitat.
The offsetting plan must:

4.2.1.1 Be developed in accordance with the *Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act,* dated March 2025.

4.2.1.2 Include an analysis of the death of fish and the harmful alteration, disruption, and/or destruction of fish habitat to ensure the offsetting measures counterbalances these effects, to the satisfaction of DFO.

4.2.1.3 Include a detailed offsetting monitoring plan to assess the implementation and effectiveness of the offsetting measures.

4.3 Offsetting criteria to assess the implementation and effectiveness of the offsetting measures: All fish habitat offsetting measures shall be completed and functioning according to the criteria contained in the approved offsetting plan referenced in 4.2.

4.3.1 The Proponent shall not carry on any work, undertaking or activity that will adversely impact the offsetting measures.

5. **Conditions that relate to monitoring and reporting of implementation of offsetting measures (described in section 4):** Not applicable at this time. Details shall be provided as per section 4.2 of this Authorization.

Authorization Limitations and Application Conditions

The Proponent is solely responsible for plans and specifications relating to this authorization and for all design, safety and workmanship aspects of all the works associated with this authorization.

The holder of this authorization is hereby authorized under the authority of Paragraphs 34.4(2)(b) and 35(2)(b) of the *Fisheries Act*. R.S.C., 1985, c.F-14, to carry on the work(s), undertaking(s) and/or activity(ies) that are likely to result in impacts to fish and fish habitat as described herein.

This authorization does not purport to release the Proponent from any obligation to obtain permission from any private landowner or to comply with the requirements of any other regulatory agencies.

This authorization does not permit the deposit of a deleterious substance in water frequented by fish. Subsection 36(3) of the *Fisheries Act* prohibits the deposit of any deleterious substances into waters frequented by fish unless authorized by regulations made by Governor in Council.

This authorization does not permit the damage or destruction of residence of individuals of such species (s. 33 of the SARA).

It is also your *Duty to Notify* DFO if you have caused, or are about to cause, the unauthorized death of fish by means other than fishing and/or the harmful alteration, disruption or destruction of fish habitat. Such notifications should be directed to http://www.dfo-mpo.gc.ca/pnw-ppe/CONTACT-eng.html.

The failure to comply with any condition of this authorization constitutes an offence under Paragraph(s) 40(3)(a) of the *Fisheries Act*, and may result in charges being laid under said Act.

The Proponent shall notify DFO at least 10 days prior to starting any works by sending an email to the DFO assessor, Nicholas Wasilik at nicholas.wasilik@dfo-mpo.gc.ca, and the DFO Arctic Triage inbox at DFO.ARCEMTriage-TriageGEARC.MPO@dfo-mpo.gc.ca. The notification shall include the starting date of the works, undertakings, or activities as well as the name of the contractor(s) conducting the works and QEP overseeing the works.

A copy of this authorization will be kept on site while the work is in progress and upon request be provided to relevant federal or provincial officials. The authorization holder is responsible for ensuring work crews are familiar with, and able to adhere to, the conditions.

This authorization cannot be transferred or assigned to another party. If the work(s), undertaking(s) or activity(ies) authorized to be conducted pursuant to this authorization are expected to be sold or transferred, or other circumstances arise that are expected to result in a new Proponent taking over the work(s), undertaking(s) or activity(ies), the Proponent named in this authorization shall advise DFO in advance.

Date of Issuance: ~~November 5, 2025~~ December 22, 2025

Approved by: José Audet-Lecouffe A/Team Leader on behalf of Cal Wenghofer Director of Habitat

Fisheries and Oceans Canada | Pêches et Océans Canada

301-5204 50th Avenue
Yellowknife, Northwest Territories
X1A 1E2

December 22, 2025

Your file *Votre référence*

Our file *Notre référence*

25-HCAA-01876

Baffinland Iron Mines Corporation
Attention: Elisabeth Luther
360 Oakville Place Dr.
Suite 300
Oakville, ON
L6K 6K8

Subject: Amendment of Baffinland Iron Mines Corporation – CV-216 Emergency Bypass and Removal– Notice of Amendment

Dear Elisabeth Luther,

The Fish and Fish Habitat Protection Program of Fisheries and Oceans Canada (DFO) would like to acknowledge your request, pursuant to section 5 of the *Authorizations Concerning Fish and Fish Habitat Protection Regulations* (the Regulations), made on December 17th, 2025, to amend an authorization issued under paragraphs 34.4(2)(b) and 35(2)(b) of the *Fisheries Act*.

This letter is to notify you that your request for an extension of Baffinland Iron Mines Corporation Fisheries Act Authorization (FAA) 25-HCAA-01876 has been granted and is effective upon receipt of this letter. The amendment to the authorization is described below:

The following section of your authorization has been deleted:

1. ***Conditions that relate to the period during which the work, undertaking or activity can be carried on:***

The work, undertaking or activity that is/are authorized to be carried on during the following period:

From Date of Issuance to ~~October 31, 2025~~ December 31, 2025

Canada

The deleted section of your authorization has been replaced by the following:

1. ***Conditions that relate to the period during which the work, undertaking or activity can be carried on:***

The work, undertaking or activity that is/are authorized to be carried on during the following period:

From Date of Issuance to May 31, 2026

The amendment has changed the valid authorization period of this Fisheries Act Authorization from December 31, 2025 to May 31, 2026. Additionally, the date of reporting found in Section 3.1 has also been changed from December 31, 2025 to July 31, 2026. This amendment is exclusive to these changes in the valid authorization period and reporting date as described and does not affect any other terms and conditions set out in the original FAA.

Failure to comply with any of the terms or conditions of the authorization as amended may lead to prosecution under the *Fisheries Act*.

A copy of the original authorization, and this letter containing the amendments should be kept on site while the work is in progress and upon request be provided to relevant federal or provincial officials. The authorization holder is responsible for ensuring work crews are familiar with, and able to adhere to, the conditions.

If you, or anyone conducting work on your behalf have any questions please contact Nicholas Wasilik by email at nicholas.wasilik@dfo-mpo.gc.ca.

Sincerely,

José Audet-Lecouffe

José Audet-Lecouffe
a/Team Lead
Arctic Region

cc:
Nicholas Wasilik (DFO)
Paul Harper (DFO)

APPENDIX B

Habitat Assessment Sheets

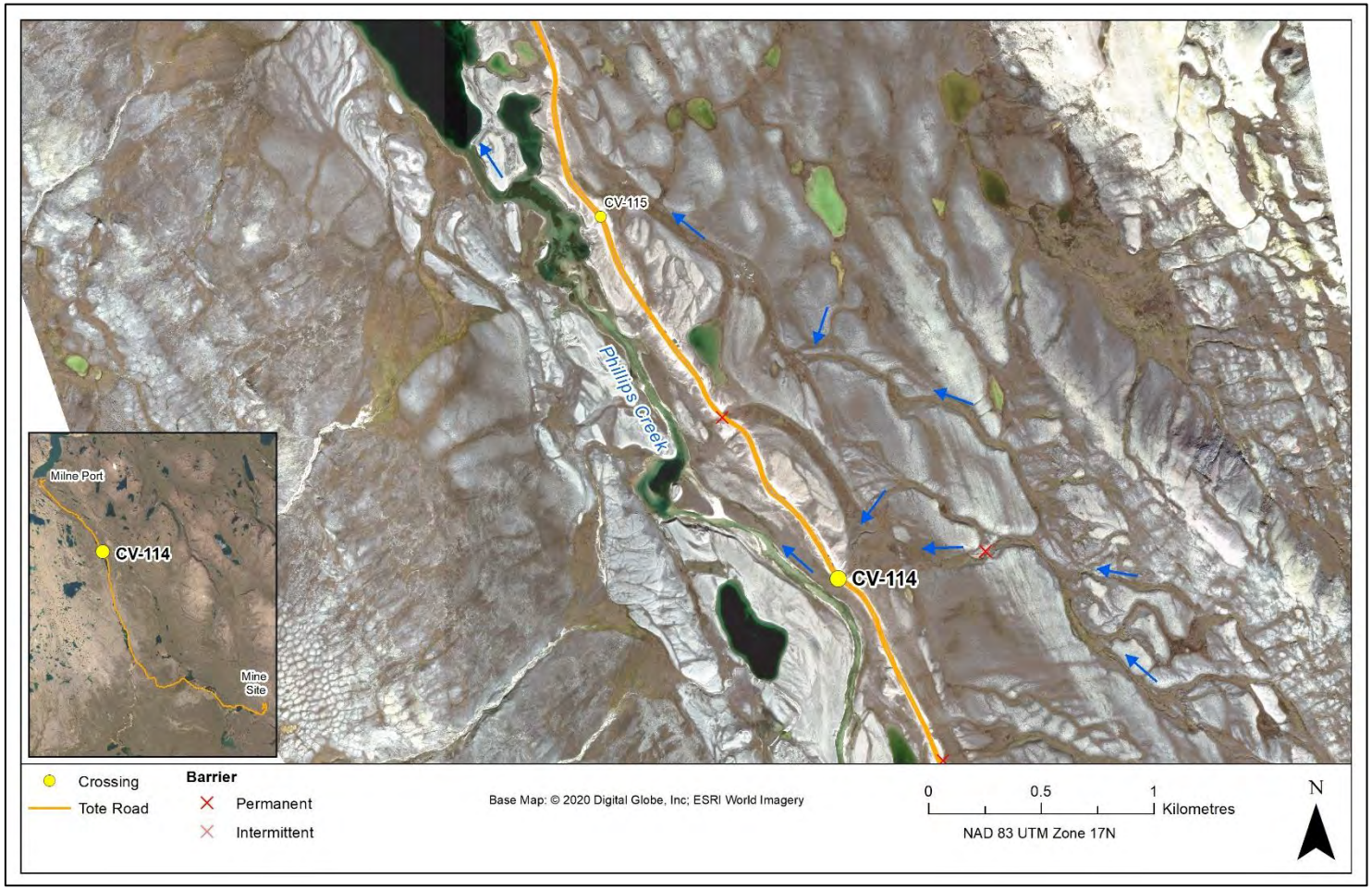
TOTE ROAD CV-114

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-114	Dates Surveyed:	10-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 520278 E 7956528 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal Stream Order: 2



TOTE ROAD CV-114

SITE SUMMARY

The Tote Road crosses a small, unnamed stream at site CV-114 that flows 70 m west into Phillips Creek, approximately halfway (2.8 km in each direction) between two of the larger lakes (Km 32 and Km 26 lakes) in the Phillips Creek system. Both lakes are of sufficient depth to support overwintering. This crossing has been identified for remediation.

Detailed habitat data were collected in the crossing area in July 2025. Measured stream wetted widths ranged from 1.1-10.2 m. Measured depths were low, typically <0.20 m. Velocities were generally moderate to high, ranging from 0.19-2.16 m/s. Stream morphology was predominantly riffle with some run and pool habitat. The substrate was primarily gravel/cobble downstream and mostly cobble upstream of the crossing.

Three juvenile Arctic Char were captured downstream and one larger juvenile was captured upstream of the crossing in July 2025. The culverts continued to be slightly perched and likely prevented upstream access for smaller fish. Char use habitat in the vicinity of the Tote Road crossing at CV-114 for rearing/feeding throughout the open-water period. There is no char spawning or overwintering habitat in this stream.

Ninespine Stickleback were not captured in July 2025 and have not been captured or observed in this stream during previous site surveys. It is unknown if the species is present in the watershed.

TOTE ROAD CV-114

FISH HABITAT POTENTIAL

Species	Spawning	Overwintering	Rearing	Adults Present
ARCH	N	N	Y	N
NNST	P	N	P	P

FISHERIES DATA

Location	Species	Survey Date	Temperature (°C)	Distance Fished (m)	Effort (Seconds)	# Fish Captured	# Fish Observed	CPUE (No. Fish/60 Seconds)	Length Range (mm)
Downstream	ARCH	10-Jul-25	8.0	50	163	3	0	1.104	49-73
	NNST					0	0	0.00	-
Upstream	ARCH			50	149	1	0	0.403	116
	NNST					0	0	0.00	-

OTHER NOTES / OBSERVATIONS

Three juvenile Arctic Char were captured downstream and one larger juvenile was captured upstream of the crossing in July 2025. The culverts continued to be slightly perched and likely prevented upstream access for smaller fish. Ninespine Stickleback were not captured in July 2025 and have not been captured or observed in this stream during previous site surveys. It is unknown if the species is present in the watershed.

TOTE ROAD CV-114

HYDROLOGY CHARACTERISTICS: 10-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Low to Moderate

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	PHILLIPS CREEK									
60D	1.30	1.20	-	0.20	-	0.28	-	0.63	-	2.16
20D	27.00	10.20	0.07	0.04	0.08	0.12	0.47	0.33	1.16	1.16
0 (Centreline)	UNDER TOTE ROAD									
20U	13.00	9.00	0.14	0.08	0.05	0.15	0.19	0.27	0.35	1.06
60U	10.00	7.00	0.05	0.09	0.09	0.22	0.24	0.23	0.24	1.02
100U	9.00	1.10	-	0.19	-	0.33	-	0.46	-	1.33

OTHER NOTES / OBSERVATIONS

Measured stream wetted widths ranged from 1.1-10.2 m. Measured depths were low, typically <0.20 m. Velocities were generally moderate to high, ranging from 0.19-2.16 m/s.

TOTE ROAD CV-114

HABITAT CHARACTERISTICS: 10-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Low to Moderate

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	PHILLIPS CREEK											
60D	60	5	-	35	-	-	-	5	35	60	-	-
20D	70	10	-	20	-	-	-	10	60	30	-	-
0 (Centreline)	UNDER TOTE ROAD											
20U	60	20	-	20	-	-	-	-	20	60	15	5
60U	40	30	-	30	-	-	-	-	20	40	30	10
100U	40	-	-	60	-	-	-	-	5	70	25	-

OTHER NOTES / OBSERVATIONS

Stream morphology was predominantly riffle with some run and pool habitat. The substrate was primarily gravel/cobble downstream and mostly cobble upstream of the crossing.

TOTE ROAD CV-114

10-JUL-25

A

B

C

D

E

F

Photos 1-1. Photos taken 20 m (top) and 60 m downstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-114

10-JUL-25

A

B

C

D

E

F

Photos 1-2. Photos taken 20 m (top) and 60 m upstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-112

10-JUL-25

A

B

C

Photos 1-3. Photos taken 100 m upstream in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-114

10-JUL-25

A

B

Photos 1-4. Photos taken of the culverts in July 2025: (A) downstream end; and (B) upstream end.

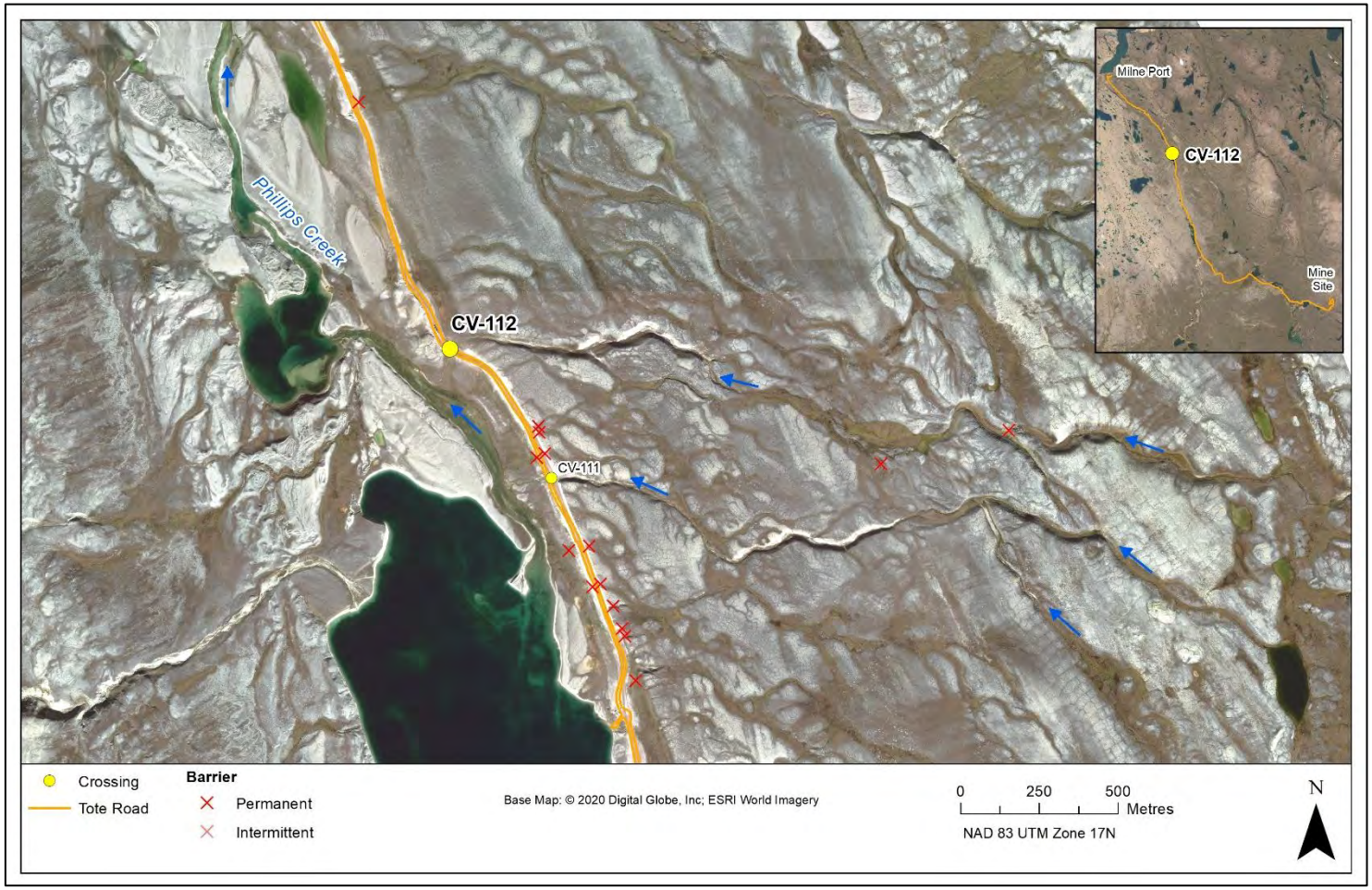
TOTE ROAD CV-112

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-112	Dates Surveyed:	10-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 521033 E 7954935 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal Stream Order: 3



TOTE ROAD CV-112

SITE SUMMARY

The Tote Road crosses a small, unnamed stream at site CV-112 that flows 120 m west into Phillips Creek, approximately 600 m downstream from Km 32 Lake and 300 m upstream from a smaller, unnamed lake. Km 32 Lake is of sufficient depth to support overwintering of both species. It is unknown if the smaller lake is of sufficient depth to support overwintering. This crossing has been identified for remediation.

Detailed habitat data were collected in the crossing area in July 2025. Measured stream wetted widths ranged from 2.8-6.0 m in July 2025. Water depths were relatively shallow, ranging from 0.02-0.17 m. Velocities were low to moderate, typically <0.5 m/s and ranging from 0.01-1.21 m/s. Stream morphology was predominantly riffle and run throughout. The substrate was primarily gravel/cobble with a few areas of fines upstream.

Juvenile Arctic Char were captured downstream and upstream of the crossing in July 2025. Although catch rates were higher downstream (4.31 fish/minute) than upstream (1.95 fish/minute), smaller char were captured in both reaches suggesting access to upstream habitat was not size-restricted. These results are consistent with previous years. Natural stream gradient increases upstream of the road, which may affect fish use. Juvenile Arctic Char are known to use habitat in the vicinity of the Tote Road crossing at CV-112 for rearing/feeding throughout the open-water period. There is no char spawning or overwintering habitat in this stream.

Ninespine Stickleback were not captured in July 2025 and have not been captured or observed in this stream during previous site surveys. It is unknown if the species is present in the watershed.

TOTE ROAD CV-112

FISH HABITAT POTENTIAL

Species	Spawning	Overwintering	Rearing	Adults Present
ARCH	N	N	Y	N
NNST	P	N	P	P

FISHERIES DATA

Location	Species	Survey Date	Temperature (°C)	Distance Fished (m)	Effort (Seconds)	# Fish Captured	# Fish Observed	CPUE (No. Fish/60 Seconds)	Length Range (mm)
Downstream	ARCH	10-Jul-25	9.0	50	181	13	0	4.309	46-114
	NNST					0	0	0.00	-
Upstream	ARCH			50	123	4	0	1.951	55-128
	NNST					0	0	0.00	-

OTHER NOTES / OBSERVATIONS

Juvenile Arctic Char were captured downstream and upstream of the crossing in July 2025. Although catch rates were higher downstream (4.31 fish/minute) than upstream (1.95 fish/minute), smaller char were captured in both reaches suggesting access to upstream habitat was not size-restricted. These results are consistent with previous years. Natural stream gradient increases upstream of the road, which may affect fish use. Ninespine Stickleback were not captured in Jul 2025 and have not been captured or observed in this stream during previous site surveys. It is unknown if the species is present in the watershed.

TOTE ROAD CV-112

HYDROLOGY CHARACTERISTICS: 10-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Low to Moderate

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	2.90	2.80	0.09	0.08	0.11	0.17	0.37	0.16	0.25	1.02
60D	32.00	5.80	0.09	0.06	0.04	0.13	0.17	0.20	0.01	1.21
20D	40.00	4.40	0.07	0.07	0.02	0.12	0.40	0.46	0.17	0.89
0 (Centreline)	UNDER TOTE ROAD									
20U	15.00	4.80	0.06	0.06	0.05	0.10	0.44	0.47	0.05	0.63
60U	14.00	4.30	0.06	0.10	0.04	0.12	0.39	0.30	0.32	0.79
100U	12.00	6.00	0.02	0.11	0.06	0.11	0.10	0.33	0.11	0.70

OTHER NOTES / OBSERVATIONS

Measured stream wetted widths ranged from 2.8-6.0 m in July 2025. Water depths were relatively shallow, ranging from 0.02-0.17 m. Velocities were low to moderate, typically <0.5 m/s and ranging from 0.01-1.21 m/s.

TOTE ROAD CV-112

HABITAT CHARACTERISTICS: 10-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Low to Moderate

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	40	20	-	40	-	-	-	-	20	50	25	5
60D	40	20	-	40	-	-	-	-	40	50	10	-
20D	20	10	-	70	-	-	-	-	65	30	5	-
0 (Centreline)	UNDER TOTE ROAD											
20U	20	10	-	70	-	-	-	25	50	20	5	-
60U	40	20	-	40	-	-	-	5	15	60	20	-
100U	40	20	-	40	-	-	-	5	15	60	20	-

OTHER NOTES / OBSERVATIONS

Stream morphology was predominantly riffle and run throughout. The substrate was primarily gravel/cobble with a few areas of fines upstream.

TOTE ROAD CV-112

10-JUL-25

A

B

C

D

E

F

Photos 1-1. Photos taken 20 m (top) and 60 m downstream (bottom) in Jul 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-112

10-JUL-25

A

B

C

Photos 1-2. Photos taken 100 m downstream in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-112

10-JUL-25

A

B

C

D

E

F

Photos 1-3. Photos taken 20 m (top) and 60 m upstream (bottom) in Jul 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-112

10-JUL-25

A

B

C

Photos 1-4. Photos taken 100 m upstream in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-112

10-JUL-25

A

B

Photos 1-5. Photos taken of the culvert in July 2025: (A) downstream end; and (B\) upstream end.

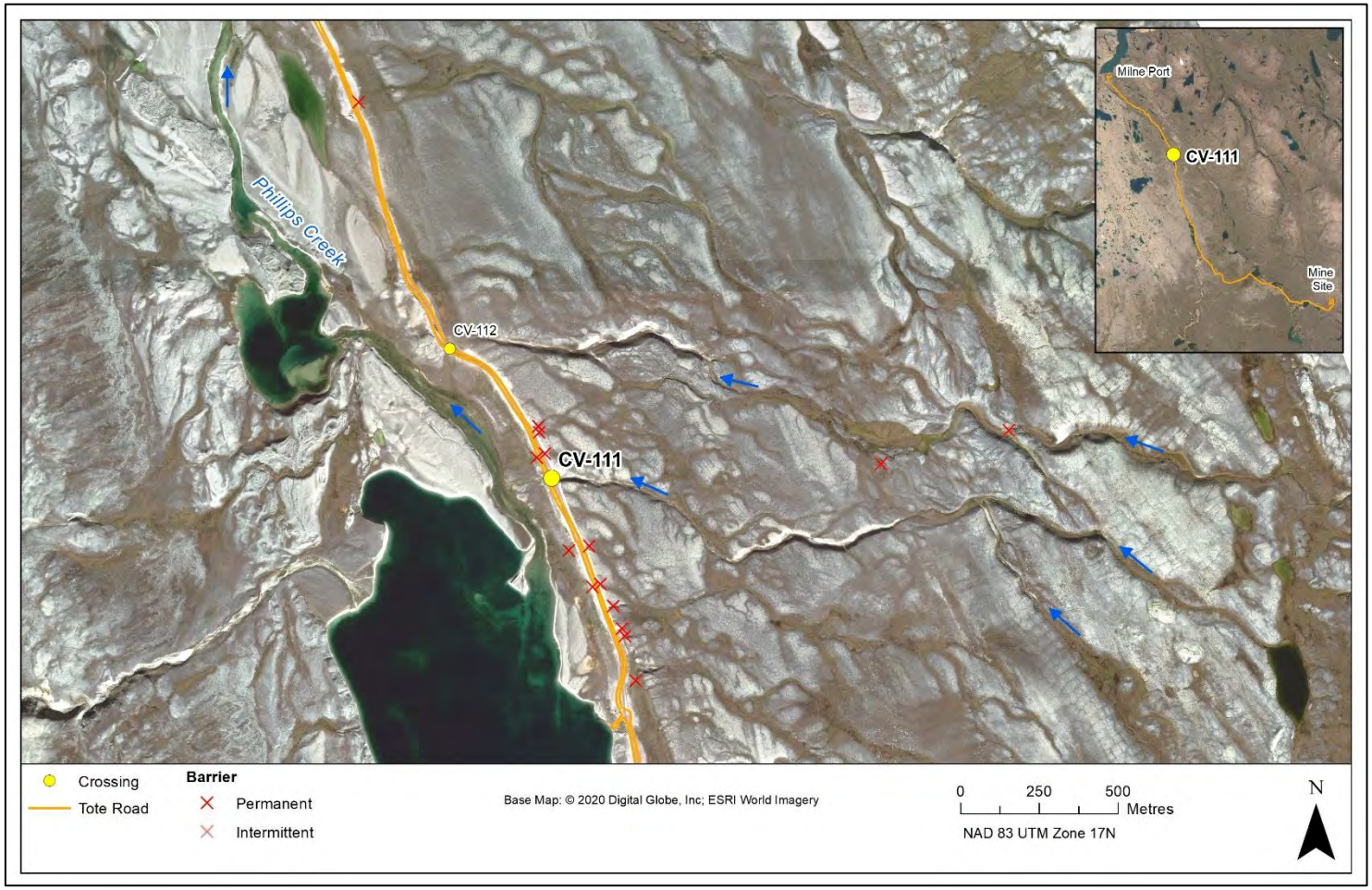
TOTE ROAD CV-111

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-111	Dates Surveyed:	13-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 521355 E 7954524 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal Stream Order: 3



TOTE ROAD CV-111

SITE SUMMARY

The Tote Road crosses a small, unnamed stream at site CV-111 that flows 120 m west into Phillips Creek near its outflow from Km 32 Lake. The lake is of sufficient depth to support overwintering of both species. In addition, there are two small lakes >2.5 km upstream from the crossing, one of which has been confirmed to be of sufficient depth to support overwintering. Although a bathymetric survey of the second upstream lake has not been conducted it is also believed to be of sufficient depth to support overwintering. Juvenile char were captured along the shorelines of both upstream lakes in 2019. This crossing has been identified for remediation.

Detailed habitat data were collected in the crossing area in July 2025. Wetted widths ranged from 3.1 to 9.0 m with upstream areas wider than downstream. Measured water depths were relatively shallow, typically <0.20 m, with a maximum of 0.25 m. Measured velocities were moderate to high, ranging from 0.02-1.71 m/s. Stream morphology was mostly riffle with some run/pool areas throughout and substrate was primarily cobble.

Six juvenile Arctic Char were captured downstream, and none were captured upstream of the crossing in July 2025. The culvert is currently perched (0.34 m) and is likely preventing most, if not all, fish access to upstream areas. Although the perch has been present for several years, char have occasionally been captured upstream of this crossing (e.g., 2024). However, there are potential upstream overwintering lakes where upstream char may originate from. Char use habitat in the vicinity of the Tote Road crossing at CV-111 for rearing/feeding when water levels are sufficient. There is no char spawning or overwintering habitat in this stream.

Ninespine Stickleback were not captured in July 2025 and have not been captured or observed in this stream during previous site surveys. It is unknown if the species is present in the watershed.

TOTE ROAD CV-111

FISH HABITAT POTENTIAL

Species	Spawning	Overwintering	Rearing	Adults Present
ARCH	N	N	Y	N
NNST	P	N	P	P

FISHERIES DATA

Location	Species	Survey Date	Temperature (°C)	Distance Fished (m)	Effort (Seconds)	# Fish Captured	# Fish Observed	CPUE (No. Fish/60 Seconds)	Length Range (mm)
Downstream	ARCH	13-Jul-25	6.0	50	223	6	0	1.614	55-194
	NNST					0	0	0.000	-
Upstream	ARCH			50	165	0	0	0.000	-
	NNST					0	0	0.000	-

OTHER NOTES / OBSERVATIONS

Six juvenile Arctic Char were captured downstream, and none were captured upstream of the crossing in July 2025. The culvert is currently perched (0.34 m) and is likely preventing most, if not all, fish access to upstream areas. The culvert has been perched for several years now. Char have occasionally been captured upstream of this crossing (e.g., 2024), however, there are potential upstream overwintering lakes where upstream char may originate from. Ninespine Stickleback were not captured in July 2025 and have not been captured or observed in this stream during previous site surveys. It is unknown if the species is present in the watershed.

TOTE ROAD CV-111

HYDROLOGY CHARACTERISTICS: 13-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	18.00	4.20	0.21	0.05	0.08	0.25	0.52	0.42	0.03	1.58
60D	12.00	3.10	0.14	0.16	0.17	0.25	0.96	1.17	0.82	1.33
20D	14.00	4.40	0.10	0.18	0.16	0.19	0.72	0.82	0.74	1.64
0 (Centreline)	UNDER TOTE ROAD									
20U	16.00	6.00	0.07	0.07	0.12	0.20	0.18	0.31	1.00	1.43
60U	11.00	9.00	0.10	0.08	0.06	0.16	0.32	0.50	1.60	1.60
100U	8.00	6.00	0.12	0.11	0.09	0.21	0.45	0.63	0.02	1.71

OTHER NOTES / OBSERVATIONS

Wetted widths ranged from 3.1 to 9.0 m in July 2025 with upstream areas wider than downstream. Measured water depths were relatively shallow, typically <0.20 m, with a maximum of 0.25 m. Measured velocities were moderate to high, ranging from 0.02-1.71 m/s.

TOTE ROAD CV-111

HABITAT CHARACTERISTICS: 13-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Low

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	70	10	-	20	-	-	-	10	20	60	10	-
60D	70	5	10	15	-	-	-	-	5	60	35	-
20D	40	20	-	40	-	-	-	5	25	50	20	-
0 (Centreline)	UNDER TOTE ROAD											
20U	70	20	-	10	-	-	-	5	30	60	5	-
60U	70	20	-	10	-	-	-	5	10	50	35	-
100U	70	10	5	5	10	-	-	5	5	20	65	5

OTHER NOTES / OBSERVATIONS

Stream morphology was mostly riffle with some run/pool areas throughout and substrate was primarily cobble.

TOTE ROAD CV-111

13-JUL-25

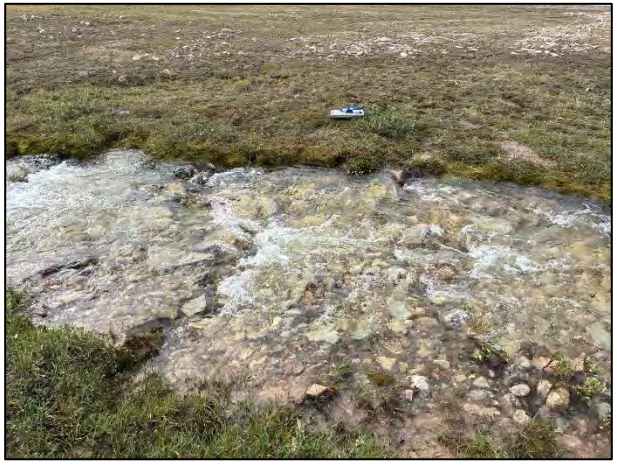
A

B

C

D

E



F

Photos 1-1. Photos taken 20 m (top) and 60 m downstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-111

13-JUL-25

A

B

C

Photos 1-2. Photos taken 100 m downstream in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-111

13-JUL-25

A

B

C

D

E

F

Photos 1-3. Photos taken 20 m (top) and 60 m upstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-111

13-JUL-25

A

B

C

Photos 1-4. Photos taken 100 m upstream in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-111

12-JUL-24

A

B

Photos 1-5. Photos taken of the culvert in July 2025: (A) downstream end; and (B) upstream end.

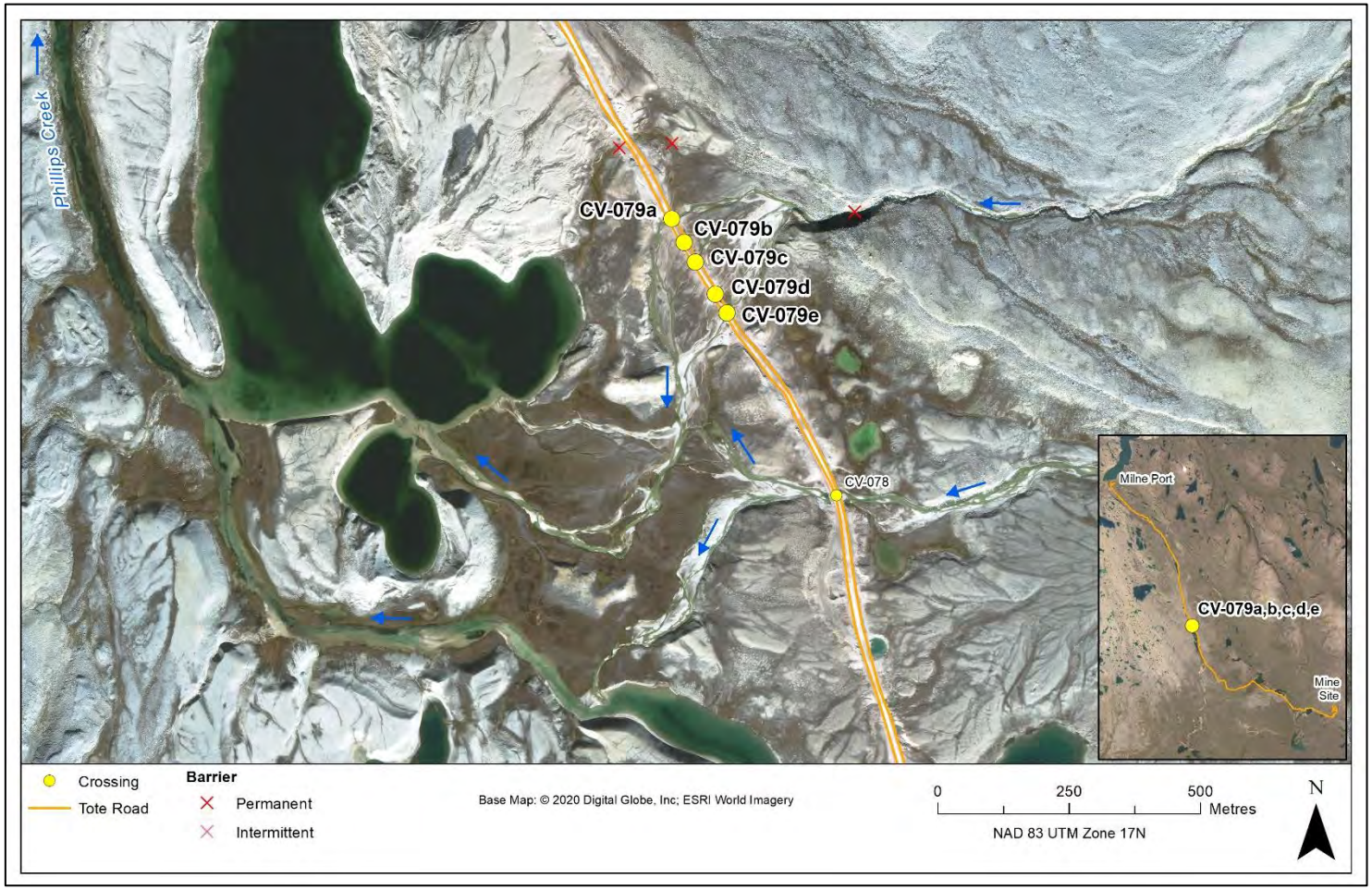
TOTE ROAD CV-079

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-079	Dates Surveyed:	14-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 525538 E 7937314 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal Stream Order: 3



TOTE ROAD CV-079

SITE SUMMARY

The Tote Road crosses an unnamed stream at site CV-079 that flows 700 m southwest into a small lake adjacent, and connected, to Phillips Creek. Flows from the CV-079 stream merge with those from the stream crossed by the road to the south at CV-078 prior to emptying into the small lake. Although a bathymetric survey has not been conducted, the lake is believed to be of sufficient depth to support overwintering of both species based on review of available imagery. The stream is highly braided at the road crossing, with at least three main fish-bearing channels that persist throughout the open-water period and several smaller ones that are intermittent.

Habitat data were collected from five fish-bearing channels present in July 2025 (the three main channels and two smaller, intermittent ones). Mean wetted widths ranged from 2.98 m in Channel b (CV-079b) to 11.53 m in the southernmost channel (CV-079e). Measured mean depths in each channel increased from north (0.07 m) to south (0.20 m). Measured mean velocities were lowest in the north channel (0.16 m/s) and relatively similar in the other four channels (range of 0.48-0.65 m/s). Stream morphology was mainly run with some riffle except in the northernmost channel (CV-079a) where shallow pool is as abundant as run habitat. Substrates were largely gravel/cobble in all channels.

Electrofishing was conducted in several of the channels in this braided system with at least one juvenile char captured in each. CV-079a is the northernmost fish-bearing channel and the one that historically had carried most of the water and provided most of the fish-habitat in the system. This channel has been part of annual monitoring since the program was initiated. Recently, there has been a shift in flow patterns; in 2024 and now 2025, flows in this channel have decreased relative to other channels in the system and it no longer provides the most fish habitat. In July 2025, char were captured both downstream and upstream of the culvert in this channel. Channels CV-079b and c are separated downstream of the road crossing but merge upstream. Most of the char captured in July 2025 were from downstream of CV-079b. Fewer fish were captured in the southernmost channels (d and e). Char can use habitat in all fish-bearing channels in the vicinity of the Tote Road crossing at CV-079 for rearing/feeding throughout the open-water period. There is no char spawning or overwintering habitat in this stream.

Ninespine Stickleback have never been captured or observed in this stream since the monitoring program began in 2009. It is unknown if they are present in the watershed.

TOTE ROAD CV-079

FISH HABITAT POTENTIAL

Species	Spawning	Overwintering	Rearing	Adults Present
ARCH	N	N	Y	N
NNST	P	N	P	P

FISHERIES DATA

Location	Species	Survey Date	Temperature (°C)	Distance Fished (m)	Effort (Seconds)	# Fish Captured	# Fish Observed	CPUE (No. Fish/60 Seconds)	Length Range (mm)
CV-079a Downstream	ARCH	14-Jul-25	7.0	50	273	8	0	1.758	57-105
	NNST					0	0	0.000	-
CV-079a Upstream	ARCH			50	129	4	0	1.860	67-143
	NNST					0	0	0.000	-
CV-079b Downstream	ARCH			50	200	14	0	4.200	61-141
	NNST					0	0	0.000	-
CV-079c Downstream	ARCH			50	104	2	0	1.154	60-122
	NNST					0	0	0.000	-
CV-079b & c Upstream	ARCH			50	179	2	0	0.670	144-235
	NNST					0	0	0.000	-
CV-079d & e Downstream	ARCH			60	128	5	0	2.344	75-111
	NNST					0	0	0.000	-
CV-079d & e Upstream	ARCH			50	120	1	0	0.500	149
	NNST					0	0	0.000	-

OTHER NOTES / OBSERVATIONS

Electrofishing was conducted in several of the channels in this braided system with at least one juvenile char captured in each. CV-079a is the northernmost fish-bearing channel and the one that historically had carried most of the water and provided most of the fish-habitat in the system. This channel has been part of annual monitoring since the program was initiated. Recently, there has been a shift in flow patterns; in 2024 and now 2025, flows in this channel have decreased relative to other channels in the system and it is no longer provides the most fish habitat. In July 2025, char were captured both downstream and upstream of the culvert in this channel. Channels CV-079b and c are separated downstream of the road crossing but merge upstream. Most of the char captured in July 2025 were downstream of CV-079b. Fewer fish were captured in the southernmost channels (d and e). Ninespine Stickleback have never been captured or observed in this stream since the monitoring program began in 2009. It is unknown if they are present in the watershed.

TOTE ROAD CV-079

HYDROLOGY CHARACTERISTICS: 14-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Low to moderate

Site -CV-079a	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	65.00	6.90	0.04	0.04	0.04	0.08	0.06	0.01	0.04	0.20
60D	53.00	4.20	0.04	0.05	0.03	0.08	0.16	0.05	0.00	0.32
20D	58.00	3.00	0.08	0.10	0.09	0.14	0.03	0.07	0.01	0.37
0 (Centreline)	UNDER TOTE ROAD									
20U	165.00	1.50	-	0.04	-	0.12	-	0.19	-	0.49
60U	170.00	8.00	0.04	0.02	0.04	0.08	0.13	0.10	0.05	0.25
100U	220.00	2.60	-	0.07	-	0.08	-	0.21	-	0.39

Site -CV-079b	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	65.00	3.60	0.08	0.09	0.11	0.12	0.26	0.43	0.23	0.76
60D	53.00	2.20	-	0.15	-	0.16	-	0.58	-	0.86
20D	58.00	5.00	0.11	0.08	0.06	0.11	0.26	0.32	0.48	0.63
0 (Centreline)	UNDER TOTE ROAD									
20U	165.00	2.10	0.06	0.12	0.12	0.15	0.34	0.45	0.59	0.59
60U	170.00	2.00	-	0.15	-	0.15	-	0.41	-	0.41
100U	MERGES WITH CV-079c AT 75 m US									

Site -CV-079c	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	65.00	7.00	0.10	0.13	0.12	0.17	0.04	0.59	0.50	0.80
60D	53.00	5.70	0.06	0.18	0.10	0.19	0.32	1.22	0.68	1.22
20D	58.00	7.00	0.14	0.12	0.10	0.22	0.79	0.76	0.53	1.03
0 (Centreline)	UNDER TOTE ROAD									
20U	165.00	9.00	0.22	0.13	0.04	0.22	0.53	0.83	0.33	1.02
60U	170.00	9.00	0.09	0.12	0.16	0.18	0.45	0.60	0.51	0.75
100U	220.00	7.00	0.20	0.28	0.21	0.29	0.40	0.61	0.36	0.63

TOTE ROAD CV-079

HYDROLOGY CHARACTERISTICS: 14-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Low to moderate

Site -CV-079d	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	MERGES WITH CV-079e									
60D	39.00	2.90	0.09	0.08	0.10	0.40	0.94	0.54	0.59	1.50
20D	91.00	9.30	0.09	0.07	0.06	0.11	0.30	0.37	0.15	0.88
0 (Centreline)	UNDER TOTE ROAD									
20U	9.00	4.40	0.13	0.08	0.10	0.14	0.37	0.36	0.27	0.50
60U	18.00	7.20	0.09	0.20	0.15	0.32	0.01	0.11	0.09	0.16
100U	MERGES WITH CV-079c AT 70 m US									

Site -CV-079e	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	72.00	3.20	0.16	0.26	0.27	0.36	0.12	0.65	1.11	1.27
60D	65.00	15.00	0.38	0.18	0.10	0.38	0.21	0.14	0.10	0.21
20D	50.00	8.00	0.14	0.16	0.18	0.38	0.46	0.30	0.39	0.61
0 (Centreline)	UNDER TOTE ROAD									
20U	68.00	21.00	0.10	0.09	0.10	0.13	0.48	0.27	0.47	0.88
60U	75.00	12.00	0.08	0.22	0.09	0.22	0.46	1.20	0.26	1.26
100U	36.00	10.00	0.24	0.19	0.04	0.33	0.23	0.35	0.18	0.66

OTHER NOTES / OBSERVATIONS

Habitat data were collected from five of the fish-bearing channels in this stream in July 2025. Mean wetted widths ranged from 2.98 m in Channel CV-079b to 11.53 m in the southernmost channel (CV-079e). Measured mean depths in each channel increased from north (0.07 m) to south (0.20 m). Measured mean velocities were lowest in the north channel (0.16 m/s) and relatively similar in the other four channels (range of 0.48-0.65 m/s).

TOTE ROAD CV-079

HABITAT CHARACTERISTICS: 14-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Low to moderate

Site -CV-079a	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	5	45	-	50	-	-	-	5	90	5	-	-
60D	20	30	-	50	-	-	-	5	85	10	-	-
20D	5	50	-	45	-	-	-	10	60	30	-	-
0 (Centreline)	UNDER TOTE ROAD											
20U	5	40	-	55	-	-	-	30	50	20	-	-
60U	5	60	-	35	-	-	-	15	50	30	5	-
100U	5	70	-	25	-	-	-	5	25	50	20	-

Site -CV-079b	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	40	10	-	50	-	-	-	5	60	30	5	-
60D	70	10	-	20	-	-	-	5	60	35	-	-
20D	10	30	-	60	-	-	-	25	50	25	-	-
0 (Centreline)	UNDER TOTE ROAD											
20U	15	5	-	80	-	-	-	40	40	20	-	-
60U	5	5	-	90	-	-	-	5	40	55	5	-
100U	MERGES WITH CV-079c AT 75 m US											

Site -CV-079c	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	30	20	-	50	-	-	-	10	30	60	-	-
60D	60	10	-	30	-	-	-	10	40	50	-	-
20D	30	10	-	60	-	-	-	10	85	5	-	-
0 (Centreline)	UNDER TOTE ROAD											
20U	30	10	40	20	-	-	-	10	70	20	-	-
60U	50	20	-	30	-	-	-	-	40	55	5	-
100U	20	10	-	70	-	-	-	-	25	60	15	-

TOTE ROAD CV-079

HABITAT CHARACTERISTICS: 14-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Low to moderate

Site -CV-079d	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	MERGES WITH CV-079e											
60D	30	10	5	55	-	-	-	-	40	55	5	-
20D	25	5	-	70	-	-	-	5	70	20	5	-
0 (Centreline)	UNDER TOTE ROAD											
20U	25	5	-	70	-	-	-	5	60	35	-	-
60U	10	20	10	60	-	-	-	30	50	20	-	-
100U	MERGES WITH CV-079c AT 70 m US											

Site -CV-079e	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	70	10	-	20	-	-	-	-	25	50	25	-
60D	-	-	-	100	-	-	-	-	25	75	-	-
20D	25	5	-	70	-	-	-	-	25	75	-	-
0 (Centreline)	UNDER TOTE ROAD											
20U	30	20	-	50	-	-	-	-	40	60	-	-
60U	40	10	-	50	-	-	-	-	50	50	-	-
100U	20	5	-	75	-	-	-	-	50	50	-	-

OTHER NOTES / OBSERVATIONS

Stream morphology was mainly run with some riffle except in the northernmost channel (CV-079a) where shallow pool is as abundant as run habitat. Substrates were largely gravel/cobble in all channels.

TOTE ROAD CV-079

14-JUL-25

A

B

C

D

E

F

Photos 1-1. Photos taken 20 m (top) and 60 m downstream (bottom) in the northernmost channel (CV-079a) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-079

14-JUL-25

A

B

C

Photos 1-2. Photos taken 100 m downstream in the northernmost channel (CV-079a) in July 2025: (A) facing upstream; (B) facing downstream; and (C) across (right bank looking at left bank).

TOTE ROAD CV-079

14-JUL-25

A

B

C

D

E

F

Photos 1-3. Photos taken 20 m (top) and 60 m upstream (bottom) in the northernmost channel (CV-079a) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-079

14-JUL-25

A

B

C

Photos 1-4. Photos taken 100 m upstream in the northernmost channel (CV-079a) in July 2025: (A) facing upstream; (B) facing downstream; and (C) across (right bank looking at left bank).

TOTE ROAD CV-079

14-JUL-25

A

B

C

D

E

F

Photos 1-5. Photos taken 20 m (top) and 60 m downstream (bottom) in the second channel from the north (CV-079b) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-079

14-JUL-25

A

B

C

Photos 1-6. Photos taken 100 m downstream in the second channel from the north (CV-079b) in July 2025: (A) facing upstream; (B) facing downstream; and (C) across (right bank looking at left bank).

TOTE ROAD CV-079

14-JUL-25

A

B

C

D

E

F

Photos 1-7. Photos taken 20 m (top) and 60 m upstream (bottom) in the second channel from the north (CV-079b) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-079

14-JUL-25

A

B

C

D

E

F

Photos 1-8. Photos taken 20 m (top) and 60 m downstream (bottom) in the middle channel (CV-079c) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-079

14-JUL-25

A

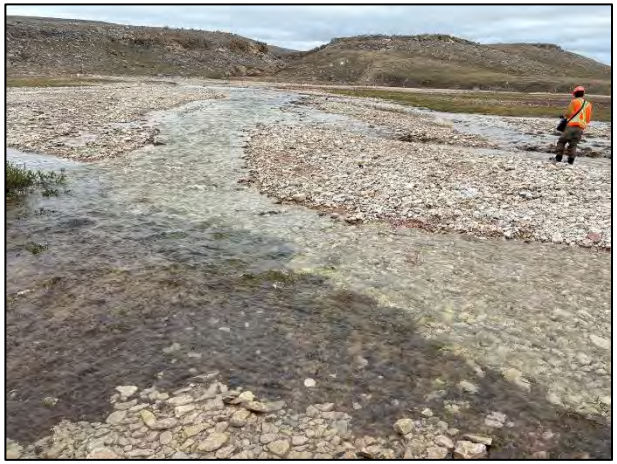
B

C

Photos 1-9. Photos taken 100 m downstream in the middle channel (CV-079c) in July 2025: (A) facing upstream; (B) facing downstream; and (C) across (right bank looking at left bank).

TOTE ROAD CV-079

14-JUL-25



A

No Photo

B

No Photo

C

D

E

F

Photos 1-10. Photos taken 20 m (top) and 60 m upstream (bottom) in the middle channel (CV-079c) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-079

14-JUL-25

A

B

C

Photos 1-11. Photos taken 100 m upstream in the middle channel (CV-079c) in July 2025: (A) facing upstream; (B) facing downstream; and (C) across (right bank looking at left bank).

TOTE ROAD CV-079

14-JUL-25

A

B

C

D

E

F

Photos 1-12. Photos taken 20 m (top) and 60 m downstream (bottom) in the second channel from the south (CV-079d) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-079

14-JUL-25

A

B

C

D

E

F

Photos 1-13. Photos taken 20 m (top) and 60 m upstream (bottom) in the second channel from the south (CV-079d) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-079

14-JUL-25

A

B

C

D

E

F

Photos 1-14. Photos taken 20 m (top) and 60 m downstream (bottom) in the southernmost channel (CV-079e) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-079

14-JUL-25

A

B

C

Photos 1-15. Photos taken 100 m downstream in the southernmost channel (CV-079e) in July 2025: (A) facing upstream; (B) facing downstream; and (C) across (right bank looking at left bank).

TOTE ROAD CV-079

14-JUL-25

A

B

C

D

E

F

Photos 1-16. Photos taken 20 m (top) and 60 m upstream (bottom) in the southernmost channel (CV-079e) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-079

14-JUL-25

A

B

C

Photos 1-17. Photos taken 100 m upstream in the southernmost channel (CV-079e) in July 2025: (A) facing upstream; (B) facing downstream; and (C) across (right bank looking at left bank).

TOTE ROAD CV-079

14-JUL-25

A

B

C

D

E

F

Photos 1-18. Photos taken of the culverts at the downstream end (top) and upstream end (bottom) in July 2025: (A) north channel (CV-079a); (B,E) second from north channel (CV-079b); and (C,F) middle channel (CV-079c).

TOTE ROAD CV-079

14-JUL-25

A

B

C

D

Photos 1-19. Photos taken of the culverts at the downstream end (top) and upstream end (bottom) in July 2025: (A,C) second from south channel (CV-079d); and (B,D) south channel (CV-079e).

TOTE ROAD CV-078

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-078	Dates Surveyed:	13-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 523852 E 7936787 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal Stream Order: 3

BAFFINLAND IRON MINES
MARY RIVER PROJECT

North/South Consultants Inc.
Aquatic Environment Specialists

FISH HABITAT:

ARCTIC CHAR - YES

NINESPINE STICKLEBACK - POTENTIAL

TOTE ROAD CV-078

SITE SUMMARY

The Tote Road crosses an unnamed stream at site CV-078 that flows 100 m west before splitting into two main channels; one channel flows 640 m southwest to Phillips Creek at its outflow from Katiktok Lake and the other flows 700 m west to a small lake adjacent, and connected, to Phillips Creek. Flows from the CV-078 stream merge with those from the stream crossed by the road at CV-079 prior to emptying into the small lake. Although a bathymetric survey has not been conducted, the lake is believed to be of sufficient depth to support overwintering of both species. Katiktok Lake is of sufficient depth to support overwintering. This site has been identified for remediation.

Detailed habitat data were collected in the stream crossing area in July 2025. Wetted widths ranged from 5.0-22.0 m in July 2025. Measured depths ranged from 0.03-0.422 m. Measured velocities ranged from 0.20-1.74 m/s. Morphology was mainly riffle/run and substrates were largely cobble throughout.

Small numbers of juvenile char were captured upstream and downstream of the crossing in July 2025. Char can use habitat in the vicinity of the Tote Road crossing at CV-078 for rearing/feeding throughout the open-water period. There is no char spawning habitat and no overwintering habitat for either species in this stream. No issues with fish passage were noted in July 2025.

Ninespine Stickleback have never been captured or observed in this stream since the monitoring program began in 2009. It is unknown if they are present in the watershed.

TOTE ROAD CV-078

FISH HABITAT POTENTIAL

Species	Spawning	Overwintering	Rearing	Adults Present
ARCH	N	N	Y	N
NNST	P	N	P	P

FISHERIES DATA

Location	Species	Survey Date	Temperature (°C)	Distance Fished (m)	Effort (Seconds)	# Fish Captured	# Fish Observed	CPUE (No. Fish/60 Seconds)	Length Range (mm)
Downstream	ARCH	13-Jul-25	7.0	60	150	4	0	1.600	85-121
	NNST					0	0	0.00	-
Upstream	ARCH			70	179	2	0	0.670	70-109
	NNST					0	0	0.00	-

OTHER NOTES / OBSERVATIONS

Small numbers of juvenile char were captured upstream and downstream of the crossing in July 2025. Ninespine Stickleback have never been captured or observed in this stream since the monitoring program began in 2009. It is unknown if they are present in the watershed.

TOTE ROAD CV-078

HYDROLOGY CHARACTERISTICS: 13-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D – 2 ch	49.00	21.00	0.28	0.26	0.09	0.31	0.82	1.24	0.34	1.75
60D – 2 ch	40.00	19.00	0.10	0.26	0.24	0.30	0.35	1.17	1.21	1.46
20D	28.00	0.19	0.12	0.42	0.42	0.92	0.60	1.42	1.42	0.19
0 (Centreline)	UNDER TOTE ROAD									
20U	33.00	22.00	0.17	0.24	0.16	0.34	1.09	1.14	1.03	1.43
60U – 2 ch	54.00	13.00	0.28	0.20	0.15	0.34	1.25	0.29	0.20	0.64
100U – 2 ch	79.00	25.00	0.22	0.08	0.35	0.35	1.13	0.21	0.36	1.35

OTHER NOTES / OBSERVATIONS

Wetted widths ranged from 5.0-22.0 m in July 2025. Measured depths ranged from 0.03-0.422 m. Measured velocities ranged from 0.20-1.74 m/s.

TOTE ROAD CV-078

HABITAT CHARACTERISTICS: 13-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D – 2 ch	70	20	-	10	-	-	-	-	20	50	20	10
60D – 2 ch	65	20	5	10	-	-	-	-	20	55	30	5
20D	70	10	10	10	-	-	-	-	10	50	30	10
0 (Centreline)	UNDER TOTE ROAD											
20U	70	5	5	20	-	-	-	1	4	50	40	5
60U – 2 ch	40	5	5	20	-	30	-	-	20	40	25	15
100U – 2 ch	25	15	5	55	-	-	-	5	35	40	15	5

OTHER NOTES / OBSERVATIONS

Morphology was mainly riffle/run and substrates were largely cobble throughout.

TOTE ROAD CV-078

13-JUL-25

A

B

C

D

E

F

Photos 1-1. Photos taken 20 m (top) and 60 m downstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-078

13-JUL-25

A

B

C

Photos 1-2. Photos taken 100 m downstream in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-078

13-JUL-25

A

B

C

D

E

F

Photos 1-3. Photos taken 20 m (top) and 60 m upstream (left channel; bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-078

13-JUL-25

A

B

C

Photos 1-4. Photos taken 100 m upstream (left channel) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-078

13-JUL-25

A

B

C

D

Photos 1-5. Photos taken of the culverts in July 2025: (A, B) downstream end; and (C, D) upstream end.

TOTE ROAD CV-072

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-072	Dates Surveyed:	14-Jul-25; 18-Aug-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 526897 E 7934576 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime:	Seasonal	Stream Order:	3

TOTE ROAD CV-072

SITE SUMMARY

The Tote Road crosses a small, unnamed braided stream at site CV-072 that flows 100 m west into Katiktok Lake. The lake is of sufficient depth to support overwintering. The CV-072 crossing includes two channels with culverts. The northern channel at CV-072b is typically dry or reduced to patchy surface flow with frequent subsurface flow barriers even during freshet site visits. The southern channel at CV-072c, located 30 m south of CV-072b, has been the only fish-bearing channel at this crossing since monitoring began in 2009. Both channels are united approximately 50 m upstream of the road. During fall 2024 there was a significant rain event (1 in 1,000 year, 24-hour event) that resulted in blockage of the main fish-bearing culvert at CV-072c and diversion of flows to culverts at CV-072b. With this change in flows, fish use and passage of the stream shifted from the south channel to the north channel during the open-water period of 2025.

The CV-072b stream channel had wetted widths ranging from 2.4-7.5 m in July 2025. Measured maximum depths ranged from 0.04-0.38 m. Maximum velocities were high, frequently exceeding 1.00 m/s and reaching as high as 1.87 m/s.

The site was revisited in August 2025 at which time the wetted area had decreased notably relative to July, with wetted widths ranging from 1.8-3.3 m. In addition, there was an area of subsurface flow near the confluence with Katiktok Lake on 18 August that created a temporary barrier to fish movements. Connectivity was restored on or before 21 August, following a period of rain. Measured maximum depths ranged from 0.04-0.11 m. Maximum velocities were low to moderate, typically <0.5 m/s.

Morphology was mainly riffle/run with some cascade/riffle farther upstream in July 2025. Morphology was mainly riffle/run/shallow pool throughout in August 2025. Substrates were predominantly cobble/gravel with increasing amounts of boulder upstream.

Juvenile char were captured downstream and upstream of the CV-072b crossing in July 2025. The lower catch rates upstream could be attributable to the changes to the stream following the rain event as described above. The culverts at CV-072b were slightly perched whereas the culvert at CV-072c was not. In addition, during the initial August 2025 site visit (18 August), the CV-072b channel had subsurface flows near the Katiktok Lake confluence downstream, resulting in many stranded char. Following a period of precipitation, connection had been restored by the time the site was revisited (21 and 28 August) with char no longer stranded upstream. The new flow patterns in this system could potentially result in fish stranding/mortalities and it is recommended that historic flow patterns be restored. There is no char spawning habitat and no overwintering habitat for either species in this stream.

Ninespine Stickleback have never been captured or observed in this stream since the monitoring program began in 2009. It is unknown if they are present in the system.

TOTE ROAD CV-072

FISH HABITAT POTENTIAL

Species	Spawning	Overwintering	Rearing	Adults Present
ARCH	N	N	Y	N
NNST	P	N	P	P

FISHERIES DATA

Location	Species	Survey Date	Temperature (°C)	Distance Fished (m)	Effort (Seconds)	# Fish Captured	# Fish Observed	CPUE (No. Fish/60 Seconds)	Length Range (mm)
Downstream	ARCH	14-Jul-25	2.0	50	314	14	0	2.675	72-164
	NNST					0	0	0.000	-
Upstream	ARCH			60	237	4	0	1.013	100-124
	NNST					0	0	0.000	-
Downstream	ARCH	18-Jul-25	2.0	65	454	18	0	2.379	56.9-200
	NNST					0	0	0.000	-
Upstream	ARCH			100	100	10	0	6.000	101-136.3
	NNST					0	0	0.000	-

OTHER NOTES / OBSERVATIONS

Juvenile char were captured downstream and upstream of crossing CV-072b in July 2025. The lower catch rates upstream could be attributable to the changes to the stream following the fall 2024 rain event as described above. During the initial August 2025 site visit (18 August), the CV-072b channel had dried up before reaching Katiktok Lake downstream, resulting in many stranded char. Following a period of precipitation, connection had been restored when the site was revisited (21 and 28 August) with char no longer stranded upstream. The new flow patterns in this system could potentially result in fish mortalities and it is recommended that historic flow patterns be restored. Stickleback have never been captured in this stream, and it is unknown if they are present in the watershed.

TOTE ROAD CV-072

HYDROLOGY CHARACTERISTICS: 14-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
80D	10.00	7.50	0.10	0.08	0.16	0.32	0.34	0.81	0.68	1.07
60D	8.00	2.40	0.36	0.36	0.04	0.38	1.11	0.52	0.22	1.35
20D	5.50	5.10	0.10	0.22	0.16	0.22	0.13	1.29	1.06	1.51
0 (Centreline)	UNDER TOTE ROAD									
20U	5.00	2.70	0.14	0.36	0.23	0.36	0.27	1.20	0.61	1.67
60U	9.00	3.70	0.11	0.33	0.06	0.33	0.45	1.23	0.14	1.87
100U	VERTICAL DROP BARRIER									

OTHER NOTES / OBSERVATIONS

This stream had wetted widths ranging from 2.4-7.5 m in July 2025. Measured maximum depths ranged from 0.04-0.38 m. Maximum velocities were high, frequently exceeding 1.00 m/s and reaching as high as 1.87 m/s.

TOTE ROAD CV-072

HABITAT CHARACTERISTICS: 14-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
80D	40	10	-	50	-	-	-	-	35	60	5	-
60D	25	5	-	70	-	-	-	-	35	60	5	5
20D	35	15	-	50	-	-	-	-	20	60	20	10
0 (Centreline)	UNDER TOTE ROAD											
20U	60	20	-	20	-	-	-	-	10	50	30	10
60U	30	-	10	10	30	20	-	-	5	5	40	50
100U	VERTICAL DROP BARRIER											

OTHER NOTES / OBSERVATIONS

Morphology was mainly riffle/run with some cascade/riffle farther upstream in July 2025. Substrates were predominantly cobble/gravel with increasing boulder upstream.

TOTE ROAD CV-072

14-JUL-25

A

B

C

D

E

F

Photos 1-1. Photos taken 20 m downstream (top) and 60 m downstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-072

14-JUL-25

A

B

C

Photos 1-2. Photos taken 80 m downstream in July 2025: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-072

14-JUL-25

A

B

C

D

E

F

Photos 1-3. Photos taken 20 m upstream (top) and 60 m upstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-072

14-JUL-25

A

B

C

D

Photos 1-4. Photos taken of the culverts at CV-072b (top) and CV-072c (bottom) in July 2025: (A,C) downstream end; and (B,D) upstream end.

TOTE ROAD CV-072

HYDROLOGY CHARACTERISTICS: 18-AUG-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Low

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
80D	SUBSURFACE FLOW									
60D	8.00	3.30	0.06	-	0.04	0.08	0.47	-	0.10	0.48
20D	5.50	2.60	0.06	0.10	0.06	0.11	0.17	0.08	0.30	0.68
0 (Centreline)	UNDER TOTE ROAD									
20U	5.00	1.80	0.05	0.19	0.15	0.19	0.06	0.27	0.11	0.91
60U	9.00	1.90	0.08	0.18	0.09	0.23	0.02	0.37	0.46	1.41
100U	VERTICAL DROP BARRIER									

OTHER NOTES / OBSERVATIONS

This stream had a much smaller wetted width in August 2025 compared with July 2025, ranging from 1.8-3.3 m. In addition, there was an area of subsurface flow near the confluence with Katiktok Lake on 18 August. Connectivity was restored by 21 August, following a period of rain. Measured maximum depths ranged from 0.04-0.11 m. Maximum velocities were low to moderate, typically <0.5 m/s.

TOTE ROAD CV-072

HABITAT CHARACTERISTICS: 18-AUG-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Low

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
80D	-	-	-	-	-	-	-	5	40	54	1	-
60D	10	30	-	60	-	-	-	-	40	55	5	-
20D	20	40	-	40	-	-	-	-	40	50	10	-
0 (Centreline)	UNDER TOTE ROAD											
20U	30	30	-	40	-	-	-	-	40	50	10	-
60U	40	30	10	20	-	-	-	-	15	25	30	30
100U	VERTICAL DROP BARRIER											

OTHER NOTES / OBSERVATIONS

Morphology was mainly riffle/run/shallow pool throughout in August 2025. Substrates were predominantly cobble/gravel with increasing boulder upstream.

TOTE ROAD CV-072

18-AUG-25

A

B

C

D

E

F

Photos 2-1. Photos taken 20 m downstream (top) and 60 m downstream (bottom) in August 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-072

18-AUG-25

A

B

C

Photos 2-2. Photos taken 80 m downstream in August 2025: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-072

14-JUL-25

A

B

C

D

E

F

Photos 2-3. Photos taken 20 m upstream (top) and 60 m upstream (bottom) in August 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-072

18-AUG-25

A

B

C

D

Photos 2-4. Photos taken of the culverts at CV-072b (A downstream and B upstream), downstream barrier at CV-072b (C) and culvert blockage at CV-072c (D) in August 2025.

TOTE ROAD BG-50

LOCATION AND CROSSING DESCRIPTION

Site ID:	BG-50	Dates Surveyed:	15-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 529294 E 7926852 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal Stream Order: 3+

BAFFINLAND IRON MINES
MARY RIVER PROJECT

North/South Consultants Inc.
Aquatic Environment Specialists

FISH HABITAT:

ARCTIC CHAR - YES

NINESPINE STICKLEBACK - YES

TOTE ROAD BG-50

SITE SUMMARY

The Tote Road crosses a large, unnamed river at site BG-50 that flows 1.0 km west to a small lake. Although a bathymetric survey has not been conducted, the lake is suspected of being of sufficient depth to support overwintering based on shoreline surveys and review of available imagery. The road crossing is located at the upstream end of a mid-channel island and is separated into a bridge crossing on the larger north channel and a culvert crossing at the smaller south channel. The culverts are perched and impassable to fish but the bridge crossing does not affect fish passage. This road crossing is scheduled for remediation.

Measured wetted widths in the channel with the culvert crossing ranged from 11.0-12.0 m downstream in July 2025. Immediately upstream of the culverts there is a short, narrow channel and farther upstream the culvert and bridge channels merge with wetted widths typically exceeding 50 m. Measured depths downstream of the culverts ranged from 0.14-0.34 and velocities ranged from 0.28-1.81 m/s. Measurements of water depths were restricted to wadeable depths in nearshore habitat; however, maximum depth and velocity were estimated to be >0.75 m and >2.00 m/s, respectively, offshore. Stream morphology was primarily riffle with some run upstream. Substrate was mainly cobble/boulder downstream with increased gravel upstream.

Although electrofishing was not conducted in July 2025, juvenile char were observed downstream and upstream of the crossing. Both species have been captured in this river in previous surveys. Juvenile, and potentially adult, char use habitat in the vicinity of the Tote Road crossing throughout the open-water period for rearing/feeding. There is no overwintering or spawning habitat for char in this river.

Stickleback use habitat in the slower-flowing areas of the stream along the banks in summer/fall for feeding. Spawning is unlikely given the lack of suitable habitat. Additional surveys of the area have shown some evidence of stickleback spawning in small, marshy tributaries of this river. There is no overwintering habitat for stickleback in this river.

TOTE ROAD BG-50

FISH HABITAT POTENTIAL

Species	Spawning	Overwintering	Rearing	Adults Present
ARCH	N	N	Y	P
NNST	N	N	Y	Y

FISHERIES DATA

Location	Species	Survey Date	Temperature (°C)	Distance Fished (m)	Effort (Seconds)	# Fish Captured	# Fish Observed	CPUE (No. Fish/60 Seconds)	Length Range (mm)
Downstream	ARCH	15-Jul-25	6.0	N/A	N/A	-	Few	-	-
	NNST					-	0	-	-
Upstream	ARCH			N/A	N/A	-	0	-	-
	NNST					-	0	-	-

OTHER NOTES / OBSERVATIONS

Electrofishing was not conducted in July 2025. However, juvenile char were observed downstream and upstream of the crossing. Both species have been captured in this river in previous surveys.

TOTE ROAD BG-50

HYDROLOGY CHARACTERISTICS: 15-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	135.00	12.00	0.20	0.18	0.17	0.22	0.55	0.72	0.78	1.03
60D	103.00	12.00	0.17	0.17	0.33	0.33	0.62	0.62	1.28	1.42
20D	110.00	11.00	0.14	0.16	0.24	0.34	0.28	0.43	0.88	1.81
0 (Centreline)	UNDER TOTE ROAD									
20U	9.00	6.00	-	0.54	-	>0.75	-	0.65	-	>2.00

OTHER NOTES / OBSERVATIONS

Measured wetted widths in the culvert crossing channel ranged from 11.0-12.0 m downstream in July 2025. Immediately upstream of the culverts there is a short, narrow channel. Farther upstream of the culvert and bridge, the two channels merge, with wetted widths typically exceeding 50 m. Measured depths downstream ranged from 0.14-0.34 and velocities from 0.28-1.81 m/s. Water levels upstream were too deep to accurately measure beyond the nearshore habitat, but maximum depth and velocity were estimated at >0.75 m and >2.00 m/s, respectively.

TOTE ROAD BG-50

HABITAT CHARACTERISTICS: 15-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	100	-	-	-	-	-	-	-	5	50	40	5
60D	100	-	-	-	-	-	-	-	5	60	30	5
20D	100	-	-	-	-	-	-	-	5	80	15	-
0 (Centreline)	UNDER TOTE ROAD											
20U	70	-	-	30	-	-	-	-	40	60	-	-

OTHER NOTES / OBSERVATIONS

Stream morphology was primarily riffle with some run upstream. Substrate was mainly cobble/boulder downstream with increased gravel upstream. The 60 and 100 m upstream transects were not surveyed as this is where the bridge and culvert channels are merged.

TOTE ROAD BG-50

15-JUL-25

A

B

C

D

E

F

Photos 1-1. Photos taken 20 m (top) and 60 m downstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD BG-50

15-JUL-25

A

B

C

Photos 1-2. Photos taken 100 m downstream in July 2025: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD BG-50

15-JUL-25

A

B

C

Photos 1-3. Photos taken 20 m upstream in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD BG-50

15-JUL-25

A

Photos 1-4. Photos taken of the culverts in July 2025: (A) downstream end; (B) upstream end.

TOTE ROAD CV-049

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-049	Dates Surveyed:	15-Jul-25; 18-Aug-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 529654 E 7926545 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal Stream Order: 3+

TOTE ROAD CV-049

SITE SUMMARY

The Tote Road crosses a large, unnamed stream at site CV-049 that flows 1.0 km west into a small lake. Although a bathymetric survey has not been conducted, the lake is suspected of being of sufficient depth to support overwintering based on shoreline surveys and review of available imagery. This downstream lake is also shared with the river crossed by the road at BG-50.

A major rain event in fall 2024 washed out the road, requiring reinstallation/replacement of the culvert and extensive repairs to the road. The site was visited twice during 2025 (July and August) to monitor fish passage through the reinstalled culverts.

The stream was relatively wide, with wetted widths ranging from 7.0-27.0 m downstream and increasing to 31.0-36.0 m upstream in July 2025. Measured maximum depths were typically <0.50 m. Measured velocities were high; maximum values often exceeded 1.00 m/s and occasionally 2.00 m/s.

In August 2025, wetted widths had decreased notably (typically <10.0 m) and an area of extensive subsurface flow was present approximately 100 m upstream of the crossing. Measured maximum depths were typically <0.20 m and measured velocities were low to moderate, ranging from 0.01-1.27 m/s.

Stream morphology in July 2025 was largely riffle/run, with shallow and deep pools dispersed throughout. By August 2025, riffle habitat was less abundant, deep pool habitat was absent, and run habitat was dominant. Substrates were predominantly cobble/gravel in July and August.

Several char, including some larger juveniles, were captured upstream and downstream of the road in July and August 2025. Char use habitat at the crossing for rearing/feeding during the open-water period. There is no char spawning or overwintering habitat in this stream.

Stickleback have never been captured in this stream, though they are known to be present in the adjacent stream crossed by the road at BG-50 and the downstream lake. Distance from the lake and high flows may restrict stickleback use to the lower reaches of this stream.

Although there were no fish passage issues during the 2025 surveys, it was noted that the single fish-bearing culvert could restrict flows and create high velocities that prevent fish passage during periods of high discharge (i.e., freshet, during periods of rain). A second embedded culvert may be necessary to mitigate this issue.

TOTE ROAD CV-049

FISH HABITAT POTENTIAL

Species	Spawning	Overwintering	Rearing	Adults Present
ARCH	N	N	Y	P
NNST	P	N	Y	Y

FISHERIES DATA

Location	Species	Survey Date	Temperature (°C)	Distance Fished (m)	Effort (Seconds)	# Fish Captured	# Fish Observed	CPUE (No. Fish/60 Seconds)	Length Range (mm)
Downstream	ARCH	15-Jul-25	4.5	60	190	6	0	1.895	86.7-145.5
	NNST					0	0	0.000	-
Upstream	ARCH			80	190	11	0	3.474	98.5-180.0
	NNST					0	0	0.000	-
Downstream	ARCH	18-Jul-25	5.0	50	121	4	0	1.983	96-170
	NNST					0	0	0.000	-
Upstream	ARCH			65	167	12	0	4.311	109-242
	NNST					0	0	0.000	-

OTHER NOTES / OBSERVATIONS

Several char, including some larger juveniles, were captured upstream and downstream of the road in July and August 2025. Char use habitat in this stream for rearing in the open-water season. There is no overwintering or spawning habitat in this stream.

Stickleback have never been captured in this stream, though they are present in the adjacent drainage (i.e., stream crossed by the road at BG-50) and the downstream lake. High flows may restrict stickleback use to the lower reaches of this stream.

TOTE ROAD CV-049

HYDROLOGY CHARACTERISTICS: 15-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	38.00	27.00	0.17	0.14	0.12	0.32	0.80	0.65	0.49	1.56
60D	56.00	8.00	0.32	0.18	0.34	0.39	0.65	0.60	1.36	1.81
20D	65.00	7.00	0.19	0.28	0.36	0.49	1.15	1.23	2.06	2.06
0 (Centreline)	UNDER TOTE ROAD									
20U	64.00	35.00	0.14	0.18	0.10	0.36	1.08	1.27	0.59	2.26
60U	90.00	31.00	0.55	0.12	0.21	0.55	0.44	1.03	0.90	1.12
100U	140.00	36.00	0.20	0.08	0.08	0.30	0.92	0.56	0.46	1.49

OTHER NOTES / OBSERVATIONS

The stream is relatively wide, with wetted width ranging from 7.0-27.0 m downstream and increasing to 31.0-36.0 m upstream in July 2025. Measured maximum depths were typically <0.50 m. Measured velocities were high; maximum values often exceeded 1.00 m/s and occasionally 2.00 m/s.

TOTE ROAD CV-049

HABITAT CHARACTERISTICS: 15-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	40	10	10	40	-	-	-	-	20	50	30	-
60D	20	10	10	60	-	-	-	-	20	40	30	10
20D	85	5	5	5	-	-	-	-	10	75	10	5
0 (Centreline)	UNDER TOTE ROAD											
20U	20	20	10	50	-	-	-	5	35	40	20	-
60U	60	5	10	25	-	-	-	15	15	50	15	5
100U	30	15	5	45	5	-	-	10	30	30	20	-

OTHER NOTES / OBSERVATIONS

Stream morphology in July 2025 was largely riffle/run, with pools dispersed throughout. Substrates were predominantly cobble/gravel.

TOTE ROAD CV-049

15-JUL-25

A

B

C

D

E

F

Photos 1-1. Photos taken 20 m (top) and 60 m downstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-049

15-JUL-25

A

B

C

Photos 1-2. Photos taken 100 m downstream in July 2025: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-049

15-JUL-25

A

B

C

D

E

F

Photos 1-3. Photos taken 20 m (top) and 60 m upstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-049

15-JUL-25

A

B

C

Photos 1-4. Photos taken 100 m upstream in July 2025: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-049

15-JUL-25

A

B

Photos 1-5. Photos taken of the culverts in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-049

HYDROLOGY CHARACTERISTICS: 18-AUG-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Low to Moderate

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	38.00	9.00	0.14	0.09	0.05	0.18	0.46	0.56	0.04	0.59
60D	56.00	5.00	0.13	0.15	0.20	0.36	0.01	0.27	0.60	0.61
20D	65.00	4.40	0.07	0.16	0.15	0.24	0.29	0.27	0.61	1.00
0 (Centreline)	UNDER TOTE ROAD									
20U	64.00	14.00	0.08	0.10	0.03	0.14	0.11	0.35	0.09	1.27
60U	90.00	5.40	0.26	0.37	0.23	0.38	0.01	0.05	0.01	0.19
100U	SUBSURFACE FLOW									

OTHER NOTES / OBSERVATIONS

Wetted widths were notably lower in August relative to July 2025 and were typically <10.0 m. An area of subsurface flow was present approximately 100 m upstream during the August site survey. Measured maximum depths were typically <0.20 m. Measured velocities were low to moderate ranging from 0.01-1.27 m/s.

TOTE ROAD CV-049

HABITAT CHARACTERISTICS: 18-AUG-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Low to Moderate

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	30	30	-	40	-	-	-	-	20	50	25	5
60D	30	20	-	50	-	-	-	-	30	50	10	10
20D	20	20	-	60	-	-	-	-	45	40	10	5
0 (Centreline)	UNDER TOTE ROAD											
20U	20	30	-	50	-	-	-	10	30	40	15	5
60U	-	-	-	-	-	-	100	10	40	30	10	10
100U	SUBSURFACE FLOW											

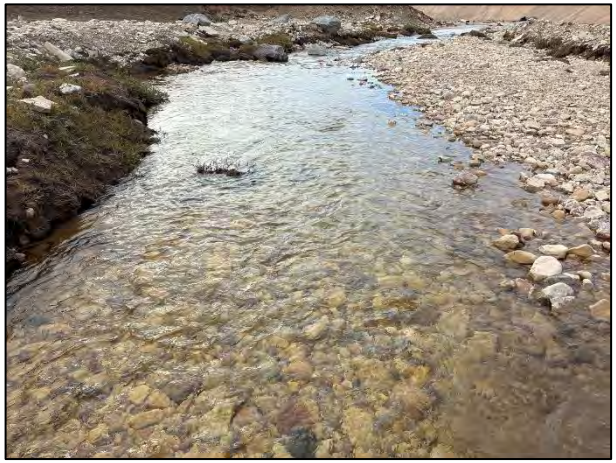
OTHER NOTES / OBSERVATIONS

Stream morphology in August 2025 was largely riffle/run, with shallow pools dispersed throughout. Substrates were predominantly cobble/gravel.

TOTE ROAD CV-049

18-AUG-25

A



B

C

D

E

F

Photos 2-1. Photos taken 20 m (top) and 60 m downstream (bottom) in August 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-049

18-AUG-25

A

B

C

Photos 2-2. Photos taken 100 m downstream in August 2025: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-049

18-AUG-25

A

B

C

D

E

F

Photos 2-3. Photos taken 20 m (top) and 60 m upstream (bottom) in August 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-049

18-AUG-25

A

B

C

Photos 2-4. Photos taken 100 m upstream in August 2025: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-049

18-AUG-25

A

B

Photos 2-5. Photos taken of the culverts in August 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD BG-30

LOCATION AND CROSSING DESCRIPTION

Site ID:	BG-30	Date Surveyed:	16-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 546070 E 7919844 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal Stream Order: 2

TOTE ROAD BG-30

SITE SUMMARY

The Tote Road crosses a small, unnamed stream at site BG-30 that flows 70 m north to the BG-29 stream system, sharing the same nearby potential overwintering lakes. This stream was part of the compensation plan for the original HADD authorization. A natural rockslide near the confluence with the BG-29 stream that had blocked fish access from overwintering areas and prevented fish use of available habitat upstream was removed in 2010. The channel was remediated into a natural step-pool approach to the culvert, successfully restoring fish passage to the entire watershed. This crossing is scheduled for additional future remediation.

In July 2025, measured wetted width downstream from the culvert ranged from 3.1-4.7 and upstream ranged from 14-20 m. Measured depths ranged from 0.06-0.26 m downstream and 0.08 to >1.5 m in the upstream pond. This deep pond persists throughout the open-water period. Measured velocities ranged from 0.03-1.05 m/s downstream with largely negligible velocity in the upstream pond. Stream morphology was mainly riffle/run/pool downstream and deep pool upstream. Substrates were predominantly cobble/gravel downstream and fines upstream.

A few juvenile Arctic Char were captured downstream of the crossing in July 2025. Only one char was captured upstream, but the large pool could not be effectively electrofished (depth >1.5 m) to quantify numbers of fish that may be present. Juvenile char use habitat in the vicinity of the Tote Road crossing at BG-30 throughout the open-water period for rearing. There is no overwintering or spawning habitat for char in this stream. There were no fish passage issues identified in July 2025.

Ninespine Stickleback were not captured in Jul 2025 but have been found downstream of the culvert closer to the confluence with the BG-29 stream, where gradient and velocities are lower, during previous site surveys. Stickleback can use habitat at the crossing area for rearing and potentially spawning, particularly in the upstream pool. There is no overwintering habitat for stickleback in this stream.

TOTE ROAD BG-30

FISH HABITAT POTENTIAL

Species	Spawning	Overwintering	Rearing	Adults Present
ARCH	N	N	Y	N
NNST	P	N	Y	Y

FISHERIES DATA

Location	Species	Survey Date	Temperature (°C)	Distance Fished (m)	Effort (Seconds)	# Fish Captured	# Fish Observed	CPUE (No. Fish/60 Seconds)	Length Range (mm)
Downstream	ARCH	16-Jul-25	Not Recorded	70	229	6	0	1.572	53-146
	NNST					0	0	0.000	-
Upstream	ARCH			150	231	1	0	0.260	100
	NNST					0	0	0.000	-

OTHER NOTES / OBSERVATIONS

A few juvenile Arctic Char were captured downstream of the crossing in July 2025. Only one char was captured upstream, but the large pool could not be effectively electrofished (depth >1.5 m) to quantify numbers of fish that may be present. Ninespine Stickleback were not captured in July 2025 but have been found downstream of the culvert closer to the confluence with the BG-29 stream, where gradient and velocities are lower, during previous site surveys.

TOTE ROAD BG-30

HYDROLOGY CHARACTERISTICS: 16-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	11.00	4.60	0.10	0.18	0.12	0.26	0.04	0.03	0.19	0.75
60D	9.00	3.10	0.10	0.08	0.10	0.14	0.30	0.08	0.30	1.05
20D	9.00	4.70	0.08	0.06	0.08	0.13	0.46	0.21	0.29	0.91
0 (Centreline)	UNDER TOTE ROAD									
20U	25.00	15.00	>1.5	>1.5	>1.5	>1.5	0.00	0.00	0.00	0.00
60U	25.00	20.00	>1.5	>1.5	>1.5	>1.5	0.00	0.00	0.00	0.00
100U	16.00	14.00	0.18	0.18	0.08	>1.5	0.00	0.00	0.00	0.27

OTHER NOTES / OBSERVATIONS

In July 2025, measured wetted width downstream from the culvert ranged from 3.1-4.7 and upstream ranged from 14-20 m. Measured depths ranged from 0.06-0.26 m downstream and 0.08 to >1.5 m in the upstream pond. This deep pond persists throughout the open-water period. Measured velocities ranged from 0.03-1.05 m/s downstream with largely negligible velocity in the upstream pond.

TOTE ROAD BG-30

HABITAT CHARACTERISTICS: 16-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	10	30	20	40	-	-	-	5	35	45	10	5
60D	30	30	-	40	-	-	-	5	15	50	30	-
20D	30	30	-	40	-	-	-	5	30	60	5	-
0 (Centreline)	UNDER TOTE ROAD											
20U	-	5	95	-	-	-	-	100	-	-	-	-
60U	-	5	95	-	-	-	-	100	-	-	-	-
100U	10	30	60	-	-	-	-	80	-	10	5	5

OTHER NOTES / OBSERVATIONS

Stream morphology was mainly riffle/run/pool downstream and deep pool upstream. Substrates were predominantly cobble/gravel downstream and fines upstream.

TOTE ROAD BG-30

16-JUL-25

A

B

C

D

E

F

Photos 1-1. Photos taken 20 m (top) and 60 m downstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right on top, right bank looking at left bank on bottom).

TOTE ROAD BG-30

16-JUL-25

A

B

C

Photos 1-2. Photos taken 100 m downstream in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD BG-30

16-JUL-25

A

B

C

D

E

F

Photos 1-3. Photos taken 20 m (top) and 60 m upstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right on top, right bank looking at left bank on bottom).

TOTE ROAD BG-30

16-JUL-25

A

B

C

Photos 1-4. Photos taken 100 m upstream in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD BG-30

16-JUL-25

A

B

Photos 1-5. Photos taken of the culvert in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD BG-27

LOCATION AND CROSSING DESCRIPTION

Site ID:	BG-27	Date Surveyed:	11-Jul-25; 16-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 547876 E 7919355 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal Stream Order: 2

TOTE ROAD BG-27

SITE SUMMARY

The Tote Road crosses a small, unnamed stream at site BG-27 that flows northeast into David Lake 50 m downstream of the culvert. Although a bathymetric survey has not been conducted, David Lake is believed to be of sufficient depth to support overwintering of both species. This crossing is scheduled for future remediation.

Detailed habitat data were collected in the crossing area in July 2025. The stream at BG-27 is generally narrow, shallow, and relatively fast moving with an increasing gradient at, and upstream of, the culvert. Measured wetted widths in July 2025 ranged from 1.8-3.3 m. Measured depths were relatively shallow (typically <0.20 m), with velocities moderate to high (typically >0.50 m/s). Stream morphology was relatively uniform, comprised mostly of riffle-run areas with shallow pooling near the banks. Substrate was mostly cobble/gravel, interspersed with smaller amounts of fines, particularly farther downstream. There are increased proportions of fines deposited upstream and downstream than in previous years that, like BG-24, are likely attributable to the major rain event in fall 2024.

Three juvenile Arctic Char were captured downstream of the crossing and none upstream in July 2025. Flows were relatively high for this stream and water was turbid throughout, which may have contributed to lower catches than are typical for this stream. Juvenile Arctic Char use habitat in the vicinity of the Tote Road crossing at BG-27 throughout the open-water season for rearing. Two of the three culverts are badly damaged and all three are perched; these conditions may have impeded upstream fish passage.

Ninespine Stickleback have never been captured or observed in this stream but are present in other tributaries of David Lake (e.g., the stream crossed by the road at BG-17). The relatively high natural flows likely restrict stickleback use to rearing in the lowermost reach at the outflow to David Lake. There is no overwintering or spawning habitat for either species in this stream.

TOTE ROAD BG-27

FISH HABITAT POTENTIAL

Species	Spawning	Overwintering	Rearing	Adults Present
ARCH	N	N	Y	N
NNST	N	N	P	P

FISHERIES DATA

Location	Species	Survey Date	Temperature (°C)	Distance Fished (m)	Effort (Seconds)	# Fish Captured	# Fish Observed	CPUE (No. Fish/60 Seconds)	Length Range (mm)
Downstream	ARCH	16-Jul-25	5.0	50	156	3	0	1.154	55-156
	NNST					0	0	0.000	-
Upstream	ARCH			50	103	0	0	0.000	-
	NNST					0	0	0.000	-

OTHER NOTES / OBSERVATIONS

Three juvenile char were captured downstream and none upstream in July 2025. Flows were relatively high for this stream and water was turbid throughout, which may have contributed to lower catches than are typical for this stream. Ninespine Stickleback have never been captured or observed in this stream but are present in other tributaries of David Lake (e.g., BG-17).

TOTE ROAD BG-27

HYDROLOGY CHARACTERISTICS: 11-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
50D	DAVID LAKE									
40D	5.00	1.90	-	0.10	-	0.16	-	0.20	-	0.96
20D	7.00	2.10	0.10	0.11	0.06	0.20	0.58	0.58	0.07	1.41
0 (Centreline)	UNDER TOTE ROAD									
20U	11.00	1.80	0.10	0.08	0.12	0.16	0.91	0.56	0.64	1.34
60U	15.00	3.20	0.14	0.06	0.06	0.14	0.83	0.38	0.47	1.41
100U	16.00	3.30	-	0.15	-	0.22	-	0.66	-	1.21

OTHER NOTES / OBSERVATIONS

Measured wetted widths in July 2025 ranged from 1.8-3.3 m. Measured depths were relatively shallow (typically <0.20 m), with velocities moderate to high (typically >0.50 m/s).

TOTE ROAD BG-27

HABITAT CHARACTERISTICS: 11-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
50D	DAVID LAKE											
40D	20	-	-	80	-	-	-	95	5	-	-	-
20D	40	10	-	50	-	-	-	30	30	30	10	-
0 (Centreline)	UNDER TOTE ROAD											
20U	60	20	-	20	-	-	-	10	40	50	-	-
60U	50	10	-	40	-	-	-	30	50	20	-	-
100U	20	10	-	70	-	-	-	10	50	30	10	-

OTHER NOTES / OBSERVATIONS

Stream morphology was relatively uniform, comprised mostly of riffle-run areas with shallow pooling near the banks. Substrate was mostly cobble/gravel, interspersed with smaller amounts of fines, particularly farther downstream. There are increased proportions of fines deposited upstream and downstream than in previous years that, like BG-24, are likely attributable to the major rain event in fall 2024.

TOTE ROAD BG-27

11-JUL-25

A

B

C

D

E

F

Photos 1-1. Photos taken 20 m (top) and 40 m downstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD BG-27

11-JUL-25

A

B

C

D

E

F

Photos 1-2. Photos taken 20 m (top) and 60 m upstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD BG-27

11-JUL-25

A

B

C

Photos 1-3. Photos taken 100 m upstream in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD BG-27

11-JUL-25

A

B

Photos 1-4. Photos taken of the culverts in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD BG-24

LOCATION AND CROSSING DESCRIPTION

Site ID:	BG-24	Dates Surveyed:	11-Jul-25; 20-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 548766 E 7918878 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal Stream Order: 3

TOTE ROAD BG-24

SITE SUMMARY

The Tote Road crosses a small, unnamed stream at site BG-24 that flows 110 m north into David Lake. Although a bathymetric survey has not been conducted, David Lake is expected to be of sufficient depth to support overwintering of both species. This crossing is scheduled for future remediation.

Detailed habitat data were collected in the crossing area in July 2025. As is often the case during or shortly after freshet, a second channel had formed upstream to the south (left) of the main fish-bearing channel. This channel created ponding along the upstream side of the road in the vicinity of the overflow culverts. The data presented here were collected from the right channel, which persists throughout the open-water period. Wetted widths in the right channel over the surveyed area ranged from 2.0-8.0 m. The right channel had measured depths ranging from 0.04-0.51 m and velocities from 0.14-1.61 m/s. Stream morphology in the right channel was largely run/riffle with some shallow pools throughout. Substrates were mainly gravel/cobble downstream and in the natural stream channel farther upstream of the crossing. Large quantities of sand have been deposited within 30 m upstream of the fish-bearing culvert in the righthand channel since the previous survey was conducted in July 2024. The origin of this sand is unknown but is presumed to have been associated with the major rain event in fall 2024. The stream was also very turbid during the July 2025 site survey.

Large numbers of juvenile char were captured downstream of the crossing in July 2025. Fewer numbers were captured upstream than downstream, which is typical for this stream likely due to a natural increase in gradient upstream of the crossing. However, freshet-induced changes to upstream habitat may also be a factor; upstream catch rates were lower in July 2025 than in any previous survey conducted at a similar time under similar temperature and flow conditions. Juvenile char use habitat in the stream for rearing and there is potential for adult use in the deeper pools near David Lake. There is no char spawning or overwintering habitat in the stream.

Ninespine Stickleback have never been captured in this stream but are known to occur in other tributaries to David Lake (e.g., stream crossed by the road at BG-17). Habitat in this stream is likely unsuitable for the species.

TOTE ROAD BG-24

FISH HABITAT POTENTIAL

Species	Spawning	Overwintering	Rearing	Adults Present
ARCH	N	N	Y	P
NNST	P	N	P	P

FISHERIES DATA

Location	Species	Survey Date	Temperature (°C)	Distance Fished (m)	Effort (Seconds)	# Fish Captured	# Fish Observed	CPUE (No. Fish/60 Seconds)	Length Range (mm)
Downstream	ARCH	20-Jul-25	Not Recorded	50	282	30	0	6.383	56-186
	NNST					0	0	0.00	-
Upstream	ARCH			70	218	2	0	0.550	89-105
	NNST					0	0	0.00	-

OTHER NOTES / OBSERVATIONS

Large numbers of juvenile char over a broad size range were captured downstream of BG-24. Only two juveniles were captured upstream. Stickleback have never been captured in this stream but are known to be present in other parts of the watershed, including the downstream lake.

TOTE ROAD BG-24

HYDROLOGY CHARACTERISTICS: 11-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: High

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	8.00	4.30	0.22	0.30	0.23	0.43	0.46	0.61	0.63	0.71
60D	8.00	3.40	0.33	0.32	0.12	0.51	1.15	0.58	1.38	1.38
20D	16.00	4.00	0.32	0.26	0.14	0.36	0.96	0.85	0.91	1.61
0 (Centreline)	UNDER TOTE ROAD									
20U	100.00	2.00	-	0.14	-	0.14	-	0.49	-	0.65
60U	102.00	8.00	0.08	0.07	0.04	0.18	0.18	0.34	0.14	1.27
100U	63.00	2.00	-	0.12	-	0.22	-	0.49	-	0.84

OTHER NOTES / OBSERVATIONS

Wetted widths over the surveyed area ranged from 2.0-8.0 m. High spring freshet flows typically lead to ponding on the upstream side of the road embankment creating a large, wetted area south of the fish-bearing culvert in the right channel. This was observed during the July 2025 visit. The stream had measured depths ranging from 0.04-0.51 m and velocities from 0.14-1.61 m/s.

TOTE ROAD BG-24

HABITAT CHARACTERISTICS: 11-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: High

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	20	-	-	80	-	-	-	80	20	-	-	-
60D	40	-	30	30	-	-	-	50	30	20	-	-
20D	10	10	50	30	-	-	-	60	20	15	5	-
0 (Centreline)	UNDER TOTE ROAD											
20U	10	10	-	80	-	-	-	85	5	5	5	-
60U	20	15	-	65	-	-	-	45	30	20	5	-
100U	20	5	-	75	-	-	-	60	30	10	-	-

OTHER NOTES / OBSERVATIONS

Stream morphology was largely run/riffle with some shallow pools throughout with a large amount of ponding present in the left channel along the road. Substrates were mainly gravel/cobble downstream and fines/gravel in the upstream pond with more cobble in the natural stream channel farther upstream. Large quantities of sand have been deposited within 30 m upstream of the fish-bearing culvert in the righthand channel since the previous survey was conducted in July 2024. The origin of this sand is unknown but may be associated with the major rain event in fall 2024.

TOTE ROAD BG-24

11-JUL-25

A

B

C

D

E

F

Photos 1-1. Photos taken 20 m (top) and 60 m downstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD BG-24

11-JUL-25

A

B

C

Photos 1-2. Photos taken 100 m downstream in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD BG-24

11-JUL-25

A

B

C

D

E

F

Photos 1-3. Photos taken 20 m (top) and 60 m upstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD BG-24

11-JUL-25

A

B

C

Photos 1-4. Photos taken 100 m upstream in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD BG-24

11-JUL-25

A

B

C

D

Photos 1-5. Photos taken of the fish-bearing culvert (top) and overflow culverts (bottom) in July 2025: (A,C) downstream end; and (B,D) upstream end.

TOTE ROAD BG-17

LOCATION AND CROSSING DESCRIPTION

Site ID:	BG-17	Dates Surveyed:	11-Jul-25; 20-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 550703 E 7917643 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal Stream Order: 3+

TOTE ROAD BG-17

SITE SUMMARY

The Tote Road crosses a small, unnamed stream at site BG-17 that flows from a small, unnamed lake 920 m to the southeast towards David Lake, 940 m northwest of the crossing. A bathymetry survey conducted in the unnamed lake demonstrated it is of sufficient depth to support overwintering of both species. Although a bathymetric survey has not been undertaken at David Lake, it is a large lake that is also expected to support overwintering. Fish accessing the crossing area could originate from either lake. This crossing is scheduled for future remediation.

Detailed habitat data were collected in the crossing area in July 2025. Wetted widths over the surveyed area ranged between 3.0 and 11.0 m. Measured depths ranged from 0.04 to 0.52 m. Measured velocities ranged from 0.00-1.87 but were typically <0.50 m/s. Stream morphology was largely run with some pools in the vicinity of the culvert downstream. Substrate was composed mainly of fines with some areas of gravel/cobble.

Both fish species have been captured in this stream over the Tote Road monitoring program. However, only char were captured in July 2025. Both species use habitat in the vicinity of the Tote Road crossing at BG-17 for rearing/feeding. Stickleback may also use habitat near the crossing for spawning. There is no spawning habitat for char and no overwintering habitat in this stream for either species. No fish passage issues were identified in July 2025.

TOTE ROAD BG-17

FISH HABITAT POTENTIAL

Species	Spawning	Overwintering	Rearing	Adults Present
ARCH	N	N	Y	P
NNST	P	N	Y	Y

FISHERIES DATA

Location	Species	Survey Date	Temperature (°C)	Distance Fished (m)	Effort (Seconds)	# Fish Captured	# Fish Observed	CPUE (No. Fish/60 Seconds)	Length Range (mm)
Downstream	ARCH	20-Jul-25	10.0	50	237	6	0	1.519	54-73
	NNST					0	0	0.000	-
Upstream	ARCH			50	207	8	0	2.319	62-130
	NNST					0	0	0.000	-

OTHER NOTES / OBSERVATIONS

Small numbers of juvenile Arctic Char were captured upstream and downstream of the crossing in July 2025. More fish, including stickleback, were likely present; the deep turbid water, notably upstream, may have reduced the effectiveness of electrofishing.

TOTE ROAD BG-17

HYDROLOGY CHARACTERISTICS: 11-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	20.00	3.00	0.33	0.31	0.35	0.35	0.26	0.44	0.00	0.44
60D	21.00	6.00	0.42	0.10	0.12	0.48	0.40	0.13	0.01	0.40
20D	13.00	11.00	0.14	0.22	0.09	0.52	0.49	0.09	0.14	1.87
0 (Centreline)	UNDER TOTE ROAD									
20U	12.00	8.00	0.46	0.40	0.44	0.46	0.08	0.11	0.11	0.11
60U	12.00	7.00	0.40	0.34	0.04	0.49	0.39	0.22	0.10	0.41
100U	32.00	3.80	0.14	0.20	0.18	0.20	0.31	0.37	0.63	0.63

OTHER NOTES / OBSERVATIONS

Wetted widths over the surveyed area ranged between 3.0 and 11.0 m. Measured depths ranged from 0.04 to 0.52 m. Measured velocities were low to moderate, typically <0.50 m/s.

TOTE ROAD BG-17

HABITAT CHARACTERISTICS: 11-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	-	-	-	100	-	-	-	75	20	-	5	-
60D	5	-	5	90	-	-	-	70	30	-	-	-
20D	10	20	60	10	-	-	-	-	85	15	-	-
0 (Centreline)	UNDER TOTE ROAD											
20U	-	-	-	100	-	-	-	95	-	-	-	5
60U	10	-	10	80	-	-	-	90	-	-	10	-
100U	-	-	-	100	-	-	-	10	90	-	-	-

OTHER NOTES / OBSERVATIONS

Stream morphology was largely run with some pools in the vicinity of the culvert downstream. Substrate was composed mainly of fines with some areas of gravel/cobble.

TOTE ROAD BG-17

11-JUL-25

A

B

C

D

E

F

Photos 1-1. Photos taken 20 m (top) and 60 m downstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD BG-17

11-JUL-25

A

B

C

Photos 1-2. Photos taken 100 m downstream in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD BG-17

11-JUL-25

A

B

C

D

E

F

Photos 1-3. Photos taken 20 m (top) and 60 m upstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD BG-17

11-JUL-25

A

B

C

Photos 1-4. Photos taken 100 m upstream in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD BG-17

11-JUL-25

A

B

Photos 1-5. Photos taken of the culverts in July 2025: (A) downstream end; and (B) upstream end.

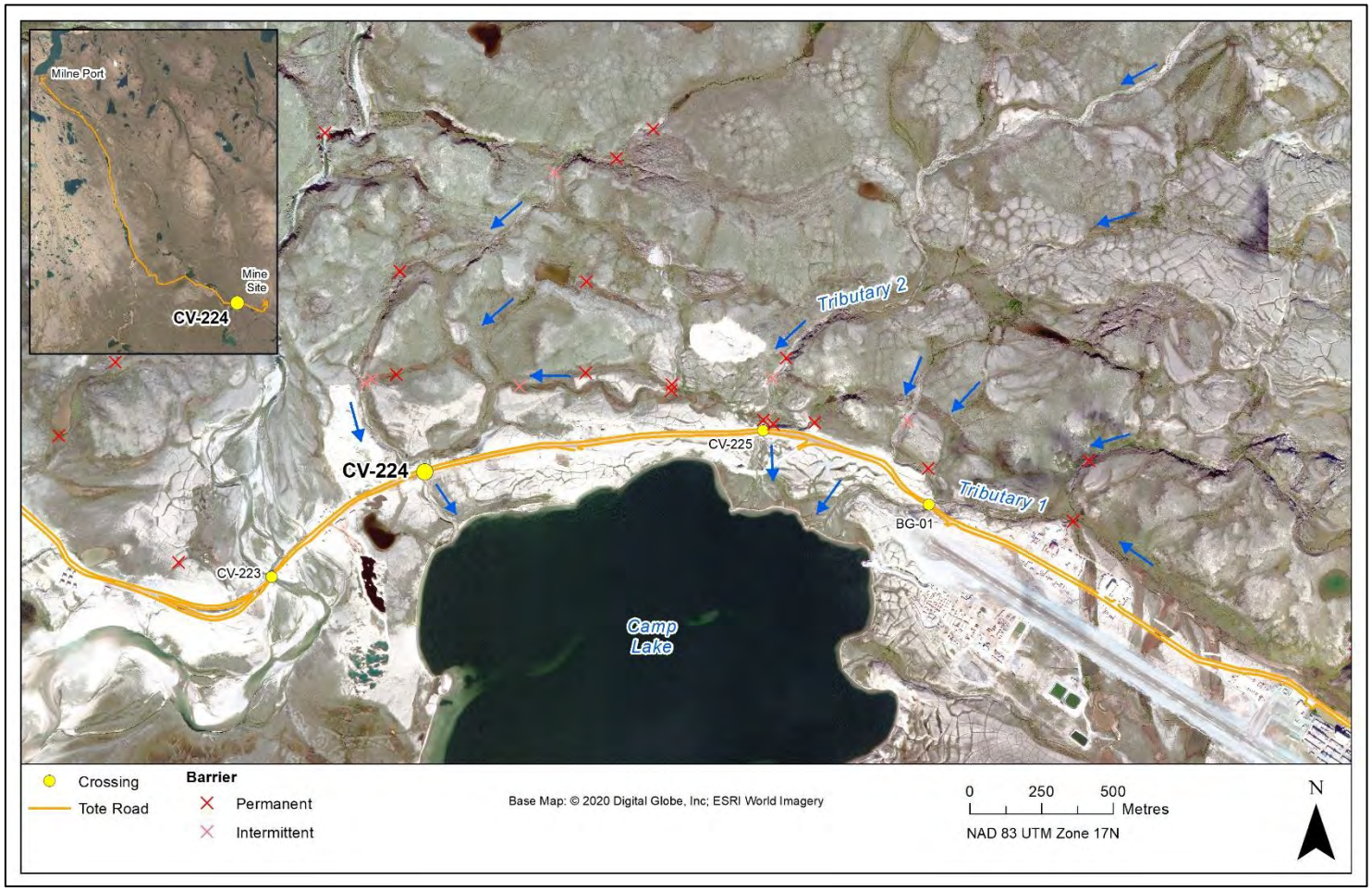
TOTE ROAD CV-224

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-224	Dates Surveyed:	09-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 556238 E 7915044 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal Stream Order: 2



TOTE ROAD CV-224

SITE SUMMARY

The Tote Road crosses a small, unnamed stream at site CV-224 that flows 250 m southeast into Camp Lake. Camp Lake has been extensively surveyed and is known to support char overwintering and spawning. This crossing has been identified for remediation.

Detailed habitat data were collected in the crossing area in July 2025. This is a narrow stream with measured wetted widths that ranged from 0.9-2.6 in July 2025. Measured depths ranged from 0.02-0.16 m and velocities ranged from 0.00 to 0.54 m/s. Stream morphology was primarily run/riffle with some pools. The substrate was uniform, consisting predominantly of fines, gravel and small cobble throughout.

There were large increases in the proportions of fine sediments in both downstream and upstream habitat since the spring 2024 survey. In addition, there appears to be significant erosion and bank slumping at several locations and a new barrier (combination of very shallow water over a vertical drop of approximately 0.3 m) has formed approximately 40 m upstream of the crossing. The barrier may be temporary and passable under higher flows than observed during July 2025. . The flow path of the stream appears to have shifted, potentially permanently, to a previously dry area and the subsequent erosion created the new barrier. The old channel was dry during the July visit. It is likely the major rain event in the fall of 2024 caused or contributed to these changes. The full impacts of these changes are unknown.

Large numbers of juvenile Arctic Char were captured downstream (9.23 fish/minute) but only a single char (0.45 fish/minute) was captured upstream in July 2025. Both culverts have small to moderate perches that appear to be preventing many juveniles from accessing upstream habitat during periods of low flow. Char use habitat near the crossing for rearing. There is no char overwintering or spawning habitat within this stream.

Six Ninespine Stickleback were captured downstream and none upstream of the crossing in July 2025. Stickleback use habitat near the crossing for rearing/feeding and potentially spawning. There is no overwintering habitat for stickleback.

TOTE ROAD CV-224

FISH HABITAT POTENTIAL

Species	Spawning	Overwintering	Rearing	Adults Present
ARCH	N	N	Y	N
NNST	P	N	Y	Y

FISHERIES DATA

Location	Species	Survey Date	Temperature (°C)	Distance Fished (m)	Effort (Seconds)	# Fish Captured	# Fish Observed	CPUE (No. Fish/60 Seconds)	Length Range (mm)
Downstream	ARCH	09-Jul-25	13.0	50	156	24	0	9.231	32-127
	NNST					6	0	2.308	34-54
Upstream	ARCH			50	134	1	0	0.448	91
	NNST					0	0	0.000	-

OTHER NOTES / OBSERVATIONS

Large numbers of juvenile Arctic Char were captured downstream (9.23 fish/minute) but only a single char (0.45 fish/minute) was captured upstream in July 2025. Both culverts have small to moderate perches that appear to have been preventing many juveniles from accessing upstream habitat during periods of low flow. Six Ninespine Stickleback were captured downstream and none upstream of the crossing in July 2025.

TOTE ROAD CV-224

HYDROLOGY CHARACTERISTICS: 09-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Low to Moderate

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	10.00	1.70	0.03	0.02	0.03	0.09	0.10	0.00	0.05	0.40
60D	17.00	2.60	0.05	0.02	0.02	0.06	0.13	0.07	0.00	0.49
20D	11.00	1.50	-	0.03	-	0.10	-	0.28	-	0.54
0 (Centreline)	UNDER TOTE ROAD									
20U	19.00	2.30	0.04	0.04	0.04	0.13	0.00	0.07	0.12	0.16
60U	19.00	0.90	-	0.05	-	0.16	-	0.19	-	0.38
100U	21.00	1.80	-	0.06	-	0.10	-	0.03	-	0.38

OTHER NOTES / OBSERVATIONS

This is a narrow stream with measured wetted widths that ranged from 0.9-2.6 in July 2025. Measured depths ranged from 0.02-0.16 m and velocities ranged from 0.00 to 0.54 m/s.

TOTE ROAD CV-224

HABITAT CHARACTERISTICS: 09-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Low to Moderate

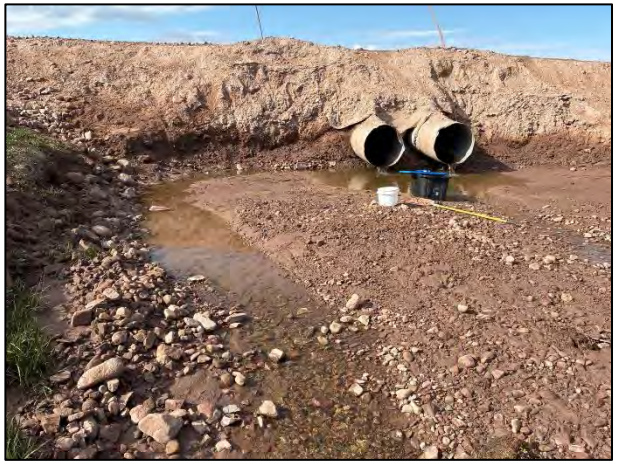
Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	20	20	-	60	-	-	-	60	20	20	-	-
60D	20	10	-	70	-	-	-	50	30	20	-	-
20D	30	10	-	60	-	-	-	30	60	10	-	-
0 (Centreline)	UNDER TOTE ROAD											
20U	10	30	-	60	-	-	-	70	25	5	-	-
60U	10	10	-	80	-	-	-	50	45	5	-	-
100U	10	10	-	80	-	-	-	75	15	5	5	-

OTHER NOTES / OBSERVATIONS

Stream morphology was primarily run/riffle with some pools. The substrate was uniform, consisting predominantly of fines, gravel and small cobble throughout.

TOTE ROAD CV-224

09-JUL-25



A

B

C

D

E

F

Photos 1-1. Photos taken 20 m (top) and 60 m downstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-225

09-JUL-25

A

B

C

Photos 1-2. Photos taken 100 m downstream in July 2025: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-224

09-JUL-25

A

B

C

D

E

F

Photos 1-3. Photos taken 20 m (top) and 60 m upstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-225

09-JUL-25

A

B

C

Photos 1-4. Photos taken 100 m upstream in July 2025: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-225

09-JUL-25

A

B

C

Photos 1-5. Photos taken 40 m upstream in July 2025 of a potential newly formed barrier: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-224

09-JUL-25

A

B

Photos 1-6. Photos taken of the culverts in July 2025: (A) downstream end; and (B) upstream end.

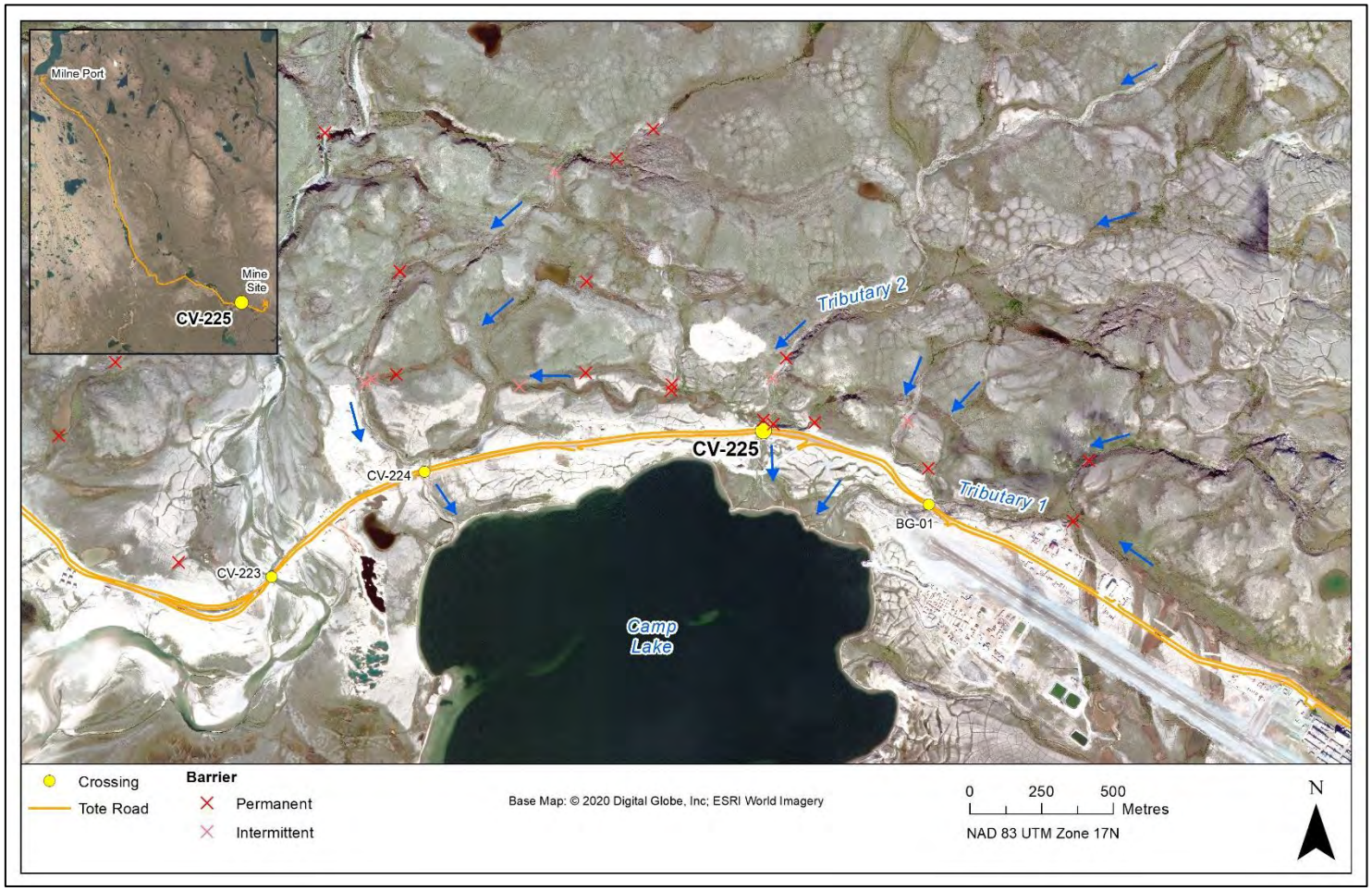
TOTE ROAD CV-225

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-225	Dates Surveyed:	09-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 554421 E 7915187 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal Stream Order: 3



TOTE ROAD CV-225

SITE SUMMARY

The Tote Road crosses an unnamed stream at site CV-225 that flows south into Camp Lake 250 m downstream of the crossing. Camp Lake has been extensively surveyed and is known to support both overwintering and char spawning. This crossing has been identified for remediation.

Detailed habitat data were collected in the crossing area in July 2025. Wetted widths ranged from 1.8 to 9.1 m. Measured water depths ranged from 0.06-0.29 m. Measured velocities were moderate to high, ranging from 0.01-1.39 m/s and typically 0.20-0.60 m/s. Stream morphology was primarily run and riffle. The substrate was mainly cobble throughout with increasing proportions of gravel downstream.

Downstream catch rates (7.69 fish/minute) of juvenile Arctic Char were more than seven times as high as upstream (1.09 fish/minute) in July 2025. Additionally, no fish smaller than 112 mm were captured upstream of the crossing. Both fish passage culverts are perched, particularly during periods of low flow, with frequently high velocity outflows during periods of high flow, which likely restricts upstream access to only larger juveniles throughout the open-water season. These data are consistent with findings in previous years. Char use habitat in the stream for rearing and there is potential for adult use in the deeper pools near Camp Lake. There is no char spawning or overwintering habitat in the stream.

Ninespine Stickleback are abundant within Camp Lake and have been captured in the lowermost reaches of this stream near its confluence with the lake, but the species has not been captured near the road. Relatively high velocities in areas near the culverts likely prevent this species from using this habitat.

TOTE ROAD CV-225

FISH HABITAT POTENTIAL

Species	Spawning	Overwintering	Rearing	Adults Present
ARCH	N	N	Y	P
NNST	P	N	P	P

FISHERIES DATA

Location	Species	Survey Date	Temperature (°C)	Distance Fished (m)	Effort (Seconds)	# Fish Captured	# Fish Observed	CPUE (No. Fish/60 Seconds)	Length Range (mm)
Downstream	ARCH	09-Jul-25	13.0	50	156	20	0	7.692	50-125
	NNST					0	0	0.00	-
Upstream	ARCH			60	220	4	0	1.091	112-148
	NNST					0	0	0.00	-

OTHER NOTES / OBSERVATIONS

Downstream catch rates (7.69 fish/minute) of juvenile Arctic Char were more than seven times as high as upstream (1.09 fish/minute) in July 2025. Additionally, no fish smaller than 112 mm were captured upstream of the crossing. Both fish passage culverts are perched with frequently high velocity outflows, which likely restricts upstream access to only larger juveniles. These data are consistent with findings in previous years. Ninespine Stickleback are abundant within Camp Lake and have been captured in the lowermost reaches of this stream near its confluence with the lake, but the species has not been captured near the road. Relatively high velocities in areas near the culverts likely prevent this species from using this habitat.

TOTE ROAD CV-225

HYDROLOGY CHARACTERISTICS: 09-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	28.00	9.10	0.07	0.06	0.10	0.16	0.33	0.29	0.91	1.04
60D	20.00	3.80	0.14	0.13	0.08	0.22	0.25	0.01	0.03	0.71
20D	40.00	1.80	0.14	0.11	0.11	0.19	0.20	0.61	0.37	1.38
0 (Centreline)	UNDER TOTE ROAD									
20U	17.00	4.10	0.13	0.15	0.13	0.25	0.26	0.84	0.19	0.94
60U	16.00	2.40	0.20	0.25	0.24	0.29	0.25	0.22	0.04	1.23
100U	29.00	6.50	0.14	0.20	0.15	0.27	0.58	0.33	0.54	1.39

OTHER NOTES / OBSERVATIONS

Wetted widths ranged from 1.8 to 9.1 m in July 2025. Measured water depths ranged from 0.06-0.29 m. Measured velocities were moderate to high, ranging from 0.01-1.39 m/s and typically 0.20-0.60 m/s.

TOTE ROAD CV-225

HABITAT CHARACTERISTICS: 09-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	40	20	-	40	-	-	-	5	45	45	5	-
60D	30	20	-	50	-	-	-	5	20	65	10	-
20D	70	10	-	20	-	-	-	-	10	70	20	-
0 (Centreline)	UNDER TOTE ROAD											
20U	40	30	-	30	-	-	-	-	10	70	15	5
60U	30	10	-	60	-	-	-	-	20	40	40	-
100U	60	10	10	10	10	-	-	5	5	30	40	20

OTHER NOTES / OBSERVATIONS

Stream morphology was primarily run and riffle in July 2025. The substrate was mainly cobble throughout with increasing proportions of gravel downstream.

TOTE ROAD CV-225

09-JUL-25

A

B

C

D

E

F

Photos 1-1. Photos taken 20 m (top) and 60 m downstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-225

09-JUL-25

A

B

C

Photos 1-2. Photos taken 100 m downstream in July 2025: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-225

09-JUL-25

A

B

C

D

E

F

Photos 1-3. Photos taken 20 m (top) and 60 m upstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-225

09-JUL-25

A

B

C

Photos 1-4. Photos taken 100 m downstream in July 2025: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-225

09-JUL-25

A

B

Photos 1-5. Photos taken of the culvert in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD BG-01

LOCATION AND CROSSING DESCRIPTION

Site ID:	BG-01	Dates Surveyed:	9-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 558000 E 7914928 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal Stream Order: 3+

TOTE ROAD BG-01

SITE SUMMARY

The Tote Road crosses an unnamed stream at site BG-01 that flows 500 m southwest into Camp Lake. Camp Lake has been extensively surveyed and is known to support char overwintering and spawning. This stream crossing has been identified for remediation.

Detailed habitat data were collected in the crossing area in July 2025. Wetted widths ranged between 2.7 and 10.7 m. Measured depths ranged from 0.01– 0.70 m. Measured velocities were variable and ranged from 0.00 to 2.26 m/s. Stream morphology was typically riffle and run, with shallow pools more common downstream of the crossing. The substrate was primarily composed of cobble/boulder with more fines present in the pool upstream of the culvert.

Similar numbers and size ranges of juvenile char were captured upstream and downstream of the crossing in July 2025. Char use habitat in the stream for rearing and there is potential for adult use in the deeper areas near Camp Lake. There is no char spawning or overwintering habitat in the stream.

Ninespine Stickleback are abundant within Camp Lake and in the lowermost reaches of this stream near its confluence with the lake. The species has only rarely been captured near the road; none were captured in July 2025. Relatively high velocities throughout the open-water period likely limit use of the crossing area by this species.

TOTE ROAD BG-01

FISH HABITAT POTENTIAL

Species	Spawning	Overwintering	Rearing	Adults Present
ARCH	N	N	Y	P
NNST	P	N	Y	Y

FISHERIES DATA

Location	Species	Survey Date	Temperature (°C)	Distance Fished (m)	Effort (Seconds)	# Fish Captured	# Fish Observed	CPUE (No. Fish/60 Seconds)	Length Range (mm)
Downstream	ARCH	9-Jul-25	13.0	50	321	21	0	3.925	71-112
	NNST					0	0	0.000	-
Upstream	ARCH			50	276	28	0	6.087	106-242
	NNST					0	0	0.000	-

OTHER NOTES / OBSERVATIONS

Slightly higher numbers of juvenile char were captured upstream than downstream of the crossing in July 2025. Char captured upstream were also larger than those captured downstream. Char use habitat in the stream for rearing and there is potential for adult use in the deeper areas near Camp Lake. There is no char spawning or overwintering habitat in the stream. Relatively high velocities during the open-water season likely limit use of the crossing area by stickleback; none were captured in July 2025.

TOTE ROAD BG-01

HYDROLOGY CHARACTERISTICS: 9-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	30.0	2.7	0.11	0.12	0.21	0.22	0.63	0.11	0.04	0.75
60D	30.0	10.7	0.09	0.06	0.18	0.22	0.41	0.85	0.07	0.85
20D	11.0	4.3	0.01	0.18	0.12	0.70	0.09	0.16	0.05	2.26
0 (Centreline)	UNDER TOTE ROAD									
20U	15.0	4.7	0.20	0.20	0.02	0.34	0.12	0.15	0.00	0.21
60U	35.0	10.0	0.24	0.10	0.08	0.25	0.06	0.02	0.19	0.81
100U	13.0	4.5	0.09	0.17	0.10	0.25	0.13	0.15	0.14	0.97

OTHER NOTES / OBSERVATIONS

Wetted widths ranged between 2.7 and 10.7 m. Measured depths ranged from 0.01–0.70 m. Measured velocities were variable and ranged from 0.00 to 2.26 m/s.

TOTE ROAD BG-01

HABITAT CHARACTERISTICS:9-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	30	30	-	40	-	-	-	5	15	50	20	10
60D	15	40	-	45	-	-	-	5	25	55	10	5
20D	5	20	70	5	-	-	-	5	20	70	5	-
0 (Centreline)	UNDER TOTE ROAD											
20U	5	5	20	70	-	-	-	30	20	40	5	5
60U	20	10	10	60	-	-	-	5	30	50	10	5
100U	40	20	-	40	-	-	-	5	15	40	30	10

OTHER NOTES / OBSERVATIONS

Stream morphology was typically riffle and run with more pool habitat downstream of the crossing. The substrate was primarily composed of cobble/boulder with more fines upstream of the culvert.

TOTE ROAD BG-01

9-JUL-25

A

B

C

D

E

F

Photos 1-1. Photos taken 20 m downstream (top) and 60 m downstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD BG-01

9-JUL-25

A

B

C

Photos 1-2. Photos taken 100 m downstream in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD BG-01

9-JUL-25

A

B

C

D

E

F

Photos 1-3. Photos taken 20 m upstream (top) and 60 m upstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD BG-01

9-JUL-25

A

B

C

Photos 1-4. Photos taken 100 m upstream in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD BG-01

9-JUL-25

A

B

Photos 1-5. Photos of the culverts in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-186

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-186	Dates Surveyed:	12-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 560705 E 7913498 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal Stream Order: 3

BAFFINLAND IRON MINES MARY RIVER PROJECT	North/South Consultants Inc. Aquatic Environment Specialists	FISH HABITAT:	ARCTIC CHAR - YES NINESPINE STICKLEBACK - YES

TOTE ROAD CV-186

SITE SUMMARY

The Tote Road crosses a small, unnamed stream at site CV-186 (sometimes referred to as Sheardown Lake – Tributary 1) that flows 420 m west into Sheardown Lake. Sheardown Lake has been extensively surveyed and is known to support both overwintering and char spawning.

Detailed habitat data were collected at the crossing in July 2025. Wetted widths ranged from 4.0-9.0 m with width increasing farther upstream of the culvert. Measured depths were generally shallow, typically 0.10-0.20 m. Measured velocities ranged from 0.08-1.32 m/s and were typically 0.20-0.60 m/s. Stream morphology was mostly riffle and run with small areas of shallow pools. The substrate was primarily composed of cobble, with greater quantities of gravel downstream.

Large numbers of juvenile char across a wide range of sizes were captured downstream of the culvert in July 2025. However, only three char were captured upstream. The badly damaged and perched culverts are likely restricting movements of fish upstream, particularly for the smallest size classes. Char use habitat in the vicinity of the Tote Road crossing at CV-186 for rearing/feeding throughout the open-water period. There is no char spawning or overwintering habitat in this stream.

Ninespine Stickleback were not captured in July 2025. Although they have been captured in the lowermost reaches of this stream near its mouth at Sheardown Lake, they have never been captured in the vicinity of the Tote Road. There is potential for stickleback spawning, though this activity is likely restricted to the lower reaches of the stream and Sheardown Lake. There is no overwintering habitat for this species.

TOTE ROAD CV-186

FISH HABITAT POTENTIAL

Species	Spawning	Overwintering	Rearing	Adults Present
ARCH	N	N	Y	N
NNST	P	N	Y	Y

FISHERIES DATA

Location	Species	Survey Date	Temperature (°C)	Distance Fished (m)	Effort (Seconds)	# Fish Captured	# Fish Observed	CPUE (No. Fish/60 Seconds)	Length Range (mm)
Downstream	ARCH	12-Jul-25	6.0	85	251	30	0	7.171	55-192
	NNST					0	0	0.00	-
Upstream	ARCH			55	254	3	0	0.709	88-116
	NNST					0	0	0.00	-

OTHER NOTES / OBSERVATIONS

Large numbers of juvenile char across a wide range of sizes were captured downstream of the culvert in July 2025. However, only three char were captured upstream. The badly damaged and perched culverts are likely restricting movements of fish upstream, particularly for the smallest size classes. Ninespine Stickleback were not captured in July 2025. Although they have been captured in the lowermost reaches of this stream near its mouth at Sheardown Lake, they have never been captured in the vicinity of the Tote Road. Both species use the stream habitat for rearing/feeding. There is potential for stickleback spawning, though this activity is likely restricted to the lower reaches of the stream and Sheardown Lake. There is no char spawning and no overwintering habitat for either species.

TOTE ROAD CV-186

HYDROLOGY CHARACTERISTICS: 12-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	17.00	4.00	0.17	0.14	0.10	0.19	0.55	0.59	0.26	1.32
60D	13.00	7.00	0.12	0.06	0.07	0.15	0.52	0.61	0.39	1.04
20D	12.00	6.00	0.14	0.18	0.16	0.19	0.59	0.78	1.24	1.24
0 (Centreline)	UNDER TOTE ROAD									
20U	10.00	5.00	0.15	0.07	0.13	0.16	0.40	0.24	0.37	1.28
60U	8.30	7.10	0.16	0.14	0.10	0.20	0.16	0.25	0.13	0.61
100U	10.00	9.00	0.10	0.12	0.08	0.29	0.08	0.26	0.35	0.56

OTHER NOTES / OBSERVATIONS

Wetted widths ranged from 4.0-9.0 m in July 2025 with width increasing farther upstream of the culvert. Measured depths were generally shallow, typically 0.10-0.20 m. Measured velocities ranged from 0.08-1.32 m/s and were typically 0.20-0.60 m/s.

TOTE ROAD CV-186

HABITAT CHARACTERISTICS: 12-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	25	5	-	70	-	-	-	20	50	10	20	-
60D	60	10	-	30	-	-	-	-	20	50	30	-
20D	60	10	-	30	-	-	-	-	20	50	30	-
0 (Centreline)	UNDER TOTE ROAD											
20U	30	20	-	50	-	-	-	-	20	50	30	-
60U	30	20	-	50	-	-	-	5	5	50	40	-
100U	20	20	-	60	-	-	-	5	5	35	50	5

OTHER NOTES / OBSERVATIONS

Stream morphology was mostly riffle and run with small areas of shallow pools. The substrate was primarily composed of cobble, with greater quantities of gravel downstream.

TOTE ROAD CV-186

12-JUL-25

A

B

C

D

E

F

Photos 1-1. Photos taken 20 m (top) and 60 m downstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-186

12-JUL-25

A

B

C

Photos 1-2. Photos taken 100 m downstream in July 2025: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-186

12-JUL-25

A

B

C

D

E

F

Photos 1-3. Photos taken 20 m (top) and 60 m upstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-186

12-JUL-25

A

B

C

Photos 1-4. Photos taken 100 m upstream in July 2025: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-186

12-JUL-25

A

B

Photos 1-5. Photos taken of the culverts in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-187

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-187	Dates Surveyed:	12-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 560957 E 7913414 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal Stream Order: 2

TOTE ROAD CV-187

SITE SUMMARY

The Tote Road crosses a small, unnamed stream at site CV-187 that flows 275 m west towards the channel crossed at CV-186 (also referred to as Sheardown Lake – Tributary 1) and then another 420 m west into Sheardown Lake. Sheardown Lake has been extensively surveyed and is known to support overwintering of both species and char spawning.

Wetted widths ranged between 4.8 and 24.0 m in July 2025, with the wider areas occurring downstream from the crossing at a small pond within the drainage. Measured water depths were generally deeper downstream (mean of 0.30 m) than upstream (mean of 0.16 m). Measured velocities were low, typically <0.05 and often negligible, especially in the downstream pond. Stream morphology was almost exclusively pool downstream and pool/run upstream. The substrate was primarily composed of fines downstream with increasing gravel and cobble proportions upstream of the crossing.

No fish were observed or captured downstream and four juvenile char were captured upstream of CV-187 in July 2025. Char use this stream, particularly the pond downstream of the CV-187 crossing, for rearing/feeding throughout the open-water period. There is no char spawning or overwintering habitat in this stream. There were no issues with fish passage identified in July 2025.

Ninespine Stickleback have never been captured in the vicinity of this crossing but have been captured downstream near the confluence with Sheardown Lake. Habitat near CV-187 is ideally suited for stickleback use but reaches of higher velocity flows downstream of CV-186 may prevent access for the species. Habitat near CV-187 could be used for feeding and potentially spawning of stickleback. There is no overwintering habitat for the species.

TOTE ROAD CV-187

FISH HABITAT POTENTIAL

Species	Spawning	Overwintering	Rearing	Adults Present
ARCH	N	N	Y	N
NNST	P	N	Y	Y

FISHERIES DATA

Location	Species	Survey Date	Temperature (°C)	Distance Fished (m)	Effort (Seconds)	# Fish Captured	# Fish Observed	CPUE (No. Fish/60 Seconds)	Length Range (mm)
Downstream	ARCH	12-Jul-25	18.5	50	110	0	0	0.00	-
	NNST					0	0	0.00	-
Upstream	ARCH			50	153	4	0	1.569	98-130
	NNST					0	0	0.00	-

OTHER NOTES / OBSERVATIONS

No fish were observed or captured downstream and four juvenile char were captured upstream of CV-187 in July 2025. Ninespine Stickleback have never been captured in the vicinity of this crossing but have been captured downstream near the confluence with Sheardown Lake. Habitat near CV-187 is ideally suited for stickleback use but reaches of higher velocity flows downstream of CV-186 may prevent access for the species. Char use habitat near the crossing for feeding/rearing. If stickleback were present, habitat uses could include feeding/rearing and potentially spawning. There is no char spawning or overwintering for either species at the crossing.

TOTE ROAD CV-187

HYDROLOGY CHARACTERISTICS: 12-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	37.00	24.00	0.28	0.08	0.08	0.50	0.00	0.03	0.02	0.03
60D	26.00	21.00	0.38	0.24	0.08	0.38	0.00	0.00	0.00	0.00
20D	22.00	15.00	0.41	0.49	0.22	0.49	0.00	0.01	0.00	0.01
0 (Centreline)	UNDER TOTE ROAD									
20U	11.00	5.10	0.19	0.22	0.18	0.30	0.00	0.00	0.09	0.09
60U	35.00	4.80	0.07	0.08	0.10	0.13	0.07	0.14	0.18	0.47
100U	54.00	16.00	0.14	0.11	0.14	0.26	0.06	0.00	0.00	0.11

OTHER NOTES / OBSERVATIONS

Wetted widths ranged between 4.8 and 24.0 m in July 2025, with the wider areas occurring downstream from the crossing at a small pond within the drainage. Measured water depths were generally deeper downstream (mean of 0.30 m) than upstream (mean of 0.16 m). Measured velocities were low, typically <0.05 and often negligible, especially in the downstream pond.

TOTE ROAD CV-187

HABITAT CHARACTERISTICS: 12-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	-	50	40	10	-	-	-	60	5	15	15	5
60D	-	30	65	5	-	-	-	80	5	10	5	-
20D	-	10	80	10	-	-	-	80	-	-	15	5
0 (Centreline)	UNDER TOTE ROAD											
20U	-	50	20	30	-	-	-	75	-	15	10	-
60U	-	30	-	70	-	-	-	10	20	60	10	-
100U	5	50	-	45	-	-	-	-	-	20	50	30

OTHER NOTES / OBSERVATIONS

Stream morphology was almost exclusively pool downstream and pool/run upstream. The substrate was primarily composed of fines downstream with increasing gravel and cobble proportions upstream of the crossing.

TOTE ROAD CV-187

12-JUL-25

A

B

C

D

E

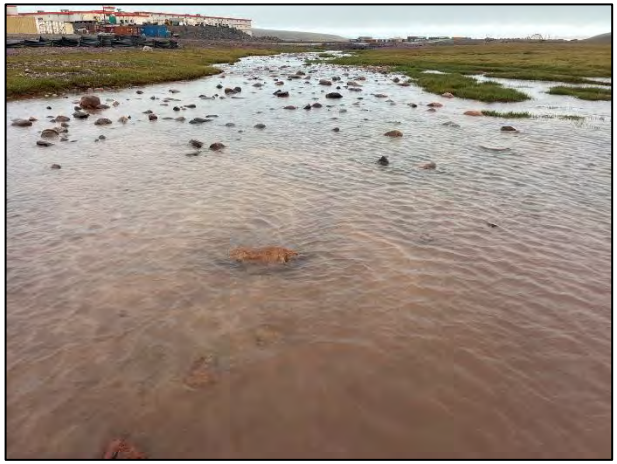
F

Photos 1-1. Photos taken 20 m (top) and 60 m downstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-187

12-JUL-25

A



B

C

Photos 1-2. Photos taken 100 m downstream in July 2025: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-187

12-JUL-25

A

B

C

D

E

F

Photos 1-3. Photos taken 20 m (top) and 60 m upstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-187

12-JUL-25

A

B

C

Photos 1-4. Photos taken 100 m upstream in July 2025: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-187

12-JUL-25

A

B

Photos 1-5. Photos taken of the culverts in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-154A

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-154a	Dates Surveyed:	10-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 507625 E 7970076 N		

Summary: This site is downstream from the Phillips Creek waterfall, and any fish use is likely limited to juvenile anadromous char. The stream provides intermittent habitat for rearing of small char during periods of high water. Stickleback were not captured in 2025 and may not be present in the watershed. There is no char spawning habitat and no overwintering for either species at the crossing. There is a slight perch at the downstream end of the culvert.

PHOTOS

A

B

Photos taken of the culverts in July 2025: (A) downstream end; and (B) upstream end.

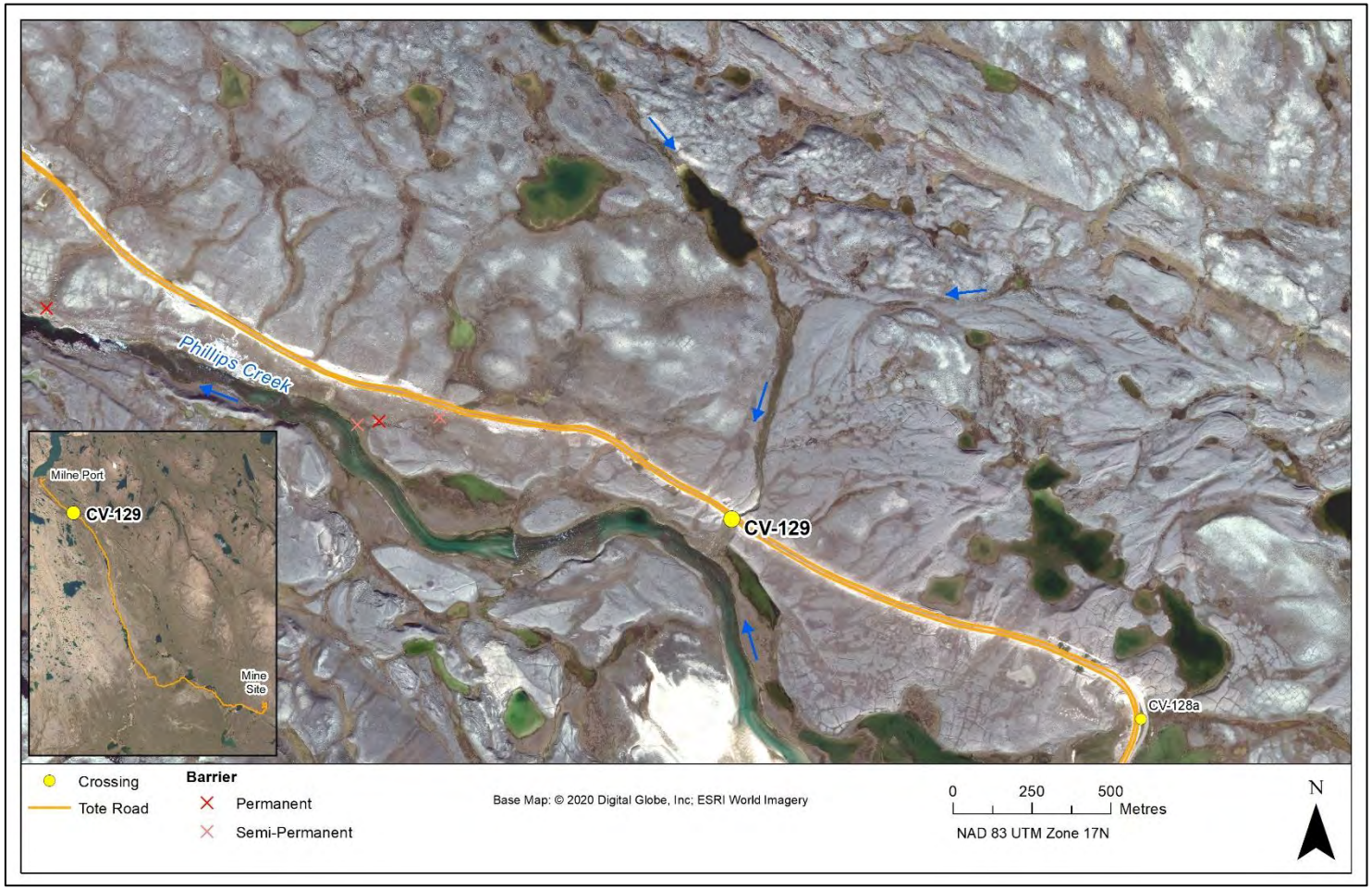
TOTE ROAD CV-129

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-129	Dates Surveyed:	10-Jul-25; 19-Aug-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 512381 E 7966783 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal Stream Order: 3



TOTE ROAD CV-129

SITE SUMMARY

The Tote Road crosses an unnamed stream at site CV-129 that flows 130 m south into Phillips Creek. There is also an unnamed lake approximately 900 m upstream that is of sufficient depth to support overwintering.

The stream was relatively wide, with wetted width ranging from 15.0-27.0 m downstream, but narrower upstream (3.2-5.9 m), in July 2025. Measured maximum depths were typically <0.20 m. Measured velocities were low to moderate, ranging from 0.00-0.93 m/s. Wetted area was similar in August 2025 with wetted widths typically >15.0 m upstream and <10 m downstream. Measured maximum depths were typically <0.20 m and measured velocities were low to moderate, ranging from 0.01-0.82 m/s in August 2025. Stream morphology in July and August 2025 was largely riffle/pool/run. Substrates were predominantly cobble/gravel with some fines in a pool upstream of the culvert.

The culvert is damaged and slightly perched but is not currently impeding fish passage. Several char were captured upstream and downstream of the road in July and August 2025. Char use habitat in this stream for rearing in the open-water season. There is no overwintering or spawning habitat in this stream. Stickleback were captured downstream in July 2025, and they periodically use the area for open-water season rearing/feeding. Habitat is likely unsuitable for stickleback spawning but could potentially be supported in this stream. There is no overwintering habitat for stickleback.

TOTE ROAD CV-129

FISH HABITAT POTENTIAL

Species	Spawning	Overwintering	Rearing	Adults Present
ARCH	N	N	Y	N
NNST	P	N	Y	Y

FISHERIES DATA

Location	Species	Survey Date	Temperature (°C)	Distance Fished (m)	Effort (Seconds)	# Fish Captured	# Fish Observed	CPUE (No. Fish/60 Seconds)	Length Range (mm)
Downstream	ARCH	10-Jul-25	10.0	90	345	2	0	0.348	85-118
	NNST					4	0	0.696	35-43
Upstream	ARCH			50	141	4	0	1.832	69-185
	NNST					0	0	0.000	-
Downstream	ARCH	19-Jul-25	6.0	90	264	5	0	1.136	81-152
	NNST					0	0	0.000	-
Upstream	ARCH			90	223	5	0	1.345	114-175
	NNST					0	0	0.000	-

OTHER NOTES / OBSERVATIONS

Several char were captured upstream and downstream of the road in July and August 2025. Char use habitat in this stream for rearing in the open-water season. There is no overwintering or spawning habitat in this stream.

Stickleback were captured downstream in July 2025 and they periodically use the area for open-water season rearing/feeding. Habitat is likely unsuitable for stickleback spawning, but could potentially be supported in this stream. There is no overwintering habitat for stickleback.

TOTE ROAD CV-129

HYDROLOGY CHARACTERISTICS: 10-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	200.00	15.00	0.06	0.09	0.08	0.46	0.10	0.20	0.15	0.66
60D	50.00	27.00	0.06	0.04	0.05	0.20	0.26	0.16	0.00	0.60
20D	42.00	15.00	0.04	0.05	0.10	0.12	0.13	0.32	0.36	0.52
0 (Centreline)	UNDER TOTE ROAD									
20U	31.00	5.90	0.12	0.26	0.20	0.29	0.00	0.07	0.08	0.23
60U	34.00	3.20	0.04	0.12	0.10	0.18	0.28	0.50	0.14	0.66
100U	42.00	4.80	0.06	0.18	0.09	0.24	0.05	0.23	0.25	0.93

OTHER NOTES / OBSERVATIONS

The stream was relatively wide, with wetted width ranging from 15.0-27.0 m downstream, but narrower upstream (3.2-5.9 m), in July 2025. Measured maximum depths were typically <0.20 m. Measured velocities were low to moderate, ranging from 0.00-0.93 m/s.

TOTE ROAD CV-129

HABITAT CHARACTERISTICS: 10-JUL-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Moderate

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	10	20	20	50	-	-	-	5	25	40	15	15
60D	15	30	10	45	-	-	-	5	25	50	15	5
20D	30	30	-	40	-	-	-	10	40	40	10	-
0 (Centreline)	UNDER TOTE ROAD											
20U	-	20	10	20	-	-	50	40	25	25	5	5
60U	30	10	-	60	-	-	-	20	50	20	10	-
100U	50	10	-	40	-	-	-	5	40	40	10	5

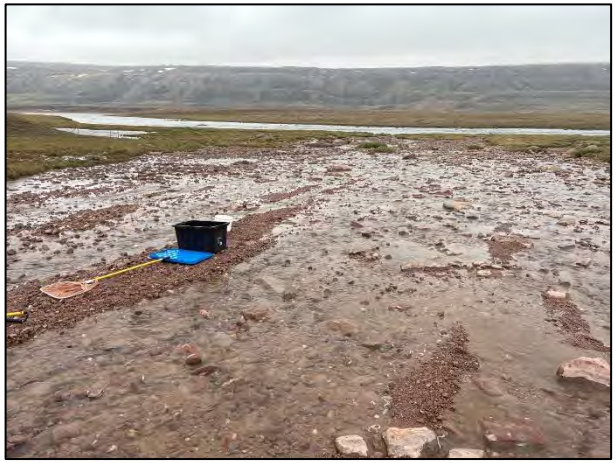
OTHER NOTES / OBSERVATIONS

Stream morphology in July 2025 was largely riffle/pool/run. Substrates were predominantly cobble/gravel with some fines in a pool upstream of the culvert.

TOTE ROAD CV-129

10-JUL-25

A



B

C

D

E

F

Photos 1-1. Photos taken 20 m (top) and 60 m downstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-129

10-JUL-25

A

B

C

Photos 1-2. Photos taken 100 m downstream in July 2025: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-129

10-JUL-25

A

B

C

D

E

F

Photos 1-3. Photos taken 20 m (top) and 60 m upstream (bottom) in July 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-129

10-JUL-25

A

B

C

Photos 1-4. Photos taken 100 m upstream in July 2025: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-129

10-JUL-25

A

B

Photos 1-5. Photos taken of the culverts in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-129

HYDROLOGY CHARACTERISTICS: 19-AUG-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Low to Moderate

Site	Channel Width (m)		Water Depth (m)				Water Velocity (m/s)			
	Bankfull	Wetted	25%	50%	75%	Max	25%	50%	75%	Max
100D	200.00	17.00	0.06	0.11	0.10	0.47	0.12	0.12	0.26	0.77
60D	50.00	24.00	0.05	0.10	0.11	0.21	0.04	0.42	0.40	0.59
20D	42.00	15.00	0.05	0.06	0.10	0.12	0.37	0.31	0.45	0.82
0 (Centreline)	UNDER TOTE ROAD									
20U	31.00	8.00	0.12	0.22	0.28	0.34	0.02	0.09	0.11	0.11
60U	34.00	4.00	0.08	0.13	0.10	0.16	0.20	0.39	0.38	0.44
100U	42.00	7.90	0.01	0.19	0.22	0.24	0.00	0.10	0.23	0.34

OTHER NOTES / OBSERVATIONS

Wetted area was similar in August to July 2025 with wetted widths typically >15.0 m upstream and <10 m downstream. Measured maximum depths were typically <0.20 m. Measured velocities were low to moderate ranging from 0.01-0.82 m/s.

TOTE ROAD CV-129

HABITAT CHARACTERISTICS: 19-AUG-25

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools: Wetted

Stage: Low to Moderate

Site	Stream Morphology Composition (%)							Substrate Composition (%)				
	Riffle	Pool (<0.2 m)	Pool (>0.2 m)	Run	Cascade	Rapids	Flat	Fines	Gravel	Small Cobble	Large Cobble	Boulders
100D	30	30	10	30	-	-	-	10	20	40	15	15
60D	30	20	5	45	-	-	-	10	10	40	30	10
20D	10	30	-	60	-	-	-	10	50	30	10	-
0 (Centreline)	UNDER TOTE ROAD											
20U	-	-	-	20	-	-	80	60	20	20	-	-
60U	30	20	-	50	-	-	-	10	20	50	20	-
100U	5	5	-	40	-	-	50	5	40	30	20	5

OTHER NOTES / OBSERVATIONS

Stream morphology in August 2025 was largely riffle/run/pool. Substrates were predominantly cobble/gravel with an area of fines in an upstream pool.

TOTE ROAD CV-129

19-AUG-25

A

B

C

D

E

F

Photos 2-1. Photos taken 20 m (top) and 60 m downstream (bottom) in August 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-129

19-AUG-25

A **B** **C**

Photos 2-2. Photos taken 100 m downstream in August 2025: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-129

19-AUG-25

A

B

C

D

E

F

Photos 2-3. Photos taken 20 m (top) and 60 m upstream (bottom) in August 2025: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-129

19-AUG-25

A

B

C

Photos 2-4. Photos taken 100 m upstream in August 2025: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-129

19-AUG-25

A

B

Photos 2-5. Photos taken of the culvert in August 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-128A

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-128a	Dates Surveyed:	17-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 513666 E 7966138 N		

Summary: Site provides shallow low-flow, marshy habitat for rearing of both species. Stickleback spawning is likely present as well. There is no char spawning habitat and no overwintering for either species. There were no passage issues in 2025.

PHOTOS

A

B

Photos taken of the culverts in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-128

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-128	Dates Surveyed:	17-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 513556 E 7965889 N		

Summary: A bridge crossing of a major river that has consistently provided open-water rearing/feeding habitat for both species. There maybe be some stickleback spawning in slower areas of the river. There is no char spawning habitat and no overwintering for either species. There were no passage issues in 2025.

PHOTOS

A

B

Photos taken of the bridge in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-115

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-115	Dates Surveyed:	17-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 519222 E 7958135 N		

Summary: This stream is frequently dry and does not provide fish habitat during the open-water period in most years. Water levels were relatively high in July 2025, and one char and one stickleback were captured downstream of the culvert. There were no fish passage issues in July 2025.

PHOTOS

A

B

Photos taken of the culvert in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-104

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-104	Dates Surveyed:	17-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 521732 E 7952788 N		

Summary: Although water levels are occasionally low (e.g., during 2019 and 2022 surveys), this stream typically provides open-water rearing habitat for juvenile Arctic Char. There is no char spawning or overwintering in this stream. Ninespine Stickleback have never been captured at this crossing, and it is unknown if they are present in the watershed. There were no fish passage issues in July 2025.

PHOTOS

A

B

Photos taken of the culvert in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-099

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-099	Dates Surveyed:	17-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 521886 E 7945397 N		

Summary: A large stream with abundant open-water rearing habitat for char. Water velocities in the culverts can be high enough to restrict upstream access to larger juveniles during periods of very high flows. There is no char spawning or overwintering in this stream. Ninespine Stickleback have never been captured at this crossing, and it is unknown if they are present in the watershed. There were no fish passage issues in July 2025.

PHOTOS

A

B

Photos taken of the culvert in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-085

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-085	Dates Surveyed:	17-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 523827 E 7940900 N		

Summary: Site provides open-water rearing habitat for juvenile Arctic Char. There is no char spawning or overwintering in this stream. Ninespine Stickleback have never been captured at this crossing, and it is unknown if they are present in the watershed. There were no fish passage issues in July 2025, however the stream is known to develop areas of subsurface flow during periods of low water, resulting in natural stranding of fish.

PHOTOS

A

B

Photos taken of the culvert in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-076

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-076	Dates Surveyed:	18-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 526586 E 7935498 N		

Summary: Site provides open-water rearing habitat for juvenile Arctic Char. There is no char spawning or overwintering in this stream. Ninespine Stickleback have never been captured at this crossing, and it is unknown if they are present in the watershed. There were no fish passage issues in July 2025.

PHOTOS

A

B

Photos taken of the culvert in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-061

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-061	Dates Surveyed:	18-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 527268 E 7931366 N		

Summary: Site provides open-water rearing habitat for juvenile Arctic Char. Upstream consists of overland flooding/marshy habitat that ponds along the road embankment. Char were captured upstream in July 2025; however, the culvert becomes slightly perched as water levels decrease following freshet and may prevent upstream passage. There is no char spawning or overwintering in this stream. Ninespine Stickleback have never been captured at this crossing and it is unknown if they are present in the watershed.

PHOTOS

A

B

Photos taken of the culvert in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-061B

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-061b	Dates Surveyed:	18-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 527523 E 7930683 N		

Summary: The site provides open-water rearing habitat for juvenile Arctic Char. Upstream habitat consists of overland flooding/marshy habitat that ponds along the road embankment. Char were captured upstream in July 2025; however, culverts become perched as water levels decrease following freshet and may prevent upstream passage during lower water periods. There is no char spawning or overwintering in this stream. Ninespine Stickleback have never been captured at this crossing, and it is unknown if they are present in the watershed.

PHOTOS

A

B

Photos taken of the culvert in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-060

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-060	Dates Surveyed:	18-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 527622 E 7930342 N		

Summary: The crossing area provides abundant open-water rearing habitat for juvenile Arctic Char. Ninespine Stickleback have never been captured at this crossing and it is unknown if they are present in the watershed. No fish passage issues were identified in 2025. There is no char spawning or overwintering in this stream.

PHOTOS

A

B

Photos taken of the culvert in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-058

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-058	Dates Surveyed:	18-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 528322 E 7928839 N		

Summary: The stream provides abundant open-water rearing habitat for juvenile Arctic Char. Ninespine Stickleback have never been captured at this crossing and it is unknown if they are present in the watershed. No fish passage issues were identified in 2025. There is no char spawning or overwintering in this stream.

PHOTOS

A

B

Photos taken of the culvert in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-040

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-040	Dates Surveyed:	18-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 557421 E 7915187 N		

Summary: This stream provides occasional rearing habitat for Arctic Char. Only three total fish have ever been captured at this crossing (one each in 2022, 2024, and 2025) since monitoring began in 2008 and all of them were captured downstream of the culverts. However, a lack of fish upstream is not due to any fish passage issues, but simply due to the overall minimal usage of habitat in this stream. Large distances (>10 km) from potential overwintering habitat (Muriel Lake) and the presence of an intermittent barrier (i.e., a subsurface flow spanning several hundred meters in length that occurs during periods of low overall flows) downstream of the crossing are the main factors limiting regular fish use of the crossing area. Ninespine Stickleback have never been captured and are unlikely to use habitat at this crossing. No culvert passage issues in 2025. There is no char spawning or overwintering in this stream.

PHOTOS

A

B

Photos taken of the culvert in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-211

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-211	Dates Surveyed:	18-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 557421 E 7915187 N		

Summary: The crossing area may provide periodic suitable open-water season rearing habitat for Arctic Char under sufficient flow conditions that allow access from the large downstream river. However, neither species has been captured at this site since monitoring began in 2021. There were no fish passage issues identified at the crossing in 2025.

PHOTOS

A

B

Photos taken of the culvert in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-212

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-212	Dates Surveyed:	19-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 537471 E 7920274 N		

Summary: The stream provides open-water season rearing habitat for Arctic Char. There is no spawning or overwintering habitat for char. Stickleback have not yet been captured in this stream since monitoring began in 2021. There were no fish passage issues identified in 2025.

PHOTOS

A

B

Photos taken of the culvert in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD BG-33

LOCATION AND CROSSING DESCRIPTION

Site ID:	BG-33	Dates Surveyed:	19-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 539714 E 7921101 N		

Summary: This small stream provides habitat for small numbers of Arctic Char and potentially Ninespine Stickleback during the open-water period. The culvert is perched and the access ramp that had previously provided upstream fish access was damaged and no longer functional. Upstream fish access is currently limited to larger juveniles and/or periods of higher water where the perch is reduced or eliminated. There is potential stickleback spawning in the crossing area. The stream does not support char spawning or overwintering for either species in this stream.

PHOTOS

A

B

Photos taken of the culvert in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-030

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-030	Dates Surveyed:	19-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 540123 E 7921310 N		

Summary: The stream provides open-water season rearing habitat for both fish species. However, Arctic Char use of this stream is minimal due to consistently low water levels and lack of a defined channel. Ninespine Stickleback are typically more common than char in this stream. No culvert passage issues were identified in 2025, though sedimentation is a recurring problem. The stream provides potential stickleback spawning habitat, but does not support char spawning or overwintering for either species.

PHOTOS

A

B

Photos taken of the culvert in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD BG-32

LOCATION AND CROSSING DESCRIPTION

Site ID:	BG-32	Dates Surveyed:	19-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 540729 E 7921597 N		

Summary: This stream consistently provides abundant, good quality open-water season rearing habitat for both species. There is potential stickleback spawning throughout this stream, but no char spawning or overwintering for either species. There were no fish passage issues in 2025.

PHOTOS

A

B

Photos taken of the culvert in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-214

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-214	Dates Surveyed:	19-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 541311 E 7921929 N		

Summary: The site provides open-water season rearing habitat for both species. Stickleback spawning may also occur near the crossing. There is no spawning habitat for char and no overwintering habitat for either species. There were no fish passage issues identified in 2025.

PHOTOS

A

B

Photos taken of the culvert in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-215

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-215	Dates Surveyed:	19-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 541954 E 7922177 N		

Summary: The site provides open-water season rearing habitat for both species. Stickleback spawning may also occur near the crossing. There is no spawning habitat for char and no overwintering habitat for either species. During periods of low water, the culverts can become slightly perched downstream, as observed in July 2025.

PHOTOS

A

B

Photos taken of the culverts in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-217

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-217	Dates Surveyed:	19-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 524321 E 7922189 N		

Summary: This is a bridge crossing of the large outlet river for Muriel Lake. Both fish species use habitat near the bridge for open-water season rearing/feeding. Adult char may also be present. Stickleback spawning may occur near the crossing. There is no spawning habitat for char and no overwintering habitat for either species at the bridge, though such habitat is likely present in the nearby deeper areas of the lake. No fish passage issues observed in July 2025.

PHOTOS

A

B

Photos taken of the bridge in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD BG-29

LOCATION AND CROSSING DESCRIPTION

Site ID:	BG-29	Dates Surveyed:	16-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 546229 E 7919877 N		

Summary: The stream provides abundant open-water season rearing habitat for both species. There is potential stickleback spawning, but no char spawning or overwintering for either species. There were no fish passage issues identified in 2025.

PHOTOS

A

B

Photos taken of the culvert in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-021

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-021	Dates Surveyed:	16-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 546474 E 7919874 N		

Summary: The site provides open-water season rearing habitat for both species. A lake 20 m downstream may provide overwintering habitat for both species. The culvert has a slight perch (0.05 m) but there is a step-pool that provides upstream access for at least larger juvenile char. Some adjustments could be made to the structure to enhance access for smaller fish. There is potential stickleback spawning, but no char spawning or overwintering for either species in this stream.

PHOTOS

A

B

Photos taken of the culvert in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD BG-03

LOCATION AND CROSSING DESCRIPTION

Site ID:	BG-03	Dates Surveyed:	20-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 554717 E 7915023 N		

Summary: The Tote Road crosses this small stream that drains south for at least 600 m before reaching a small pond. There is at least periodic connectivity to the Tom River near its confluence with the north end of Mary Lake. Both fish species were captured downstream of the culvert in July 2025. The step-pool approach to the culvert may not be accessible for fish, particularly during periods of low water.

PHOTOS

A

B

Photos taken of the culvert in July 2025: (A) downstream end; and (B) upstream end.

TOTE ROAD CV-223

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-223	Dates Surveyed:	19-Jul-25	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 555705 E 7914676 N		

Summary: This is a bridge/culvert crossing of a large river. Arctic char use habitat near the bridge for open-water season rearing/feeding. Adult char may also be present. Stickleback have not been captured near the crossing but are present in Mary Lake downstream. There is no spawning habitat for char and no overwintering habitat for either species. No fish passage issues were observed in July 2025.

PHOTOS

A

B

Photos taken of the bridge in July 2025: (A) downstream end; and (B) upstream end.

APPENDIX C

Crossing Maintenance and Erosion and Sediment Controls Implemented in 2025

During 2025, monitoring was conducted during open-water along the Tote Road to monitor the quality of surface water flows at select fish-bearing watercourse crossings (culverts, bridges), in accordance with Appendix D Tote Road Monitoring Program (TRMP) of the Roads Management Plan (BAF-PH1-830-P16-0023). Upstream and downstream water quality was monitored for pH, Total Suspended Solids (TSS), Total Dissolved Solids (TDS) and turbidity. In 2025, there were no monitoring events which reported Project-related impacts to surface water, as a result of the operation and maintenance of the Tote Road. The Tote Road Water Quality monitoring results for 2025 are presented in Table 2.

Beginning in May, Erosion and Sediment Control (ESC) assessments focused on responding to the annual on-set of freshet. Baffinland developed an Erosion and Sediment Control Awareness training and completed its delivery to applicable staff, prior to freshet 2025. A total of 127 personnel received the training. Where required, Operational maintenance and ESC Best Management Practices, were implemented to protect fish habitat from potential erosion and sedimentation and included:

- Installation of silt fencing, coir logs, spring berms and geotextile
- Construction of rock check dams, filter berms, water diversion ditches and rock armouring of roadside embankments and ditches
- Monitoring of snow stockpile run-off, clearing and steaming snow from culvert inlets/ outlets prior to freshet, sediment removal from ditches and ESC structures

Improvements to water management systems above CV 187 and CV 186 were prioritised prior to Freshet which included the construction of aggregate filter berms and replacement of silt curtain and coir logs

In June 2025, Baffinland submitted a notification to DFO, advising that a blockage of fish-bearing culvert crossing CV-187 was identified and that corrective measures to reinstall and restore flow and passage was intended. During the crossing replacement, significant improvements to road embankment armouring and check dams were implemented adjacent to the crossing.

Two (2) sections of road were chosen to trial the installation of a geocell grid for the purpose of reducing erosion, dust generation and road subsidence in these high traffic areas. At Km 64 of the Tote Road, a 200 m section of road was re-graded and geocell installed, while similar works were completed on a 100 m section of road on the Mary River fuel farm hill. Performance of the geocell in these locations will be further observed in 2026 and is planned for use at CV 216.

At the Milne Port site, replacement of a blocked drainage culvert was completed to address local flooding of the roadway and reduce potential erosion of the embankment leading down to Milne Port East Beach.

On the Tote Road, in spring 2025, Baffinland reinstalled a single culvert to restore fish passage and water conveyance at CV 216 prior to freshet, following geotechnical destabilisation experienced at the crossing. Further work commenced following an October Authorisation for construction of a new crossing at CV 216, which experienced further settlement in the open water period of 2025. A site specific retrofit of BG 17 occurred and focused on reconstructing the aprons, road grades and embankments adjacent to the crossing.

Crossing maintenance and ESC measures associated with fish bearing waters or crossings that were implemented in 2025 is provided in Table 1. A Photo Journal is provided in Appendix A.

Baffinland

Table 1. Erosion and Sediment Control Implemented in 2025

Mary River Location	Event Summary	Action	Status	Photo #
SDLT, south of Power Generation facility	Constructed 3 aggregate filter berms across the ephemeral run-off channels in the location above CV 187	Constructed three aggregate berms across run-off channels. Construction and aggregate placement completed during frozen conditions.	Completed April 2025	4, 5
KM 103 (CV-186)	ESC required to mitigate run-ff and stream erosion	Coir logs installed and streambank armouring installed	Completed 2025-06-16	22
KM 103.5 (CV-187)	Replacement of obstructed culverts in fish-bearing watercourse.	Notification submitted to DFO, informing required works to ensure fish passage and water conveyance. CV 187 was reinstalled and embankments and aprons were armoured. New check dams were produced.,	Completed 2025-06-29dditional Minor works completed 2025-09-12	1, 2, 3
KM 103 (CV-187)	Silt fence maintenance required	New silt fence installed along road embankment, post-construction of culvert replacement	Completed 2025-07-03	15
Milne Port Location	**Event Summary**	**Action**	**Status**	**Photo #**
Milne Port Beach	Erosion of embankment during rainfall event	Installed silt fencing	Completed 2025-07-13	25
East Beach	Buried drainage culvert replaced due to flooding of local roadway and erosion of embankment	Existing culvert removed and replaced with new culvert, backfilling and re-grading/ armouring of the embankment	Completed 2025-09-26	6, 7
Tote Road Location	**Event Summary**	**Action**	**Status**	**Photo #**
KM 80.5 (CV-216)	Culvert replacement due to culvert settlement causing blocked fish passage and water flow. Temporary measures.	One 2.0 m diameter culvert was excavated from the crossing and replaced at grade of watercourse, prior to the on-set of freshet	Completed 2025-04-25	10, 11
KM 72 (CV-040)	Step pool maintenance required	Sediment excavated from road side step pools	Completed 2025-06-06	14

KM 97.5 (CV-224)	Silt fence requires maintenance	Re-secured geotextile to stakes	Completed 2025-06-13	20
KM 88 (BG-24)	Run-off by-passing silt fence	Additional silt fence installed to intercept run-off	Completed 2025-06-13	21
KM 53 (CV-076)	Silt fence at toe of rip rap was ineffective	Removed old silt fence and replaced further from toe	Completed 2025-06-13	55
KM 77.5 (CV030)	Run-off along Tote Road	Installed coir logs along toe of rip rap embankment	Completed 2025-06-16	58
KM 100 (BG-01)	Defined sediment build-up/failing silt fences	Install three rolls of silt fence in front and behind existing silt fence to reinforce ESC measures at crossing	Completed 2025-06-29	23, 24
KM 88 (BG-24)	Silt fence maintenance required	New silt fence installed along road embankment	Completed 2025-07-18	16
KM 94.5 (CV-001)	Run-off pooling in proximity to watercourse	Installed coir log	Completed 2025-07-18	26
KM 99.5 (CV-225)	Road run-off running down embankment	Installed silt fence	Completed 2025-07-18	27
KM 32 (CV-111)	Run-off along Tote Road	Installed silt fence	Complete 2025-07-19	28
KM 51 (CV-078)	Run-off pooling in proximity to watercourse	Installed silt fence	Complete 2025-07-19	30
KM 60 (CV-059)	Silt fencing needs replacing	Installed new silt fence	Complete 2025-07-20	29
KM 60.5 (CV-057)	Replace damaged silt fence with coir log	Installed new coir log	Completed 2025-07-20	31
KM 74.5 (CV-212)	Run-off pooling in proximity to watercourse	Installed silt fence	Completed 2025-07-24	32
KM 79.5 (CV-215)	Install silt fence to cover greater area	Removed and replace old silt fence with and extended further	Completed 2025-07-24	33
KM 85 (CV-021)	Erosion occurring below established check dams from the north upstream swale	Installed two spring berms	Completed 2025-09-29	34
KM 91	Run-off along Tote Road	Installed silt fencing	Completed 2025-07-30	35
KM 58 (CV-061b)	Run-off from Tote Road	Install new silt fencing	Completed 2025-07-31	57
KM 32 (CV-111)	Natural erosion on left stream bank, upstream of culvert crossing	Installed silt fence along the bank in two locations	Completed 2025-08-08	36

KM 29 (CV-114)	Erosion of road embankment observed	Installed silt fence to mitigate sediment migration	Completed 2025-08-11	18
KM 64 (CV-048)	Silt fence maintenance required	Silt fence re-secured, sediment accumulation removed	Completed 2025-08-10	17
KM 60 (CV-059)	Silt fence maintenance required	Re-secured silt fence to stake	Completed 2025-08-10	37
KM 92	Natural run-off along Tote Road	Installed silt fence on west side of Tote Road and 2 spring berms on east side of Tote Road	Complete 2025-08-10	38
KM 53 (CV-76)	Roadway embankment erosion, and potential for sediment movement	Installed 2.5 lengths of silt fence along north west side of roadway, separating road embankment/road corner from the downstream culvert	Completed 2025-08-15	39
KM 51 (CV-079)	Potential culvert stranding area due to water pool beneath overflow culvert	Established small channel connecting the pool to the stream, providing passage for fish observed in pool	Completed 2025-08-16	40
KM 100 (BG-01)	Silt fence is disrepair on bank by culvert	Silt fence repaired/replaced, extended towards the culvert, removed weathered silt fence	Completed 2025-08-16	41, 42
KM 86.5 (BG-27)	Roadway embankment erosion, run-off pooling in proximity to watercourse	Installed silt fence (2) along sandy roadway embankment and sandy hill and installed five spring berms	Complete 2025-08-17	43
KM 97.5 (CV-224)	Roadway embankment erosion	Existing downstream south west side silt fence extended, now fully flush with road, additional silt fence installed. Installed silt fence on upstream bank south of culvert to separate water flow from roadway embankment erosion	Completed 2025-08-17	44, 45
KM 90 (BG-17)	Roadway embankment erosion and impacted run-off	Installed sild fence and spring berms along east slope on downstream side	Completed 2025-08-18	46

KM 51 (CV-078)	Potential culvert stranding area due to water pool beneath overflow culvert	Established small channel connecting the pool to the stream, providing passage for fish observed in pool	Completed 2025-08-19	47
KM 84.5 (BG-30)	Upstream silt fence in disrepair	Re-secured and performed maintenance on silt fence on upstream side, and installed additional silt fence.	2025-08-24	48
KM 94 (BG-04)	Roadway embankment erosion not adequately addressed by current silt fence	Installed two additional silt fences to extend the original silt fence and form a J-shape curve to improve erosion control	2025-08-24	49
KM 21.5	Silt fence maintenance required	Silt fence re-secured, sediment accumulation removed	Completed 2025-09-10, 2025-09-12	19
KM 74.5 (CV-212)	Silt fence in disrepair	Re-secured and performed maintenance on silt fence	Completed 2025-09-10	50
KM 88 (BG-24)	Roadway embankment erosion, and potential for sediment movement	On the north upstream side, two spring berms were installed within a swale to filter water and increase pool capacity. Below them, two silt fences were installed – one intercept and slow the flow velocity, and the second to promote sediment deposition.	Completed 2025-09-12	51
KM 15 (CV-129)	Erosion occurring on embankment along the downstream south side of the culvert.	Installed silt fence to mitigate sediment migration	Completed 2025-09-12	56
KM 88 (BG-24)	Repair and replaced downstream silt fence	Installed 100m of continuous silt fence downstream of south embankment, replaced with a series of hooking silt fences to capture roadway erosion. Installation was difficult due to rocky frozen tundra conditions.	Completed 2025-09-14	52
KM 80.5 (CV-216)	Install silt fence to capture terminus of the road for culvert construction	Two 100m silt fences were installed on each side of the water crossing. Shaped to capture	Completed 2025-09-30	53, 54

		terminus from the road. Silt fences remained in place for duration of the project and were removed when required to complete the construction.		
KM 90 (BG-17)	Retrofit culvert inlets and outlets, re-construct transition to natural channel bed to resolve culvert perching, ensure fish passage. Re-grade and armour watercourse embankments.	Scour pools at culvert inlets/ outlets re-constructed with larger aggregate and boulders, watercourse embankment re-graded and benched then armoured to reduce run-off.	Completed 2025-12-19	8, 9
KM 81.5 (CV-216)	By-pass Road Construction upstream of existing/ settling CV-216 crossing	Construct new road and install three (3) culverts within crossing for fish and watercourse passage.	Construction On-going in 2026	12, 13, 14

APPENDIX A
2025 ESC Implementation Photo Journal

Photo 1. KM 103.5, CV-187, temporary coffer dam and silt fencing placed downstream of the outlet to contain turbid water from construction works from entering watercourse and act as fish exclusion zones, 2025-06-21

Photo 2. KM 103.5, CV-187, looking north at completed crossing, 2025-06-28

Photo 3. KM 103.5, CV-187, culvert inlets after completion of re-construction, 2025-09-28

Photo 4. Image of filter berms above CV 187 locations A, B and C, Mary River, 2025

Photo 5. Filter berm C above CV 187 after completion, looking south towards berm B, 2025-04-18

Photo 6. Milne Port east beach, culvert replacement, backfilling in progress looking downstream, 2025-09-20

Photo 7. Milne Port east beach, culvert replacement, armouring of the culvert outlet, 2025-09-20

Photo 8. KM 90, BG-17, retrofit work completed downstream scour pool and perched outlet resolved, embankment armouring, 2025-12-25

Photo 9. KM 90, BG-17, retrofit work completed upstream scour pool and perched outlet resolved, embankment armouring, 2025-12-23

Photo 10. KM 80.5, CV-216 replacement, new single 2.0 m culvert installed to replace existing settled culverts in advance of freshet, looking upstream, 2025-04-22

Photo 11. KM 80.5, CV-216, replacement, outlet of new single 2.0 m culvert installed prior to freshet, looking upstream, 2025-04-24

Photo 12. KM 80.5, CV-216by-pass, construction of bentonite pad base for crossing, geotextile placed across watercourse channel, mixing of prescribed sand and bentonite mixture, 2025-11-24

Photo 13. KM 80.5, CV-216by-pass, vac truck de-watering the work area due to groundwater upwelling, 2025-12-29

Photo 14. KM 72, CV-040, sediment accumulation excavated from the step pools, 2025-06-06

Photo 15. KM 103, CV-187, silt fence re-installed along upstream embankment, 2025-07-03

Photo 16. KM 88, BG-24, new silt fence installed along downstream embankment, 2025-07-18

Photo 17. CV-048, KM 64, ESC required maintenance, re-secured and performed maintenance on silt fence, 2025-08-10

Photo 18. CV-114, KM 29, roadway bank erosion, silt fences installed downstream of crossing, 2025-08-11

Photo 19. KM 21.5, Silt fence maintenance completed to remove sediment accumulation and re-secure geotextile, 25-09-10

Photo 20. KM 97.5, CV-224, silt fence re-secured to stakes, 2025-06-13

Photo 21. KM 88, BG-24, additional silt fence installed, 2025-06-13

Photo 22. KM 103, CV-186, coir logs and rip rap installed along streambank at culvert inlet, 2025-06-16

Photo 23. KM 100, BG-01, new silt fence installed in front and behind existing silt fence on upstream side for ongoing ESC control, 2025-06-29

Photo 24. KM 100, BG-01, new silt fence installed on downstream side to address areas of sediment mobilization, 2025-06-29

Photo 25. Milne Port Beach, silt fence installed, 2025-07-13

Photo 26. KM 94.5, CV-001, coir log installed in road side swale, 2025-07-18

Photo 27. KM 99.5, CV-225, Installed new silt fence, 2025-07-18

Photo 28. KM 32, CV-111, run-off along Tote Road, silt fence installed, 2025-07-19

Photo 29. KM 60, CV-059, removed and installed new silt fence, 2025-07-20

Photo 30. KM 51, CV-078, run-off pooling in proximity to watercourse, silt fence installed, 2025-07-19

Photo 31 KM 60.5, CV-057, replaced old silt fence with new coir log, 2025-07-20

Photo 32. KM 74.5, CV-212, run-off pooling in proximity to watercourse, silt fence installed, 2025-07-24

Photo 33. KM 79.5, CV-215, replaced old silt fence and extended further, 2025-07-24

Photo 34. KM 85, CV-021, installed two new spring berms, 2025-07-29

Photo 35. KM 91, run-off along Tote Road, silt fence installed, 2025-07-30

Photo 36. KM 32, CV-111, natural erosion on upstream stream bank, silt fences installed, 2025-08-08

Photo 37. KM 60, CV-059, Re-secured silt fence to stakes, 2025-08-10

Photo 38. KM 92, natural Run-off along Tote Road, silt fence installed, 2025-08-10

Photo 39. KM 53, CV-76, run-off along Tote Road, silt fence installed, 2025-08-15

Photo 40. KM 51, CV-079, small channel established connecting pool to stream, restoring fish passage, 2025-08-16

Photo 41. KM 100, BG-01, ESC required maintenance, silt fence repaired/replaced and extended towards culvert, 2025-08-16

Photo 42. KM 100, BG-01, sand erosion from embankment, silt fence installed comprehensively around perimeter, 2025-08-16

Photo 43. KM 87, BG-27, run-off along Tote Road, silt fence and spring berms installed, 2025-08-17

Photo 44. KM 98, CV-224, roadway bank erosion, existing silt fence extended, additional silt fence installed, 2025-08-17

Photo 45. KM 98, CV-224, roadway bank erosion, silt fence installed to separate water flow from roadway erosion, 2025-08-17

Photo 46. KM 90, BG-17, surface water above watercourse, silt fence and spring berms installed, 2025-08-18

Photo 47. KM 51, CV-078, small channel established connecting pool to stream, restoring fish passage, 2025-08-19

Photo 48. KM 85, BG-30, roadway bank erosion, additional silt fence installed upstream of culvert, 2025-08-25

Photo 49. KM 95, BG-04, silt fence extended and J-shape curve formed to improve erosion control, 2025-08-24

Photo 50. KM 75, CV-212, re-secured and performed maintenance on silt fence, 2025-09-10

Photo 51: KM88, BG-024, silt fencing installed and additional spring berms installed upstream, 2025-09-12

Photo 52. KM 88, BG-24, series of hooking silt fence installed, downstream south embankment, 2025-09-14

Photo 53. KM 81.5, CV-216, silt fencing installed (double layer) prior to road construction for new CV-216 crossing construction, 2025-09-30

Photo 54. KM 81.5, CV-216, south approach pre-construction beginning, all works within ESC controls, 2025-10-01

Photo 55. KM 53, CV-076, replaced old silt fence and extended further past toe, 2025-06-16

Photo 56. KM 15, CV-129, installed silt fence to mitigate sediment migration, 2025-09-12

Photo 57. KM 58, CV-061b, installed new silt fencing to mitigate sedimentation migration, 2025-07-31

Photo 58. KM 77.5, CV-030, installed coir logs along the toe of the rip rap embankment, 2025-06-16