

TOTE ROAD CV-001

8-JUL-23



A



B



C



D



E



F

Photos 1-1. Photos taken 20 m downstream (top) and 60 m downstream (bottom) in spring 2023: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-001

8-JUL-23



A



B



C

Photos 1-2. Photos taken 100 m downstream in spring 2023: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-001

8-JUL-23



A



B



C



D



E



F

Photos 1-3. Photos taken 20 m upstream (top) and 60 m upstream (bottom) in spring 2023: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-001

8-JUL-23



A



B



C

Photos 1-4. Photos taken 100 m upstream in spring 2023: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

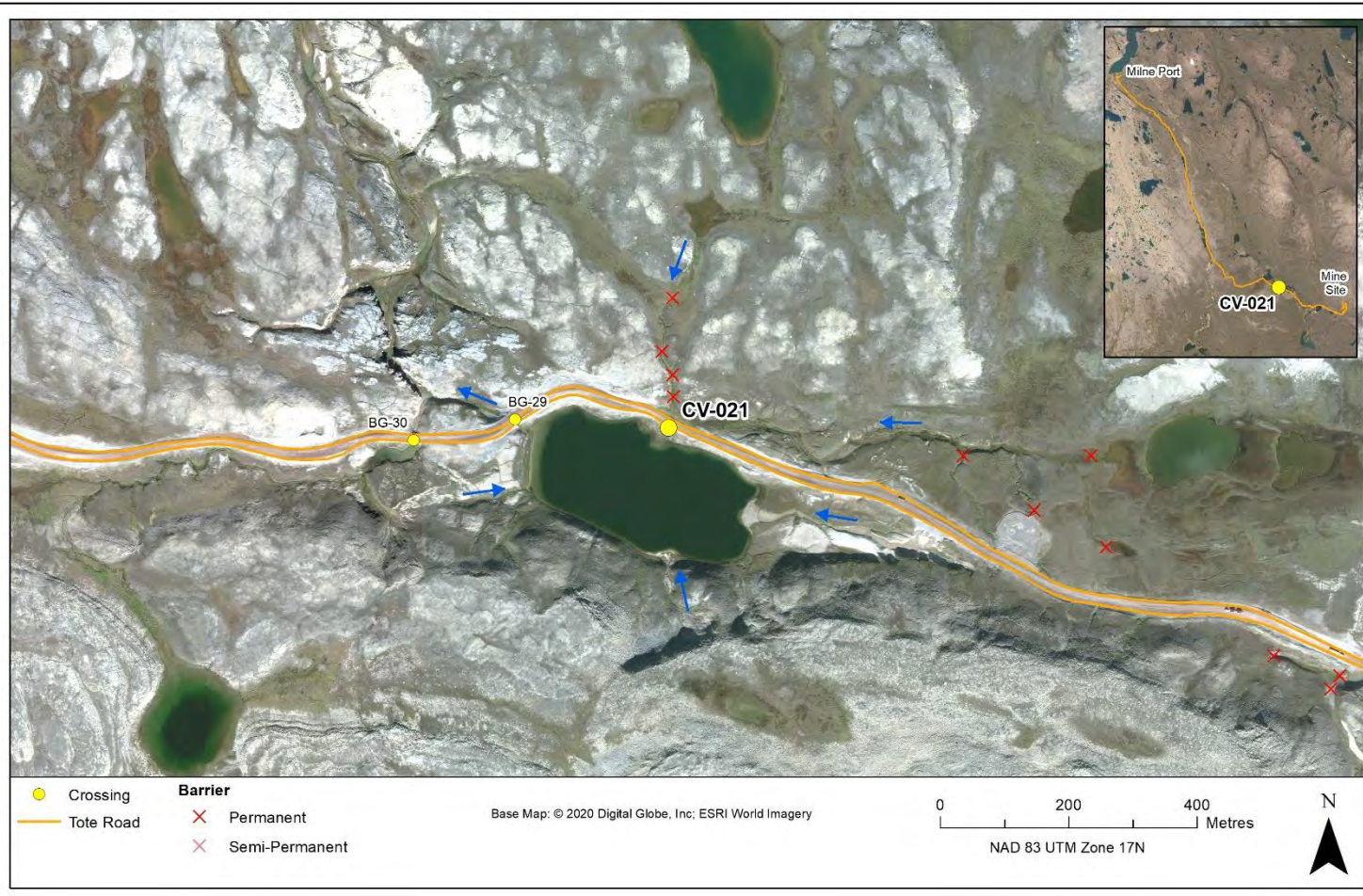
TOTE ROAD CV-021

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-021	Dates Surveyed:	5-Jul-23	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 546468 E 7919864 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal Stream Order: 2



BAFFINLAND IRON MINES
MARY RIVER PROJECT

 **North/South Consultants Inc.**
Aquatic Environment Specialists

FISH HABITAT:

ARCTIC CHAR - YES

NINESPINE STICKLEBACK - YES

TOTE ROAD CV-021

SITE SUMMARY

The Tote Road crosses a small, unnamed stream at site CV-021 that flows 20 m south into a small lake. The downstream lake has sufficient depth to support overwintering for both species.

Detailed habitat data were collected at this site in spring 2023. Downstream of the road the stream is a narrow (3.2 m in spring 2023) channel with low to moderate depths and velocities (maximum 0.34 m and 0.41 m/s, respectively). Upstream of the road the stream ponds (pool approximately 20 x 40 m) along the embankment. Stream morphology was largely pool throughout with fines and gravel substrate.

Juvenile Arctic Char were not captured in this stream in spring 2023 but have been observed/captured both downstream and upstream of the road crossing in previous surveys. Char can use this stream for open-water rearing. There is no char spawning or overwintering habitat in this stream.

Ninespine Stickleback have frequently been captured in this stream, including spring 2023. The species uses habitat in the vicinity of the Tote Road crossing at CV-001 for rearing/feeding and likely spawning, particularly in the upstream pool. There is no overwintering habitat for stickleback in this stream.

TOTE ROAD CV-021

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	5-Jul-23	3.0	50	94	0	0	0.00	-
	NNST					1	0	0.64	55
Upstream	ARCH			50	111	0	0	0.00	-
	NNST					0	0	0.00	-

OTHER NOTES / OBSERVATIONS

During the 2023 spring survey, a single adult Ninespine Stickleback was captured downstream of the installed culverts. Low water temperatures during the survey period likely limited fish movements from overwintering habitat to the crossing area. The rocky step-pool approach to the lefthand culvert is currently accessible to char.

TOTE ROAD CV-021

HYDROLOGY CHARACTERISTICS: 5-JUL-23

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	LAKE									
60D										
20D	6.9	3.2	-	-	-	0.34	-	-	-	0.41
0 (Centreline)	UNDER TOTE ROAD									
20U	POND									
60U										
100U										

OTHER NOTES / OBSERVATIONS

Downstream of the road the stream is a narrow (3.2 m in spring 2023) channel with low to moderate depths and velocities (maximum 0.34 m and 0.41 m/s, respectively).
Upstream of the road the stream formed a large pool (approximately 20 x 40 m) along the embankment.

TOTE ROAD CV-021

HABITAT CHARACTERISTICS: 5-JUL-23

Wetted/Dry/Shallow (<0.02 m)/Unconnected Pools:WettedStage: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	LAKE											
60D												
20D	10	30	50	10	-	-	-	60	30	10	10	-
0 (Centreline)	UNDER TOTE ROAD											
20U												
60U	POND											
100U												

OTHER NOTES / OBSERVATIONS

Stream morphology was largely pool throughout with fines and gravel substrate.

TOTE ROAD CV-021

5-JUL-23



A



B



C

Photos 1-1. Photos taken 20 m downstream in spring 2023: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-021

5-JUL-23



A



B



C

Photos 1-2. Photos taken 20 m upstream in spring 2023: (A) facing upstream; (B) facing downstream; and (C) across (right bank looking at left bank).

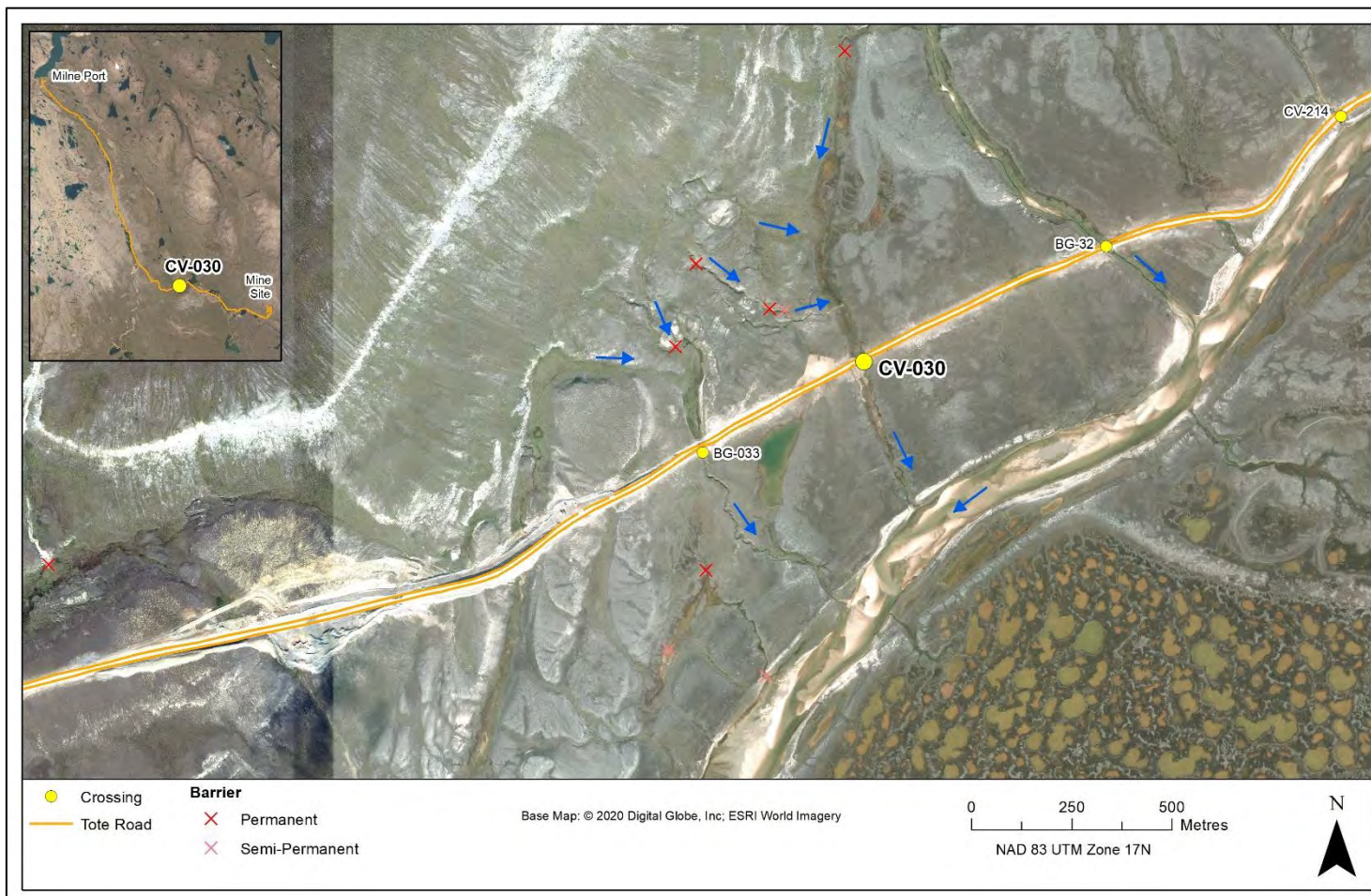
TOTE ROAD CV-030

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-030	Dates Surveyed:	4-Jul-23	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 540123 E 7921310 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal Stream Order: 2



BAFFINLAND IRON MINES
MARY RIVER PROJECT

 **North/South Consultants Inc.**
Aquatic Environment Specialists

FISH HABITAT:

ARCTIC CHAR - YES
NINESPINE STICKLEBACK - YES

TOTE ROAD CV-030

SITE SUMMARY

The Tote Road crosses a small, unnamed stream at site CV-030 that flows 400 m south into the main outflow river from Muriel Lake. Muriel Lake, which is 2.5 km to the east, Although a bathymetric survey has not been conducted, Muriel Lake is believed to be of sufficient depth to support overwintering of both species.

Detailed habitat data were collected at CV-030 in spring 2023. The stream is generally narrow (<5.0 m) but widens considerably 100 m downstream from the crossing where habitat becomes more wetland than stream. Maximum depths ranged from 0.22-0.68 m and velocities from 0.24-1.20 m/s. Stream morphology was largely run/riffle/pool throughout with predominantly fines. There were increased proportions of cobble/gravel in the stream near the road from embankment material entering the stream.

Juvenile Arctic Char were not captured or observed in this stream in spring 2023 but have been occasionally captured upstream and downstream in previous surveys. Habitat in this stream is typically shallow wetland, with some pools that become isolated from the main channel during summer/fall and is not preferred by juvenile char. Char can use this stream for rearing in the open-water period. There is no char spawning or overwintering habitat in this stream.

Ninespine Stickleback were captured upstream and downstream of the road crossing in spring 2023 and are typically abundant in this stream. The species can use habitat in the vicinity of the Tote Road crossing at CV-001 for rearing/feeding and likely spawning. There is no overwintering habitat for stickleback in this stream.

TOTE ROAD CV-030

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	4-Jul-23	3.0	50	107	0	0	0.00	-
	NNST					2	0	1.12	45 - 59
Upstream	ARCH			50	123	0	0	0.00	-
	NNST					3	0	1.46	46 - 50

OTHER NOTES / OBSERVATIONS

Juvenile char were not captured or observed in spring 2023 and are typically uncommon in this stream. Adult stickleback were captured upstream and downstream of the road crossing and are typically much more abundant than char in this stream.

TOTE ROAD CV-030

HYDROLOGY CHARACTERISTICS: 4-JUL-23

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	35.6	28.7	-	-	-	0.68	-	-	-	0.21
60D	30.6	4.2	-	-	-	0.22	-	-	-	0.32
20D	47.0	2.2	-	-	-	0.29	-	-	-	0.30
0 (Centreline)	UNDER TOTE ROAD									
20U	14.0	0.8	-	-	-	0.25	-	-	-	1.20
60U	18.2	5.4	-	-	-	0.51	-	-	-	0.24
100U	8.2	2.1	-	-	-	0.51	-	-	-	0.99

OTHER NOTES / OBSERVATIONS

The stream is generally narrow (<5.0 m) but widens considerably 100 m downstream from the culvert where habitat becomes more wetland than stream. Maximum measured depths ranged from 0.22-0.68 m and velocities from 0.24-1.20 m/s.

TOTE ROAD CV-030

HABITAT CHARACTERISTICS: 4-JUL-23

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	20	-	60	-	-	-	98	2	-	-	-
60D	15	15	10	60	-	-	-	95	5	-	-	-
20D	20	30	10	40	-	-	-	50	45	5	-	-
0 (Centreline)	UNDER TOTE ROAD											
20U	20	20	10	50	-	-	-	20	50	30	-	-
60U	10	40	20	30	-	-	-	85	15	-	-	-
100U	50	20	5	25	-	-	-	100	-	-	-	-

OTHER NOTES / OBSERVATIONS

Stream morphology was largely run/riffle/pool with predominantly fines throughout. There were increased proportions of cobble/gravel near the road from embankment material entering the stream.

TOTE ROAD CV-030

4-JUL-23



A



B



C



D



E



F

Photos 1-1. Photos taken 20 m downstream (top) and 60 m downstream (bottom) in spring 2023: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-030

4-JUL-23



A



B



C

Photos 1-2. Photos taken 100 m downstream in spring 2023: (A) facing upstream; (B) facing downstream; and (C) across (right bank looking at left bank).

TOTE ROAD CV-030

4-JUL-23



A



B



C



D



E



F

Photos 1-3. Photos taken 20 m upstream (top) and 60 m upstream (bottom) in spring 2023: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-030

4-JUL-23



A



B



C

Photos 1-4. Photos taken 100 m upstream in spring 2023: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

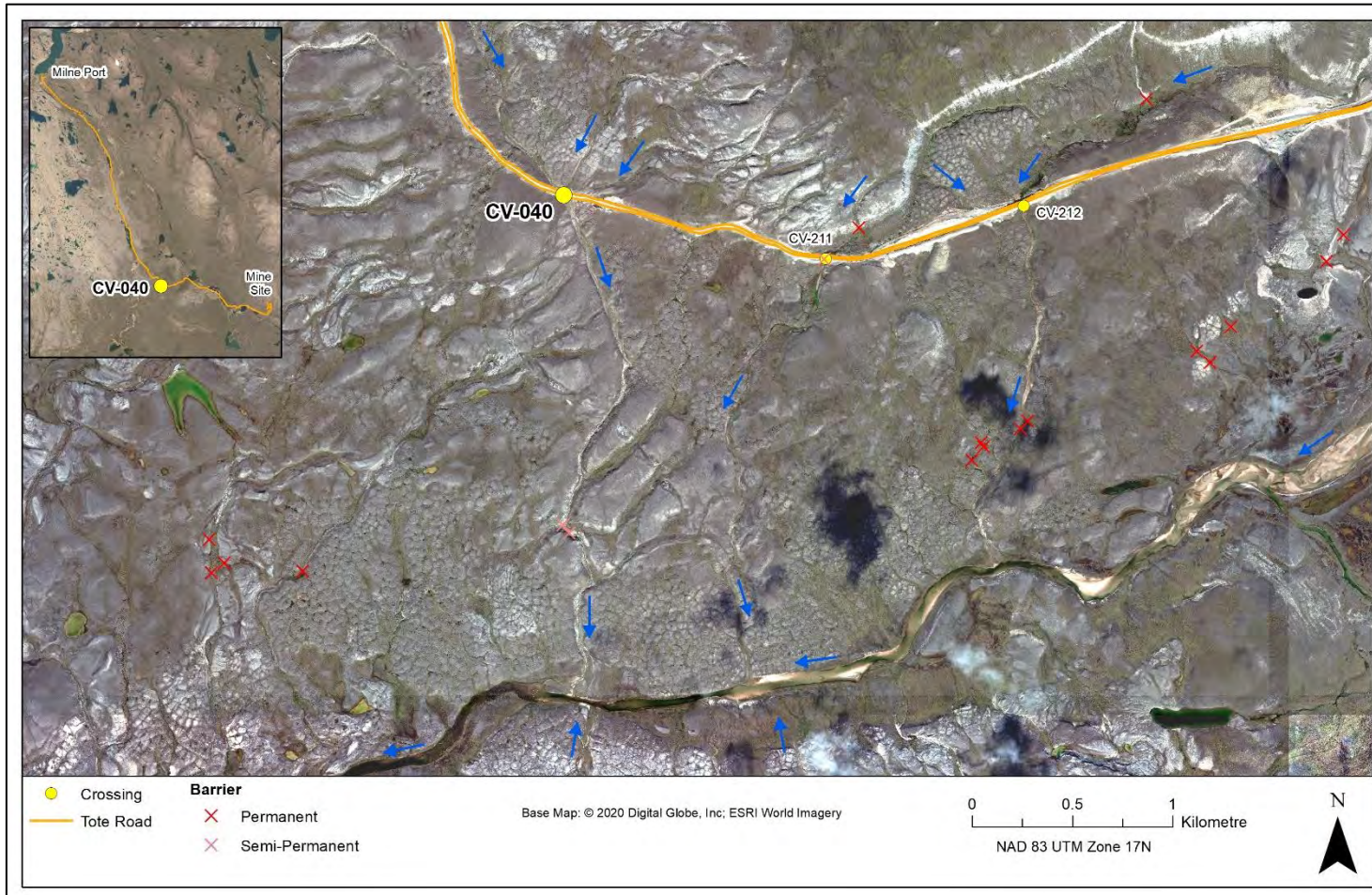
TOTE ROAD CV-040

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-040	Dates Surveyed:	4-Jul-23	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 535168 E 7920326 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-040

SITE SUMMARY

The Tote Road crosses a large, unnamed stream at site CV-040 that flows 2.5 km south into the main outflow river from Muriel Lake. Although a bathymetric survey of has not been conducted, Muriel Lake, located is 8.8 km to the east of the road crossing, is believed to be of sufficient depth to support overwintering of both species.

Detailed habitat data were collected at CV-040 in spring 2023. The stream is wide, with wetted widths ranging from 10.1-31.0 m. Maximum depths ranged from 0.25-0.56 m. Measured velocities were high with maximum values typically exceeding 1.00 m/s. Stream morphology was largely riffle throughout and substrates were predominantly cobble/boulder.

Juvenile Arctic Char were not captured in this stream in spring 2023. Char have rarely been captured in previous surveys and only larger (>120 mm fork length) individuals have been observed in the crossing area. There is an intermittent subsurface flow barrier downstream from the road that forms during periods of low flow. This intermittent barrier, combined with the large distance from overwintering habitat (i.e., closest potential overwintering habitat is 6.8 km), limits potential use of habitat near the road by char. When accessible, char can use this stream for open-water rearing. There is no char spawning or overwintering habitat in this stream.

Ninespine Stickleback have never been captured or observed in this stream and may be absent from the catchment. Habitat may not be suitable for the species .

TOTE ROAD CV-040

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	4-Jul-23	1.0	50	131	0	0	0.00	-
	NNST					0	0	0.00	-
Upstream	ARCH			50	137	0	0	0.00	-
	NNST					0	0	0.00	-

OTHER NOTES / OBSERVATIONS

No fish were observed or captured at the time of survey. Low water temperature, and high flows during the survey period likely limited fish movements from overwintering habitat to the crossing area.

TOTE ROAD CV-040

HYDROLOGY CHARACTERISTICS: 4-JUL-23

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	43.0	31.0	-	-	-	0.28	-	-	-	0.96
60D	46.1	19.2	-	-	-	0.48	-	-	-	1.38
20D	55.0	10.2	-	-	-	0.56	-	-	-	1.83
0 (Centreline)	UNDER TOTE ROAD									
20U	23.9	10.1	-	-	-	0.50	-	-	-	1.03
60U	22.2	14.5	-	-	-	0.25	-	-	-	1.39
100U	27.5	12.3	-	-	-	0.38	-	-	-	1.21

OTHER NOTES / OBSERVATIONS

The stream is wide, with wetted width ranging from 10.1-31.0 m. Maximum depths ranged from 0.25-0.56 m. Measured velocities were high with maximum values at or above of 1.0 m/s.

TOTE ROAD CV-040

HABITAT CHARACTERISTICS: 4-JUL-23

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	70	10	5	15	-	-	-	15	20	15	30	20
60D	70	8	2	20	-	-	-	5	15	45	20	15
20D	60	10	20	10	-	-	-	20	10	40	20	10
0 (Centreline)	UNDER TOTE ROAD											
20U	50	15	20	15	-	-	-	15	40	35	5	5
60U	70	10	10	10	-	-	-	10	10	5	40	35
100U	75	10	10	5	-	-	-	10	5	10	45	30

OTHER NOTES / OBSERVATIONS

Stream morphology was largely riffle and substrates were predominantly cobble/boulder throughout.

TOTE ROAD CV-040

4-JUL-23



A



B



C



D



E



F

Photos 1-1. Photos taken 20 m downstream (top) and 60 m downstream (bottom) in spring 2023: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-040

4-JUL-23



A



B



C

Photos 1-2. Photos taken 100 m downstream in spring 2023: (A) facing upstream; (B) facing downstream; and (C) across (right bank looking at left bank).

TOTE ROAD CV-040

4-JUL-23



A



B



C



D



E



F

Photos 1-3. Photos taken 20 m upstream (top) and 60 m upstream (bottom) in spring 2023: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-040

4-JUL-23



A



B



C

Photos 1-4. Photos taken 100 m upstream in spring 2023: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-049

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-049	Dates Surveyed:	4-Jul-23	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 529654 E 7926545 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-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 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. Detailed habitat data were collected at CV-049 in spring 2023.

The stream is relatively wide, with wetted width ranging from 8.5-30.5 m. Maximum depths were typically <0.50 m, but there was a deep scour pool (estimated depth of 2.5 m) downstream of the culverts in spring 2023. Measured velocities were high with maximum values often exceeding 1.00 m/s. Excepting the large scour pool downstream and a few shallow pools upstream, stream morphology was largely riffle/run. Substrates were predominantly cobble/gravel.

Juvenile Arctic Char and one potential adult were captured/observed upstream and downstream in this stream in spring 2023. 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.

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	4-Jul-23	2.5	50	149	3	0	1.21	142 - 400
	NNST					0	0	0.00	-
Upstream	ARCH	4-Jul-23	2.5	50	144	0	1	0.42	N/A
	NNST					0	0	0.00	-

OTHER NOTES / OBSERVATIONS

A few large char, including a potential adult (400 mm), were captured upstream and downstream of the road in spring 2023. 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: 4-JUL-23

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	41.3	15.1	-	-	-	0.38	-	-	-	1.86
60D	68.3	22.9	-	-	-	0.26	-	-	-	1.43
20D	88.5	8.5	-	-	-	~2.5	-	-	-	1.00
0 (Centreline)	UNDER TOTE ROAD									
20U	82.1	20.0	-	-	-	0.44	-	-	-	0.99
60U	75.0	30.1	-	-	-	0.28	-	-	-	0.80
100U	135.7	30.5	-	-	-	0.31	-	-	-	0.77

OTHER NOTES / OBSERVATIONS

The stream is relatively wide, with wetted width ranging from 8.5-30.5 m. Maximum depths were typically <0.50 m, but there was a deep scour pool (estimated depth of 2.5 m) downstream of the culverts in spring 2023. Measured velocities were high (maximum values exceeding 1.00 m/s) and increased with increasing distance downstream.

TOTE ROAD CV-049

HABITAT CHARACTERISTICS: 4-JUL-23

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	60	5	15	20	-	-	-	5	30	55	-	10
60D	60	10	5	20	-	-	5	10	10	75	-	5
20D	30	10	50	10	-	-	-	-	10	40	50	-
0 (Centreline)	UNDER TOTE ROAD											
20U	50	20	20	10	-	-	-	10	30	50	5	5
60U	60	25	-	15	-	-	-	5	10	80	5	-
100U	50	30	1	9	-	-	-	5	20	65	5	5

OTHER NOTES / OBSERVATIONS

Stream morphology was largely riffle/run, excepting the large scour pool downstream and a few shallow pools upstream of the road. Substrates were predominantly cobble/gravel.

TOTE ROAD CV-049

4-JUL-23



A



B



C



D



E



F

Photos 1-1. Photos taken 20 m downstream (top) and 60 m downstream (bottom) in spring 2023: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-049

4-JUL-23



A



B



C

Photos 1-2. Photos taken 100 m downstream in spring 2023: (A) facing upstream; (B) facing downstream; and (C) across (right bank looking at left bank).

TOTE ROAD CV-049

4-JUL-23



A



B



C



D



E



F

Photos 1-3. Photos taken 20 m upstream (top) and 60 m upstream (bottom) in spring 2023: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-049

4-JUL-23



A



B



C

Photos 1-4. Photos taken 100 m upstream in spring 2023: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

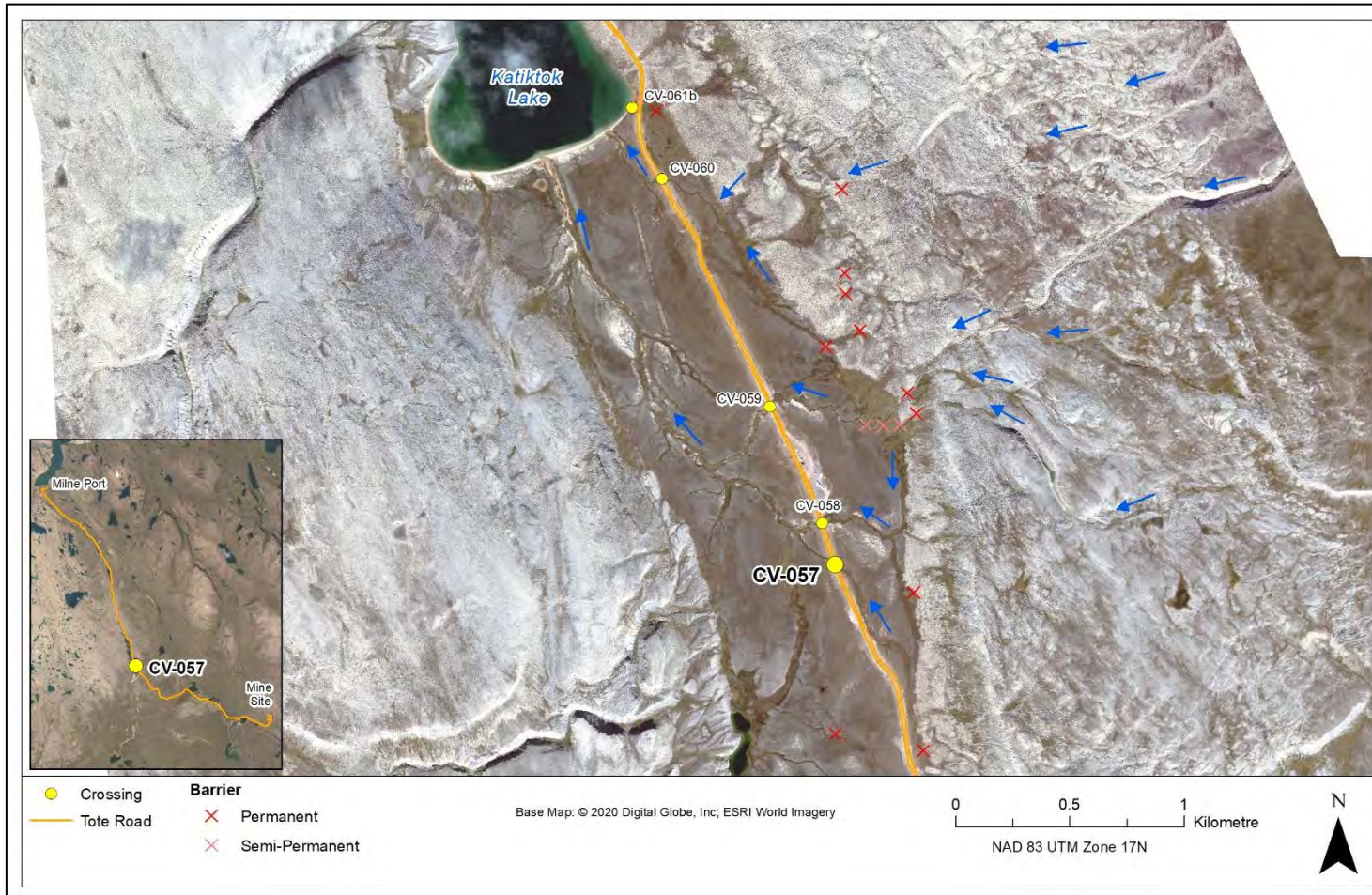
TOTE ROAD CV-057

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-057	Dates Surveyed:	4-Jul-23	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 528094 E 7929347 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal Stream Order: 2



BAFFINLAND IRON MINES
MARY RIVER PROJECT

 **North/South Consultants Inc.**
Aquatic Environment Specialists

FISH HABITAT:

ARCTIC CHAR - YES

NINESPINE STICKLEBACK - POTENTIAL

TOTE ROAD CV-057

SITE SUMMARY

The Tote Road crosses a small, unnamed stream at site CV-057 that flows northwest into Katiktok Lake 2.5 km downstream of the culvert. Katiktok Lake has been surveyed for coarse bathymetry data and has sufficient depth to support overwintering. This stream is part of the same catchment as streams crossed by the road at sites CV-058 and CV-059 and collectively they represent the southernmost streams in the Phillips Creek drainage area.

This stream is generally narrow, deep, and relatively slow moving. Wetted widths in spring 2023 ranged from 3.2 to 14.1 m. Measured depths did not exceed 1.0 m, ranging from 0.41 – 0.78 m. Maximum velocities at each transect were generally slow, ranging from 0.04 – 0.62 m/s. Stream morphology was a combination of shallow and deep pools in wider areas and riffle-run at constrictions. The stream is nearly uniformly composed of fine substrate with small patches of gravel and occasional piece of cobble.

Juvenile Arctic char use habitat in the vicinity of the Tote Road crossing at CV-057 rearing/feeding throughout the open-water period. 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 despite an abundance of suitable habitat. It is unknown if they are present in Katiktok Lake.

TOTE ROAD CV-057

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	4-Jul-23	4.0	50	139	0	0	0.00	-
	NNST					0	0	0.00	-
Upstream	ARCH			50	133	0	0	0.00	-
	NNST					0	0	0.00	-

OTHER NOTES / OBSERVATIONS

Although not captured in spring 2023, juvenile char have been captured during several previous surveys of this stream. Char use habitat for open-water rearing. There is no overwintering or spawning. Stickleback have never been captured in this stream and may be absent from the watershed.

TOTE ROAD CV-057

HYDROLOGY CHARACTERISTICS: 4-JUL-23

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	16.7	3.3	-	-	-	0.78	-	-	-	0.36
60D	10.1	4.5	-	-	-	0.41	-	-	-	0.18
20D	8.9	3.2	-	-	-	0.41	-	-	-	0.62
0 (Centreline)	UNDER TOTE ROAD									
20U	8.1	1.6	-	-	-	0.58	-	-	-	0.08
60U	53.0	14.1	-	-	-	0.58	-	-	-	0.10
100U	20.1	13.1	-	-	-	0.41	-	-	-	0.04

OTHER NOTES / OBSERVATIONS

This stream is generally narrow, deep, and relatively slow moving. Wetted widths in spring 2023 ranged from 3.2 - 14.1 m. Measured depths ranged from 0.41 – 0.78 m. Velocities were generally slow, ranging from 0.04 – 0.62 m/s.

TOTE ROAD CV-057

HABITAT CHARACTERISTICS: 4-JUL-23

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	30	20	30	-	-	-	100	-	-	-	-
60D	35	20	20	25	-	-	-	90	10	-	-	-
20D	30	40	15	15	-	-	-	90	9	1	-	-
0 (Centreline)	UNDER TOTE ROAD											
20U	50	30	-	20	-	-	-	95	5	-	-	-
60U	20	50	20	10	-	-	-	96	2	2	-	-
100U	5	40	25	30	-	-	-	90	8	2	-	-

OTHER NOTES / OBSERVATIONS

In wider parts of the stream, morphology tended to be a combination of shallow and deep pools while riffle-run were more common in narrower sections. The stream is nearly uniformly composed of fine sand-like substrate with small patches of gravel and occasional piece of cobble.

TOTE ROAD CV-057

4-JUL-23



A



B



C



D



E



F

Photos 1-1. Photos taken 20 m downstream (top) and 60 m downstream (bottom) in spring 2023: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-057

4-JUL-23



A



B



C

Photos 1-2. Photos taken 100 m downstream in spring 2023: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

TOTE ROAD CV-057

4-JUL-23



A



B



C



D



E



F

Photos 1-3. Photos taken 20 m upstream (top) and 60 m upstream (bottom) in spring 2023: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-057

4-JUL-23



A



B



C

Photos 1-4. Photos taken 100 m upstream in spring 2023: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).

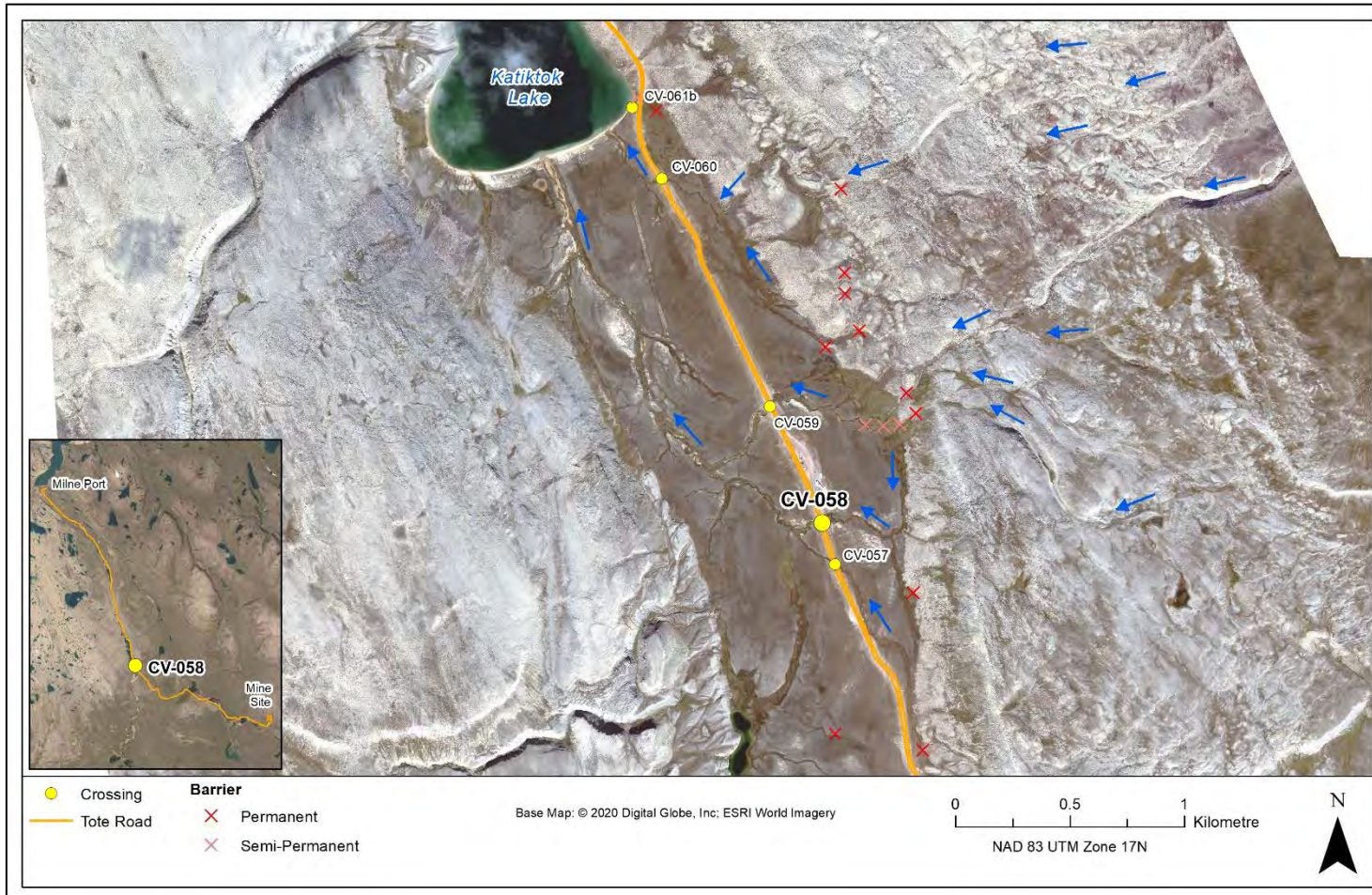
TOTE ROAD CV-058

LOCATION AND CROSSING DESCRIPTION

Site ID:	CV-058	Dates Surveyed:	4-Jul-23	Waterbody Type:	Stream
Project Interaction:	Tote Road Culvert	UTM Coordinates:	17W 528322 E 7928839 N		

GENERAL PHYSICAL CHARACTERISTICS

Flow Regime: Seasonal Stream Order: 2



BAFFINLAND IRON MINES
MARY RIVER PROJECT

 **North/South Consultants Inc.**
Aquatic Environment Specialists

FISH HABITAT:

ARCTIC CHAR - YES

NINESPINE STICKLEBACK - POTENTIAL

TOTE ROAD CV-058

SITE SUMMARY

The Tote Road crosses a small, unnamed stream at site CV-058 that flows northwest into Katiktok Lake, 2.5 km downstream of the crossing. Katiktok Lake is of sufficient depth to support overwintering both species. This stream is part of the same catchment as streams crossed by the road at sites CV-057 and CV-059 and collectively they represent the southernmost streams in the Phillips Creek drainage area.

This stream is generally narrow (<10.0 m) near and upstream of the road crossing, widening downstream near the confluence with the stream crossed by the road at CV-057. Maximum depths were typically >0.50 m and occasionally exceeded 1.0 m. Maximum velocities were moderate, ranging from 0.35 – 0.51 m/s. Stream morphology was a combination of shallow and deep pools in wider areas and riffle-run at constrictions. The stream is nearly uniformly composed of fine substrate with small patches of gravel and occasional pieces of cobble.

Although not captured in spring 2023, likely due to the cold water temperatures, juvenile Arctic char have been typically captured/observed in this stream and use habitat in the vicinity of the Tote Road crossing for rearing/feeding throughout the open-water period. There is no char spawning or overwintering habitat.

Ninespine Stickleback have never been captured or observed in this stream since the Tote Road monitoring program began in 2009 despite an abundance of suitable habitat. It is unknown if they are present in Katiktok Lake.

TOTE ROAD CV-058

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	3-Jul-23	3.0	50	147	0	0	0.00	-
	NNST					0	0	0.00	-
Upstream	ARCH			50	128	0	0	0.00	-
	NNST					0	0	0.00	-

OTHER NOTES / OBSERVATIONS

No fish were observed or captured in spring 2023.

TOTE ROAD CV-058

HYDROLOGY CHARACTERISTICS: 4-JUL-23

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	20.0	16.0	-	-	-	>1.0	-	-	-	0.51
60D	22.4	16.5	-	-	-	0.64	-	-	-	0.37
20D	13.4	3.7	-	-	-	0.43	-	-	-	0.36
0 (Centreline)	UNDER TOTE ROAD									
20U	42.6	6.9	-	-	-	0.50	-	-	-	0.35
60U	34.8	7.3	-	-	-	>1.0	-	-	-	0.51
100U	40.0	9.5	-	-	-	0.98	-	-	-	0.51

OTHER NOTES / OBSERVATIONS

This stream is generally narrow (<10.0 m) near and upstream of the culvert, widening downstream near the confluence with the stream crossed at CV-057. Maximum depths were typically >0.50 m and occasionally exceeded 1.0 m. Maximum velocities were moderate, ranging from 0.35 – 0.51 m/s.

TOTE ROAD CV-058

HABITAT CHARACTERISTICS: 4-JUL-23

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	5	10	70	15	-	-	-	99	-	1	-	-
60D	10	25	50	15	-	-	-	100	-	-	-	-
20D	5	30	40	25	-	-	-	85	14	1	-	-
0 (Centreline)	UNDER TOTE ROAD											
20U	20	20	30	30	-	-	-	80	15	5	-	-
60U	5	20	50	25	-	-	-	99	1	-	-	-
100U	10	10	70	10	-	-	-	100	-	-	-	-

OTHER NOTES / OBSERVATIONS

Stream morphology was a combination of shallow and deep pools in wider areas and riffle-run at constrictions. The stream is nearly uniformly composed of fine substrate with small patches of gravel and occasional pieces of cobble.

TOTE ROAD CV-058

4-JUL-23



A



B



C



D



E



F

Photos 1-1. Photos taken 20 m downstream (top) and 60 m downstream (bottom) in spring 2023: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (right bank looking at left bank).

TOTE ROAD CV-058

4-JUL-23



A



B



C

Photos 1-2. Photos taken 100 m downstream in spring 2023: (A) facing upstream; (B) facing downstream; and (C) across (right bank looking at left bank).

TOTE ROAD CV-058

4-JUL-23



A



B



C



D



E



F

Photos 1-3. Photos taken 20 m upstream (top) and 60 m upstream (bottom) in spring 2023: (A,D) facing upstream; (B,E) facing downstream; and (C,F) across (left bank looking at right bank).

TOTE ROAD CV-058

4-JUL-23



A



B



C

Photos 1-4. Photos taken 100 m upstream in spring 2023: (A) facing upstream; (B) facing downstream; and (C) across (left bank looking at right bank).