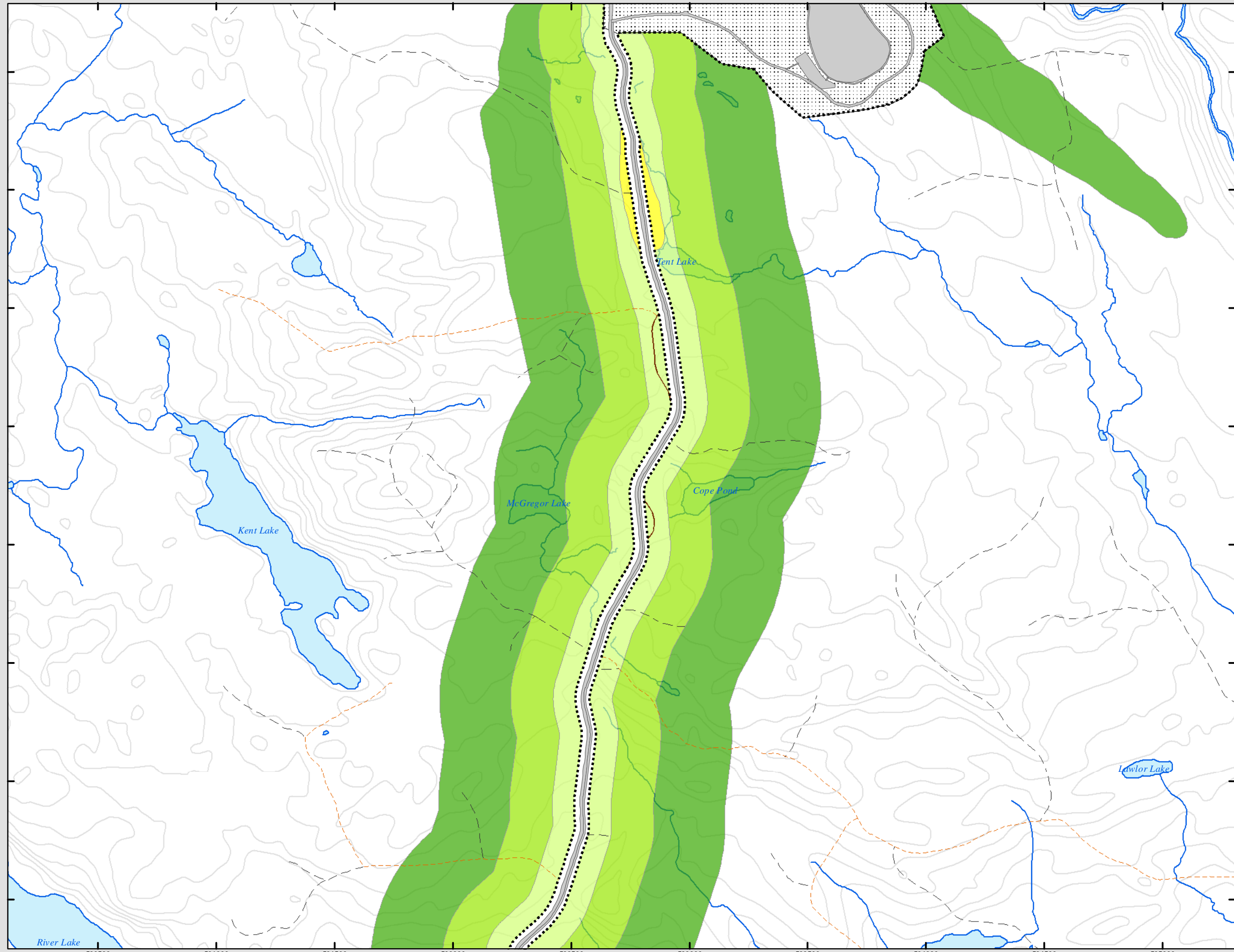


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FIGURE CEEA 2-31-9B

**Beaver Dam Mine Project
Air Contours
SO2 1-Hour Levels**



Beaver Dam Mine Site (concentrations beyond property boundary shown)

SO2 Ranges (ug/m3)

- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- 0.8

Local Road

Dry Weather / Seasonal Road

Track

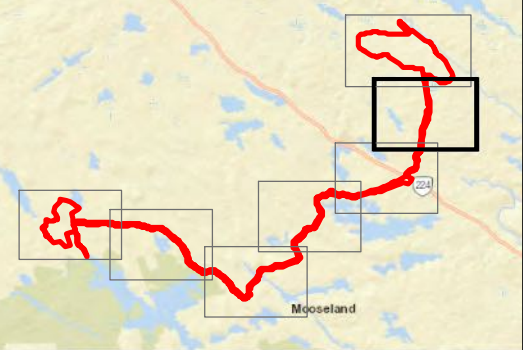
NSTDB Mapped Watercourses

Lakes

Proposed Project Infrastructure

Proposed Property Boundary

SO2 1-Hour Guideline: 900 ug/m3 (not shown on map)
Background Concentration Used: 7.9 ug/m3 (not shown on map)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 125 250 500 m

1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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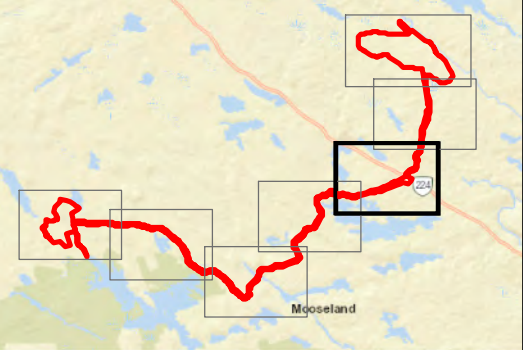


FIGURE CEA 2-31-9C

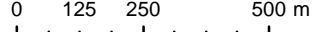
**Beaver Dam Mine Project
Air Contours
SO2 1-Hour Levels**

- Receptor
- SO2 Ranges (ug/m3)**
- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8
- Collector Road
- Local Road
- - - Dry Weather / Seasonal Road
- - - Diveways (>300 m)
- - - Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure
- - - Proposed Property Boundary

SO2 1-Hour Guideline: 900 ug/m3 (not shown on map)
Background Concentration Used: 7.9 ug/m3 (not shown on map)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter



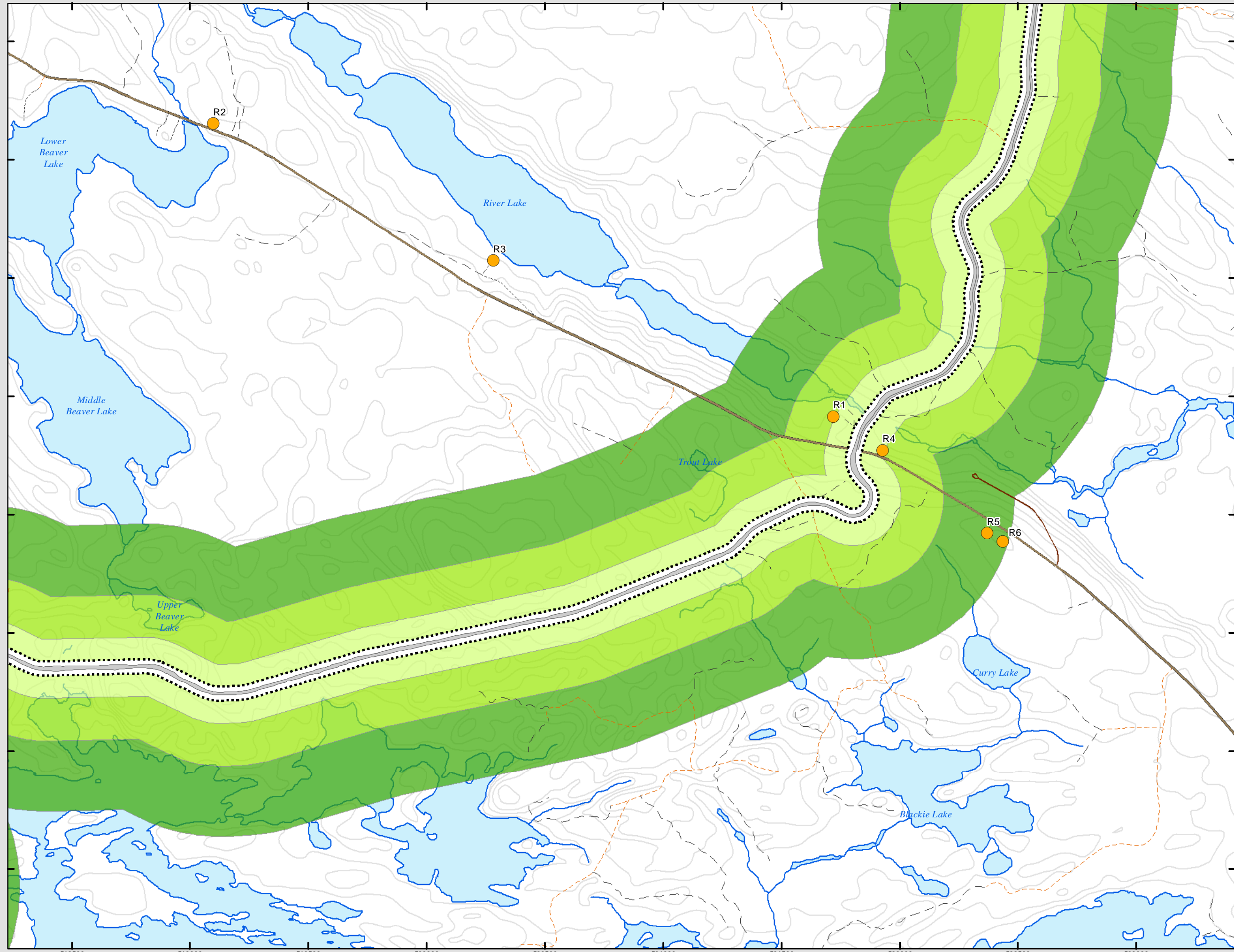
1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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FIGURE CEAA 2-31-9D

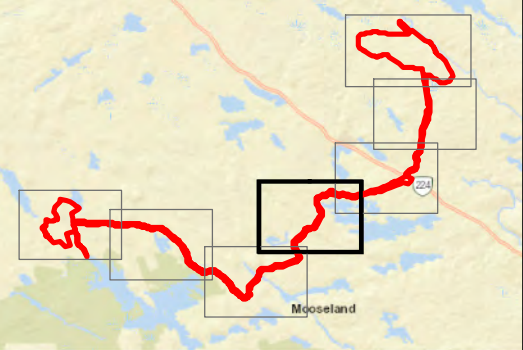
Beaver Dam Mine Project
Air Contours
SO2 1-Hour Levels

SO2 Ranges (ug/m3)

- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8

- Dry Weather / Seasonal Road
- Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure
- Proposed Property Boundary

SO2 1-Hour Guideline: 900 ug/m3 (not shown on map)
Background Concentration Used: 7.9 ug/m3 (not shown on map)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 125 250 500 m

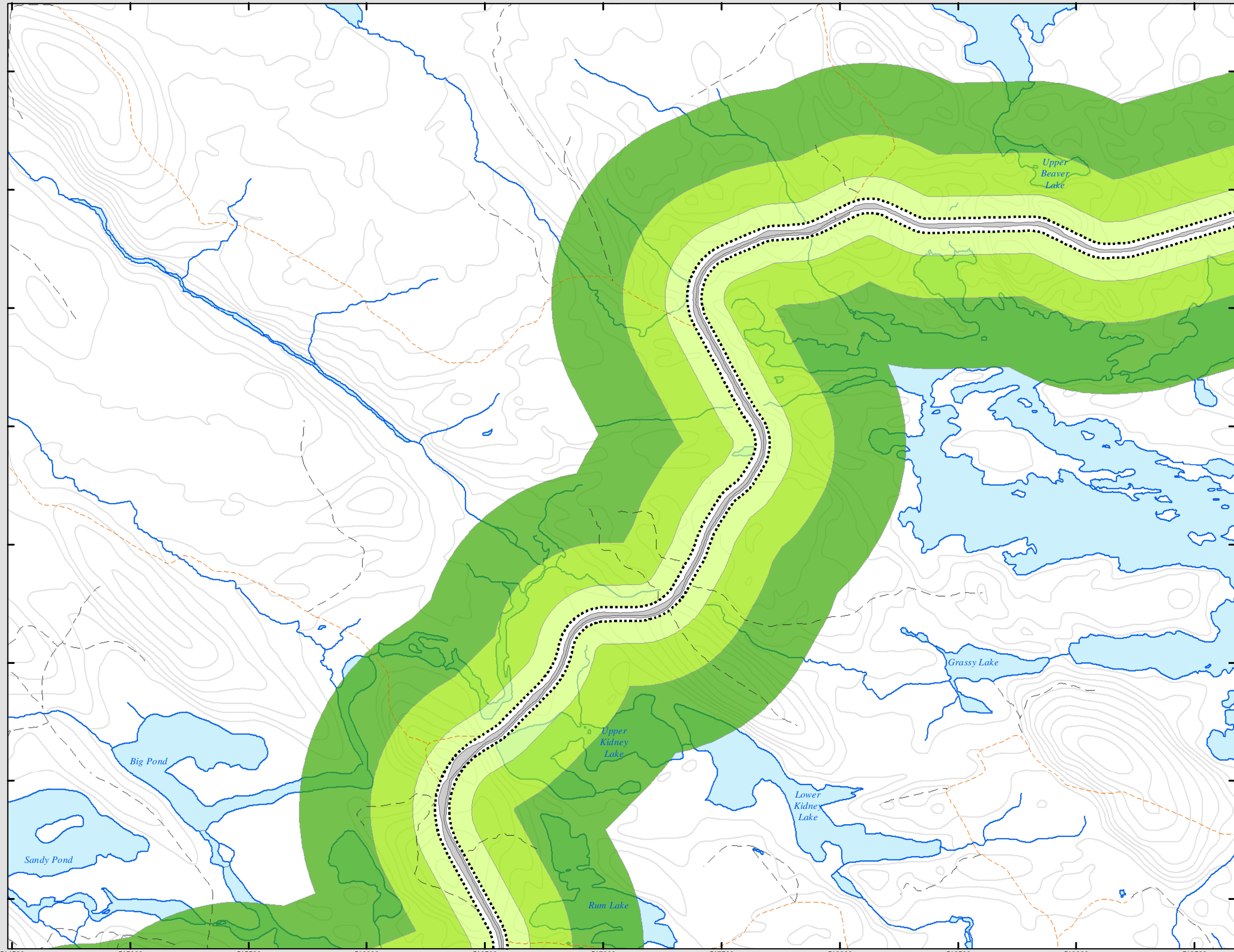
1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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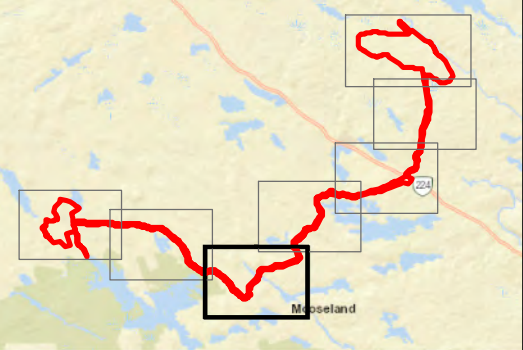
Atlantic Gold

FIGURE CEA 2-31-9E

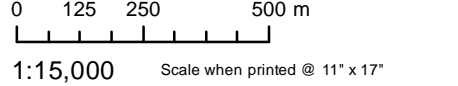
**Beaver Dam Mine Project
Air Contours
SO2 1-Hour Levels**

- Receptor
- SO2 Ranges (ug/m3)
 - 0.2 - 0.4
 - 0.4 - 0.6
 - 0.6 - 0.8
- Local Road
- - - Dry Weather / Seasonal Road
- - - Diveways (>300 m)
- - - Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure
- - - Proposed Property Boundary

SO2 1-Hour Guideline: 900 ug/m3 (not shown on map)
Background Concentration Used: 7.9 ug/m3 (not shown on map)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

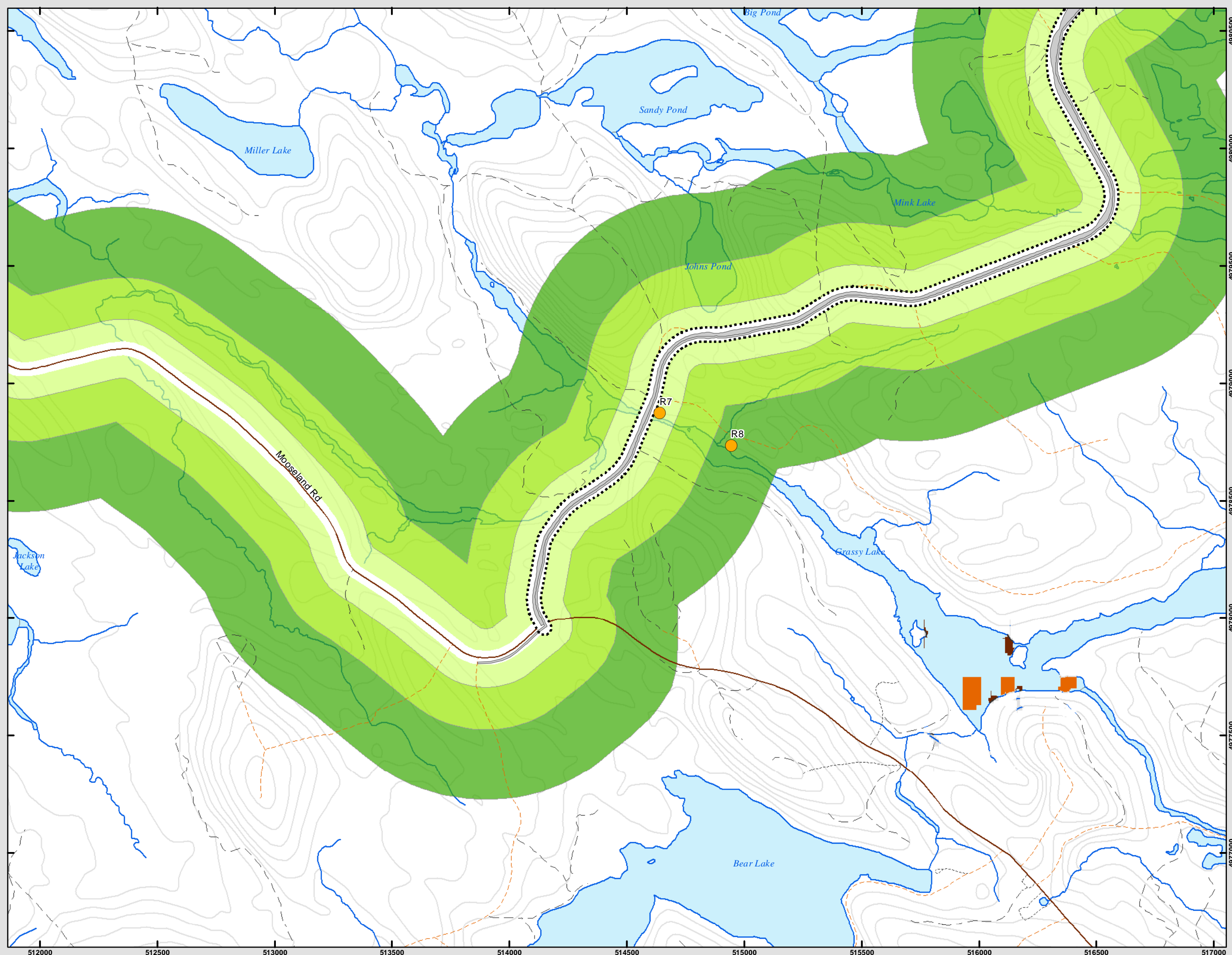


Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Gamin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Prepared For:

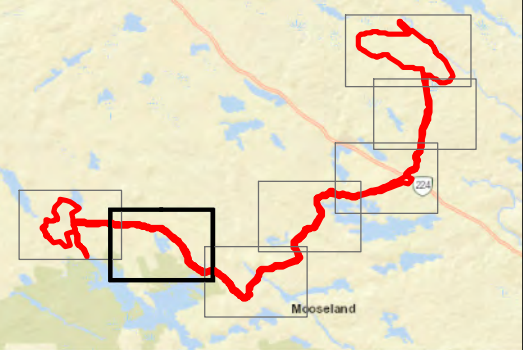


FIGURE CEEA 2-31-9F

Beaver Dam Mine Project Air Contours SO2 1-Hour Levels

- Receptor
- SO2 Ranges (ug/m3)
 - 0.2 - 0.4
 - 0.4 - 0.6
 - 0.6 - 0.8
- Local Road
- Dry Weather / Seasonal Road
- Diveways (>300 m)
- Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure

SO2 1-Hour Guideline: 900 ug/m3 (not shown on map)
Background Concentration Used: 7.9 ug/m3 (not shown on map)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 125 250 500 m

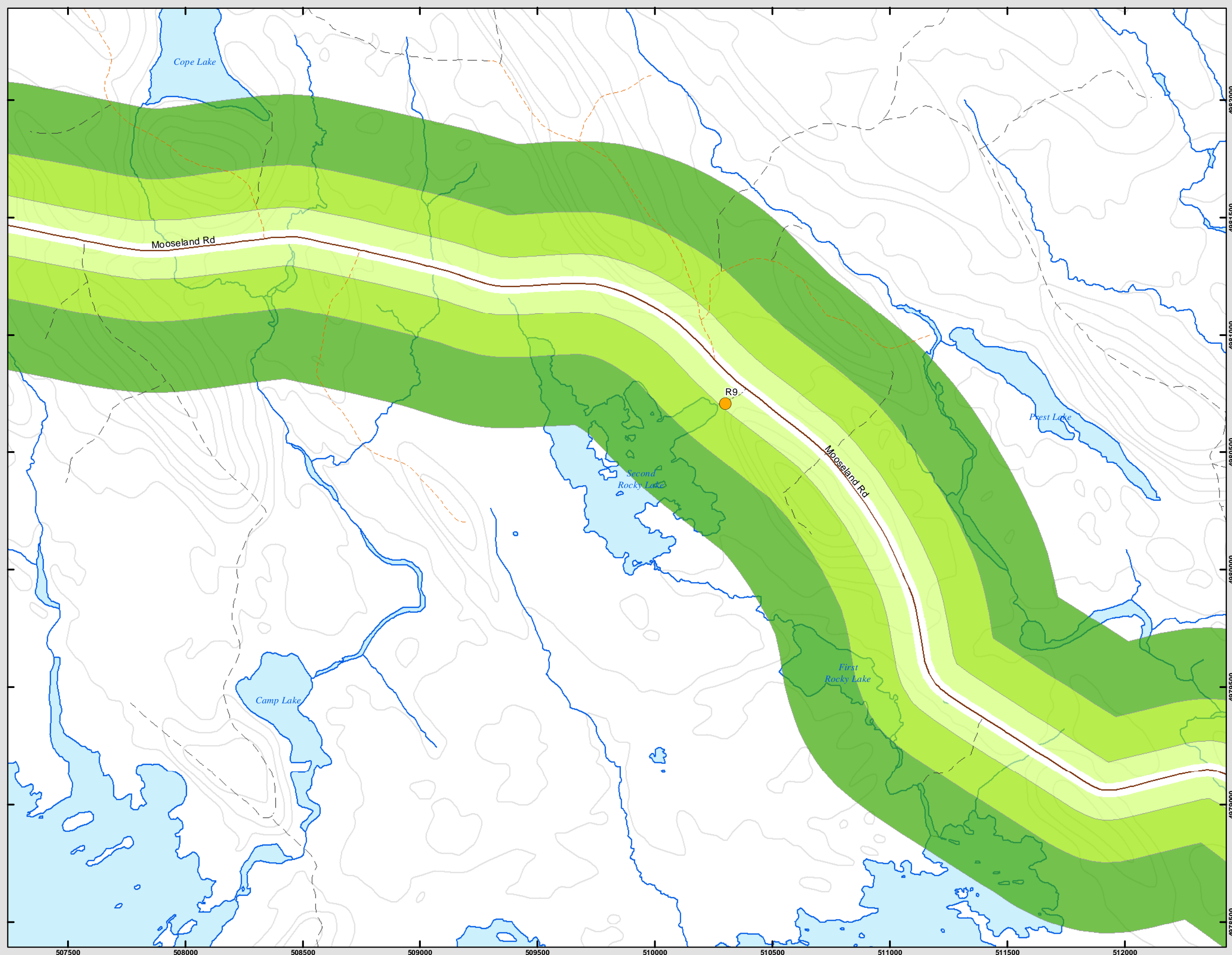
1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Gamin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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FIGURE CEA 2-31-9G

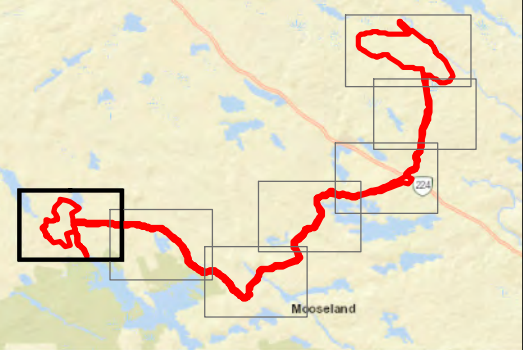
Beaver Dam Mine Project Air Contours SO2 1-Hour Levels

SO2 Ranges (ug/m3)

- 0.2 - 0.4
- 0.4 - 0.6
- 0.6 - 0.8

- Local Road
- Dry Weather / Seasonal Road
- Diveways (>300 m)
- Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure
- Existing Touquoy Infrastructure Layout
- Existing Touquoy Property Boundary

SO2 1-Hour Guideline: 900 ug/m3 (not shown on map)
Background Concentration Used: 7.9 ug/m3 (not shown on map)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 125 250 500 m

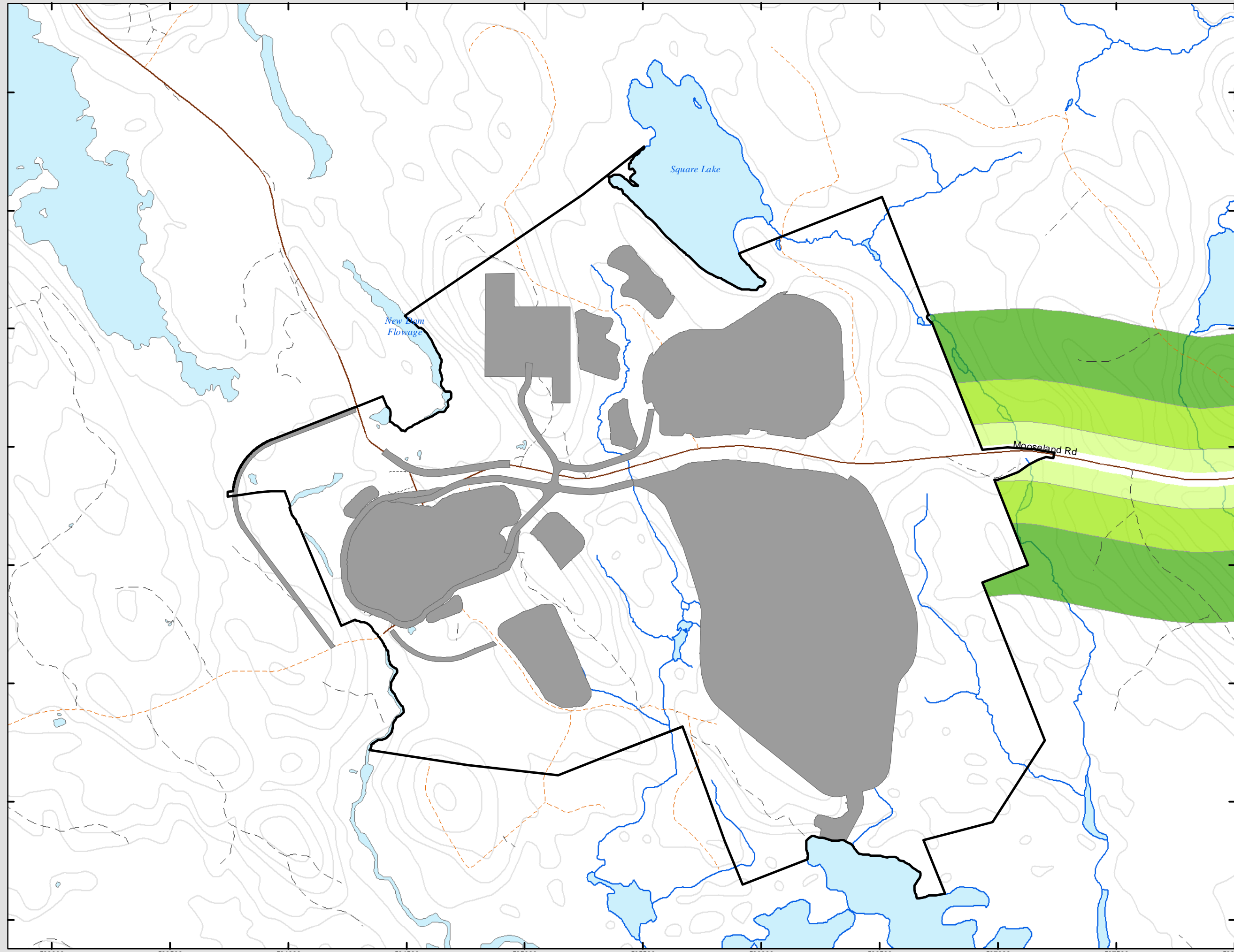
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Drawn By: SS Date: 2021-09-21
Reviewed By: MM

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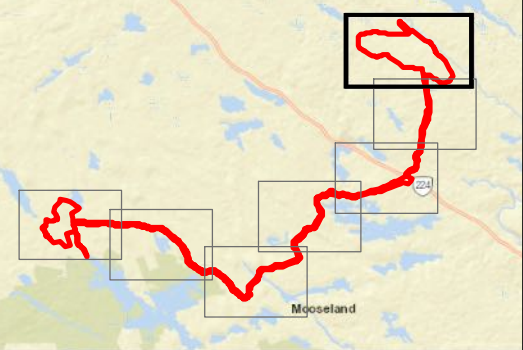


FIGURE CEA 2-31-10A

Beaver Dam Mine Project Air Contours SO2 24-Hour Levels

- Beaver Dam Mine Site (concentrations reach background within boundary)
- SO2 Ranges (ug/m3)
 - 0.2 - 0.4
 - 0.4 - 0.6
 - 0.6 - 0.8
 - 0.8
- Local Road
- Dry Weather / Seasonal Road
- Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure
- Proposed Property Boundary

SO2 24-Hour Guideline: 300 ug/m3 (not shown on map)
Background Concentration Used: 5.2 ug/m3 (not shown on map)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 170 340 680 m

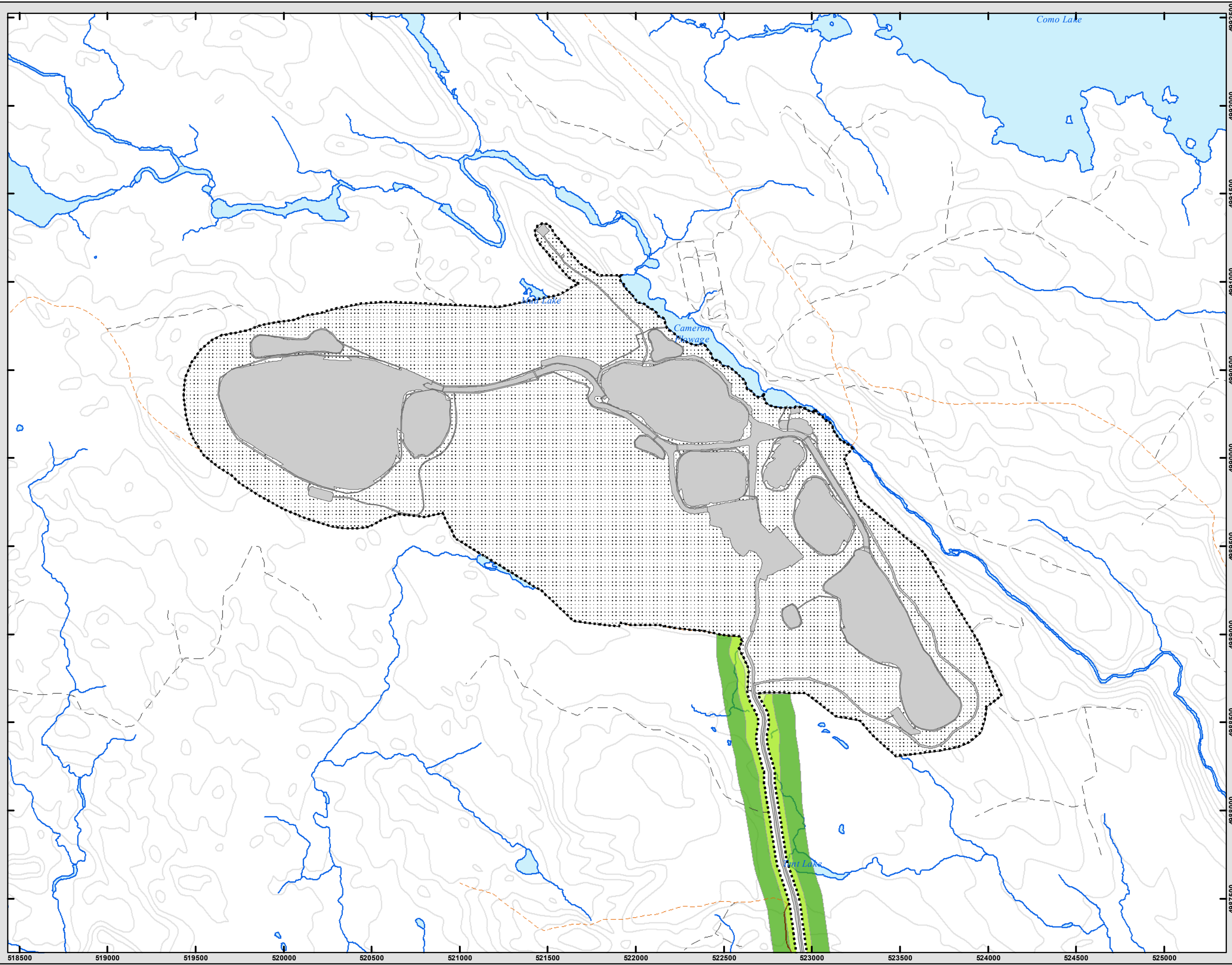
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Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Gamin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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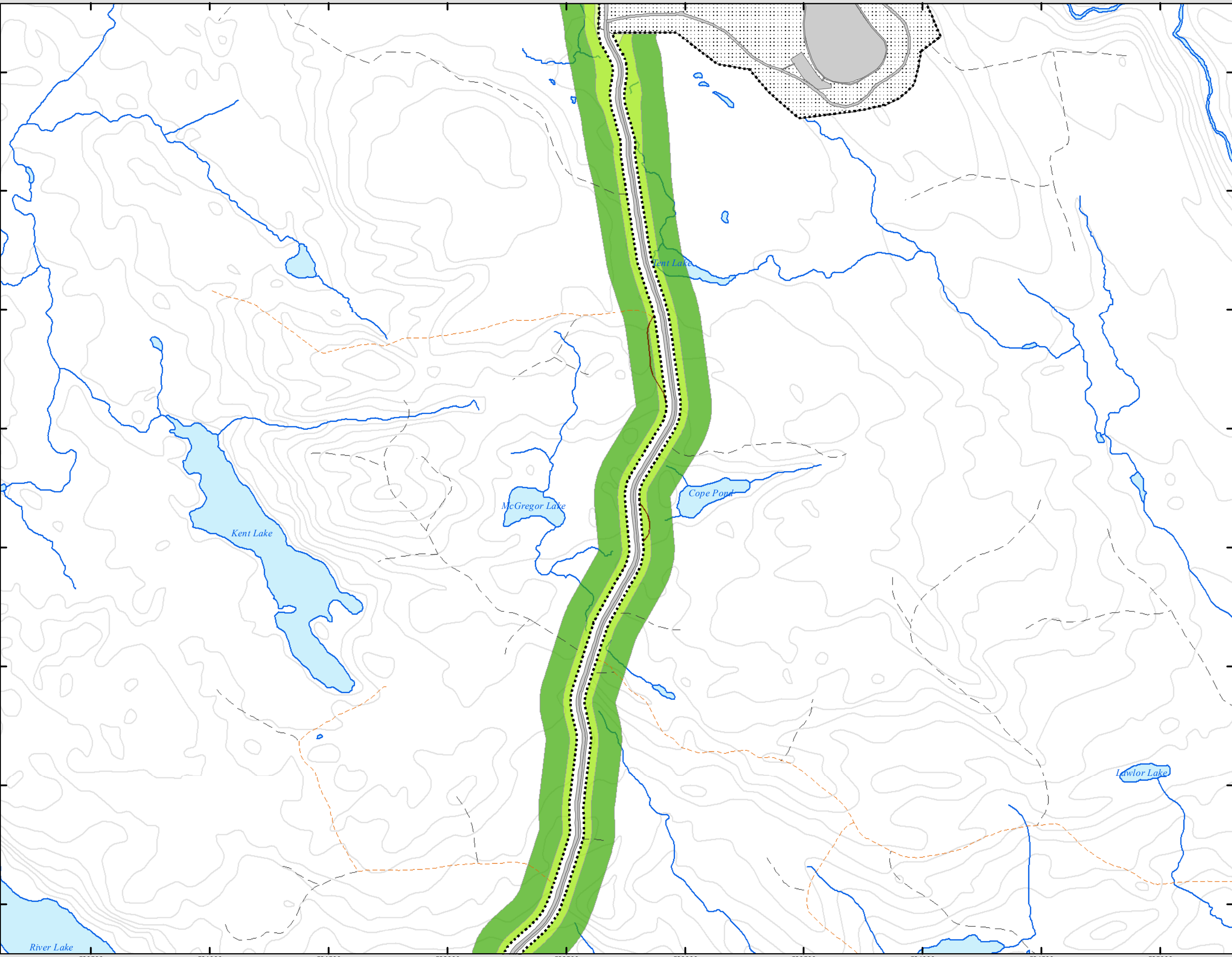
Prepared For:



Atlantic Gold

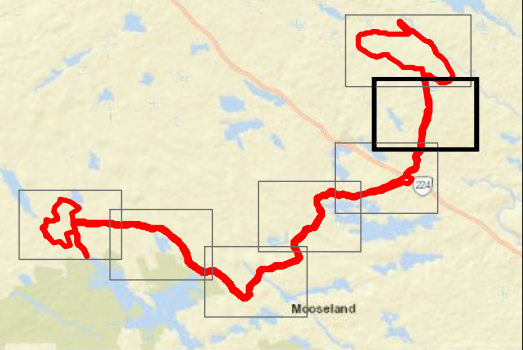
FIGURE CEEA 2-31-10B

**Beaver Dam Mine Project
Air Contours
SO2 24-Hour Levels**



- Beaver Dam Mine Site (concentrations reach background within boundary)
 - Local Road
 - Dry Weather / Seasonal Road
 - Track
 - NSTDB Mapped Watercourses
 - Lakes
 - Proposed Project Infrastructure
 - Proposed Property Boundary
- SO2 Ranges (ug/m3)**
- 0.2 - 0.4
 - 0.4 - 0.6
 - 0.6 - 0.8

SO2 24-Hour Guideline: 300 ug/m3 (not shown on map)
Background Concentration Used: 5.2 ug/m3 (not shown on map)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 125 250 500 m

1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Gamin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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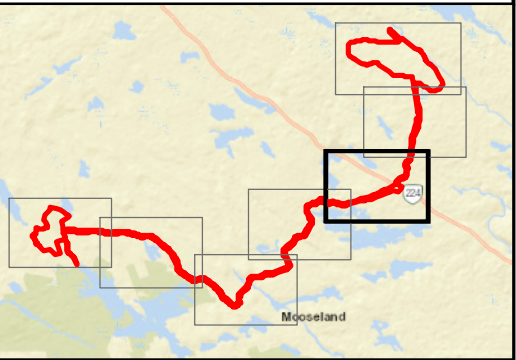


FIGURE CEA 2-31-10C

Beaver Dam Mine Project Air Contours SO₂ 24-Hour Levels

- Receptor
- SO₂ Ranges (ug/m³)**
- 0.2 - 0.4
- 0.4 - 0.6
- Collector Road
- Local Road
- Dry Weather / Seasonal Road
- Diveways (>300 m)
- Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure
- Proposed Property Boundary

SO₂ 24-Hour Guideline: 300 ug/m³ (not shown on map)
Background Concentration Used: 5.2 ug/m³ (not shown on map)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter



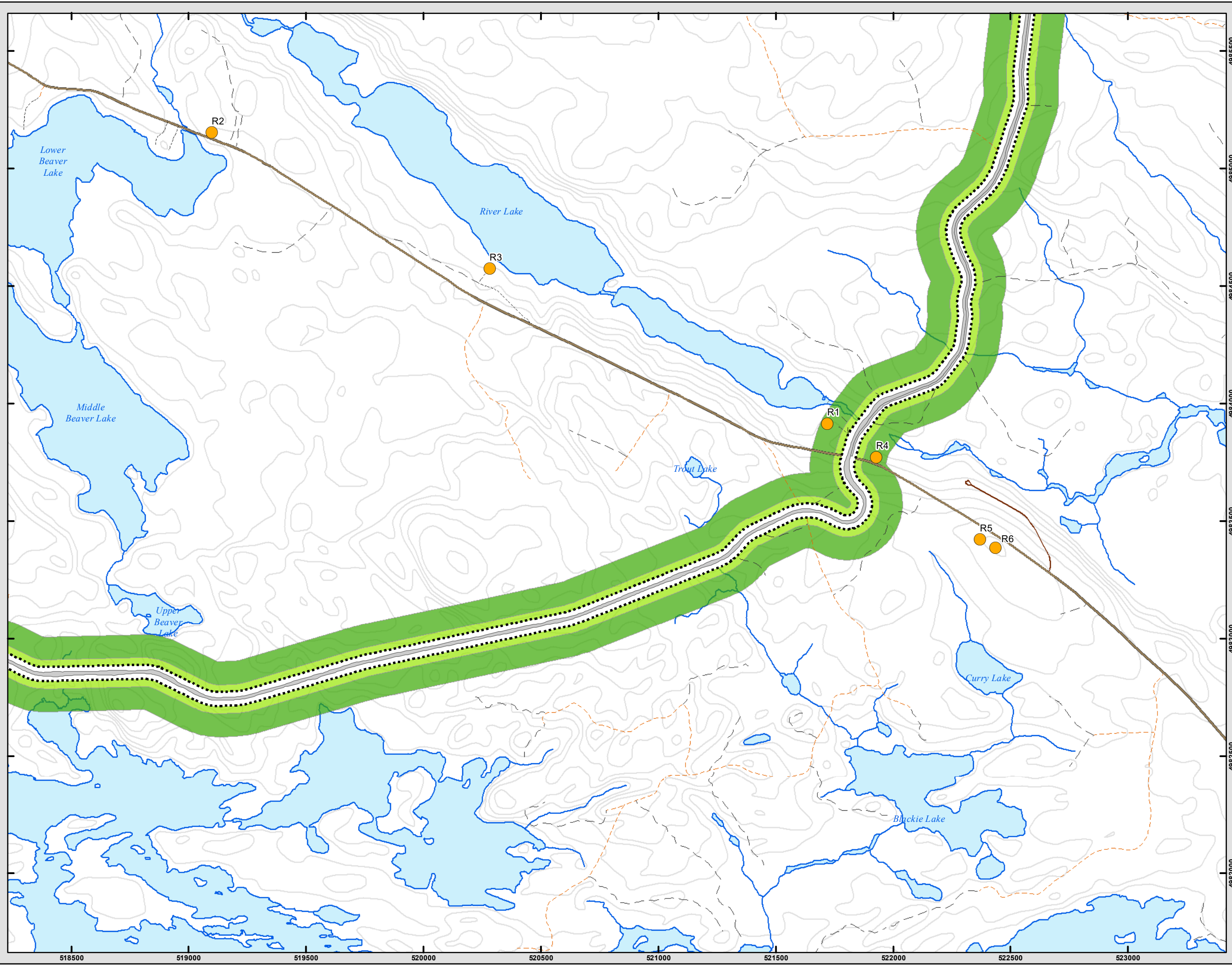
0 125 250 500 m
1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Prepared For:



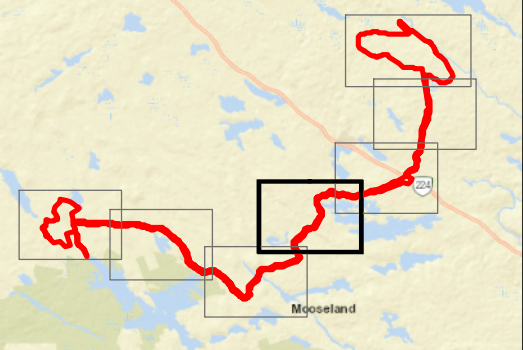
Atlantic Gold

FIGURE CEA 2-31-10D

**Beaver Dam Mine Project
Air Contours
SO₂ 24-Hour Levels**

- SO₂ Ranges (ug/m³)**
- 0.2 - 0.4
 - 0.4 - 0.6
- Dry Weather / Seasonal Road
 - Track
 - NSTDB Mapped Watercourses
 - Lakes
 - Proposed Project Infrastructure
 - Proposed Property Boundary

SO₂ 24-Hour Guideline: 300 ug/m³ (not shown on map)
Background Concentration Used: 5.2 ug/m³ (not shown on map)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 125 250 500 m

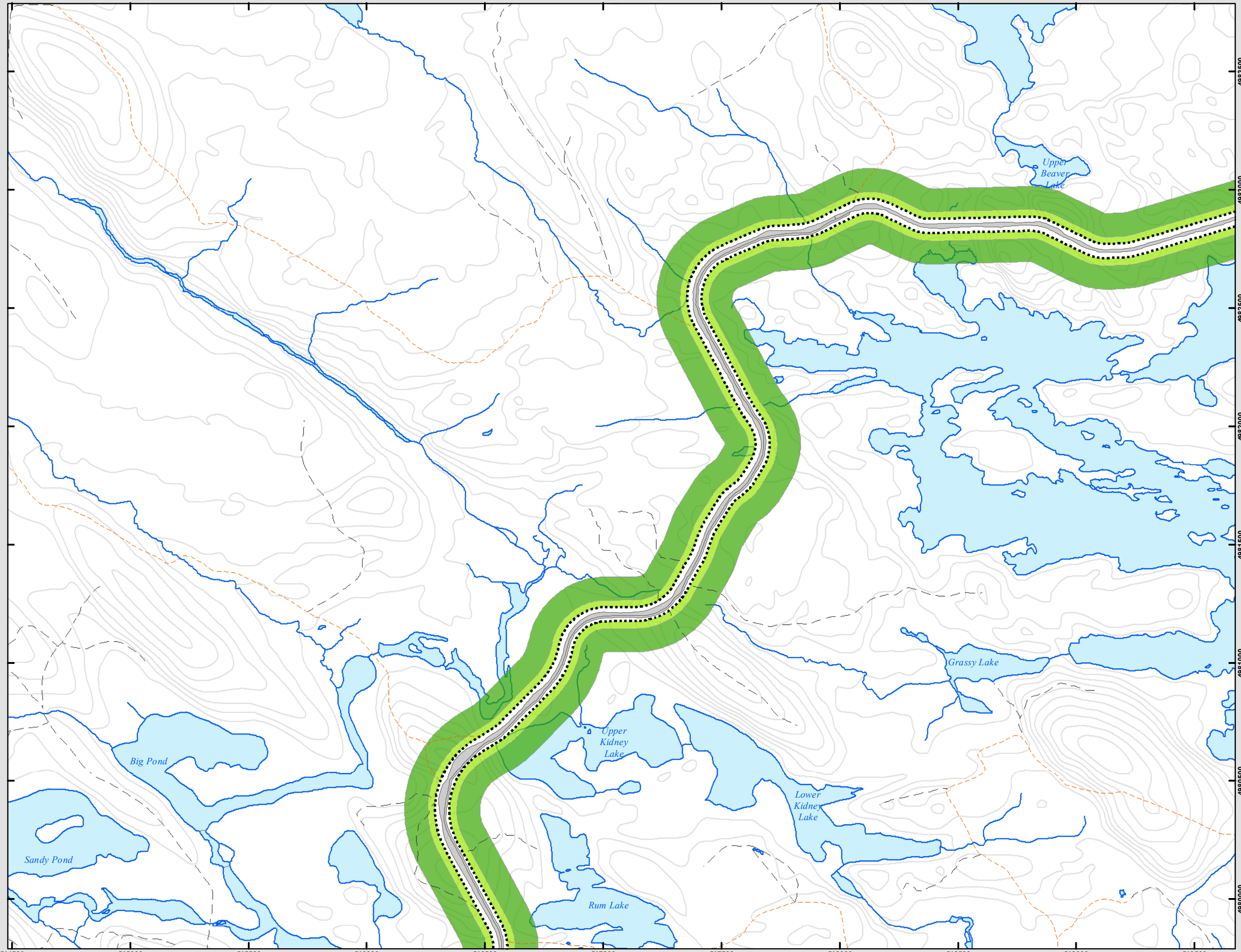
1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Prepared For:

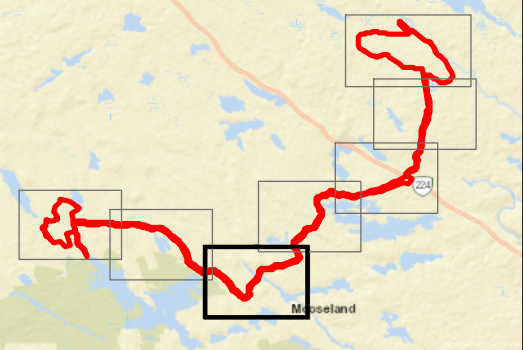


FIGURE CEA 2-31-10E

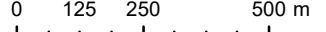
Beaver Dam Mine Project Air Contours SO2 24-Hour Levels

- Receptor
- SO2 Ranges (ug/m3)
 - 0.2 - 0.4
 - 0.4 - 0.6
- Local Road
- - - Dry Weather / Seasonal Road
- - - - Diveways (>300 m)
- - - - Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure
- · - · - Proposed Property Boundary

SO2 24-Hour Guideline: 300 ug/m3 (not shown on map)
Background Concentration Used: 5.2 ug/m3 (not shown on map)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter



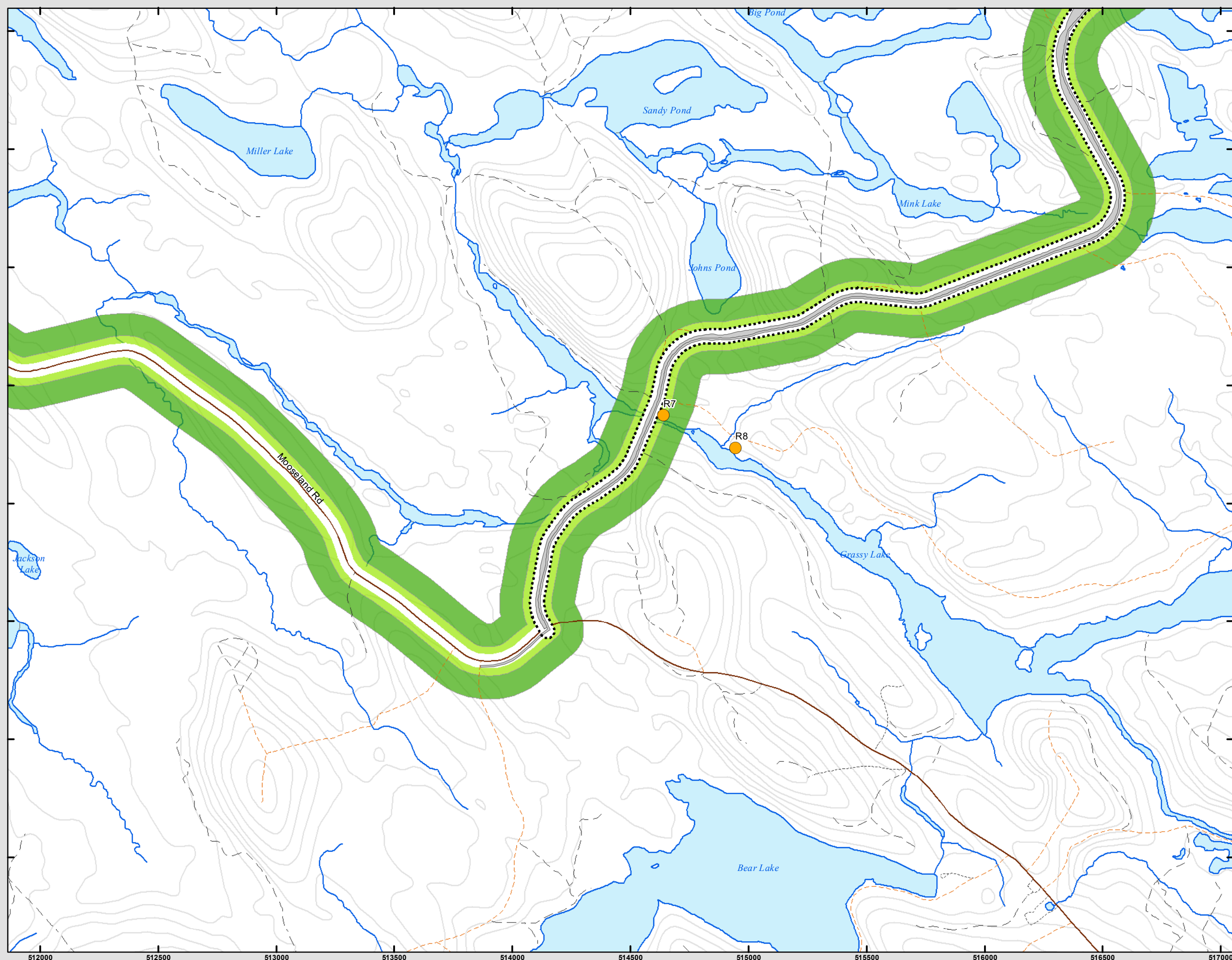
1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Gamin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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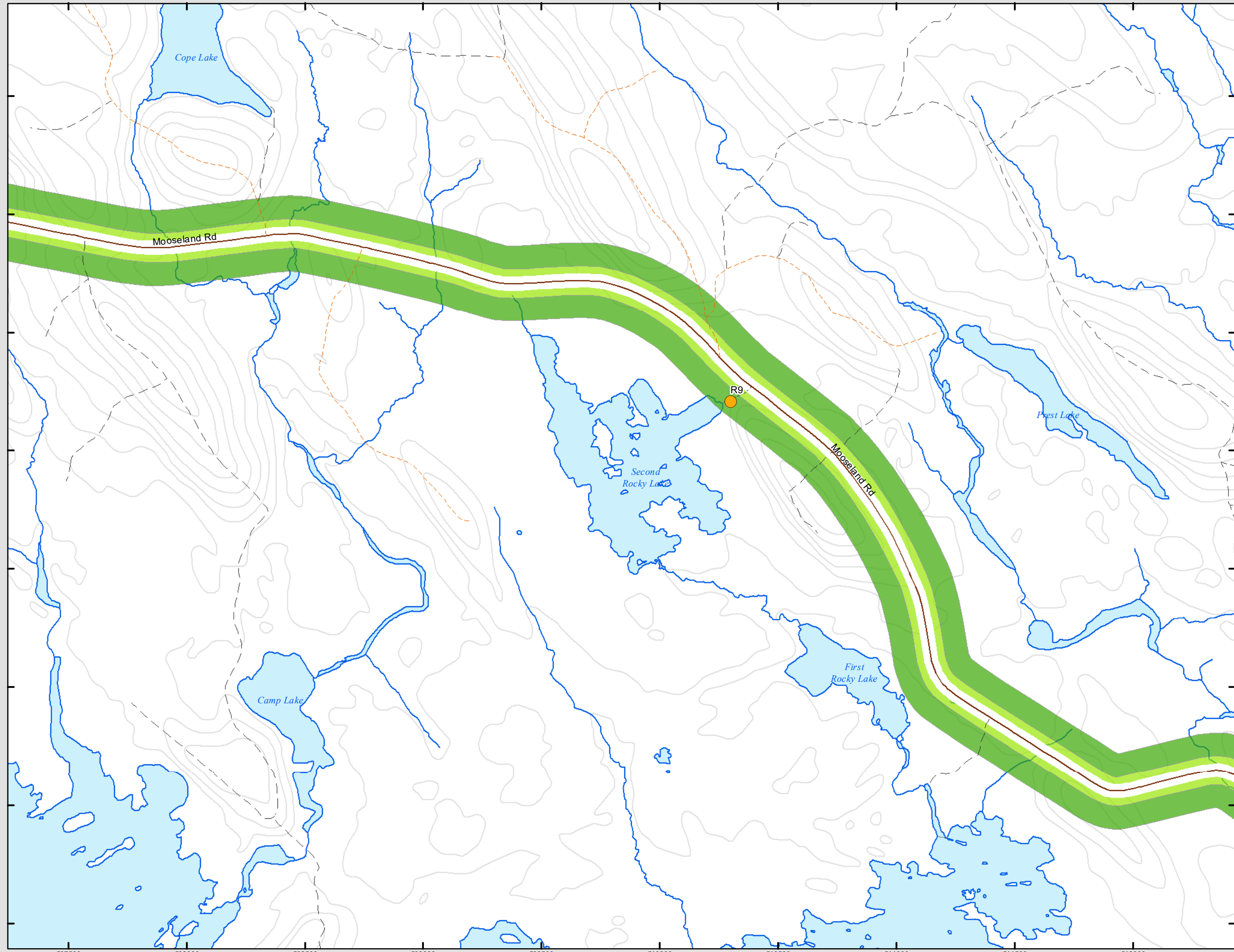


Prepared For:



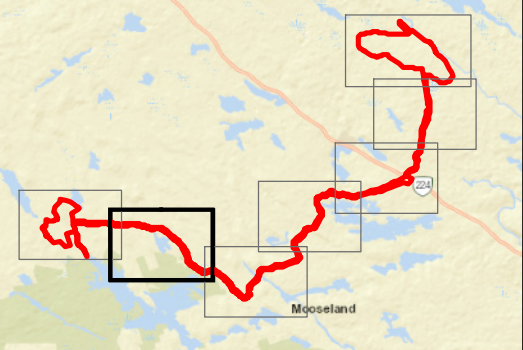
FIGURE CEA 2-31-10F

Beaver Dam Mine Project Air Contours SO2 24-Hour Levels



- Receptor
- SO2 Ranges (ug/m3)
 - 0.2 - 0.4
 - 0.4 - 0.6
- Local Road
- Dry Weather / Seasonal Road
- Diveways (>300 m)
- Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure

SO2 24-Hour Guideline: 300 ug/m3 (not shown on map)
Background Concentration Used: 5.2 ug/m3 (not shown on map)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 125 250 500 m

1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Gamin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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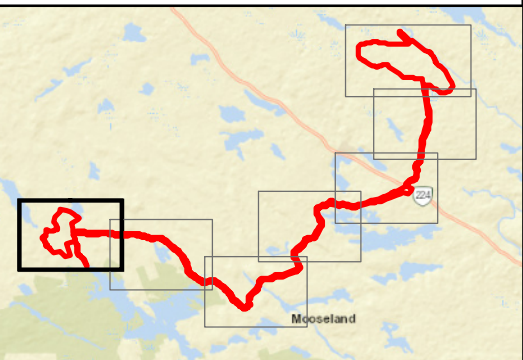


FIGURE CEAA 2-31-10G

Beaver Dam Mine Project Air Contours SO2 24-Hour Levels

- SO2 Ranges (ug/m3)**
- 0.2 - 0.4
 - 0.4 - 0.6
- Local Road
 - Dry Weather / Seasonal Road
 - Diveways (>300 m)
 - Track
 - NSTDB Mapped Watercourses
 - Lakes
 - Proposed Project Infrastructure
 - Existing Touquoy Infrastructure Layout
 - Existing Touquoy Property Boundary

SO2 24-Hour Guideline: 300 ug/m3 (not shown on map)
Background Concentration Used: 5.2 ug/m3 (not shown on map)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 125 250 500 m

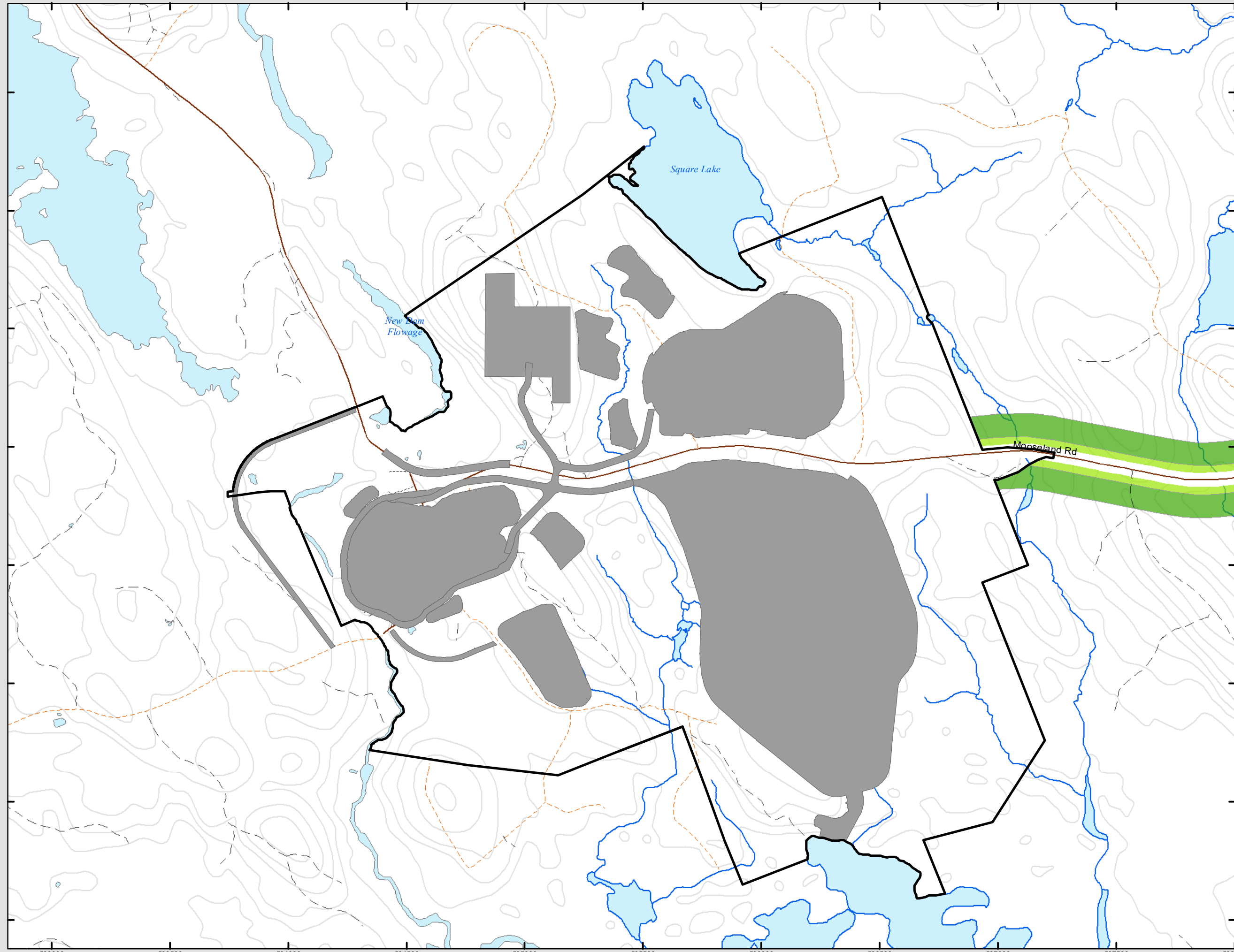
1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Prepared For:

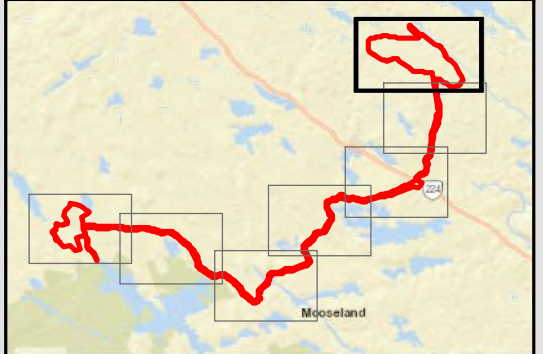


FIGURE CEEA 2-31-11A

Beaver Dam Mine Project Air Contours SO2 Average Annual Levels

- Beaver Dam Mine Site (concentrations reach background within boundary)
- SO2 Ranges (ug/m3)
 - 0.2 - 0.4
 - 0.4 - 0.6
 - 0.6 - 0.8
 - 0.8
- Local Road
- Dry Weather / Seasonal Road
- Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure
- Proposed Property Boundary

SO2 Annual Guideline: 60 ug/m3 (not shown on map)
Background Concentration Used: 1.9 ug/m3 (not shown on map)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 170 340 680 m

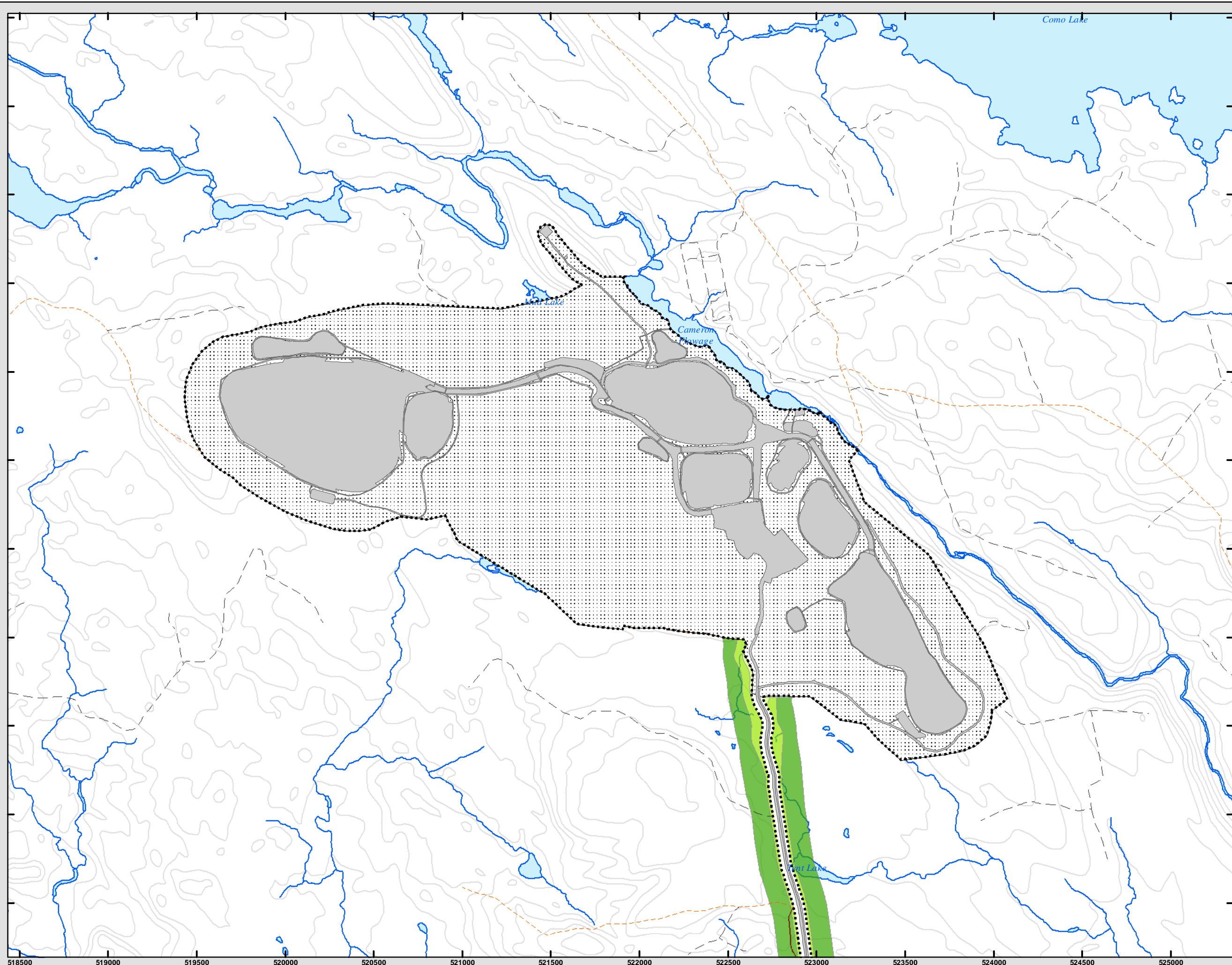
1:20,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Gamin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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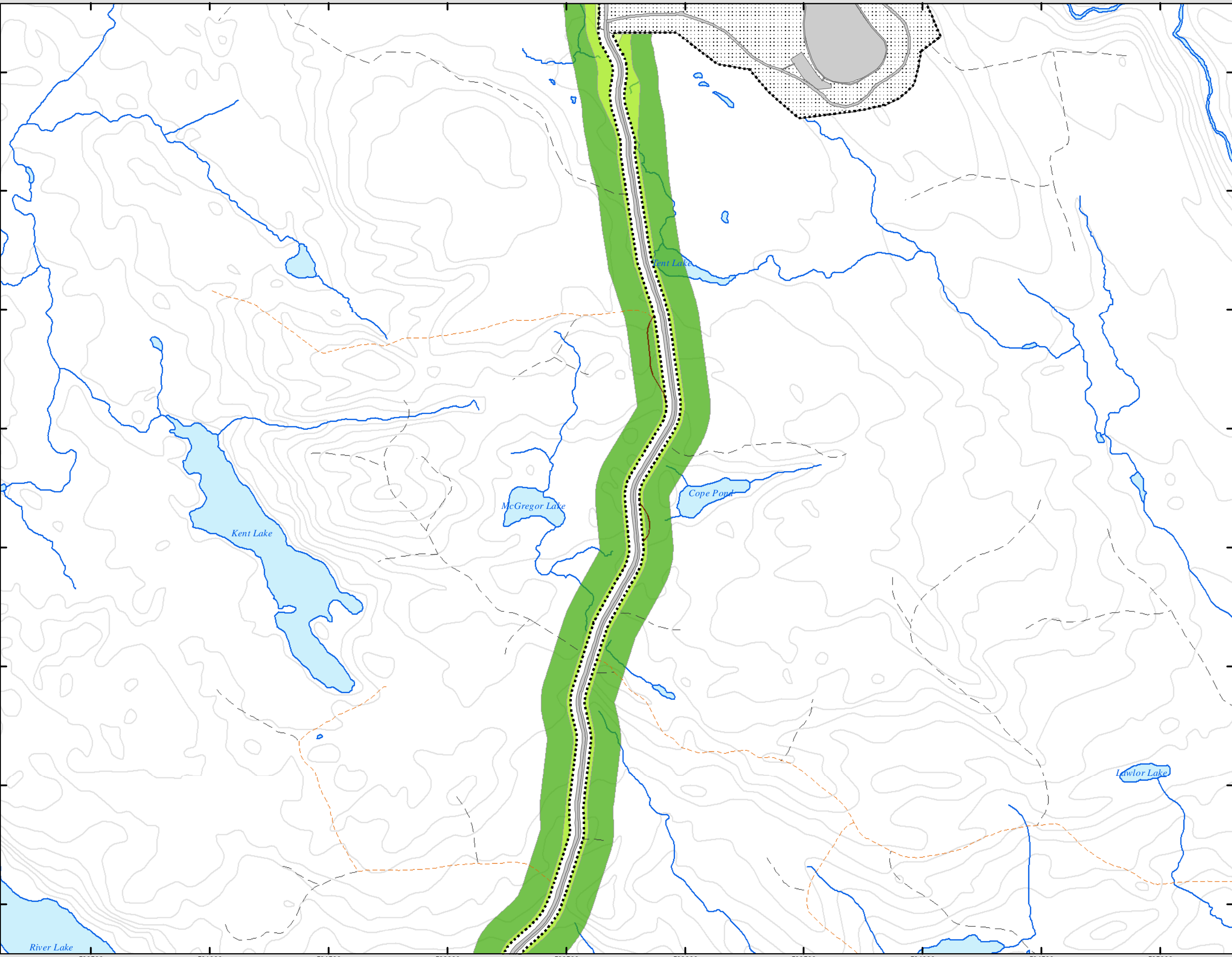
Prepared For:



Atlantic Gold

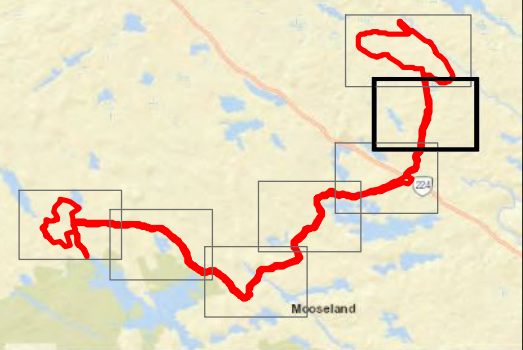
FIGURE CEEA 2-31-11B

**Beaver Dam Mine Project
Air Contours
SO2 Average Annual Levels**

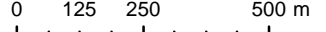


- Beaver Dam Mine Site (concentrations reach background within boundary)
 - Local Road
 - Dry Weather / Seasonal Road
 - Track
 - NSTDB Mapped Watercourses
 - Lakes
 - Proposed Project Infrastructure
 - Proposed Property Boundary
- SO2 Ranges (ug/m3)**
- 0.2 - 0.4
 - 0.4 - 0.6
 - 0.6 - 0.8

SO2 Annual Guideline: 60 ug/m3 (not shown on map)
Background Concentration Used: 1.9 ug/m3 (not shown on map)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter



1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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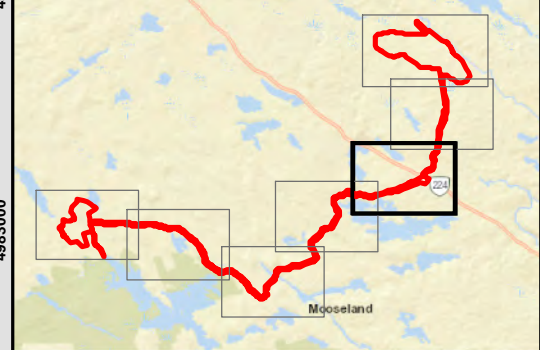


FIGURE CEA 2-31-11C

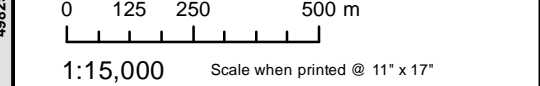
Beaver Dam Mine Project Air Contours SO2 Average Annual Levels

- Receptor
- SO2 Ranges (ug/m3)**
- 0.2 - 0.4
- 0.4 - 0.6
- Collector Road
- Local Road
- Dry Weather / Seasonal Road
- Diveways (>300 m)
- Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure
- Proposed Property Boundary

SO2 Annual Guideline: 60 ug/m3 (not shown on map)
Background Concentration Used: 1.9 ug/m3 (not shown on map)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

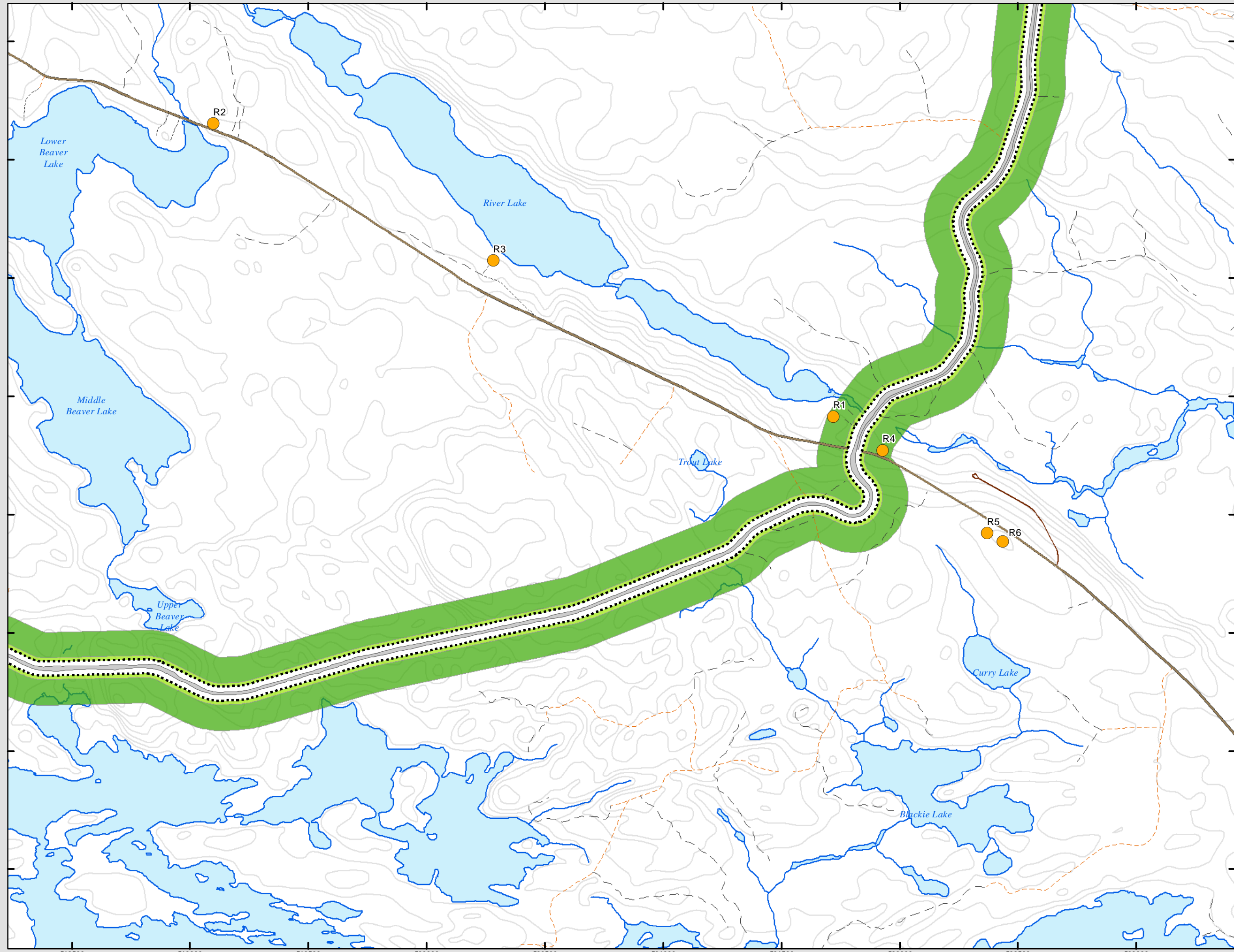


Drawn By: SS
Reviewed By: MM
Date: 2021-09-21

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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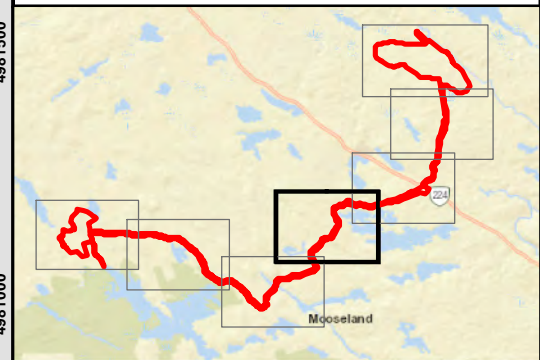


FIGURE CEA 2-31-11D

**Beaver Dam Mine Project
Air Contours
SO2 Average Annual Levels**

- SO2 Ranges (ug/m3)**
- 0.2 - 0.4
 - 0.4 - 0.6
- Dry Weather / Seasonal Road
 - Track
 - NSTDB Mapped Watercourses
 - Lakes
 - Proposed Project Infrastructure
 - Proposed Property Boundary

SO2 Annual Guideline: 60 ug/m3 (not shown on map)
Background Concentration Used: 1.9 ug/m3 (not shown on map)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 125 250 500 m

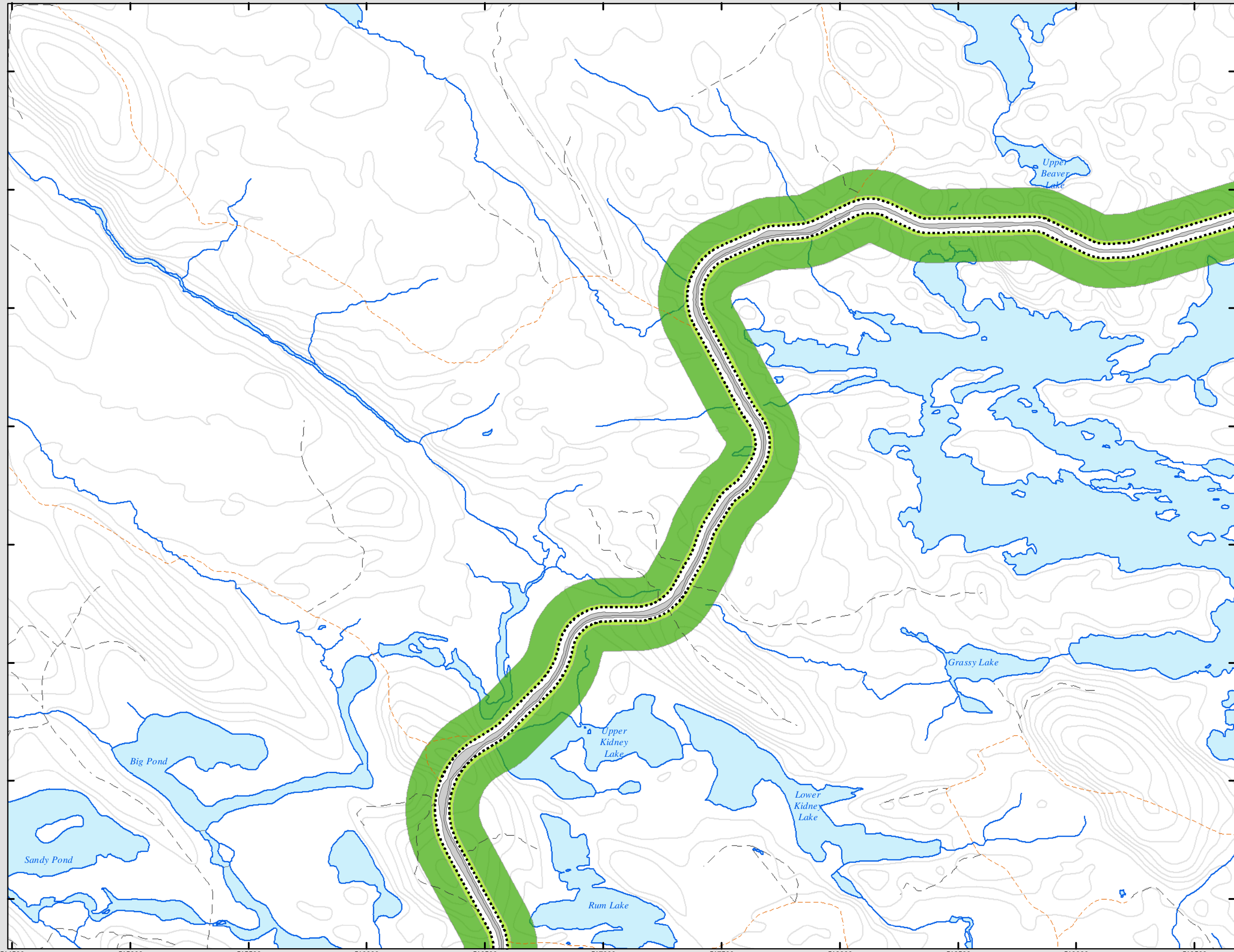
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Reviewed By: MM

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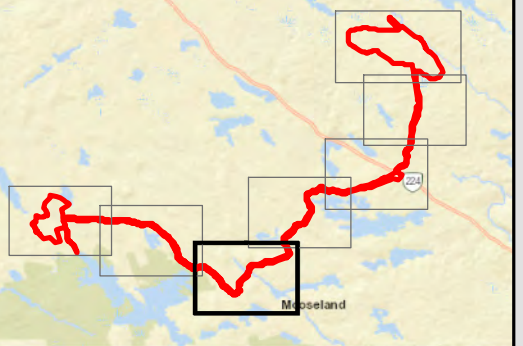


FIGURE CEEA 2-31-11D

Beaver Dam Mine Project Air Contours SO2 Average Annual Levels

- Receptor
- SO2 Ranges (ug/m3)
 - 0.2 - 0.4
 - 0.4 - 0.6
- Local Road
- Dry Weather / Seasonal Road
- Diveways (>300 m)
- Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure
- Proposed Property Boundary

SO2 Annual Guideline: 60 ug/m3 (not shown on map)
Background Concentration Used: 1.9 ug/m3 (not shown on map)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

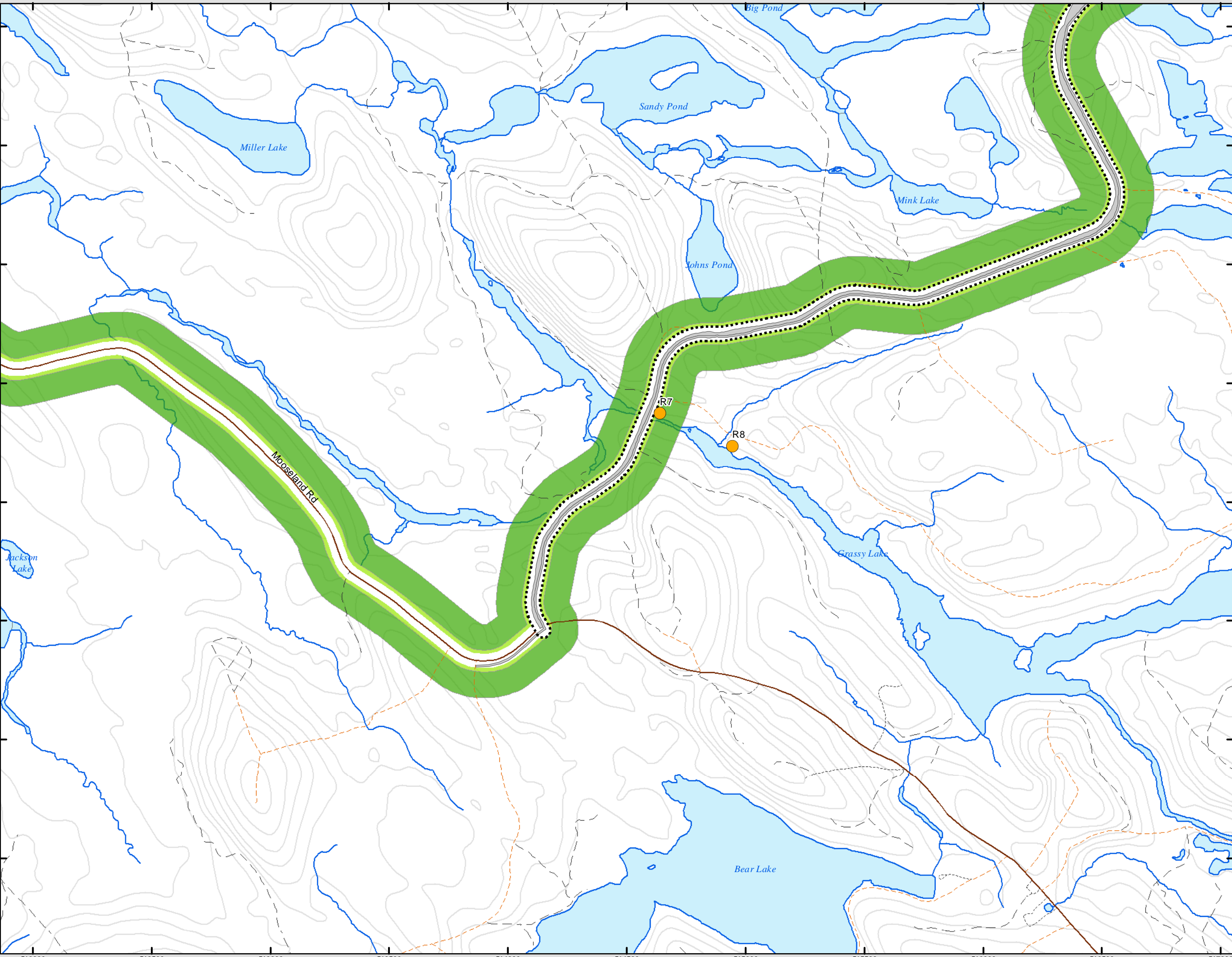
0 125 250 500 m
1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

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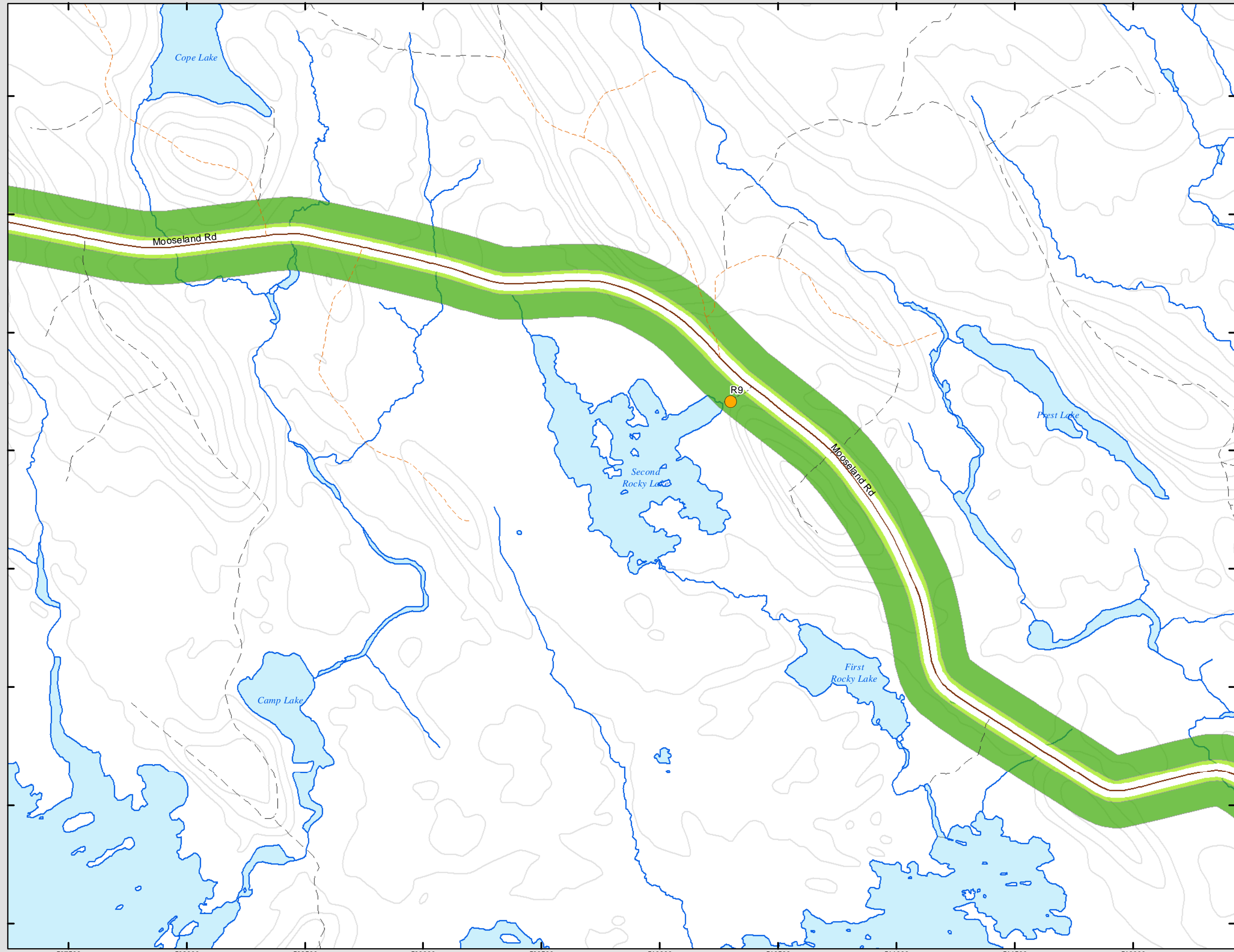


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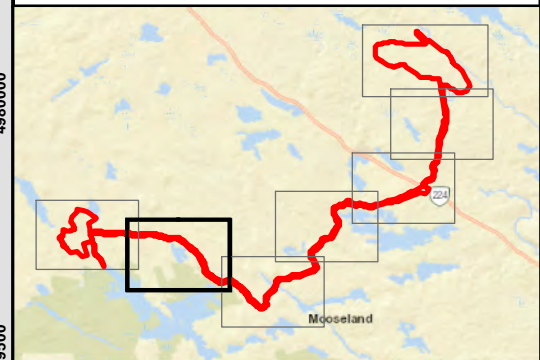
FIGURE CEA 2-31-11F

Beaver Dam Mine Project Air Contours SO2 Average Annual Levels



- Receptor
- SO2 Ranges (ug/m3)
 - 0.2 - 0.4
 - 0.4 - 0.6
- Local Road
- Dry Weather / Seasonal Road
- Diveways (>300 m)
- Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure

SO2 Annual Guideline: 60 ug/m3 (not shown on map)
Background Concentration Used: 1.9 ug/m3 (not shown on map)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 125 250 500 m

1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Gamin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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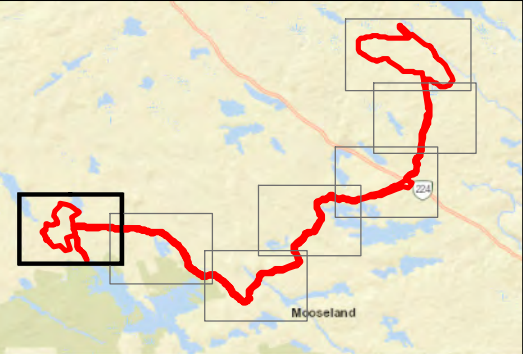


FIGURE CEA 2-31-11G

Beaver Dam Mine Project Air Contours SO2 Average Annual Levels

- SO2 Ranges (ug/m3)**
- 0.2 - 0.4
 - 0.4 - 0.6
- Local Road
 - Dry Weather / Seasonal Road
 - Diveways (>300 m)
 - Track
 - NSTDB Mapped Watercourses
 - Lakes
 - Proposed Project Infrastructure
 - Existing Touquoy Infrastructure Layout
 - Existing Touquoy Property Boundary

SO2 Annual Guideline: 60 ug/m3 (not shown on map)
Background Concentration Used: 1.9 ug/m3 (not shown on map)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 125 250 500 m

1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Gamin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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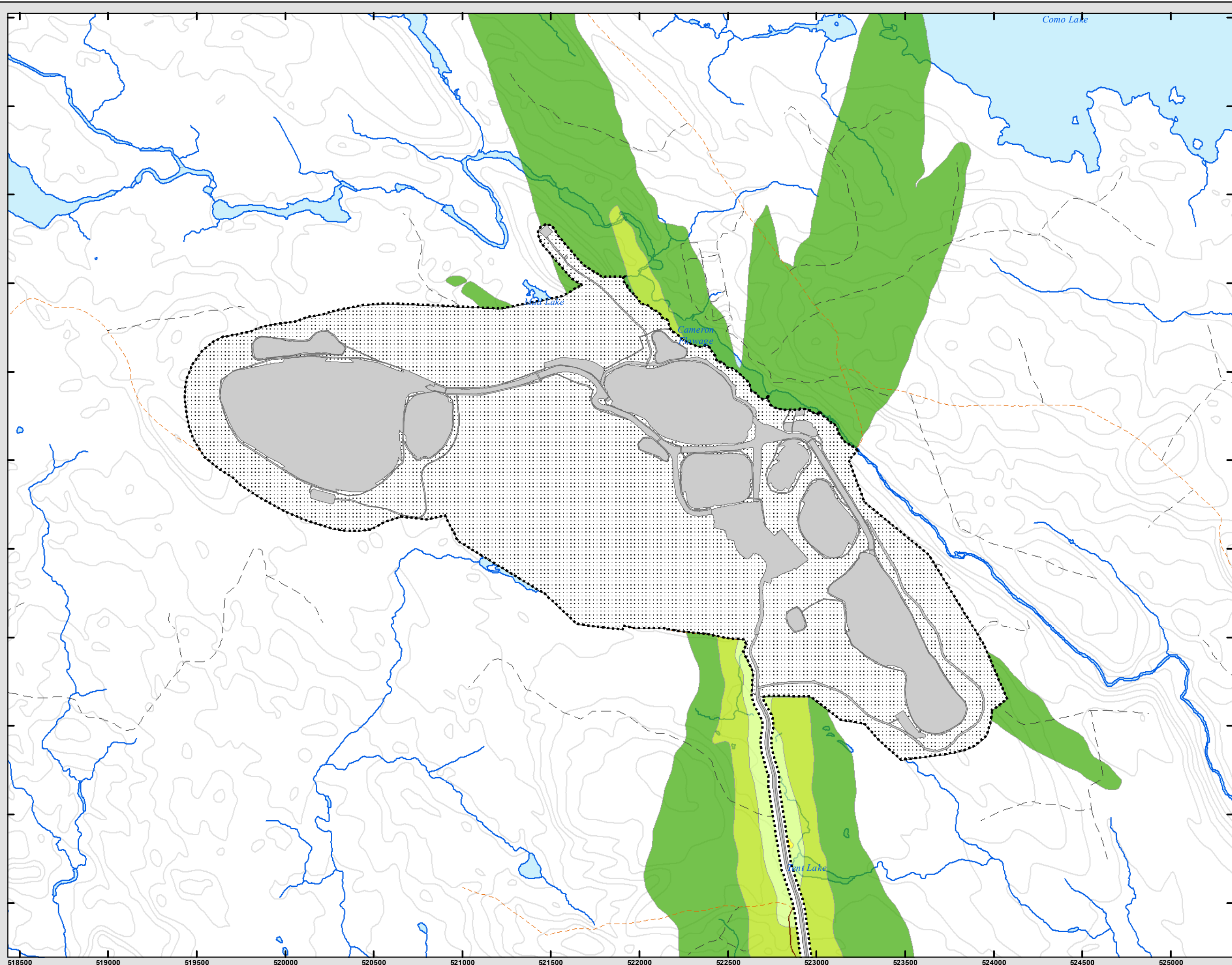
Prepared For:



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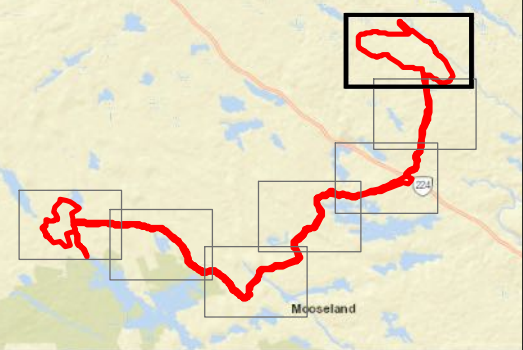
FIGURE CEAA 2-31-12A

**Beaver Dam Mine Project
Air Contours
Total VOC 1-Hour Levels**



- Beaver Dam Mine Site (no concentration data within boundary)
- Total VOC Ranges (ug/m3)**
 - 0.2 - 0.4
 - 0.4 - 0.6
 - 0.6 - 0.8
 - 0.8
- Local Road
- Dry Weather / Seasonal Road
- Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure
- Proposed Property Boundary

Total VOC 1-Hour Guideline: No guideline available/selected
Background Concentration Used: No concentration available/selected



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 170 340 680 m

1:20,000 Scale when printed @ 11" x 17"

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Reviewed By: MM

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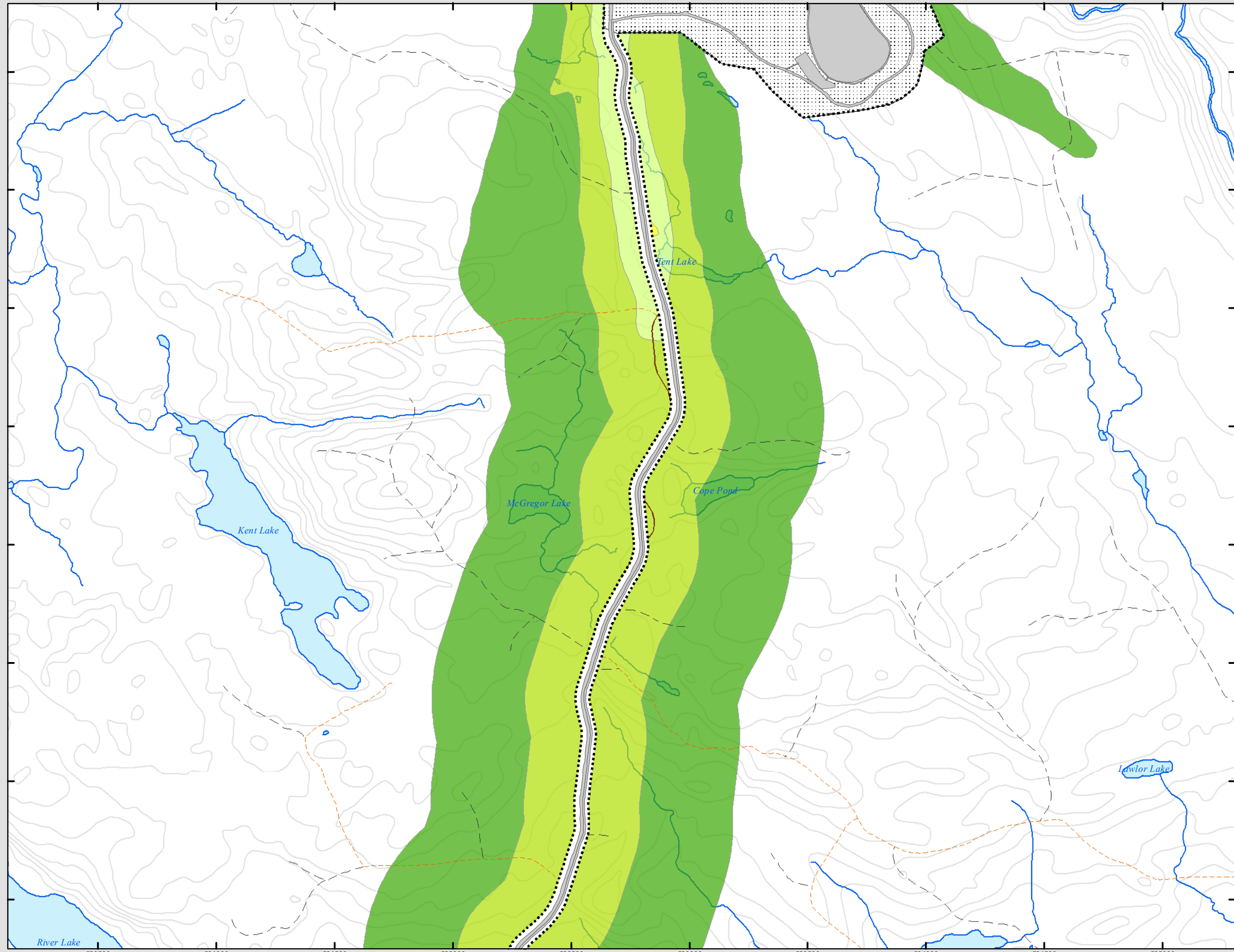
Prepared For:



Atlantic Gold

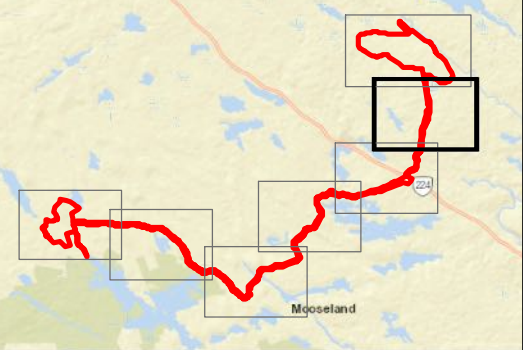
FIGURE CEEA 2-31-12B

**Beaver Dam Mine Project
Air Contours
Total VOC 1-Hour Levels**


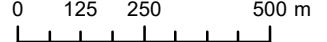


Beaver Dam Mine Site (no concentration data within boundary)	Local Road
	Dry Weather / Seasonal Road
Total VOC Ranges (ug/m3)	Track
0.2 - 0.4	NSTDB Mapped Watercourses
0.4 - 0.6	Lakes
0.6 - 0.8	Proposed Project Infrastructure
0.8	Proposed Property Boundary

Total VOC 1-Hour Guideline: No guideline available/selected
Background Concentration Used: No concentration available/selected



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-23
Reviewed By: MM

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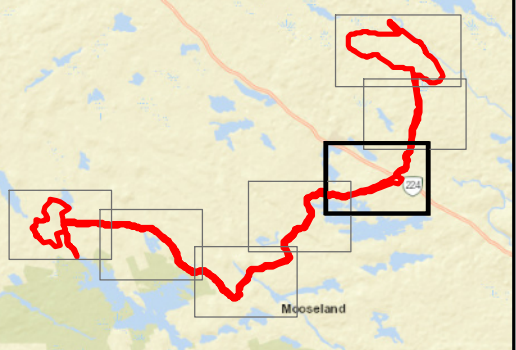


FIGURE CEA 2-31-12C

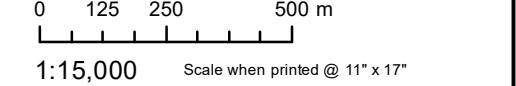
Beaver Dam Mine Project
Air Contours
Total VOC 1-Hour Levels

- Receptor
- Collector Road
- Local Road
- Dry Weather / Seasonal Road
- Diveways (>300 m)
- Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure
- Proposed Property Boundary

Total VOC 1-Hour Guideline: No guideline available/selected
Background Concentration Used: No concentration available/selected



Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

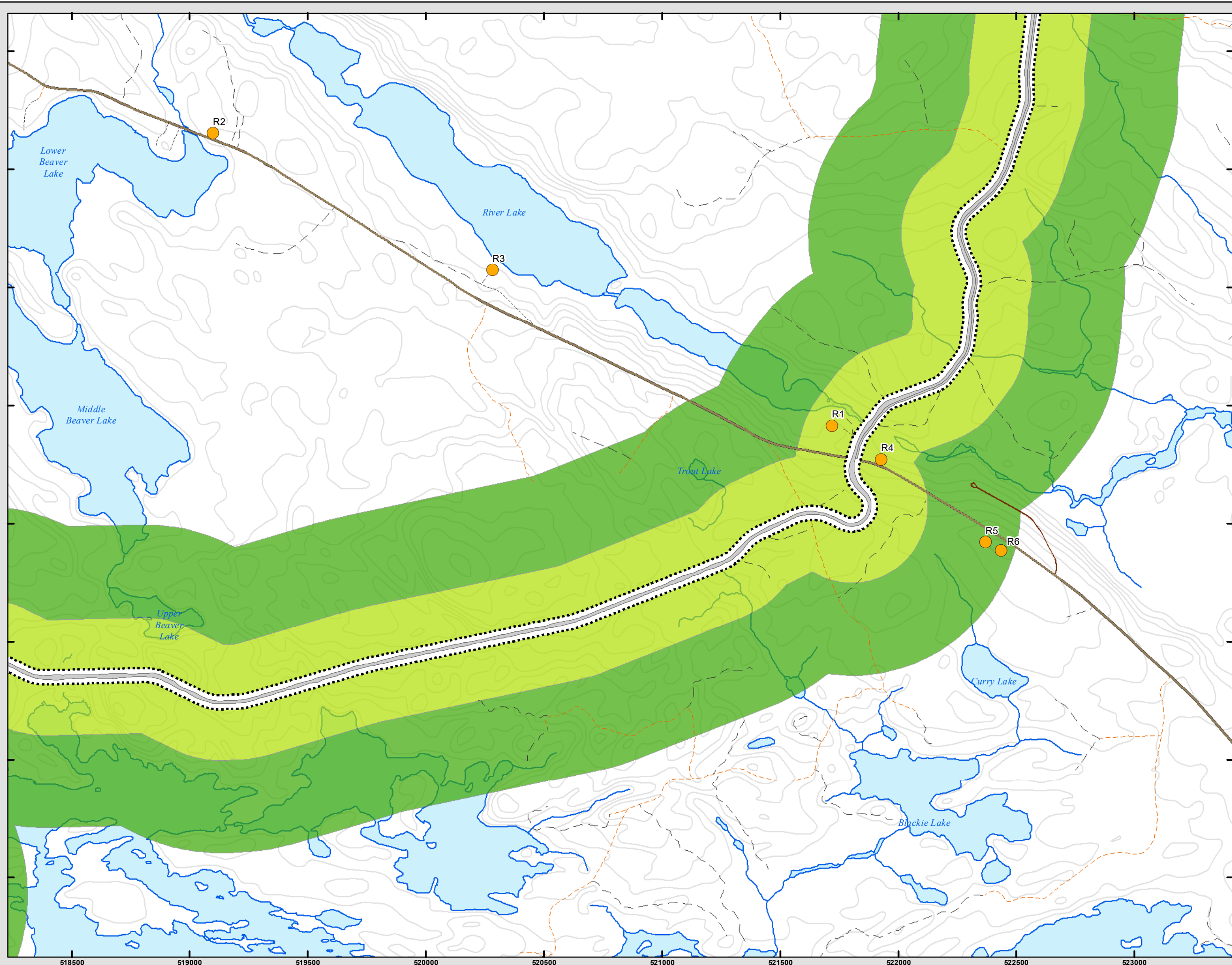


Drawn By: SS
Reviewed By: MM
Date: 2021-09-23

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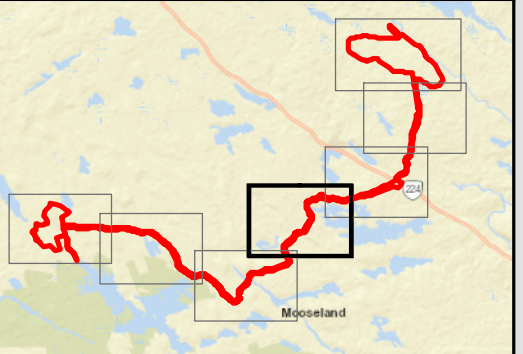


FIGURE CEA 2-31-12D

Beaver Dam Mine Project Air Contours Total VOC 1-Hour Levels

- Total VOC Ranges (ug/m3)**
- 0.2 - 0.4
 - 0.4 - 0.6
- Legend:**
- Dry Weather / Seasonal Road
 - Track
 - NSTDB Mapped Watercourses
 - Lakes
 - Proposed Project Infrastructure
 - Proposed Property Boundary

Total VOC 1-Hour Guideline: No guideline available/selected
Background Concentration Used: No concentration available/selected



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 125 250 500 m

1:15,000 Scale when printed @ 11" x 17"

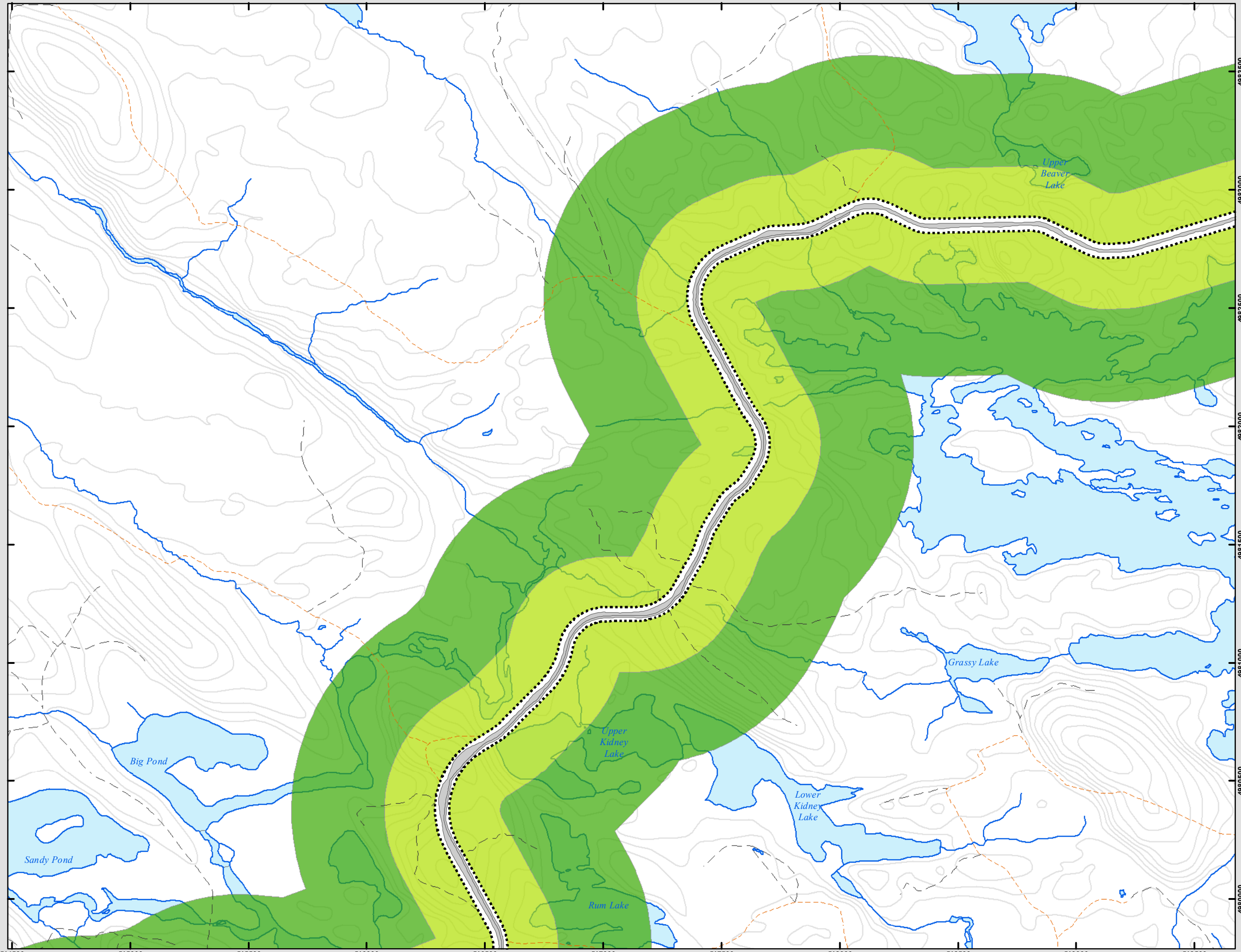
Drawn By: SS Date: 2021-09-23
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Document Name: BD_EIS_Figure6-2-X_Air_VOC_1hr



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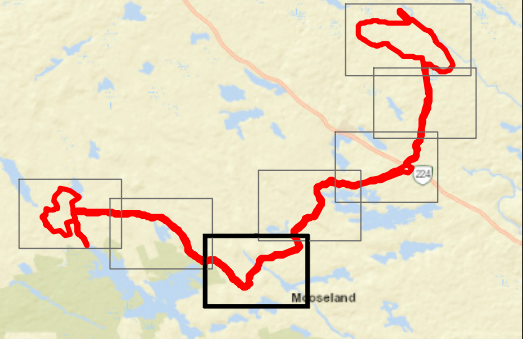


FIGURE CEA 2-31-12E

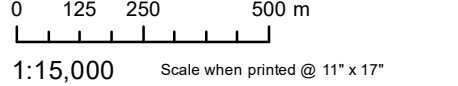
Beaver Dam Mine Project Air Contours Total VOC 1-Hour Levels

- Receptor
- Total VOC Ranges (ug/m3)
 - 0.2 - 0.4
 - 0.4 - 0.6
- Local Road
- - - Dry Weather / Seasonal Road
- - - Diveways (>300 m)
- - - Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure
- - - Proposed Property Boundary

Total VOC 1-Hour Guideline: No guideline available/selected
Background Concentration Used: No concentration available/selected



Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

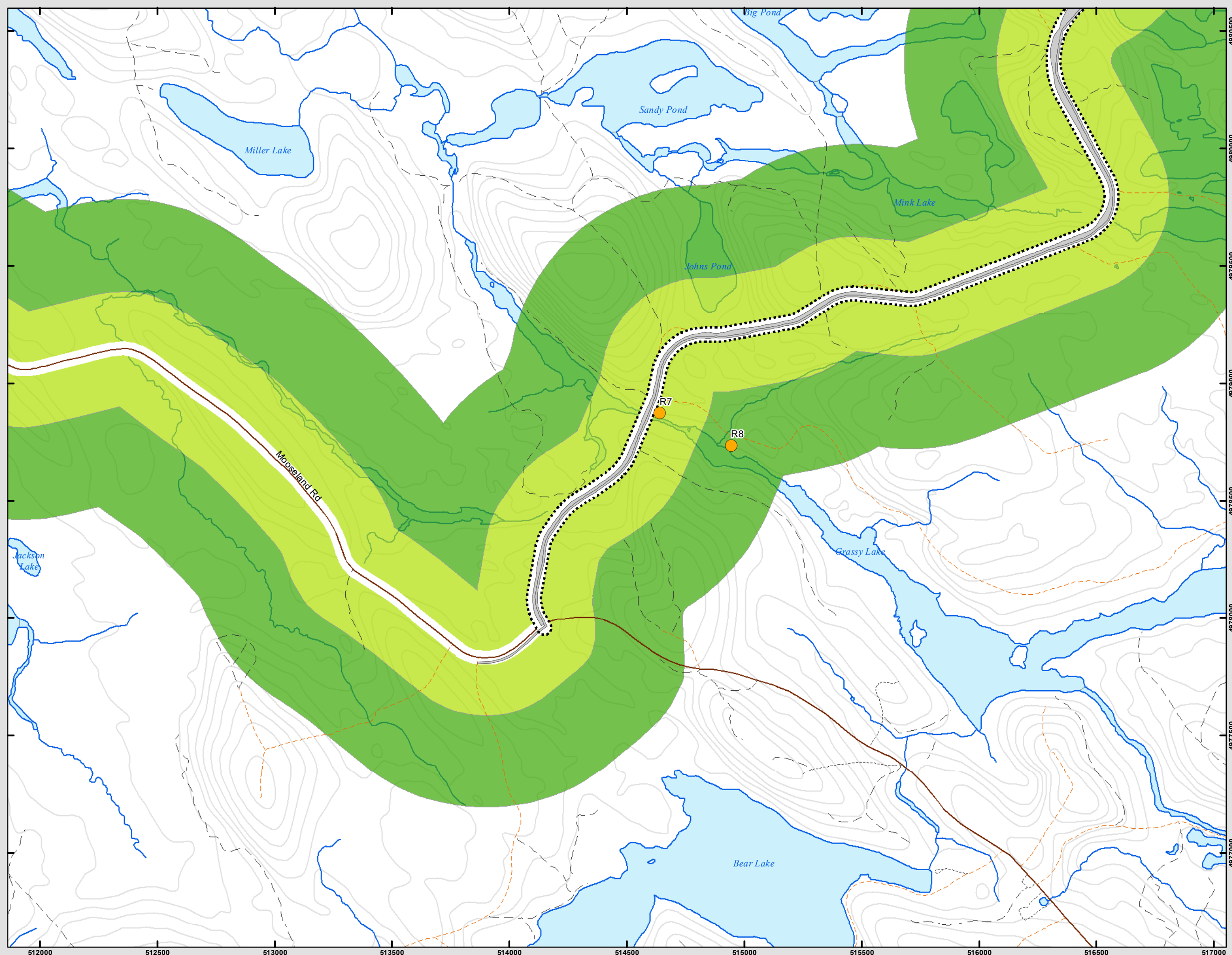


Drawn By: SS Date: 2021-09-23
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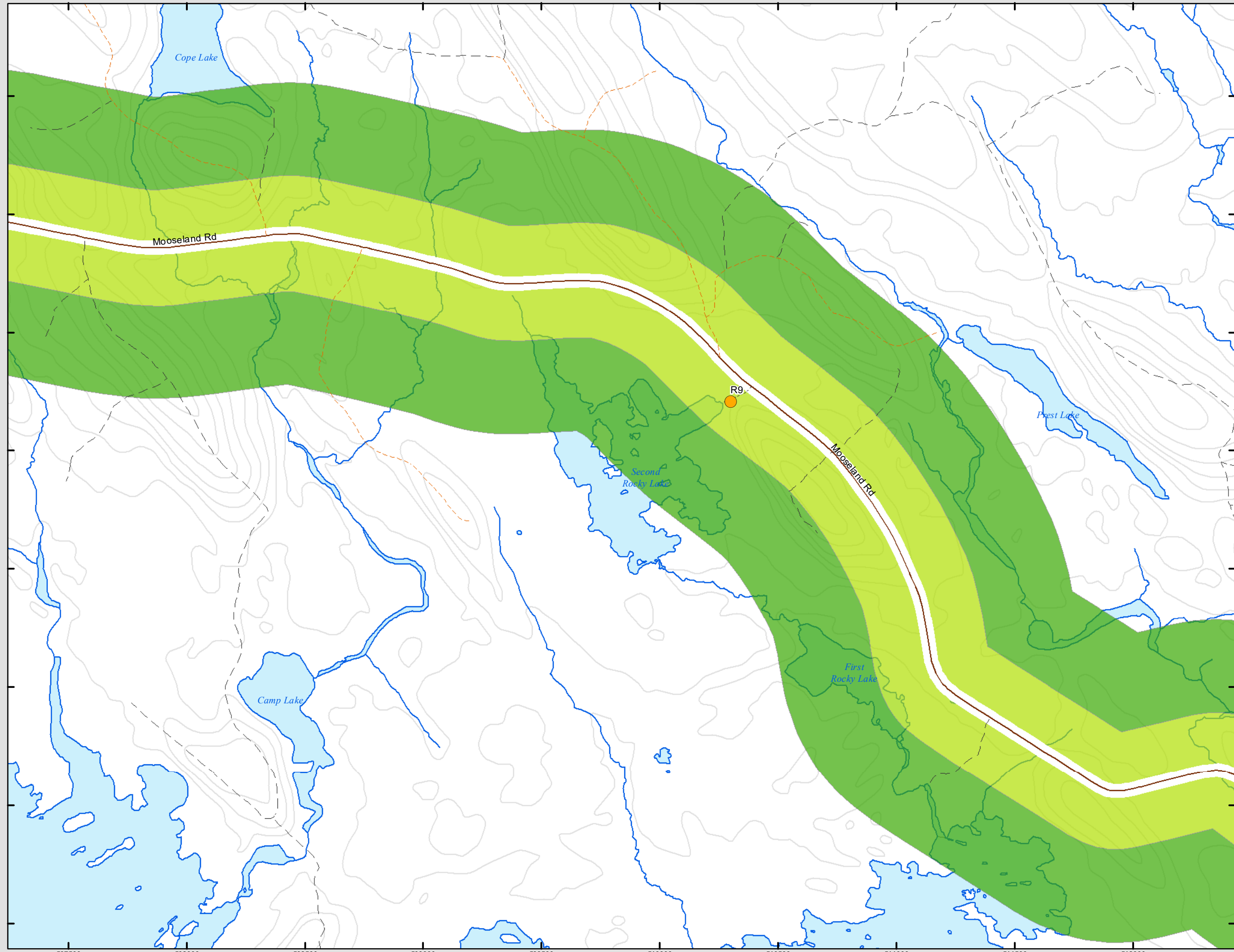


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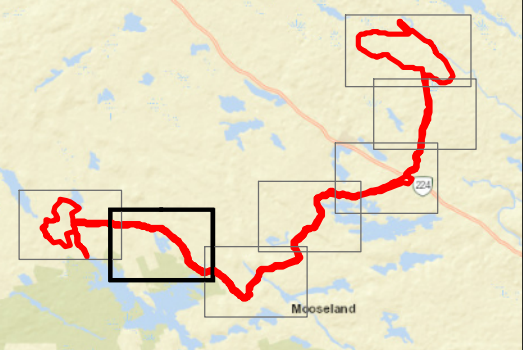
FIGURE CEA 2-31-12F

Beaver Dam Mine Project Air Contours Total VOC 1-Hour Levels



- Receptor
- Local Road
- - - Dry Weather / Seasonal Road
- 0.2 - 0.4
- 0.4 - 0.6
- - - Diveways (>300 m)
- - - Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure

Total VOC 1-Hour Guideline: No guideline available/selected
Background Concentration Used: No concentration available/selected



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 125 250 500 m

1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-23
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Gamin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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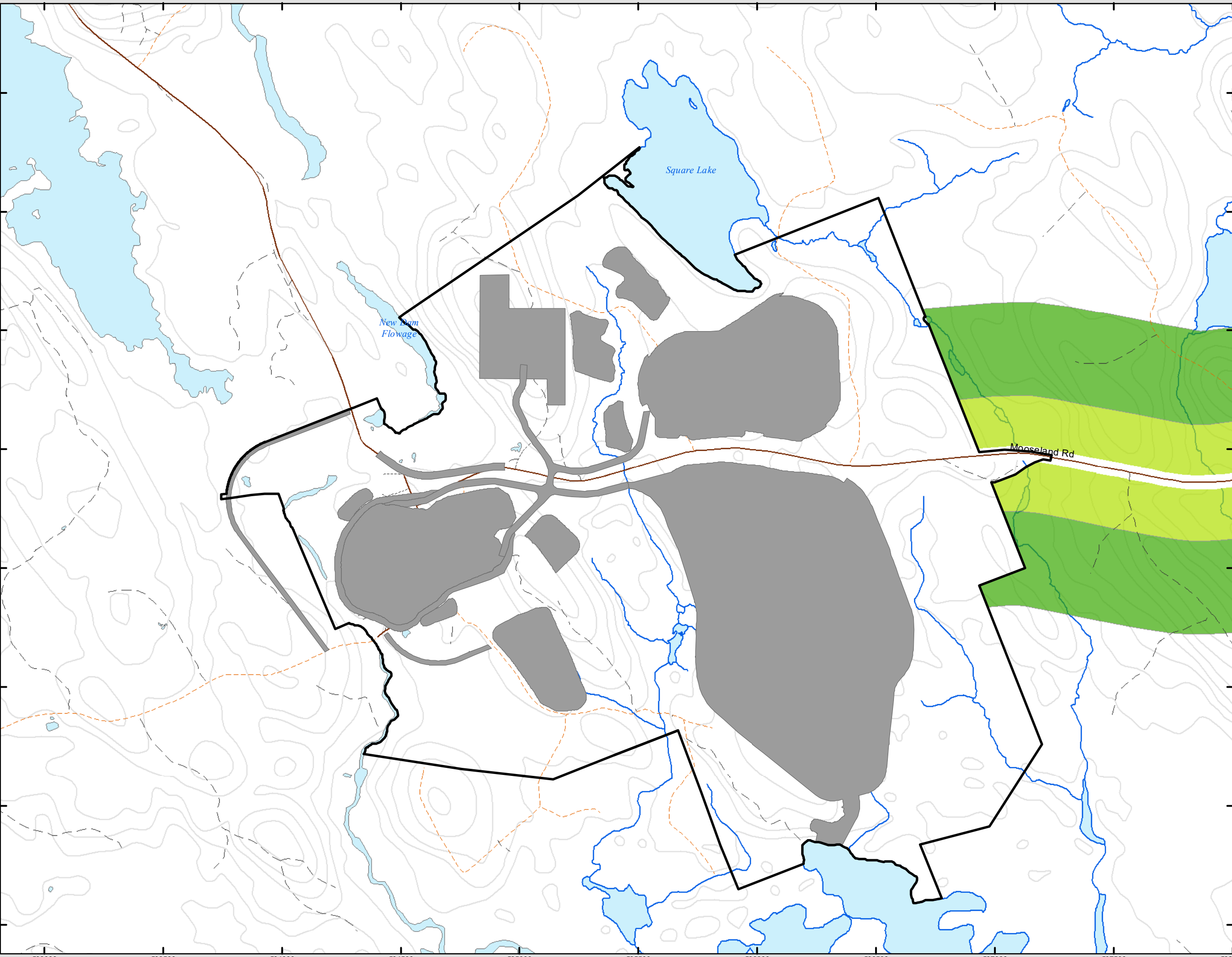
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FIGURE CEA 2-31-12G

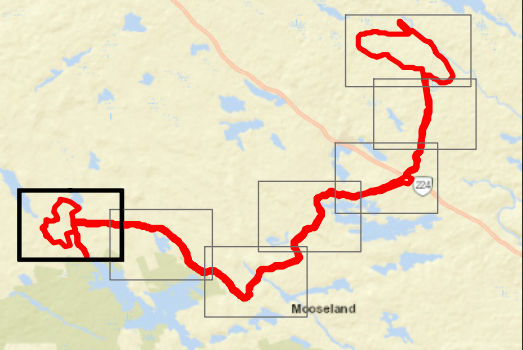
**Beaver Dam Mine Project
Air Contours
Total VOC 1-Hour Levels**



Total VOC Ranges (ug/m3)
0.2 - 0.4
0.4 - 0.6

- Local Road
- - - Dry Weather / Seasonal Road
- - - Diveways (>300 m)
- - - Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure
- Existing Touquoy Infrastructure Layout
- Existing Touquoy Property Boundary

Total VOC 1-Hour Guideline: No guideline available/selected
Background Concentration Used: No concentration available/selected



Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

0 125 250 500 m

1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-23
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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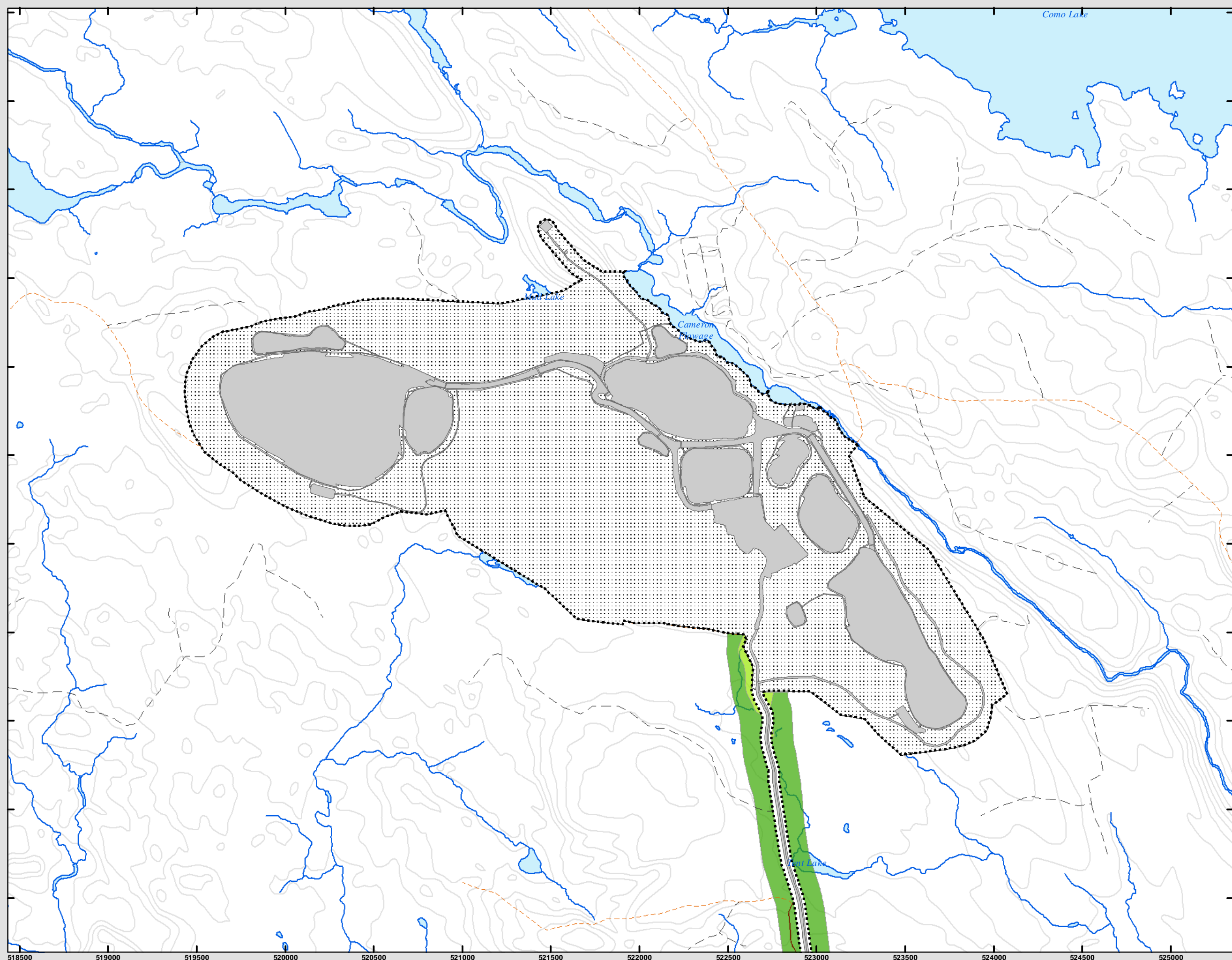
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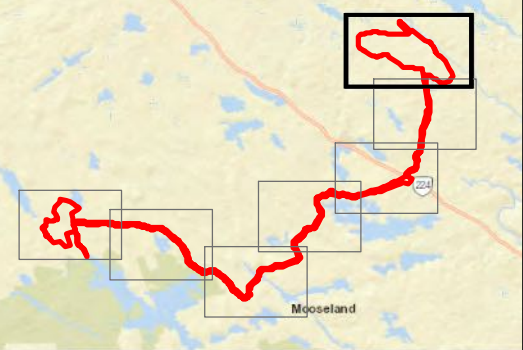
FIGURE CEAA 2-31-13A

**Beaver Dam Mine Project
Air Contours
Total VOC 24-Hour Levels**



- Beaver Dam Mine Site (no concentration data within boundary)
- Total VOC Ranges (ug/m3)**
 - 0.1-0.2
 - 0.2-0.3
 - 0.3
- Local Road
- Dry Weather / Seasonal Road
- Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure
- Proposed Property Boundary

Total VOC 24-Hour Guideline: No guideline available/selected
Background Concentration Used: No concentration available/selected



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 170 340 680 m

1:20,000 Scale when printed @ 11" x 17"

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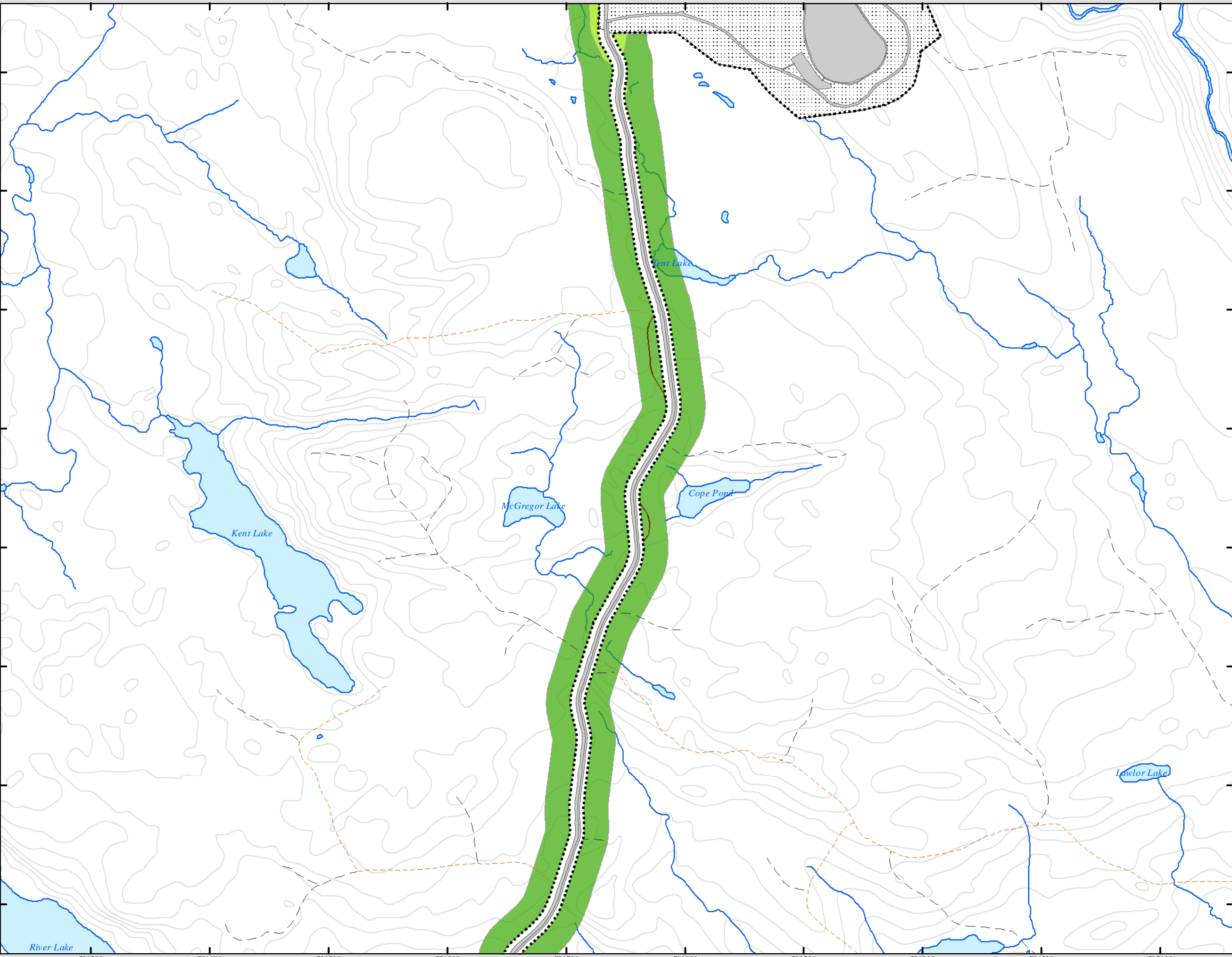
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Atlantic Gold

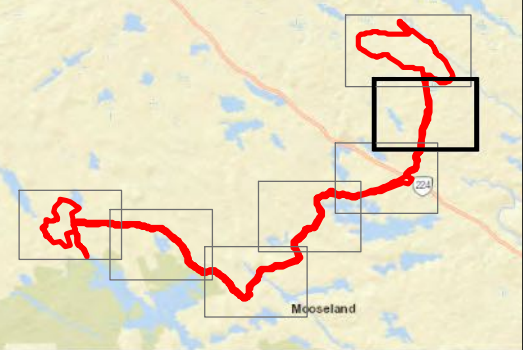
FIGURE CEAA 2-31-13B

**Beaver Dam Mine Project
Air Contours
Total VOC 24-Hour Levels**



- Beaver Dam Mine Site (no concentration data within boundary)
- Total VOC Ranges (ug/m3)**
 - 0.1-0.2
 - 0.2-0.3
 - 0.3
- Local Road
- Dry Weather / Seasonal Road
- Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure
- Proposed Property Boundary

Total VOC 24-Hour Guideline: No guideline available/selected
Background Concentration Used: No concentration available/selected



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 125 250 500 m

1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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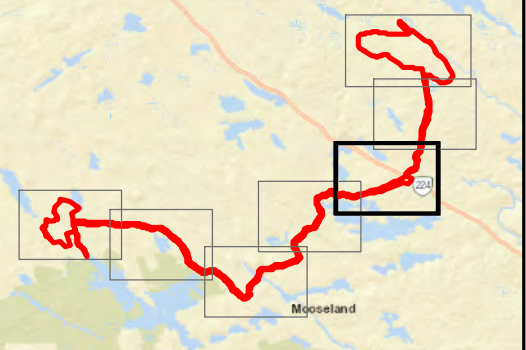


FIGURE CEA 2-31-13C

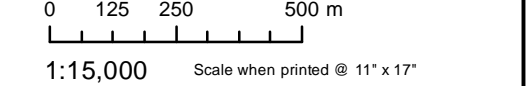
Beaver Dam Mine Project Air Contours Total VOC 24-Hour Levels

- Receptor
- Total VOC Ranges (ug/m3)
 - 0.1-0.2
- Collector Road
- Local Road
- Dry Weather / Seasonal Road
- Diveways (>300 m)
- Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure
- Proposed Property Boundary

Total VOC 24-Hour Guideline: No guideline available/selected
Background Concentration Used: No concentration available/selected



Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

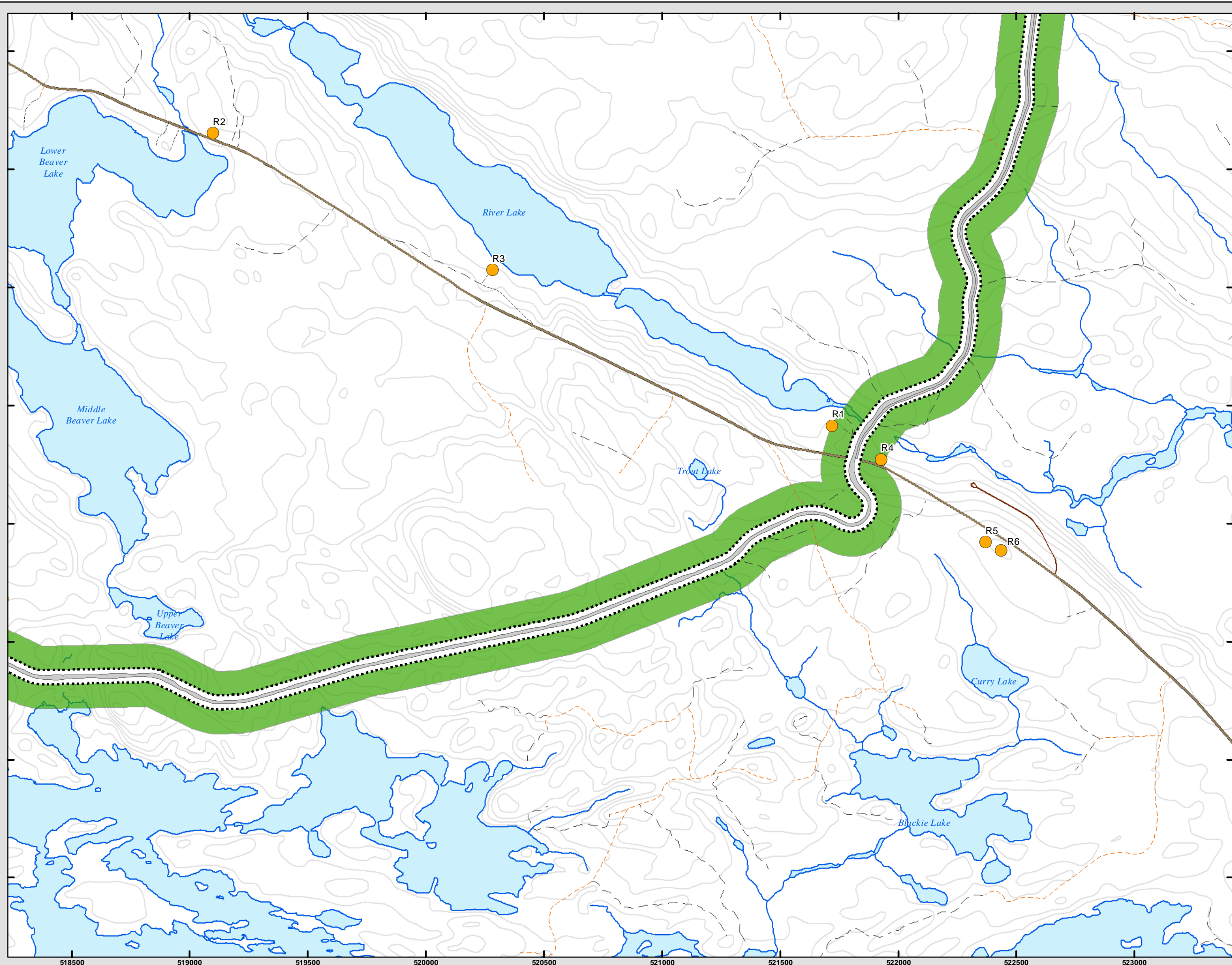


Drawn By: SS Date: 2021-09-21
Reviewed By: MM

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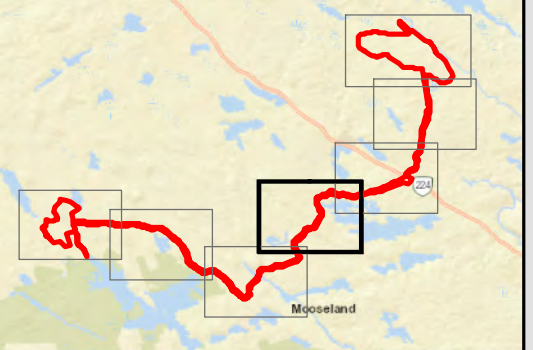


FIGURE CEA 2-31-13D

Beaver Dam Mine Project Air Contours Total VOC 24-Hour Levels

- Total VOC Ranges (ug/m3)**
- 0.1-0.2
 - Dry Weather / Seasonal Road
 - Track
 - NSTDB Mapped Watercourses
 - Lakes
 - Proposed Project Infrastructure
 - Proposed Property Boundary

Total VOC 24-Hour Guideline: No guideline available/selected
Background Concentration Used: No concentration available/selected



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 125 250 500 m

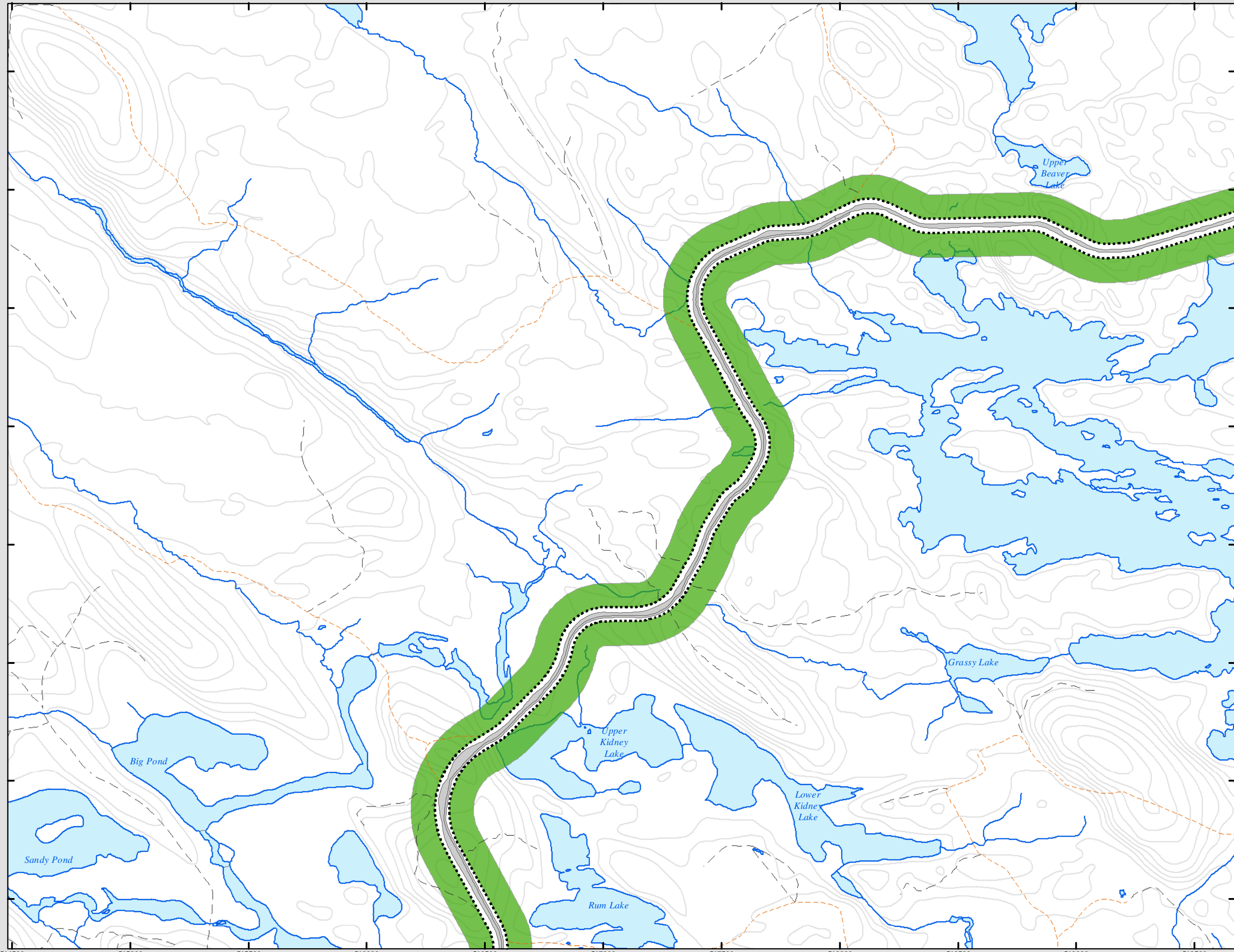
1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



McCallum Environmental Ltd.



4983500
4983000
4982500
4982000
4981500
4981000
4980500
4980000

Prepared For:

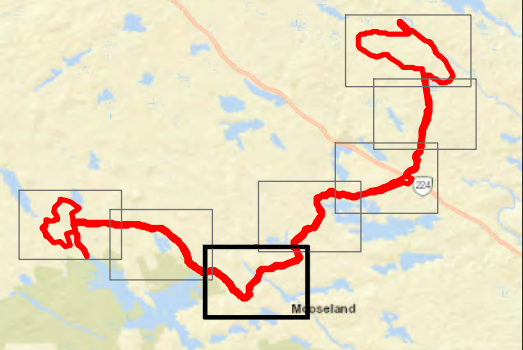


FIGURE CEEA 2-31-13E

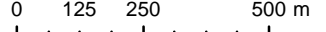
Beaver Dam Mine Project Air Contours Total VOC 24-Hour Levels

- Receptor
- Total VOC Ranges (ug/m3)
- 0.1-0.2
- Local Road
- Dry Weather / Seasonal Road
- Diveways (>300 m)
- Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure
- Proposed Property Boundary

Total VOC 24-Hour Guideline: No guideline available/selected
Background Concentration Used: No concentration available/selected



Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter



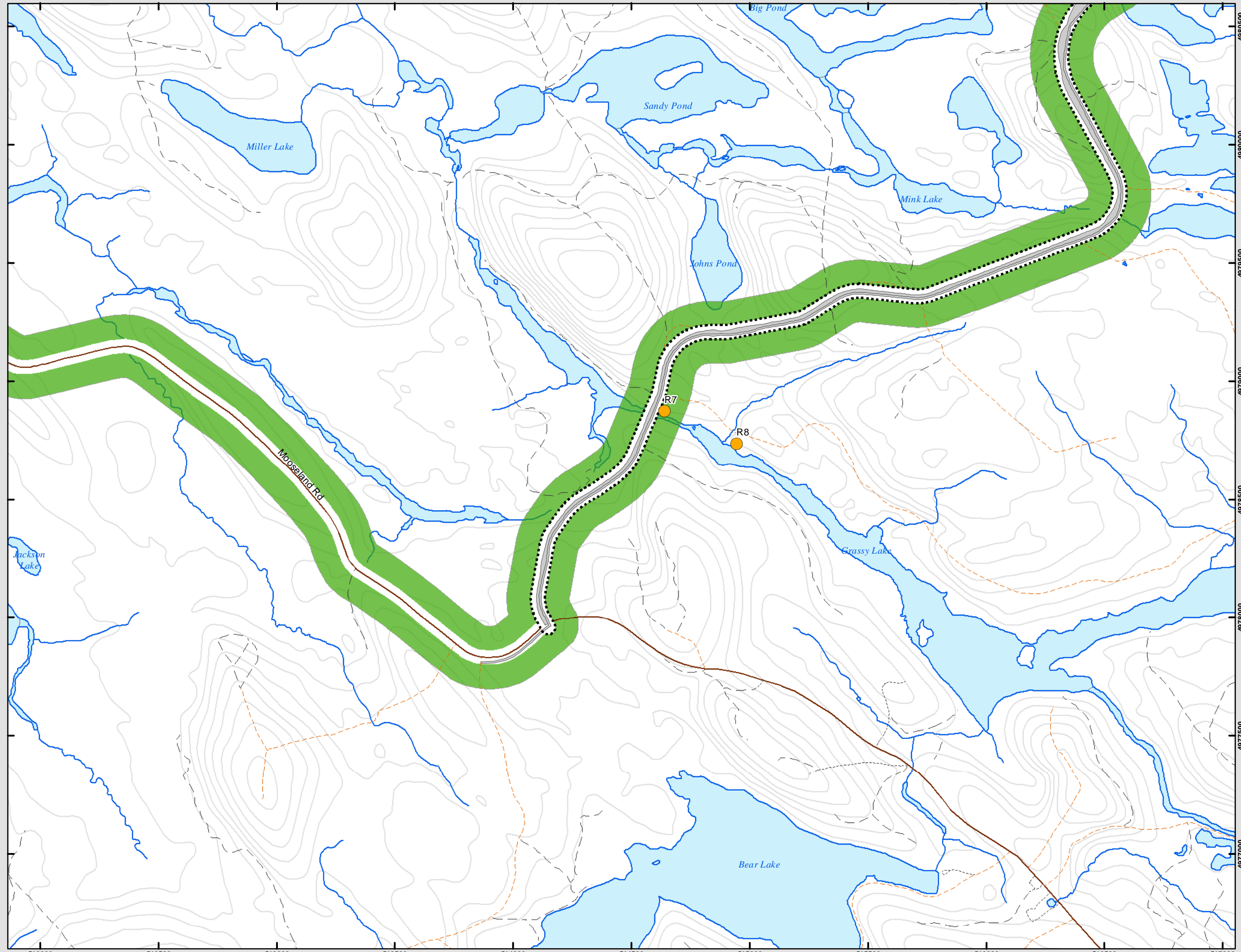
1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Gamin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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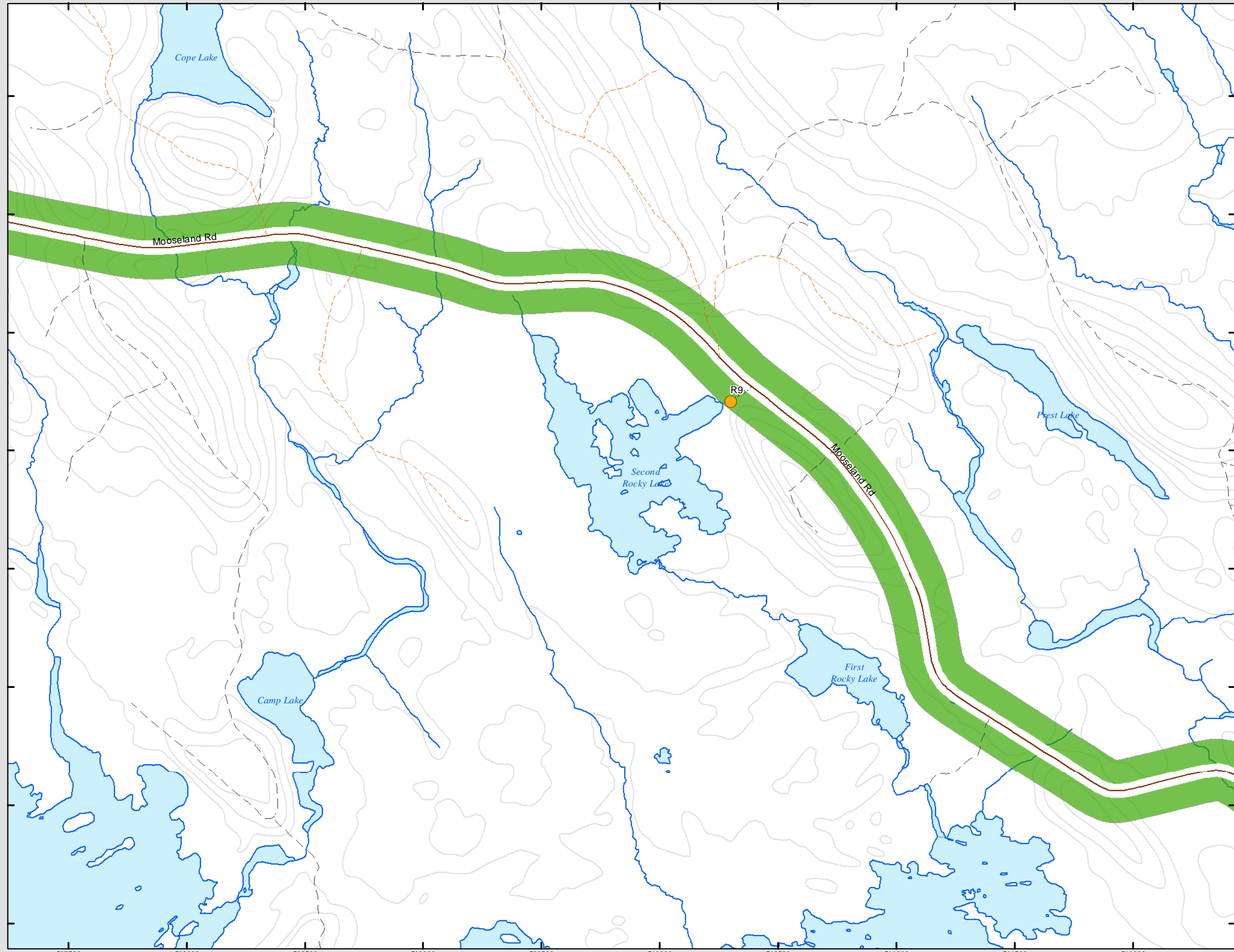


Prepared For:



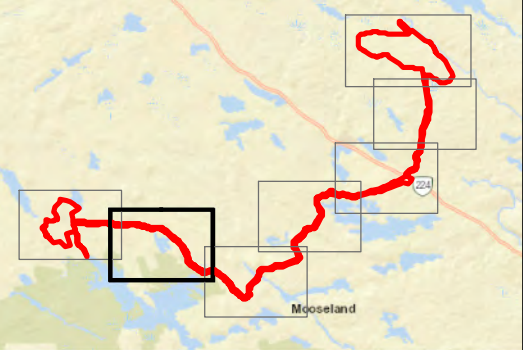
FIGURE CEA 2-31-13F

Beaver Dam Mine Project Air Contours Total VOC 24-Hour Levels



- Receptor
- Total VOC Ranges (ug/m³)
 - 0.1-0.2
- Local Road
- Dry Weather / Seasonal Road
- Diveways (>300 m)
- Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure

Total VOC 24-Hour Guideline: No guideline available/selected
Background Concentration Used: No concentration available/selected



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 125 250 500 m

1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Gamin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Atlantic Gold

FIGURE CEA 2-31-13G

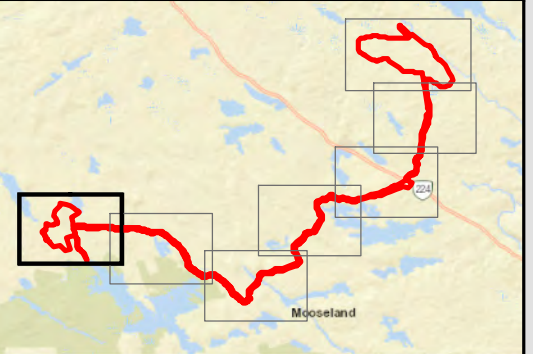
**Beaver Dam Mine Project
Air Contours
Total VOC 24-Hour Levels**

**Total VOC Ranges
(ug/m3)**

0.1-0.2

- Local Road
- Dry Weather / Seasonal Road
- Diveways (>300 m)
- Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure
- Existing Touquoy Infrastructure Layout
- Existing Touquoy Property Boundary

Total VOC 24-Hour Guideline: No guideline available/selected
Background Concentration Used: No concentration available/selected



Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter



0 125 250 500 m

1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Prepared For:

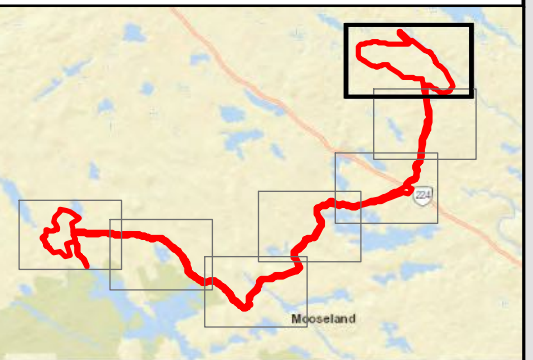


FIGURE CEAA 2-31-14A

Beaver Dam Mine Project Air Contours Total VOC Average Annual Levels

- Beaver Dam Mine Site (no concentration data within boundary)
- Total VOC Ranges (ug/m3)**
 - 0.02-0.04
 - 0.04-0.06
 - 0.06-0.08
 - 0.08
- Local Road
- Dry Weather / Seasonal Road
- Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure
- Proposed Property Boundary

Total VOC Annual Guideline: No guideline available/selected
Background Concentration Used: No concentration available/selected



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 170 340 680 m

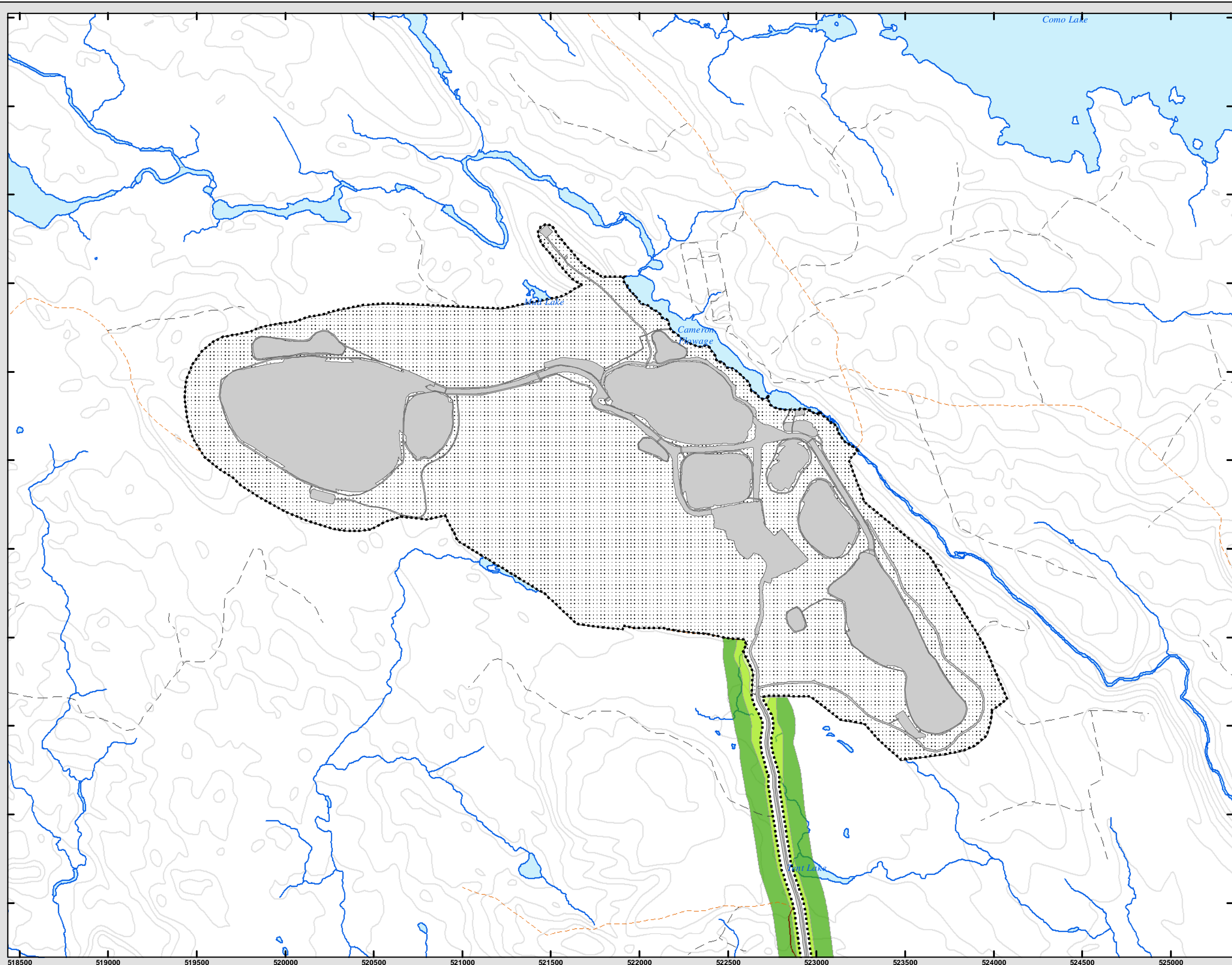
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Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Gamin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Prepared For:



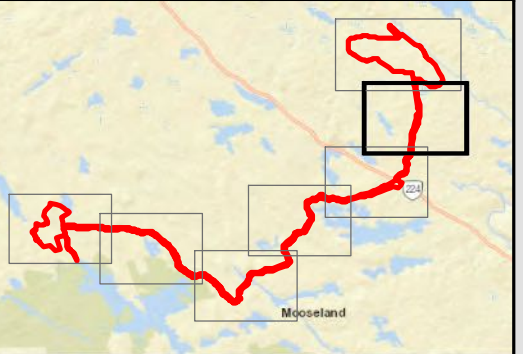
Atlantic Gold

FIGURE CEA 2-31-14B

**Beaver Dam Mine Project
Air Contours
Total VOC Average Annual
Levels**

- Beaver Dam Mine Site (no concentration data within boundary)
 - Local Road
 - Dry Weather / Seasonal Road
 - Track
 - NSTDB Mapped Watercourses
 - Lakes
 - Proposed Project Infrastructure
 - Proposed Property Boundary
- Total VOC Ranges (ug/m3)**
- 0.02-0.04
 - 0.04-0.06
 - 0.06-0.08

Total VOC Annual Guideline: No guideline available/selected
Background Concentration Used: No concentration available/selected



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 125 250 500 m

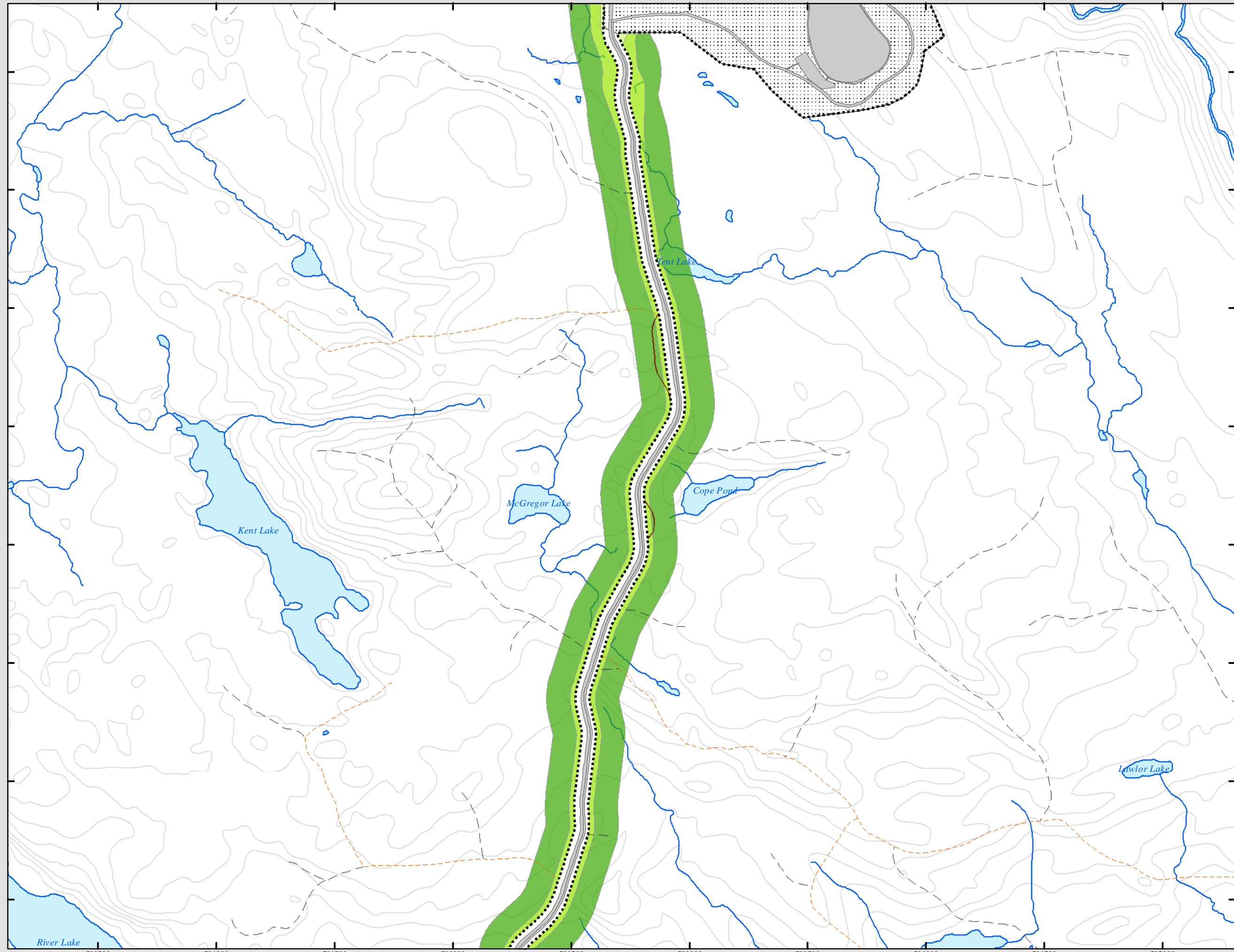
1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Prepared For:



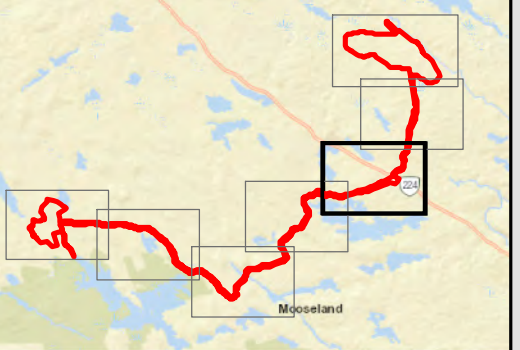
Atlantic Gold

FIGURE CEA 2-31-14C

**Beaver Dam Mine Project
Air Contours
Total VOC Average Annual
Levels**

- Receptor
- Total VOC Ranges (ug/m3)**
- 0.02-0.04
- 0.04-0.06
- Collector Road
- Local Road
- Dry Weather / Seasonal Road
- Diveways (>300 m)
- Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure
- Proposed Property Boundary

Total VOC Annual Guideline: No guideline available/selected
Background Concentration Used: No concentration available/selected



Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter



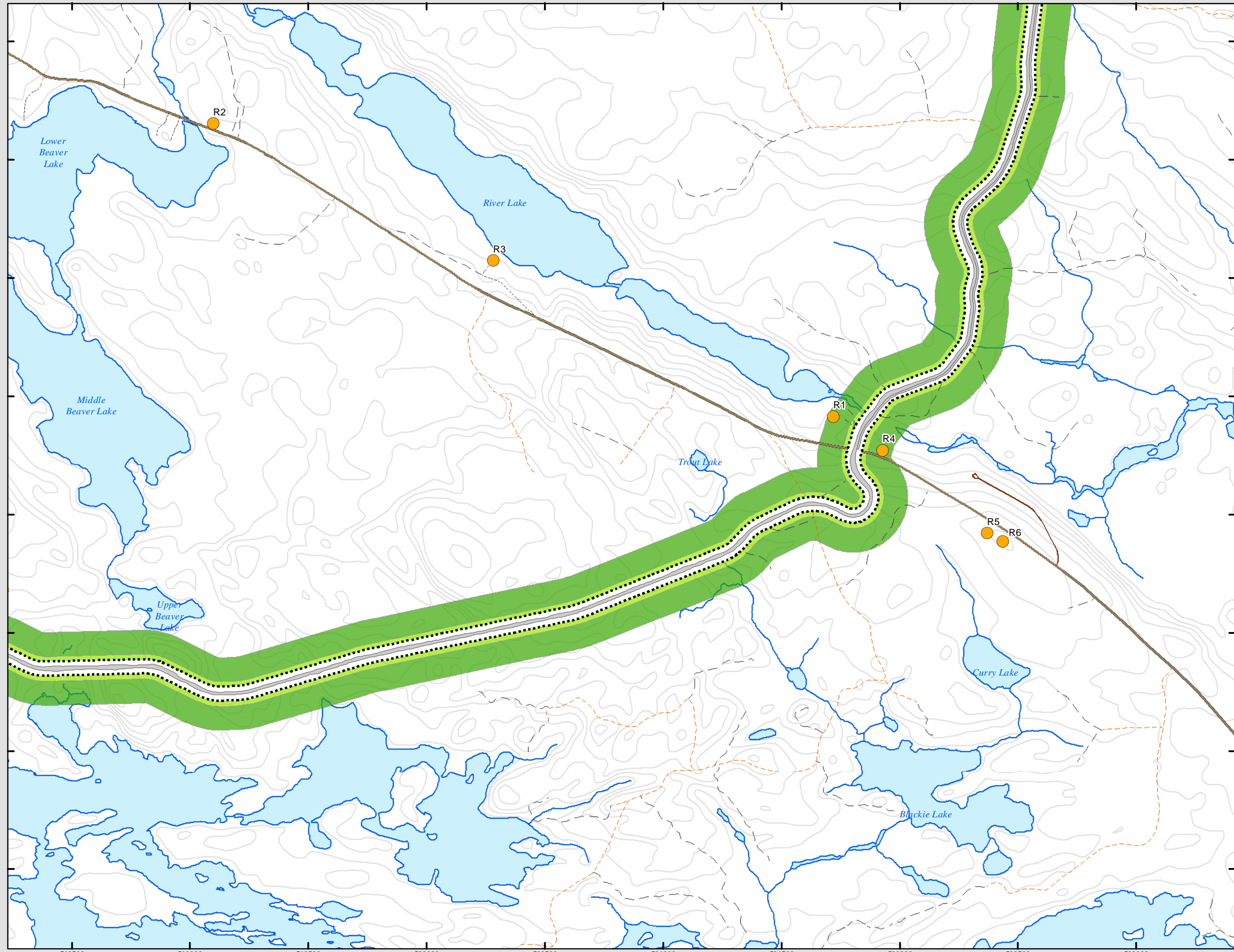
0 125 250 500 m
1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Prepared For:

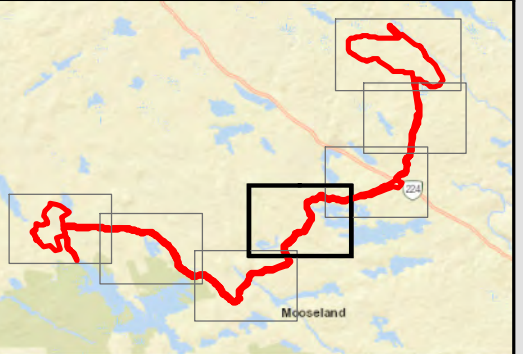


FIGURE CEA 2-31-14D

Beaver Dam Mine Project Air Contours Total VOC Average Annual Levels

- Total VOC Ranges (ug/m3)**
- 0.02-0.04
 - 0.04-0.06
- Dry Weather / Seasonal Road
 - Track
 - NSTDB Mapped Watercourses
 - Lakes
 - Proposed Project Infrastructure
 - Proposed Property Boundary

Total VOC Annual Guideline: No guideline available/selected
Background Concentration Used: No concentration available/selected



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 125 250 500 m

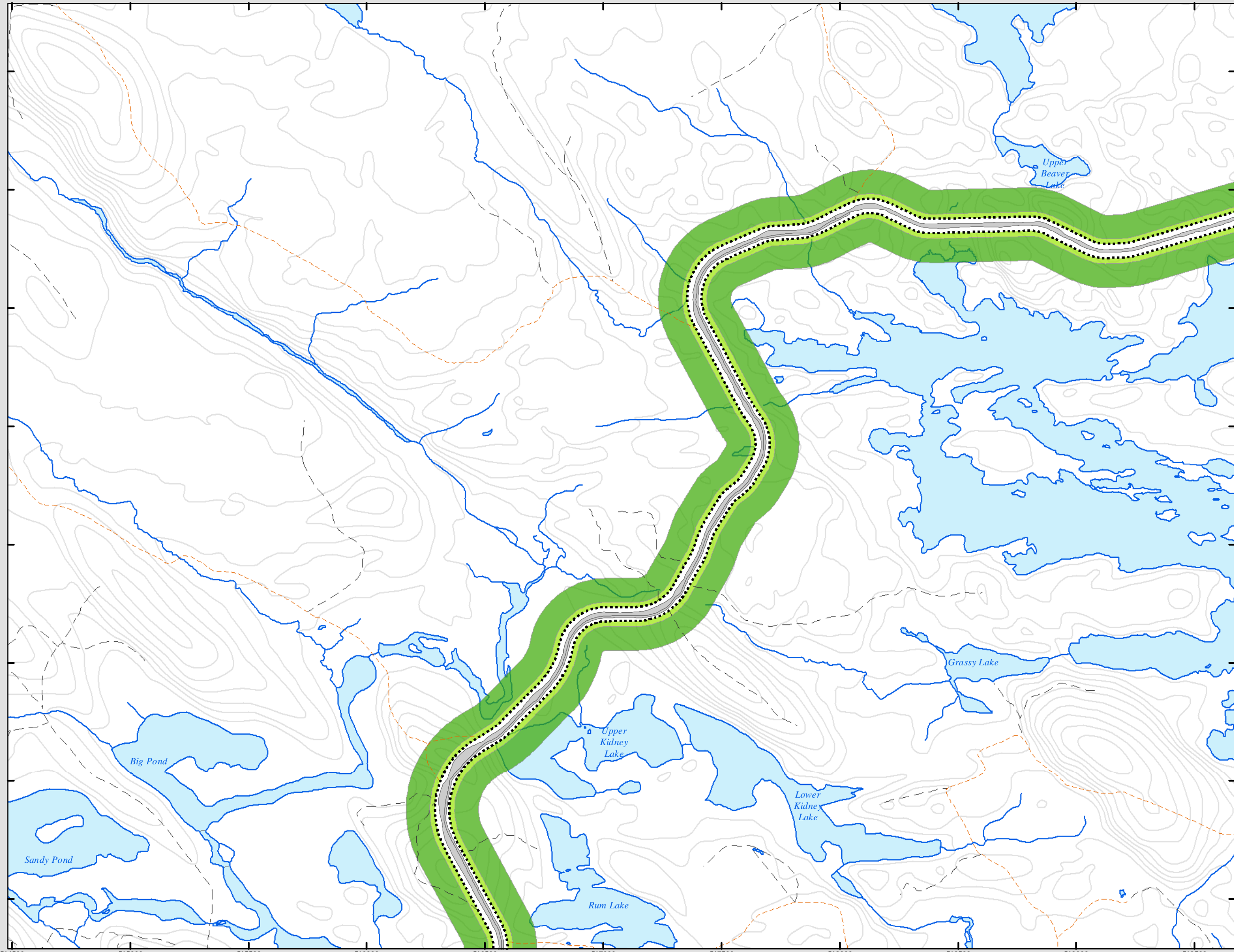
1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Prepared For:

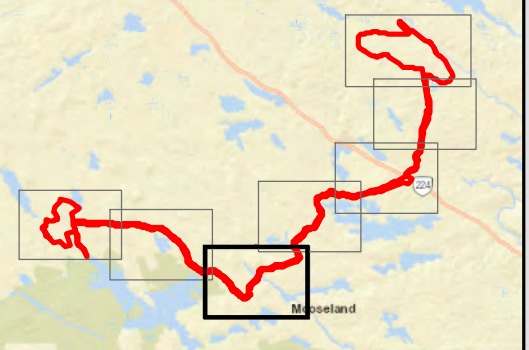


FIGURE CEA 2-31-14E

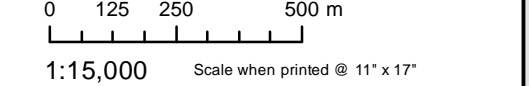
Beaver Dam Mine Project Air Contours Total VOC Average Annual Levels

- Receptor
- Total VOC Ranges (ug/m3)**
- 0.02-0.04
- 0.04-0.06
- Local Road
- Dry Weather / Seasonal Road
- Diveways (>300 m)
- Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Project Infrastructure
- Proposed Property Boundary

Total VOC Annual Guideline: No guideline available/selected
Background Concentration Used: No concentration available/selected



Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter

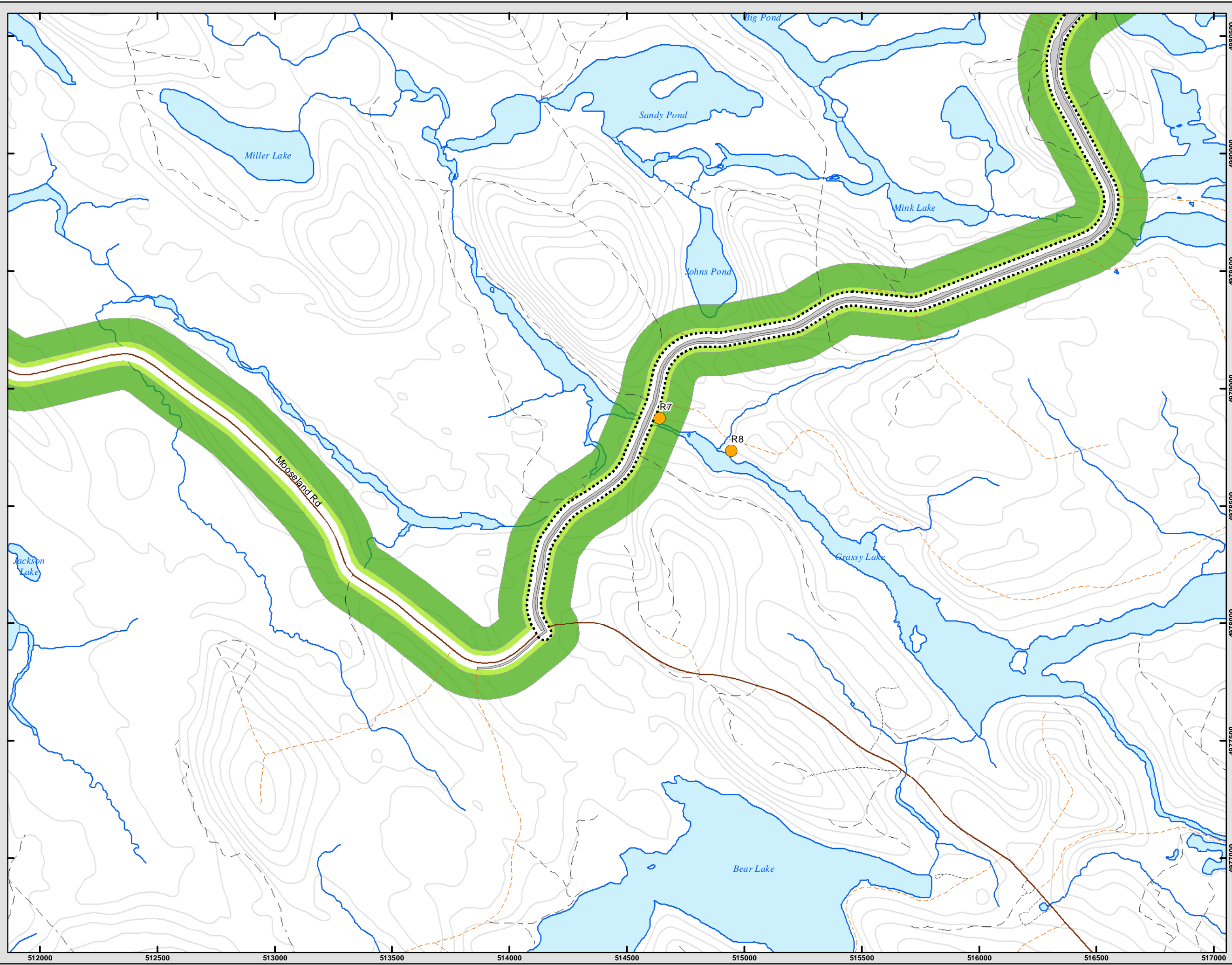


Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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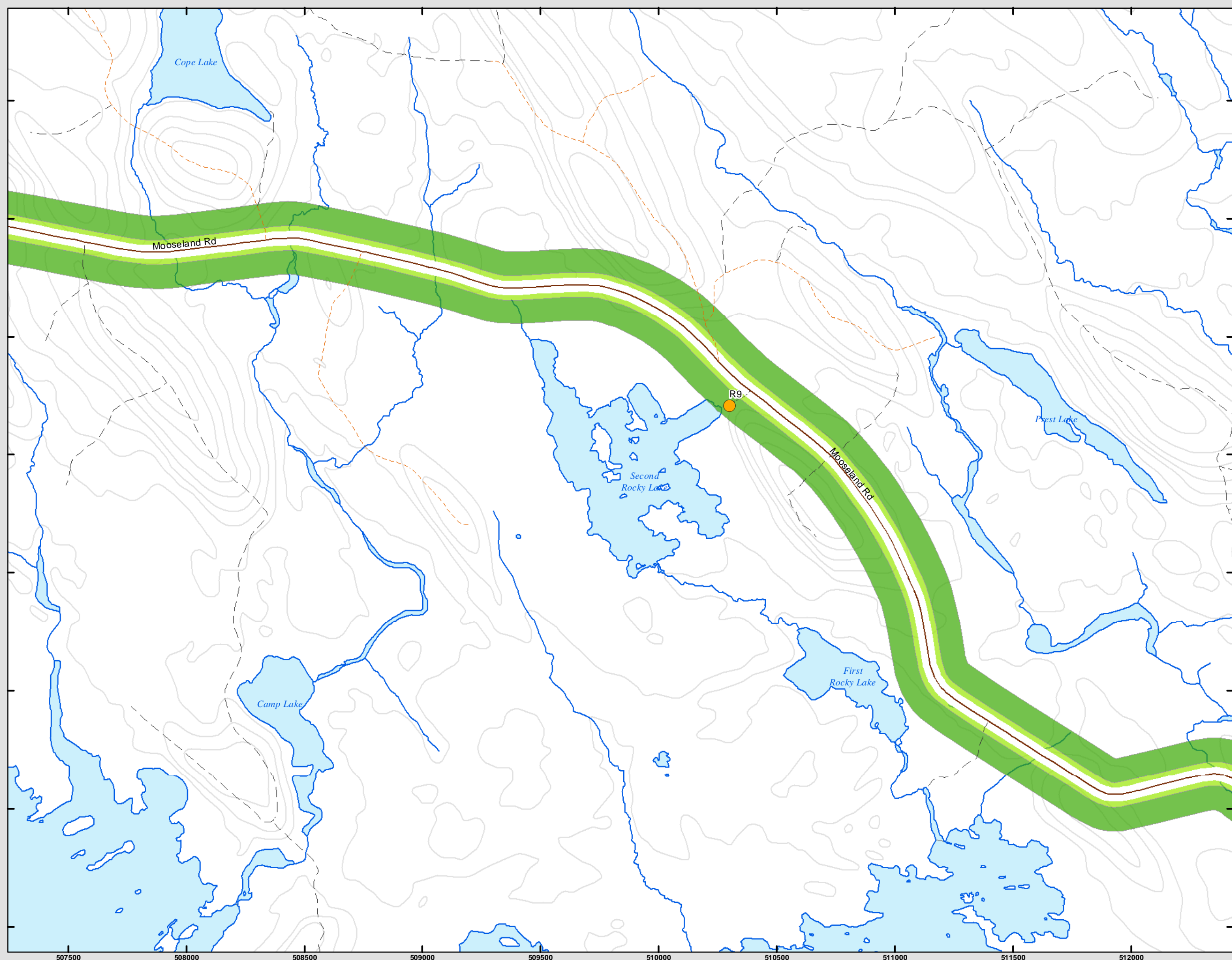


Prepared For:



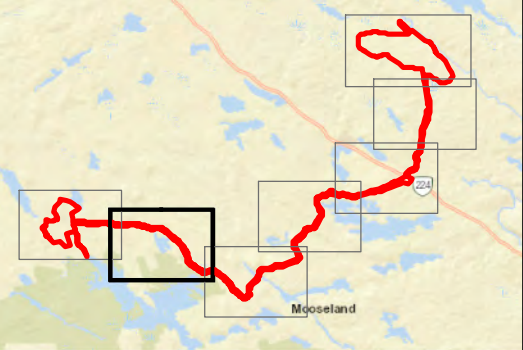
FIGURE CEEA 2-31-14F

Beaver Dam Mine Project Air Contours Total VOC Average Annual Levels

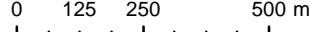


- Receptor
 - Local Road
 - Dry Weather / Seasonal Road
 - Diveways (>300 m)
 - - - Track
 - NSTDB Mapped Watercourses
 - Lakes
 - Proposed Project Infrastructure
- Total VOC Ranges (ug/m3)**
- 0.02-0.04
 - 0.04-0.06

Total VOC Annual Guideline: No guideline available/selected
Background Concentration Used: No concentration available/selected



Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter



1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Gamin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Prepared For:

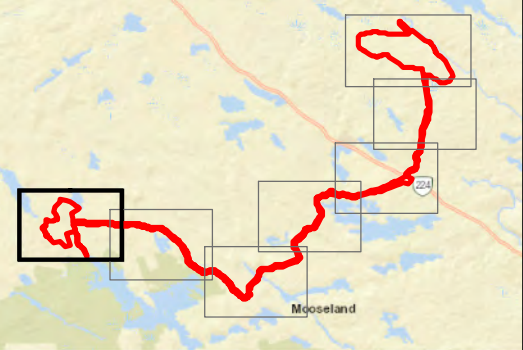


FIGURE CEA 2-31-14G

Beaver Dam Mine Project Air Contours Total VOC Average Annual Levels

- Total VOC Ranges (ug/m3)**
- 0.02-0.04
 - 0.04-0.06
- Local Road
 - Dry Weather / Seasonal Road
 - Diveways (>300 m)
 - Track
 - NSTDB Mapped Watercourses
 - Lakes
 - Proposed Project Infrastructure
 - Existing Touquoy Infrastructure Layout
 - Existing Touquoy Property Boundary

Total VOC Annual Guideline: No guideline available/selected
Background Concentration Used: No concentration available/selected



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 125 250 500 m

1:15,000 Scale when printed @ 11" x 17"

Drawn By: SS Date: 2021-09-21
Reviewed By: MM

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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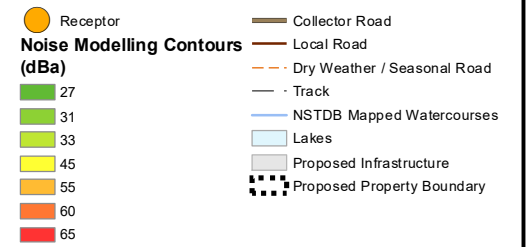
Prepared For:



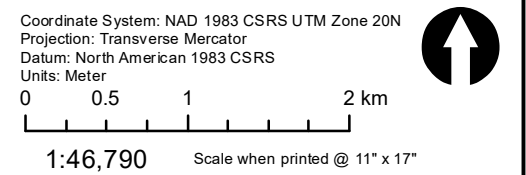
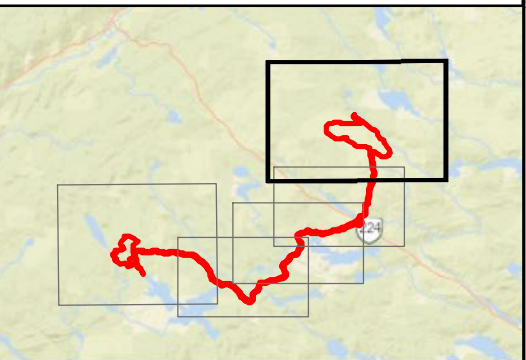
FIGURE CEAA 2-31-15A

Beaver Dam Mine Project

Noise Modelling Contours Day/Evening Operations



Note: Background noise level at all receptors conservatively assumed to be 33 dBA during the day based on ambient sound level monitoring conducted at several locations in the Project Area between 2007 and 2016 (GHD, 2018)

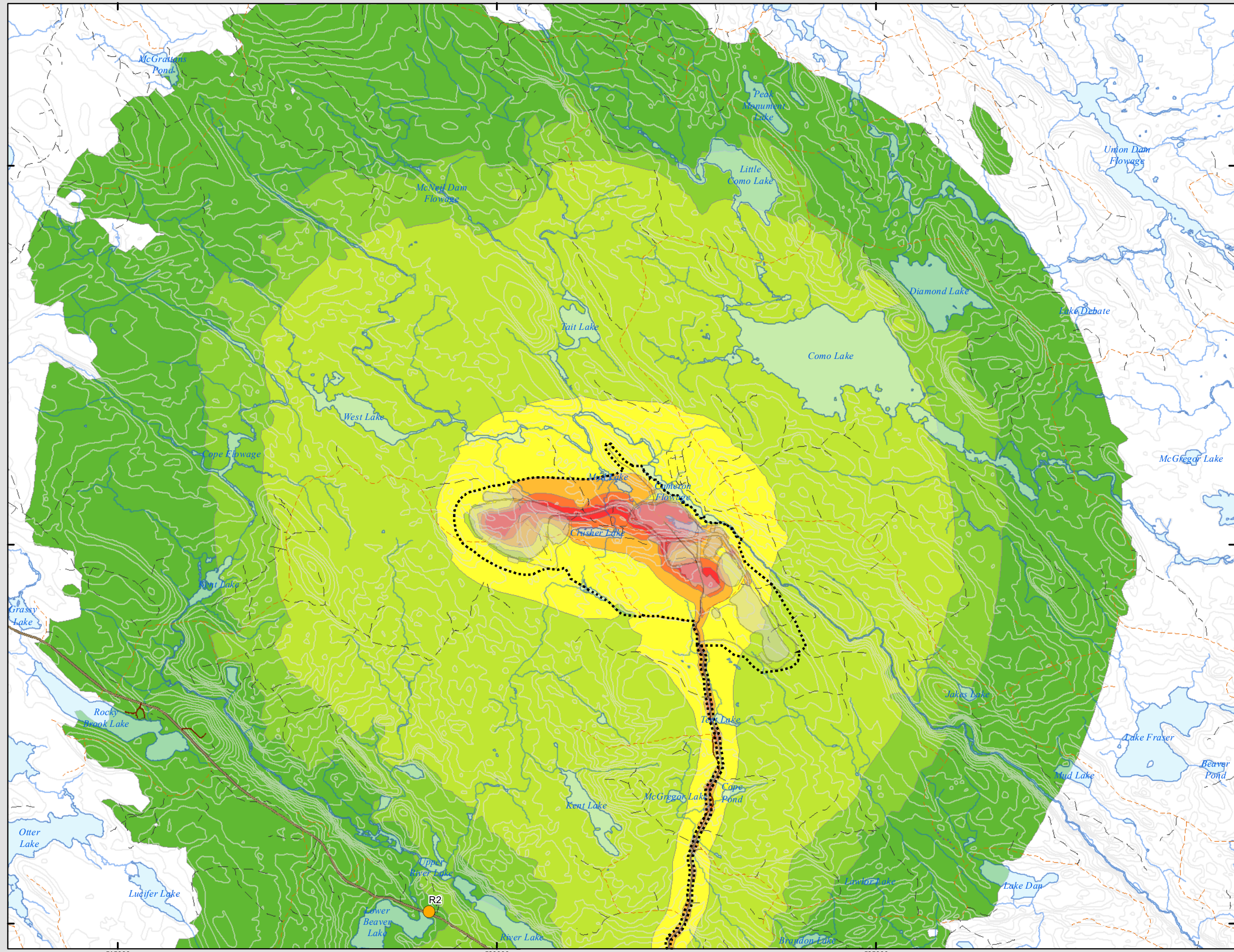


Drawn By: MEL Date: 2021-09-22
Reviewed By: GHD

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Prepared For:



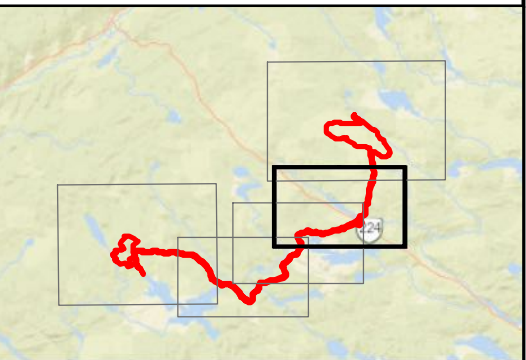
FIGURE CEEA 2-31-15B

Beaver Dam Mine Project

**Noise Modelling Contours
Day/Evening Operations**

- Receptor
 - Noise Modelling Contours (dBA)**
 - 27
 - 31
 - 33
 - 45
 - 55
 - 60
 - 65
- Collector Road
 - Local Road
 - Dry Weather / Seasonal Road
 - Track
 - NSTDB Mapped Watercourses
 - Lakes
 - Proposed Infrastructure
 - Proposed Property Boundary

Note: Background noise level at all receptors conservatively assumed to be 33 dBA during the day based on ambient sound level monitoring conducted at several locations in the Project Area between 2007 and 2016 (GHD, 2018)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

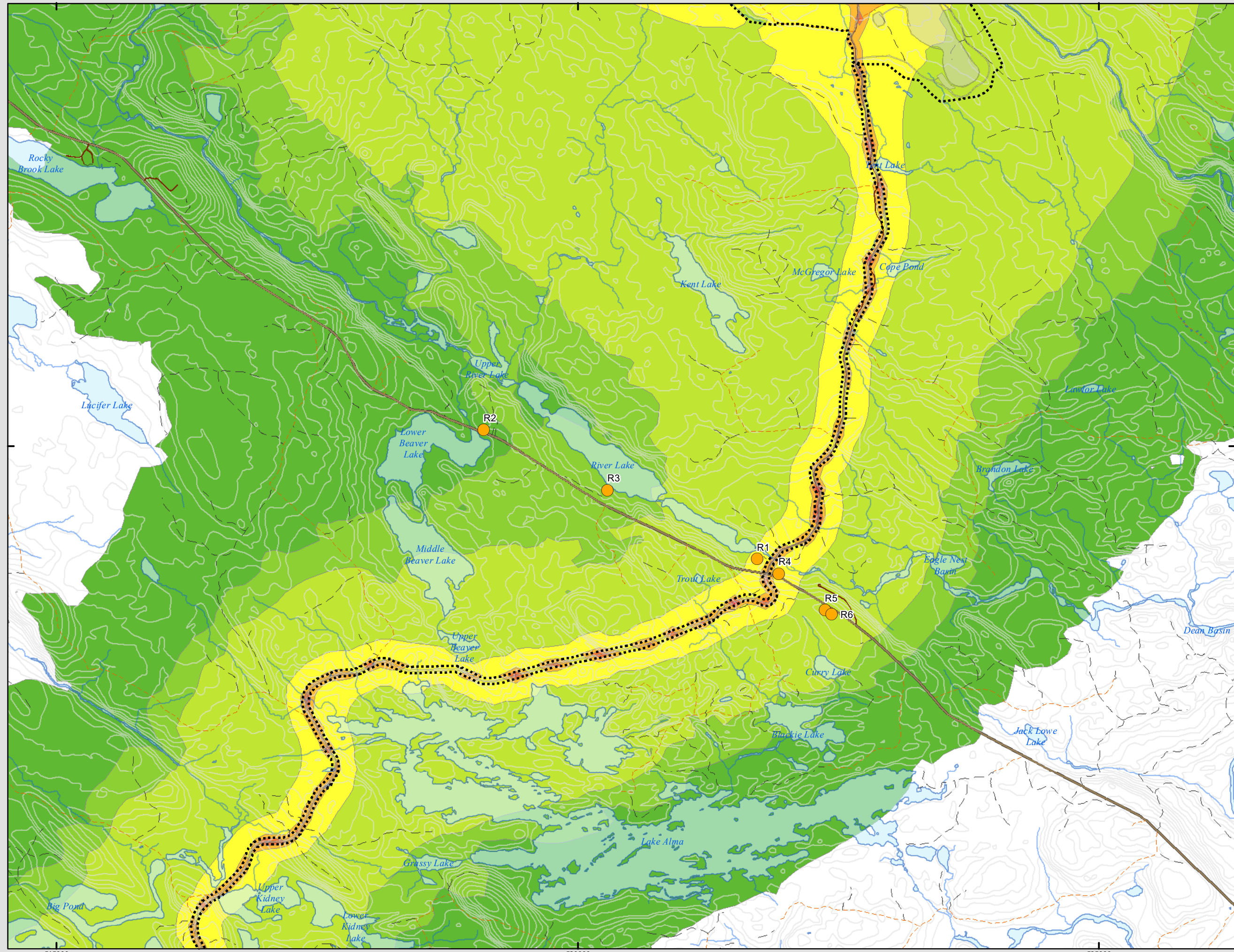
0 0.45 0.9 1.8 km
 1:34,040 Scale when printed @ 11" x 17"

Drawn By: MEL Date: 2021-09-22
 Reviewed By: GHD

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



McCallum Environmental Ltd.



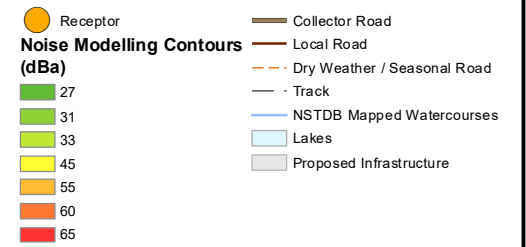
Prepared For:



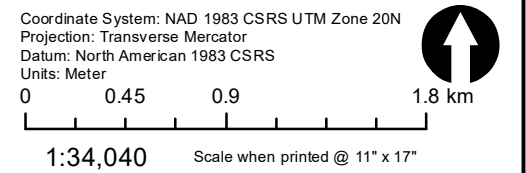
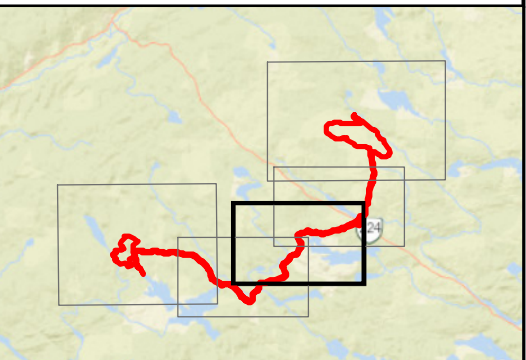
FIGURE CEAA 2-31-15C

Beaver Dam Mine Project

Noise Modelling Contours Day/Evening Operations



Note: Background noise level at all receptors conservatively assumed to be 33 dBA during the day based on ambient sound level monitoring conducted at several locations in the Project Area between 2007 and 2016 (GHD, 2018)

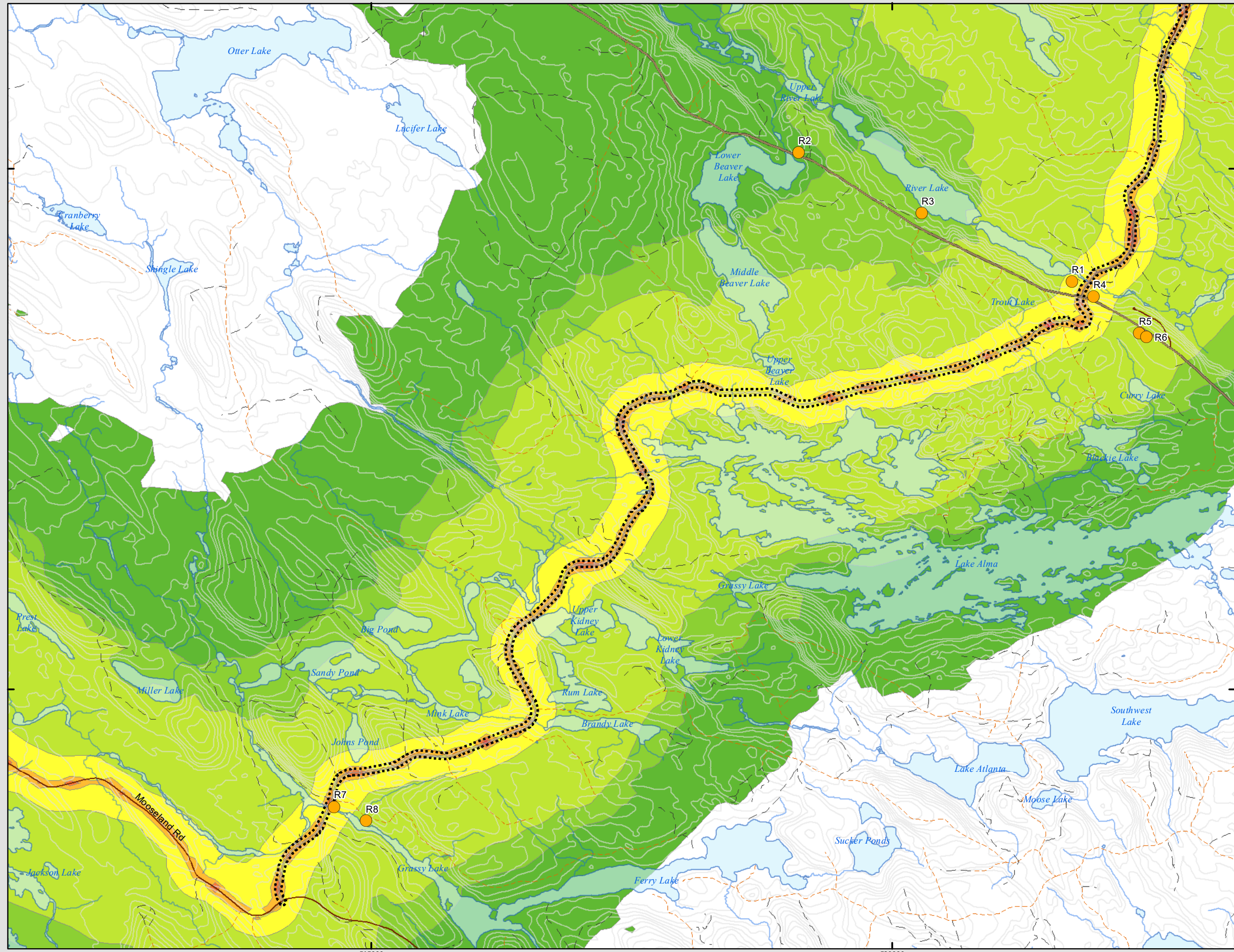


Drawn By: MEL Date: 2021-09-22
Reviewed By: GHD

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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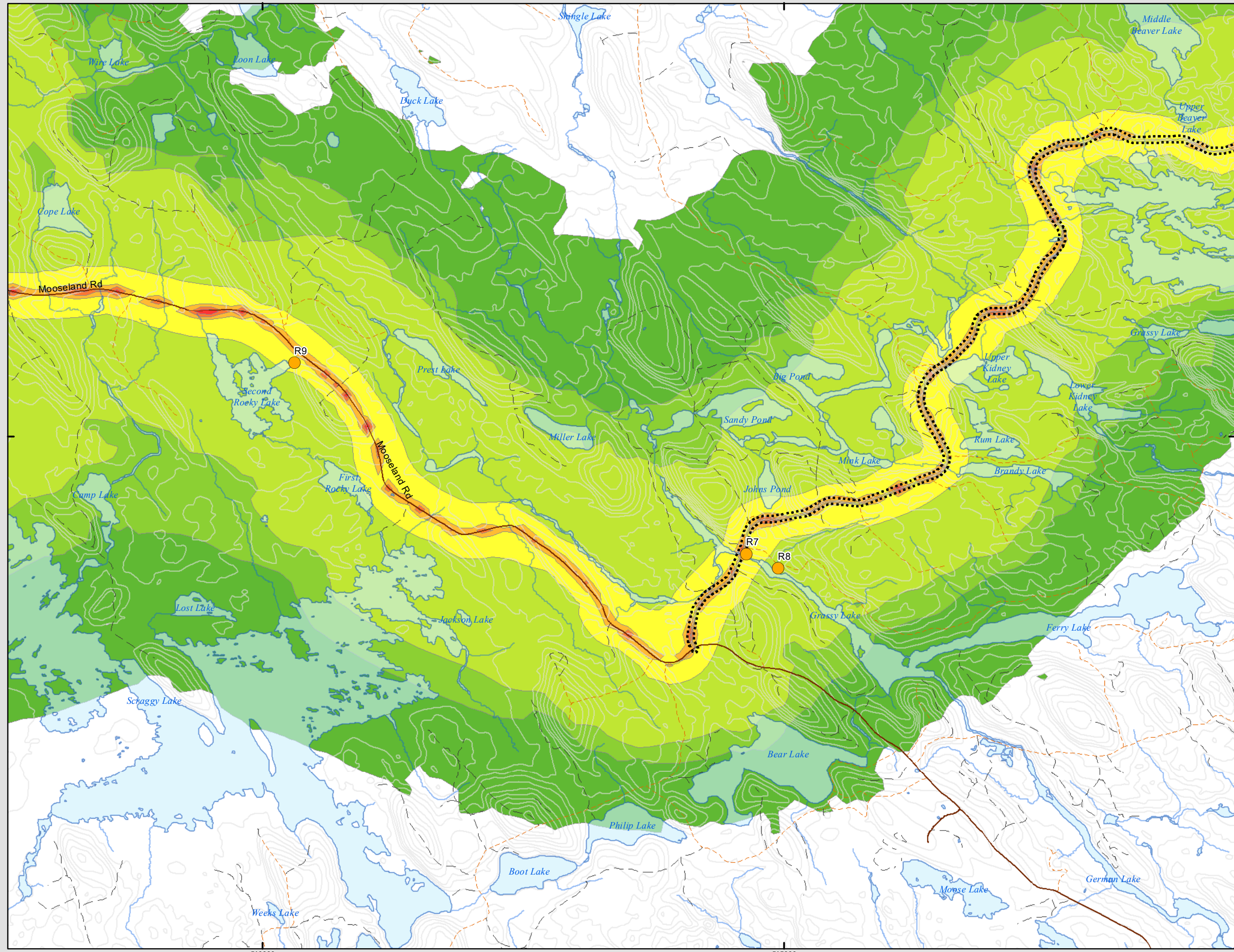
Prepared For:



FIGURE CEAA 2-31-15D

Beaver Dam Mine Project

Noise Modelling Contours
Day/Evening Operations



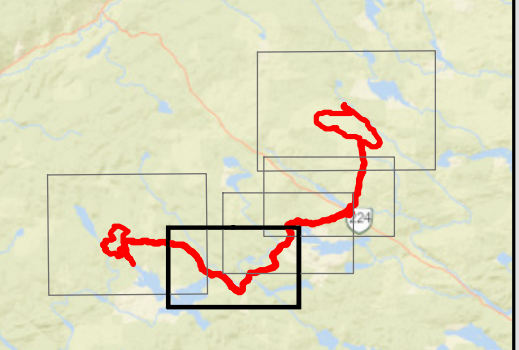
● Receptor

Noise Modelling Contours (dBA)

- 27
- 31
- 33
- 45
- 55
- 60
- 65

- Local Road
- - - Dry Weather / Seasonal Road
- - - Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Infrastructure

Note: Background noise level at all receptors conservatively assumed to be 33 dBA during the day based on ambient sound level monitoring conducted at several locations in the Project Area between 2007 and 2016 (GHD, 2018)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 0.45 0.9 1.8 km

1:34,040 Scale when printed @ 11" x 17"

Drawn By: MEL Date: 2021-09-22
Reviewed By: GHD

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Prepared For:



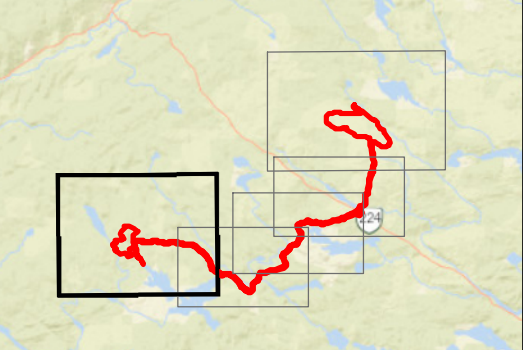
FIGURE CEAA 2-31-15E

Beaver Dam Mine Project

Noise Modelling Contours
Day/Evening Operations

- Receptor
- Noise Modelling Contours (dBA)
 - 27
 - 31
 - 33
 - 45
 - 55
 - 60
 - 65
- Local Road
- Dry Weather / Seasonal Road
- Track
- NSTDB Mapped Watercourses
- Lakes
- Proposed Infrastructure
- Existing Touquoy Property Boundary

Note: Background noise level at all receptors conservatively assumed to be 33 dBA during the day based on ambient sound level monitoring conducted at several locations in the Project Area between 2007 and 2016 (GHD, 2018)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

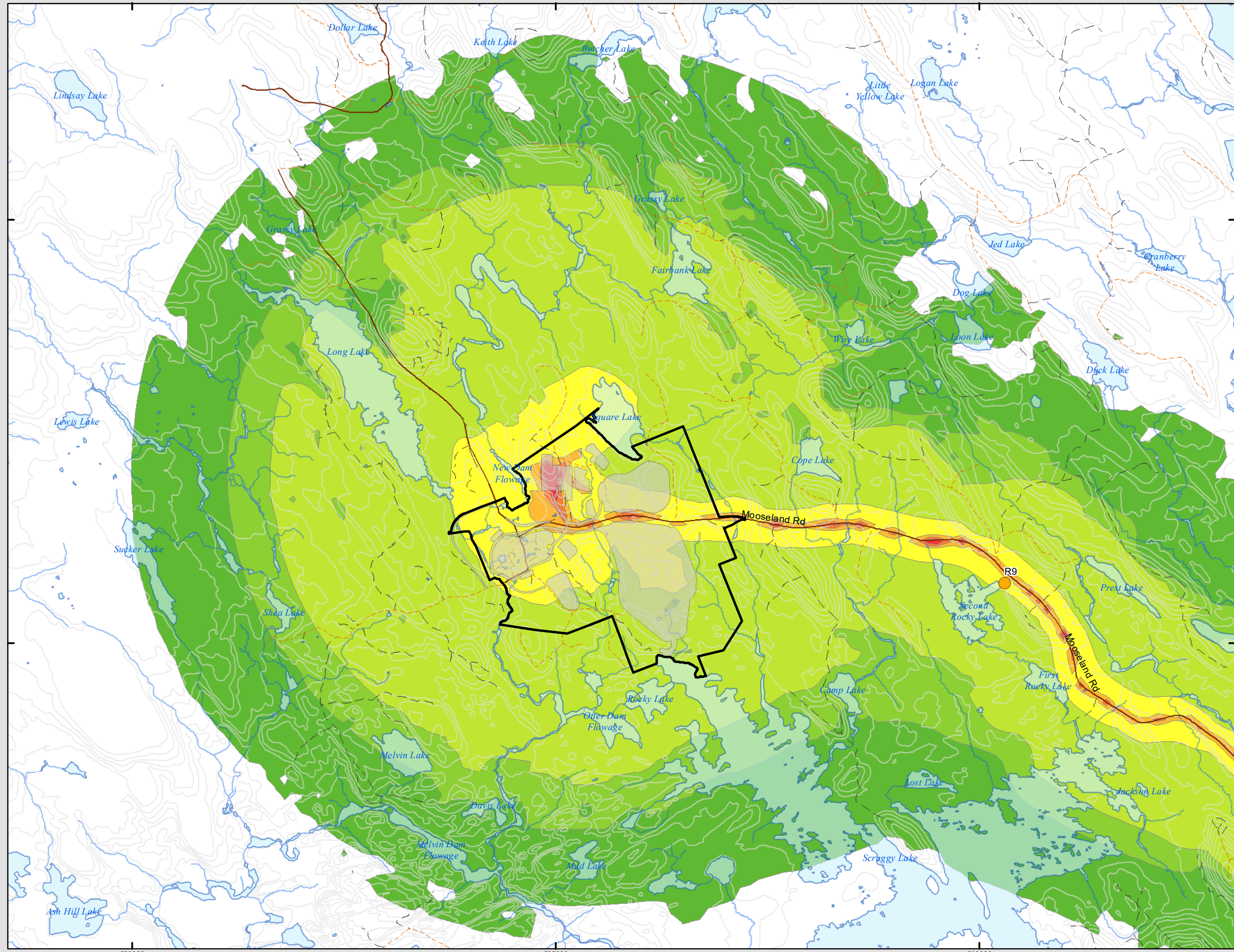
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Drawn By: MEL Date: 2021-09-22
Reviewed By: GHD

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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50000

505000

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4985000

4980000

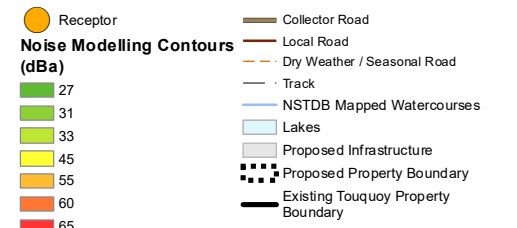
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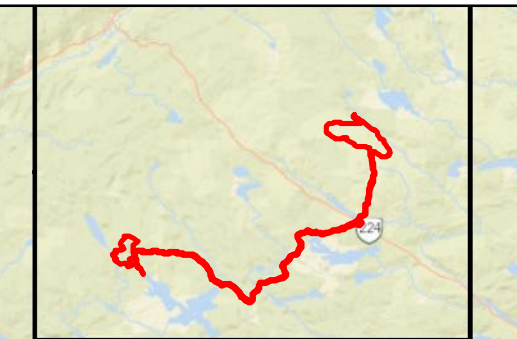
FIGURE CEA 2-31-16

Beaver Dam Mine Project

Noise Modelling Contours Nighttime Operations



Note: Background noise level at all receptors conservatively assumed to be 33 dBA during the day based on ambient sound level monitoring conducted at several locations in the Project Area between 2007 and 2016 (GHD, 2018)



Coordinate System: NAD 1983 CSRS UTM Zone 20N
Projection: Transverse Mercator
Datum: North American 1983 CSRS
Units: Meter



0 0.75 1.5 3 km

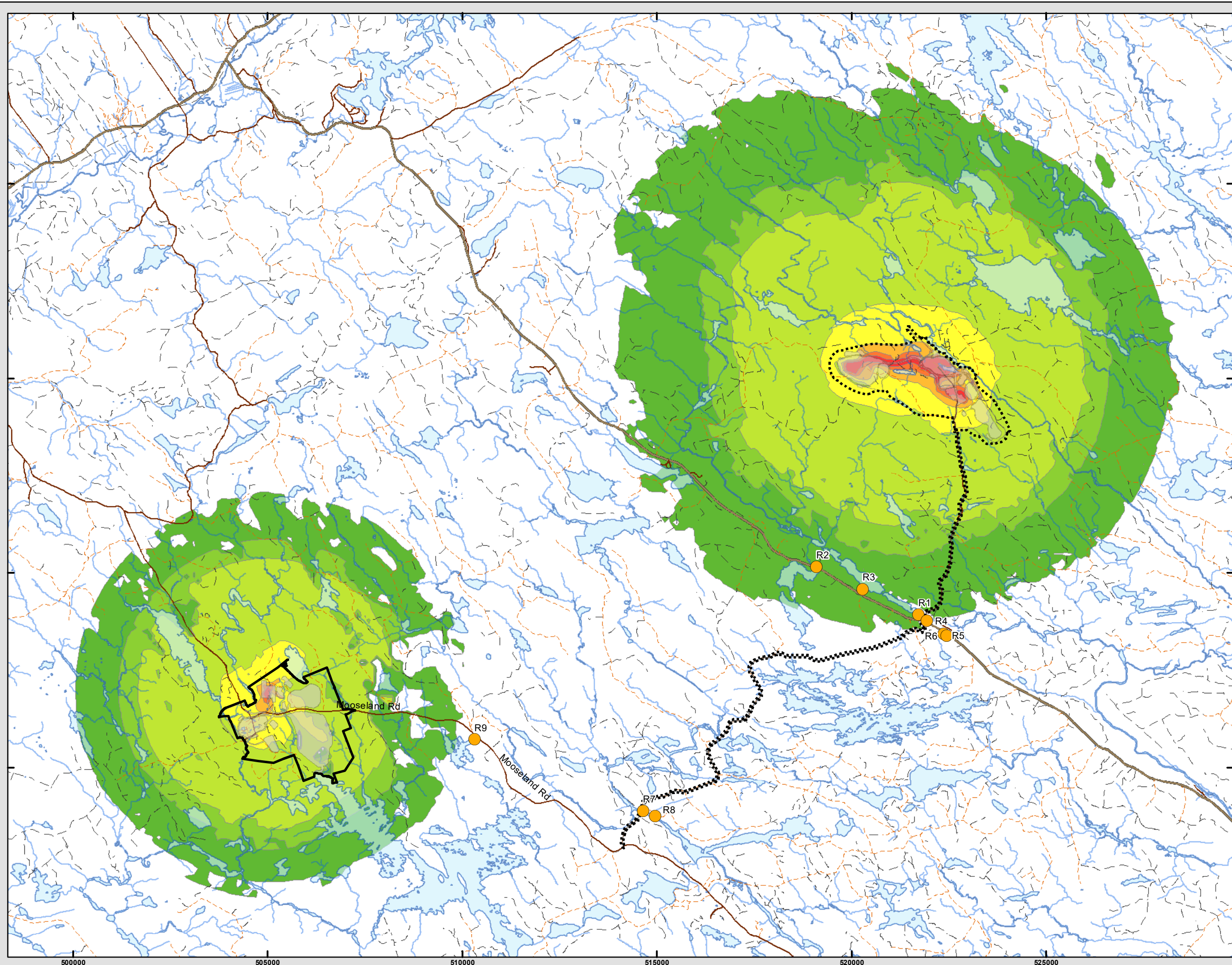
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Drawn By: MEL Date: 2021-09-22
Reviewed By: GHD

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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4995000
4990000
4985000
4980000

Prepared For:



FIGURE CEEA-2-31-17

Beaver Dam Mine Project

Air Contour Total Suspended Particulate Matter 24-Hour Levels Regional Scale

- Receptor
 - Air Regional Assessment
 - Project Area
 - Air Local Assessment
- TSP Ranges (ug/m3)**
- 5
 - 5 - 10
 - 10 - 15
 - 15 - 17.1
 - 17.1 - 20
 - 20 - 25
 - 25 - 30
 - 30 - 35
 - 35 - 40
 - 40 - 45
 - 45 - 50
 - 50 - 55
 - 55 - 60
 - 60 - 65



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

1:340,000 Scale when printed @ 11" x 17"

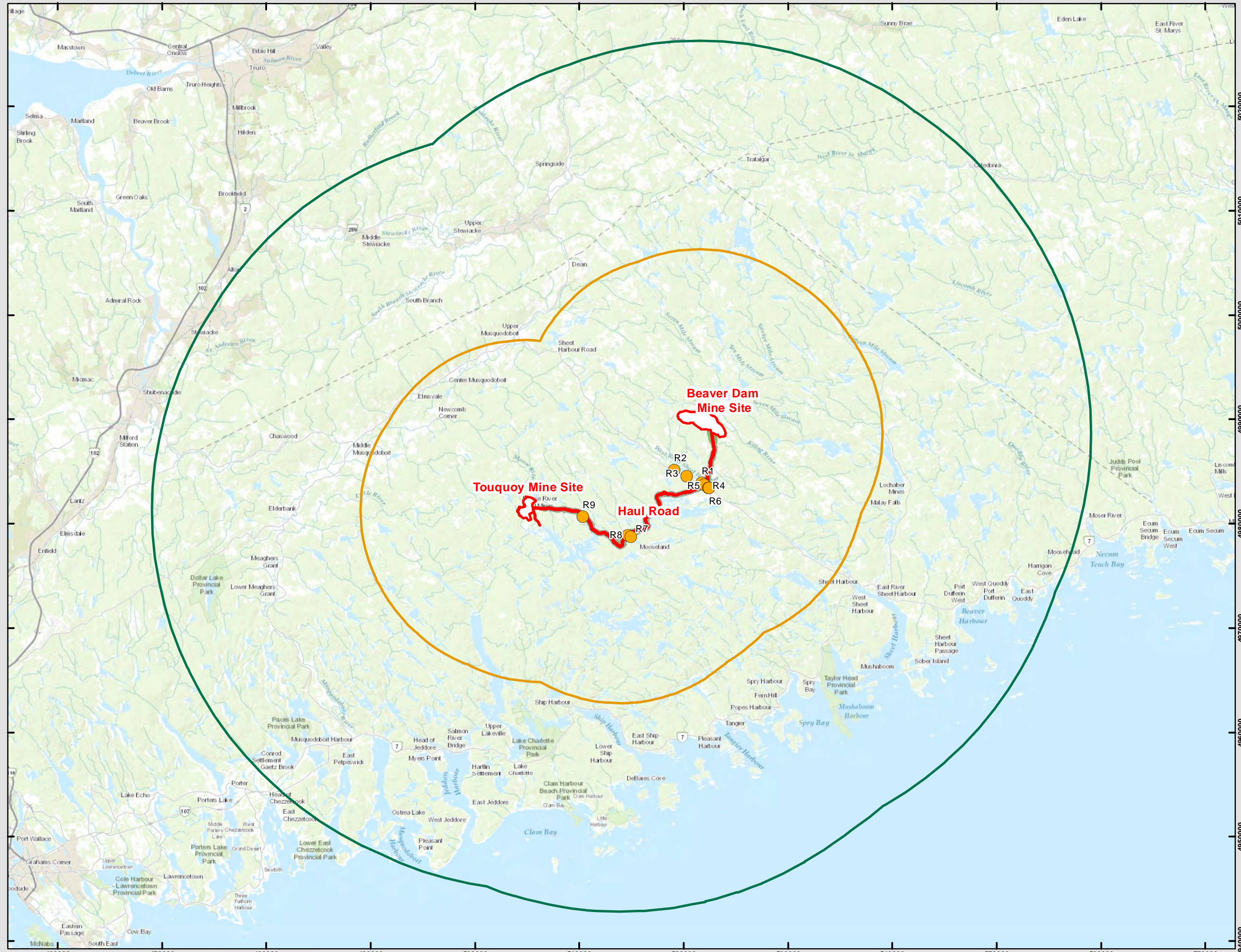
Drawn By: MEL Date: 2021-09-22
Reviewed By: AMNS

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Document Name: BD_EIS_Figure6.2-X Air TSP 24hr_Regional



Prepared For:

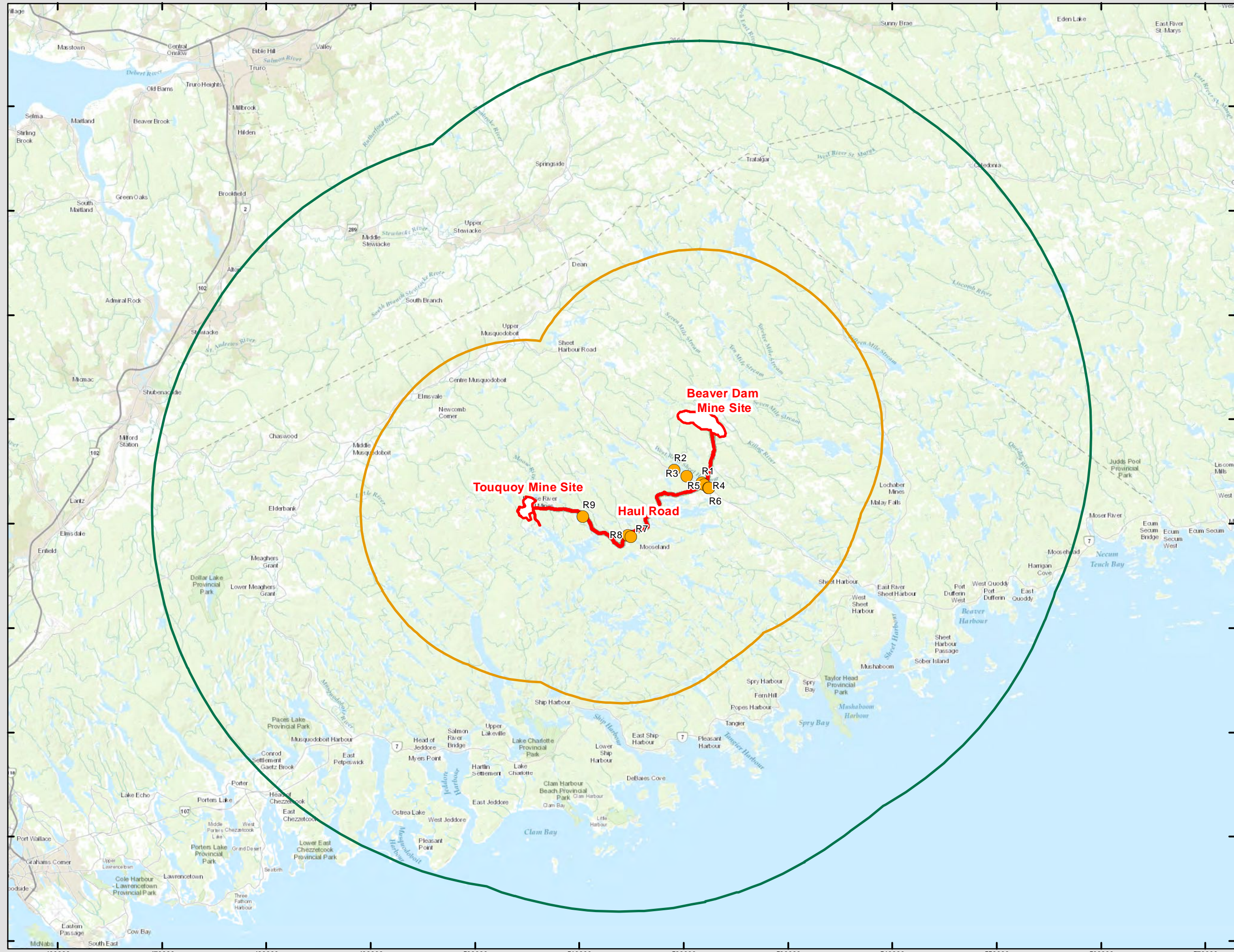


FIGURE CEA 2-31-18

Beaver Dam Mine Project

Air Contour PM10 24-Hour Levels
Regional Scale

- Receptor
 - Air Regional Assessment
 - Air Local Assessment
 - Project Area
- PM10 Ranges (um/m3)**
- 5
 - 5 - 10
 - 10 - 13.5
 - 13.5 - 15
 - 15 - 20
 - 20 - 25
 - 25 - 30



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

1:340,000 Scale when printed @ 11" x 17"

Drawn By: MEL Date: 2021-09-22
 Reviewed By: AMNS

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Prepared For:

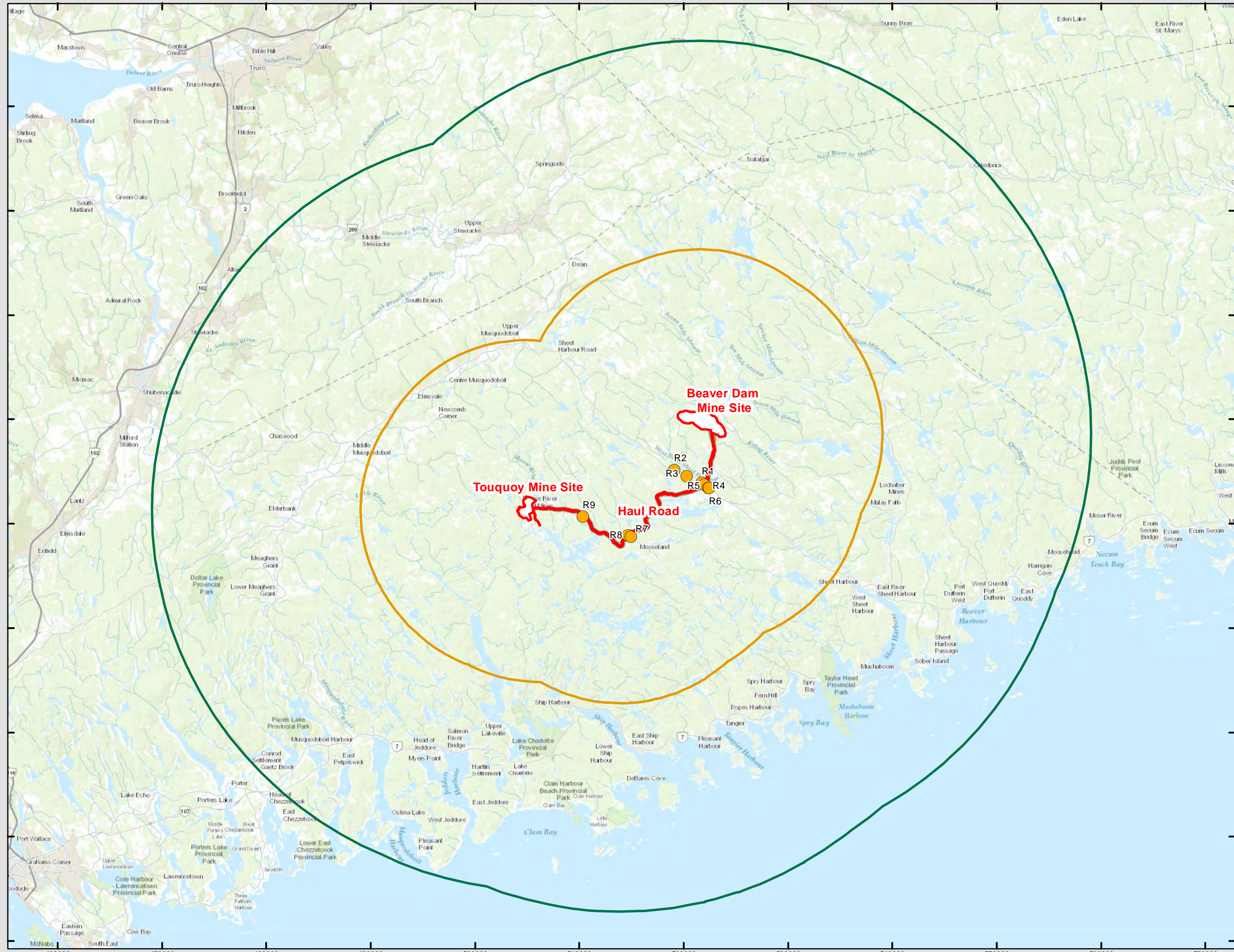


FIGURE CEEA 2-31-19

Beaver Dam Mine Project

Air Contour PM2.5 24-Hour Levels Regional Scale

- Receptor
 - Air Regional Assessment
 - Project Area
 - Air Local Assessment
- PM 2.5 Ranges (ug/m3)**
- 0.5
 - 0.5 - 1
 - 1 - 1.5
 - 1.5 - 2
 - 2 - 2.5
 - 2.5 - 3



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

1:340,000 Scale when printed @ 11" x 17"

Drawn By: MEL Date: 2021-09-22
 Reviewed By: AMNS

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Prepared For:

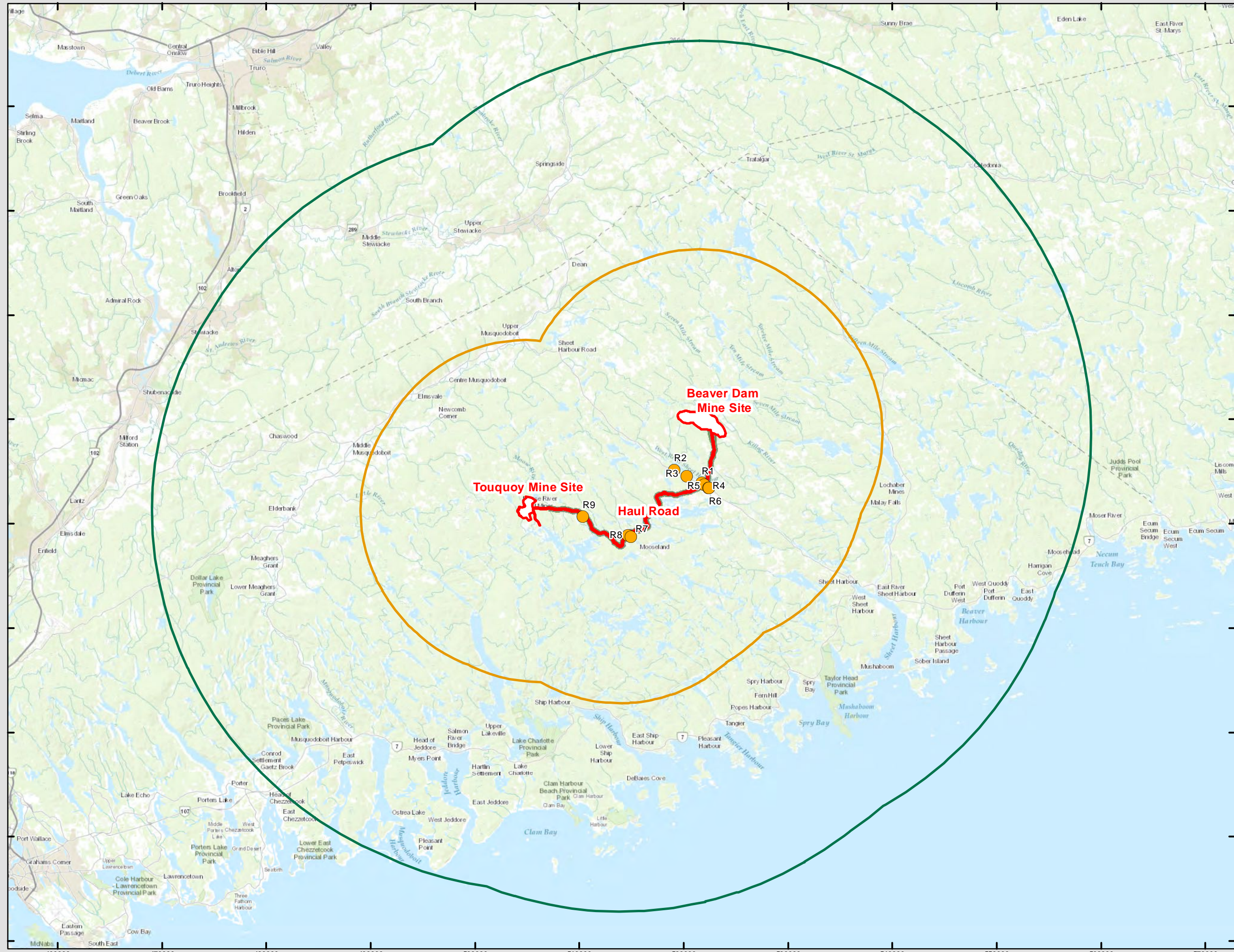


FIGURE CEA 2-31-20

Beaver Dam Mine Project

Air Contours NO2 24-Hour Levels
Regional Scale

- Receptor
 - Air Regional Assessment
 - Project Area
 - Air Local Assessment
- NO2 Ranges (ug/m3)**
- 1 - 2
 - 2 - 3
 - 3 - 4
 - 4 - 5
 - 5 - 6
 - 6 - 7
 - 7



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

1:340,000 Scale when printed @ 11" x 17"

Drawn By: MEL Date: 2021-09-22
 Reviewed By: AMNS

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Prepared For:

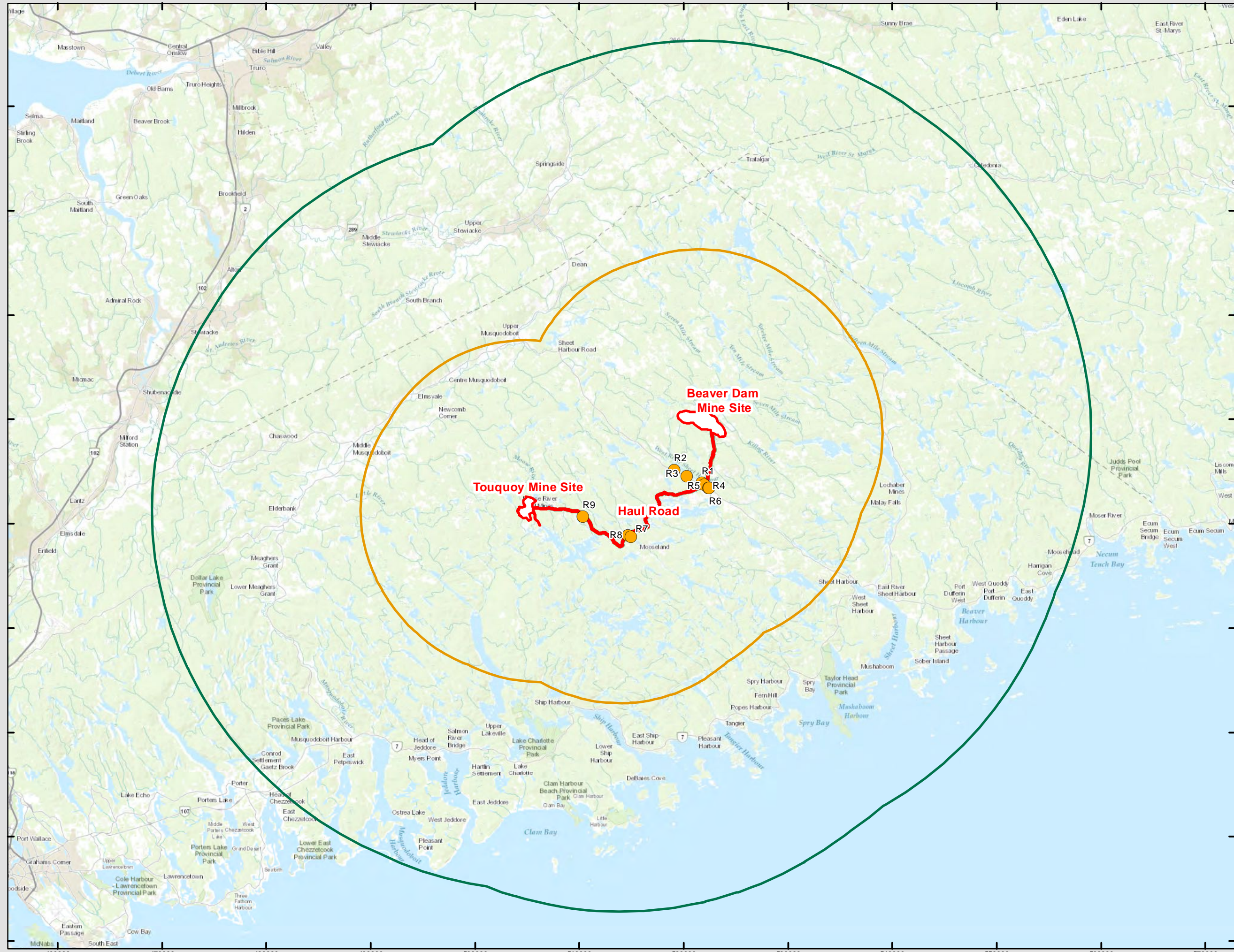


FIGURE CEA 2-31-21

Beaver Dam Mine Project

Air Contours SO2 24-Hour Levels
Regional Scale

- Receptor
 - Air Regional Assessment
 - Project Area
 - Air Local Assessment
- SO2 Ranges (ug/m3)**
- 0.2 - 0.4
 - 0.4 - 0.6
 - 0.6 - 0.8
 - 0.8



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

1:340,000 Scale when printed @ 11" x 17"

Drawn By: MEL Date: 2021-09-22
 Reviewed By: AMNS

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Prepared For:

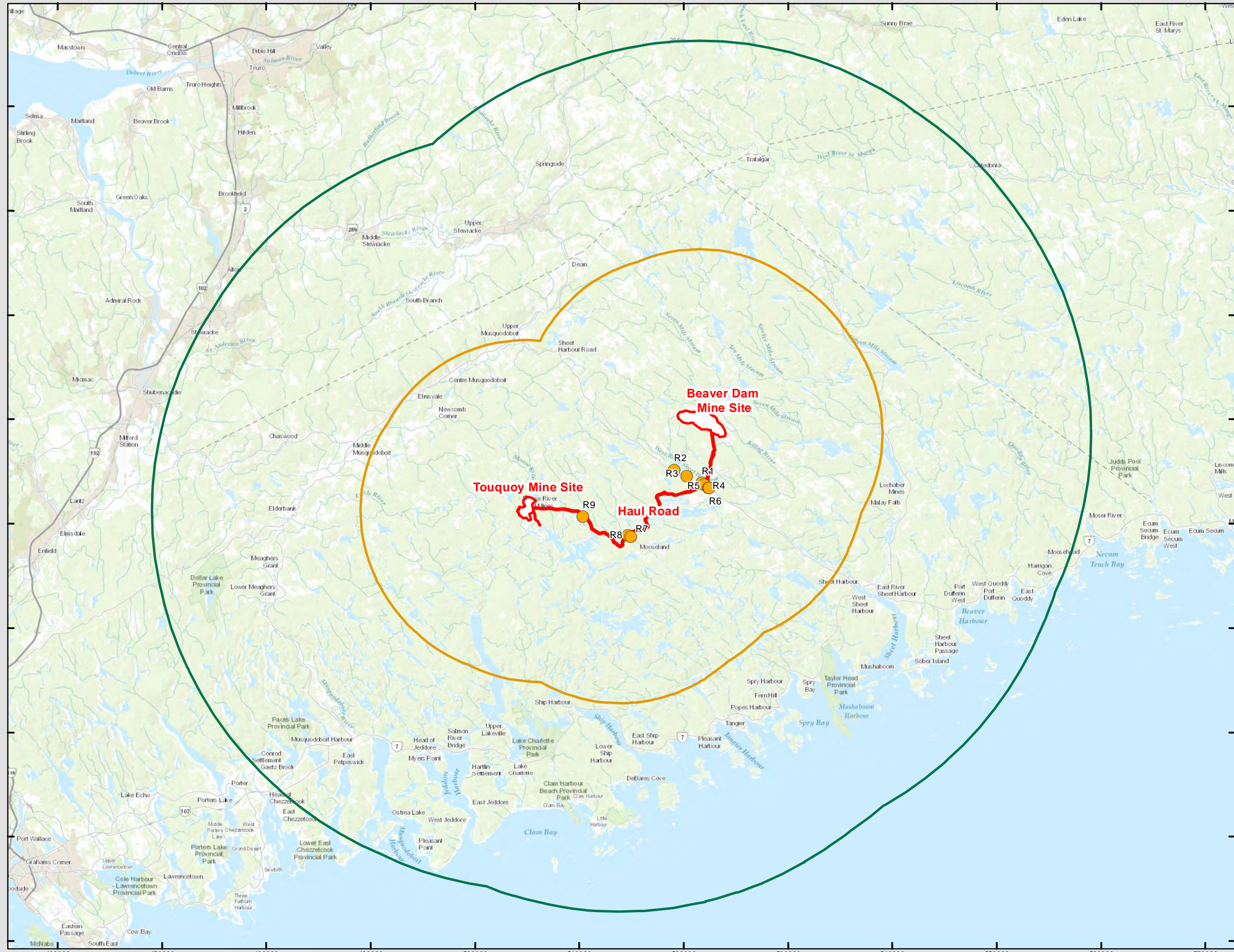


FIGURE CEA 2-31-22

Beaver Dam Mine Project

Air Contours Total VOC 24-Hour Levels Regional Scale

- Receptor
 - Air Regional Assessment
 - Project Area
 - Air Local Assessment
- Total VOC Ranges (ug/m3)**
- 0.1-0.2
 - 0.2-0.3
 - 0.3



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

0 5 10 20 km

1:340,000 Scale when printed @ 11" x 17"

Drawn By: MEL Date: 2021-09-22
 Reviewed By: AMNS

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Prepared For:



FIGURE CEEA 2-31-23

Beaver Dam Mine Project

Noise Contours Day/Evening Operations Regional Scale

- Receptor
- Noise Local Assessment
- Noise Regional Assessment Area
- Project Area

Noise Modelling Contours (dBa)

- 27
- 31
- 33
- 45
- 55
- 60
- 65



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter

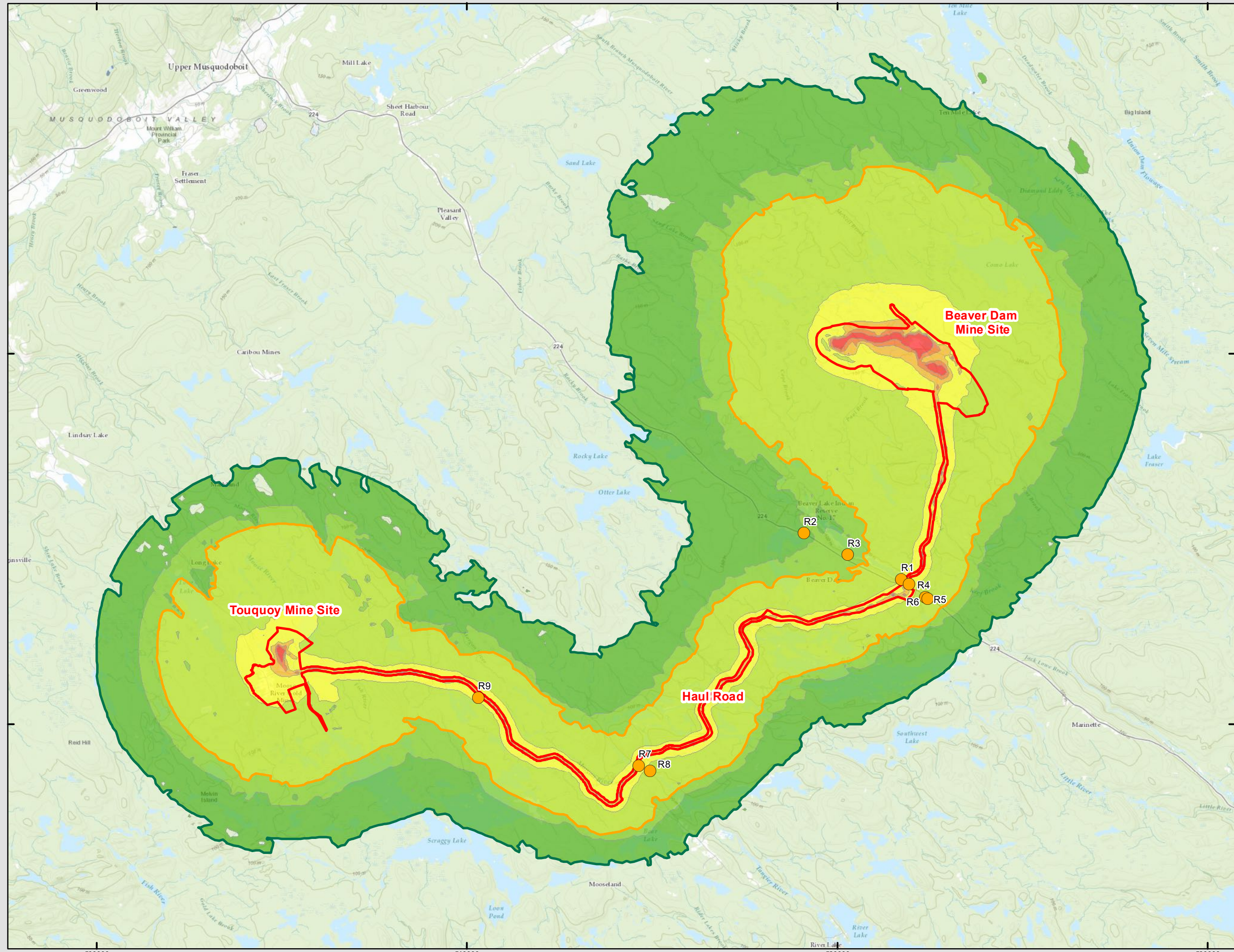
0 1.25 2.5 5 km
 1:95,795 Scale when printed @ 11" x 17"

Drawn By: MEL Date: 2021-09-22
 Reviewed By: AMNS

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



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Prepared For:



FIGURE CEAA 2-31-24

Beaver Dam Mine Project

Noise Contours Nighttime Operations Regional Scale

- Receptor
- Noise Local Assessment Area
- Noise Regional Assessment Area
- Project Area

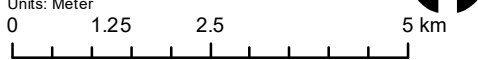
V03 Direct Lg OptionB
Night

Noise Modelling
Contours (dBa)

- 27
- 31
- 33
- 45
- 55
- 60
- 65



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter



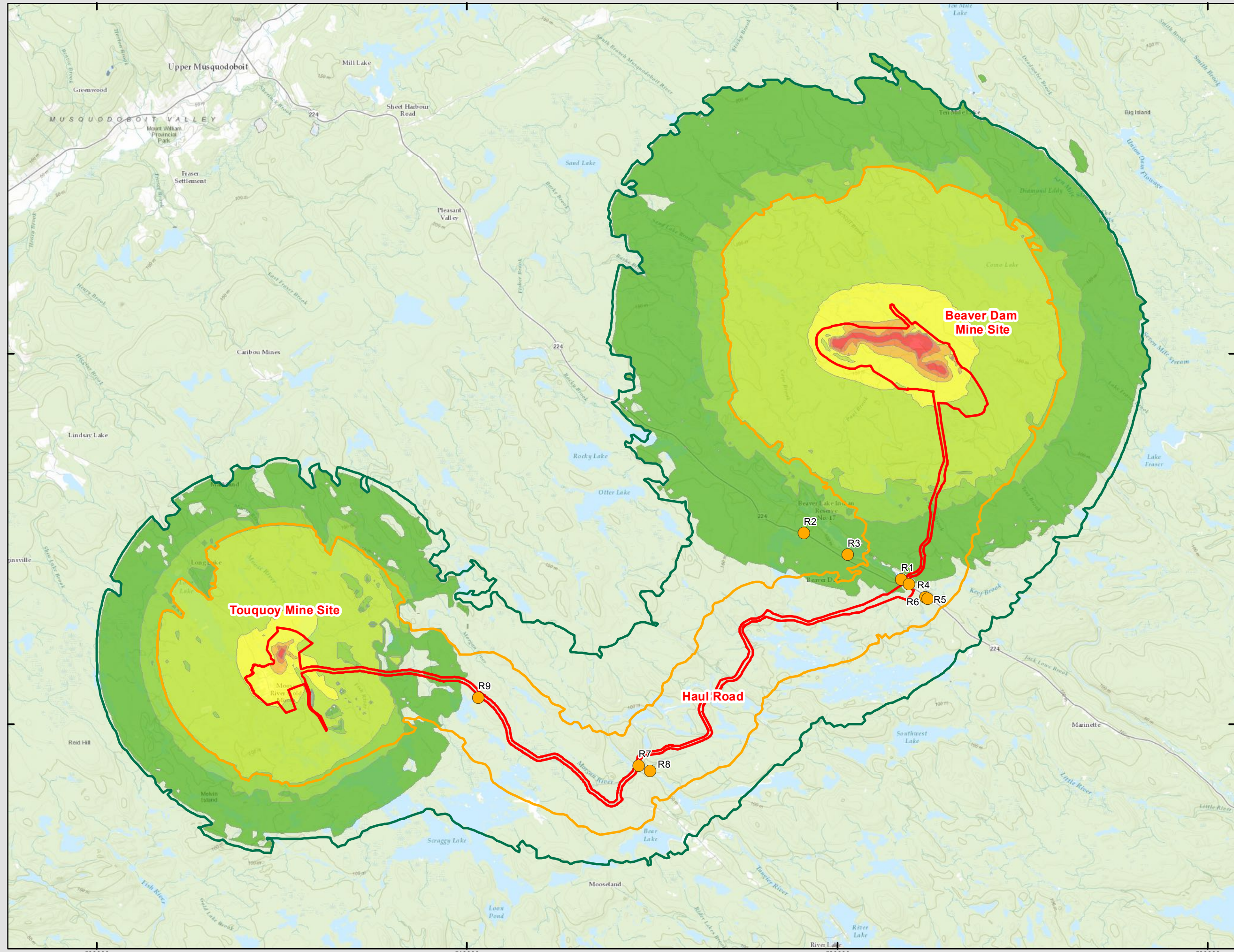
1:95,795 Scale when printed @ 11" x 17"

Drawn By: MEL Date: 2021-09-22
 Reviewed By: AMNS

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



McCallum Environmental Ltd.



ATTACHMENT CEAA 2-31-A:

**GASEOUS COMPOUNDS IMPACTS AT RESIDENTIAL RECEPTORS MEMO,
OCTOBER 20, 2021**



Technical Memorandum

October 20, 2021

To	Danielle Finlayson-Bourque	Tel	519-340-4231
		Email	gordon.reusing@ghd.com
From	Gordon Reusing	Ref. No.	088664-MEM-15
Subject	Gaseous Compounds Impacts at Residential Receptors Beaver Dam Mine Project – Beaver Dam, Nova Scotia		

GHD Limited (GHD) is pleased to present the modelling results of gaseous species (NO₂, SO₂ and VOCs) at the residential receptors located in the Beaver Dam mine project Study Area from the Project Only and Cumulative sources of emissions. This was prepared to address the recent Health Canada comments.

Tables A and B summarize the gaseous species (NO₂, SO₂ and VOCs) modeling results at the sensitive (residential) receptors for the Project only and Cumulative Haul Road truck traffic scenarios respectively.

All predicted gaseous species concentrations are below the identified air quality assessment criteria with and without background air concentrations. We have used the Canadian Ambient Air Quality Standards (CAAQS) criteria for the year 2025 for comparison for the 1-hour and annual time averaging periods which are more stringent than the current Nova Scotia standards that were used in our Air Quality Assessment Report. We have used the Nova Scotia and Ontario standards for 24-hour time averaging period for SO₂ and NO₂ respectively. There are no applicable standards for VOCs.

Please do not hesitate to contact me if you have any questions or require any additional information

Regards

Gord Reusing, M.A.Sc., P.E., P. Eng.
Business Group Leader

Encl.

Table A

Gaseous Compounds Modelling Results at Residential Receptors
Air Quality Impact Assessment Memo
Beaver Dam, Nova Scotia

Project Only							
Parameter	Averaging Period	Assessment Criteria (Air Quality Standard) ($\mu\text{g}/\text{m}^3$)	Maximum Predicted Concentration ($\mu\text{g}/\text{m}^3$)	Percentage of Assessment Criteria (%)	Background Concentration ($\mu\text{g}/\text{m}^3$)	Combined Effect ^(a) ($\mu\text{g}/\text{m}^3$)	Percentage of Assessment Criteria for Combined Effect (%)
R1 – 9 Beaver Dam Mines Road (Marlborough/Goodland Property)							
NO ₂	1-hour	78.96	6.37	8%	41.40	47.77	60%
	24-hour	200	1.03	1%	17.00	18.03	9%
	Annual	22.56	0.30	1%	3.30	3.60	16%
SO ₂	1-hour	170.3	0.00	<1%	7.90	7.90	5%
	24-hour	300	0.00	<1%	5.20	5.20	2%
	Annual	10.48	0.00	<1%	1.90	1.90	18%
VOCs	1-hour	-	0.27	-	-	-	-
	24-hour	-	0.04	-	-	-	-
	Annual	-	0.01	-	-	-	-
R2 – 4112 Highway 224 (Beaver Lake IR 17)							
NO ₂	1-hour	78.96	6.17	8%	41.40	47.57	60%
	24-hour	200	0.46	0%	17.00	17.46	9%
	Annual	22.56	0.07	0%	3.30	3.37	15%
SO ₂	1-hour	170.3	0.00	<1%	7.90	7.90	5%
	24-hour	300	0.00	<1%	5.20	5.20	2%
	Annual	10.48	0.00	<1%	1.90	1.90	18%
VOCs	1-hour	-	0.26	-	-	-	-
	24-hour	-	0.02	-	-	-	-
	Annual	-	0.00	-	-	-	-
R3 – 4115 Highway 224 (Cottage on Crown Land)							
NO ₂	1-hour	78.96	3.99	5%	41.40	45.39	57%
	24-hour	200	0.41	0%	17.00	17.41	9%
	Annual	22.56	0.10	0%	3.30	3.40	15%
SO ₂	1-hour	170.3	0.00	<1%	7.90	7.90	5%
	24-hour	300	0.00	<1%	5.20	5.20	2%
	Annual	10.48	0.00	<1%	1.90	1.90	18%
VOCs	1-hour	-	0.17	-	-	-	-
	24-hour	-	0.02	-	-	-	-
	Annual	-	0.00	-	-	-	-
R4 – 3492 Highway 224 (Hobbs Property)							
NO ₂	1-hour	78.96	11.93	15%	41.40	53.33	68%
	24-hour	200	2.74	1%	17.00	19.74	10%
	Annual	22.56	0.84	4%	3.30	4.14	18%
SO ₂	1-hour	170.3	0.00	<1%	7.90	7.90	5%
	24-hour	300	0.00	<1%	5.20	5.20	2%
	Annual	10.48	0.00	<1%	1.90	1.90	18%
VOCs	1-hour	-	0.50	-	-	-	-
	24-hour	-	0.11	-	-	-	-
	Annual	-	0.03	-	-	-	-
R5 – 3379 Highway 224 (McLeod Property)							
NO ₂	1-hour	78.96	6.31	8%	41.40	47.71	60%
	24-hour	200	0.69	0%	17.00	17.69	9%
	Annual	22.56	0.18	1%	3.30	3.48	15%
SO ₂	1-hour	170.3	0.00	<1%	7.90	7.90	5%
	24-hour	300	0.00	<1%	5.20	5.20	2%
	Annual	10.48	0.00	<1%	1.90	1.90	18%
VOCs	1-hour	-	0.26	-	-	-	-
	24-hour	-	0.03	-	-	-	-
	Annual	-	0.01	-	-	-	-
R6 – 3373 Highway 224 (Smith Property)							
NO ₂	1-hour	78.96	6.27	8%	41.40	47.67	60%
	24-hour	200	0.63	0%	17.00	17.63	9%
	Annual	22.56	0.16	1%	3.30	3.46	15%
SO ₂	1-hour	170.3	0.00	<1%	7.90	7.90	5%
	24-hour	300	0.00	<1%	5.20	5.20	2%
	Annual	10.48	0.00	<1%	1.90	1.90	18%
VOCs	1-hour	-	0.26	-	-	-	-
	24-hour	-	0.03	-	-	-	-
	Annual	-	0.01	-	-	-	-

Table A

**Gaseous Compounds Modelling Results at Residential Receptors
Air Quality Impact Assessment Memo
Beaver Dam, Nova Scotia**

Project Only							
Parameter	Averaging Period	Assessment Criteria (Air Quality Standard) ($\mu\text{g}/\text{m}^3$)	Maximum Predicted Concentration ($\mu\text{g}/\text{m}^3$)	Percentage of Assessment Criteria (%)	Background Concentration ($\mu\text{g}/\text{m}^3$)	Combined Effect ^(a) ($\mu\text{g}/\text{m}^3$)	Percentage of Assessment Criteria for Combined Effect (%)
R7 – Tangier River (Deepwood Estates Property)^(b)							
NO ₂	1-hour	78.96	13.29	17%	41.40	54.69	69%
	24-hour	200	4.43	2%	17.00	21.43	11%
	Annual	22.56	1.37	6%	3.30	4.67	21%
SO ₂	1-hour	170.3	0.00	<1%	7.90	7.90	5%
	24-hour	300	0.00	<1%	5.20	5.20	2%
	Annual	10.48	0.00	<1%	1.90	1.90	18%
VOCs	1-hour	-	0.55	-	-	-	-
	24-hour	-	0.18	-	-	-	-
	Annual	-	0.06	-	-	-	-
R8 – Tangier River (Musquodoboit Lumber Co Ltd. Property/John Dickson Lease)							
NO ₂	1-hour	78.96	8.00	10%	41.40	49.40	63%
	24-hour	200	1.17	1%	17.00	18.17	9%
	Annual	22.56	0.30	1%	3.30	3.60	16%
SO ₂	1-hour	170.3	0.00	<1%	7.90	7.90	5%
	24-hour	300	0.00	<1%	5.20	5.20	2%
	Annual	10.48	0.00	<1%	1.90	1.90	18%
VOCs	1-hour	-	0.33	-	-	-	-
	24-hour	-	0.05	-	-	-	-
	Annual	-	0.01	-	-	-	-
R9 – 5579 Mooseland Road (Lloy Property)							
NO ₂	1-hour	78.96	9.16	12%	41.40	50.56	64%
	24-hour	200	2.93	1%	17.00	19.93	10%
	Annual	22.56	0.87	4%	3.30	4.17	18%
SO ₂	1-hour	170.3	0.00	<1%	7.90	7.90	5%
	24-hour	300	0.00	<1%	5.20	5.20	2%
	Annual	10.48	0.00	<1%	1.90	1.90	18%
VOCs	1-hour	-	0.38	-	-	-	-
	24-hour	-	0.12	-	-	-	-
	Annual	-	0.03	-	-	-	-

Table B

Gaseous Compounds Modelling Results at Residential Receptors
Air Quality Impact Assessment Memo
Beaver Dam, Nova Scotia

Cumulative							
Parameter	Averaging Period	Assessment Criteria (Air Quality Standard) ($\mu\text{g}/\text{m}^3$)	Maximum Predicted Concentration ($\mu\text{g}/\text{m}^3$)	Percentage of Assessment Criteria (%)	Background Concentration ($\mu\text{g}/\text{m}^3$)	Combined Effect ^(a) ($\mu\text{g}/\text{m}^3$)	Percentage of Assessment Criteria for Combined Effect (%)
R1 – 9 Beaver Dam Mines Road (Marlborough/Goodland Property)							
NO ₂	1-hour	78.96	9.65	12%	41.40	51.05	65%
	24-hour	200	1.56	1%	17.00	18.56	9%
	Annual	22.56	0.45	2%	3.30	3.75	17%
SO ₂	1-hour	170.3	0.00	<1%	7.90	7.90	5%
	24-hour	300	0.00	<1%	5.20	5.20	2%
	Annual	10.48	0.00	<1%	1.90	1.90	18%
VOCs	1-hour	-	0.41	-	-	-	-
	24-hour	-	0.06	-	-	-	-
	Annual	-	0.02	-	-	-	-
R2 – 4112 Highway 224 (Beaver Lake IR 17)							
NO ₂	1-hour	78.96	9.35	12%	41.40	50.75	64%
	24-hour	200	0.70	0%	17.00	17.70	9%
	Annual	22.56	0.11	0%	3.30	3.41	15%
SO ₂	1-hour	170.3	0.00	<1%	7.90	7.90	5%
	24-hour	300	0.00	<1%	5.20	5.20	2%
	Annual	10.48	0.00	<1%	1.90	1.90	18%
VOCs	1-hour	-	0.39	-	-	-	-
	24-hour	-	0.03	-	-	-	-
	Annual	-	0.00	-	-	-	-
R3 – 4115 Highway 224 (Cottage on Crown Land)							
NO ₂	1-hour	78.96	6.05	8%	41.40	47.45	60%
	24-hour	200	0.62	0%	17.00	17.62	9%
	Annual	22.56	0.15	1%	3.30	3.45	15%
SO ₂	1-hour	170.3	0.00	<1%	7.90	7.90	5%
	24-hour	300	0.00	<1%	5.20	5.20	2%
	Annual	10.48	0.00	<1%	1.90	1.90	18%
VOCs	1-hour	-	0.26	-	-	-	-
	24-hour	-	0.03	-	-	-	-
	Annual	-	0.00	-	-	-	-
R4 – 3492 Highway 224 (Hobbs Property)							
NO ₂	1-hour	78.96	18.08	23%	41.40	59.48	75%
	24-hour	200	4.15	2%	17.00	21.15	11%
	Annual	22.56	1.27	6%	3.30	4.57	20%
SO ₂	1-hour	170.3	0.00	<1%	7.90	7.90	5%
	24-hour	300	0.00	<1%	5.20	5.20	2%
	Annual	10.48	0.00	<1%	1.90	1.90	18%
VOCs	1-hour	-	0.76	-	-	-	-
	24-hour	-	0.17	-	-	-	-
	Annual	-	0.05	-	-	-	-
R5 – 3379 Highway 224 (McLeod Property)							
NO ₂	1-hour	78.96	9.56	12%	41.40	50.96	65%
	24-hour	200	1.05	1%	17.00	18.05	9%
	Annual	22.56	0.27	1%	3.30	3.57	16%
SO ₂	1-hour	170.3	0.00	<1%	7.90	7.90	5%
	24-hour	300	0.00	<1%	5.20	5.20	2%
	Annual	10.48	0.00	<1%	1.90	1.90	18%
VOCs	1-hour	-	0.39	-	-	-	-
	24-hour	-	0.05	-	-	-	-
	Annual	-	0.02	-	-	-	-
R6 – 3373 Highway 224 (Smith Property)							
NO ₂	1-hour	78.96	9.50	12%	41.40	50.90	64%
	24-hour	200	0.95	0%	17.00	17.95	9%
	Annual	22.56	0.24	1%	3.30	3.54	16%
SO ₂	1-hour	170.3	0.00	<1%	7.90	7.90	5%
	24-hour	300	0.00	<1%	5.20	5.20	2%
	Annual	10.48	0.00	<1%	1.90	1.90	18%
VOCs	1-hour	-	0.39	-	-	-	-
	24-hour	-	0.05	-	-	-	-
	Annual	-	0.02	-	-	-	-

Table B

Gaseous Compounds Modelling Results at Residential Receptors
Air Quality Impact Assessment Memo
Beaver Dam, Nova Scotia

Cumulative							
Parameter	Averaging Period	Assessment Criteria (Air Quality Standard) ($\mu\text{g}/\text{m}^3$)	Maximum Predicted Concentration ($\mu\text{g}/\text{m}^3$)	Percentage of Assessment Criteria (%)	Background Concentration ($\mu\text{g}/\text{m}^3$)	Combined Effect ^(a) ($\mu\text{g}/\text{m}^3$)	Percentage of Assessment Criteria for Combined Effect (%)
R7 – Tangier River (Deepwood Estates Property)^(b)							
NO ₂	1-hour	78.96	20.14	26%	41.40	61.54	78%
	24-hour	200	6.71	3%	17.00	23.71	12%
	Annual	22.56	2.08	9%	3.30	5.38	24%
SO ₂	1-hour	170.3	0.00	<1%	7.90	7.90	5%
	24-hour	300	0.00	<1%	5.20	5.20	2%
	Annual	10.48	0.00	<1%	1.90	1.90	18%
VOCs	1-hour	-	0.83	-	-	-	-
	24-hour	-	0.27	-	-	-	-
	Annual	-	0.09	-	-	-	-
R8 – Tangier River (Musquodoboit Lumber Co Ltd. Property/John Dickson Lease)							
NO ₂	1-hour	78.96	12.12	15%	41.40	53.52	68%
	24-hour	200	1.77	1%	17.00	18.77	9%
	Annual	22.56	0.45	2%	3.30	3.75	17%
SO ₂	1-hour	170.3	0.00	<1%	7.90	7.90	5%
	24-hour	300	0.00	<1%	5.20	5.20	2%
	Annual	10.48	0.00	<1%	1.90	1.90	18%
VOCs	1-hour	-	0.50	-	-	-	-
	24-hour	-	0.08	-	-	-	-
	Annual	-	0.02	-	-	-	-
R9 – 5579 Mooseland Road (Lloy Property)							
NO ₂	1-hour	78.96	13.88	18%	41.40	55.28	70%
	24-hour	200	4.44	2%	17.00	21.44	11%
	Annual	22.56	1.32	6%	3.30	4.62	20%
SO ₂	1-hour	170.3	0.00	<1%	7.90	7.90	5%
	24-hour	300	0.00	<1%	5.20	5.20	2%
	Annual	10.48	0.00	<1%	1.90	1.90	18%
VOCs	1-hour	-	0.58	-	-	-	-
	24-hour	-	0.18	-	-	-	-
	Annual	-	0.05	-	-	-	-

**Beaver Dam Mine Project Environmental Impact Assessment
Information Request Responses, Round 2**

Round 2 Information Request Number:	CEAA-2-32
Regulatory Agency/Indigenous Community:	HC
Topic/Discipline:	Air, Noise and Human Health
EIS Guideline Reference:	Section 6.1.1 Atmospheric Environment
Revised EIS (February 28, 2019) Reference:	Section 2.3.2.2, p127 Section 6.1.8, p219

Context and Rationale

Section 6.1.8 states that “traffic on the Haul Road will generally be restricted to 16 hours per day during the operational phase. This will minimize noise along the Haul Road during evening hours.”

Section 2.3.2.2 states that approximately 20 trucks will be operating between 0600-2300 hours (which is a time span of 17 hours) to transport ore from the Beaver Dam Mine site to the Touquoy Mine site.

It is unclear whether an increased duration will have an impact on noise levels along the Haul Road during the evening hours (which according to the Nova Scotia Guidelines for Environmental Noise Measurement and Assessment is between 1900 and 2300 hours).

In the event future noise levels are elevated, a formalized complaint-response plan should be implemented and additional mitigation may also be necessary.

The Proponent is Required to ...

Confirm that the truck traffic for the noise assessment has been adjusted to reflect 16 hours rather than 12 hours. If noise levels are likely to be elevated during the evening/overnight period, provide a discussion of any additional mitigation measures that may be employed to reduce noise levels at the nearest receptor locations.

Develop a complaint-response plan which would be implemented in the event of public complaints associated with increased noise levels during project construction and/or operation.

Response

The maximum (worst-case) predicted noise level at the property boundaries are in compliance with sound level limits as detailed in Appendix B.2, Section 3.3, Table 3.4, PDF page 14, Section 6.1.7.3, Table 6.1-10, page 6-26 and included in Table CEAA 2-32-1 below. The modelling used for the assessment was adjusted to reflect haul road operations of up to 16 hour per day, during day/evening time periods only (i.e., 7:00 AM to 11:00 PM) (NSEL 1990, 1999). Elevated noise levels during the evening/overnight (i.e., nighttime) periods are not expected to exceed guidelines as shown in and included below as Table CEAA 2-32-1.

**Beaver Dam Mine Project Environmental Impact Assessment
 Information Request Responses, Round 2**
Table CEAA 2-32-1: Maximum (Worst-case) Predicted Noise Levels at Property Boundaries

Property Line Description	Maximum Noise Level (dBA) (Day/Evening/Night)	Sound Level Limit (dBA) (Day/Evening/Night)	Compliance
Beaver Dam Mine Site Property, Option A ^(b)	55 / 55 / 55	65 / 60 / 55	Yes
Beaver Dam Mine Site Property, Option B ^(b)	55 / 55 / 55	65 / 60 / 55	Yes
Haul Road ^(a) (30 m from centerline of road)	58 / 58 / -	65 / 60 / 55	Yes
Touquoy Mine Site Property ^(b)	55 / 55 / 54	65 / 60 / 55	Yes

Source: AMNS 2021, Section 6.1.7.3.2, Table 6.1-10, page 6-26 and in Appendix B.2, Table 3.3, PDF page 13.

Notes: ^(a) Truck traffic used in the noise assessment and related modelling is considered to be a 16-hour shift between 7:00 AM to 11:00 PM (Guidelines for Environmental Noise Measurement and Assessment [NSEL 1990]).

^(b) Nova Scotia Environment Pit and Quarry Guidelines (NSEL 1999) and Guidelines for Environmental Noise Measurement and Assessment. (NSEL 1990).
 dBA = decibels; m = metre.

A draft Complaint Resolution Plan has been developed for the Beaver Dam Mine Project and will be used in the for public complaints including complaints associated with potential increased noise levels during project construction and/or operations. The draft Complaint Resolution Plan is included as Attachment CEAA 2-32-A below.

References

AMNS (Atlantic Mining NS Inc.). 2021. Updated Environmental Impact Statement. Beaver Dam Mine Project. Submitted to the Impact Assessment Agency of Canada and Nova Scotia Environment. October 2021. Middle Musquodoboit, NS.

NSEL (Nova Scotia Environment and Labour). 1990. Guidelines for Environmental Noise Measurement and Assessment. <http://www.noise-ordinances.com/wpcontent/uploads/2015/09/EnvironmentalNoiseMeasurement.pdf>, accessed September 2017.

NSEL. 1999. Pit and Quarry Guidelines. https://novascotia.ca/nse/issues/docs/Pit_and_Quarry_Guidelines.pdf, accessed November 2017.

ATTACHMENT CEAA 2-32-A:**DRAFT COMPLAINT RESOLUTION PLAN**



**DRAFT Complaint Resolution Plan
Version 1**

**Beaver Dam Mine Project
Environmental Impact Statement
October 2021**

REVISION HISTORY

Version	Date	Notes/Revisions
Version 1	October 2021	Created the draft Complaint Resolution Plan. Outlines the formal response procedure to complaints from members of the public received directly by AMNS.

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4	CORRECTIVE ACTION, ESCALATION, AND EXTERNAL REPORTING.....	4

List of Attachments

Attachment A: Record of Public Complaints and Company Response Form

1 PURPOSE

This document is intended to standardize the formal response procedure to complaints from members of the public received directly by Atlantic Mining NS Inc. (AMNS) in association with its activities associated with the Beaver Dam Mine Project.

This plan also standardizes the documentation of contact information for the individual making the complaint and the Company response(s) to address the complaint, as well as the submission of records associated with this procedure to Nova Scotia Environment (NSE).

The Company is committed to addressing complaints in a timely and respectful manner. This includes verbal and written complaints directed to the Company. Where complaints may address issues that appear unrelated to the Company's project activities, the individual will be notified of such.

Specifically, this plan includes procedures to address complaints associated with the Project:

- Receive and record all complaints and document name, title, address, telephone number and email as provided by individual;
- Investigate the cause of complaint and undertake appropriate action, if necessary, to correct the problem;
- Respond to complainant in a timely fashion depending on nature of investigation and corrective actions if necessary; and
- Document any corrective actions in short or long term and responses to the complainant, including any arbitration refers, proceedings of referrals and the decisions rendered.

2 RECEIVING AND RECORDING COMPLAINT

When a complaint is received by AMNS from a member of the public, the Company employee initially receiving the complaint shall log the name, title, address, telephone number, and email address of the individual using Borealis or email these details, using the Record of Public Complaints and Company Response Form, to the Community Engagement Specialist (CES) for input to Borealis.

The Community Engagement Specialist will engage with appropriate departments (i.e., Site Supervisor, Environment Department, Communications and External Affairs Department, etc.) and regulatory authorities as warranted.

Where the complaint is provided in real time, the member of the public shall be referred to, in the first instance, the Community Engagement Specialist (CES), and/or cc'd to the Site Supervisor and/or Security Department on site as is warranted. Escalation depends on issue, but all three Department contacts should be considered for notification, and always the CES who will initially take point on complaints.

3 INITIAL INVESTIGATION AND INTERNAL REPORTING

In a timely fashion depending on the sensitivity of the complaint, the Community Engagement Specialist in consultation with the Site Supervisor shall investigate the cause of the complaint and undertake appropriate corrective actions, as necessary, to address the concern.

Initial observations and/or corrective actions as appropriate shall be documented in Borealis within 24-hour period of complaint by the Community Engagement Specialist and/or Site Supervisor

The timeliness of corrective actions being completed shall depend on their nature and the sensitivity of the complaint. This shall be at the discretion of the Community Engagement Specialist in collaboration with the Environment Department and/or the Site Supervisor and/or Communication Manager as required.

Where corrective actions and/or reporting require additional documentation, this shall be appended within Borealis to document follow up on the complaint, assign taskings, and notification of timelines.

4 CORRECTIVE ACTION, ESCALATION, AND EXTERNAL REPORTING

Where contact information has been provided and at the discretion of the Community Engagement Specialist, the complaint/concern/grievance shall be acknowledged within 3 business days of the initial complaint.

The complaint/grievance will be followed up within 10 days of the initial complaint with the member of the public who lodged the complaint.

At the discretion of the community engagement specialist, the issue will be elevated to Level 3 personnel or above as required.

Where the complaint is referred to arbitration, the proceedings of any referrals and the decisions rendered shall be documented.

At regular Community Liaison Committee (CLC) meetings, a summary of complaints received from the public and Company responses, including corrective actions if any, shall be reported and noted in meeting notes.

Reporting to NSE will be completed as per IA at a minimum (i.e., quarterly reports); however, notification will be provided as appropriate depending on sensitivity of the complaint.

Attachment A
Record of Public Complaints and Company Response Form



Record of Public Complaints and Company Response Form

Date and Time Complaint Received: _____

Form of Complaint (e.g., site visit, phone call, email): _____

Name of Atlantic Gold employee initially receiving complaint: _____

Contact Information of Member of Public Lodging Complaint (indicate N/A if not provided):

Name: _____ Title: _____

Address: _____

Email: _____ Telephone: _____

Nature of complaint as described by member of the public:

Observations and/or corrective actions:

Time and date of email or text to Community Engagement Specialist:

To be completed by Site Supervisor (or designate):

Print:	
Sign:	
Date:	

Attach additional documentation on additional follow up to respond to complaint as appropriate to document resolution and communication, including any arbitration completed. (Yes / No)

**Beaver Dam Mine Project Environmental Impact Assessment
Information Request Responses, Round 2**

Round 2 Information Request Number:	CEAA-2-33
Regulatory Agency/Indigenous Community:	HC
Topic/Discipline:	Air, Noise and Human Health
EIS Guideline Reference:	Section 6.1.1 Atmospheric Environment
Revised EIS (February 28, 2019) Reference:	Section 6.2, p229 Section 6.2.4.4, pp238 and 239

Context and Rationale

The proponent considered particle deposition as the sole operable pathway for air contaminants and assessed the health effects of only particulate matter (PM), such as total suspended particulate (TSP), PM_{2.5} and PM₁₀. The EIS states that “gaseous compounds were screened out during the preliminary air quality assessment (Appendix C.1), only particulate concentrations were carried forward for the air quality impact assessment”. However, it is unclear why other important criteria air contaminants, such as NO₂ and SO₂, were screened out and not carried forward to the impact assessment.

Also, although the annual average PM_{2.5} concentration is predicted to exceed the Canadian Ambient Air Quality Standards (CAAQS) at the maximum point of impingement (MPOI) in the Haul Road operations scenario, the effect is considered not-significant as the exceedances are predicted to occur less than 2% of the time.

The CAAQS for PM_{2.5} explicitly recognize the absence of health effects thresholds by having additional management levels at concentrations below the CAAQS, which reflect the health and environmental benefits that can be achieved by taking actions to reduce air pollution to background levels. The proponent mentions that health risks exist below the air quality criteria; however, the risk levels are stated to “be within acceptable ranges” without discussing the possible mitigation measures to prevent air quality deterioration compared to background levels.

The Proponent is Required to ...

Provide an additional explanation as to why the inhalation of gaseous compounds, such as NO₂ and SO₂, were screened out of further assessment in terms of human health.

Provide a qualitative or quantitative HHRA for PM_{2.5} in relation to exposure throughout the study area with particular attention to PM_{2.5} concentrations along the Haul Road in close proximity to seasonal/permanent residences and traditional land use areas.

Provide a discussion of the implications of the CAAQS-associated management levels and the potential to reduce emissions.

Response

Gaseous compounds emitted by proposed traffic on the Haul Road were assessed and the predicted maximum concentrations of the gaseous species (i.e., NO₂, SO₂ and VOCs) did not exceed the selected air quality criteria for these parameters. Gaseous compounds were screened out as modelling showed that they were negligible along the Haul Road. For this reason, gaseous compounds were not carried forward for further assessment. The maximum predicted concentrations of gaseous species are detailed in Appendix C.1, Table 7B, PDF page 40 of the Updated 2021 EIS (AMNS 2021) and summarized below in

**Beaver Dam Mine Project Environmental Impact Assessment
 Information Request Responses, Round 2**

Table CEAA 2-33-1 for ease of reference. It should be noted that there is no air quality criteria for total VOCs (Appendix C.1, Table 6, PDF page 37) therefore the predicted maximum concentrations of total VOCs in Appendix C.1, Table 7B, PDF page 40 are shown to be negligible.

Table CEAA 2-33-1: Maximum Predicted Concentrations due to Haul Road Operations

Parameter	Averaging Period	Assessment Criteria (Ambient Air Quality Standard) ($\mu\text{g}/\text{m}^3$)	Maximum Predicted Concentration ($\mu\text{g}/\text{m}^3$)	Percentage of Assessment Criteria (%)	Background Concentration ($\mu\text{g}/\text{m}^3$)	Combined Effect ^(a) ($\mu\text{g}/\text{m}^3$)	Percentage of Assessment Criteria for Combined Effect (%)
NO ₂	1-hour	400	14.2	4	41.4	55.6	14
	24-hour	200	6.7	3	17.0	23.7	12
	Annual	100	2.7	3	3.3	6.0	6
SO ₂	1-hour	900	0.0	0	7.9	7.9	1
	24-hour	300	0.0	0	5.2	5.2	2
	Annual	60	0.0	0	1.9	1.9	3
VOC	1-hour	–	0.6	–	–	–	–
	24-hour	–	0.3	–	–	–	–
	Annual	–	0.1	–	–	–	–

Source: Adapted from AMNS 2021, Appendix C.1, Table 7B, PDF page 40.

Notes: ^(a) "Combined Effect" equals predicted maximum concentration and background concentration. $\mu\text{g}/\text{m}^3$ = micrograms per cubic metre.

$\mu\text{g}/\text{m}^3$ = micrograms per cubic metre; PM₁₀ = coarse particulate matter; PM_{2.5} = fine particulate matter; TSP = total suspended particulate; g/m²/yr = grams per square metre per year.

The proponent has committed to achieving an 80 to 90% reduction in re-suspended road dust as a result of vehicle travel on this road (compared to unmitigated travel on an unpaved road) through the use of advanced road surface applications. Re-modelling of PM_{2.5} demonstrates that the CAAQS for this species will be met at and beyond 30 m from the road centerline for all averaging periods (see also responses to CEAA 2-27 and CEAA 2-28).

The proper use of advanced dust mitigation applications on the haul road has been identified as a need through the Environmental Assessment process, in order to address the potential for road dust, especially PM_{2.5} to exceed the CAAQS due to road traffic. The proposed dust mitigation on this haul road is now predicted to achieve Air Zone CAAQS for project traffic, other road traffic and background (the cumulative effects scenario), and emissions due to all anticipated Project haul road activity by itself is predicted to be well below the threshold for keeping areas clean for both the 24-hour and annual averaging periods.

References

AMNS (Atlantic Mining NS Inc.). 2021. Updated Environmental Impact Statement. Beaver Dam Mine Project. Submitted to the Impact Assessment Agency of Canada and Nova Scotia Environment. October 2021. Middle Musquodoboit, NS.

**Beaver Dam Mine Project Environmental Impact Assessment
Information Request Responses, Round 2**

Round 2 Information Request Number:	CEAA-2-34
Regulatory Agency/Indigenous Community:	HC
Topic/Discipline:	Groundwater and Surface Water
EIS Guideline Reference:	Section 6.1.4 Groundwater and Surface Water
Revised EIS (February 28, 2019) Reference:	Section 6.6.3.1, p297

Context and Rationale

The discussion of regional domestic well supplies is not sufficient to identify potential receptors of project-related contaminants. It is unclear whether the “nearest domestic well” referenced is at the intersection of Hwy 224 and the Haul Road or elsewhere.

The results presented in Tables 6.6-1 and 6.6-2 are not discussed and it is not clear how the results represent regional baseline groundwater quality.

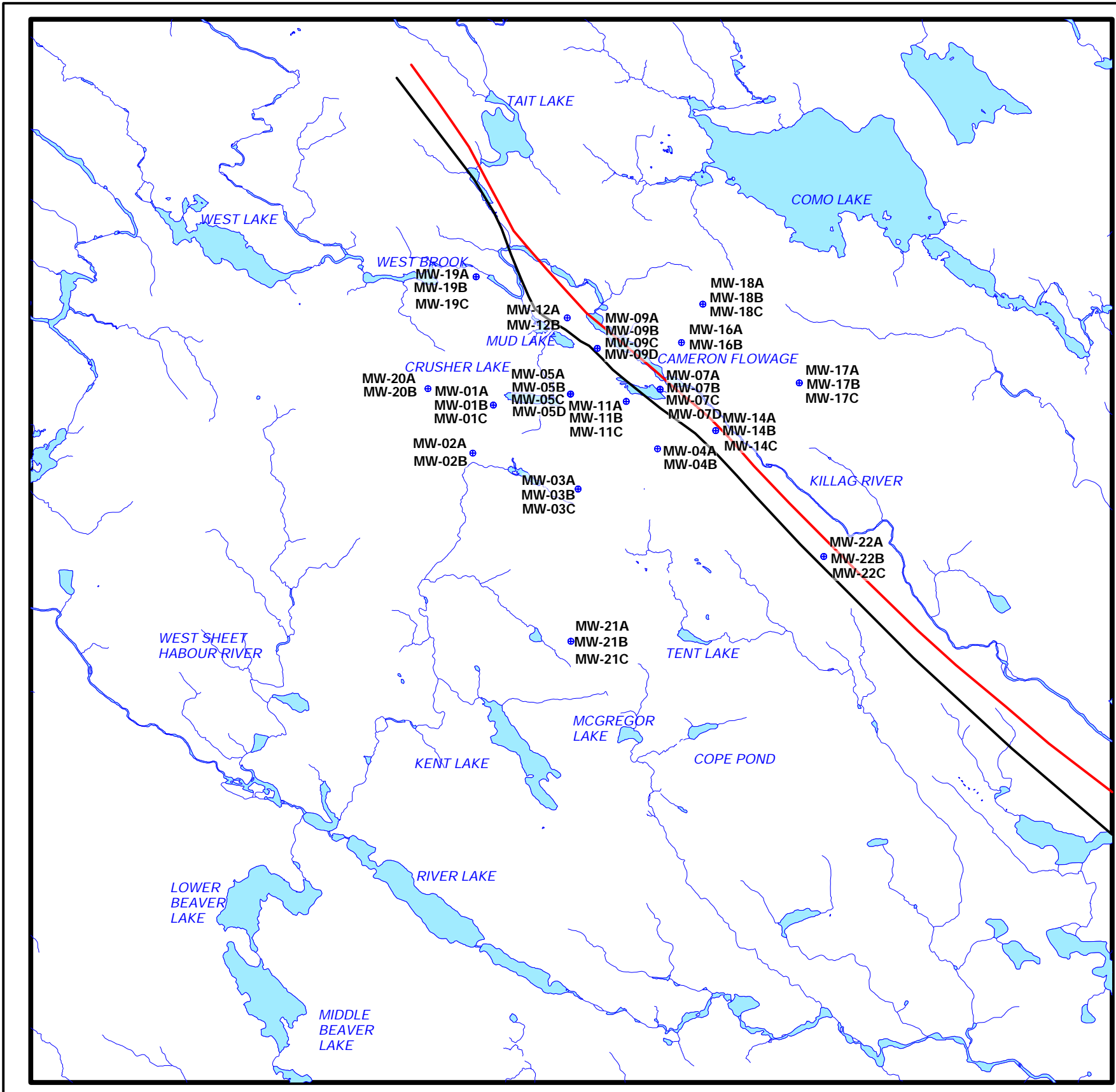
The Proponent is Required to ...





Provide a map showing the documented domestic drilled and dug wells within the project area/zone of influence. For example, clarify where the wells from Tables 6.6-1 and 6.6-2 are located.

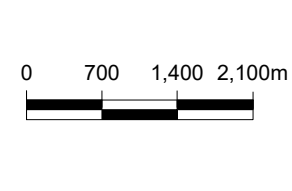
Indicate when the samples in Tables 6.6-1 and 6.6-2 were taken and discuss the results in terms of existing contaminants of potential concern (COPC) levels.

Response

The updated baseline groundwater quality data is summarized in Appendix F.4 as discussed in Section 6.6.3.1, page 6-159 of the Updated 2021 EIS (AMNS 2021). Updated baseline groundwater quality data is collected from the Beaver Dam Mine Site monitoring well network presented on Figure CEAA-2-34-1. As stated in Section 6.6.4.2.1, page 6-171 of the Updated 2021 EIS, “Results from the ongoing groundwater monitoring program at the Beaver Dam Mine Site indicate that the groundwater has an approximately neutral acidity (pH ranges from 5.15 to 8.31, average of 7.0) and has an elevated hardness (2.2 to 270 milligrams per litre [mg/L], average of 37 mg/L as Calcium Carbonate [CaCO₃]). Metals including aluminum, arsenic, total copper, iron, total lead, manganese, total silver, and zinc are naturally elevated relative to NSE PSS for GW and NSE Tier 1 EQS for potable groundwater, NSE Tier 2 PSS for groundwater discharge to surface water (>10 m) and/or GCDWQ MAC. However, these metals are within ranges typically found in groundwater throughout Nova Scotia. Groundwater analytical results for the Beaver Dam Mine Site are presented in the Baseline Groundwater Program Memo (Appendix F.4). Appendix F.4 (Section 3, PDF page 5) in the Updated 2021 EIS presents collected quarterly groundwater monitoring well sampling analytic results compared to applicable regulatory criteria.” (AMNS 2021). The data presented in Appendix F.4 of the Updated 2021 EIS (AMNS 2021) is representative of groundwater conditions at the Beaver Dam Mine Site prior to the proposed development.



- LEGEND**
-  SURFACE WATER BODY
 -  MUD LAKE FAULT
 -  CAMERON FLOWAGE FAULT
 -  GROUNDWATER MONITORING LOCATIONS



ATLANTIC GOLD CORPORATION
 MARINETTE, NOVA SCOTIA
 BEAVER DAM MINE
 BEAVER DAM MINE GROUNDWATER MONITORING
 WELL LOCATIONS

088664-031
 September 02, 2021

FIGURE CEA-2-34-1

**Beaver Dam Mine Project Environmental Impact Assessment
 Information Request Responses, Round 2**

The groundwater quality data presented in Section 6.6.4.1, Table 6.6-2, page 6-166 and Table 6.6-3, page 6-167 of the Updated 2021 EIS (AMNS 2021), and included below as Tables CEAA 2-34-1 and CEAA 2-34-2 for ease of reference, are historic groundwater quality measurements collected from the Beaver Dam Site in May and June 1986 as referenced in JWA (1986). The dug well referenced in Section 6.6.4.1, Table 6.6-2, page 6-166 of the Updated 2021 EIS (AMNS 2021) (Table CEAA 2-34-1 below) was a test well that was constructed as part of the Water Supply Exploration Program conducted by JWA (1986) to evaluate the feasibility of developing a groundwater supply for potable and mine uses. JWA (1986) concluded that a single groundwater well could not supply a sufficient quantity of water, and if a well were to be developed, iron and manganese would be the most likely water quality problems. Section 6.6.4.1, Table 6.6-2, page 6-166 of the Updated 2021 EIS (AMNS 2021) and Table CEAA 2-34-1 below, presented the groundwater quality data collected from the dug well by JWA (1986) and shows that arsenic exceed the NSE Tier 1 EQS for potable groundwater and the CDWQ guidelines maximum acceptable concentration. Iron and manganese exceed their respective CDWQ guidelines aesthetic objectives. The dug well was not developed into a potable drinking water source and was abandoned. The location of the abandoned dug well is presented in Figure CEAA 2-34-2.

Table CEAA 2-34-1: Till Groundwater Analysis for Dug Well in area of Beaver Dam Mine Site

Parameter	NSE Tier 1 EQS	CDWQ Guidelines	CDWQ Source	Units	Dug Well
Sodium		200	AO	mg/L	2.0
Potassium				mg/L	0.3
Calcium				mg/L	21.0
Magnesium				mg/L	3.5
Hardness (CaCO ₃)				mg/L	67.0
Alkalinity (CaCO ₃)				mg/L	40.7
Sulfate		500	AO	mg/L	22.0
Chloride		250	AO	mg/L	6.4
Silica				mg/L	3.9
Orthophosphate				mg/L	<0.01
Nitrate + Nitrite				mg/L	0.12
Ammonia				mg/L	<0.5
Arsenic	0.01	0.01	MAC	mg/L	0.04
Iron		0.3	AO	mg/L	2.3
Manganese		0.05	AO	mg/L	0.25
Lead	0.01	0.01	MAC	mg/L	0.009
Copper		1	AO	mg/L	0.01
Zinc	5	5	AO	mg/L	0.03
Total Dissolved Solids		500	AO	mg/L	84.0
Suspended Solids				mg/L	382
Colour		15	AO	TCU	12.5
Turbidity				NTU	87
Conductivity				µmho/cm	149.0
pH		7.0 to 10.5	AO	S.U.	6.8

Source: AMNS 2021, Section 6.6.4.1, Table 6.6-2, page 6-166

Notes: The Dug well was partially constructed of waste rock and the sample was turbid so it may not be representative of metals in the overburden groundwater. NSE Tier 1 EQS = Nova Scotia Environment Tier 1 Environmental Quality Standards for Potable Groundwater (Coarse Grained Soil), Agricultural/Residential; CDWQ = Health Canada's Guidelines for Canadian Drinking Water Quality, October 2014; AO = Aesthetic Objective; MAC = Maximum Acceptable Concentration; m = metre; < = less than; mg/L = milligrams per litre; µmho/cm = micromhos per centimetre; TCU = true colour units; NTU = nephelometric turbidity units.

Red = Denotes guideline exceedance of CDWQG.

Bold = Denotes guideline exceedance of NSE Tier1 EQS.

**Beaver Dam Mine Project Environmental Impact Assessment
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The water quality samples collected from the Austen Shaft and DDH86-47 (Section 6.6.4.1, Table 6.6-3, page 6-167 of the Updated 2021 EIS [AMNS 2021] and included as Table CEEA 2-34-2 below) were part of the geochemical evaluation carried out by JWA (1986) to evaluate water quality characteristics during pumping of the historic mine workings. Similar to the dug well, water quality samples collected from Austen Shaft and DDH86-47 exceeded the NSE Tier 1 EQS for potable groundwater and the CDWQ guidelines maximum acceptable concentration for arsenic. Water quality samples collected from Austen Shaft and DDH86-47 also exceed the CDWQ guidelines for iron and manganese. The location of the Austen Shaft and DDH86-47 are presented in Figure CEEA 2-34-2. As discussed above, the baseline data collected by JWA (1986) from the dug well, Austen Shaft and DDH86-47 has been updated with the groundwater quality data collected from the Beaver Dam Mine Site monitoring well network as presented in Appendix F.4 of the Updated 2021 EIS (AMNS 2021). Neither the dug well, Austen Shaft nor DDH86-47 have been used as potable groundwater resources.

Figure CEEA-2-34-3 presents the location of identified drilled/dug wells that may be used as potable groundwater sources in the vicinity of the Beaver Dam Mine Site and Haul Road. As shown on Figure CEEA 2-34-3, the nearest confirmed domestic well to the Beaver Dam Mine Site is R2, which is located approximately 2 km north of the Haul Road along Highway 224. R2 is located approximately 5km southwest of the Beaver Dam Mine Site and is outside of the predicted groundwater area of influence of the Beaver Dam Mine Site (Section 7, PDF page 40 of Appendix F.5 in the Updated 2021 EIS [AMNS 2021] for the extent of predicted groundwater quality impacts). Therefore, there are no predicted impacts to existing potable groundwater sources that could potentially result from development of the Beaver Dam Mine Site. Potential impacts from the Haul Road to groundwater and surface water from dust deposition along the Haul Road are evaluated in Appendix F.9 of the Updated 2021 EIS (AMNS 2021).

Table CEEA 2-34-2: Bedrock Groundwater Analysis for Drilled Wells in area of Beaver Dam Mine Site

Parameter	NSE Tier 1 EQS	CDWQ Guidelines	CDWQ Source	Units	Austen Shaft 7m	Austen Shaft 17m	DDH86- 47 (flowing) ^(a)
Sodium		200	AO	mg/L	2.1	2.3	4.4
Potassium				mg/L	0.9	0.8	1.4
Calcium				mg/L	8.3	9.5	24.3
Magnesium				mg/L	1.0	1.1	2.0
Hardness (CaCO ₃)				mg/L	25.0	28.3	69.0
Alkalinity (CaCO ₃)				mg/L	20.3	23.5	69.0
Sulfate		500	AO	mg/L	8.0	8.0	7.5
Chloride	250	250	AO	mg/L	3.3	3.1	4.6
Silica				mg/L	4.8	5.2	12.0
Orthophosphate				mg/L	0.02	<0.01	0.01
Nitrate + Nitrite				mg/L	0.18	0.13	<0.5
Ammonia				mg/L	<0.05	<0.05	<0.5
Arsenic	0.01	0.01	MAC	mg/L	0.04	0.04	0.04
Iron		0.3	AO	mg/L	0.3	0.32	0.5
Manganese		0.05	AO	mg/L	<0.01	0.03	0.31
Lead	0.01	0.010	MAC	mg/L	<0.002	<0.002	<0.002
Copper		1	AO	mg/L	<0.01	<0.01	<0.01
Zinc	5	5	AO	mg/L	<0.01	<0.01	<0.01
Total Dissolved Solids		500	AO	mg/L	35.0	43.0	94.0
Suspended Solids				mg/L	<0.3	<0.3	0.8
Colour		15	AO	TCU	5.0	5.0	20
Turbidity				NTU	1.5	2.3	0.4

**Beaver Dam Mine Project Environmental Impact Assessment
 Information Request Responses, Round 2**
Table CEAA 2-34-2: Bedrock Groundwater Analysis for Drilled Wells in area of Beaver Dam Mine Site (continued)

Parameter	NSE Tier 1 EQS	CDWQ Guidelines	CDWQ Source	Units	Austin Shaft 7m	Austin Shaft 17m	DDH86- 47 (flowing) ^(a)
Conductivity				µmho/cm	69.00	76.00	161.0
pH		7.0 - 10.5	AO	S.U.	6.30	6.40	7.4
Aluminum		0.1	AO	mg/L	<0.05	<0.05	-
Boron	5	5	MAC	mg/L	<0.02	<0.02	-
Barium	1	1	MAC	mg/L	<0.005	<0.005	-
Beryllium	0.004			mg/L	<0.005	<0.005	-
Chromium	0.05	0.05	MAC	mg/L	<0.01	<0.01	-
Cobalt	0.01			mg/L	<0.01	<0.01	-
Nickel	0.1			mg/L	<0.02	<0.02	-
Antimony	0.006	0.006	MAC	mg/L	<0.05	<0.05	-
Selenium	0.01	0.05	MAC	mg/L	<0.1	<0.1	-
Tin	4.4			mg/L	<0.03	<0.03	-
Vanadium	0.0062			mg/L	<0.01	<0.01	-
Mercury	0.001	0.001	MAC	mg/L	<0.05	<0.05	-
Cadmium	0.005	0.005	MAC	mg/L	<0.01	<0.01	-

Source: AMNS 2021, Section 6.6.4.1, Table 6.6-3, page 6-167.

Notes: ^(a) Sample taken from exploration borehole but representative of typical bedrock groundwater of site area.

NSE Tier 1 EQS = Nova Scotia Environment Tier 1 Environmental Quality Standards for Potable Groundwater (Coarse Grained Soil), Agricultural/Residential; CDWQ = Health Canada's Guidelines for Canadian Drinking Water Quality, October 2014; AO = Aesthetic Objective; MAC = Maximum Acceptable Concentration; < = less than; m = metre; mg/L = milligrams per litre; µmho/cm = micromhos per centimetre; TCU = true colour units; NTU = nephelometric turbidity units.

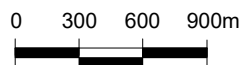
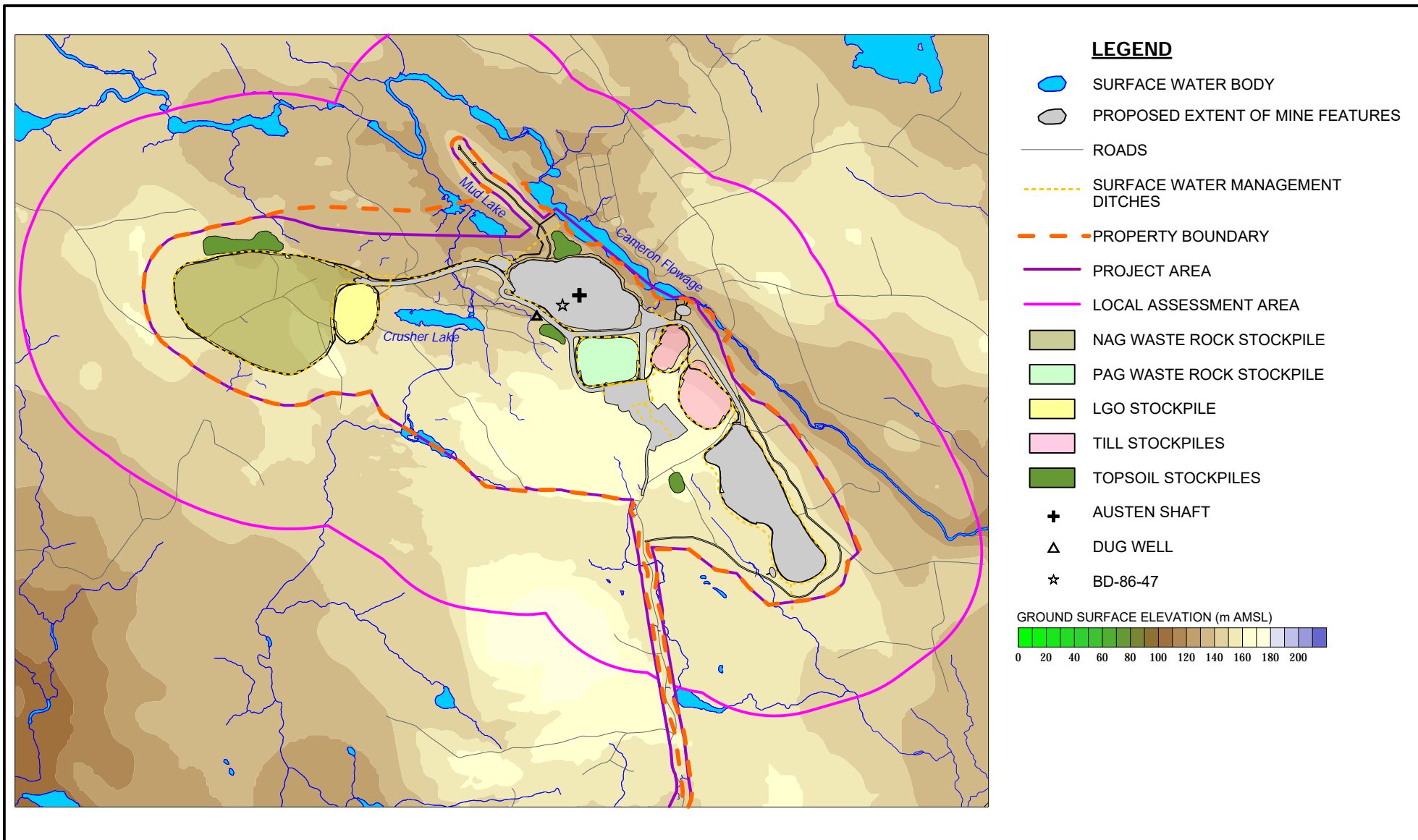
Red Denotes guideline exceedance.

Bold Denotes guideline exceedance of NSE Tier1 EQS.

References

AMNS (Atlantic Mining NS Inc.). 2021. Updated Environmental Impact Statement. Beaver Dam Mine Project. Submitted to the Impact Assessment Agency of Canada and Nova Scotia Environment. May 2021. Middle Musquodoboit, NS.

JWA (Jacques, Whitford and Associates). 1986. Hydrogeology Investigation Beaver Dam Mine. Project No. M1289. Submitted to Seabright Resources Inc. 64p.



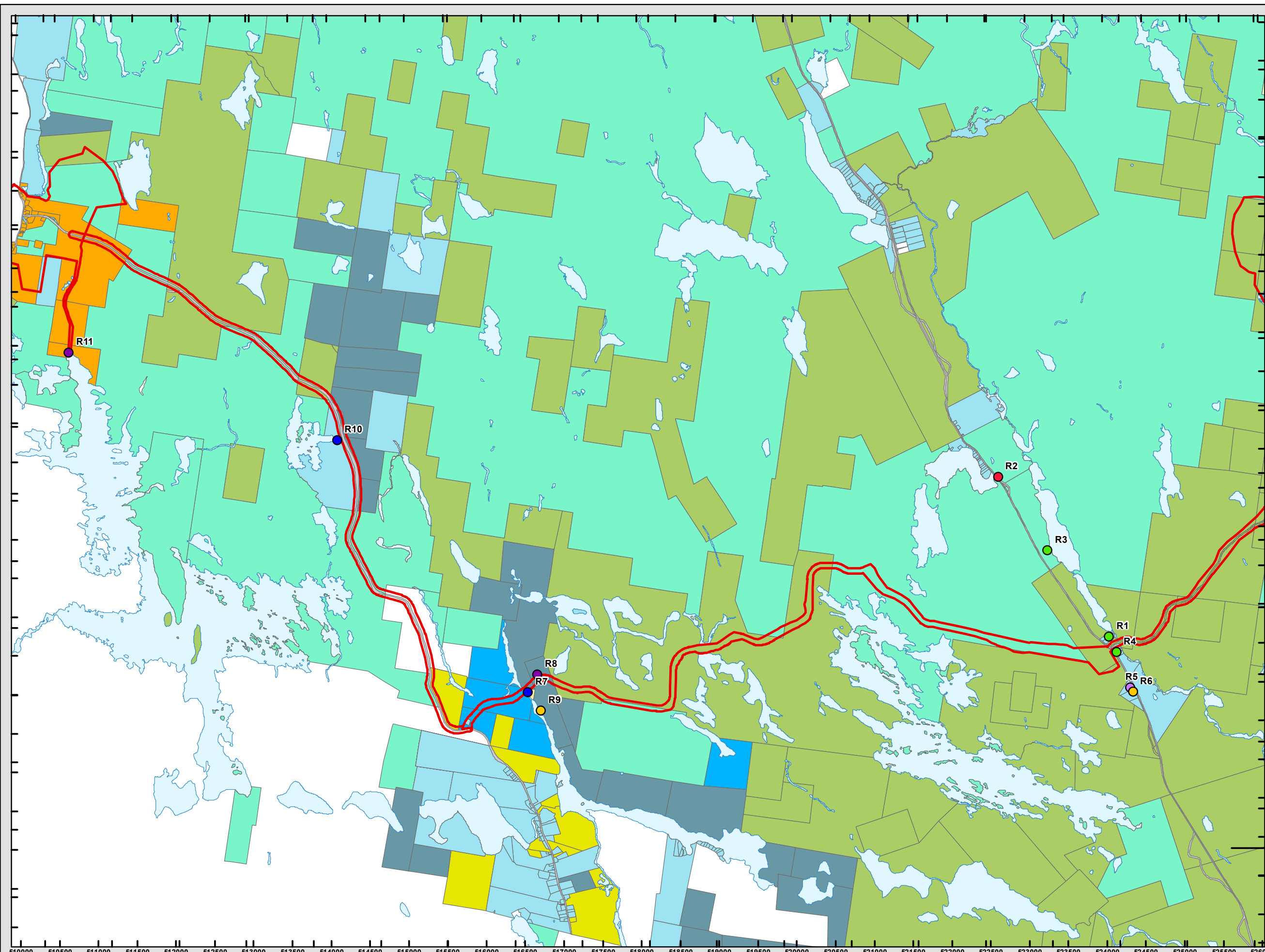
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TABLE 6.6-2 AND 6.6-3 SAMPLE LOCATIONS

088664-031

September 02, 2021

FIGURE CEA-2-34-2



Prepared For:



**FIGURE CEA 2-34-3
Beaver Dam Potable
Wells**

Location

Mooseland, NS

Potable Well Status

- Deemed not applicable
- Drilled well on site
- Dug well on site
- Inconclusive
- No well
- Rainwater collection
- 181217_Updated_BD_PA

OWN_TYPE

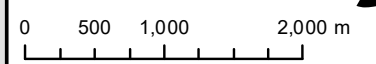
- CROWN
- PRIVATE
- UNKNOWN
- ROAD
- WATER

CORPORATE

- D.D.V. GOLD LIMITED
- DEEPWOOD ESTATES LIMITED
- MUSQUODOBOIT LUMBER CO LTD
- NORTHERN TIMBER NOVA SCOTIA CORP
- PREST BROS LIMITED
- PREST ENTERPRISES LIMITED



Coordinate System: NAD 1983 CSRS UTM Zone 20N
 Projection: Transverse Mercator
 Datum: North American 1983 CSRS
 Units: Meter



1:52,000 Scale when printed @ 11" x 17"

Drawn By: LP Date: 7/8/2019



McCallum Environmental Ltd.

**Beaver Dam Mine Project Environmental Impact Assessment
Information Request Responses, Round 2**

Round 2 Information Request Number:	CEAA-2-35
Regulatory Agency/Indigenous Community:	HC
Topic/Discipline:	Groundwater and Surface Water
EIS Guideline Reference:	Section 4.1 Guidance
Revised EIS (February 28, 2019) Reference:	Section 1.3 Federal, p83 Section 6.6.5.4, p316 Section 6.7.5.1, p378 Section 6.7.5.5, p385 Section 6.14.6 Surface Water and Groundwater, p837 Section 6.14.6 Surface Water and Groundwater, pp836 and 837 Table ES-1, Reference IR Number NSE-1-2, p13 Table ES-1, Reference IR Number NSE-154, p22, Section 6.16.3.2, p874, Section 6.3.4 Aboriginal Peoples Section 6.5 Mitigation

Context and Rationale

“Groundwater modelling was completed for the Beaver Dam Mine Site and included an assessment of the geographic extent for changes to the quantity and quality of groundwater for the site, Haul Road, and Preferred Alternative Haul Road. No current water supplies will be affected by the project as designed and proposed in this EIS document. Therefore, a mitigation plan is not necessary, however the Proponent has stated in public and Mi’kmaq engagement sessions that prudent project planning means that monitoring of the water supplies at Beaver Lake IR and any identified water supplies along the selected final Haul Road would be completed.”

The Proponent is Required to ...

Compare predicted surface and/or groundwater concentrations to the GCDWQ if there are drinking water supplies (surface or groundwater) affected by project activities.

Include nitrate in Table 6.7-15 or further justify its exclusion.

Provide a justification as to why average contaminant concentrations in groundwater discharges to surface water were used to evaluate potential health risks from the consumption of surface and/or groundwater that may be impacted by mining activities.

Response

The Preferred Alternative Road is no longer being considered for the Beaver Dam Mine Project.

In this Information Request, Round 2 (IR2; CEAA-2-35) the proponent is required to “Compare predicted surface and/or groundwater concentrations to the Guidelines for Canadian Drinking Water Quality (GCDWQ) if there are drinking water supplies (surface or groundwater) affected by project activities.” As described in the Section 6.6.4.1 page 6-163, Section 6.6.7.1, page 6-188, and Section 8.4.4, Table 8.4-2, page 8-28 of the Updated 2021 EIS (AMNS 2021) and further described in IR2 response for CEAA-2-34 the nearest potable well is located approximately 5 km southwest of the Beaver Dam Mine Site. This is outside of the project influence with respect to groundwater. Therefore, no comparison to GCDWQ guidelines is required under CEAA-2-35 as there are no surface and/or groundwater drinking supplies affected by project activities at the Beaver Dam Mine Site. Although there are no potable surface and/or groundwater supplies affected by activities at the Beaver Dam Mine Site, Appendix F.5 (Section 7.4, PDF page 46), and Section 6.6.7.1, page 6-188 the Updated 2021 EIS (AMNS 2021) included the

**Beaver Dam Mine Project Environmental Impact Assessment
 Information Request Responses, Round 2**

comparison to potable criteria to satisfy Nova Scotia Environment comments recognizing that groundwater on crown land could be considered potable in the future.

Attachment CEAA 2-35-A, Figures CEAA 2-35-1 through CEAA 2-35-156 below present the simulated contaminant of concern (COC) concentrations and state the applicable regulatory criteria (i.e., GCDWQ, Nova Scotia Environment [NSE] Tier 1 Environmental Quality Standards [EQS] for potable groundwater, and NSE Tier 2 PSS [>10 m] for groundwater discharge to surface water). Attachment CEAA 2-35-A, Figures CEAA 2-35-1 through CEAA 2-35-156 include all individual parameters which have applicable guidelines (i.e., GCDWQ, NSE Tier 1 EQS for potable groundwater, and/or NSE Tier 2 Pathway-specific Standards [PSS] [>10 m] for groundwater discharge to surface water) including those parameters which are not predicted to exceed the applicable guidelines. There are no drinking water supplies (surface water or groundwater) within the radius of influence of the Beaver Dam Mine Site. The groundwater criteria for manganese has been updated from the GCDWQ aesthetic objective of 120 micrograms per litre ($\mu\text{g/L}$) to the NSE EQS Tier 2 PSS criteria for potable groundwater of 50 $\mu\text{g/L}$. Baseline groundwater quality sampling results, collected from the Beaver Dam Mine Site monitoring well network (described in IR2 response CEAA-2-34) are presented in Appendix F.4, Section 3.2, PDF page 7 of the Updated 2021 EIS (AMNS 2021) and include comparison to applicable regulatory criteria.

Nitrate has been added to Section 6.7.7.1.4, Table 6.7-18, page 6-258 of the Updated 2021 EIS (AMNS 2021), which was Table 6.7-15 in the Revised 2019 EIS (AMNS 2019) and presented as Table CEAA 2-35-1 below.

Maximum, not average, simulated concentrations in groundwater discharge are used to evaluate potential health risks from the consumption of surface and/or groundwater that may be impacted by mining activities. As discussed in Sections 7.1.5.1, PDF page 44 and Section 7.1.5.2, PDF page 44 in Appendix F.5 (Hydrogeologic Modelling Report, Beaver Dam Mine Site) of the Updated 2021 EIS (AMNS 2021) only advection and dispersion were considered for contaminant transport to provide a conservative bias for predicted COC concentrations. Furthermore, the post-closure transport simulations were run for 500 years to approximate a steady-state condition thereby simulating the maximum extent and concentration of potential COCs. For end-of-mine (EOM), it is assumed the EOM COC sources will persist for approximately double the predicted duration to provide a further conservative bias towards simulating the maximum extent and concentration of potential COCs.

Table CEAA 2-35-1: Selected Receiving Environment Guidelines Informing the Effects Assessment to Surface Water Quality Valued Component

Chemical	CCME ($\mu\text{g/L}$)	Nova Scotia Tier 1 ($\mu\text{g/L}$)	Selected Guideline	Regulation
Silver	0.25	0.25	0.25	Nova Scotia Tier 1
Aluminum	5/100 ^(a)	5	5	Nova Scotia Tier 1
Antimony	NG	20	20	Nova Scotia Tier 1
Arsenic	5	5	5	Nova Scotia Tier 1
Cadmium	0.04/0.09 ^(b)	0.4	0.04	Nova Scotia Tier 1
Chromium	8.9 ^(c)	1	8.9	CCME
Cobalt	NG	10	10	Nova Scotia Tier 1
Copper	2/4 ^(d)	2	2	Nova Scotia Tier 1
Iron	300	300	300	Nova Scotia Tier 1
Mercury	0.026	0.026	0.026	Nova Scotia Tier 1

**Beaver Dam Mine Project Environmental Impact Assessment
Information Request Responses, Round 2**
Table CEAA 2-35-1: Selected Receiving Environment Guidelines Informing the Effects Assessment to Surface Water Quality Valued Component (continued)

Chemical	CCME (µg/L)	Nova Scotia Tier 1 (µg/L)	Selected Guideline	Regulation
Manganese	NG	820	820	Nova Scotia Tier 1
Molybdenum	73	73	73	Nova Scotia Tier 1
Nickel	25	25	25	Nova Scotia Tier 1
Lead	1/7 ^(e)	1	1	Nova Scotia Tier 1
Selenium	1	1	1	Nova Scotia Tier 1
Sulphate	NG	NG	128 mg/L ^(f)	BC ENV
Thallium	0.8	0.8	0.8	Nova Scotia Tier 1
Uranium	15	300	15	CCME
Zinc	7	30	7	CCME
WAD Cyanide	5	5	5	Nova Scotia Tier 1
Total Cyanide (based on Strong Acid Dissociated)	NG	NG	5 ^(g)	CCME
Nitrate	NG	13,000	13,000	CCME
Nitrite	NG	60	60	CCME
Total Ammonia - N	NG	Varies with pH and temperature	Varies with pH and temperature	CCME

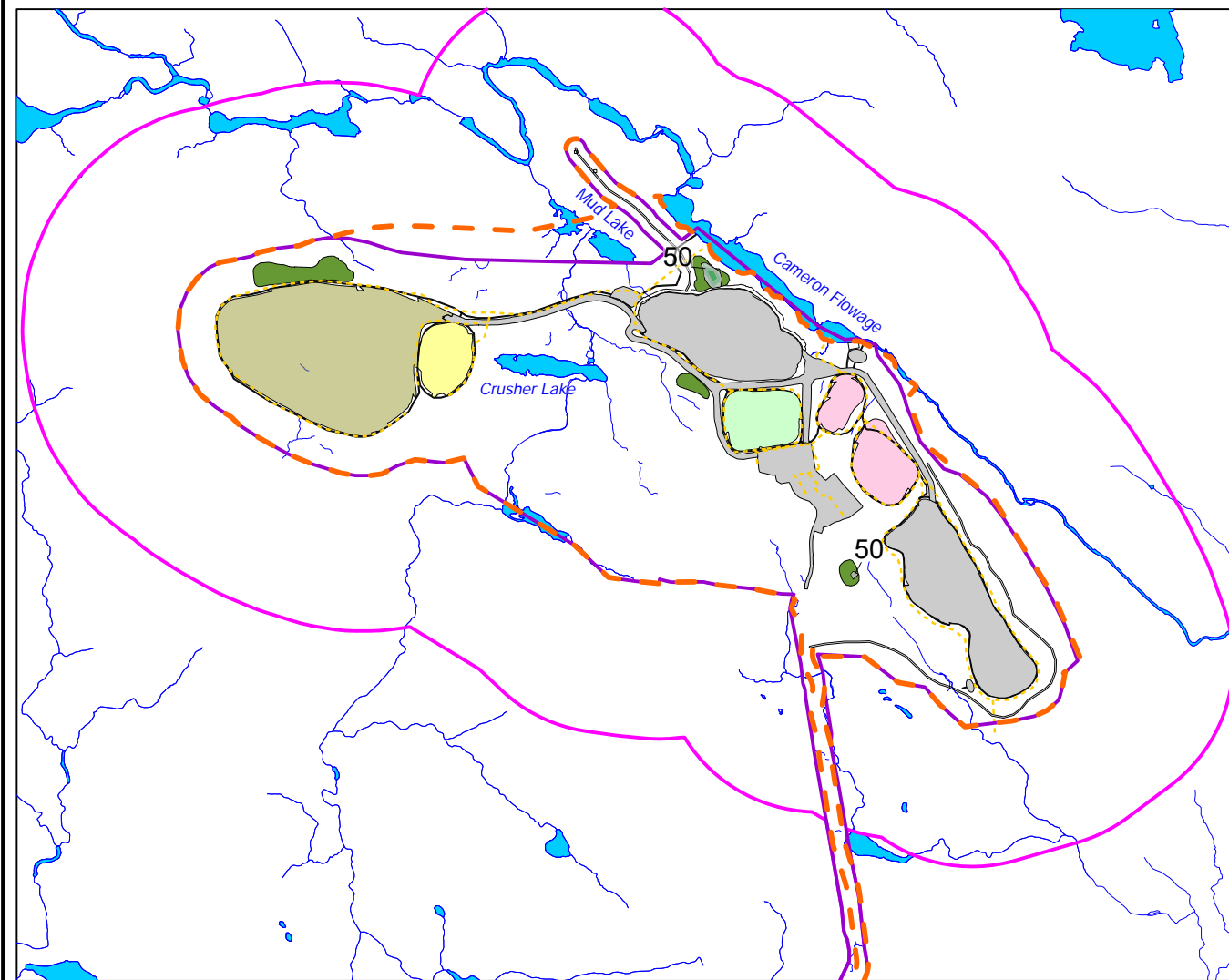
Notes: NG = No guideline available from that agency

- (a) The CCME water quality guideline for aluminum of 5 µg/L is for pH<6.5, and 100 µg/L is for pH ≥ 6.5. The background pH of the Killag River is 4.59 and 6; and mean pH of Moose River is 6.05; therefore, the guideline of 5 µg/L is appropriate for use at both sites.
- (b) The CCME water quality guideline for cadmium of 0.04 µg/L is for water hardness >0 to <17 mg/L, and 0.09 µg/L is for water of 50 mg/L hardness. The background water hardness of the Killag River is between 1.6 and 5.5 mg/L CaCO₃; and the mean hardness of Moose River is 5.0 mg/L; therefore, the guideline of 0.04 µg/L is appropriate for use at both sites.
- (c) Based on Cr⁶⁺; this value was selected to be conservative and that is assumed that Cr will exist in the oxidized state under oxygenated conditions characteristic of fast-moving streams/rivers as well as epilimnetic environments.
- (d) The CCME water quality guideline for copper of 2 µg/L is for water hardness of 0 to <82 mg/L or when the hardness is unknown. When the hardness is >82 to 5,180 mg/L, the following equation is used to calculate the guideline: CWQG (µg/L) = 0.2 * e^{0.8545[ln(hardness)]-1.465}, and at a hardness >180 mg/L, the guideline is 4 µg/L. The background water hardness of the Killag River is between 1.6 and 5.5 mg/L CaCO₃ and the mean hardness of Moose River is 5.0 mg/L; therefore, the guideline of 2 µg/L is appropriate for use at both sites.
- (e) The CCME water quality guideline for lead of 1 µg/L is for water hardness of 0 to <560 mg/L or when the hardness is unknown. When the hardness is >60 to 5,180 mg/L, the following equation is used to calculate the guideline: CWQG (µg/L) = e^{1.273[ln(hardness)]-4.705}, and at a hardness >180 mg/L, the guideline is 7 µg/L. The background water hardness of the Killag River is between 1.6 and 5.5 mg/L CaCO₃ and the mean hardness in Moose River is 5.0 mg/L; therefore, the guideline of 1 µg/L is appropriate for use at both sites.
- (f) No CCME or NS Tier 1 guideline is available; therefore, a guideline from BC MOE was used (https://www2.gov.bc.ca/assets/gov/environment/air-landwater/water/waterquality/wqgs-wqos/approved-wqgs/wqg_summary_aquaticlife_wildlife_agri.pdf).
- (g) This guideline is for free CN, and hence does not apply to Total CN. It is used to provide perspective only in the effects assessment.

References

AMNS (Atlantic Mining NS Inc.). 2021. Updated Environmental Impact Statement. Beaver Dam Mine Project. Submitted to the Impact Assessment Agency of Canada and Nova Scotia Environment. May 2021. Middle Musquodoboit, NS.

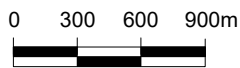
ATTACHMENT CEAA 2-35-A:**SIMULATED CONTAMINANT OF CONCERN (COC) CONCENTRATIONS COMPARED TO
FEDERAL AND PROVINCIAL GUIDELINES
(FIGURES CEAA 2-35-1 THROUGH CEAA 2-35-156)**



LEGEND

- SURFACE WATER BODY
- PROPOSED EXTENT OF MINE FEATURES
- 0.1 SIMULATED ALUMINIUM CONCENTRATION (ug/L)
- SURFACE WATER MANAGEMENT DITCHES
- PROPERTY BOUNDARY
- PROJECT AREA
- LOCAL ASSESSMENT AREA
- NAG WASTE ROCK STOCKPILE
- PAG WASTE ROCK STOCKPILE
- LGO STOCKPILE
- TILL STOCKPILES
- TOPSOIL STOCKPILES

Note: The aluminium Tier 1 EQS for potable groundwater is 100 ug/L.

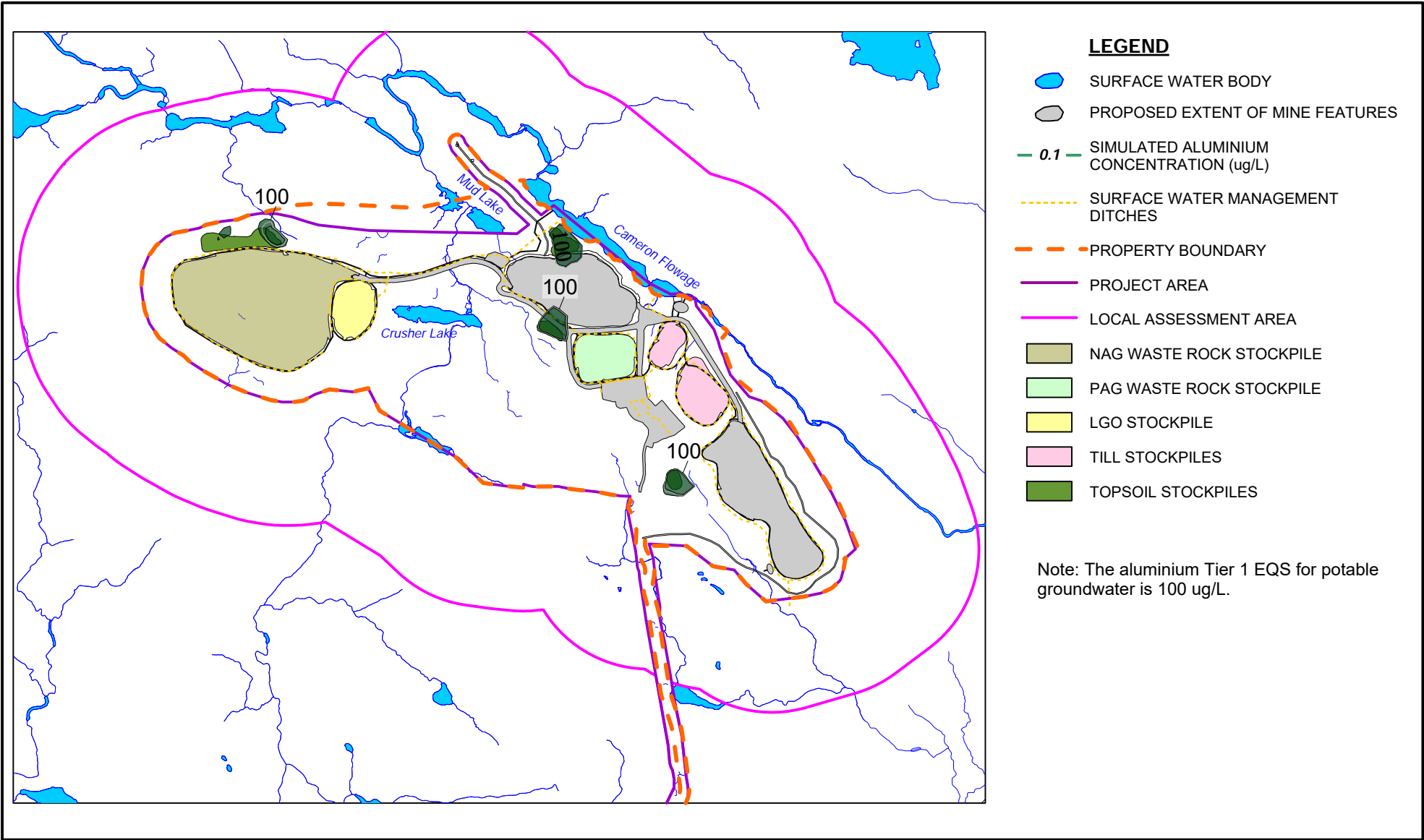


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SIMULATED ALUMINIUM CONCENTRATION VERSUS POTABLE CRITERIA
 EOM - BASE CASE SOURCE TERMS - BASE CASE CONDITION

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FIGURE CEA-2-35-1

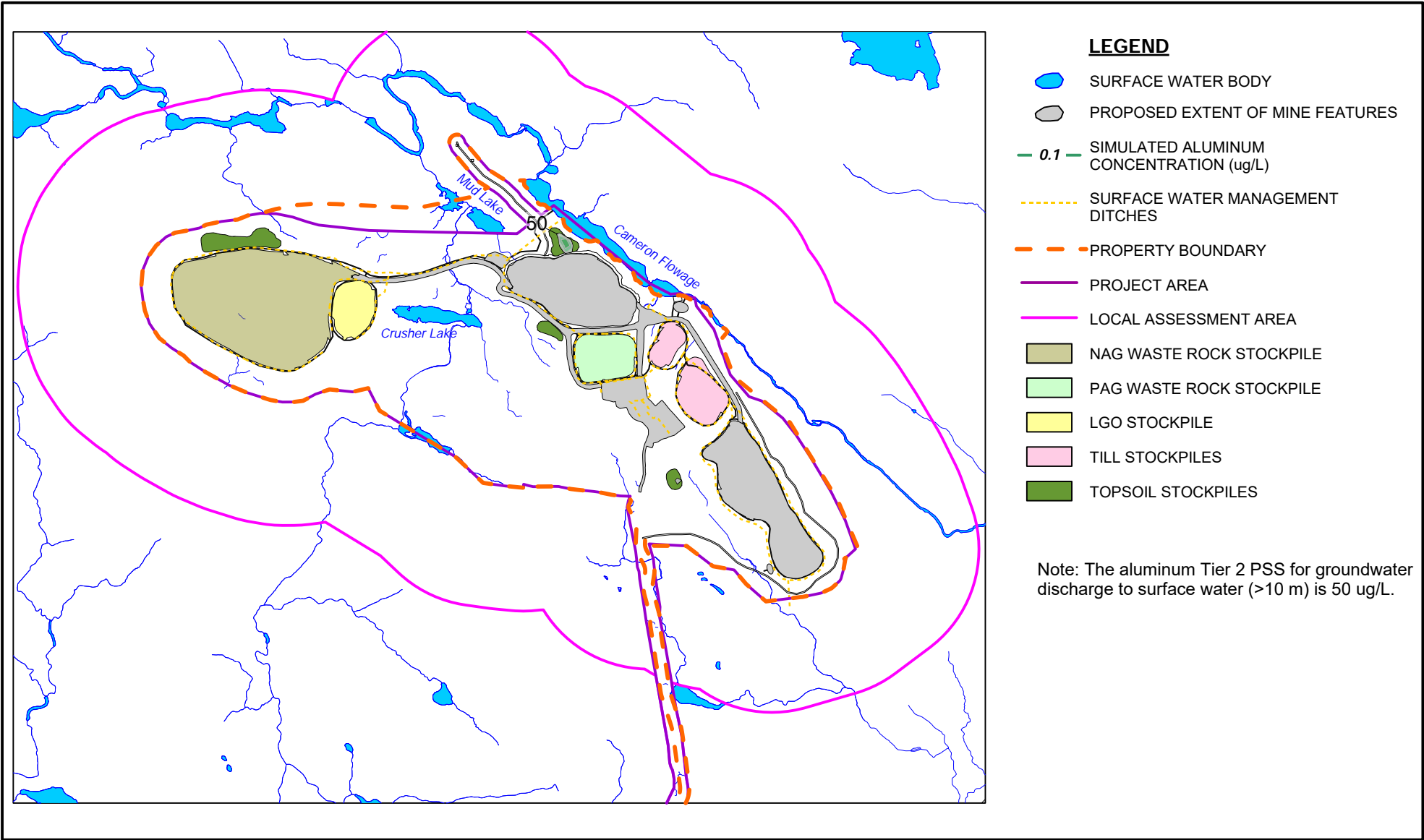


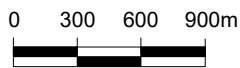
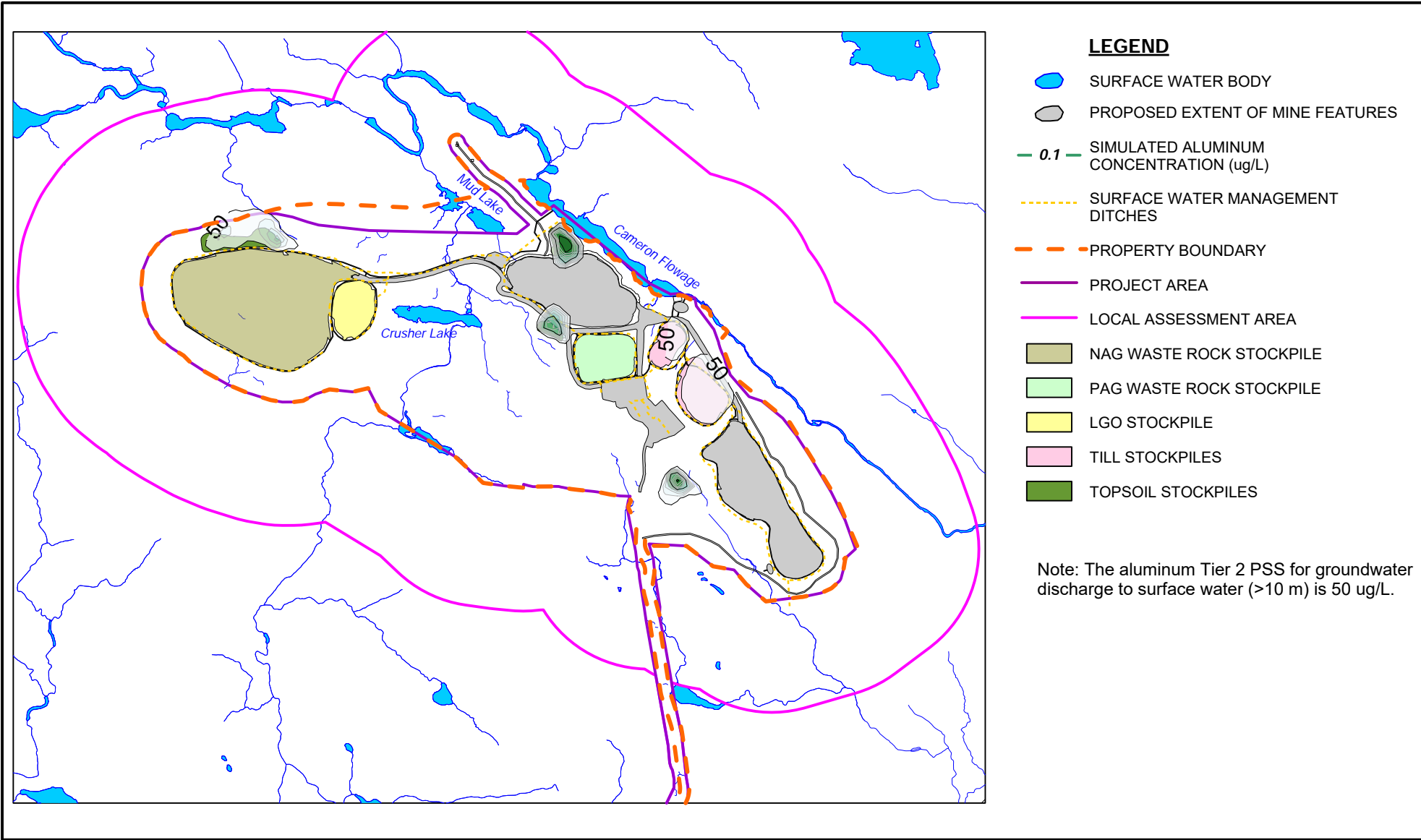
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 BEAVER DAM MINE

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SIMULATED ALUMINIUM CONCENTRATION VERSUS POTABLE CRITERIA
 EOM - UPPER CASE SOURCE TERMS - BASE CASE CONDITION

FIGURE CEA-2-35-2



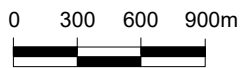
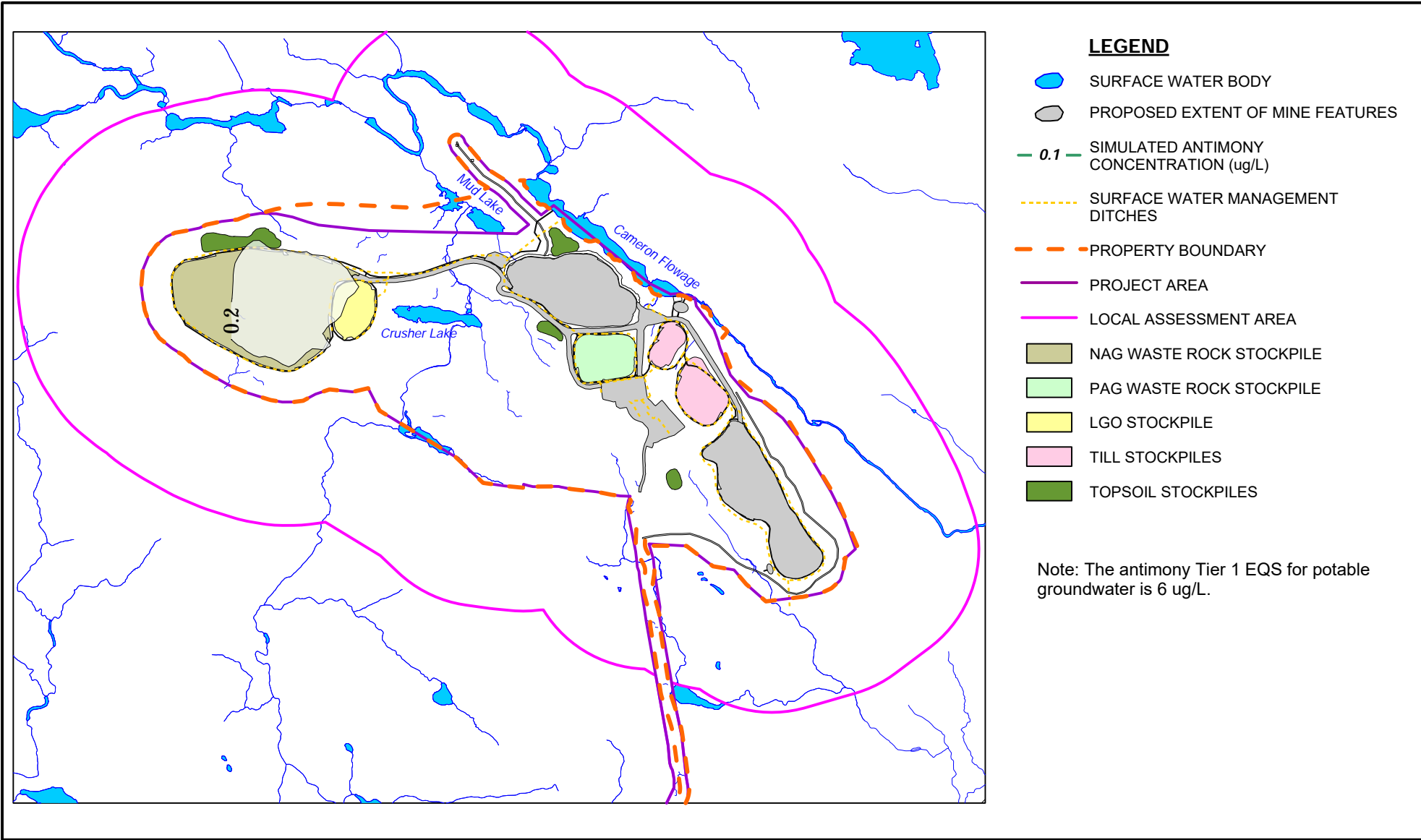


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SIMULATED ALUMINUM CONCENTRATION VERSUS TIER 2 PSS
 EOM - UPPER CASE SOURCE TERMS - BASE CASE CONDITION

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FIGURE CEA-2-35-4

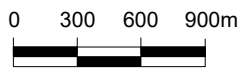
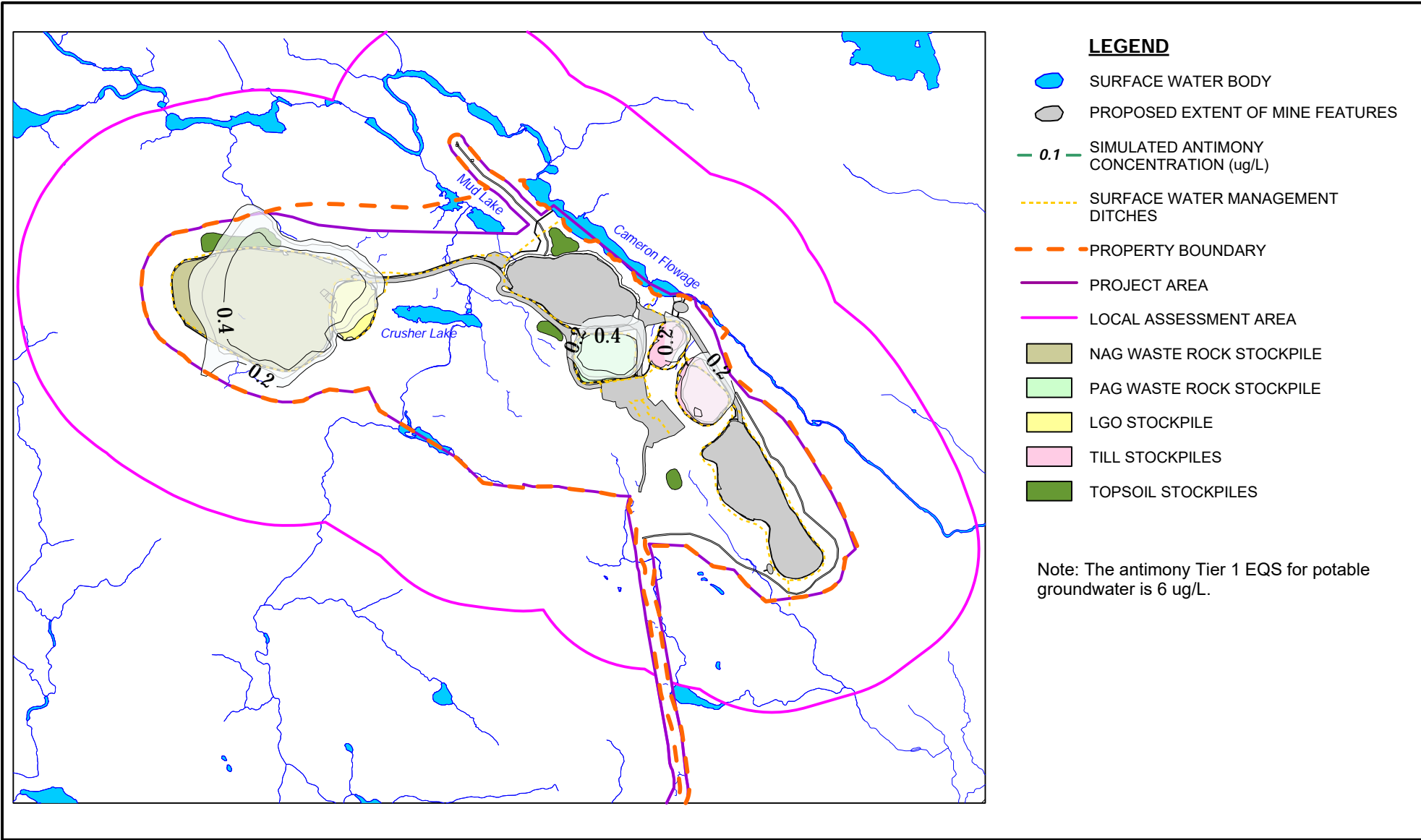


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SIMULATED ANTIMONY CONCENTRATION VERSUS POTABLE CRITERIA
 EOM - BASE CASE SOURCE TERMS - BASE CASE CONDITION

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FIGURE CEA-2-35-5

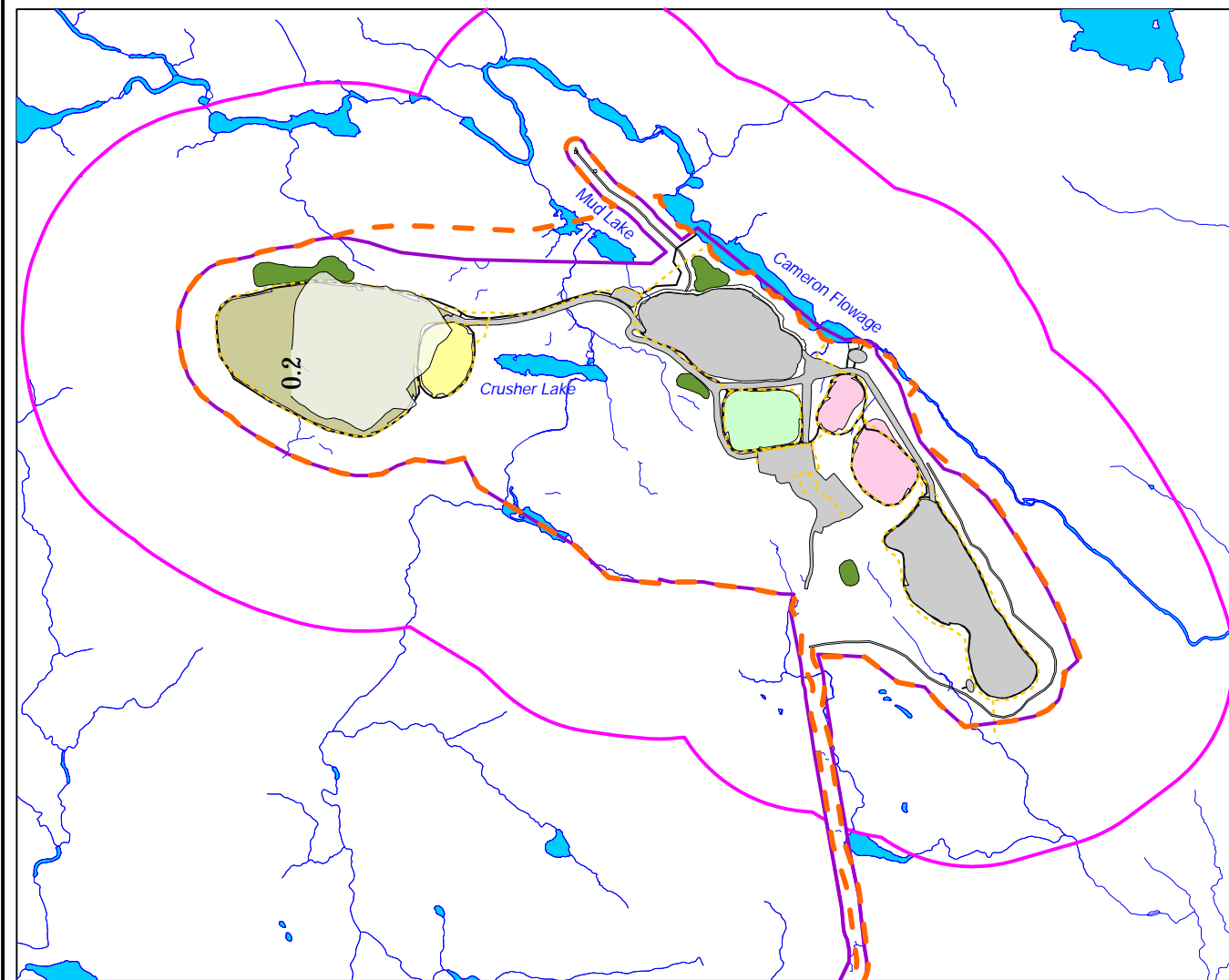


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SIMULATED ANTIMONY CONCENTRATION VERSUS POTABLE CRITERIA
 EOM - UPPER CASE SOURCE TERMS - BASE CASE CONDITION

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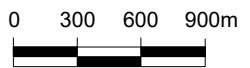
FIGURE CEA-2-35-6



LEGEND

- SURFACE WATER BODY
- PROPOSED EXTENT OF MINE FEATURES
- 0.1 SIMULATED ANTIMONY CONCENTRATION (ug/L)
- SURFACE WATER MANAGEMENT DITCHES
- PROPERTY BOUNDARY
- PROJECT AREA
- LOCAL ASSESSMENT AREA
- NAG WASTE ROCK STOCKPILE
- PAG WASTE ROCK STOCKPILE
- LGO STOCKPILE
- TILL STOCKPILES
- TOPSOIL STOCKPILES

Note: The antimony Tier 2 PSS for groundwater discharge to surface water (>10 m) is 200 ug/L.

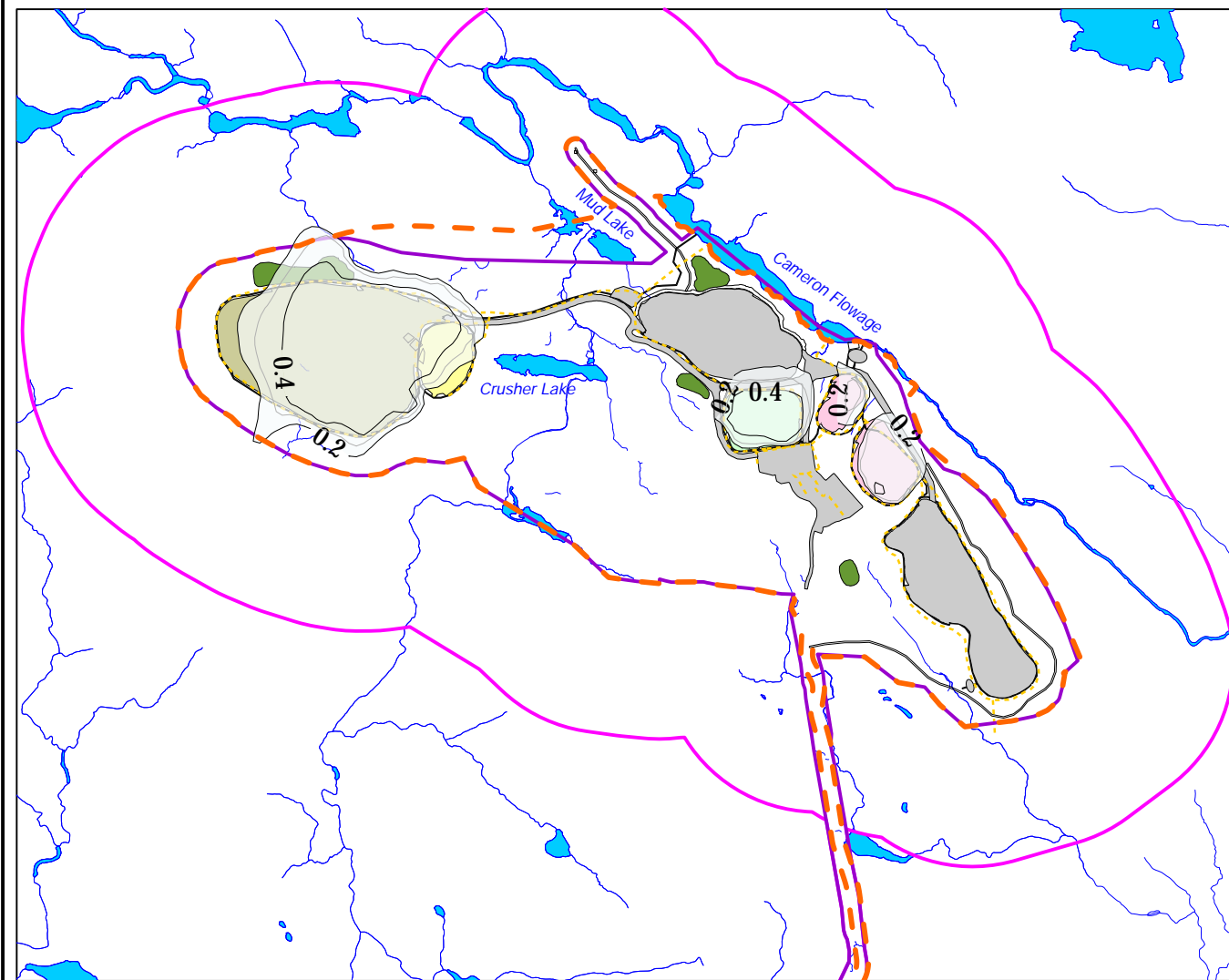


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SIMULATED ANTIMONY CONCENTRATION VERSUS TIER 2 PSS
 EOM - BASE CASE SOURCE TERMS - BASE CASE CONDITION

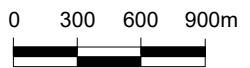
088664-031
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FIGURE CEA-2-35-7



- LEGEND**
- SURFACE WATER BODY
 - PROPOSED EXTENT OF MINE FEATURES
 - 0.1 SIMULATED ANTIMONY CONCENTRATION (ug/L)
 - SURFACE WATER MANAGEMENT DITCHES
 - PROPERTY BOUNDARY
 - PROJECT AREA
 - LOCAL ASSESSMENT AREA
 - NAG WASTE ROCK STOCKPILE
 - PAG WASTE ROCK STOCKPILE
 - LGO STOCKPILE
 - TILL STOCKPILES
 - TOPSOIL STOCKPILES

Note: The antimony Tier 2 PSS for groundwater discharge to surface water (>10 m) is 200 ug/L.

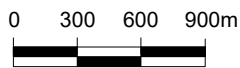
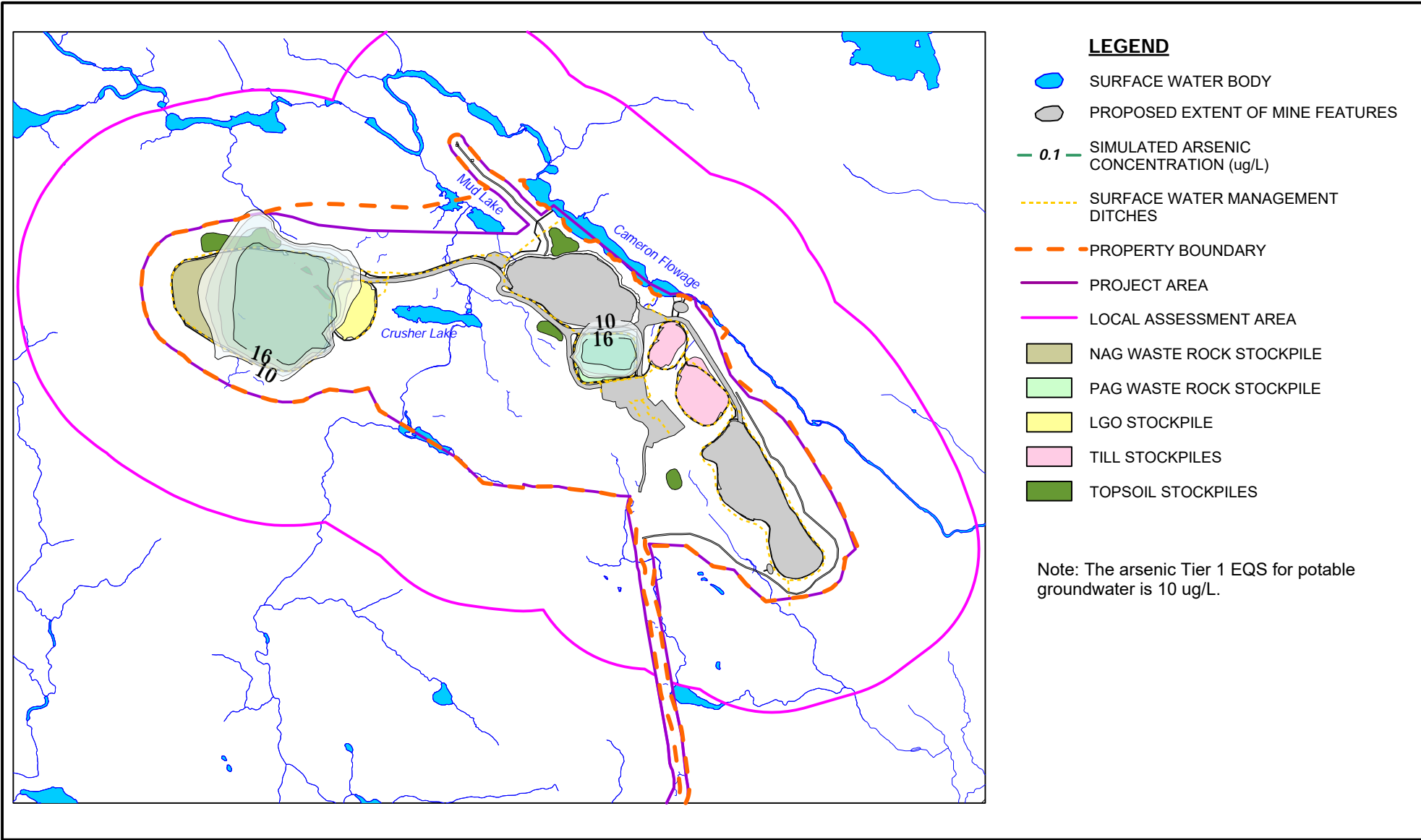


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 BEAVER DAM MINE

SIMULATED ANTIMONY CONCENTRATION VERSUS TIER 2 PSS
 EOM - UPPER CASE SOURCE TERMS - BASE CASE CONDITION

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FIGURE CEA-2-35-8

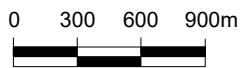
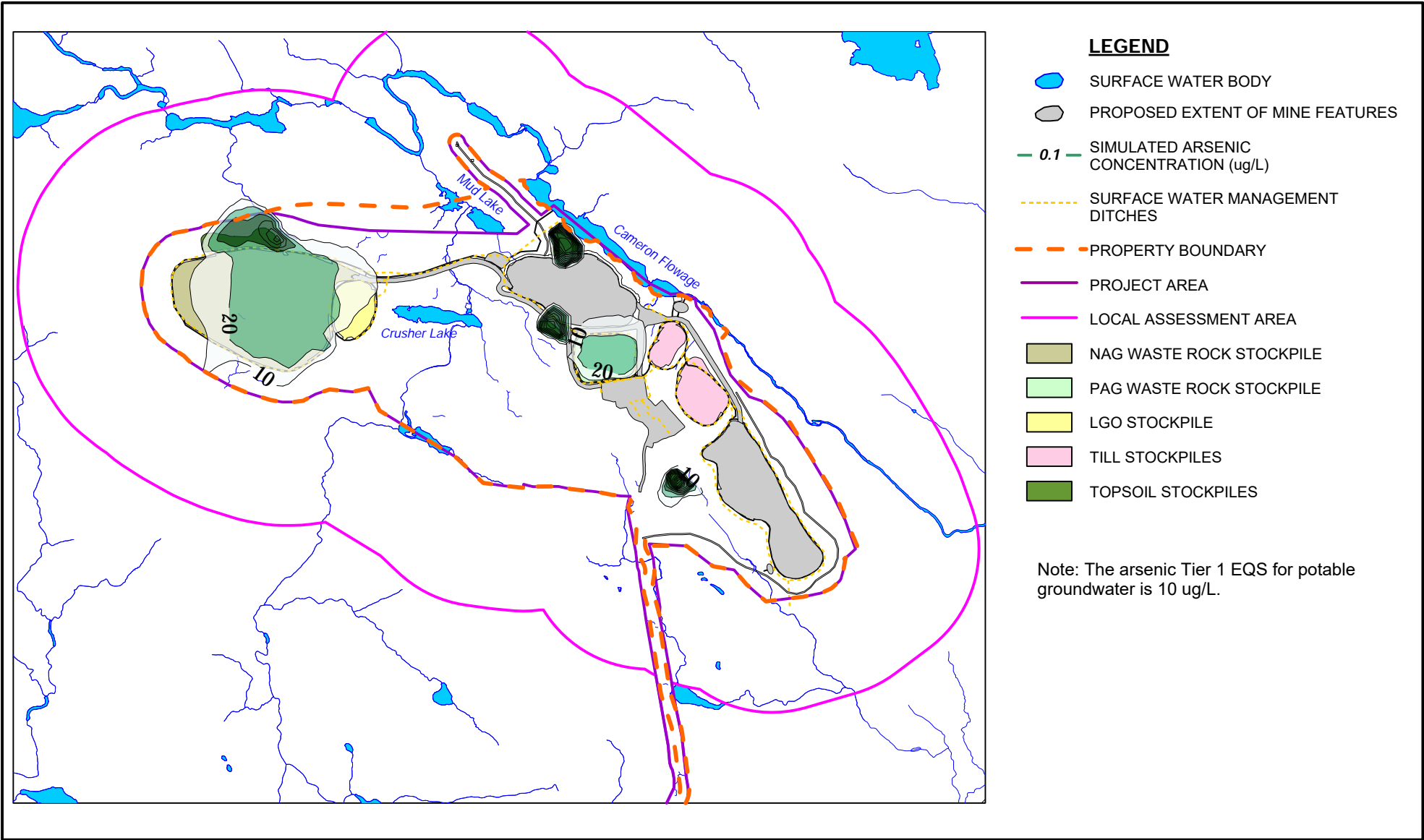


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SIMULATED ARSENIC CONCENTRATION VERSUS POTABLE CRITERIA
 EOM - BASE CASE SOURCE TERMS - BASE CASE CONDITION

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FIGURE CEA-2-35-9

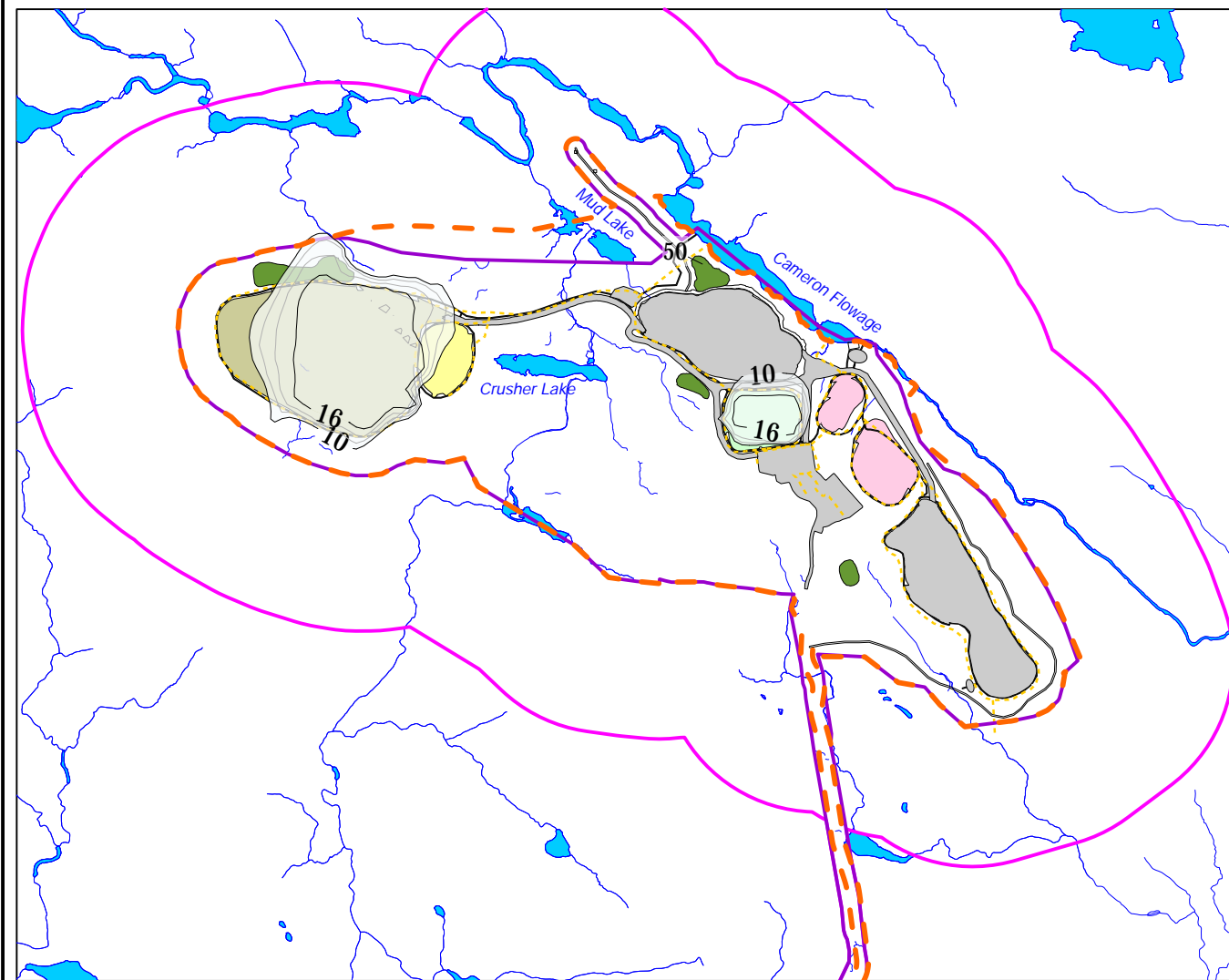


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 BEAVER DAM MINE

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SIMULATED ARSENIC CONCENTRATION VERSUS POTABLE CRITERIA
 EOM - UPPER CASE SOURCE TERMS - BASE CASE CONDITION

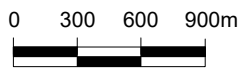
FIGURE CEA-2-35-10



LEGEND

- SURFACE WATER BODY
- PROPOSED EXTENT OF MINE FEATURES
- 0.1 SIMULATED ARSENIC CONCENTRATION (ug/L)
- SURFACE WATER MANAGEMENT DITCHES
- PROPERTY BOUNDARY
- PROJECT AREA
- LOCAL ASSESSMENT AREA
- NAG WASTE ROCK STOCKPILE
- PAG WASTE ROCK STOCKPILE
- LGO STOCKPILE
- TILL STOCKPILES
- TOPSOIL STOCKPILES

Note: The arsenic Tier 2 PSS for groundwater discharge to surface water (>10 m) is 50 ug/L.



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SIMULATED ARSENIC CONCENTRATION VERSUS TIER 2 PSS
 EOM - BASE CASE SOURCE TERMS - BASE CASE CONDITION

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FIGURE CEA-2-35-11