

February 1, 2018

TBTE Ref. No. 17-319

Dante Di Gregorio, H.B.A., J.D.
Estimator/Project Manager
Bruno's Contracting (Thunder Bay) Limited

Re: Natural Environment Level 1 Assessment, Trout Lake ASI
Aggregate Source Investigation – MNRF Thunder Bay District, Ontario

1 Introduction

Bruno's Contracting (Bruno's) retained TBT Engineering Limited (TBTE) to provide a Natural Environment Level (NEL) 1 Assessment in support of an Aggregate Source Investigation (ASI) at the Trout Lake site, a Category 9 (above water) gravel pit. The site is located approximately 20 kilometres northwest of Thunder Bay, Ontario, in the District of Thunder Bay (Appendix A: Enclosure 1). The Trout Lake site is not currently permitted for aggregate extraction.

This report outlines the results of background research and a site visit undertaken to meet the requirements of the NEL 1 Assessment as per the Aggregate Resources of Ontario document – Provincial Standards, Version 1.0 – which was developed to support the Aggregate Resources Act, RSO.1990 c.A.8 (amended by S.O. 1996 c.30 Reg. 244/97, 535/97 and 52/98). The NEL 1 Assessment is required for any areas proposed for the extraction of aggregates, identifying any of the following features on or within 120 metres of the site:

- Significant wetlands
- Fish habitat
- Significant wildlife habitat
- Significant portions of the habitat of endangered or threatened species
- Significant areas of natural and scientific interest (ANSI)

2 Site Reconnaissance and Field Investigation Methodology

A TBTE biologist visited the site on August 2, 2017, to review the surface features, drainage patterns, and natural environment within and surrounding the site. Access to the site was gained from Highway 591, bordering the west side of the site. Equipment included a field notebook, GPS Unit (GPS Map 64s), binoculars (Huntshield 10 by 42), and a digital camera (Samsung TL-220).

3 Site Location and Description

The site is located approximately 20 kilometres northwest of Thunder Bay, Ontario, in the Ware Township and the Thunder Bay Mining Division. The site can be characterized as having low to moderate relief, with no exposed bedrock knobs (Photo 1). Surface water on-site generally flows either north into Trout Lake or east into the outlet tributary of Trout Lake, directly north and east of the site, respectively. The other large lake in the area is Dog Lake; approximately ten kilometres northwest of the site. Coordinates - based on North American Datum 1983 (NAD 83) – near the centre of the site are as follows: Zone 16, Northing of 5,387,600 metres, and Easting of 324,500 metres. The proposed extraction limit, before restrictions, is approximately 400 metres wide, east to west, by 700 metres long, north to south, for an approximate area of 28 hectares (ha).



Photo 1: View west from near the centre of the site, depicting the low to moderate relief typical of site conditions, on August 2, 2017.

Upland vegetation on-site varied from a mature mixedwood stand, with a moderately dense understory, at the north end of the site, to a young deciduous stand of trembling aspen and white birch with some jack pine and a relatively dense understory of shrubs across the majority of the site (Photos 2 and 3). In addition, various overgrown tertiary roads were noted across the site in association with previous forest harvesting that has occurred throughout the southern two-thirds of the site in recent years (Photo 4). Highway 591 borders the site to the west, Trout Lake Road borders the site to the north, and the McIntyre River (outlet of Trout Lake) is immediately east of the site (Photos 5, 6, and 7).

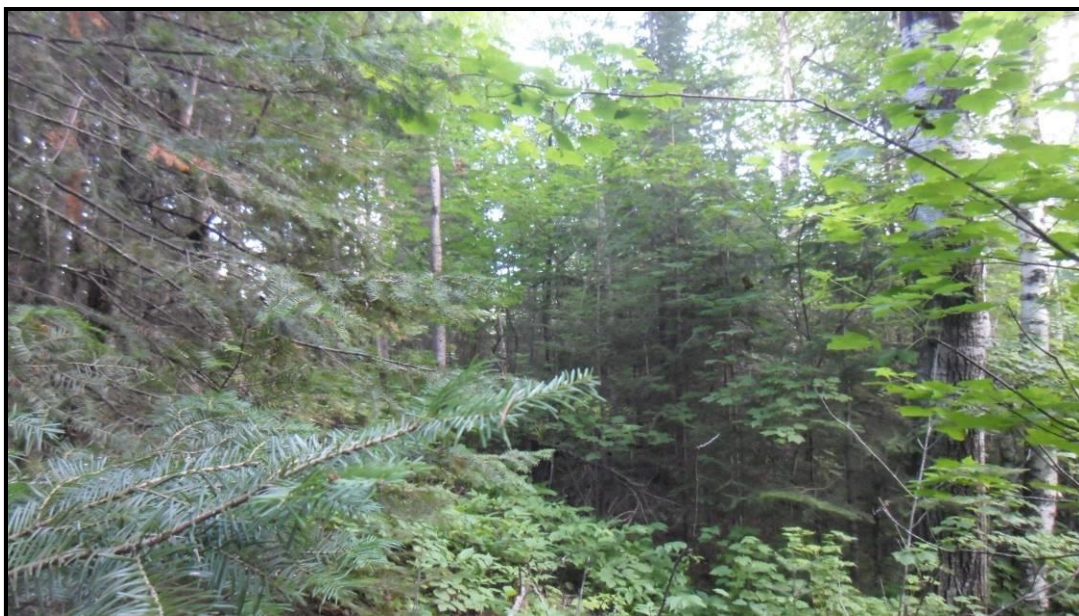


Photo 2: View north from within the northern portion of the site, depicting a mature mixedwood stand, on August 2, 2017.



Photo 3: View north from near the centre of the site, depicting the young deciduous stand typical of conditions across most of the site, on August 2, 2017.



Photo 4: View west from the southern half of the site, depicting an overgrown tertiary road, typical of conditions across the majority of the site, on August 2, 2017.



Photo 5: View north from a west-centre location within the 120-metre Offset Area of the site, depicting Highway 591, on August 2, 2017.



Photo 6: View east from a north-centre location within the 120-metre Offset Area of the site, depicting Trout Lake Road, on August 2, 2017.



Photo 7: View south from the southeast corner within the 120-metre Offset Area of the site, depicting the McIntyre River (outlet of Trout Lake), on August 2, 2017.

Additional site photographs are provided in Appendix B.

Significant Wetlands

During the site visit by TBTE, a large (~1km²) black spruce wetland, identified as Ecosite (ES) 36, was noted south of the site (Photo 8). Based on the aerial imagery (coarse filter), it appears that this wetland is relatively homogeneous and therefore may not qualify as a provincially significant wetland (PSW) due to the limited diversity of conditions noted (MNR, 2010). Based on the gradual slope (<10%) and vegetated (forest) habitat noted along the perimeter of the wetland during the site visit, and based on the MNR (2010) guidance document for protection of PSWs, a buffer of 60 metres (minimum) is recommended from the edge of this wetland. A buffer of 60 metres should provide the necessary and substantial protection needed, given the sensitivity of the wetland habitat and the potential that it may be a PSW.



Photo 8: View south from a south-centre location, depicting the black spruce wetland edge along the southern border of the site, on August 2, 2017.

Other Wetlands

MNRF concerns regarding the natural environment often include recommendations to protect coldwater streams in addition to wetland habitat, due to the sensitivity of the species that depend on both habitats (MNR, 2010). The McIntyre River, a coldwater stream, drains southward from Trout Lake along the east side of the site, and wetland riparian-zone habitat was also noted alongside the river (Photo 9). As such, to protect the wetland habitat noted and, in turn, the associated coldwater creek, TBTE recommends a 60-metre vegetative buffer (minimum) from the wetland edges, in keeping with DFO (1992) and MNR (2010) guidelines for protecting waterbodies and wetland habitat, as indicated on Enclosure 2 (Appendix A).



Photo 9: View south from the western edge of the riparian-zone wetland along the west side of the McIntyre River, on August 2, 2017.

Fish Habitat

During the site visit by TBTE, the McIntyre River was noted to border the east boundary of the site, and the river is known to be inhabited by brook trout, a sensitive coldwater fish. No other fish habitat was noted during the site visit by TBTE, and a 60-metre buffer (minimum) is recommended for protection of the McIntyre River, in keeping with DFO (1992) and MNR (2010) guidelines for protecting waterbodies and riparian-zone wetland habitat, as indicated on Enclosure 2 (Appendix A).

Significant Habitat of Endangered or Threatened Species

No SAR species or critical habitat (e.g. large stick nests, heronries) was identified during the site visit by TBTE. Table 1, below, provides a summary of the various SAR species that may use the habitat on-site based on the site visit, and the known distributions and habitat preferences and tolerances for each species (see Section 7.0, for References associated with each species); the list was compiled using personal knowledge, and private and government sources such as the Natural Heritage Information Centre (NHIC) database, the SAR in Ontario List or SARO website, and the SAR Act Public Registry or SARA website. Table 1 also provides the current status of each species based on the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), the SARO list, and SAR Act (SARA), including Schedules.

Table 1: The COSEWIC, SARA, and SARO status of species at risk that may live within the general vicinity of this site based on known distributions, available habitat, and knowledge of habitat preferences and tolerances for each species.

Group	Common Name	COSEWIC	SARA	Schedule	SARO
Birds	bald eagle	NAR	-	-	SC
	bank swallow	Thr	-	-	-
	barn swallow	Thr	-	-	Thr
	Canada warbler	Thr	Thr	1	SC
	common nighthawk	Thr	Thr	1	SC
	eastern wood-pewee	SC	-	-	SC
	olive-sided flycatcher	Thr	Thr	1	SC
Mammals	grey fox	Thr	Thr	1	Thr
	little brown bat	End	-	-	End
	northern long-eared bat	End	-	-	End

1. The species listed are believed to live in northwestern Ontario at some stage in their life cycle, based on a complete distribution search for all species on the SARO List.
2. NAR=Not at Risk; Thr=threatened; End=endangered; SC=special concern; Exp=extirpated; dash(-)=no status; Schedule 1=official; Schedule 2 or 3=unofficial.
3. COSEWIC=Committee on the Status of Endangered Wildlife in Canada; SARA=Species at Risk Act Registry; and, SARO=Species at Risk List for Ontario determined by the Ministry of Natural Resources.

With respect to potential impacts to species from Table 1 that live in or near water and in wetlands or wet forest types (includes bald eagle, bank swallow, barn swallow, Canada warbler, grey fox, olive-sided flycatcher, little brown bat, and northern long-eared bat), no issues or concerns are expected if the recommended buffers are provided for the wetlands and the tributary of Trout Lake (McIntyre River) identified, as indicated on Enclosure 2 (Appendix A).

With respect to potential impacts to the other SAR species (e.g. common nighthawk, eastern wood-pewee) estimated to live within or within the vicinity of the site, no major issues or concerns are expected given the current level of impact and human encroachment, the small site footprint (~28ha), the lack of any obvious signs of use by the SAR species listed, and the abundance of similar habitat in the general vicinity. However, clearing of the forest habitat during the spring and early summer would impact any SAR species using the area for breeding and birthing. Therefore, it is recommended that clearing be conducted outside of the spring and early summer period, from April 1 to the end of July, a vulnerable period (breeding and birthing) for most animal species in temperate regions (Shinomiya *et al.*, 2014); if unavoidable, a biologist should screen

the site to confirm that proposed areas to be cleared are not being used by any of the SAR species listed.

Significant Wildlife Habitat

Significant wildlife habitat, described as four broad categories in the MNR (2000) Technical Guide document, includes: seasonal concentration areas; rare vegetation communities or specialized habitats for wildlife; habitats of species of conservation concern, excluding the habitats of endangered and threatened species; and, animal movement corridors. No significant wildlife habitat was noted during the site visit by TBTE, although the area appeared suitable for typical big and small game species of northern Ontario such as black bear, moose, deer, wolf, lynx, hare, grouse, fox, and various other animals typical of the region.

Significant Areas of Natural and Scientific Interest (ANSI)

No significant Area of Natural or Scientific Interest (ANSI) was identified on-site, based on the background searches completed by TBTE.

Other Features of Interest

The site appeared to be good habitat for many animal species, as is typically the case throughout the boreal forest of northwestern Ontario. Given the expected use by many animals, it is recommended that any clearing of forest habitat associated with development of the aggregate operation be undertaken at a time of year when animals will not be disturbed during the vulnerable spring and early summer period, from April 1 to the end of July; when most animals, such as birds, give birth to and raise young (Shinomiya *et al.*, 2014; EC, [updated in 2016]).

4 Summary

Highway 591 borders the west side, Trout Lake Road borders the north end, and a tertiary road network was noted throughout the site due to recent forest-clearing operations. No significant wildlife habitat, no significant portions of the habitat of endangered or threatened species, and no ANSI were identified on-site. Furthermore, no SAR species were seen or heard, nor were obvious signs or evidence of any noted during the site investigation by TBTE. However, a relatively large (~1km²) black spruce wetland was noted south of the proposed extraction area that may be provincially significant. Additionally, riparian-zone wetland habitat was identified along the perimeter of the McIntyre River, a sensitive coldwater system bordering the east side of

the site. As such, TBTE confirmed the locations of wetland habitat and recommends a 60-metre protective buffer (minimum) around the perimeter of the wetlands, as indicated on Enclosure 2 (Appendix A). With respect to fish habitat, the McIntyre River was noted east of the site, and a buffer of 60 metres (minimum) is also recommended for protection. Other features of interest included the expected use of the site by many animal species of northwestern Ontario. Typically, a sensitive time of year for animals living in northwestern Ontario includes the spring breeding season for birds, from April to July (end), when other animals are also giving birth and raising young. As such, clearing of trees as part of preparations for development of the site is recommended for the period of August through to the end of March, to avoid disturbance of the area during the sensitive spring and early summer season. In summary, it is expected that the plans for development of the aggregate site at this location, subject to the aforementioned mitigative measures, will not alter the environmental conditions to any great degree beyond the current level of impact and human encroachment within the general area. Thus, a more detailed (i.e. NEL 2) assessment is not foreseen to be necessary.

5 Limitations

Conclusions and recommendations presented in this report are based on the best available information and supplemented by TBTE's field review and published mapping. This report has been prepared to aid in the development of this property for aggregate extractions. Where references have been made to regulatory statutes, codes, guidelines and the like, note that these regulations are subject to interpretation and the regulations and their interpretations can change over time. Conditions may become apparent during extraction that were not detected and could not be anticipated at the time of the site visit. It is therefore recommended that TBTE be contacted to review the significance of the new information, and its' potential impact on the recommendations provided in this report.

6 Qualifications of the Assessor

The assessor was TBTE's Senior Environmental Scientist, Mr. Ken MacIntosh. Ken is an Environmental Scientist with TBT Engineering who has worked in the field of biology and environmental assessment for over 25 years. Ken was formally educated in forestry and biology, and specialized (HBS and MSc theses) in fisheries, followed by on-the-job training as a Fisheries Research Biologist with the MNR for 15 years. Ken entered the private consulting field

over 10 years ago, providing Ken with a wealth of opportunities that have allowed him to expand his skills and enhance his formal education in forestry and biology, including development as a competent birder. Ken has routinely been required to conduct terrestrial and aquatic assessments and to design, implement, and interpret studies associated with protection of our environment from various industrial development activities, such as new and existing highways, railways, new and existing mines, power-line corridors, solar parks, waterpower projects, and aggregate operations. Ken has been involved in developing mitigation plans to address various sensitive species of northwestern Ontario, including forest-dwelling woodland caribou, the little brown bat, the great blue heron, lake sturgeon, the eastern whip-poor will, bank and barn swallow, brook trout, the Canada warbler, red pine and white pine, the bald eagle, and the bobolink. Ken is also considerably experienced with administration, design, and construction-related activities, such as: ensuring proper planning, installation, and maintenance of erosion and sediment control measures, bridges, and culverts; and, designing and implementing baseline studies or Environmental Effects Monitoring (EEM) studies for mining.

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8 Closure

Should there be any changes to project configurations or assumptions, or should you have any questions, please feel free to contact TBTE.

Prepared by:



Ken MacIntosh, M.Sc
Senior Fish & Wildlife Biologist

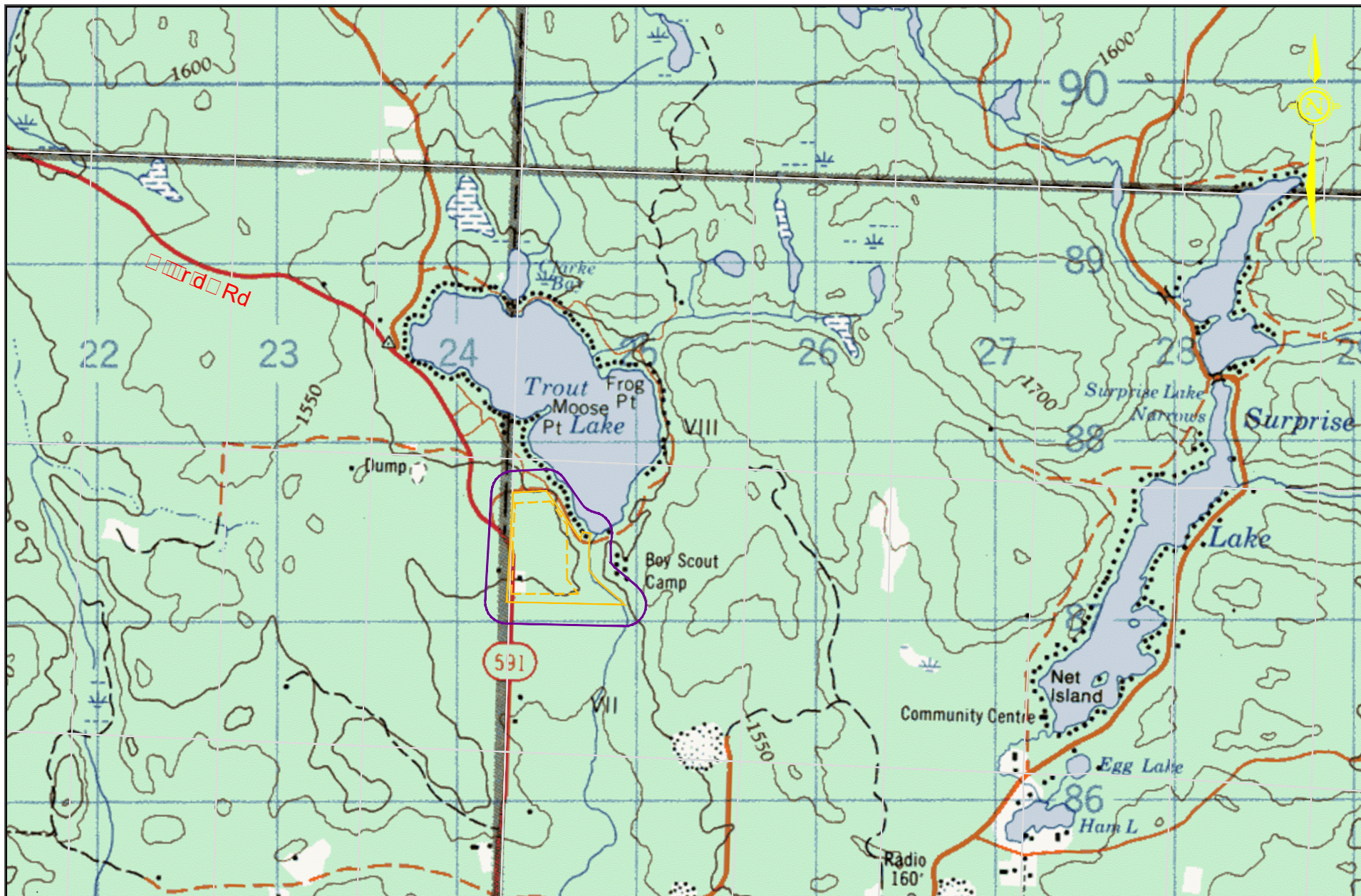
Reviewed by:



DJ MacKintosh, P.Eng
Assistant Manager of Environmental Services, TBT Engineering

Appendix A

Site Maps



- - - - - Extraction Limit
- Road
- Proposed Boundary
- Watercourse
- 120m Offset Area
- Waterbody
- Contour

DWG. TITLE:

SITE PLAN

PROJECT:

**TROUT LAKE PIT
AGGREGATE SITE INVESTIGATION**



CLIENT:

BRUNO'S CONTRACTING

DRAWN BY:

NDL

APPROVED BY:

K.M.

SCALE:

1 : 30,000

PROJECT NO.

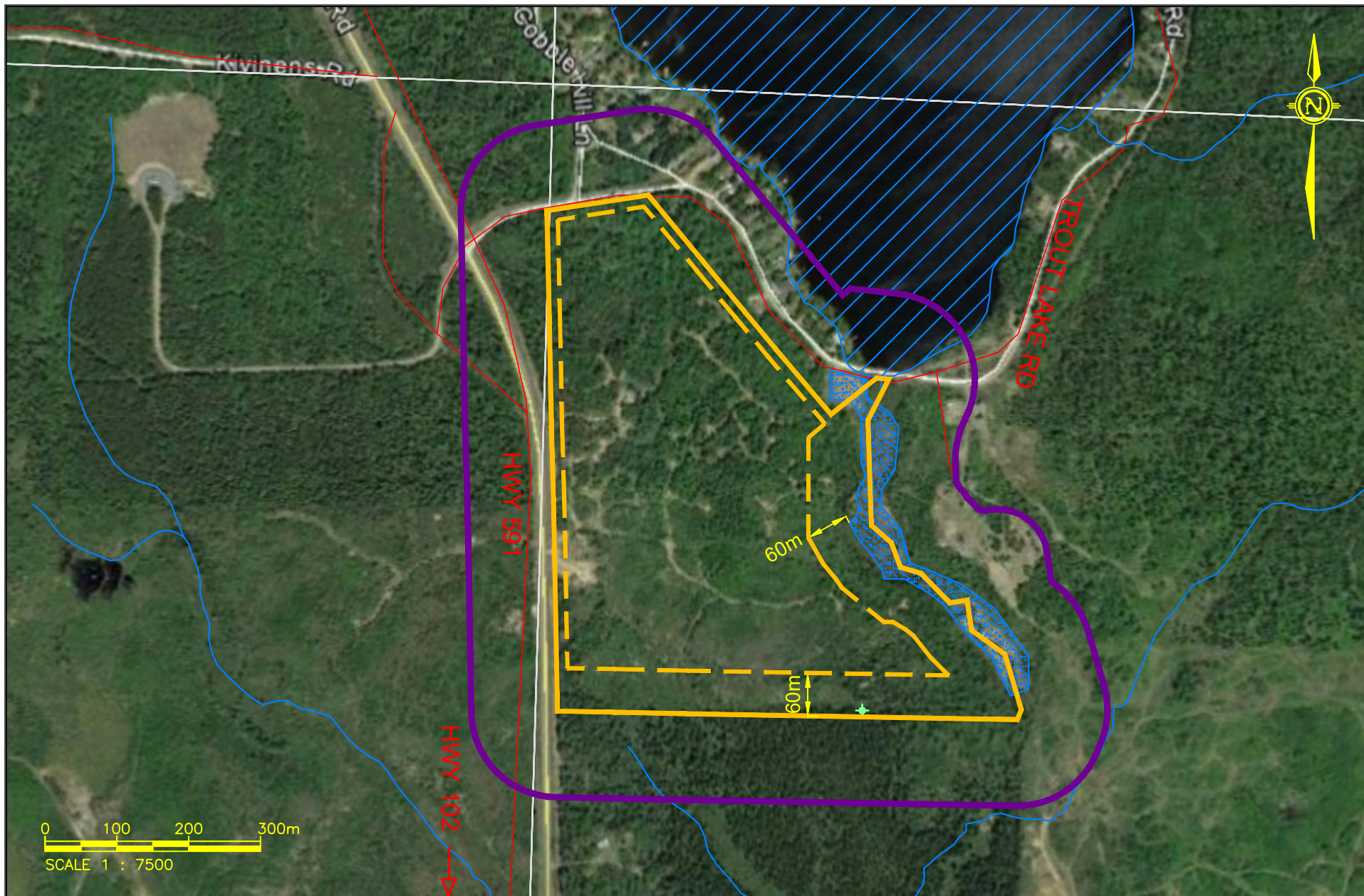
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DATE:

09/19/2017

ENCLOSURE

1



<p> --- Extraction Limit Proposed Boundary 120m Offset Area --- Contour </p>			<p> --- Road Waterbody Wetland --- River </p>			<p> + Creek + Wetland Edge --- Intermittent Creek </p>		
<p> DWG. TITLE: DETAILED SITE PLAN </p>			<p> PROJECT: TROUT PIT AGGREGATE SITE INVESTIGATION </p>			<p> TBT ENGINEERING CONSULTING GROUP </p>		
<p> CLIENT: BRUNO'S CONTRACTING </p>			<p> DRAWN BY: S.H. </p>			<p> PROJECT NO. 17-319 </p>		
<p> SCALE: 1 : 7500 </p>			<p> APPROVED BY: K.M. </p>			<p> DATE: JAN 22 2018 </p>		
			<p> ENCLOSURE 2 </p>					

Appendix B

Additional Photographs



Photo B-1: View north from the south shore of Trout Lake by the outlet culvert to the McIntyre River, on August 2, 2017.



Photo B-2: View south from a south-centre location, depicting the distant terrain of the area and a distant view of the black spruce wetland south of the site, on August 2, 2017.