NATURAL ENVIRONMENT LEVEL 1 AND 2 TECHNICAL REPORT

VIOLET HILL PIT REVISED HAUL ROAD ROUTE
TOWN OF MONO
DUFFERIN COUNTY

APRIL 2018

Prepared for
Greenwood Aggregates Company Limited

Prepared by;
Robin E. Craig. B.Sc., M.Sc.
Certified Wildlife Biologist
3092 Old Second South
Midhurst, Ontario,
L9X 1P7
(705) 722-7237
robin.craig@bell.net

Table of Contents

List of figures

1.0 INTRODUCTION

Agency review of the original Violet Hill Pit application resulted in a rejection of the proposed haul route that was directed to Highway 89. Therefore, an alternative is being proposed. This report is intended to accompany the original Natural Environment Technical Report (Craig, 2016) of the Violet Hill Pit application as required by the Aggregate Resources Act of Ontario (ARA), Official Plan and Zoning By-law Amendment. It will provide natural environment technical information (Levels 1) and impact assessment (Level 2) for the changed location of the proposed internal haul road. The report was commissioned by Greenwood Aggregates Company Limited who will be referred to throughout this report as "the proponent".

The property is located in Lot 31, Concession 4, Town of Mono, County of Dufferin (Figure 1).

The property lies within the jurisdictions of the Town of Mono, County of Dufferin, the Midhurst District of the Ontario Ministry of Natural Resources and Forestry (OMNRF) and the Nottawasaga Valley Conservation Authority (NVCA).

The information provided in this report is described in OMNR Policy A. R. 2.01.07 License Applications: Natural Environment Report Standards March 15, 2006. The purpose of the Level 1 component of this natural environment report is to document the presence of significant natural heritage features and fish habitat on the study area and on the adjacent lands within 120m. The Level 2 component is to assess the potentially negative impacts of an aggregate operation on all documented natural features and to provide preventative, mitigative or remedial measures.

The natural heritage features that will be discussed include the following:

significant wetlands
significant portions of the habitat of endangered and threatened species
significant Areas of Natural and Scientific Interest (ANSIs)
significant woodlands (south and east of the Canadian Shield)
significant valleylands (south and east of the Canadian Shield)
significant wildlife habitat and
fish habitat

1.1 Town of Mono Peer Reviewer Information Requests

The Town of Mono peer reviewers, Stovel and Associates Inc. and Gray Owl Environmental Inc. have provided a list of information that they have recommended should be determined in the impact assessment of the proposed haul road.

The list is as follows with respect to shrub/early successional bird breeding significant wildlife habitat;

1. "How much of this habitat will be physically lost as a result of the haul road?"

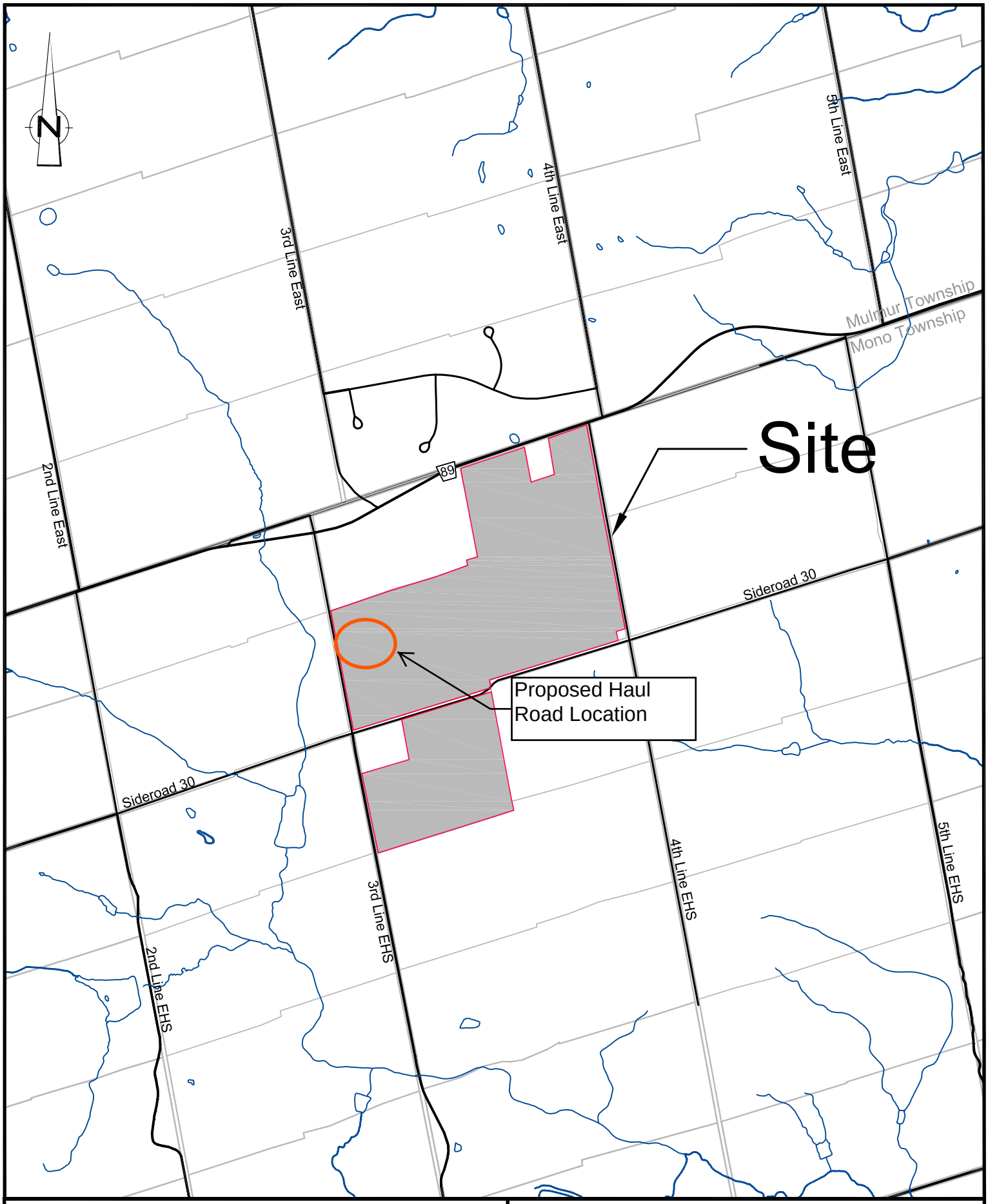


Figure 1: Greenwood Violet Hill Pit Location and
Location of Proposed Haul Road
Town of Mono
Coutny of Dufferin

Scale 1:25,000

2. “Will the residual portions of the habitat be sufficient to continue to support the four early successional breeding birds?”

3. “Will noise or dust from the truck traffic have an adverse effect on them?”

With respect to other natural heritage features;

4. “It is noted that a resident indicated the presence of amphibian and reptile (snapping turtle) habitat along the 3rd Line. Additional amphibian and reptile inventories should be undertaken in the vicinity of the 3rd Line and the former pit area.”

5. “As part of the assessment of the impacts of the new haul road, it will be necessary to demonstrate compliance with the PPS policy for significant wildlife habitat and that there will be no negative impacts on the feature or its functions.”

These listed items will be discussed in this report.

2.0 HAUL ROAD PROPOSAL

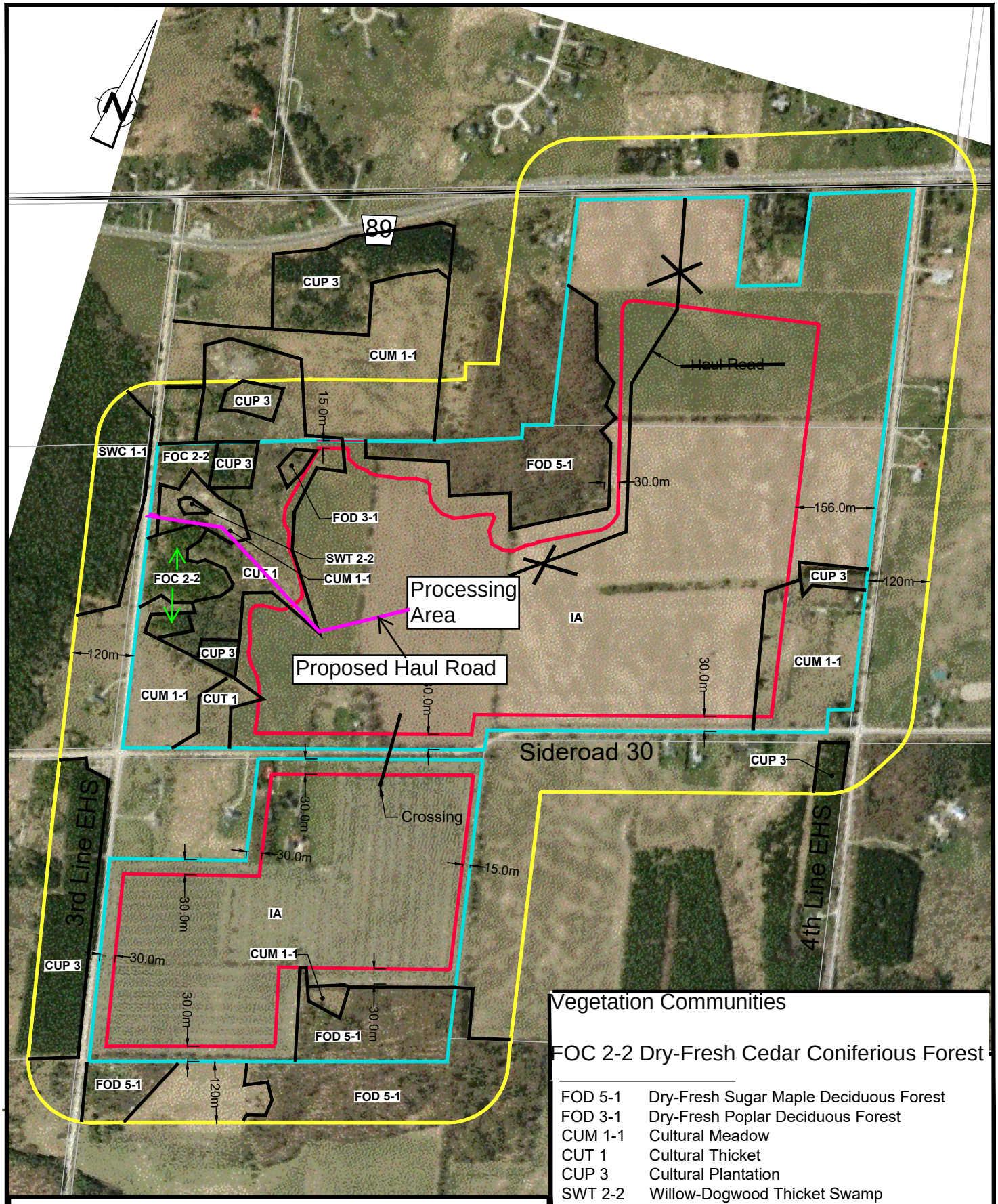
The revised internal haul road will proceed west from the processing area to link with the 3rd Line (Figure 2). It will pass through a natural draw in the topography on the west side of the property and connect with the 3rd Line in the northwest corner of the Violet Hill Pit property. It will be constructed from the 3rd Line to an elevation of 424 m, bringing it to the bottom of the first lift of excavation. The haul road will be 12.0 m wide with 8.0 m of it paved and 2 m wide ditches on either side. C. C. Tathum & Associates Ltd. (2018) has provided a grading plan and an updated erosion hazard study.

To construct the roadway, there will be areas requiring fill and cut to achieve the optimum design grades. In areas where fill is required to achieve grade, the existing slope will be maintained. In areas of cut, excavation will occur to construct the roadway and 3:1 (horizontal:vertical) stable slopes will be constructed from the roadway to existing grade. The constructed stable cut/fill slopes will be protected from erosion to the satisfaction of the Town of Mono.

The access roadway is being constructed through a natural draw resulting in surface runoff draining toward the roadway. Ditches are proposed on either side of the roadway to convey surface runoff away from the road surface. The ditches will be armoured to prevent erosion and excess runoff will be collected on site in a constructed retention pond. Both the armouring and the retention pond will be constructed to the satisfaction of the Town of Mono.

The proponent is working closely with the Niagara Escarpment Commission to finalize screening options for the haul road.

When aggregate extraction is completed, the haul road will be left in place to provide access to the agricultural lands that are proposed in the rehabilitation plans for the pit.



Vegetation Communities

FOC 2-2 Dry-Fresh Cedar Coniferious Forest

FOD 5-1	Dry-Fresh Sugar Maple Deciduous Forest
FOD 3-1	Dry-Fresh Poplar Deciduous Forest
CUM 1-1	Cultural Meadow
CUT 1	Cultural Thicket
CUP 3	Cultural Plantation
SWT 2-2	Willow-Dogwood Thicket Swamp
SWC 1-1	White Cedar Mineral Swamp
IA	Intensive Agriculture

Legend

Proposed Licensed Boundary

Proposed Extraction Limit

Scale 1:10,000

Figure 2: Location of the Proposed Haul Road on the Greenwood Violet Hill Property
Town of Mono
County of Dufferin

3.0 REVIEW OF BACKGROUND INFORMATION

The Natural Environment Level 1 and 2 Technical Report (NETR) (Craig, 2016) was relied upon for the majority of the background information for this report. An up to date species at risk list and the OMNRF Natural Heritage Information Centre (NHIC) web site "Make-a-Map" feature were consulted prior to field work beginning in June 2017 and were consulted again in February 2018 at the time of report writing.

The Dufferin County Official Plan (OP), the Town of Mono OP and The Town of Mono Draft Natural Heritage Atlas and Nottawasaga Conservation Authority web site were reviewed to determine updates to environmental designations and policies.

Other information reviewed included;

- C. C. Tathum & Associates Ltd. letter dated January 19, 2018 to Greenwood Aggregates Re: Violet Hill Pit – Part Lots 30, 31, 32, Concession 4 E.H.S., Town of Mono Erosion Hazard Study – Update

- C. C. Tathum & Associates Ltd. Access Road Plan (grading plan) AR-1 dated Jan 18.

- Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edition 2010.

- Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E, 2015.

- Whitewater Hydrogeology Ltd., 2016. Proposed Violet Hill Pit Combined Level 1 Level 2 Hydrogeological Assessment.

- Trinity Consultants Ontario INC. 2016. Air Quality Assessment Report Violet Hill Pit. Town of Mono, ON. For Greenwood Aggregates Limited.

- Trinity Consultants Ontario INC. 2018. Best Management Practices Plan for Fugitive Dust, Greenwood Aggregates Company Limited, Violet Hill Pit, Town of Mono, ON.

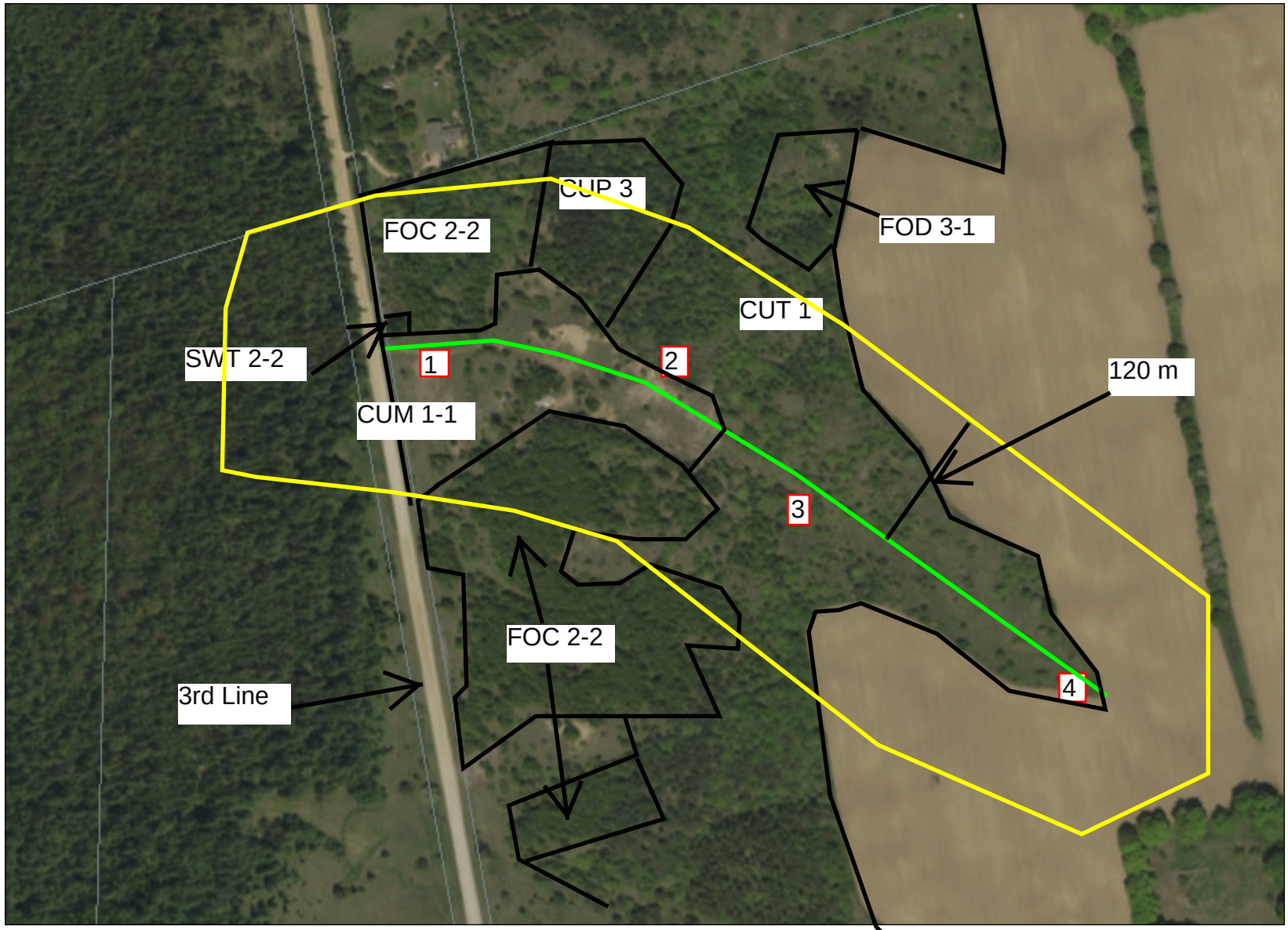
4.0 EXISTING SITE CONDITIONS

4.1 Description

The area in which the proposed haul road is located is on the west side of the Violet Hill Pit property (Figure 2). The land is bounded on the east by intensively cultivated lands and on the west by the 3rd Line of the Town of Mono. The route is through a valley that slopes from east to west. As the roadway leaves the processing area it will initially pass through former cultivated lands and then through a cultural thicket community, for about 250 m, and a cultural meadow community, for about 200 m, before reaching the 3rd Line, (Figure 2 and 3). Within the cultural

MINISTRY OF NATURAL RESOURCES AND FORESTRY
Make a Topographic Map

Figure 3: Greenwood Violet Hill Pit Proposed Internal Haul Road, Vegetation Communities and Avian Survey Points 2017



Legend

Internal Haul Road

Avian Survey Point 2

Vegetation Communities

CUT 1 - Cultural Thicket = Significant Wildlife Habitat - Shrub/Early Successional Habitat

CUM 1-1 Cultural Meadow

CUP 3 Cultural Plantation

FOC 2-2 - Dry-Fresh Cedar Coniferous Forest

FOD 3-1 Dry-Fresh Poplar Deciduous Forest

SWT 2-2 Willow-Dogwood Thicket Swamp

0 0.2 km

Projection: Web Mercator

N

meadow the road passes through an abandoned pit and then follows an existing gravel driveway to the 3rd Line. Within the old pit is a recreational trailer that is accessed by the gravel driveway.

4.2 Adjacent Lands Within 120 m

Adjacent to the roadway as it runs from the processing area will be former cultivated lands. As it enters the natural vegetation communities it will be bordered by cultural thicket and cultural meadow. Within 120m there is also a cultural plantation, a dry-fresh cedar forest and a swamp thicket north of the roadway and a dry-fresh cedar forest community to the south. West of the access to the 3rd Line is the Violet Hill Complex Provincially Significant Wetland (PSW).

4.3 Surface and Ground Water

The haul road is within the Sheldon Creek sub-watershed of the Nottawasaga watershed but it is more than 120 m from the creek. There are no surface water features along the proposed haul road or within 120 m (Whitewater Hydrogeology, 2016). The ground water flows to the west in the direction of the PSW and the Sheldon Creek.

5.0 FIELD STUDY METHODS

Field surveys were undertaken on the following 3 dates in 2017, June 14, June 27 and July 5.

Data were collected using the following protocols and guidelines.

- Bobolink Survey methodology (OMNRF, undated)
- Butternut Health Assessment Protocol (BHA) (OMNRF, 2014a)
- Survey Protocol for at Risk Species of Bat in Treed Habitats, Little Brown Myotis, Northern Myotis and Tri-colored Bat (OMNRF, 2017)

Table 1; Field Study Details

Dates - 2017	Observer	Purpose of visit	Times	Time spent	Weather
June 14	R. Craig	Breeding bird survey	8:30 am – 10:00 am	1.5 hrs	Sunny, light breeze, 16 ^{o}C
June 27	R. Craig	Breeding bird and Butternut surveys	8:15 am – 9:30 am	1.25 hrs	Sunny, calm, 12 ^{o}C
July 5	R. Craig	Breeding birds and Butternut surveys	8:30 am – 10:00 am	1.5 hrs	Sunny , clear, light breeze, 16^{o} – 30^{o} C

5.1 Vegetation

Vegetation was thoroughly investigated in the area of the proposed haul road in 2015 and reported in the NETR. Two plant species rare in Dufferin County were found in the area of the proposed haul road, White Heath Aster (*Symphotrichum pilosum*) and Prairie Cinquefoil (*Drymocallus arguta*) (Riley, 1989). White Heath Aster was found to be abundant in 2 locations on the property. The colony of plants within 120 m of the haul road route consisted of a few dozen plants and was located along the driveway leading to the trailer at NAD 83 easting 17T574327, northing 17T4883317. The Prairie Cinqufoil was found growing along the haul road route in the old pit floor at easting 574327 northing 4883252. These 2 species were searched for during 2017 particularly in the areas of these coordinates.

5.1.1Butternut

Butternut, an endangered species, had been found during vegetation surveys on the proposed pit site in 2014 and 2015. No Butternut were found within 120 m of the new haul road but seedlings may have sprouted in this area since these earlier surveys and individual Butternut may have been missed. As a result, surveys for Butternut were conducted along the proposed haul road alignment and within 120 m of the alignment. The 2017 surveys were conducted on June 27 and July 5 which are within the protocol recommended survey dates of May 15 to August 31.

5.2 Birds

Since threatened and significant wildlife habitat species had been observed during breeding bird surveys in 2015 in cultural meadow and thicket habitats, the area of the proposed haul road was surveyed again in 2017 for breeding birds. Four points were selected along the proposed alignment and visited on 3 separate dates at least 1 week apart between June 14 and July 5 (Figure 3).

Table 2; Survey Point Coordinates (NAD 83)

Point	Coordinates (NAD 83 17T)	
	Easting	Northing
1	574196	4883326
2	574308	4883229
3	574448	4883152
4	574075	4883320

Surveys were conducted within the first 5 hours after sunrise which on average was approximately 5:30 – 10:30 am. These survey dates and times are in accordance with the survey protocols for Southern Ontario.

5.3 Bats

Bat maternity habitat suitability assessment was conducted in accordance with survey protocols (OMNRF, 2017). This involved searching for forested ecosites along and within 120 m of the

haul road route and determining whether there were trees with 10cm or greater breast height diameters.

5.4 Reptiles and Amphibians

Reptiles and amphibians were searched for and noted if present during surveys in the area of the haul road route in 2015. They were also searched for in 2017. The site was visited on 3 dates in 2017 during the prime turtle nesting season of June/July. Roadsides were searched during the early morning hours when many turtles are either actively digging nests or recently completed them.

There was no standing water within 120 m of the haul road in 2015. In 2017 there was no standing water on the site but there was water lying in the ditch along the east side of the 3rd Line north of the proposed haul road. This water area was searched for amphibians.

5.5 Vegetation Communities

Vegetation communities were surveyed in 2015 and reported in the NETR (2016). There will have been minimal change in the communities present and little change to their boundaries. As a result, no additional vegetation community surveys were undertaken.

5.6 Adjacent Lands

Adjacent lands within 120 m owned by the proponent were physically surveyed. Lands that were not owned by the proponent were not physically visited but natural features were either observed from the road allowance of the 3rd Line and were determined from air photo interpretation.

6.0 FIELD STUDY RESULTS

6.1 Vegetation

The rare plants White Heath Aster and Prairie Cinquefoil were both searched for along and within 120 of the haul road.

Neither was found.

6.1.1 Butternut

The entire area within 120 m of the proposed haul road was searched for Butternut seedlings, saplings and mature trees following the Butternut Assessment Protocol (2014).

No Butternut were found.

6.2 Birds

A total of 25 bird species were observed during the 2017 survey (Appendix 1). There were 20 species likely breeding along the roadway or within 120 m. Five other species were seen either passing over or foraging on the site, having nested elsewhere beyond 120 m.

No Bobolinks or Eastern Meadowlarks, both threatened species, or any other endangered, threatened or species of concern birds were observed.

One significant wildlife habitat (SWH) shrub/early successional bird breeding habitat indicator species, Brown Thrasher and 2 shrub/early successional common species, Eastern Towhee and Field Sparrow were observed. One SWH open country common species Vesper Sparrow, was observed.

6.3 Reptiles and Amphibians

No turtles or evidence of turtles such a carapace drags marks, predated nests or scattered egg shells were observed anywhere along the proposed haul road, within the old pit or on adjacent lands within 120 m.

As many as three Green Frogs were heard calling from the wet ditch along the east side of the 3rd Line but nowhere else along or within 120 m the haul road route.

No other reptiles or amphibians were observed.

7.0 LEVEL 1 NATURAL FEATURES

Natural features along and within 120 m of the haul road and those that may impacted will be identified in this section while impacts and mitigation will be discussed in Section 8.0.

7.1 Provincially Significant Wetlands (PSW)

There are no PSW's along the length of the proposed haul road.

7.2 Provincially Significant Wetlands on Adjacent Lands

The Violet Hill PSW is located within 120 m west of the junction of the haul road with the 3rd Line.

There is also a 0.5 ha willow mineral swamp thicket (SWT 2-2) within 120 m north of the haul road that is also within 750 m of the PSW. The Ontario Wetland Evaluation System (OMNRF 2014b), pg 40, "Wetland Complexes" states the following;

> "*Note that wetland units less than 2 ha in size may be included as part of the complex. Such tiny wetlands may be recognized when, in the opinion of the evaluator, the small wetland pocket may provide important ecological benefit. Some examples of such benefits would be a grassy area used by spawning pike; an area containing a community or specimen of a rare or unusual plant species; a seepage area in which a regionally or provincially significant plant or animal species is found; or a wetland which strengthens a corridor link between larger wetlands or natural areas. The evaluator must attach to the Wetland Data Record a brief documentation of the reasons for inclusion of those areas less than 2 ha. The reasons for recognizing any group of wetlands as a complex together with the outer boundary line should receive the approval of the appropriate MNR.*"

The willow mineral swamp community area is less than 2 ha and had no standing water at anytime between May and August of 2015. In June 2017, during a wetter than normal spring, there was a small amount of water accumulated in the east 3rd Line roadside ditch which is contiguous with the swamp community. The wetland shrub species present included Bebb's Willow, Pussy Willow and Red-osier Dogwood which grow equally well on dry or wet sites (facultative species), are all common and are not dependant on wetlands. There were no rare or unusual plants present, it is not a seepage area in which a regionally or provincially significant plant or animal is found, and it does not provide a linkage with other wetlands or natural areas.

This willow mineral swamp community is, therefore, not part of a complex with the PSW.

The PSW west of the 3rd Line and/or its ecological functions may, however, be impacted by the proposed haul road because it is within 120 m.

7.3 Endangered and Threatened Species

7.3.1 Butternut – Endangered

Butternut usually grows alone or in small groups in well drained soil often on gravel sites. It is often found along streams, near forest edges and along fencerows. Butternut were reported in the NETR but none were observed along or within 120 m of the roadway. This area was searched again in 2017 for Butternut seedlings, saplings and mature trees.

No Butternut were found along or within 120 m of the haul road.

Therefore, Butternut and Butternut significant habitat will not be negatively impacted by the proposed haul road.

7.3.2 Bats - Endangered

The species considered were Little Brown Myotis, Northern Myotis and Tri-colored Bat. Significant habitat for these species would consist of hibernation roosts or hibernacula and maternity roosts. Hibernation roosts for all species are found in caves or abandoned mines (OMNRF 2017). These three bats often choose maternity roosts in older forests populated by large trees with diameters equal to or greater than 10 cm and appropriate tree cavities or dead leaf cover.

- **Hibernacula**

Since there are no caves, cliffs or mines present on or within 120 m of the roadway, there are no hibernation habitats for bat species along or within 120 m of the haul road.

Therefore, bat hibernacula will not be negatively impacted by the proposed roadway.

- **Maternity Roosts**

There are no forested ecosites along the haul road route. Adjacent wooded communities included a dry-fresh cedar ecosite north of the haul road and another south of the haul road. Trees were up generally less than 10 m tall. They appeared to be early successional Eastern White Cedar was becoming established in an abandoned pasture. There were no large deciduous trees such as oak or Sugar Maple. There was also an early successional conifer plantation north of the haul road. There were no dead or decaying trees. Therefore there were no trees that offered potential bat maternity habitats.

None of these wooded ecosites will be altered by the building of the haul road, therefore, bat maternity roosts, if present, will not be negatively impacted.

7.3.3 Bobolink and Eastern Meadowlark - Threatened

No Bobolink or Eastern Meadowlarks were observed along or within 120m of the haul road route in the 2014 – 2015 surveys. These 2 species were not observed along or within 120 m of the haul road route during 2017 surveys.

Therefore, these 2 threatened species will not be negatively impacted by the proposed haul road.

7.3.4 Endangered and Threatened Species Conclusion

No endangered or threatened species were reported in background information and none were found along or within 120 m of the proposed haul road therefore none will be negatively impacted by the proposal.

7.4 Significant Areas of Natural and Scientific Interest (A.N.S.I.'s)

A review of all available background information for the NETR and for this report the Town of Mono Draft Natural Heritage Atlas was also reviewed and there were A.N.S.I's on or within 120m of the site.

Therefore, no A.N.S.I.'s will be negatively impacted by the proposed haul road.

7.5 Significant Woodlands

An analysis of significant woodlands was carried out in the NETR. The Draft Town of Mono Natural Heritage Atlas was also reviewed. There were no significant woodlands along the proposed haul road. There is a significant woodland adjacent and west of the haul road site that is a component of the PSW. This woodland has been identified as a White Cedar Mineral Swamp community (SWC 1-1).

Because of the size of this woodland, as determined by air photo interpretation, the ecological functions may include the following;

- Interior habitat
- Proximity to other significant habitats
- Linkages

• Water protection

Therefore this significant woodland and its ecological functions within 120 m may be impacted by the proposed haul road.

7.6 Significant Valleylands (SVLD)

The Draft Town of Mono Natural Heritage Atlas indicated that there are no SVLD where the haul road is being proposed but there is a SVLD along the Sheldon Creek within 120 m west of the proposal. There is an overlap with SVLD, the PSW and the significant woodland designations.

Therefore this SVLD within 120 m may be impacted by the proposed haul road.

7.7 Significant Wildlife Habitat (SWH)

SWH was discussed in detail in the NETR with respect to the entire property including the area of the proposed haul road. The following were considered SWH on the Violet Hill Pit property;

- Shrub/Early Sucessional Bird Breeding Habitat
- Eastern Wood-Pewee Habitat

These SWHs and the following other potential SWHs, open country breeding bird habitat, turtle nesting area, amphibian breeding habitat and rare plants will be discussed with information from the 2017 surveys in the following sections.

7.7.1 Shrub/Early Successional Bird Breeding Habitat

About 9.8 ha of this SWH are found on the west area of the Violet Hill Pit property. About 250 m of the proposed haul road is located within this SWH and the haul road will divide it. Since the haul road including ditches on either side will be 12 m wide, the footprint of the haul road will be 12 m x 250 m = 3000 sq. m or 0.3 ha of the SWH. The Brown Thrasher, an "indicator species", and Eastern Towhee and Field Sparrow, "common species" were found in 2017 surveys within 120 m along the proposed haul road within this SWH.

Therefore, shrub/early successional bird breeding habitat and animal movement may be impacted by the haul road.

7.7.2 Eastern Wood-Pewee Habitat

In surveys conducted in 2014 and 2015 Eastern Wood-Pewee were found in the north and south woodlands on the property. None were found along or within 120 m of the proposed haul road. In 2017 surveys calling Eastern Wood-Pewee were not found along or within 120 m of the haul road.

Therefore, breeding Eastern Wood-Pewee SWH is not present along or within 120 m of the haul road and will not be negatively impacted.

7.7.3 Open Country Bird Breeding Habitat

The amount of grassland/meadow habitat on and adjacent to the Violet Hill Pit site is 18.8 ha. Large grassland areas greater than 30 ha are considered significant. Although 1 "common" open country species was observed during the 2017 surveys, there is no significant open country breeding bird habitat confirmed on the Violet Hill Pit property. This was discussed in detail in the NETR (2016). The footprint of the haul road through grassland/meadow habitat is 200 m x 12 m = 2400 sq m or 0.24 ha. The loss of habitat is 0.24 ha / 18.8 ha x 100 % = 1.3 % of the total available on and adjacent to the site. This is a negligible amount. New grassland/meadow areas will be created through setbacks and planting as outlined below in Section 8.5.1 thereby increasing the total grassland habitat on the site. The new grassland to be created in the setback along the north property boundary is 5.4 ha or 22.5 times larger than the grassland habitat lost to the haul road foot print. There will also be grassland habitat created during site rehabilitation and planting of the side slopes.

Therefore, there is no significant open country breeding bird habitat on or within 120 m of the haul road and none will be negatively impacted.

7.7.4 Turtle Nesting Areas

Turtle nesting areas were discussed in Section 6.7.2.2 of the NETR. To be considered as significant a nesting area must meet several criteria as outlined in the SWHCS (OMNRF, 2015). A nesting area must consist of exposed mineral soil, be located less than 100 m from or within one of the ELC communities (marsh, shallow water or bog) that contain open water components and have at least five Midland Painted Turtles, or 1 Northern Map, or 1 Snapping Turtle nest present. Snapping Turtles will nest in roadside gravel however nesting areas on the sides of municipal or provincial road embankments and shoulders are not considered significant wildlife habitats. Although there is a former gravel pit area along the haul road that offers exposed mineral soils, there are no wetland open water areas on the property and there were none observed within 120 m off site.

In 2014 – 15 no turtles or evidence of turtle nesting such as predated eggs were observed during surveys of the property. No turtles were seen along roads surrounding the property during the spring nesting season or on adjacent lands. In 2017 the proposed haul area was visited on 3 dates in June and July which is during the prime turtle nesting period. No turtles or evidence of turtles or turtle nesting were observed in the area of the proposed haul road or within 120 m.

As a result no additional turtle surveys are warranted.

Therefore, there are no significant turtle nesting habitats on or within 120 m of the haul road and none will be negatively impacted.

7.7.5 Amphibian Breeding Habitat – woodlands and wetlands

Amphibian woodland breeding habitat was discussed in Section 6.7.2.3 of the NETR and it was concluded was that there was no significant amphibian breeding woodland habitat on or known

within 120 m of the site. There was also no wetland amphibian breeding habitat identified on or within the Violet Hill Pit property.

Green Frogs were observed in water in the east 3rd Line ditch in 2017. They were also reported from the same location during the 2015 surveys, although no water was present in the ditch in 2015. The water in the ditch in 2017 was likely the result of heavier than normal rainfall through the spring of 2017. Green Frogs are not found breeding in woodland ponds but can be found breeding in open water wetland ponds. A minimum of 2 frog species must be present to be considered significant amphibian breeding wetland habitat. Only 1, the Green Frog was observed in the ditch.

Green Frogs, especially juveniles, often disperse overland to new habitats during warm, rainy nights. At this time large numbers can be seen crossing roads, yards etc. and often take up residences in small ponds, puddles and road side ditches (Harding, 1997). This is possibly how Green Frogs found their way to the 3rd Line ditch. They were likely hatched and reared elsewhere. To be successful in reproducing, amphibians must have water present until at least mid July in any given year to allow for the tadpoles to develop into frogs and emerge from the water. In 2015 there was no standing water in the ditch from May until August although Green Frogs had managed to be present. Although not confirmed, in all likelihood the ditch dried up in 2017 before tadpoles could have emerged, if any were present. Therefore even though Green Frogs were present successful reproduction was unlikely and the habitat was temporary while water was present and not a suitable breeding habitat. Because of the temporary nature of the water in the ditch, it is unlikely it was suitable breeding habitat for any other amphibian species.

As a result, no additional amphibian surveys are warranted.

Therefore, there is no significant amphibian breeding habitats on or within 120 m of the proposed haul road and none will be negatively impacted.

7.7.6 Rare Plants

The rare plants White Heath Aster and Prairie Cinquefoil were found along or within 120 m of the haul road in 2015 but not in 2017. Neither species is, however, endangered, threatened or a species of concern. The ranking of each is G5 meaning that they are secure in Canada with no immediate threats and S4 which means they are uncommon but not rare and apparently secure in Ontario.

There is the potential that these 2 rare plant species may be present and could be negatively impacted by the proposed haul road.

7.8 Fish Habitat

The haul road lies within the Sheldon Creek sub-watershed of the Nottawasaga River Watershed. Sheldon Creek is located more than 120 m west of the site. There are no surface water streams on the property and the only surface water flow leaving the site to the west is minimal. Most of the surface water on the property infiltrates and enters the ground water system. The ground water beneath the site flows west or south towards Sheldon Creek, as it follows the site

topography (Whitewater Hydrogeology, 2016). There will be no change to ground water flow because of the proposed haul road (White, 2018 personnel communication).

Since there is no fish habitat on or within 120 m of the road site, there is no direct negative impact to fish or fish habitat. There will also be no negative impact to ground water quantity to fish habitat more than 120 m from the site.

There is potential for activities associated with road construction on the site to impact the quality of the ground water leaving the site and therefore impact fish and fish habitat off site, beyond 120 m.

8.0 LEVEL 2 – IMPACT ASSESSMENT AND MITIGATION

All mitigation recommended in this section is listed in Appendix 2 and will be included on the updated site plans that accompany the application.

8.1 Provincially Significant Wetlands on Adjacent Lands

A unit of the Violet Hills Wetland Complex PSW is located within 120 m west of the west limit of the proposed internal haul road. The wetland is separated from the intersection of the haul road with the 3rd Line by a 20 m wide road allowance. Thus, about 100 m of the haul road is within 120 m of the wetland.

The ecological functions within the 100 m area where the proposed haul road will be located would include forage and potential nest/den areas for wetland wildlife and source water for the wetland. The haul road footprint within 120 m of the PSW will be about 100 m (length of haul road) x 12 m (width of haul road) = 1200 sq. m or 0.12 ha. Approximately 320 m of the wetland boundary are within 120 m of the entire, proposed Violet Hill Pit. Therefore, there are 320 m x 100 m = 32000 sq. m or 3.2 ha of land adjacent to the PSW on the Violet Hill Pit site where wetland ecological functions potentially occur. The loss of forage and nesting/denning ecological functional area because of the footprint of the haul road is therefore 0.12 ha /3.2 ha x 100 = 3.75 % of the total available wetland ecological functional area on the Violet Hill Pit property. Since there is no identified areas within the 3.2 ha footprint of the haul road that provide critical functions, the loss of 3.75% will be minimal and will not have a negative impact on foraging and nesting/denning functions related to the PSW.

To minimize the impacts of the haul road construction on nesting/denning wildlife within the 3.2 ha area of the haul road footprint, the following mitigation is recommended.

- No land clearing or construction to occur from April 1 to July 31.
- Minimize the area disturbed during land clearing and road construction.

Minimal to no surface water flows from the site or the area of the haul road to the wetland.

To ensure no negative impact from siltation to any source water through surface water flowing to the wetland, the following mitigation is recommended.

- The haul road ditches will be armoured as required to prevent erosion.

- Surface water from the haul road will be retained on site to infiltrate into the ground water system.

- Erosion protection and surface water retention facilities will be designed to the satisfaction of the Town of Mono.

Ground water from the Violet Hill Pit property flows west to the wetland, as has been discussed in the NETR and the Hydrogeological report (Whitewater Hydrogeology, 2016). C. C. Tathum (2018) has constructed bore holes along the route of the haul road during engineering studies and determined that the underlying soil in made up of sand which is porous and allows surface water to infiltrate rapidly. Water will continue to infiltrate to the ground water and therefore there will be no negative impact to the quantity of ground water flowing to the wetland. Retained surface water will also infiltrate to the ground water system, as discussed above.

The following mitigation is recommended to ensure no negative impacts to the quality of ground water flowing to the wetland.

- Store fuel and maintain equipment in a fuel and maintenance area in accordance with Provincial legislation.

- Ensure vehicles and equipment are refueled from a mobile source.

- Ensure all construction personnel are familiar with the Greenwood Aggregates corporate Spills Contingency Plan and the ten point "Spill Contingency Plan" described on page 2 of the site plans.

Therefore, there will be no negative impact to the adjacent PSW or its ecological functions within 120 m of the proposed haul road.

8.2 Endangered and Threatened Species

Although no endangered or threatened species were found in the area of the haul road or within 120 m, this could change over time as habitats evolve and the Species at Risk List is revised.

To ensure compliance with the Provincial Endangered Species Act and Planning Policy, the following general mitigation is recommended.

- Prior to stripping, the haul road area and within 120 m will be surveyed for the presence of endangered and threatened species during appropriate survey time periods by a qualified professional.

- A report of the above described surveys will be kept on file at the pit site and will be provided to OMNRF if an endangered or threatened species is found.

- If required, approvals/authorizations will be obtained under the Endangered Species Act and/or amendments made to the site plan as necessary.

Therefore, there will be no negative impact to endangered or threatened species or their habitats on or within 120 m of the proposed haul road.

8.3 Significant Woodlands on Adjacent Lands

There are no significant woodlands along the haul road route but there is a White Cedar Mineral Swamp ecosite within 120 m to the west, which is a community within the Violet Hills Wetland Complex PSW. The ecological functions could include the following;

- Interior habitat
- Proximity to other significant habitats
- Linkages
- Water protection

The woodland is separated from the nearest portion of the haul road by the 20 m 3rd Line road allowance. About 100 m of the haul road will be within the 120 m adjacent lands designation. There will be no direct impact on the woodland, therefore, there will be no negative impact to interior habitat. Fish habitat is a significant habitat present in Sheldon Creek which is more than 120 m to the west of the proposal but within the woodland area. Ground water quantity will not be impacted by the haul road. Mitigation has been recommended in Section 8.1 to protect ground water quality flowing to the wetland and fish habitat. Therefore, there will be no negative impact to fish habitat. No other significant habitats have been identified within 120 m of the haul road, therefore there will be no negative impacts to other significant habitats. The woodland is part of a linear linkage along the Sheldon Creek valley. The haul road will not interfere with this linkage, therefore there will be no negative impact to the linkage along the Sheldon Creek valley. With respect to water protection no area of the woodland will be altered because of the haul road and mitigation has been recommended in Section 8.1 to protect both the quality and quantity of surface and ground water quality flowing to the woodland.

Therefore, there will be no negative impact to the adjacent significant woodland or the woodland ecological functions.

8.4 Significant Valleylands on Adjacent Lands

Although the haul road is not within a significant valleyland it is within 120 m of the Sheldon Creek valley. The ecological functions include the following;

- Surface water
- Ground water

- Landform prominence
- Distinctive geomorphic landforms
- Degree of naturalness
- Community and species diversity
- Unique communities and species

As previously discussed, surface water will not be impacted by the haul road and mitigation has been recommended to protect both the quality and quantity of surface and groundwater leaving the site. Since the valleyland will not be entered to construct the haul road there will be no impact to any distinctive landform prominence, geomorphic landforms, degree of naturalness, community and species diversity or the uniqueness of the valleyland communities or species.

Therefore, there will be no negative impact to the Sheldon Creek significant valleyland or any of its ecological functions.

8.5 Significant Wildlife Habitat

8.5.1 Shrub/Early Successional Bird Breeding Habitat

An estimated 250 m of the haul road is within this SWH habitat and the footprint of the haul road will be 0.3 ha. There are 9.8 ha of this habitat available and the road footprint will remove about 0.3 ha / 9.8 ha x 100% = 3 % of the total. This reduction in area is negligible and will not negatively impact the bird breeding habitat including that of the Brown Thrasher, Eastern Towhee and Field Sparrow.

A 50 m wide strip along the northern boundary of the licence that is adjacent to the north woodland will be excluded from the pit extraction limit. This strip will be directly connected to and will form an eastern extension of the existing shrub habitat. The area of the newly dedicated natural strip will be about 5.4 ha. This is 5.4 ha / 0.3 ha = 18 times the area of the SWH being removed by the haul road footprint. This is more than adequate to compensate for the loss. Current land use on this strip is intensive agriculture and is of little or no value to breeding birds. To improve the strip for wildlife the following mitigation is recommended;

- Plant the 5.4 ha setback land along the north property boundary with a native and non-native non-invasive meadow seed mixture including the following;

  Oat (*Avena fatua*) for a cover crop along with
  Perennial Rye (*Lolium perenne*)
  Canada Wild Rye (*Elymus canadensis*)
  White Clover (*Trifolium repens*)
  Common Milkweed (*Asclepias syriaca*)
  New England Aster (*Symphotrichum novae-angliae)*
  Goldenrod *(Solidago sp.)*

This mixture will be subject to seed availability and substitutions may be required.

This planting mixture will provide grassland habitat initially for many species of breeding birds as well as the Monarch butterfly, a species of concern. Natural regeneration of tree and shrub species will occur because of the abundant tree and shrub species currently present along the nearby fence row and north woodland boundary. As a result of natural regeneration the strip will become vegetated with a diverse variety of woody and non-woody vegetation. The grassland open country habitat will transform into shrub/early successional bird breeding habitat within 10 to 25 years.

In addition, as part of the progressive rehabilitation of the pit, the side slopes, which are estimated to be 50 m wide will be planted with the same native/non-native grass and forb mixture. This will provide grassland habitat for many species of open country breeding birds as well as the Monarch butterfly. Natural succession will be allowed to occur so that the side slopes will naturally re-vegetate with woody and other vegetation. This will increase overall site species diversity and lead to additional shrub/early successional habitat.

Breeding birds looking for shrub/early successional habitats will quickly find these "new" areas as the available habitat becomes attractive to them. This shrub/early successional habitat is transitional between meadow and forest habitats. Left to natural processes, in another 10 to 25 years, this shrub habitat will become early stage woodland. Species of breeding birds will change as the vegetation communities evolve.

8.5.1.1 Animal Movement Within the Shrub/Early Successional SWH

The haul road runs approximately east – west and therefore will divide the SWH into a north and south area. Generally wildlife are most actively on the move through the night. In some cases they are more active during certain seasons such as spring or autumn when they are reproducing or moving between habitats. The movement of birds using the SWH will not be impacted because birds can fly over the haul road. Small, medium and large mammals will be able to easily cross the haul road at night as they now cross the 3rd Line but in more safety because there will be no traffic on the haul road at night. Amphibians are currently crossing the much wider (20 m) 3rd Line from west to east because the Green Frogs that are often present in the east ditch most likely came from the wetland west of the 3rd Line. These frogs have likely moved at night and have been able to safely navigate the night traffic along the 3rd Line. Therefore amphibian movement across the haul road is possible and likely with minimum difficulty because the haul road is narrower (12 m) and there will be no hazards from traffic at night when the frogs are most likely to move. No reptiles have been observed in the area of the haul road during any of the field surveys. If reptiles are attempting to move across the haul road the 12 m width should not be a deterrent and their movement will most likely be completed safely at night when there will be no traffic.

8.5.2 Rare Plants

In a letter dated December 18, 2016 to OMNRF, the NVCA requested that if the 2 rare plant species White Heath Aster and Prairie Cinquefoil may be impacted by the pit proposal that "consideration should be given to a salvage/transplant plan – particularly for prairie cinquefoil. It is likely that suitable habitats could be found outside of the proposed extraction limit". There was also a second colony of White Heath Aster found in 2015 at coordinates NAD 83 T17

easting 574221 northing 4882973 in the grassland south of the haul road, beyond 120 m, near 30 Sideroad. This indicates that there are other suitable sites for this species on the Violet Hill Pit property. Suitable sites for Prairie Cinquefoil can also be found on the property.

To protect these 2 rare plant species the following mitigation is recommended.

- Prior to clearing for the haul road, the ditches and the surface water retention facility, the area will be surveyed for White Heath Aster (*Symphotrichum pilosum*) and Prairie Cinquefoil (*Drymocallus arguta*) by a qualified professional.

- If one or both species are found they will be relocated by a qualified professional to suitable habitat on the Violet Hill Pit Property.

8.5.3 Noise Impacts on Breeding Birds

There are no Provincial guidelines regarding noise impacts on breeding birds or any other wildlife in Ontario. To assist with the analysis the following document was consulted, "Effects of Highway Noise on Birds" (Dooling R. J. and A. N Popper, 2007). Their thesis is that one of the main impacts to breeding birds would be what is termed "masking effect". Masking effect is continuous noise of sufficient intensity in the frequency region of bird hearing that it can have a detrimental effect on the detection and discrimination of vocal signals from other birds therefore interfering with mating and territorial singing during the breeding season. A study by Forman et. al. (2002), reported in the above document, looked at 5 species of grassland birds along roads in and around Boston, Mass. US. They found that low traffic volume, which they considered to be 8000 vehicles per day, had no effect on grassland bird populations.

From the Traffic Report prepared by C. C. Tathum (2016) the peak number of loads per day would be 162. Assuming the vehicle also had to enter the site that would be 325 vehicles per day along the haul road in and out of the pit. The traffic noise would be intermittent and not continuous and is well below 8000 vehicles per day. Although the Forman study only considered grassland (open country) bird species the results would presumably also apply to shrub/early successional bird species.

8.5.4 Dust Impacts on Breeding Birds and Vegetation

There are also no guidelines regarding dust impacts on breeding birds or vegetation. Research studies by Smith, A. C. et. al. (2005) and Male (2004) investigating the impacts of road and mining dust from a diamond mine in the arctic found that there was no impact on breeding birds up to 1 km from the site. They did find, however, that dust did negatively impact vegetation. The haul road will be paved therefore reducing the potential for dust from truck traffic. In addition the following mitigation is recommended to protect vegetation from dust impacts;

- Ensure all construction personnel are familiar with and implement the 10 point dust control plan on the site plans.

- Ensure all construction personnel are familiar with dust control measures contained in the Trinity Consultants Ontario INC. Air Quality Assessment Report Violet Hill Pit, Town of Mono, ON, Greenwood Aggregates Company Limited, 2016.

- Ensure all construction personnel are familiar with the dust control measures contained in Trinity Consultants Ontario INC. Best Management Practices Plan for Fugitive Dust, Greenwood Aggregates Company Limited, Violet Hill Pit>Town of Mono, ON. 2018.

Adherence to dust control measures contained in the above reports will ensure that air quality on the Violet Hill Pit proposed haul road will comply with Provincial standards.

8.5.5 SWH Conclusion

Shrub/early successional breeding bird habitat is the only SWH present along or within 120 m of the haul road. About 0.3 ha of this SWH will be removed by the footprint of the haul road. This is only 3% of the total available of this SWH on the site. An area of 5.4 ha, or 18 times the area of the haul road footprint will be created along the north boundary of the property. This will more than compensate for this loss. The 5.4 ha will initially be planted in grassland species but will succeed to shrub habitat in time. Open country grassland habitat will also be created on the pit side slopes during pit rehabilitation. In time this grassland will also succeed to shrub/early sucessional habitat. Animal movement through the SWH will not be impacted by the haul road because most wildlife movement occurs at night and there will be no traffic on the haul road at night. Two species of rare plants if present along the haul road route will be moved to other suitable locations. Truck traffic noise on the haul road and dust are not concerns to local bird populations. Mitigation has been recommended to ensure that dust will not negatively impact vegetation.

Therefore, there will be no negative impacts to the significant shrub/early successional habitat or its ecological functions, to wildlife movement, to the identified rare plant species and from noise or dust.

8.6 Fish Habitat

Although there is no fish habitat in the area of the haul road or within 120 m there is fish habitat west of the site in the Sheldon Creek. No surface water flows from the site to the creek but ground water does flow west and may reach the creek. Mitigation recommended in Section 8.1 to protect ground water flowing into the Violet Hill PSW will also protect fish habitat.

Therefore, there will be no negative impact to fish or fish habitat more than 120 m from the site of the haul road.

9.0 CONCLUSION

This report provides Level 1 and 2 natural environment technical information and impact assessment along and within 120 m of the proposed revised haul road route for the Violet Hill Pit. The Violet Hills Wetland Complex is west of the haul road within 120 m. Mitigation has

been recommended to ensure that there will be no negative impact to this PSW or its ecological functions. Although no endangered or threatened species were found along the haul road or within 120 m, mitigation has been recommended to ensure no negative impacts to endangered or threatened species during clearing and construction. Two rare plant species will be searched for prior to road construction and relocated to suitable locations if necessary. There are no significant woodlands or significant valleylands along the haul road route but these features are found within 120 m to the west. Although there is no fish habitat along the haul road route or within 120 m there is fish habitat west of the site beyond 120 m. Mitigation recommended in Section 8.1 will also ensure that there will be no negative impacts to the woodland and valleyland and fish habitat. All proposed mitigation is listed in Appendix 2. The haul road will be left in place to provide access to the agricultural lands that result from the ultimate rehabilitation of the pit floor.

The Town of Mono peer reviewer requested that 5 concerns be addressed in this report. They are as follows with the appropriate report sections where each is addressed;

With respect to shrub/early successional bird breeding significant wildlife habitat;

1. "How much of this habitat will be physically lost as a result of the haul road?"

   Addressed in Sections 7.7.1 and 8.5.1.

2. "Will the residual portions of the habitat be sufficient to continue to support the four early successional breeding birds?"

   Addressed in Section 8.5.1.

3. "Will noise or dust from the truck traffic have an adverse effect on them?"

   Addressed in Sections 8.5.2 and 8.5.3.

With respect to other natural heritage features

4. "It is noted that a resident indicated the presence of amphibian and reptile (snapping turtle) habitat along the 3rd Line. Additional amphibian and reptile inventories should be undertaken to in the vicinity of the 3rd Line and the former pit area."

   Addressed in Sections 7.7.1 and 7.7.2

5. "As part of the assessment of the impacts of the new haul road, it will be necessary to demonstrate compliance with the PPS policy for significant wildlife habitat and that there will be no negative impacts on the feature or its functions."

   Addressed in Sections 8.1 through 8.6.

The proposal, therefore, meets the test of OMNR Policy A. R. 2.01.07 License Applications: Natural Environment Report Standards March 15, 2006 that no existing natural feature will be impacted by the proposed haul road. The proposal also meets the test and the intent of Natural Heritage Policy 2.1.1 “Natural heritage features and areas shall be protected for the long term.” and Policy 2.1.2 “The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features.”

Respectfully submitted,

Robin E. Craig, B.Sc., M.Sc.
Environmental Consultant
Certified Wildlife Biologist

10.0 REFERENCES

C. C. Tathum & Associates Ltd. letter dated January 19, 2018 to Greenwood Aggregates Re: Violet Hill Pit – Part Lots 30, 31, 32, Concession 4 E.H.S., Town of Mono Erosion Hazard Study – Update

C. C. Tathum & Associates Ltd. Access Road Plan (grading plan) AR-1 dated Jan 18.

County of Dufferin Official Plan, Office consolidation July 2017.

County of Dufferin Web Site - Interactive Map.

Craig, R. E. 2016. Natural Environment Level 1 and 2 Technical Report, violet Hill Pit, Town of Mono, Dufferin County.

Dooling, R. J. and Popper, A. N.. (2007). The Effects of Highway Noise on Birds. Prepared for the California Department of Transportation, Division of Environmental Analysis. 74 pages.

Forman, R. T. T., Reineking, B., and Hersperger, A. M. (2002). Road traffic and nearby grassland bird patterns in a suburbanizing landscape. Environ. Manage. 29, P.782-800.

Harding, J. H. 1997.Amphibians and Reptiles of the Great Lakes Region. The University of Michigan Press. 378 pages.

Ontario Ministry of Natural Resources and Forestry. Undated. Bobolink Survey Methodology.

Ontario Ministry of Natural Resources. 2006. Policy No.: A. R. 2.01.07. License Applications: Natural Environment Report Standards.

Ontario Ministry of Natural Resources, 2010. Natural Heritage Reference Manual The Provincial Policy Statement. 2005. Second Edition.

Ontario Ministry of Natural Resources. 2014a. Butternut Assessment Guidelines. Assessment of Butternut Tree Health for the Purposes of the Endnagered Species Act, 2007. Amended December 2014 (Version 2).

Ontario Ministry of Natural Resources. 2014b. Ontario Wetland Evaluation System, Sothern Ontario, 3rd Edition, Version 3.3. (OWES)

Ontario Ministry of Natural Resources and Forestry. 2015. Significant Wildlife Habitat Criteria Schedules For Ecoregion 6E.

Ontario Ministry of Natural Resources and Forestry. Natural Heritage Information Centre, 2017 and 2018. Species at Risk Information.

Ontario Ministry of Natural Resources and Forestry. 2017. Survey Protocol for Species at Risk Bats within Treed Habitats Little Brown Myotis, Northern Myoits and Tri-Colored Bat.

Riley, J. L. 1989. Distribution and Status of Vascular Plants of Central Region, Onatariio Ministry of Natural Resources. 110 pages.

Smith, A. C., Virgl, J. A., Panayi, D. and Armstrong, A. R. (2005). Effects of a Diamond Mine on Tundra Breeding Birds. Arctic, Vol 58 No 3. P. 295-304.

Stovel and Associates Inc. 2018. Review of Natural Environment Level 1 and 2 Technical Report and Response to Peer Review. Violet Hill Pit – Town of Mono.

Town of Mono Official Plan, Consolidated as of January 2016.

Town of Mono Draft Natural Heritage Atlas, 2017.

Town of Mono Draft Natural Heritage Planning Map, 2017.

Trinity Consultants Ontario INC. 2016. Air Quality Assessment Report, Violet Hill Pit, Town of Mono, ON. Greenwood Aggregates Company Limited.

Trinity Consultants Ontario INC. 2018. Best Management Practices Plan for Fugitive Dust, Greenwood Aggregates Company Limited, Violet Hill Pit, Town of Mono, ON.

White, T. Whitewater Hydrogeology Inc. personnel communication via e-mail 2/09/18.

Whitewater Hydrogeology Ltd., 2016. Proposed Violet Hill Pit Combined Level 1 Level 2 Hydrogeological Assessment.

APPENDIX 1: BIRD SURVEY RESULTS VIOLET HILL HAUL ROAD AREA 2017

Birds								
Common Name	**Scientific Name**	**Breeding Evidence** *				**Area Sensitivity** **	**G** **Rank #**	**S** **Rank #**
		Ob.	**Po.**	**Pr.**	**Conf.**			
Green Heron	*Butorides virescens*	X					G5	S4B
Red-tailed Hawk	*Buteo jamaicenis*	X					G5	S5B
Killdeer	*Charadrius vociferus*		H				G5	S5B
Mourning Dove	*Zenaida macroura*			T			G5	S5
Northern Flicker	*Colaptes auratus*		H				G5	S4B
Pileated Woodpecker	*Dryocopus pileatus*	X					G5	S4S5
Eastern Kingbird	*Tyrannus tyrannus*		H				G5	S5B
Blue Jay	*Cyanocitta cristata*			T			G5	S5
American Crow	*Corvus brachyrhynchos*	X					G5	S5B
Black Capped Chickadee	*Poecile atricapilla*			T			G5	S5

Birds								
Common Name	**Scientific Name**	**Breeding Evidence** *				**Area Sensitivity** **	**G Rank #**	**S Rank #**
		Ob.	**Po.**	**Pr.**	**Conf.**			
American Robin	*Turdus migratorius*			T			G5	S5B
Veery	*Catharus fucescens*		S				G5	S5B
Hermit Thrush	*Catharus guttatus*		S				G5	S5B
Brown Thrasher	*Toxostoma rufum*			T		SHi	G5	S5B
Northern Cardinal	*Cardinalis cardinalis*		S				G5	S5
Rose-breasted Grosbeak	*Pheucticus ludovicianus*	X					G5	S5B
Eastern Towhee	*Pipilo erythrophthalmus*			T		SHc	G5	S4B
Field Sparrow	*Spizella pusilla*		S			SHc	G5	S5B
Chipping Sparrow	*Spizella passerina*			T			G5	S5B
Vesper Sparrow	*Pooecetes gramineus*			T		OC	G5	S4B
Song Sparrow	*Melospiza melodia*			T			G5	S5B
Red-winged Blackbird	*Agelaius phoeniceus*			T			G5	S5B
Common Grackle	*Quiscalus quiscula*			T			G5	S5B

Birds								
Common Name	**Scientific Name**	**Breeding Evidence ***				**Area Sensitivity ****	**G Rank #**	**S Rank #**
		Ob.	**Po.**	**Pr.**	**Conf.**			
Purple finch	*Carpodacus purpurens*		S				G5	S4B
American Goldfinch	*Spinus tristis*			T			G5	S5B

* Breeding Codes from Ontario Breeding Bird Atlas, 2001, 2003.

Ob. = Observed, X = species observed in its breeding season (no evidence of breeding). Presumed migrants not recorded.

Po. = Possible Breeding, H = species observed in its breeding season in suitable nesting habitat.

S = singing male present, or breeding calls heard, in its breeding season in suitable nesting habitat.

Pr. = Probable Breeding, T = permanent territory presumed thorough registration of territorial song on a least 2 days, a week or more apart, at the same place.

DD = distraction display or injury feigning.

FY = recently fledged young or downy young, including young incapable of sustained flight.

Cb. = Confirmed Breeding, NE = nest containing egg(s)

** **Area sensitivity**

1. Threatened and Species of Concern – on the Species at Risk Ontario list (SARO) of the Endangered Species Act, 2007
2. Significant Wildlife Habitat Ecoregion Criteria Schedules, Addendum to the Significant Wildlife Habitat Technical Guide, OMNR, 2009 (Draft)

FI = forest interior species, OC = open country species, SHi = shrub/early successional indicator species, SHc = shrub/early successional common species

SCA = seasonal concentration area

*** G RANK Definition**

G4 Common; usually more than 100 occurrences; usually not susceptible to immediate threats.

G5 Very common; demonstrably secure under present conditions.

T denotes that the rank applies to a subspecies r variety.

G? Unranked, or if following a ranking, rank is tentatively assigned (e.g. G5?).

S RANK Definition

S4 Apparently secure; uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5 Secure; common, widespread, and abundant in the nation or state/province.

B Breeding migrants/vagrants

N Non-breeding migrants/vagrants

SNA Not Applicable; A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

APPENDIX 2: NATURAL HERITAGE MITGATION

Provincially Significant Wetlands on Adjacent Lands

- No land clearing or construction to occur from April 1 to July 31.
- Minimize area disturbance during land clearing and road construction.
- The haul road ditches will be armoured as required to prevent erosion.
- Surface water from the haul road will be retained on site to infiltrate into the ground water system.
- Erosion protection and surface water retention facilities will be designed to the satisfaction of the Town of Mono.
- Store fuel and maintain equipment in a fuel and maintenance area in accordance with Provincial legislation.
- Ensure vehicles and equipment are refueled from a mobile source.
- Ensure all construction personnel are familiar with the Greenwood Aggregates corporate Spills Contingency Plan and the ten point "Spill Contingency Plan" described on page 2 of the site plans.

Endangered and Threatened Species

- Prior to striping, the haul road area and within 120 m will be surveyed for the presence of endangered and threatened species during appropriate survey time periods by a qualified professional.
- A report of the above described surveys will be kept on file at the pit site and will be provided to OMNRF if an endangered or threatened species is found.
- If required, approvals/authorizations will be obtained under the Endangered Species Act and/or amendments made to the site plan as necessary.

Significant Wildlife Habitat

Shrub/Early Successional Bird Breeding Habitat

- Plant the 5.4 ha setback land along the north boundary of the property with a native and non-native non-invasive meadow seed mixture including the following;

Oat (*Avena fatua*) for a cover crop along with
Perennial Rye (*Lolium perenne*)
Canada Wild Rye (*Elymus canadensis*)
White Clover (*Trifolium repens*)
Common Milkweed (*Asclepias syriaca*)
New England Aster (*Symphotrichum novae-angliae)*
Goldenrod *(Solidago sp.)*

Rare Plants

- Prior to clearing for the haul road, the ditches and the surface water retention facility, the area will be surveyed for White Heath Aster (*Symphotrichum pilosum*) and Prairie Cinquefoil (*Drymocallus arguta*) by a qualified professional.

- If one or both species are found they will be relocated by a qualified professional to suitable habitat on the Violet Hill Pit Property.

Dust Impacts on Breeding Birds and Vegetation

- Ensure all construction personnel are familiar with and implement the 10 point dust control plan on the site plans.

- Ensure all construction personnel are familiar with dust control measures contained in the Trinity Consultants Ontario INC. Air Quality Assessment Report Violet Hill Pit, Town of Mono, ON, Greenwood Aggregates Company Limited, 2016.

- Ensure all construction personnel are familiar with the dust control measures contained in Trinity Consultants Ontario INC. Best Management Practices Plan for Fugitive Dust, Greenwood Aggregates Company Limited, Violet Hill Pit>Town of Mono, ON. 2018.

RESUME

Robin Edward Craig, B.Sc., M.Sc.
Certified Wildlife Biologist
3092 Old Second South
Midhurst, Ontario
L9X 1P7
(705) 722-7237

2001-present Environmental Consultant

- Natural Environment Technical Level 1and 2 Reports for aggregate licence applications and
- Environmental Impact Statements for planning applications
- Species at risk surveys and impact assessments
- Ontario Municipal Board appearances regarding land development and aggregate application issues
- conducted numerous Butternut Health assessments as required by the Endangered Species Act (2007)
- Ontario's Ambassador to Canada's Recreational Fisheries Award Program (Federal Department of Fisheries and Oceans)
- assembled wildlife/fisheries data for Severn Sound Remedial Action Plan (SSRAP) de-listing report
- contracts with Ducks Unlimited and private landowners, trade shows, pond advice and wetland boundary delineation
- Barrie Ducks Unlimited Fund Raising Committee (Past Chairman)

1973 - 2001 –Biologist with Ontario Ministry of Natural Resources

1999-2001 Provincial Community Fisheries and Wildlife Involvement Program (CFWIP) Coordinator

- chair of Provincial Committee that developed program policies and procedures and annually allocated $1.0 million to support over 500 volunteer groups with resource projects
- developed procedures to ensure CFWIP followed revised Fisheries Act protocol and assisted with review of all OMNR programs to ensure adherence to new protocols

1998-1999 Resource Liaison Officer, Midhurst District OMNR

- facilitated agreements with multi-interest volunteer groups regarding operations of Copeland Forest and 4 Simcoe County Provincial Wildlife Areas (PWA's)
- facilitated agreements with Ducks Unlimited to operate OMNR dams at Tiny and Wye Marsh PWAs
- managed SSRAP riparian habitat project including supervising staff, budgeting, approving projects; more than 85 projects completed, 65 km of stream buffers created and over $2.0 million in work completed
- worked with First Nations regarding resource issues

1973-1998 OMNR Field Biologist, Niagara and Huronia/Midhurst Distircts

- SSRAP planning team member from 1986 involved with identifying issues, developing remedial options and implementing actions
- Provincial CFWIP Committee member for Southern Ontario from 1992-1999

- provided resource input to multi-agency, water quality improvement, landowner funding committees such as NVCA Lands and Waters Committee and SSRAP Non Point Source Committee
- managed various resource inventory and data collection projects such as lake, stream and wetland inventories and angler and hunter surveys
- lead development of local OMNR Fisheries Management Plan, wildlife area management plans, fish and wildlife Land Use Guidelines
- lead team that developed a Controlled Deer Hunt for Simcoe and Dufferin Counties, 1978
- member of a multi-agency team that developed guidelines for harvesting aquatic plants in Ontario
- worked with City of Barrie to develop a "Fish Habitat Study" to guide waterfront development and protect fish habitat, one result was the "habitat" islands created by the Barrie Rotary Club in 1998
- conducted radio telemetry studies of walleye and muskellunge to determine spawning habitats
- conducted workshops for contractors about Provincial Work Permit system and fish habitat protection
- accepted as an expert witness in court cases and Ontario Municipal Board hearings in issues about fish habitat and wetlands
- published papers in peer reviewed journals about wildlife diseases and fish habitat
- trained OMNR and Conservation Authority staff about Fisheries Act fish habitat protocols and procedures
- member of team that trained senior OMNR mangers about sustainable development
- member of team that developed a wetland restoration training course for Ontario Biologists
- worked with proponents of marina, housing, aggregate, etc. development proposals to ensure compliance with various resource protection policies and legislation including Federal Fisheries Act and Provincial Wetland Policies

Other Qualifications and Training

- B.Sc. U. of Guelph, (1970)
- M.Sc., U. of Guelph, (1972)
- Certified Wildlife Biologist, The Wildlife Society (since 1979)
- Ontario Wetland Evaluation Training
- Aquatic Habitat Inventory Training
- Wetland Restoration Training
- Larval Fish Identification Training
- Law Enforcement Training
- Ontario Municipal Board Training
- Negotiation Training
- Stresses and Management of Cold and Warmwater Fish communities Training
- First Nations Culture Training
- Fish Culture Training
- Fish and Wildlife Population Modeling
- Ecosystem Management
- Ecological Sustainability
- Waterfowl Identification and Management
- Provincial Planning Policies
- Federal Fisheries Act Habitat Policies
- Wildlife Management Area Planning
- St. John's Ambulance CPR/First Aid
- Ontario Health and Safely Act
- Butternut Health Assessor (#180)
- Butternut Health training update (2013)
- NHIC Data Sensitivity Training, 2013

Robin Craig, Environmental Consultant
3092 Old Second South
Midhurst, ON, L9X 1P7
July 17, 2018

Greenwood Aggregates Limited
R.R. # 2
Orangeville, ON, L9W 2Y9
Attn. S. Greenwood

Re: Response to the Second Town of Mono Technical Peer Review Comments

Dear Mr. Greenwood;

This letter is in response to the natural heritage comments made by Stovel and Associates Inc. and Gray Owl Environmental Inc. (both acting for the Town of Mono) dated February 5, 2018 regarding the Natural Environment Technical Report (NETR) and Response to the Peer Review dated January 17, 2018 that were prepared by Robin E. Craig for the proposed Greenwood Violet Hill Pit within the Town of Mono. This response will address the concerns that apply to natural heritage issues in the order in which they were presented in the February 5 letter.

The following were reviewed when preparing this response;

Craig, Robin E. 2016. Natural Environment Level 1 and 2 Technical Report, Violet Hill Pit, Town of Mono, Dufferin County (NETR).

Craig, Robin E. 2018. Letter dated January 17, to Greenwood Aggregates Limited Re: Response to the Town of Mono Technical Peer Review Comments of the Natural Environment Technical Report.

Greenwood Aggregates Limited, Violet Hill Pit Site Draft Plans, June 26, 2018.

Stovel and Associates Inc. 2018. Letter dated February 5 Re: Review of Natural Environment Level 1 and 2 Technical Report Violet Hill Pit and Response to Peer Review, Violet Hill Pit – Town of Mono.

Trinity Consultants Ontario Inc. 2018. Best Management Practices Plan for Fugitive Dust, Greenwood Aggregates Company Limited, Violet Hill Pit, Town Of Mono, ON.

1. Reviewer Concern - Butternut Location on Site Plans

The reviewers recommend that the exact locations of the 4 Butternut in the onsite hedgerows be shown on the Site Plans.

Response
The locations of the 4 Butternut in the hedgerows will be marked on the site plans including the required 50 m setbacks.

2. Reviewer Concern - Cultural thicket and 3d Line Entrance/Haul Road

The reviewers note that the new haul road alignment cuts through the cultural thicket on the west side of the site and essentially bisects the community in half. The reviewers also acknowledge that a separate impact assessment on the cultural thicket habitat will be prepared for the haul road. They go on to recommend that the following elements be assessed and included in the assessment.

1. "How much of this habitat will be physically lost as a result of the haul road?"

2. "Will the residual portions of the habitat be sufficient to continue to support the four early successional breeding birds?"

3. "Will the noise and dust from the truck traffic have an adverse effect on them?"

4. "It is noticed that a resident indicated the presence of amphibian and reptile (snapping turtle) habitat along 3rd Line. Additional amphibian and reptile inventories should be undertaken in the vicinity of the 3rd Line and the former pit area"

5. "As part of the assessment of the impacts of the new haul road, it will be necessary to demonstrate compliance with the PPS policy for significant wildlife habitat and that there will be no negative impacts on the feature or its ecological functions."

Response
The assessment of the impact of the new haul road has been completed and is entitled "Natural Environment Level 1 and 2 Technical Report, Violet Hill Pit Revised Haul Road Route" by Robin E. Craig, dated April 2018. The report has been provided to review agencies.

3. Reviewer Concern - Figure 4 Should be Modified
The reviewers recommend that Figure 4 be modified to include all Significant Natural Heritage Features. Since the PPS does not recognize the term "Species at Risk" they suggest that habitats be subdivided into two categories: Habitats of Endangered and Threatened Species including Butternut (showing the 50 m radius around the trees), Barn Swallow, Bobolink, and Eastern Meadowlark, and Significant Wildlife Habitat including the cultural thicket and habitats for Eastern Wood-Pewee and Grasshopper Sparrow.

Response
This has been completed and a revised Figure 4 is attached to this letter.

4. **Reviewer Concern – Dust Mitigation for Vegetation**

The reviewers comment that although Craig notes that dust mitigation will assist in protecting the vegetation, they request that the basis for this comment be explained with reference to any submitted Best Management Plan and scientific research.

Response Sam, I think Trinity needs to review this response and possibly address the dust issue with regards to impacts on vegetation as they are the experts.

The best way to protect the vegetation on or near a pit site is to control fugitive dust on the site. Trinity Consultants Ontario Inc. has prepared a "Best Management Practices Plan for Fugitive Dust" (2018), for the Violet Hill Pit. From this plan an eleven point dust control plan has been included on the June 26, 2018 draft site plans for the Pit. Point eleven states that the operator shall follow all recommendations contained in the Trinity Consultants plan.

In this way fugitive dust will be addressed and minimized or eliminated from the pit. Therefore, fugitive dust will not coat vegetation and it follows that there will be no negative impacts to vegetation as a result.

5. **Reviewer Concern - Side Slope Plantings**

The January 17, 2018 peer response stated that "The Town will be circulated on planting plans for side slopes." The reviewers are concerned that "This information still needs to be provided."

Response

Side slope planting will be a part of site rehabilitation. Condition #6 on page 3 of the site plans states that the side slopes will be planted with a seed mix that contains native grass and forb species and avoids invasive species such as Crown Vetch. The specific plans will be provided to the Town of Mono prior to any rehabilitation of a slope or slopes. The approach to slope rehab may change with time and species of vegetation deemed appropriate or available may also change. By preparing the plans just prior to rehab will allow the science of the day to apply. The plans will therefore not be locked into licence conditions that could become inappropriate or unfeasible.

Conclusion;

I believe this response addresses the Natural Heritage concerns raised by Stovel and Associates Inc. and Gray Owl Environmental Inc. on behalf of the Town of Mono in their February 5, 2018 review of our January 17, 2018 response to their earlier comments to the proposed Violet Hill Pit application. If the Town accepts our recommendations, changes will need to be included on the site plans.

Respectively submitted;

Robin E. Craig BSc., MSc.,
Certified Wildlife Biologist, Environmental Consultant