

# **REVIEW AND ASSESSMENT**

of the

## **PROPOSED HIDDEN QUARRY LEVEL II NATURAL ENVIRONMENT TECHNICAL REPORT**

Prepared for James Dick Construction Limited by GWS Ecological and Forestry Services Inc. in association with Gray Owl Environmental Inc.

by

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\*Brydson Creek Fish Weir

### 1.0 PURPOSE OF REVIEW

The Concerned Resident's Coalition has prepared the present document to evaluate the 'Proposed Hidden Quarry Level II Natural Environment Technical Report' prepared for James Dick Construction Limited by GWS Ecological & Forestry Services Inc.(GWS) in association with Gray Owl Environmental Inc. (August, 2012) for its accuracy, strengths and weaknesses and conclusions. The RWS report is extensive and the purpose of the report was to identify environmental features and functions in the Hidden Quarry site and

then evaluate the impacts of the proposed aggregate extraction operation on these features. The study also addresses the requirements of the 2005 Provincial Policy Statement (PPS), as well as the environmental study requirements under the County of Wellington Official Plan and the Township of Guelph-Eramosa Zoning By-law.

We will be providing evidence that disputes many of the conclusions of the GWS document and by association the 2012 Harden Hydrogeological Report. We also question the Township's planning consultant's inability to understand the natural capital that will be lost if this application is approved. Natural water systems including cold-water creeks, provincially significant wetlands, spring-fed ponds and species at risk will be significantly impacted. The environmental and human health consequences of the Hidden quarry operations to the Guelph Eramosa Township will certainly be known several years from now and will potentially only lead to more environmental issues for the global community.

## 2.0 INTRODUCTION TO GWS REPORT

The GWS report includes: (1) background information and site conditions on the proposed quarry site, (2) the methodologies used in the 2011 and 2012 field surveys of vegetation and animals, (3) analysis of natural heritage features, (4) description of the proposed quarry development and the (5) the potential impacts and mitigation measures for the operation. In addition, earlier studies completed by Prime Environmental Consultants Ltd. (1995-96) documented the vegetation and biota of the site. This document was submitted to JDCL but never circulated to the relevant agencies and municipalities. (Page 5, Sec. 2.2, Par. 1). G. Scheifele of GWS was General Manager of Prime Environmental at the time of the 1995-96 study (LinkedIn resume). Data from that report are referred to in the present report and incorporated in appendix tables as 1997 data; however, the methods employed were not provided.

## 3.0 NATURAL FEATURES

### 3.1 General Physiography

The Hidden Quarry site stratigraphy has been described in the GWS report as generally consisting of a "sand and gravel unit" overlying "a narrow continuous layer of silt till which acts as an aquitard". "Collectively, these overburden materials range from 6 to 10 m in thickness and they are underlain by fractured dolostone bedrock. This stratigraphy creates localized pooling and the formation of an upper aquifer within the surficial sand and gravel deposit. This shallow groundwater generally flows across the site from west to east towards Blue Springs Creek." (Page 18, Par. 3 of GWS report) This is reiterated in the 'Halton Region Environmentally Sensitive Areas Consolidation Report': "...the fractured nature of the Lockport-Amabel Formation (which also serves as a karst aquifer due to the soluble nature of the rock) results from high infiltration of rainfall in this area. Portions of many small creeks are also captured by bedrock joints, thus recharging groundwater flow." (Halton Region & N-S Env., 2005).

**Comments:** The term karst has been used in the context of the aquifer within the Lockport-Amabel formation and the Blue Springs system by the Halton Region. It is

unclear why the dolostone that is within the site and is considered to be part of the Amabel formation, predominantly comprising the Gasport formation (sub-member of the Lockport formation) is not considered to possess karst characteristics. Sink holes, a disappearing stream on site and large fractures and cavities identified by borehole analyses from the site indicate at least significantly fractured rock that is characteristic of the early stages of karst formation. There is no explanation in a June 7, 2013 letter by Harden Environmental about the numerous natural core breaks, vuggy characteristics of the rock and two water bearing fractures at 16 and 18.5 metres depth discovered during the drilling of M15. (Characteristic of karst topography). In a later Harden letter dated July 15, 2013 he admits that there is the presence of vugs and fossiliferous zones (reefal zones) within the bedrock are “not necessarily” indicative of karst conditions. Open fissures on the scale of inches not millimeters as stated in this letter were well documented in borehole analyses. The Harden Report goes on to state that large cavities indicative of karst were not found. However, in a final statement it is only the one characteristic of karst features (absence of cavities) that is used to negate the presence of karst features. (Harden July 15, 2013).

### 3.2 Wetlands on site and Adjacent to site

#### 3.2.1 Provincially Significant Wetland

The GWS report states: “*The Eramosa River-Blue Springs Provincially Significant Wetland (PSW) complex encompasses the main channel of Blue Springs Creek and also includes several isolated wetlands located north of this watercourse. One of these PSWs is located within the site along Concession Road 6*”. As mentioned above this particular wetland should be considered an ANSI and development should not occur by this wetland. Under the PPS development is not permitted within significant wetlands but development may occur provided it can be demonstrated that there are no negative impacts on the features or ecological functions for which the area is designated. The GWS report also states that consideration must also be given for the indirect impacts on the PSW through the alteration of surface water flows and ground water levels.

**Comments:** The onerous hydrogeological conditions of approval that have to be met by JDCL after approval indicate that there is not enough evidence to determine if the quarry will have an impact on the wetlands and the Blue Springs Wetland Complex.

#### 3.2.2 Unevaluated wetlands

The unevaluated wetlands range in size from 0.1 to 0.4 hectares and were identified during the GWS study (Page 27 & Fig. 9) within the site. The 0.4 m wetland (MAM3-2) located within the interior of the site that forms part of Tributary B was not considered a PSW by the OMNRF. The 0.4 ha wetland was considered unevaluated because it was below the minimum 0.5 ha evaluation size limit for wetland status (MNRF, 2013a). It is unclear whether the mapping of this wetland was accurate as no data was submitted in the application to confirm this fact. The GWS goes on to state that the wetland does not perform any significant ecological functions. This statement is incorrect as all wetlands provide significant recharge capacity and water purification. The wetland also this wetland provides food (insects and microflora) to fish further downstream and insects for birds that reside on site. The wetland was historically much larger with more retained water

(boating and swimming occurred, Bill Hill personal communication). However, the wetland was significantly drained for some unknown reason.

**Comments:** This particular wetland if considered a PSW would have caused significant operational problems for the applicant as the wetland may have been afforded more protection as a PSW versus an unevaluated wetland. The GWS report also confirms that that this wetland could have been considered part of the PSW because of its proximity to other PSWs (North and east).

### 3.2.3 Wetlands to be destroyed

Wetlands considered man-made and located in the abandoned wayside pit appear to be destined for destruction. It is not clear why 0.2 hectares of wetland are to be destroyed in the extraction process (GWS to GRCA, dated Sept. 17, 2013). There has been no analysis of the potential impact of this extraction on the wetland by the township's consultant, Burnside and Associates. There is also a statement that indicates that the GRCA should verify the limit of the wetland and confirm that wetland removal is in accordance with Section 2.1 of the Provincial Policy Statement and Section 8.4.5 of the GRCA's Wetlands Policy. It is unclear if this confirmation was ever completed.

### 3.2.4 Allen and De Grandis Wetlands and Ponds

There is minimal discussion of the wetlands to the North that comprise a 27 acre PSW and spring-fed ponds that supply the Brydson Creek and Tributary B with recharge water. This Northern area acts as a vital recharge area for the local aquifer and in a Gartner and Lee study (2004) the entire area was reported to be an area that should be protected from any development because of its significant recharge capacity. There is also a natural connection to the Hidden Quarry site in terms of water flow and the natural heritage corridor that exists in this area. A complex relationship between the waterways and the woodlands support a vast variety of animals, birds, amphibians, turtles, and plant species. This natural heritage area should be protected for the long term.

Ducks Unlimited also stated in a letter to the township (Ducks Unlimited, 2015) the importance of these wetlands and ponds as migratory stopovers for waterfowl and provide a staging area in winter.

#### Geese on De Grandis Pond February 2014

The final quarry ponds on the Hidden Quarry site will be directly south of the De Grandis ponds and will also be used as resting spots for migratory birds. There has been no discussion of the migratory pathways of ducks and Canada geese across the site in either the GWS or in the MSH planning report. GWS's comment about these migratory birds not staying over in the rehabilitated quarry ponds the winter in quarry ponds is incorrect as geese are often seen on quarry ponds. The potential for significant contamination of the quarry ponds by waterfowl is real.

**Comments:** It is unclear why there has been no real concern by the MNRF and the MOE for the natural corridor that does exist to the North and these water systems are connected to the quarry site. How can these wetlands not be influenced by quarry operations and why were these wetlands not given more priority in the analysis of the potential negative impacts on water birds, furbearers, bull frogs and deer that inhabit this area? Development is not permitted within a PSW, but it must be conclusively demonstrated that there are no negative impacts on the features or ecological functions on these adjacent wetlands if aggregate extraction is to occur.

Wetlands are critical recharge areas and water purification systems for our drinking water. These wetlands should be afforded more consideration with respect to adaptive management practices. Seventy percent of Ontario's wetlands have been destroyed by development. There is no reference to this fact in the report and no real concern is given to the fragile nature of these wetlands to blasting.

### 3.2.5 Cold Water Stream Designation (Tributary B)

Brydson Creek and Tributary B are two of the few untouched cold water tributaries in South Western Ontario. The GRCA clearly identified Tributary B *that crosses the Hidden Quarry site as an unevaluated cold water stream (Page 16, Par. 2). The stream connects on the south side of Highway #7 to the Brydson Creek and then the Blue Springs Creek.* The Blue Springs Creek originated as a major meltwater channel which served to drain the Wisconsin glacier as it retreated from the Paris, Galt and Moffat moraine positions. Abundant meltwater carrying large crystalline boulders eroded into the bedrock plain removing existing morainal material. Localized deposits of glaciofluvial sands and gravels were left within the valley as meltwater volume decreased in the latter stages of retreat.

The channel of the Blue Springs Creek has an extremely low gradient resulting in the formation of wetlands and accumulation of organic material along its length. Erosion by the meltwater removed surficial material on either side of the stream for some distance resulting in exposure of the soluble Amabel dolomites. Post glacial rainfall and stream activity on this exposed rock has resulted in the development of karst processes as surface waters dissolve the bedrock creating subterranean routes to the creek. Landforms associated with this process include sinkholes, caves and springs (Halton Region & N-S Env., 2005).

A CRC-funded aquatic and ecosystem fish survey in late 2014 found brook trout spawning beds in Brydson Creek, which flows into Blue Springs Creek. Brook Trout are an indicator of excellent habitat and water quality conditions - which includes moderately flowing, small, cold water streams often associated with headwater areas of Grand River tributaries (Schiefer, 2015). A key habitat component is the presence of groundwater upwellings and flowing springs.

### 3.3 Landscape Connectivity Assessment:

Wellington County consultant, Williams and Associates (2013) stated that the woodlands within the site “*contribute to local forest cover, provide linkage to neighboring woodlands, and provide important ecological connection to the nearby natural areas (i.e., Eramosa/Blue Springs Creek corridors).*” and felt that “*...the GWS technical reports provided inadequate discussion as to the importance of the woodlands on the property relative to nearby natural areas, and incorrectly suggested negligible linkages to the Blue Springs Creek to the south.* The GRCA (2013a) also commented that: “*An intermittent creek and floodplain traverses the woodland area and ultimately connects two large natural areas offsite. According to the Significant Wildlife Habitat Technical Guide animal movement corridors exist at different scales and encompass a wide variety of landscape features, including riparian zones, stream and river valleys, wetlands and woodlands. Therefore, a wildlife movement corridor may exist across the subject property.*”

The site’s mature white pine and natural woodlot is well connected to the North and is connected to the South (Blue Springs System) via wetlands marshes and the Tributary B catchment. Highway #7 is a 2 lane highway and Tributary B joins the Brydson Creek via a culvert under the Highway. In addition, this culvert is large enough for a reasonably tall individual to cross to the south side of Highway 7 making it a potential passage way for wildlife.

Recent field work conducted by Dr. Karl Schiefer in November 2014 for the CRC also concluded “That the water course and abutting woodlands of the Hidden Quarry site are well connected to wetlands, woodlands and ponds North of the site (Allen and De Grandis wetlands and woodlands), These large recharge areas are likely the primary source of the groundwater that discharges on the Brydson property in the vicinity of the Brydson Pond”. (Schiefer, 2015).

**Comments:** There is a connection both south and north of the site via woodlands and water systems. However, there have been no ecological wildlife movement studies performed to validate this hypothesis. The GWS report also states that mammals, reptiles and amphibians venturing across the road will become road kill. This statement is not significantly sound and is just an assumption and not fact. Clearly, GWS concedes that this is a corridor as the applicant promises to provide tree planting just before extraction to correct for the loss of this corridor. It is unclear how many small trees will be needed to be planted and how long they will take to grow to provide an adequate corridor for wildlife during extraction.

We propose that connectivity with respect to wildlife movement from North to South can occur via the highway and/or the culvert that is present (about 1.5 m height) under Highway 7 (S. De Grandis, pers. comm.). Culverts and bridges across highways are used by wildlife in many regions of Ontario and Canada. This culvert and its potential role in connectivity was not discussed by GWS. A study should be undertaken to confirm that this culvert or the Highway can provide wildlife movement between the proposed quarry site and the Blue Springs wetland complex.

3.4 Significant Woodlands: Woodlands cover 33.5 ha of the site and therefore are considered as significant (over 10 ha) by Wellington County. In addition, three small mature stands, each less than 2 ha, are near Tributary B in the southeast portion of the site (Page 55, Par. 6). The dominant deciduous and coniferous trees in these stands are over 100 years old. The PPS states that features of a significant woodland include “*an area which is ecologically important in terms of features such as species composition ... functionally important due to its contribution to the broader landscape because of its location, size*”, or ....” “*Natural Heritage Management Policies of the PPS for significant woodland criteria include woodland size, ecological functions (woodland interior habitat, proximity to other woodlands and other habitats, linkages, water protection, woodland diversity)...*” (GWS report Page 53). The woodland (Page GWS report, 60, Sec. 7.2 ii) also lies in close proximity to other woodlands and wetlands north and east of the subject lands. As such, they provide an important linkage to these natural features.

**Comments:** The report incorrectly states that the functions of the woodlands and wetlands will not be affected by the loss of the conifer plantation. Any removal of trees from a natural heritage system will affect the functional properties of the area specifically the ability to prevent flooding and erosion. The GRCA (2013a) commented that GWS should provide details of how the woodlands and wetlands on adjacent lands will not be affected by the loss of the conifer plantation from the subject lands. It is also noteworthy that the Halton Region in 2014 suggest that candidate significant woodlands are located just south of the property, along the south side of Highway 7, within the 120m adjacent lands study area surrounding the proposed Hidden Quarry. There is a lengthy discussion in the GWS report concerning the designation of the woodlands as significant and Greenland. It is clear that the woodland size and its ecological function meet the criteria of a significant woodland. The existence of a corridor for wildlife also attests that any removal of natural habitat would have a significant impact on this ecosystem. In fact, GWS states that on size alone the subject property would qualify as a candidate significant woodland.

### 3.5 Significant Wildlife Habitat:

The GWS Report demonstrates that the following Significant Wildlife habitat is present on the subject property: a) Amphibian Breeding Ponds - comprise a diverse frog community. b) Habitat for a Species of Conservation Concern - breeding and foraging habitat for Snapping Turtle. c) Breeding Habitat for area-sensitive bird species (i.e., Ruffed Grouse, Hairy Woodpecker, Pileated Woodpecker and Ovenbird) d) Winter Habitat for Deer and Wild Turkey and e) Habitat for Species at Risk - Little Brown Myotis, Snapping Turtle, Eastern Wood-Pewee and Monarch Butterfly. Statements in the report such as “*An abundance of Spring Peepers and Wood Frogs were recorded at the on-site cattail marsh and the off-site thicket swamp,*” which “*represent significant wildlife habitat.*” (Page 55, Par. 7) validate this significant wildlife designation. The report confirms that “*the on-site cattail marsh supports a small population of snapping turtles and this area should be considered significant wildlife habitat for this species of conservation concern*”.

In many cases the report provides contradictory statements and tries to diminish the importance of the significant wildlife habitat for other species such as deer. “*Significant seasonal concentration areas are not found on the subject property*” (Page 54, Par. 3)

and “Some potential types of seasonal concentration areas include winter deer yards, colonial bird nesting sites, waterfowl stopover and staging areas, raptor winter feeding and roosting areas, bat and reptile hibernacula.” and “Areas that support species at risk,...” (Page 54, Par. 2). Also, from Par. 3: “Although some deer overwinter on the site and adjacent lands to the north the herd is relatively small and hence MNR has not identified the area as a significant deer yarding area.” However, many residents of the area can confirm that there is a significant deer population in the area as hunters frequently visit the site and kill deer (Allen and De Grandis, personal comm).

**Comments:** Clearly the Hidden Quarry site and adjacent woodlands and wetlands are significant wildlife habitat.

#### 4.0 APPLICABLE LEGISLATION AND LAND USE PLANNING

##### 4.1 GWS official Designation of Land

According to the GWS report, official designation of Land Use for the Hidden Quarry property and surrounding (adjacent) land north and southeast of the site varies considerably, between the agency and jurisdiction involved (see Table1 below and Page 3 & Pages 16-17).

<u>Table 1: Land Use Designation</u>				
<u>Agency/Jurisdiction</u>	<u>6<sup>th</sup> Line (Marshes)</u>	<u>Stream</u>	<u>Rest of Site</u>	<u>Adjacent (N &amp; S)</u>
Guelph-EramosaTwp	Hazard Land (HL)	Hazard Land (HL)	Agricultural	--
Wellington City	Core Greenlands (CG)	Core Greenlands (CG)	Mineral Aggregate	Greenlands and Agricultural
Halton Region	--	—	—	Greenlands A&B
GRCA	Prov Significant Wetlands (PSW)	Unevaluated wetland	--	PSW
GRCA/MNR/ MOEE/Municipalities	Open Space Protection	—	—	Open Space Protection

##### 4.2 Open-Space Protection

The GWS report acknowledges (page 16), that the watercourse and adjacent riparian habitat by the Hidden Quarry site is considered “within the open-space-protection concept” as identified in “The Eramosa River-Blue Springs Linear Corridor Initiative” that was commissioned by the GRCA, MNR, MOEE and municipalities. “Open Space-Protection” refers to lands that are ecologically fragile or highly sensitive to groundwater

contamination. The extensive permeable surficial deposits found in the corridor study area and the potential for these deposits to function as groundwater recharge areas led to this designation. The large forested areas to the north and southeast of the site are also identified as Open Space-Protection and/or Conservation (i.e. natural areas of lesser ecological sensitivity).

**Comments:** The ecological fragility and sensitivity to groundwater contamination of the site is extremely important when considering below the water table excavation. Removal of fractured rock with karst characteristics can lead to increased contamination of natural water systems, wells and even municipal wells.

#### 4.3 Areas of Natural and Scientific Interest and Environmentally Sensitive Areas.

The Blue Springs Creek Wetland (see Figure) is a regionally significant Life Sciences Area of Natural or Scientific Interest (ANSI) and the Blue Springs Creek Valley is an Environmentally Sensitive Area (ESA). Both areas lie within 0.5 km of the Hidden Quarry site (GAIA, 2014). The ESA is located within the provincially significant Eramosa River - Blue Springs Creek wetland complex which extends into Wellington County. Blue Springs Creek is a tributary of the Eramosa River in the Grand River watershed. This area has been designated a regionally significant life science ANSI by the OMNR (Klinkenberg 1984).



Figure 2: Blue Springs Wetland complex ANSI

**Comment:** The GWS report states that “*There are no Areas of Natural or Scientific Interest (ANSI) identified on the subject property or adjacent lands.*” The close proximity of the Blue Springs Creek Wetland and the inclusion of the PSW on the site as a PSW in the Blue Springs Creek wetland complex does not appear to a concern for the MNRF and the GRCA. However, it is unclear why the on-site PSW that is associated with the Blue Springs Wetland has not been afforded the same ANSI designation?

#### 4.4 Greenlands

The official plan underlying designation of the site land is mostly "Greenlands" with smaller areas of "Core Greenlands" and "Prime Agricultural" The report also confirms that “*a section of the site is considered*” Greenlands (see report summary table, section 4.0).

**Comments:** The Greenlands designation is an important designation in terms of environmental protection. It is rarely mentioned in the GWS report and is basically considered irrelevant in the MSH planning report as it pertains to nature capital versus aggregate extraction.

#### 4.5. Natural Heritage Planning

The province defines a natural heritage system as “a system made up of natural heritage features and areas, and linkages intended to provide connectivity (at the regional or site level) and support natural processes which are necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species, and ecosystems”. These systems areas support hydrologic functions, and working landscapes that enable ecological functions to continue. Natural Heritage Systems Planning is premised



Snapping turtle

on identifying Greenways – spatially and functionally interconnected systems of core natural features, corridors and buffers – so that the benefits they provide can be restored, enhanced or protected. In an attempt to protect natural heritage systems and agricultural land. The Greenbelt Plan (2005) was developed and has recently been under review.

**Comments:** The Hidden Quarry site as described in the GWS report (Section 4.1.6) is a natural heritage system that is located less than 0.5 Km from the Greenbelt. It is clear that there is both a natural water linkage that extends many kilometres to the North and South of the site. The system is also a wildlife corridor between the lands south of the site and north of the site that meet a natural heritage system. The authors of the present report suggest that there could be a logical Greenbelt extension that would include the Hidden Quarry site and lands to the North of the property.

#### 4.6 Provincial Policy Statement

According to the Aggregate Resources Act and the Provincial Policy Statement 2.1 and cited in the GWS report (Page 52): “Development is not permitted within significant habitat of endangered and threatened species, significant wetlands, or significant coastal wetlands. Development and site alteration is not permitted on lands adjacent to such features, or within or adjacent to significant woodlands, significant valleylands significant wildlife habitat, and significant areas of natural and scientific interest unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions. Development and site alteration is not permitted within fish habitat except in accordance with provincial and federal requirements...”

The PPS also requires that natural heritage features and areas be protected for the long term. To that end, it sets out some restrictions on development that vary from outright prohibitions to demonstrating that there will be no negative impact on natural features or their ecological functions. In terms of systems-based planning, the PPS also recommends that: “The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage 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.” It goes further to require the maintenance of these linkages to protect, improve or restore the quality and quantity of water.*

**Comments:** The natural heritage features of the site and adjacent wetlands and the Blue Springs Wetlands complex have been negated in the GWS report and the MSH report by the fact that the complex is more than 0.5 km away from the site and a well-accepted monitoring plan and established trigger levels have been developed by Harden Environmental for the Brydson Creek. These triggers or alerts for water level decreases or increases (also contaminants) will signal any negative impacts that may occur due to the quarry operations. Unfortunately, monitoring has not been supported well with respect to the MNRF or the MOE due to recent cutbacks in personnel. Development in this area should not be permitted as monitoring is not 100% effective in protecting significant wetlands, wildlife and water systems.

## 5.0 CRITISMS OF THE SURVEY METHODOLOGIES

The report details the methodologies used in field studies completed in 2011 and 2012. However, the methodologies used by Prime Environmental Consultants Ltd in the 1995-96 field investigation of vegetation and biota of the site are not described. This earlier report was not circulated to the relevant agencies and municipalities as part of the aggregate application. (GWS report Page 5, Sec. 2.2, Par. 1).

The following criticisms of the methodologies by relevant stakeholders are noted in the Table 1 below:

Table 1: Methodologies Questioned by Various Stakeholders	
Halton Region (Burnside, 2015)	Additional information was required regarding the extent of field surveys and species observations of the species documented on adjacent lands in Halton Region.
Burnside and Associates (2015)	Field data collections should have been mapped, especially for species that are sensitive, rare, threatened or endangered, or field data sheets and should be included as an appendix.
OMNR (2014)	The question of surveying for Blanding’s Turtle and its occurrence within 2,000 m of the site was never addressed.
OMNR (2014)	Barn swallows and possible nesting sites within 200 m of the site should be evaluated.

OMNRF (2013b)	Snapping turtle habitat and the temperature of the day when the survey was performed was questioned.
Dr. Husband (University of Guelph, 2014)	Non-vascular plants (e.g., mosses, liverworts) were not surveyed.
GRCA (2013a)	The use of forest inventory reporting standards and codes to describe vegetation communities is of limited use. The apparent lack of vegetation and soils information is especially problematic and provides only a limited understanding of the wetland communities on this site. The checklist of plant species in Appendix B provides information for the entire property and is also of limited use at the individual community level.
GRCA (2013a)	It was recommended that the OMNR's Draft Ecoregion Criteria Schedules be consulted to determine whether or not the woodland provides significant wildlife habitat and the EIS updated accordingly.
Dr. Husband (2014)	The list of bird species was short. Surprisingly absent were such species as Black and White Warbler, Black-Throated Green Warbler, Yellow-Rumped Warbler, Red-Bellied Woodpecker, Yellow-Bellied Sapsucker, Phoebe*, Winter Wren, Dark-Eyed Junco, Green Heron*, Common Merganser, Sora*, Virginia Rail, Common Nighthawk*, Northern Waterthrush, White-Throated Sparrow*, Swamp Sparrow, Pine Siskin, Purple Finch, Red Poll, Barn Swallow (Husband, 2014). Species marked with * were recorded in 1997 but absent in 2011/12 (GWS, 2012).
CRC	GWS chose not to search for birds found in Wellington county during this study because there is either no suitable habitat for them in the area or because the study area is not within their known range within the county. This included: the 'endangered' Barn Owl, Loggerhead Shrike and Henslow's Sparrow, and the 'threatened' Chimney Swift (Page 44, Table 5). Other species of 'special concern' not found on site due to unsuitable or marginal habitat included: Bald Eagle, Black Tern, Short-Eared Owl, Red-Headed Woodpecker, Golden-Winged Warbler, Canada Warbler and

	Yellow-Breasted Chat (Pages 48-51). Red-headed woodpecker is commonly found in the area.
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**Comments:** These are only a select group of criticisms of the methodologies submitted by the various stakeholders. It is unclear whether these requests were completed and there is no documentation available on the GET site concerning these issues.

## 6.0 DETAILED ANALYSIS OF THE SURVEY RESULTS

### 6.0 VEGETATION

#### 6.1 Vegetation Communities:

6. 1.1 Vascular Plant Species: Botanical surveys were conducted on June 29, July 7 and September 7 of 2011. Of the 268 vascular plant species identified in 1997 and 2011, 151 were found in both surveys, 80 were present in 1997 but absent in 2011, and 37 were new in 2011 (Appendix B). This change “...likely reflects changes in plant succession over the past 15 years.” and “... by tree and shrub growth in upland areas since 1997 and related canopy closure.” and differences in water levels of marsh habitats. (GWS report Page 29).

A forest resource inventory was conducted on December 7 and 9, 2010 and on December 7, 2011. Tree species in the overstory included: White Cedar, Scotch pine, White Pine, White Spruce, Sugar Maple, Black Cherry, Poplar and White Ash. Understory trees included: Eastern Hemlock, Eastern White Cedar, Scotch Pine, White Pine, Red Pine, Norway Spruce, White Spruce, American Beech, Basswood, Yellow Birch, Black Cherry, Hawthorn, Ironwood, Little Leaf Linden, Poplar, Balsam Poplar, Manitoba Maple, Silver Maple, Sugar Maple, Red Ash, White Ash. White Elm, Trembling Aspen and Pear. Average age of trees ranged from 30 years in pine plantations to over 150 years in naturally-established stands (GWS report: Pages 21-28: Table 2).

**Comment:** Clearly there is a highly mixed variety of trees and vascular plant species that is present at the site. No non-vascular plants were surveyed. Some of the trees on the site are over 100 years old and deserve to be preserved.

#### 6. 1. 2 Non-Vascular Species

There were no studies conducted on mosses and other non-vascular plants that may be potentially growing in the Hidden Quarry site.

## 7.0 WILDLIFE

## 7.1 Birds

In 2011 and 2012, sixty-two bird species were detected, of which **52 species were considered breeders**. Observations were made on four occasions in 2011 (May 20-June 26) and four in 2012 (April 19-June 7). Ten species recorded in 1997 were absent in 2011, in some cases possibly due to change (maturation) in their habitat over the years (Pages 31-32).



Eastern Wood Pewee

The Bobolink, designated as **threatened both nationally and provincially**, was observed on adjacent agricultural lands northwest of the site, but occasionally moved within 120 m of the site (GWS report, Page 37, Par. 3). Any negative impact on the adjacent lands such as dust and drier soil conditions due to water table drawdowns will influence the nesting patterns of this species.

On-site, the Eastern Wood-Pewee was observed both in the mixed white pine-sugar maple forest adjacent to Highway 7 and the coniferous plantation immediately adjacent to this woodland (GWS report, Page 37, Par. 5). The Eastern Wood-Pewee, was also found within the study area in 2011 and was listed in the report as breeding. Not designated as a species at risk at the time of the GWS report, **it was subsequently designated as a species of 'special concern' both federally and provincially** (COSEWIC, 2012; OMNRF).

The Wood Thrush was found on adjacent land in 2011, i.e., the sugar maple - white ash forest north of the site. It is now **designated as 'threatened' federally** (Government of Canada) and of **'special concern' provincially** (OMNRF).

A CRC funded survey in 2014 documented a Barn Swallow (**COSEWIC - 'threatened'**) foraging on both sides of 6th Line near the open water/cattail wetland and presumably was a breeding individual. *"The Hidden Quarry site offers suitable foraging habitat for Barn Swallows predominately in this area..."* (GAIA, 2014); and the MNR considers the foraging habitats within 200 m of the nest as habitat." (OMNRF, 2014).

Area-Sensitive Species Habitat such as for the Ruffed Grouse, Hairy Woodpecker, Pileated Woodpecker, Veery and Scarlet Tanager which *"...require from 10 to 50 ha of woodland for breeding purposes."* were observed in woodland habitats of the study area (GWS, 2012). The Veery and Scarlet Tanager were observed off-site in the coniferous swamp and the deciduous forest around the Mudge property wetland. (GWS report Page 55, Par. 5). Also recorded on-site, the Red-Breasted Nuthatch, White-Breasted Nuthatch and Savannah Sparrow are considered area-sensitive by OMNR (2000), the Nuthatches requiring a minimum of 10 ha and the Savannah Sparrow 50 ha. The GWS (2012) report authors argue that *"...it is now generally accepted that these species are not area-sensitive."* (Page 37, Par. 8). However, Pravosudov & Grubb (1993) cite a habitat range

of 5-15 ha for the White-Breasted Nuthatch, which is similar to the 0.1-0.2 km<sup>2</sup> (10-20 ha) cited by Roof (1999).

The Ovenbird, also an area-sensitive species (OMNR, 2000), was listed as on-site and breeding in the coniferous plantation which comprises 26.3 ha in total area (GWS, 2012: Page 36, Table 5; Appendix Table C; Table 2). Highest quality Ovenbird habitat requires fragments greater than 20 ha in core area, or at least 80 ha in total woodlot size; forest patches smaller than 5 ha represent poor habitat. (Burke & Nol, 1998).

**Comments:** Many birds require substantial areas of suitable habitat for successful breeding and their populations decline when habitat becomes fragmented and reduced in size. The larger and least fragmented forest stands within a planning area will support the most significant populations of forest-area sensitive species. (OMNR, 2000). The only solution offered by GWS to deal with the presence of these birds on-site is to state that the birds will not be impacted by the loss of the conifer forest? Other alternatives to the bird population is to: a) not blast and extract aggregate during the breeding season, b) retain some original woodland, and c) to rehabilitate the woodland after the completion of extraction in several areas in 15 to 20 years. There is a disturbing assumption made that the birds will be on site breeding for only the first few years until the woodlands are destroyed by extraction and they will then find suitable land elsewhere?

## 7.2 Amphibians

A number of frog species, including Green Frog, Wood Frog, Spring Peeper, Gray Tree Frog, Northern Leopard Frog and the American Toad were found in the four ponds surveyed in 2011 and 2012 (GWS report Pages 38-41). The Northern Leopard Frog is designated a species of 'special concern' federally for Western Boreal/Prairie populations, but not in Ontario (Gov't of Canada). The **Western Chorus Frog (COSEWIC - 'threatened')** inhabited marsh habitat in 1997 but was absent in 2011/12 (Page 41, Sec. 4.5.2, Par. 1). The GWS report actually states that "...all ponds supported a good diversity of common frogs and toads, except for the in-stream pond." (Page 55, Par. 7) and "An abundance of Spring Peepers and Wood Frogs were recorded at the on-site cattail marsh and the off-site thicket swamp," "Given the size and diversity of these frog populations the on-site cattail marsh and the two ponds found on adjacent lands are considered to represent significant wildlife habitat."

**Comments:** There is no solution given by GWS that provides 100% assurance that the marshes and wetlands within the site will be protected enough to save any of these amphibians. In fact, there will be a partial removal of wetland for extraction. The questionable drawdown values in water levels and the change in recharge values for the entire area may adversely affect this habitat.

## 7.3 Reptiles

### 7.3.1 Snakes

Numerous Eastern Garter snakes were found in 2011.

### 7.3.2 Turtles

There was evidence (a carapace) that the cattail marsh at the north-west corner of the JDCL property is inhabited by the Midland Painted Turtle (GWS report, Page 41). **Snapping Turtles (*Chelydra serpentina*), of 'special concern' (COSEWIC)**, both nationally and provincially, were found on the JDCL site in both the 1997 and 2011 wildlife inventories. A small established population is supported by the 1.0 hectare marsh on the site. GWS states clearly that "*The on-site cattail marsh should be considered **significant wildlife habitat** for this species of conservation concern (Snapping Turtle).... "On the subject property the most likely nesting areas are the roadside and gravelly areas along the shoreline of the marsh as well as the areas previously exposed by aggregate extraction."* (GWS report, Page 47, Par. 6). It should be noted that these turtles mature at 20 years and the removal of even one individual can dramatically affect the survival of the population (wildlifepreservation.ca).

**Blanding's Turtle (COSEWIC - 'threatened')** was observed in 1989 where the proposed Hidden Quarry site is located as well as from surrounding one - km squares (GAIA, 2014). An on-site targeted survey was conducted on April 18, 2011, while temperature was between -1 to 0 °C. **This was considered unsuitable to detect either Blanding's Turtles ('threatened') or Spotted Turtles ('endangered') if they were in fact present, by the MNRF.** However, the MNRF considered there to be suitable habitat for both species on site: "MNRF is of the opinion that it is not reasonable to conclude that the species are absent from the site based on the field work that has been conducted to date." (MNRF, 2013b). **Subsequently, upon a change of staff, this opinion changed to "based on the site investigation record (Table 1) the team did a very detailed and robust study of all taxa." and "The Ministry has no further concerns with the Natural Environment Report." (MNRF, 2013c).**

**Comment:** These studies were significantly flawed and there seemed to be a correlation with a sudden change in opinion about these turtle studies because of a new MNRF staff member (Dr. Graham Buck) reviewing the application. These turtles have only been afforded protection by JDCL by protecting the cattail marsh with a 30 m barrier including the installation of a hydraulic barrier. Hunter and Associates have strongly disputed the ability of this barrier to protect the wetland (May 2015 and September 25 2015)

Other suggestions by Burnside and associates was training of aggregate workers to deal with large "snapping" turtles and to construct barriers to prevent them from laying eggs in gravel. Not sure what Workmen's Compensation would say if one of the workers was injured by an aggressive female laying eggs. As there is minimal staff at the MNRF to deal with an issue such as an egg laying female that has strayed into the aggregate site. We can only assume that these turtles will be destroyed. Burnside also note that additional mitigation measures would minimize the potential for adverse effects. There is no description of when these mitigation procedures would come into effect.

## 7.4 Insects

### 7.4.1 Butterflies and Odonata

Twenty-six species of butterfly were observed on the site; most are common in Ontario (GWS report Par.1). However, the **Monarch Butterfly, a species of 'special concern'**

**nationally and provincially and recently considered ‘critically imperiled’ in eastern North America (Jepsen et al., 2015)** was observed in small numbers during two surveys in 2011. Nectar sources, such as *Aster* and *Solidago*, were available on the property. Also, two species of Milkweed (*Asclepias*), although not abundant or widespread, were available as food source for the caterpillar stage in both 1997 and 2011 (GWS report Appendix B). GWS (Page 46, Section 4.5.6) considered the “*Habitat for these species may be designated significant wildlife habitat*” but changed their opinion later in the report to: “*It is concluded that the study area does not provide significant habitat for the monarch. It was observed in small numbers on an irregular basis, its host plants are not abundant on site, there was no evidence of caterpillars on site, and there were no concentrations of the species.*” (GWS report Page 47, Section 4.5.7).

All of the 9 species of Damselflies and 12 Dragonfly species detected on the site in 2011 were classified as very common and secure, or secure.

The **Rusty-patched Bumble Bee (‘endangered’) and the West Virginia White butterfly (‘special concern’)** were not addressed in the report. However, a host plant (*Cardamine diphylla*) for the butterfly was found on the site previously in 1997 but not in 2011 (GWS, 2012). Only three individuals of the bumble bee have been found in Canada in the past 10 years; it is believed to be on the brink of extinction throughout its large range (WPS).

**Comments:** Milkweed would not normally be found on adjacent agricultural lands, since it can be toxic to grazing animals. The Hidden Quarry site provides a potentially important habitat for the Monarch. Habitat and food are available for both adult and larval Monarchs (*Danaus plexippus*), so statements regarding suitability of the habitat are contradictory. Note that the data obtained by GWS seems to be from a single survey specifically for butterflies and odonates on July 27, 2011 and from four occasions in each of 2011 and 2012 (see Section 4.5.1) by extending other wildlife surveys later into the day (GWS, 2012). We question whether these studies were sufficient to accurately determine the distribution and abundance of Monarch adults and caterpillars.

## 7.5 Mammals:

Of the 17 species of mammals found on the site, 15 are very common provincially and locally, or uncommon but secure. The two Brown Bat species (Little and Big) were recorded on the Hidden Quarry site. The Little Brown Myotis was found on-site at the cattail marsh and at the on-site house. It had no formal provincial designation as of the date of the GWS report (August, 2012). Subsequently, however, this species was added to the Ontario endangered species list (facing imminent extinction or extirpation) in January 2013. As such, “... endangered species and their habitat are automatically protected.” and “...receive legal protection” (OMNRF; COSSARO, 2012). **The Little Brown Bat (*Myotis lucifugus*) is declining significantly due to disease.** **Comments:** GWS states that “*There is no suitable hibernation habitat on site and it is likely that local bats hibernate in caves near Rockwood. Maternal roosts occur most commonly in buildings and less frequently in natural habitats, including the deciduous and mixed forest stands which occur close to the on-site abandoned building and will be retained.*”(GWS, 2013a). However, whether hibernation during the winter occurs on-site or nearby seems

immaterial - the site provides habitat for feeding, breeding and raising of young during the rest of the year.

## 7.6 Fish Species

Natural and self-sustaining Brook Trout populations were found in the Brydson Creek south of the site and may have been isolated for a sufficient period of time that they have unique genetic characteristics (Schiefer, 2015). The population was considered very healthy and all age classes of brook trout were caught and released. The concentration of Redds (breeding spots in the gravel base of the creek) were almost 3 times greater than in the Blue Springs Creek.



Brook trout caught and released back to the Brydson Creek

Brook stickleback were also found between the site's culvert discharge and Highway #7 in 1996 (Page 19, Sec. 4.3, Par. 2). Stickleback have also been found on an adjacent area called "the Mudge property" (personal communication, Mr. Mudge) and observed in the upper reaches of Tributary B (personal communication, Ms. Kingshott). One Brook Trout was caught in 2013 in Tributary B near the culvert discharge area (personal communication, Mr. Campbell). Brown trout and rainbow trout have been observed or stocked on the Allen and/or De Grandis property for many years.

**.Comments:** There have been only short duration catch and release studies performed in the Brydson Creek, Tributary B and the Allen and De Grandis ponds and wetlands. To obtain a true estimate of the fish and aquatic systems of the water system at least 5 years of analysis should be performed. Resident aquatic species in these headwater streams are vulnerable to fragmentation due to habitat alteration or resource extraction. Consequently, the preservation of Brook Trout and other species may be important for persistence of the species in the face of an uncertain environmental future.

In addition, the springs associated with the presence of Brook trout are located within 225 m of the Hidden Quarry license boundary, within 350 m of the overburden extraction, and within 425 m of the site plan bedrock extraction limits, (Hunter & Associates, 2015), thereby making it subject to the Department of Fisheries and Oceans (DFO) requirements of monitoring for vibration during blasting (Wright & Hopky, 1998). To date the proponent has not completed a DFO application.

There is only one statement in the GWS report that establishes that there is a small population of Brook Trout in the Brydson Creek. The planning report provides no discussion of the impacts except to describe the fish study and comments by Burnside and Associates. In our opinion that the proposed quarry will not cause a change that is significant enough to result in adverse effects to the resident fish population. They go on

to say that best management practices and standard Erosion and Sediment Control mitigation measures must be followed. It may be too late for the fish if these measures are not in place and monitored.

## 8.0 POTENTIAL IMPACTS AND MITIGATION

### 8.1 Provincially Significant Wetland Complex

The GWS report has claimed that the *“Proposed extraction will not have any direct effect on the on-site PSW.”* (Page 58, Par.1) due to protection by a 30 m buffer of trees and shrubs and *the construction of a hydraulic barrier in the overburden in order to decrease the shallow groundwater flow to the south and thereby offset the downward loss of water.”* The Hunter report (2015) states clearly that the hydraulic barrier has not been proven to stop the downward flow of groundwater through the silt layer of the wetland into the bedrock aquifer. The increase in downward hydraulic gradient if a leak occurs in the barrier will drain the wetland water into the quarry site.

The discussion of the Allen wetland and the impact of bedrock extraction indicates that the zone of influence is within the dolostone aquifer beneath the Allen and Mudge wetlands. There is no conclusive evidence that both wetlands do not receive bedrock ground water. Water levels may drop significantly if there is any contribution of bedrock ground water to these wetlands.

There is a proposed 20 m buffer for the reed canary grass organic meadow marsh located adjacent to the on-site stream *“that will not extend to the limit of the wetland’s catchment area.”* (Page 59, Sec. 7.1.1, Par. 1). Under the township’s bylaw there has to be a 30 m barrier imposed along the full length of the meadow marsh to insure that extraction does not impact this marsh.

The question of the source of water for the De Grandis Farm Ponds which are spring fed and contribute flow to the Allen Wetland and then to Tributary B (the intermittent stream on the JDCL property) **is unanswered**. There has been little consideration given to the statement by the MNRF “Waterbodies, wetlands and other areas (e.g., seeps, recharge/discharge areas) are very important and should be protected wherever possible (MNR, 2000, Natural Heritage System Planning Rule #14).

### 8.2 Significant Woodlands

The GWS report claims that:

- The JDCL site *“... will still have over 10 hectares of well-connected woodlands if the quarry development is approved as proposed.”* (Page 60, Par. 3).
- About 7 ha of interior woodland habitat will be lost. *“The JDCL woodlands lie in close proximity to other woodlands and wetlands located to the north and west of the site.”* and *“...they provide an important linkage to these natural features.”* but this linkage *“will not be significantly affected by the proposed loss of conifer plantation from part of the site”* (Page 60, Par. 4).

- *We conclude that there will be no impact on the Little Brown Myotis as a result of the proposed Hidden Quarry.” and “All potential natural maternal roosts will be retained.” However “In the event some bats are roosting within the existing building, alternative natural roosts will be available to them once the house is removed. Maternal roosts may be used from April ...until September.” It is recommended that the house be removed outside of this window when bats are likely to be absent from the area.” (GWS, 2013a).*
- The statement on Page 62, Par.1 that: *“...only portions of the naturally established woodland have ecological characteristics and functions that warrant protection as shown in Figures 10 and 11.” and “This residual woodland in conjunction with proposed reforestation will still be of sufficient size to justify incorporation into the Greenlands System if the County wishes to do so in the future.”*

**Comments:** When the forested area on the quarry site is reduced to about 10 ha, the area available to area-sensitive bird species (Ruffed Grouse, Hairy Woodpecker, Pileated Woodpecker and Ovenbird) will be marginal at best. The statement that the country will be able to apply for Greenland status again is flawed. As development occurs in the area there will be little chance in 20 years to again regain the land’s Greenlands status.

It is claimed that most of the plants and animals in the site’s woodlands are considered secure. However, four species are not: Snapping Turtle (‘special concern’), Monarch (‘special concern’), the Eastern Wood Pewee (‘special concern’) and the Little Brown Myotis (‘endangered’).

In many areas, Little Brown Myotis inhabit forested areas near water (Havens, 2006), feeding over open water and at the margins of bodies of water and forests (Kuntz & Reichard, 2010). On the proposed quarry site, this species was found at the cattail marsh and at the on-site house. During the day, they roost in trees, buildings, under rocks and in piles of wood (Havens, 2006). They occupy more remote night roosts in confined spaces to cluster together for warmth or to rest and digest between the two or more feeding bouts per night. Foraging range for pregnant bats can exceed 30 ha but this decreases during lactation (Kuntz & Reichard, 2010). Nursery roosts are usually only occupied by females and their young and are similar to day roosts but warmer than ambient temperature (Havens, 2006). **How will this species be adequately protected when the on-site house is torn down, from the loss of any woodland habitat, from dust, and from the noise and air concussion (of quarry operation blasting) which may disturb bat colonies as far away as 1,500 m (Langer, 2001).**

The Eastern Wood-Pewee, which specializes in a food source of small flying insects, may also be adversely affected by the removal of woodlands, since it is mostly associated with the mid-canopy layer of forest clearings and edges of deciduous and mixed forests (COSEWIC 2012). In 2011 it “...was observed both in the mixed white pine-sugar maple forest adjacent to Highway 7 and the coniferous plantation immediately adjacent to this woodland” (GWS, 2012).

Williams and Associates (2013) suggested that current vegetation be retained until just prior to extraction, plus expeditious restoration back to natural cover and enhancing tree/natural vegetation along the 6th Line to mitigate effects on connectivity.

### 8.3 Water Systems

The GWS report states that:

- *“The subject property is not considered important for water protection as it does not represent a sensitive recharge, discharge or headwater area.”* (Page 61, Par.1). In contrast, from Page 58, Sec. 7.0: *“...the County has identified the intermittent stream that flows through the property as a Core Greenlands feature.*
- *Although this stream does not provide fish habitat it nonetheless warrants protection since it provides seasonal flow to a tributary of Blue Springs Creek which supports populations of brook and brown trout.“*

**Comments:** The two statements are contradictory. Consider that: “The Brydson Creek and its Springs are a groundwater ‘resurgence area’ for upgradient Tributary B and C recharge and for a portion of the shallower groundwater flow through the proposed Hidden Quarry site.” (Hunter & Associates, 2015). Quarrying can intersect active groundwater conduits or cause their blockage, with adverse consequences for aquatic communities (Langer, 2001)

It is clear that the MNRF asserts that *“Seeps and springs that are part of a forest or some other natural vegetation community should be assigned greater significance than those that are isolated or in disturbed habitats. Those that are important to other natural heritage features, such as fish habitat, should be considered significant.”* (OMNR, 2000). In fact, in an early letter to GWS the GRCA states that *“Information in this office indicates that there are strong upward gradients on and adjacent to this site. A lowering of the groundwater table on this site could further reduce or eliminate groundwater inputs to these features and could potentially result in the loss of amphibian breeding areas.”* (GRCA, 2013a).

Burnside (2015) stated that *“The existing background studies did not definitively determine if water from the open water area of the quarry will be connected through groundwater to Brydson Creek beyond incidental infiltration.”* and *“The outflow from the quarry will result in a localized increase to surface water temperatures in the Creek. It is not clear how this temperature rise will be controlled by slowly increasing levels of groundwater discharge to the Creek will mitigate that temperature change.*

CRC consultant (Mr. McMartin) states that “Negative changes to hydrology arising from quarry operations may affect the ecological values of the Blue Springs Creek Wetlands ANSI and the Blue Springs Creek Valley ESA, both of which are protected by provincial and regional governments and which lie within 0.5 km of the Hidden Quarry site (GAIA, 2014). Halton Region states “...it is not clear what JDCL’s approach is to finalizing their commitments concerning down gradient property protection. In the absence of an Adaptive Management Plan (AMP) and key references identified on a site plan, it is not

clear how off-site monitoring and implementation matters are to be applied and fulfilled.” (Halton, 2015)

**Comments:** These are contradictory statements about the impact of the quarry on the intermittent stream and groundwater recharge. It is difficult to comprehend how there is only downward movement of water from the stream and yet no lateral infiltration into the overburden. Once quarrying begins, how can a stream on a 40 m to 60 m - wide ‘causeway’ will perform normally once the surrounding surface layer, its aquitard and the bedrock is blasted and removed? Removing the protective layer of the overburden and aquifer of the site may cause pollution of the groundwater and groundwater flow patterns may change due to blasting. (Ekmekci, 1993; Langer, 2001).

#### 8.4 Significant Wildlife Habitat

The report states that:

*“...proposed quarry development should have no impact on the hydroperiod of the off-site PSWs and hence no effect on amphibian breeding. “ and “...no effect on snapping turtle aquatic or breeding habitat.”(Page 62, Par. 2).*

**Comments:** Burnside asserts that *“Snapping Turtle habitat may be considered Significant Wildlife Habitat and should be discussed in detail.”* Additional mitigation measures to minimize the potential for adverse impacts on Snapping Turtles include *“...exclusion fencing, best management practices, worker education programs and pre-construction SAR surveys.”* (Burnside, 2015). Again, it is not a mitigation question, since it should be a conservation necessity for area. It is noteworthy that Burnside also states that *“Development and site alteration are also not permitted within or adjacent to Significant Wildlife Habitat unless it can be demonstrated that no negative effects will result.”* (Burnside, 2013).

#### 8.5 Sediment and Erosion Control, Dust Effects

The GWS report states:

- *“With respect to dust control, the notes on the ARA Site Plans are considered sufficient to ensure that residual woodland and adjacent woodlands are effectively protected from dust damage to their foliage”* (Page 62, Par. 2).

**Comments:** What assurance is there for the protection of on-site biota, wetland, nearby agricultural crops, animals and residents from the dust generated by operations on the site? Contamination may well make some of the crops unsaleable and cause illness of animals and people which have no choice but to inhale the fine particles.

#### 8.6 Environmental Enhancement - Progressive and Final Rehabilitation Plan

The issue of the final rehabilitation plan and accumulative impacts assessment is important to all stakeholders. There has been extensive review of the rehabilitation plans. However the fact remains that this site will become an area that is dominated by two quarry lakes and not returned to significant wetland and woodland.

GWS (2014) states: *“Habitat conditions will generally be unfavorable to heavy waterfowl use of the area, particularly during the spring and summer.” “The ponds will be about 22 m deep and aquatic emergent and submergent vegetation will therefore be limited to the relatively narrow littoral zone where water depths are less than 2 m. As a result, there will not be an abundance of food available that is attractive to waterfowl. The wetlands that may develop in the shallow areas will be below the minimum size necessary to support waterfowl broods. Dabbling ducks typically feed in the top 20 cm of the water column, so there will be limited areas that are suitable for foraging for them. Most diving ducks can dive to depths of only about 5 m, far less than the 22 m depth of the quarry ponds, so they will not be able to access food on the pond’s substrate. Given the above considerations, waterfowl nesting and brood rearing in the quarry during the spring and summer months should be minimal. The greatest waterfowl use of the area will likely occur during the fall migration although the number of birds should still be relatively low.”*(GWS, 2014).

**Comments:** What is the net benefit of the ponds to be created as a result of the quarrying operation? The proposed habitat rehabilitation plan appears to create an environment which is poorer than the diverse habitats destroyed. The premise that proposed habitat rehabilitation and protection will ultimately improve or restore environmental health is questionable. Dr Brian Husband summarizes the impact of this operation on the current habitat well: *“Increasing the number of habitat forms (cliffs, lakes, etc.) may increase diversity, but diversity alone is not a useful measure given that these habitats are historically not associated with this site. What matters is the diversity AND function of the existing habitats that are being placed at risk. To assume that rehabilitation will leave the site better than it began also ignores the complexity of habitat rehabilitation and the large number of population restoration failures that have occurred in the past”* (Husband, 2014).

## 9.0 SUMMARY & CONCLUSIONS OF THIS REVIEW

This Level II Natural Environment Technical Report completed in support of the JDCL Hidden Quarry proposal contains serious flaws with respect to its accuracy in defining the impact on the natural features of a significant land corridor. This dramatic change in land planning will impact many aspects of the local environment and potentially the Blue Springs Wetland Complex. The reliance on the Hydrogeology report by Harden Environmental has complicated the final conclusion of the GWS report. The general hydrogeology of the area has been challenged by Hunter and Associates and leaves unanswered questions pertaining to the actual changes in hydrogeological conditions that will occur at the site and the adjacent lands. The impacts to both ground water and surface flow to wetlands, the PSW on site, the Allen wetland, De Grandis ponds and in the Blue Springs Wetland complex still remain unknown.

Wildlife on the property and adjacent lands has not been afforded the recognition outlined in provincial and municipal policies related to wildlife conservation. Two species of ‘special concern’ were found during the 2011-2012 field surveys - the Monarch Butterfly and the Snapping Turtle. The GWS report did not consider the Monarch to be present in sufficient numbers to be important. However, what is the definition of significant numbers? Subsequent to the date of the GWS report, the Eastern Wood-Pewee, and the

Little Brown Myotis (Bat) have been designated federally and provincially as 'special concern' and 'endangered', respectively.

Although the report assures the reader that Snapping Turtle wetland habitat will be adequately protected by a 30 m buffer and hydraulic barrier during the quarrying operation, this species' habitat in the PSW at the northwest corner of the JDCL property is adjacent to the area that will be blasted and extracted first (Phase 1). Should the wetland suddenly be drained as a result of the collapse of the hydraulic barrier (of dubious merit) due to the numerous blasting shockwaves, then habitat for the Snapping Turtle and other wetland species will be severely impacted or destroyed. Even without sudden drainage, the shockwaves from blasting and the dust and noise from the rock processing operation will have a detrimental impact on the turtles' breeding, nesting and foraging.

Furthermore, how will the populations of the Eastern Wood-Pewee which mainly inhabits the mid-canopy layer of forest clearings and edges of deciduous and mixed forests, and of the Little Brown Myotis, which in part inhabits forested areas near water, be protected from the dust and noise, the loss of woodland habitat and damage to the on-site wetland? The report states that the site does not provide significant habitat for the Monarch Butterfly which was observed on-site. Habitat and food were nevertheless available for both adults and caterpillars. Was the surveillance sufficient to accurately determine the species' distribution and abundance throughout their stay in the area?

Reduction of forest cover to about 10 ha from the existing 33.5 ha will very likely have an adverse effect on the Ruffed Grouse, Hairy Woodpecker, Pileated Woodpecker and Ovenbird, area-sensitive bird species requiring from 10 to 50 ha or more of woodland for breeding.

There are a number of locations in the body of the report that are or appear to be contradicted by statements elsewhere. These are related to: areas of natural or scientific interest, environmentally sensitive areas, significant seasonal concentration areas, significant wildlife habitat, area-sensitive species habitat, and the importance of the JDCL site and stream to water flow and recharge in surrounding lands.

The JDCL property has essentially been excised and treated in geographic isolation by the various agency-mandated studies that have attempted to support the proposal and thereby assure agencies, municipalities and citizens that the quarrying operation is safe and will not have any negative effects on surrounding areas and uses. In essence, assuming that one can treat the site in isolation. However, this 38.08 hectare property, its surface environment and biota, the on-site stream, the surface layers, and the groundwater flowing beneath the site in the bedrock should really be treated as an important link or continuity between the lands and PSWs to the north and west, and the Eramosa River-Blue Springs provincially significant wetland complex and the coldwater fish habitat to the south and east. Destruction or contamination of this connection by blasting and quarrying would be very damaging to the environment and to citizens dependent on the groundwater. Possibly irreversible.

Failure of government agencies charged with protection of the environment for Ontario citizens to recognize obvious threats - even when the concerns and issues have been clearly presented to them - is very troubling.

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## SPECIES AT RISK ACT

In cases where there is a risk of a contravention of SARA, mining operators would need to apply for a SARA permit.

Permit applications are considered on a case-by-case basis. A permit may only be issued where:

- the activity is scientific research relating to the conservation of the species and conducted by qualified persons;
- the activity benefits the species or is required to enhance its chance of survival in the wild; or
- affecting the species is incidental to the carrying out of the activity.

In addition, permits may also only be issued where:

- all reasonable alternatives to the activity that would reduce the impact on the species have been considered and the best solution has been adopted;
- all feasible measures will be taken to minimize the impact of the activity on the species or its critical habitat or the residences of its individuals; and
- the activity will not jeopardize the survival or recovery of the
- Species