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MEMORANDUM

TO: **Don Drackley, IBI Group**

FROM: **Arnie Fausto**

CC: **Grant Kauffman, LGL Limited**

DATE: **March 7, 2007**

RE: **2004 Salamanders Surveys**
Hidden Valley ESPA
South Kitchener Transportation Corridor Study

The following provides a summary of field activities undertaken during the 2004 field season with specific reference to salamander studies.

Background

The Jefferson salamander is a member of the mole salamander family which are burrowers, spending most of their lives underground. The Jefferson salamander is seldom seen except during the early spring when it migrates to ponds during the breeding season of March and April. The Jefferson salamander is a provincially and nationally threatened species regulated under Schedule 1 of the Canada *Species At Risk Act* (SARA) and the Ontario *Fish and Wildlife Conservation Act*.

With regards to the potential for the presence of Jefferson salamander at Hidden Valley ESPA, the past literature confirms that a triploid female (Jefferson salamander X blue spotted salamander hybrid) is present from a collection record in 1979 and its identity during that time was confirmed by Dr. James T. Bogart from the University of Guelph (Dr. Bogart is recognized as an expert on Jefferson salamanders in Canada and is Chair of the Jefferson Salamanders Recovery Team). External morphology and confirmatory testing indicated that this tiploid was likely a Tremblay's salamander (*Ambystoma tremblayi).* Hybrids, both larvae and adults, can be difficult to distinguish from the parent species. Adults live in the soil or in leaf litter on the forest floor, and are best seen in early spring when they move to woodland ponds to breed.

Study Methodology

To confirm the historical record for what potentially could be Jefferson salamander, LGL conducted an intensive survey throughout March and April 2004. Accordingly, LGL reviewed information provided through past surveys (Ecologistics 1979) and LGL's field program consisted of reviewing past information (March 9, 2004) to determine the locations of potential breeding ponds, and this effort was followed by a daytime vernal pool survey on March 10, 2004. The daytime vernal pool surveys revealed that all vernal pools in the Hidden Valley area were in frozen condition. Locations of all potential vernal pools and breeding ponds were recorded using GPS and noted on ortho-air photography so that field crews would be very familiar with their locations, as the actual field surveys would be performed during the evening hours.

LGL field personnel who conducted surveys were Allison Featherstone, B.Sc. and Wayne King, B.Sc., biologists with over 40 years of combined wildlife biology experience.

Prior to conducting actual nightime surveys, LGL field crews kept a close watch on weather events, and antecedent weather conditions, especially if forecasts of warm rains are anticipated during the months of March and April. Rain was experienced during Friday March 5, 2004, but a field check by LGL staff on Saturday March 6, 2004 confirmed that vernal pools were under frozen conditions. In addition to keeping a close watch on the weather conditions, LGL has also corresponded with other researchers and MNR staff from other locations in other to determine if Jefferson salamander movements were observed at other sites.

Field work conducted during March 2004 consisted of surveying for adult salamanders in Hidden Valley ponds and vernal pools at night (where they can be seen in the water column with the aid of flashlights and spotlights). Members of the Jefferson salamander complex in general can be identified in the field (i.e., pures and polyploids).

Field work conducted in April 2004 consisted of intensive evening surveys, daytime surveys, and collection of a few samples of egg masses. Egg masses were counted in the field (Jefferson salamander complex egg masses can usually be separated in the field from spotted salamander egg masses) and their presence demonstrates the use of ponds for breeding. Egg masses were collected and taken to the University of Guelph lab for further analysis.

Evening Salamander Surveys

Dates when visits to Hidden Valley ponds and vernal pool in March 2004 are listed below:

Date (2004)	Description of Work
March 10	Daytime surveys to mark locations of all vernal pools and potential amphibian habitat based on habitat criteria from literature sources
March 11	Daytime field check of all ponds and vernal pools
March 15	Evening Salamander Surveys of all ponds and vernal pools
March 23	Evening Salamander Surveys of all ponds and vernal pools
March 24	Evening Salamander Surveys of all ponds and vernal pools
March 25	Evening Salamander Surveys of all ponds and vernal pools
March 26	Evening Salamander Surveys of all ponds and vernal pools
March 29	Evening Salamander Surveys of all ponds and vernal pools
March 30	Evening Salamander Surveys of all ponds and vernal pools
March 31	Evening Salamander Surveys of all ponds and vernal pools
April 1	Evening Salamander Surveys of all ponds and vernal pools
April 6	Evening Salamander Surveys of all ponds and vernal pools

Note: Yellow highlights indicate evenings when weather conditions were most favourable for salamander detection based on weather forecasts (ie. Rain and warm evenings).

All evening surveys took place between the hours of 7:00 P.M and 2:00 A.M.

Results of the evening surveys during March and April 2004 confirmed the presence of the following species within the study area:

- yellow spotted salamander (*Ambystoma maculatum)*
- red back and lead back salamander (*Plethodon cinereus*)
- red spotted newt (*Notophthalmus viridiscens*)

The salamanders documented were in the most eastern pond that has inflow from the wetland area, at the base of the esker ridge. It is a permanent pond, and may have groundwater input. No fish were documented in any of the watercourses or water bodies of the ESPA #27 which also enhances the breeding survival of amphibian species.

Several other vernal pools were also documented in the deciduous forest communities (both along the esker ridge and the northern portion adjacent to Highway 8). These pools were confirmed to be not active as amphibian breeding ponds during 2004, and most dried up early in April and May 2004 which would prevent the development of any amphibian species that may have used them.

All vernal pools and breeding ponds observed in the study are located within the core area of the Hidden Valley ESPA and natural lands.

Egg Mass Surveys

Detailed egg mass surveys of Hidden Valley vernal pools and ponds were conducted during April 15 and April 30, 2004. Eggs from yellow spotted salamanders and blue spotted salamanders *(Ambystoma laterale)* were noted and identified. Samples from the blue spotted salamanders were submitted to Dr. James Bogart for further analysis and testing. Dr. Bogart indicated that to the best of his knowledge, this was the first known record for blue spotted salamanders in the area.

Analysis of egg samples by Dr. Bogart indicated that the eggs are non viable and so enzymes and DNA extraction could not be done. However, Dr. Bogart stated that he was 95% sure that the eggs are those of blue spotted salamanders (*A. laterale*) and not Jefferson salamanders (J. Bogart, *pers. comm.*.). He also stated that there is a very slim (5%) chance that they are LLJ hybrids (*A. tremblayi*), although this is highly unlikely. Dr. Bogart stated that based on these findings, there is likely no Jefferson's salamanders in the study area.

Summary and Concluding Comments

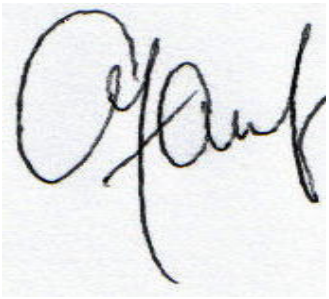
The previous findings made by Ecologistics Limited in 1979 did not confirm the presence of pure Jefferson salamanders in Hidden Valley ESPA. Intensive surveys conducted by LGL Limited in 2004 confirms the presence of other mole salamanders in Hidden Valley, such as spotted salamanders (*A. maculatum*) and blue spotted salamanders (*A. laterale*), however, there continues to be no conclusive evidence of pure Jefferson salamanders inhabiting this area.

LGL's surveys commenced on March 10, 2004 at which time, the ponds within Hidden Valley were frozen, as shown in the attached photographs. During the next few weeks, intensive surveys were completed right to the end of March, including the week following March 26th, which was widely believed to be the week with the largest migration of Jefferson and spotted salamanders in Southern Ontario (Scott Sampson, Ontario Vernal Pools Association pers.comm. to Allison Featherstone, April 5, 2004). Egg mass surveys in April also confirms the presence of spotted salamanders (*A. maculatum*) and blue spotted salamanders (*A. laterale*), but there were no Jefferson salamanders noted. These findings are supported by observations made by Dr. Bogart.

Based on the information provided above, it is our professional opinion that surveys were conducted at the appropriate time and covered the period from frozen to a complete thaw of all vernal pools. During this period, searches were performed by qualified wildlife personnel from LGL Limited using accepted survey protocols. The identification of other mole salamander species during these surveys supports the conclusion that the surveys were valid and thorough. Despite this intensive effort, the presence of Jefferson salamanders was not confirmed.
I trust that the above information provides sufficient background for your use.
Should you require additional information, please let me know.

Yours truly,

LGL Limited environmental research associates



J. Arnel Fausto, M.Sc
Senior Ecologist
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Vernal Pool Conditions as Noted in March 10, 2004 in Hidden Valley ESPA


Pond 2A


Pond 4


Pool 5

Panoramic view of Pond 1b

Pond 3