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April 24, 007

file number: 46159-00006

DELIVERED BY E-MAIL AND REGULAR MAIL

Templeman Menninga LLP
205 Dundas Street East, Suite 200
P.O. Box 234
Belleville, Ontario K8N 1A1

Attention: Wayne Fairbrother

Dear Mr. Fairbrother:

Re: Agency Comments on Part A Report - CBSES

Please find attached a copy of the Agency Comments on the revised Part A Report for the Comprehensive Broader Scale Environmental Study.

You will recall that the timeline filed as Exhibit 7 at the October 11, 2006 Pre-hearing contemplated that these comments would be provided by January 15, 2007.

You will recall that during our conference call among counsel on February 20, 2007 it was agreed that in order for these comments to be as productive as possible it was appropriate for our respective consultants to meet along with representatives of the CCC to review the comments in draft.

This meeting took place on February 28, 2007. As is set out in the attached letter, there has continued to be discussions between our respective consultants. We believe that this process has been productive although it is not in keeping with the milestones document.

The Town continues to be committed to meeting the milestones in order to ensure that this matter moves toward the scheduled hearing commencement date of September 29, 2008.

Yours very truly,

DAVIS & COMPANY LLP

A handwritten signature in black ink, appearing to read 'C. Barnett', written over a horizontal line.

Per:
Chris M. Barnett
CMB/mqs

Encl.

cc: Dan Kennaley, Town of Caledon
Todd Salter, Town of Caledon
Hazel Breton, Credit Valley Conservation
Stephen Garrod, Garrod Pickfield LLP
Ron Webb, Davis Webb Schulze & Moon LLP
John Buhlman, WeirFoulds LLP



TOWN HALL

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April 20, 2007

To: Chris Barnett
Davis & Company
1 First Canadian Place, Suite 5300
P.O. Box 367, 100 King Street West
Toronto, Ontario M5X 1E2

Re: **Comprehensive Broader Scale Environmental Study, Caledon Aggregate Resource Area 9-A
Revised Draft Part A Report, Volumes 1 & 2, dated November 2006**

The Town of Caledon, Region of Peel and Credit Valley Conservation have completed a review of the above-noted documents and wish to provide the following comments. These comments have taken into consideration feed-back the agencies have received from JDCL regarding the draft agency comments that were provided on a confidential, without prejudice basis on February 28, 2007. It should be noted that additional discussions have occurred between JDCL team members and agency staff since the release of the draft agency comments. The results of these additional discussions are not reflected in this letter except to the extent that they have warranted revisions to the February 28 draft agency comments.

MUNICIPAL COMMENTS:

General Comments

1. Social impact

As noted in previous correspondence, this remains an area of fundamental disagreement. Section 4-1 of the revised draft Part A CBSES report discusses "Existing Land Uses and Social Conditions" but does not acknowledge/describe the "interactions between the environmental issues subject of the CBSES and social conditions" (excerpt from letter from James Parkin to Templeman Meninga, July 29, 2004). Furthermore, the report does not discuss or identify how potential impacts related to these interactions will be dealt with. It is clear from the community input to date that there are serious public concerns in this regard. To the extent that these concerns are relevant to the broader work being undertaken through the CBSES, they need to be addressed by the Study.

2. Resource Area 9-A Delineation

The delineation of Resource Area 9-A throughout the Report does not correctly reflect Schedule L of the Caledon Official Plan. In particular, a wetland area in the north-central section of Resource Area 9-A between Shaws Creek Road and Winston Churchill Boulevard was excluded from CHPMARA in accordance with the OPA 124/161 settlement agreement. In addition, the boundary of the Resource Area does not appear to accurately correspond to the alignment of the east branch of Rogers Creek north of Old Base Line Road. Unfortunately, this error was not caught in the agency review of the first draft Part A Report. These errors should not be carried forward into Parts B and C and should be corrected in the final version of the Part A Report. The Town of Caledon has provided JDCL with a digital file of the boundary of Resource Area 9-A to assist in this regard.

Also, as discussed on February 28, 2007, the Town has agreed to allow the incorrect version of Resource Area 9-A to be used as the basis for the Part B modeling on the advice from CVC that this will not affect the outcome of the modeling exercise.

This agreement should not be construed as agreement by the Town of Caledon that the incorrect version can be used for any other purpose (e.g. for the refinement of municipal constraints) or that it has any status.

3. Study/Focus Area

The discussion on the Study Area and "Focus Area" (Section 2.2) and their respective delineations on Figure 2.2 (and other Figures) do not appear to take into account the functional connections to portions of Third and Fourth Creeks identified later in the Report (i.e.: as noted on Page 5-3). Given that one of the stated purposes of the Part A Report is to refine the boundaries of the Study Area (and by extension, the proposed Focus Area) based on functional interrelationships, it would seem appropriate and necessary to identify a refined Study Area and Focus Area in the Part A Report, which will then be carried forward into the Part B & C Reports.

4. Section 4.7 missing reference to key Caledon OP policies

The discussion of the Town of Caledon Official Plan starting on page 4-23 only addresses existing land use designations and does not recognize or discuss other major applicable policy sections, such as the Ecosystem Framework and Performance Measures set out in Section 3.1 and the Aggregate Resource Management policies set out in Section 5.11. This comment was made through the previous agency submission on the June 2005 version of the Part A Report. This is still considered an omission that needs to be rectified.

5. Municipal Constraints section missing

Following the release of the June 2005 draft of the Part A Report, a great deal of discussion went into the agency concerns surrounding the report's approach to refining municipal constraints and identification of a "Natural Heritage System". These discussions resulted in a revised approach being agreed to, as documented in Appendix G (dated June 16, 2006) to the CBSES Workplan (most recent revision date January 2007). This section is now completely missing from the revised draft Part A Report and has been replaced by a note (page 11-51) indicating that this section is being revised as per the MHBC proposal and will be included in the Part B or C Report. Given that it has been over six months since the revised approach was agreed to, and that the agencies have been clear from the outset that this is an important component of the Part A Report, this is considered a significant omission. The agencies are not agreeable to waiting until some ill-defined point in Part B or C to receive this section and would request that it be provided immediately so that it can be reviewed by the agencies in the context of the draft Part A Report, and considered as the study moves through Parts B and C. Subsequent to the February 28, 2007 CBSES meeting, CVC has advised that they did not agree that the Municipal Constraints section could be provided later in the study process.

Specific Comments

Section 1 – Introduction and Background

Section 1.2, page 1-6: The second paragraph refers to this as the "Final Part A Report". This conflicts with later statements that this is still a draft report and won't be finalized until the completion of the study (which is the understanding of the agencies).

Sections 1.2 & 1.3: There are references on pages 1-7 - 1.9 to Appendices A and B. Staff could not locate these Appendices. Further, a revised version of the Work Plan was provided to the agencies on January 15, 2007. When the Part A Report is finalized this section will need to be updated to refer to the most current version of the CBSES Work Plan and include the referenced appendices.

Section 2 – Background and Setting

Section 2.1: This section makes numerous references to subwatersheds and subwatershed ecosystems. Given past discussions regarding the scale of the study, perhaps it would be appropriate to change these references to “subcatchments”, or “subwatersheds and their related subcatchment areas”.

Section 3 – Characterization Analysis

Section 3.3, page 3-7: The statement that the agencies are in agreement that all data gaps have been identified and addressed appears questionable in light of CVC's technical comments, and requires further discussion at a minimum.

Section 4 – Overview of Study Area and Land Use Policy Analysis

Section 4.4, page 4-14, second full paragraph: This paragraph is incorrect and should be corrected, or removed entirely.

Section 4.7, page 4-23, 1st paragraph: Where does the phrase “unconstrained crushed stone resources” come from and what is it intended to mean in this context?

Section 4.8.2, page 4-27: The agencies have previously taken issue with the use of language referring to aggregate extraction as being “the most likely form of land use change within the Study Area”, and alternative wording has been negotiated in the context of the CBSES Work Plan. In this section, more acceptable wording could be along the lines of “Resource Area 9-A has been identified as an area of high potential mineral aggregate resources in both the Peel Regional and Caledon Official Plan.”

Section 4.8.2, page 4-27: The second paragraph makes reference to estate residential developments requiring an Official Plan Amendment. Agency staff has the understanding that the Greenbelt Plan prohibits estate residential development outside of currently designated settlement areas. Unless this interpretation can be demonstrated to be incorrect, this statement should be corrected. In addition, the Caledon and Peel Official Plans prohibit new estate residential developments outside of Settlement Areas and the Palgrave Estate Residential Community.

Figure 4.2 should be showing Terra Cotta, Cheltenham, Belfountain and Inglewood as Minor Urban Centres.

Section 5 – Hydrologic Characterization

Section 5.2, page 5-2, last paragraph: The agencies do not understand the reference to “areas regulated by the Town of Erin, Town of Halton Hills and Town of Caledon”. Is this referring to areas regulated by the CVC under the new “generic regulations” (the list of features seems to imply this)? This paragraph and related Figure 5.2 must be clarified.

Section 11 – Wetland and Terrestrial Ecology Characterization

Section 11.1, first paragraph: The last sentence of this paragraph makes reference to a “Natural Heritage System”. As per previous discussions on this issue, and as noted under General Comment # 5 above, this language should be changed to reflect the agreed-upon approach contained in Appendix G to the revised CBSES Work Plan. The same comment applies to the third bullet point on the list on page 11-3.

Section 11 Outline, page 11-4: Shouldn't this outline (and the analysis in the body of Section 11) include reference to “Significant Wildlife Habitat” in accordance with the PPS 2005? Further to this point, there is reference at the top of page 11-30 to a section dealing with Significant Wildlife Habitat (second bullet point), but a section with this heading could not be found.

Section 11.3: In general, it is unclear where the discussion and analysis regarding Provincially Significant Wetlands, and recent re-evaluations and complexing, leads. Have additional wetlands areas been re-evaluated and added to the Provincially Significant Wetland complexes within the Study Area, and if yes, how are these depicted on Figure 11.1? This is an important question, as PSW's are an accepted exclusionary constraint with respect to aggregate extraction.

Section 11.3.2, page 11-13: Shouldn't these “Other Wetlands” be evaluated through the CBSES to determine their status as potential constraints to aggregate extraction and other land uses. This could have an important bearing on Parts B and C of the study.

Note: With respect to the two points above, CVC has provided the following supplemental comment:

“The mapping of evaluated wetlands is the most recent available. Other wetland evaluations have taken place but will likely take considerable time for CVC to process and receive approval from MNR. Other wetlands within the CBSES study area should be treated as if they are a part of a PSW.”

Glossary: There are numerous definitions that do not have a source noted. The only definitions attributed to the Town of Caledon relate to “woodlands”. It is unclear why these definitions have been incorporated into the CBSES and not all other relevant Town of Caledon definitions. It is recommended the Town of Caledon woodland definitions be removed.

Section 12 – Integrated Summary and Sensitivity Analysis

Section 12.1.2.3, page 12-5, final paragraph: The first sentence of this paragraph could be interpreted to mean that developers/proponents have no roles or responsibilities with respect to implementing the AEM Plan, which in the agencies' view, is incorrect. It is recommended that wording along the following lines be added to the end of the sentence: “..and through site specific development reviews/approvals.”

Section 12.1.3, page 12-6, first paragraph: Again language is being used here that the agencies have previously taken issue with (refer to the first comment above on Section 4.8.2). Alternative wording is requested here.

Section 12.3.6, page 12-40: Same wording concern as per comment on Sections 12.1.3 and 4.8.2.

Section 12, Glossary: Same comments as per the Glossary for Section 11.

CVC COMMENTS:

In general, CVC appreciates the level of field work and assessments that were completed on the Part A report by the JDCL team. We believe that the collaboration that occurred throughout the process on the technical aspects have resulted in a report that is, to a large degree, technically sound. However, there are some gaps that need to be addressed which are essential to completing the report and meeting the intent of Part A of the CBSES process. The following comments have been divided into "General" and "Specific". We have provided specific direction on what we are requesting which has given rise to a lengthy response. We trust that this is helpful and it is not intended to be frustrating to the authors of the Part A report. As always we are willing to meet and resolve the issues and concerns raised in order to work towards a resolution.

General Comments

The manner in which the tables, figures and data are placed in the document makes it very difficult to review and interpret results of the study. Figures and tables should be incorporated into the text that is discussing the results or an issue. Data should be kept in the Appendices, and summarized in the text.

There is a tendency in the tone of the report to emphasize the anthropogenic impacts as opposed to highlighting the "naturalness" of the systems present in the study area. In addition, comparisons of features and functions should be assessed on the merits of what they add to the system within the study area and not be compared to provincially significant systems (e.g. comparisons to the Niagara Escarpment).

Fluvial Geomorphology

This is the same version as the draft June 2005 version which was found to be lacking in detail, specifically the detailed data collection and analysis to determine accurate reach characteristics and sensitivities which will be used in Part B – Impact Assessments.

This section does not reflect the revised work plan that was agreed upon in August 2006 Meeting -Beebe/Thomas/MacMillan – August 23, 2006) or the expanded field site investigation locations which John Beebe selected.

This section of the report would benefit from a review by the author of the hydrogeology sections of the report (to pick up on baseflow transfers between subcatchments). Terminology used should be consistent with other sections of the report (reference to "regions" as opposed to "systems").

It is unacceptable to have Section 8.7 submitted in the final draft of the Report as stated on page 8-11. Please provide an acceptable timeline that conforms to the process agreed to.

Fisheries

Although it is true an assessment focused locally around the Resource Area will "generally" address concerns further away it should be noted some impacts may only become evident further from the Resource Area. These would include interactions with deeper groundwater that are connected to surface waters further away and cumulative effects, such as impacts on first order streams that are not "direct habitat", but cumulatively reach thresholds in downstream orders.

The attempt to model and predict habitat potential is appreciated and can be further utilized, particularly in predicting coolwater communities. The 3 layers within the groundwater model for fisheries should be further discussed in isolation or weighted to achieve a "best fit" in extrapolating from existing communities (i.e. Bedrock Potential layer least predictive, Hydrogeologic Potential best layer). In the end, this information should be used to produce a new map of Potential Fish

Communities to summarize reach sensitivity and management implications. Other observation and influences related to wetland, piezometer data, groundwater-surface water flux should be further integrated.

CVC would be willing to meet to work through the main issues including the potential extent of coolwater fish communities and the sensitivity of various "specialized habitats".

CVC generally agrees with the assessment of manmade ponds and supports management and restoration opportunities. Natural limitations, such as threshold flows in intermittent channels and the isolation of intervening permanent reaches should be prominent in determining sensitivities. Likewise, natural barriers on steep escarpment gradients can be easily estimated using contours and shale locations from maps. In reviewing Figure 5.8 it is clear that all (10?) permanent reaches become isolated due to intermittent conditions regardless of pond barriers. Except for Rogers Main and South Branch these isolated reaches are less than 1 km suggesting further sensitivity that should be recognized.

Additional discussion regarding headwater ecology (i.e. River Continuum Concept and contributing functions of fishless waters and wetlands), coolwater species biology and habitats and the ecological sensitivity of isolated communities are necessary to characterize the fishery and for future analysis and management.

Available biomass results need to be presented to characterize productivity and stream health. Spawning surveys along the main river also need to be mapped and discussed re: deeper groundwater flow paths they depend on.

CVC notes conflicting statements but a pervasive idea of "no evidence of wetlands contributing downstream flow" (p10-15 i) throughout the document. CVC expects the integration of aquatic data to include a better analysis of wetland functions. A good example would be refining the habitat potential / sensitivity map using mapped wetlands and discharge areas for permanent, cool and coldwater reaches. Throughout the report references to groundwater are made that influence flows and fish habitat that are perhaps intended to reflect or correlate with wetland contributions. Other wetland functions must be recognized as related to the storage and slow release of surface waters to streams. These waters, unlike groundwater may not be characteristically cold. It is this flow component that can be utilized by the coolwater indicator species of redbelly dace and mudminnows as they are not directly dependent on groundwater or cooler temperatures.

Terrestrial

Overall the section is a good characterization of the wetland and terrestrial ecology of the CBSSES study area, although some data gaps have not been addressed and these will be identified below.

There is important information in the Appendices that is not adequately reflected in the text (CBSSES Wetland Vegetation Observation Summary).

Quantify terms like small amount, majority, mainly, predominantly with numbers or percent. This has not been addressed November 2006 Draft Report.

Integration

Generally the integration section needs to overlay all disciplines to produce an overall sensitivity or significance map in Part A for use in Part B.

Specific Comments

Section 1 – Introduction

Page 1-1 – Please refer to the Terms of Reference generated by the agencies for the definition of Parts A, B and C. The multi-disciplines listed do not include water quality.

Page 1-2 – 1st full paragraph – Please refer to the consultants that are conducting the modeling work by name. It is inappropriate to be referring to them as “CVC’s consultants”. Please also refer to the models obtained from CVC as the “Regional scale models”. The footnote on this page should also be removed as it is no longer relevant given that the agencies now have an Agreement on how the modeling will be dealt for the study.

Page 1-7 – Please add to the description of Part A and Part B the need to develop and finalize environmental management Objectives and Targets. Please add to the description of Part B the need to develop and assess Management Alternatives.

Section 2 – Background & Setting

Page 2-3, 4th paragraph – Please note that CVC does not share this opinion at this point in time. We will assess this further at the conclusion of Part B. As such we request that this paragraph be removed.

Section 3 –CBSES Methodology

Page 3-7 – Section 3.3 – Please provide a description here of the Upper, Middle and Lower Regions.

Section 4 – Overview Of Study Area & Land Use Policy Analysis

Page 4-17, 3rd paragraph – Please note that Terra Cotta is not in the Town of Halton Hills (it’s in the Region of Peel and Town of Caledon).

Section 5 – Hydrologic Characterization

Page 5-24, Section 5.3.2.2, Table 5.9: Table 5.9 is not referred to in the text of the report. Also, please add the number of flow measurements for each monitoring location in Table 5.9

Page 5-6, paragraph following bullets – Please clarify what the “CVC Drainage Classification System” is.

Section 6 – Hydrogeologic Characterization

Section 6.2.3, Figure 6.4:

DP06 should be noted as “dry” rather than “n/a” for April. The figure legend should be adjusted so that it does not cover large portions of the Study Area.

Page 6-12, Section 6.1.3, Figures 6.9 and 6.10:

There are a number of locations (e.g., south of Ballinacfad, between Winston Churchill and Heritage Road) where the overburden thickness is indicated to be greater than 10 metres, but where the surficial geology is indicated to be bedrock. It is understood that the sources and data sets used to produce these two figures have limitations; however, these discrepancies require further discussion. Field observations should be referred to where possible, and the related discussion should identify any uncertainties in the Study Area characterization related to the discrepancies between the data sets.

Page 6-19, Section 6.1.4, 3rd paragraph:

Please indicate the range of depths at which the Eramosa Member is noted in MOE well records, and the range of thicknesses for the Eramosa Member.

Page 6-19, Section 6.1.4, 4th paragraph:

Please indicate the information sources (e.g., MOE well records, air photos, field surveys) that were utilized to determine that karst features are not present within the Study Area.

Pages 6-20 to 6-21, Section 6.2.1:

Please explain the difference between the “solution-enhanced openings” listed on page 6-21 among the secondary features occurring in the Amabel Formation, and the “large solution conduits” listed on page 6-20 among the features not expected within the Amabel Formation.

Section 6.2.2, Figure 6.16:

Please add labels to the X-axis.

Section 6.2.2, Figures 6.17 to 6.19 – The Y-axis should be labeled “groundwater elevations” rather than just “elevations”.

Page 6-35, Section 6.2.4, 2nd paragraph:

The discussion of groundwater recharge and discharge zones incorrectly references Figure 6.17. The reference should be to Figure 6.21.

Section 6.2.6, Figure 6.14:

The legend on Figure 6.14 should indicate that areas with depth to groundwater between 2 metres and -2 metres are also areas of potential groundwater discharge.

Pages 6-47 to 6-50, Section 6.3.1:

In addition to the well yields referenced from the Dames & Moore study and other sources, this study should include the minimum, mean, and maximum well yields for the MOE well records within the Study Area.

Section 6.2.3, Figure 6.26 – The Y-axis should be labeled “groundwater elevations” rather than just “elevations”. This figure is out of sequence.

Section 7 – Water Budget And Preliminary Sensitivity Analysis

Page 7-4, Section 7.2

Provide a description of the Thornthwaite and Mather method, an example is illustrated in the MOE Stormwater Planning and Design Manual 2003.

Page 7-4, Section 7.2

There is a statement that reads, "for this Part A analysis, the Meteorological Service of Canada was retained to prepare a preliminary water budget using the Thornthwaite and Mather method as presented in Section 5.0 for data available up to 2004." Is this to indicate that MSC, were the ones who undertook the water budget analysis, on behalf of the consultants.

Page 7-6, Section 7.2.

The term "Harold No." should be replaced with "Subcatchment No." and a reference added to CVC modeling for the Credit River Watershed.

Pages 7-6 and 7-7, Section 7.2:

The comment at the bottom of page 7-6 on the need for the Part B study to evaluate the amount of recharge from wetlands and creeks requires further explanation. As the comment is presently written, it is possible to interpret the comment to be suggesting that the wetlands' recharge/discharge functions identified through the monitoring program may be re-evaluated in the Part B study, which should not be the case. It would be helpful to repeat the more thorough explanation from Appendix G (top of page G-23) in this section so that it is clear that the overall characterization of wetlands is not at issue, but rather the manner in which the wetlands were represented in the previous model.

Page 7-9, bottom of page – It seems premature to discuss the groundwater related effects of extraction at this time. We recommend that this section be removed and placed in Part B reporting.

Section 8 – Fluvial Geomorphological/Stream Morphological Characterization

Pg 8-11, Sec 8.7 Sedimentological Properties

Apparently this section "was still under investigation" in June of 2005 and it is still left blank. Sediment transport analyses (as specified in the revised work plan) will have a bearing on the reach sensitivity analysis and is required as a component of Part A characterization.

Section 9 – Baseline Water Quality Characterization

Pg 9-2, Sec 9.2.2.1, 1st paragraph

1st sentence should read: "...mid summer collections will show water quality impairment to a greater degree."

Last sentence should be rephrased, e.g. "Therefore, summer sampling may be more likely to identify site conditions limited by high summer temperatures."

Pg 9-2, Sec 9.2.2.1, 3rd paragraph

CVC protocol follows that specimens are preserved in 10% buffered formalin (not 80% alcohol). If the 80% alcohol is a CBSES protocol it should appear in section 9.2.2.2.

Pg 9-5, Sec 9.2.2.3 (2004), 4th paragraph

Inconsistency in paragraph as it states both: "Filter feeders... are more tolerant to pollution" and "This feeding group may increase or decrease with increasing stress."

Pg 9-8, Sec 9.2.3 (2005), 1st paragraph
Should explain why site NS1 was not sampled in 2005.

Pg 9-9, Sec 9.2.3 (2006), 1st paragraph
Delete last two sentences (repeat of previous sentences).

Pg 9-9 to 9-10, Sec 9.2.3 (2006)
The depths referred to in the station descriptions are quite large (e.g. 3.9 m, 3.80 m etc. for NS6). Are these in fact widths?

Pg 9-9 to 9-10, Sec 9.2.3 (2006), *Station NS5, Station NS1, Station NS4*
Last sentence should read: "Aquatic vegetation and algae were not observed at this station."

Pg 9-10, Sec 9.2.4.1, 2nd paragraph
Should state which years the average HBI is based on.

Pg 9-11, Sec 9.2.4.2 (2004), 1st paragraph
1st sentence should read: "...raw data is provided in the Water Quality/Benthic Appendix..."

Pg 9-12, Sec 9.2.4.2 (2004), *Station NS4*
3rd sentence: 7.46 should be 7.46%

Pg 9-14, Sec 9.2.4.2 (2004), Hilsenhoff Analysis, 1st and 2nd paragraphs
The HBI is not an average as it is based on one sampling point at one station. Should be referred to as HBI, not average HBI.

Pg 9-16, Sec 9.2.4.2 (2005), *Station NS4*
Last sentence should read: "The number of intolerant taxa found at this station was 11..."

Pg 9-17, Sec 9.2.4.2 (2005), EPT Analysis, 2nd, 3rd, 4th paragraphs
Content in these paragraphs is repeated from 2004 EPT Analysis section (pg 9-13). Repeated content should be removed.

Pg 9-18, Sec 9.2.4.2 (2005), BioMAP Analysis, 4th paragraph
1st sentence should read: "...and the WQI(q) score was 2..."

Pg 9-20, Sec 9.2.4.2 (2006), Station Results Overview (Station NS6) *Replicate 1*
3rd sentence: Change spelling to Hydropsychidae
7th sentence: Replace "station" with "replicate"

Pg 9-20, Sec 9.2.4.2 (2006), Station Results Overview (Station NS6) *Replicate 2*
6th sentence: Replace "station" with "replicate"

Pg 9-20, Sec 9.2.4.2 (2006), Station Results Overview (Station NS6) *Replicate 2*
Pg 9-20, Sec 9.2.4.2 (2006), Station Results Overview (Station NS6) *Replicate 3*
Pg 9-21, Sec 9.2.4.2 (2006), Station Results Overview (Station NS6) *Replicate 4*
Pg 9-21, Sec 9.2.4.2 (2006), Station Results Overview (Station NS5) *Replicate 1*
Pg 9-21, Sec 9.2.4.2 (2006), Station Results Overview (Station NS5) *Replicate 2*

Pg 9-22, Sec 9.2.4.2 (2006), Station Results Overview (Station NS5) *Replicate 3*
Pg 9-22, Sec 9.2.4.2 (2006), Station Results Overview (Station NS5) *Replicate 4*
Pg 9-24, Sec 9.2.4.2 (2006), Station Results Overview (Station NS4) *Replicate 2*
Change spelling to Simuliidae

Pg 9-21, Sec 9.2.4.2 (2006), Station Results Overview (Station NS5) *Replicate 2*
7th sentence should read: "This replicate was composed of 85.29% clingers"

Pg 9-23, Sec 9.2.4.2 (2006), Station Results Overview (Station NS1) *Replicate 2*
Last sentence: Replace "station" with "replicate"

Pg 9-27 Sec 9.2.4.2 (2006), Station Results Overview (Hilsenhoff Analysis)
1st sentence should read: "...Station NS6 did not have 100 arthropods at any of its replicates to complete the HBI calculation."

Pg 9-28 Sec 9.2.4.2 (2006), Station Results Overview (Hilsenhoff Analysis), 2nd paragraph
1st sentence should read: "Second Creek has been determined to have an overall HBI rating of "Very Good"..."

Pg 9-28 Sec 9.2.4.2 (2006), Station Results Overview (BioMAP Analysis), 1st paragraph
2nd sentence should read: "Replicate 2 WQI(d) score was 15.18 (between impaired and unimpaired)..."

Pg 9-28 Sec 9.2.4.2 (2006), Station Results Overview (BioMAP Analysis), 2nd paragraph
3rd sentence should read: "The WQI(d) score at each for the replicates indicated impairment."
7th sentence (pg 9-29) should read: "The WQI(q) indicated impairment at..."

Pg 9-29 Sec 9.2.4.2 (2006), Station Results Overview (BioMAP Analysis), last paragraph
5th sentence should read: "The WQI(q) scores at Replicates..."

Pg 9-30 Sec 9.2.4.3 (2004), 2nd paragraph
5th sentence should read: "At the downstream station..."

Pg 9-32 Sec 9.2.4.4, 3rd paragraph
4th sentence should read: "...which may suggest the possibility..."
5th sentence should read: "...where "Fair" water quality indicates that there is..."

Pg 9-33 Sec 9.2.5, 1st paragraph
Should state whether or not any of the COSEWIC Molluscs have been found in the Study Area.

Pg 9-33 Sec 9.2.5, 2nd paragraph
Should read: "...(*Stylurus scudder*), listed as G4..."
Should explain the significance of "S3".

Pg 9-39, top of page – Do the temperature values reported include the period during which the creek was dry?

Pg 9-58: second last paragraph (*Until Environment Canada...*) can be deleted as the guideline has already been approved.

Pg 9-59: first full sentence: should read: "... well below the CEQG target criterion of 2.9 mg/L nitrate as Nitrogen (13 mg/L nitrate ion)."

Section 10 – Aquatic Habitat & Fisheries Characterization

p10-3 The study area described has focused on the negative anthropogenic impacts. Unlike urbanization many of the agricultural impacts cited are reversible and indeed the trend of naturalization of marginal agricultural lands has been noted elsewhere in the report. More balance should be provided by reporting on the naturalness of the area such as % forested, wetland, riparian cover and natural channels.

p10-4 ii) "Given the predominance of intermittent or ephemeral stream flow conditions" there needs to be more emphasis on the extent of this condition in the Study Area and the number of isolated reaches vs. other areas in the Credit watershed where they are usually restricted to headwaters or single more predictive reaches (e.g. Main Caledon Creek). It could be referenced whether isolated reaches are more common throughout the Niagara Escarpment outside the Credit.

The identification of intermittent coldwater reaches is unique or seemingly contradictory. State whether this is based on the seasonal use by brook trout alone or whether groundwater contributions in this reach also support this designation. If not, state that these reaches are not likely to provide thermal refuge or spawning habitat.

p10-6 Confirm which specified period of time was used to state that the "Spring 2005 was considered an average to slightly wetter year, and Spring 2006 was considered to be a drier year" and by how much. This is important in characterizing seasonal use of habitats. It should also be stated that the focus is on identifying seasonal habitats used on an annual basis although some reaches may only be used in wetter years that occur at greater recurrence intervals (5, 10, 20 year...). This will explain some distributions such as fish found in the "pig pond" connected by a swale designated as "not direct habitat" documented later.

p 10-8 Figure 5.8 provides a good tool that should be used to identify permanently flowing reaches isolated by intermittent reaches up and downstream that make them uniquely sensitive.

p10-8 This section needs to identify the range of species and their sensitivities, particularly the recognition of Northern Redbelly Dace and Central Mudminnow as coolwater/wetland indicators. Discussion on their habitat requirements and that they are less common/abundant should be noted. These species are too often documented as just being dominated by other warmwater species and in one case not deserved of a separate Coolwater heading later (p10-39). Other species identified by CVC as more sensitive based on literature cited in a Methodolgy for Assessing The Biotic Integrity of Fish Communities of the Credit Watershed (CVC 1999) should be noted elsewhere. Of the species recorded in the study area, please state moderately sensitive species would include longnose dace, hog sucker, darters and brassy minnow. Some of these also contribute to the greater diversity of coolwater communities. Using the number of species might also be used to better characterize fish communities and later refine fish community sensitivities.

p10-9 ii) CVC requests the use of "Small" in the Warmwater designation to avoid confusion when this document is used in a CRFMP watershed context by other readers. CVC agrees with your choice not to document ponds as Large Warmwater because of their relatively small size and preference not to manage on-line ponds as such. Wolf Lake may be noted as an exception because of its large size, public use and management for fishing.

iii) CVC requests not using the cold/cool classification intended for large main river habitats to avoid confusion with the main river and when this document is used in a watershed context. At the very least these reaches should be designated as a coldwater management zone in Part 2 as well as other areas with a high potential for brook trout (temperature data would help with such designations). It is suspected brook trout may be excluded from these areas by direct competition with other trout species. Also consider the re-introduction of Atlantic salmon (coldwater designation), which will occupy the same reaches as brown and rainbow trout and historically co-existed with brook trout.

vi) Were sculpin identified in reaches without brook trout? If so these reaches should be designated as coldwater.

p10-10 vii) There is a need for some scientific background or reference on unique and contributing functions of first order streams ("Not Direct Fish Habitat") cumulatively to downstream reaches borrowing from literature such as the geomorphic Laws of Stream Order and the River Continuum Concept (Vannote et. al 1980). Ultimately these functions must be maintained or replicated. Please insert the following functions into this section: timing of flow conveyance, nutrient, sediment and temperature regulation, water quality improvements, the generation of coarse particulate matter and food organisms to downstream communities. (Contributing functions are documented in CVC's Methodology for Assessing Headwater Features and is now being further developed by TRCA).

p10-10 In reviewing the wetlands map available in Figure 5.9 the vast majority of coldwater reaches intersect a wetland above the escarpment and 4/5 of coolwater reaches. This obvious relationship should be noted as a pattern and predictive tool.

It is recommended that all isolated permanently flowing reaches be identified on a map and considered as some form of specialized or sensitive habitats. This can then be utilized in management zone/sensitivity designations proposed in Part 2.

There is an overall concern that coolwater communities have been underestimated. Indicator coolwater species may be absent from roadside sampling areas, dip nets are more likely to find more abundant warmwater species and wetland areas may have posed sampling constraints. Normally coolwater communities would be more conservatively extrapolated downstream to coldwater designations. Potential habitat mapping could be used to address this issue (but does not). The distribution of wetlands and potential groundwater contributions should be used to extrapolate coolwater communities. The CRFMP actually predicted coldwater communities in most of these areas such that coolwater should be the next obvious choice.

p10-19 v) CVC suspects that this pond may provide refuge habitat for coolwater indicator species adapted to dense vegetation. Muskgrass is a submergent plant indicative of permanent water directly from groundwater sources. Furthermore the marsh community described (p10-20 ii) with deeper pools (sampled?) at Rockside Rd. suggest coolwater not warmwater habitat. Cold and coolwater species were sampled downstream. As such a coolwater designation should be awarded.

p10-23 iv) Why is FCU1 mapped as undefined if some combination of defined permanent and intermittent reaches were reported? Please confirm the character of this reach as the area downstream supports coldwater fish that are in proximity (1km) to the Resource Area.

p 10-25 Generally, there has been good recognition of reaches isolated by manmade ponds but not on reaches isolated by intermittency or lack of channel definition and natural escarpment barriers. These natural limitations must be clearly recognized (under separate heading in 10.4) as they cannot be addressed through restoration efforts as on-line ponds can be.

The diversity of ponds constructed over springs, permanent and intermittent reaches and whether ponds contribute to more permanent or intermittent flows should be noted. Further assessments may be useful (Habitat Potential section) or required but site level investigations were not expected at this scale.

Some recognition of ongoing projects should be noted on lower Rogers Creek to mitigate/remove on-line ponds (first and second ponds upstream from the Credit) are underway and are related to the Atlantic Salmon Restoration Program.

p10-26 v) All barriers are not clearly mapped on Figure 10.2 as stated. Natural barriers should also be mapped.

vii) The effect of the distribution of barriers and intermittent reaches on fish communities (not just brook trout) requires broader characterization here. The significance of barriers and isolated reaches regarding sensitivity and management is an important issue to be addressed in Parts B and C.

p10-28 v) Figure 10.3 is referred to as Aquatic Sensitivity/Constraints but is titled Potential vs. Existing Communities? A Sensitivity / Potential map of Fish Community reaches is preferred. The map should use the location of specialized habitats including spawning areas, reaches containing YOY trout from all records, known springs/watercress locations and any permanently flowing but isolated reaches to designate reaches similar to existing Fish Communities. (Those isolated by ponds alone could be excluded or simply highlighted for restoration to potential conditions.)

p10-30 Please reference spawning surveys conducted by CVC on lower Rogers that confirmed spawning (although overestimated) below the confluence pond with the South Tributary to the 10th Line pond complex. Few if any redds were located downstream of this pond complex to the Credit River confluence. Please include this information for characterization purposes.

Isolated coldwater reaches where no redds and where YOY were located must be identified as high priority areas for further spawning surveys. There are 3 isolated coldwater reaches without spawning areas identified (one being stocked ponds?, Fourth Creek FCS2 and South Branch Rogers). FCS2 would be a high priority given it is adjacent to the Resource Area.

Mapping should clearly identify all reaches surveyed but with null results. Using dots alone does not reflect longer reaches that should have been surveyed.

Please include all documentation (Zimmer 2002 from CVC) of available spawning habitats for the Credit River. This is important as the groundwater resources from the tributary basins likely contribute directly to these areas via deeper groundwater vectors and are more prone to cumulative effects from upgradient.

p10-32 There is an emphasis on on-line ponds as refuge. Please identify which intermittent reaches have or are more likely to provide refuge pools. Traditionally these are found at roadside culverts that scour deeper than usual pools, but natural ones can also form or exist in wetlands. Although an inventory of refuge pools was not expected, at least one wetland refuge pool was observed on Second Creek South Branch at Rockside Road that contained frog species (requiring permanent pools) and unidentified fish. RCM5 also contained a good refuge pool.

p10-12 Provide discussion to show the duality of implications of having on-line pond refuge habitats recognized, if these same features also represent barriers to other refuge areas. There is some conflict with the management desire to mitigate/remove such features.

p10-33 ii) This bullet focuses on groundwater and thermal refuge. Any permanent flows (cool and warmwater) isolated seasonally are important refuge areas to be mapped. These would be more critical to fish populations in the event on-line ponds are mitigated/removed.

p10-34 The groundwater model (Figure 6.14) used to predict discharge zones for fisheries is much appreciated. Its interpretation however should be extended beyond that as a potential for coldwater communities given their general restriction and isolation within the study area. Although the modelling does not explain coldwater reaches in the lower physiographic area, further focus is required in the more complex Middle Region. Discuss that the model also identifies contributing wetland areas together with some high potential areas for coolwater and any warmwater permanent reaches. The 3 layers within the groundwater model for fisheries could also be used in isolation or weighted (i.e. Bedrock Potential layer least predictive vs. Hydrogeologic Potential best visual correlation with existing conditions).

p10-35 ii) The sites on Fourth and East Branch, Rogers should be identified on a map not only as refuge (for any species) but also as potential coldwater habitat.

p10-36 i) Brown and rainbow trout are cold/cool indicators not cool as stated. Brown trout also benefit from groundwater upwelling as their eggs also overwinter. Temperature data should be used to reconsider this reach as coldwater. Brook trout are likely being outcompeted given the presence of multi-year classes. MNR recently assessed these reaches and consider them cold in relation to the Atlantic salmon program.

See previous comments on p 10-8

p10-38 iii) To clarify, CVC stated that under existing conditions only those tributaries draining off the escarpment and having their headwaters extending above the brim and intercepting wetlands or other groundwater sources support trout including Rogers and Second Creeks. This statement is also repeated in the Integration Section.

v) Confirm that the 1982 record is at or upstream of Winston Churchill? and not in Terra Cotta CA proper. CVC does own other lands upstream.

p10-39 iv) Please separate Cool and Warmwater sections to avoid the idea they are not significantly different, that is also perpetuated with comments that coolwater is often dominated by warmwater species. Indicator species are often low in numbers but remain significant in an ecological sense, as decided in the CRFMP. Coolwater communities are also indicated by a greater diversity of warmwater species.

p10-41 i) RCW1 is noted as having redbelly dace and should not be mapped as warmwater. It also drains into a coolwater reach that should be extended. On the tour CVC observed some remnant refuge pools and evidence of flow that may suggest potential seasonal habitat being limited only by a downstream perched culvert on RCWU to RCW2. Such potential should be recognized in the Potential Map (Part A) and/or Management Zones (Part B).

p10-42 iii) Assume there is potential for coolwater (vs. warmwater) habitat given that brook trout (coldwater) were originally suspected. Minimal sampling effort will be biased toward warmwater species. The adjacent tributary is also coolwater.

p10-44 iii) State that here are some permanent reaches or natural pools that may also provide refuge in the Middle Region.

iv) State that the Hutchinson swale has a relatively large catchment compared to others with no fish. Given that it transects the Resource Area the entire length should be further assessed for refuge habitats? CVC recently received information that fish

were observed by a property owner seeking advice from MNR for a "clean out". If this is true, this and perhaps other similar reaches will need to be re-classified based either on additional sampling or a greater reliance on a potential fisheries model.

v) Fish in the pig pond is a surprise unless it is assumed they accessed it from the swale downstream that was mapped as not being seasonal fish habitat. This may be explained by access flows that only occur during unusually wet periods greater than on an annual basis normally used to determine seasonal habitats.

It seems more logical that the East Branch of Rogers would progress from a warm to cool to cold without an intervening warm reach between the cool and cold? Please provide an explanation including comments on sampling effort and habitat potential.

CVC has an unconfirmed record of redbelly dace (DFO violation) just upstream of 5th SR on the Main Branch Rogers that should extend the coolwater designation from the downstream reach.

p10-46 iv) This reach should potentially be coolwater as it was not sampled and only based on sunfish observations in a pond.

p10-47 i) The association with permanent flow, groundwater and wetlands suggests good coolwater potential rather than being warmwater and undefined? Also note coolwater species do well in homogeneous habitats dominated by fines and detritus. More sampling may be required of this isolated reach given its proximity to the Resource Area and a questionable record of brook trout.

Please consider that it may be reasonable to assume reaches above the coldwater reach of Second may also be cool (another more natural transition?).

CVC has sampled redbelly dace throughout the ponds and connecting streams at the Terra Cotta Conservation Area. It is mostly permanent and originates in springs identified on the maps. There is also no defined channel and rarely any surface flows through a section on the Jack Smyth property that is now mapped as intermittent coolwater. It would be more accurately defined as subsurface.

p10-49 Please explain that according to the CRFMP lower Third Creek has an existing coldwater community documented where it is now undefined. The coolwater reach that would become intervening should then also become coldwater. The source of this confusion may relate to the presence of rainbow trout and the differences in coldwater/coolwater definitions used. Original records need to be reviewed and this resolved to avoid conflicts with the CRFMP.

p10-50 iii) If there is other available water/air temperature data use it in assessing habitat potential elsewhere and management zones in Part B. Figure 10.2 shows that this reach with few fish is very short and sandwiched between extensive coldwater reaches with brook trout up and downstream? Either omit this reach or extrapolate it based on similar habitat conditions or extend halfway to the sampled brook trout locations.

v) It should be stated that one reach of Fourth Creek remains undefined and is not "well removed from ... Resource 9A" at about 1 km to the east.

p10-51, section 10.5.2.5 Please state that the high gradient and shale in these tributaries present natural barriers. Such barriers need to be generally identified/mapped throughout the escarpment reaches of all streams within the report.

p 10-51, section 10.5.2.6 See comments for p 10-25 section 10.3.6.

p10-52 iii) Please note which ponds contained coolwater species and whether this designation was applied to adjacent stream reaches. In reviewing the tables one pond contained redbelly dace yet adjacent stream reaches were undefined (SCM5)? Discuss that many ponds are reported to support stocked trout that may suggest at least a coolwater designation on adjacent stream reaches?

p10-52 iv) State that local significance of species is still being assessed for the Credit. MNR also has a list of regionally significant fish species. The best reference available now are sensitivity scores awarded to all species in a Methodology for Assessing the Biotic Integrity of Fish Communities of The Credit (CVC 1999) as noted in 10.2.4. Brassy minnow is the most restricted fish recorded on the Credit and within this study area. It should also be noted that many species suitable for coolwater reaches have not colonized the Credit watershed above the escarpment including darters, hog sucker, stonecat and sculpin, making the presence of redbelly dace and mudminnow more valuable as indicators.

p10-52, section 10.7 This section it is more of a "comparative analysis of the predicted and observed/sampled fish communities" reach by reach. The reporting emphasizes the variations and abrupt changes rather than seeking out a more predictive pattern.

Please consider the integration of other map layers (groundwater-surface water flux, wetland distribution, water temperatures, piezometer data, springs, observations) to refine interpretation of the model with a focus on potential coolwater areas. Again, the 3 layers within the groundwater model for fisheries could also be used in isolation or weighted (i.e. Bedrock Potential layer least predictive vs. Hydrogeologic Potential best visual correlation with existing conditions).

That the CRFMP predicted cold waters for this study area should be addressed. CVC accepts that the CRFMP method was at a coarser level and could not predict the same detail of variation provided. The model used in this study also has more potential.

p10-57 iii to 58) In reviewing Figure 10.3 all 3 perennial reaches above the escarpment were predicted by the groundwater model in terms of flow, however the community designations varied from warm to cold. This suggests the model may better predict where flows are more consistent and cooler and should be used as such. (It is assumed the warmwater reach on the South Branch has not been adequately sampled for coolwater/wetland indicators that is also directly upstream of a coldwater reach).

Section 11 – Wetland & Terrestrial Ecological Characterization

Terrestrial Comments based in Hydrology

Produce a separate map for Wetland Vegetation Observation Stations. Label wetlands to correspond to the wetlands described in Appendix J.2.2.2 Wetland Site Descriptions. The map should also indicate which wetlands are receiving groundwater inputs, as identified in the Appendix. Necessary for interpretation.

Information contained in Wetland Site Descriptions (Appendix J.2.2.2) concerning groundwater discharge or surface water contributions to wetlands needs to be reflected in the text of the report, particularly in the Hydrogeology Section and Wetland Section of the report. There is a good general discussion in Section 12 Integration.

Terrestrial Comments based in Biology or Ecology –General Comments

Issue # 1 - Lack of Floristic and ELC information in key woodlands and some riparian zones

Work Plan for CBSES, June 2006:

“Where access permits, additional floristic and ELC information will be collected in key wetlands, riparian zones and woodlots within the Focus Area, particularly those with a groundwater relationship that may be affected by future extraction scenarios”. – p. 15

Also noted in Appendix C, Item # 8.

CVC Comment on CBSES Part A Report

- Based on the revised draft Part A Report it appears that no field work has been carried out in woodlands, and information on riparian zones is not apparent or may be lacking.
- Information is needed to characterize, assess functions, sensitivity, rarity, and to identify opportunities and constraints.

Issue # 2 - Lack of Vascular Plant Surveys in Woodlands or Riparian Zones

Work Plan for CBSES, June 2006:

“Where access permits, in-season vascular plant surveys will be completed in the spring and summer (May-August) to confirm the presence/absence of rare species or sensitive habitats, to update ELC mapping within the study area, and to refine opportunities/constraints mapping.” – p. 15

CVC Comment on CBSES Part A Report

- In-season vascular plant surveys appear to have only been completed in wetlands. There is no evidence of surveys in woodlands, other terrestrial communities (including non-wetland riparian zones)
- Information is needed to characterize, assess functions, sensitivity, rarity, and to identify opportunities and constraints

Issue # 3 - Functional Assessment

Work Plan for CBSES, June 2006:

“Synthesis of this data will be used to define those areas that are functionally connected to Resource Area 9a.” – p. 15

“The overlaying of the existing conditions data/layers will define the key natural heritage attributes/functions and interrelationships within the Study Area.” – p. 15

“Existing conditions and constraint mapping themes are expected to include: ...
• wildlife habitat/linkages” – p. 15

"Functional linkages will be identified within the Study Area." – p. 16

CVC Comment on CBSES Part A Report

- Functional assessment for wildlife habitat and landscape connectivity is lacking.
 - Functional assessment needs to address important functions at the study scale, not just the provincial or watershed scale.
 - Natural heritage system section removed from latest Part A Report, and is necessary as part of the characterization for the current report (refer to Town of Caledon general comment # 5).
 - Map biological "hotspots" (concentrations of significant or sensitive species or communities) across the study area, not just Niagara Escarpment and Paris Moraine. Some have been identified in text of Section 11.5.
 - Incorporate biological "hotspots" into natural heritage system.
 - Natural Heritage System should link biological "hotspots" of middle region to the Niagara Escarpment and the Paris Moraine.
 - Mapping of primary or secondary wildlife linkages or corridors is missing.
 - No discussion regarding the priority or restoration potential of local or subwatershed scale corridors (tributary or terrestrial based).
 - Functional role of successional communities and plantations to wildlife habitat and corridors has not been addressed.
 - All known habitats (breeding, foraging, and migration) associated with significant or sensitive species must be identified and mapped.
- A methodology for assessing the significance and sensitivity of features and/or functions needs to be provided which documents how and why a feature or function was determined to be significant, sensitive and important for the identification of Significant Woodlands, and Significant Wildlife Habitat.
- Develop a natural heritage system/refined municipal constraints map for the study area in accordance with Appendix G to the revised CBSES Work Plan.

Issue # 4 - ELC Landscape Indicators

Work Plan for CBSES, June 2006:

"ELC landscape indicators such as habitat patch size, shape, diversity, connectivity and edge effects will be considered in the analysis." – p.17

CVC Comment on CBSES Part A Report

- Analysis missing from report
- Necessary for functional assessment, prioritization, and impact assessment

Issue # 5 – Prioritization

Work Plan for CBSES, June 2006:

“The establishment of different levels of significance/sensitivity and protection priority within the Study Area will also be used to identify resource protection targets (e.g. forest, wetland area) and develop adaptive management plan requirements (mitigation, monitoring).” – p.17

CVC Comment on CBSES Part A Report

- Prioritization analysis missing from report
- Important for the identification of Significant Woodlands, and Significant Wildlife Habitat
- Necessary for functional assessment, prioritization, and impact assessment
- A methodology for assessing priority needs to be provided which documents how and why a feature or function was determined to be a protection priority.

Issue # 6 – Jefferson Salamander Surveys

- CVC and MNR are of the opinion that the issue is still unresolved and additional surveys are required at the vernal pool east of Shaw's Creek Road and north of Old Baseline. CVC and/or JDCL should discuss this with MNR.

Issue # 7 – Species At Risk Data and Mapping

- New Species at Risk data (especially Jefferson salamander) is available. CVC and Aurora MNR have more recent data. A query of CVC's database revealed 35 SAR records within the study area – 13 were obtained from NHIC and 22 are CVC records. Of the 22 CVC records, 18 are confirmed sightings (observed by CVC staff) and 4 are unconfirmed locations (reported by naturalists). This is relatively new information and would be made available upon approval from the Ontario Ministry of Natural Resources.

Issue # 8 – Wildlife Monitoring Stations Mapping

- Figure 11.7 (Wildlife Monitoring Stations) is too cluttered. Separate birds and amphibians on to two different maps to permit readers view locations of monitoring stations and to interpret results.
- Amphibian and bird monitoring stations need to be accurately labeled on a clear map to correspond to the way the stations are labeled in Section 11 and in the Appendix.

Have records of road kill milksnake been submitted to the NHIC?

Please provide UTM coordinates of wetland photo monitoring stations.

Terrestrial Comments based in Biology or Ecology –Specific Comments

Table 11.2:

- Credit Forks ANSI contains Jefferson salamander
- Jefferson salamander complex found by CVC staff at Terra Cotta Forest ANSI
- Pg. 11-13, 4th paragraph – CVC mapping indicates that the bog is not in the study area. Please double check, and confirm with CVC.

- Pg. 11-25, 4th paragraph – Note large cultural meadows can support area sensitive grassland species. Note the presence of any occurrences of cultural meadows that may be large enough (>10 ha) to potentially support area sensitive grassland species.
- Pg. 11-26, 3rd paragraph – Add hydrologic value of plantations
- Pg. 11-28, 3rd paragraph – Are there any rare community types in Terra Cotta Forest
- Pg. 11-30, 1st paragraph under amphibians: Ephemeral wetlands/pools should also be documented as suitable amphibian habitat, as should slow creeks and oxbows.
- Pg. 11-32, 6th paragraph – Add explanation of why amphibians are monitored
- Pg. 11-32, 6th paragraph – Brown snake missing from last sentence
- Pg. 11-33, last paragraph: It should be noted that Jefferson salamander are not just “recorded at several locations”, but instead emphasized that there is a large amount of habitat in subwatershed 12 that is utilized by Jefferson salamander. The areas surrounding the Rockfort property have some of the highest concentrations of Jefferson salamander in the country/province.
- Pg. 11-34 – Discuss sensitivity of vernal pools to changes in groundwater levels.
- Pg. 11-34, 3rd paragraph: as noted above (point 3 and 4), JESA records need to be updated and LJJ records must also be included.
- Pg. 11-34, 4th paragraph: It should be noted that JESA do not breed every year – just because sampling in one year did not turn up egg masses, that does not mean the pond is not used in other years.
- Pg. 11-35, 1st paragraph: Blanding’s turtle may also be present.
- Pg. 11-35, 2nd paragraph: The current mapping with unlabelled amphibian monitoring sites (Figure 11.7) does not allow for an accurate assessment of areas of highest species richness and abundance. I would like to see two separate maps illustrating the analysis of the amphibian monitoring results: 1) one map illustrating species richness by monitoring station and 2) a map illustrating species abundance by monitoring station.
- Pg. 11-35, 4th paragraph – last sentence – add “and may function as stepping stone habitat between the core natural areas of the Paris Moraine and the Niagara Escarpment”.
- Pg. 11-35, 3rd paragraph – Was MNR contacted regarding deer wintering yards?
- Pg. 11-35, 4th paragraph – Discuss connectivity function of area between Paris Moraine and the Niagara Escarpment”.
- Pg. 11-40, 6th paragraph – Species may utilize area as parts of Resource Area 9-A for foraging

- Pg. 11-40, 6th paragraph – Discuss connectivity function of Resource Area 9-A between Paris Moraine and the Niagara Escarpment”.

Appendix J.1.4.1 Species Recorded Dead on Roads

- There are no details on the road mortality study (dates, times, number of sampling events) that would indicate the robustness of the results

Section 12 – Integrated Summary & Sensitivity Analysis

p12-1, Section 12.1 – last line- Please reword “ ____characterization information across various disciplines.” to “ ____findings across disciplines to establish and define key environmental features, functions and linkages.”

p12-5, top of page – The issue of risk and level of risk is not discussed.

p12-7, 3rd full paragraph – chemical pathways should also be added to this discussion

p12-9, bottom of page – Please add agriculture to the list of human modifications.

p12-19, section 12.3.1 – Some of the analysis on the unit area flow should be summarized here.

p12-22, Section 12.3.2- It is anticipated that this section will be reviewed and updated when the additional work is completed. As a result we will not comment any further.

p12-32,Section 12.3.5 Although the correlation of wetlands with permanent and coldwater reaches are better recognized, it is not further utilized to refine other potential habitats (e.g. coolwater). Other groundwater data such as that presented in Figure 7.1 (Flux) seems to correlate well with coldwater and spawning habitats and should also be integrated.

The groundwater connections with the coldwater community and spawning areas in the Credit River are not adequately explained (deeper groundwater vectors). It is only suggested groundwater resources are reduced?

Given fish biomass and IBI results was not presented (not available from CVC yet), stream health should have been expressed through invertebrate sampling and integrated with fish to express community sensitivity. This may be addressed when determining fish sensitivity/management zones.

Water temperatures and other water quality data require integration.

Geomorphological information and analysis is required.

p12-38 i) Figure 12.5 maps the inter-relationship of riparian areas and wetlands but further discussion and application other than the correlation with a few permanent and coldwater reaches (e.g. coolwater potential) is needed.

ii) That fishless habitats are correlated with lack of riparian areas tends to ignore a more causative relationship with headwater physiography that must also be noted.

Generally the integration section needs to overlay all disciplines to produce an overall sensitivity or significance map for use in Part B.

p12-24, section 12.3.3 Typical relationships between water quality and fish are noted but a good integrative assessment is lacking. For example, correlate stream temperature data with fish habitat. This will be needed to identify habitat potential and fish community sensitivity for management in Parts B and C.

Water temperatures are interpreted as absolute limitations on coldwater fish at certain sites rather than a comparative analysis related to a pattern of cold, cool and warm reaches that is needed. It should be noted elsewhere on the Credit brook trout are found in reaches regularly exceeding the lethal limit quoted.

In Section 9.3 Temperature Monitoring - other useful data is presented that should also be integrated with the mapping of fish communities.

p12-39 ii) CVC is not convinced that the constrained brook trout populations are necessarily due to historical impacts. Natural constraints are also important and should be noted. CVC is more concerned with the lack of coolwater species documented (vs. trout distributions).

APPENDIX D

Tables D2.1 to D2.4

A description of each of the parameters within the table would be helpful, in addition to an example calculation. Furthermore, a column indicating the monthly infiltration should also be added. A copy of the document by Environment Canada "Water Balance Tabulations for Canadian Climate Stations" should be included within Appendix D.

Table D5.1 to D5.39:

There are many locations within the Tables where the phrase "not measured" is used, there should be an additional column or reason as to why no streamflow was measured, whether it was related to property access issue or whether the stream had no flow.