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2 November 2015

**Electronic Mail**

Mr. Liam Marray  
Manager, Planning Ecology  
Credit Valley Conservation  
1255 Old Derry Road  
Mississauga ON L5N 6R4

**RE: TRI-COUNTY AGGREGATES LTD. GRAVEL PIT APPLICATIONS**

Dear Mr. Marray:

We are responding to the comments set out in your October 9<sup>th</sup> letter to the Township, using the following excerpt from the Word version you provided. Our responses are shown in three colours below each of the CVC comments. **Groundwater Science's (GSC's) are shown in blue, Beacon comments are coloured green and Long Environmental comments are in burgundy.**

Staff of the Credit Valley Conservation (CVC) have had an opportunity to review the above –noted applications and provide the following comments for your consideration.

Material Reviewed

- 1) Tri-County Pit Site Planning Report February 2015 prepared by Long Environmental
- 2) Site Plan Drawings 1-3 dated February 2015 prepared by Long Environmental

The subject site contains no watercourses or associated hazards (floodplain or erosion). Furthermore, the property contains no significant natural heritage features of concern to CVC. However, a tributary of Shaws Creek traverses north of the site on lands own by the Licensee. In addition, a portion of a significant woodland is located on the lands own by the Licensee. The woodland also contains wetlands.

CVC has worked with the proponent with respect to locating the site outside of the hazards associated with the tributary of Shaws Creek. CVC has reviewed the site boundaries and has no objection to the location of the boundary with respect to the floodplain and erosion hazards.

The site is located within the 25 year time of travel zone of the Well Head Protection Area (WHPA) of the Alton supply well. The regional mapping undertaken for the Source Water Protection studies does infer a different groundwater flow direction than that concluded through this study. Although there are differences between the 2 studies, CVC has no concerns with the proposed pit from a Source Water Protection perspective.

In general, CVC is satisfied with the methodology, monitoring network, and the analysis that the consultant employed to identify the groundwater system. Although 2014 was a wet year, CVC recommends that the Operation Plan contain a condition that explicitly states that groundwater monitoring will continue on site until excavation is complete and that the pit floor will remain 1.5 metres above the identified high groundwater level.

Site Plan Drawing 2, Note W5 is intended to govern the annual review of groundwater monitoring to ensure that the pit floor is 1.5 m above groundwater:

*W5. DURING OPERATIONAL YEARS THE MONITORING DATA SHALL BE SUMMARIZED IN AN ANNUAL REPORT PROVIDED TO THE MINISTRY OF NATURAL RESOURCES AND FORESTRY, CREDIT VALLEY CONSERVATION AND TOWNSHIP OF EAST GARAFRAXA BY MARCH 31ST OF THE FOLLOWING YEAR. THE ANNUAL REPORT WILL INCLUDE A REVIEW OF THE HIGH GROUNDWATER TABLE TO ENSURE THAT THE MAXIMUM DEPTH OF EXCAVATION IS AT LEAST 1.5 M*

This note was inadvertently abbreviated from the recommendation in GSC's report. It should continue with:

*HIGHER AND TO DESCRIBE ANY MITIGATION MEASURES UNDERTAKEN AT THE SITE AND THE RESULTS OF THOSE MITIGATION MEASURES.*

CVC is generally satisfied with the methodology applied to undertake the water balance assessment and the results that were generated. The major surface water feature is Shaws Creek Tributary. The water balance concludes that aggregate extraction will decrease future runoff into Shaw Creek Tributary by 0.59 L/s (0.07%). The report suggests that given the intermittent nature of the creek and the fact that it receives runoff mostly during snowmelt (800 L/s) and heavy precipitation, the reduction of runoff as a result of aggregate extraction does not represent a significant impact. The water balance shows that in the existing condition, runoff into the Shaw Creek Tributary is 1.52 L/s. In respect of this, we do not fully understand how a post-development run-off reduction of 0.59 L/s is assessed as representing a loss of only 0.07%. Why is the runoff amount in the post-situation being compared against the snowmelt amount, but not against the run-off assessed in the pre-condition? Please explain.

The water balance calculation shown in the report indicates that the existing average annual runoff to the creek is estimated to be 1.52 L/s. After extraction and rehabilitation is complete the estimated average annual site runoff reaching the creek is 0.92 L/s. This represents a reduction of 0.6 L/s (39%) in runoff leaving the site and reaching the creek. We note that this water is not "lost", it simply enters the groundwater system instead of flowing overland to the creek. However, given upstream catchment size and conditions, this reduction in runoff is small in comparison to actual streamflow in the creek.

In an attempt to put this reduction into perspective and illustrate what effect the change in runoff would have at the creek, the entire estimated average annual site runoff reduction, of 0.6 L/s, was compared to the instantaneous streamflow measurement obtained at the creek under spring snowmelt conditions, of over 800 L/s in April 2014. The comparison was made simply to illustrate that although the total annual runoff reduction appears large as a percentage of the original contribution, it is small in (0.07%) comparison to conditions observed in the field as represented by the measured 2014 spring snowmelt streamflow. We acknowledge that a better comparison would examine seasonal conditions.

The monthly water balance calculations shown in the report indicate the majority of water contribution to the creek from the site, and therefore volumetric impact of the runoff reduction, occurs during snowmelt. The average spring snowmelt runoff estimate for existing conditions of 10.4 L/s represents approximately 1.3% of the streamflow measured during snowmelt 2014, the remaining 98.7% would originate from the catchment area upstream of the site. This comparison illustrates the relationship between site runoff and actual streamflow in the creek. Using that comparison, a 39% change in site runoff would only correspond to a 0.5% change in streamflow.



As noted above, this water is not “lost” to the stream, it will enter the shallow groundwater system and can contribute to discharge that likely occurs further downstream of the site.

We note that over much of the summer the creek is observed to be predominantly dry, and as indicated by the monthly water balance results under most conditions no actual runoff would reach the creek from the site. Under those conditions the change in site runoff potential will have no significant effect on streamflow. The stream level monitoring results indicate that, during larger precipitation events, there is some short-term flow within the creek. However based on the setting the primary source of this flow is interpreted to be the much larger upstream catchment which includes areas where silty clay soils result in higher runoff rates.

There is also some site runoff potential in the late fall. The average monthly November runoff estimate for existing conditions of 3.5 L/s represents approximately 4% of the 98 L/s streamflow measured in November 2014. Using that comparison, a 39% change in site runoff would only correspond to a 1.4% change in streamflow under those conditions. Therefore overall changes in runoff are relatively small in scale with respect to streamflow and will not have a significant effect on the creek.

A preliminary water taking assessment for aggregate wash was undertaken. The study shows that consumptive use of water is 382.9L/min for 182 days. The simulation for pumping from wash pond will result in approximately 80 cm drawdown of groundwater in the creek, which was indicated to happen only during the period that groundwater levels are naturally below the creek bed. It is expected that a detailed review of water taking will take place at the stage of the PTTW application, where a pointed water taking assessment will be conducted with more field study, aquifer tests and monitoring. CVC requests an opportunity to review and comment on the reports submitted in support of the PTTW in order to confirm that the water taking will not result in negative impacts to the watercourse and wetlands.

**Our Client agrees to include the CVC in the PTTW application process.**

It should be noted that any infrastructure required for the mitigation measures for the water taking within area subject to Ontario Regulation 160/06 that is not part of the ARA application would require a permit from CVC. It is also not clear how the mitigation measure would mitigate the impacts to the shallow groundwater system. Further discussion is required both from a technical perspective and a policy perspective.

All infrastructure needed for the proposed mitigation measures would be constructed within the Stage 1 Processing Area and within the licensed boundary (see Operational Plan). This could include a bedrock well, if needed, adjacent to the proposed wash pond. Note that the wash ponds would be constructed on the pit floor within the processing area, and will have no connection to Shaws Creek.

Mitigation would only be needed in response to potential wash operation related impacts to groundwater contribution to the creek. There is no potential direct effect on streamflow in the creek, only a potential “indirect” effect through the groundwater system that would only occur under very specific high water table conditions. The potential impact identified is a drawdown within the shallow unconfined sand and gravel aquifer around the wash pond associated with taking water from the pond system and using that water to wash aggregate. In the event that the pond related drawdown interferes with the movement of groundwater to the creek, mitigation is expected. As noted in the report, washing operations would occur during times when, to date, the water table is observed to be below the creek. Under those conditions, no potential impact to groundwater contribution would be expected. However to ensure all impact potential is addressed, mitigation measures are proposed.



We note that prior to any washing operations at the site, a Permit To Take Water (PTTW) will be needed. Additional, detailed discussion related to impacts and mitigation measures is expected as part of any PTTW approval process. At this time the mitigation measure recommendations are made to illustrate that practical and reasonable mitigation measures are available as needed in the future.

The mitigation options proposed include: a reduction or cessation of water taking until impacts are mitigated or the use of a bedrock make-up well to mitigate drawdown within the unconfined aquifer.

The mitigation options are intended to reduce or eliminate drawdowns in the shallow unconfined aquifer around the pond. This can be done by reducing or stopping the pumping activities and letting groundwater levels recover naturally due to rainfall and groundwater flow across the site. Drawdown can also be eliminated by adding water to the wash pond (only) from a separate source, in this case the deep, confined bedrock aquifer, to offset water losses associated with aggregate washing. By adding water to the pond, and ensuring the pond level does not decline significantly through the operational year, drawdown at and around the pond is reduced or eliminated. Water taking from the deep aquifer would not significantly affect groundwater levels in the shallow unconfined aquifer due to the thick till sequence separating the two aquifer systems.

The Shaws Creek tributary is identified as direct fish habitat. Section 2.1.6 of the Provincial Policy Statement states:

Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.

CVC no longer has an agreement with Fisheries and Oceans Canada (DFO) to review applications to determine impacts to fish habitat. As a result, CVC recommends that confirmation be received by the municipality from (DFO) that the proposal meets all federal requirements with respect to fish habitat.

Under Section 35 of the *Fisheries Act*, projects are prohibited from causing serious harm to fish unless authorized by Fisheries and Oceans Canada (DFO). Determining the applicability of the Section 35 prohibition to particular water bodies is now made on a case-by-case basis through a self-assessment process to determine if serious harm to commercial, recreational or aboriginal fisheries may occur. DFO provides on-line guidance for the self-assessment process including stipulations for when projects may be exempt from DFO review, Measures to Avoid Causing Harm, and Pathway of Effects diagrams for determining how common development projects may impact fisheries.

Based on the proposed operations and mitigation measures, we do not anticipate that the project will result in causing serious harm to fish. We are in the process of completing a self-assessment to determine if the project will be exempt.

The Natural Environment Report identified 1 Endangered Species (Butternut) and 3 threatened species (Bank Swallow, Barn Swallow and Bobolink) on the property. Section 2.17 of the Provincial Policy states:

Development and site alteration shall not be permitted in habitat of threatened and endangered species except in accordance with provincial and federal requirements.

CVC recommends that confirmation be received by the municipality that the proposal meets the requirements of the Province and that there are no implications to the planning act applications. It should be noted that although there may not be suitable breeding habitat for Bank Swallow on the subject property, all life stages should be considered.



The Midhurst MNR provided comments on its review of the Tri-County Pit Natural Environment Assessment report on June 15, 2015. The project team provided response comments and further detail regarding species at risk and significant wildlife habitat and water resources in an email package dated August 14, 2015. MNR responded in a letter on October 21, 2015 in which it is stated that their concerns regarding endangered and threatened species and significant wildlife habitat have been addressed and that they have no additional comments on these issues.

The following responses regarding endangered and threatened species include those that have been provided to the MNR.

#### Butternut

Butternut trees were observed from along the edge of the northern woodlot (Unit 5) and the locations of the trees are outside of the proposed licensed area and 120 m adjacent lands.

MNR did not raise concerns or request any additional information regarding this species.

#### Bank Swallow

Bank Swallows were observed flying over the agricultural lands on the southern edge of the property and sitting in a hedgerow along the southern edge of the property. An active aggregate operation is located to the south west of the site and it is possible that these birds are nesting off site. There is no nesting habitat for this species within the proposed licensed area.

MNR did not raise concerns or request any additional information regarding this species.

#### Barn Swallow

One active Barn Swallow nest was observed on a light fixture on the porch of the abandoned homestead on the east side of the property. Barn Swallow was observed actively foraging over the meadow to the south of this location and on the east side of 18<sup>th</sup> Line. The MNR recognized the presence of nesting habitat.

MNR did not raise concerns or request any additional information regarding this species.

Under Section 17 of the *Endangered Species Act* the Minister of Natural Resources may issue a permit to authorize a person to carry out an activity that would otherwise be prohibited by Sections 9 and 10 of the Act.

Tri-County Aggregates Ltd. will pursue such a permit, at the time required, as stages of the operations are planned to proceed.

#### Bobolink

Four pair of Bobolink were recorded in May 2014 as breeding in the hay fields on lands within 120 m of the site. The hay field was harvested prior to the following two breeding bird surveys in June 2014 and no additional Bobolink observations were made. Since the 2014 observations of Bobolink during the breeding bird surveys, the field has been tilled for crop rotation. There were no Bobolink observed from the field during the 2015 breeding bird surveys.



MNRF requested clarification as to how much of the licensed area is suitable for Bobolink. The Existing Conditions & Proposed Site Figure 2 of the Level 1 and 2 Environmental Assessment report illustrates the identified limits of Bobolink habitat based on the 2014 field investigations. The figure also shows the limits of the proposed license area and extraction area. This area is 12.48 ha in size. The MNRF further states that the EA report acknowledges that prior to extraction in this area an authorization under the ESA would be required. This field is not anticipated to be extracted for at least 10 years.

MNRF is satisfied that this issue can be addressed in the future through inclusion of proposed Note E2 on Site Plan Drawing 3, stating that Tri-County Aggregates Ltd. will pursue such a permit at the time required as stages of the operations are planned to proceed.

The report addresses Significant Wildlife Habitat based on the Criteria outlined in the Significant Wildlife Habitat Technical Guide 2002. CVC would recommend that Significant Wildlife Habitat Eco-region Criteria Schedules for Eco-region 6E (2015) be used. CVC recognizes that this document has only recently been finalized; however, drafts of the document have been in use for a number of years. We recommend that this document be referenced in determining Significant Wildlife Habitat. Two areas of potential concern are habitat of eastern Wood Pewee (Species of Concern) and potential that the wetland (Unit 6) is significant due to amphibian breeding. The report should identify all significant wildlife habitat, buffers and potential impacts and mitigation measures.

MNRF recommended that the Significant Wildlife Habitat Eco-region Criteria Schedules for Eco-region 6E also be used in the screening for SWH for the project. Their request included using the Criteria Schedules for screening the woodland vernal pool and woodland for potential SWH for breeding amphibians and Eastern Wood-Pewee, respectively.

Through subsequent discussions with the MNRF, it was recognized that the woodland is both outside of the proposed license area and outside of the 120 m adjacent lands, with the exception of a small area along the eastern corner of the woodland as shown on Figure 2 of the EA report. To this extent it is our opinion that any candidate SWH associated with the woodland would not be captured through the Level 1 screening as provided in Table 7, Section 5.10 of the NEA report. This conclusion remains unchanged and SWH would not qualify to be taken forward to the Level 2 assessment.

Nevertheless, to address the request for assessing SWH using the SWH Ecoregion 6E Criterion Schedule the following evaluation/screening has been provided.

Based on the 2014 and 2015 breeding amphibian surveys three species have been recorded from the wetland/pool in the woodland including Wood Frog Spring Peeper, and Western Chorus Frog. Calling codes for each species were 2 or 3 with over 20 individuals of Spring Peepers and Chorus Frogs recorded. Based on the habitat feature occurring within the ELC community series of FOD, the number of species and individuals recorded, and a travel corridor connection within woodland, the breeding amphibian habitat would qualify as SWH. Through the hydrological assessment that has been completed, including monitoring of the surface-groundwater interaction from 2014 to 2015, it has been determined that the wetland is maintained by surface water and this feature and its function will not be affected by the proposed operations.

Eastern Wood-pewee (Special Concern) was recorded from the woodland during both the 2014 and 2015 breeding bird species. In our opinion, the SWH Ecoregion 6E Criterion Schedule provides broad criteria for confirming SWH for Special Concern. For example, there is no direction provided regarding the numbers of breeding pairs needed to qualify as SWH. In the absence of this information and based on the defining criteria provided, the



woodland community provides the form and function needs for Eastern Wood-pewee and may qualify as candidate SWH depending on a threshold for the numbers of pairs of Eastern Wood-pewee utilizing the woodland.

C5VC would recommend that the significant woodland, significant wildlife habitat and associated buffers be zoned appropriately.

The areas of significant woodland, significant wildlife habitat and buffers are outside of the proposed license area.

CVC is supportive of working with the proponent and MNR for the development of the Restoration Plan as identified on Drawing 3 of 3.

Yours very truly,

LONG ENVIRONMENTAL CONSULTANTS INC.



R. J. Long, P. Eng, MCIP, RPP

e.c. Tri-County Aggregates Ltd.  
Township of East Garafraxa  
Groundwater Science Corp.  
Beacon Environmental

