



July 20, 2015

Via: Email

Mr. Rob Stovel
Stovel & Associates
297 Briarhill Dr.,
Stratford ON N5A

Dear Rob:

**Re: Tri County Aggregates
Project No.: 300034724.0000**

The Township of East Garafraxa received a complete application for the proposed Tri-County gravel pit on April 16, 2015. Reports were circulated a couple weeks later for review and comment. This letter provides comments in our capacity as Township Engineers, and specifically focuses on Traffic, Air Quality, and Hydrogeology. I was assisted in this review by Dr. Kristina Zeromskiene who provided expertise in air quality and by Dave Hopkins, P.Geo. who is a hydrogeologist. We also have provided some general commentary.

General Comments

Planning Report

- On Page 52, we assume the “minimum working face height is 7 m” should actually be “maximum”.

Site Plan

- The label for “Area to be Licensed” should connect to the licensed boundary, not the buffer zone.

Existing Features Plan

- Note C1 refers to the Thomas Madill site as ALHA-46, but it should be ALHb-13.
- Prescribed Condition 5 states that a Spills Program will be developed prior to site preparation, but we would prefer to review it as part of the current application.

Operational Plan

- Note W4 alludes to observations being made with respect to the washwater operations interfering with groundwater flow to Shaw’s Creek. It is unclear who will be making these

observations or how it will be defined. The note seems like a very informal form of a monitoring program and should be expanded.

- Please add the Township to the list of recipients of monitoring data in Note W5.
- There is a well labelled in the location of the existing farmhouse. Does it need to be properly abandoned?
- The Township may want to consider elimination of the berm adjacent to the 18th Line because of concerns for snow drifting.
- The haul route may need to be shifted north in order to maintain proper slopes to the southern boundary.

Progressive and Final Rehabilitation Plan

- Note 5 suggests that fill will be brought to the site from an external source. The Township has encountered difficulties in monitoring and controlling such activities. It is preferred to use on site materials and to only consider external sources if a soils balance report determines that there is a shortfall. Should the importation of external fill be approved, there will need to be a number of additional notes added to deal with potential contamination etc. and the traffic report will need to consider the additional trucking.
- Note E1 refers to reforestation occurring within 0.21 ha immediately north of the site. This area should be shown on the plan. With the post extractive use being agricultural, we would have expected that the agricultural area would be maximized. It is not clear, but it appears that some additional modification may be in order to blend the grades of the rehabilitated site with the adjacent farm field to achieve a better integrated farm field.

Traffic

- 3.0 m road widening is required on the 17th and 18th Line.
- It is difficult to understand exactly what is being put forward to address traffic issues. The application was supported by a Traffic Impact Study prepared by C.F. Crozier and Associates dated March 2014 (a copy of which was previously provided to the Township on an informal basis). As noted in the Section 11 of the Planning report, the projected traffic volumes in the Crozier report became obsolete right around the time it was released, as a result of Greenwood posting its application to increase annual production. Those numbers were confirmed in October of 2014. While the Planning Report makes reference to the recommendations of the Greenwood traffic consultant, it isn't clear whether or not Tri-County agrees with the recommendations and is willing to participate in the upgrades. If so, there is a need to establish how and when the recommendations will be implemented.
- We support the comments made by Triton Engineering on behalf of the County of Dufferin as outlined in their memos of June 5 and 22, 2015. These comments mostly affect the design details for the intersection of County Road 3 and Township Line 17.
- The Crozier report found a number of site line issues on the 17th Line, concluding that appropriate design speeds had not been followed. However, these conclusions were based

on contours taken from aerial photography, which are relatively inaccurate. We have field checked the conclusions and determined that a number of the areas identified are in fact satisfactory.

- In our email of December 12, 2013 we asked that the traffic report determine queuing lengths for trucks awaiting the unlocking of the gate, with the intent of locating the gate at a distance that would allow the queue to take place outside of the municipal right of way. The report did not provide the information requested.

Hydrogeology

- Groundwater levels have only been monitored since November 2013, which is a relatively short period of time. The application is premised on a maximum seasonally high groundwater elevation of 475.5 masl at the southern part of the site (see Note 6 on the Existing Features Plan). The southern part of the Tri-County site is contiguous to the northern part of the Greenwood (East Pit) site, which is also currently under review for license. The supporting documents for the Greenwood site contain several more years of data, and suggest a maximum seasonally high groundwater elevation of 477.2 masl (MW99-09) at its northern end. In other words the Tri-County application is based on a groundwater elevation that is 1.7 m lower than what was determined by Greenwood in the same general location. This discrepancy could require significant amendment to the Tri-County plan.
- The GSI report includes the location of wells within 500 m of the site with locations based on coordinates obtained from the MOECC interactive water well mapping website. All offsite wells are indicated to be deep drilled wells completed in the bedrock. However, it is possible that there may be shallow dug wells in the area that are not included in the MOECC database. This should be confirmed with a door to door well survey.
- After the observation wells were developed response tests were completed to estimate the hydraulic conductivity (K) of the sand and gravel unit. The overall geometric K value of 1.07×10^{-4} m/s was calculated by GSI. However, the K value for MW7-14 (8.4×10^{-7} m/s) seems abnormally low considering the material is described as medium to coarse sand. The borehole logs indicate that some native material has collapsed around the screen.
- The water level response for MW7-14 shows a similar trend as MW5-15 which suggests that the well is providing appropriate water level data. However, the water levels were initially very similar, but the difference between water levels has increased over time. Burnside recommends that MW7-14 be subjected to additional development to remove any silt that may have accumulated in the well.
- The pumping from the wash pond has the potential to lower the water table. This will need to be considered when establishing the high water table for the site. Consideration also needs to be made for cumulative impacts, as other pits in the area may be operating washing plants at the same time. In addition, as indicated above it should be confirmed that there are no dug wells in the area.
- GSI suggests that a bedrock well pumping would provide sufficient water to “top up” the pond. Prior to considering the use of a bedrock “make-up” well GSI should confirm that the predicted drawdown will not result in water levels below the pump setting in nearby domestic

wells. If a bedrock “make-up” well is to be considered, the monitoring program should be expanded to consider the closest domestic wells. The “high water table” will need to take into account any drawdown associated with the wash pond.

- Any required MOECC approvals, such as a Permit to Take Water, should be obtained prior to final approval by the Township of the project. The Township should be copied with any application as well as supporting documentation.

Air Quality

The following comments arise from our review of the Air Quality Assessment prepared by Senes Consultants and dated January 2015.

- Page 1.6 indicates “These sources include exhaust emissions from mobile equipment such as haul trucks and front end loaders, and stationary equipment such as a diesel generator.” The diesel generator, depending on specific parameters may be required to be registered on the Environmental Activity and Sector Registry (EASR) or apply for an Environmental Compliance Approval.
- Clarification is required for the source and the data that was used for background data. There is reference on Page 2-1 to a report dated October 13, 2013 by C.F. Crozier & Associates which is not included in the references. However on Page 3-11 reference is made to a Crozier report dated March 2014 and that report is listed in the references. We would like to know what information was taken from each of the two studies.
- The permanent processing plant may require an Environmental Compliance Approval from MOECC. If so, the approvals should be secured prior to final approval of the project. The Township should be copied on any applications to MOECC.
- Table 3.1 should include rehabilitation activities that take place during Stages 1 through 4.
- It would be helpful if a legend was provided with Figure 3.1. Location of berms A, B, C and D should be labelled.
- The MOBILE 6C Emissions Model was used, rather than MOVES, which is more current and replaced MOBILE in 2010. Please justify why the latest version was not used in the assessment.
- Table 4-2 includes Area-3, but not driving length through Area 1 or 2. It is not clear how trucks get to Area 3 without passing Area 2.
- Truck movement is included in Stage 4 in Area 3; however, Table 3.1 does not mention any activities in Area 3 during Stage 4. Please clarify what activities are occurring in Area 3 during Stage 4.
- Does the column in Table 5.1 for “Exceedances (days/yr.)” for overall maximum mean 72 exceedances on average per year, or does it mean 72 exceedances in 5 years?
- The overall maximum 24-hr PM10 concentration for the Stage 4 case is predicted to be 146 $\mu\text{g}/\text{m}^3$ compared to an interim AAQC of 50 $\mu\text{g}/\text{m}^3$. Table 5.2 indicates that there will be

26 exceedances per year, which means every 2nd week there will be a day where the concentration is above the criteria. In this case, the contribution just from the pit extraction activities not including roads is 74%; therefore, it appears that this one source would result in off-property concentrations above the AAQC value. After removing outliers, the predicted maximum concentration is $114 \mu\text{g}/\text{m}^3$, which is more than double the AAQC value of $50 \mu\text{g}/\text{m}^3$.

A similar situation exists with TSP. Table 5.2 indicates exceedance on 72 days per year. If the facility operates 6 days a week for 10 months a year then the facility operates ($6 \times 10 \times 4.3 =$) 258 days/year. With 72 exceedances in 258 days, there will be exceedances on ($72/258 \times 100\% =$) 28% of the days of operation which is one or two days a week. If the simulation used emissions for 365 days/year, then the exceedances happen ($72/365 \times 100\% =$) 20% of the time which is still more than once a week.

AERMOD is known to predict concentrations quite well but not predict the location of that concentration as well. The distance from the predicted 24-hr TSP overall maximum to the nearest receptor is less than 100 m; therefore, there is a significant possibility that the worst-case exceedances might actually occur at receptor R9.

Please justify why exceedances above the criteria, given their frequency, contribution from pit extraction and distance to the nearest sensitive receptor should be considered acceptable.

Cumulative impacts with other local pits should be considered. Potentially, if approvals are given there could be several hundred acres of pits exposed and creating dust at the same time.

Please let us know if discussion is required on these comments.

Yours truly,

R.J. Burnside & Associates Limited



Gord Feniak, P.Eng.
GF:mp

cc: Sue Stone, Township of East Garafraxa (Via: Email)
Jeff Wilker, Thomson Rogers (Via: Email)

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