TECHNICAL MEMORANDUM

DATE June 10, 2013 **PROJECT No.** 12-1151-0213

TO Mr. Jeffrey Lee
Town of Oakville

CC Mr. John Bayliss, Mr. Scott Winger

FROM Tracy Hodges, Golder Associates **EMAIL** tracy_hodges@golder.com

RESPONSE TO PEER REVIEW – PHASE 2 OF COMPLETE APPLICATION – BRONTE ASPHALT PLANT OAKVILLE HEALTH PROTECTION AIR QUALITY BY-LAW APPLICATION FOR APPROVAL

Dear Mr. Lee,

This memo is to provide additional clarification of information as requested in the Town of Oakville Peer review letter received on May 22, 2013 from XCG Environmental Engineers and Scientists (XCG) regarding the Phase 2 Review of the Application for Approval for Dufferin Construction Company's Bronte Asphalt Plant.

To simplify the response, comments are summarized in a tabular format and included as attachment A to this memo. These comments address only those areas that further clarification was requested.

As stated in the Phase 2 Review by XCG, there are a few points of clarification that should be addressed. However, these findings are not significant and will not change the overall assessment. As a result no additional modelling or revision of emissions quantification was required.

Based on the data provided in the application, the Facility does not significantly affect air quality in the existing airshed as the facility induced Fine Particulate Matter (FPM) concentrations are less than 0.2 micrograms per cubic metres annually, the criterion defined by the Oakville Health Protection Air Quality By-Law.

If you require any further clarification, please contact the undersigned at 905-567-6100 extension 1527.

Sincerely,

Tracy Hodges B.Sc. (Hons.), CCEP
Air Quality Specialist

Anthony Ciccone, Ph.D., P.Eng.
Principal

TMH/AC/am

Attachments: Attachment A and Figure 2

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Section 1 – Responses to Findings of the Phase 2 Review

Application Item	Elaboration of Application Item	Issues Raised in Phase 2 Review Comments	Response
3.2 Location	Provide facility address and at least two location in the town; and, (ii) details in the environs within 3 kilometres of the facility (site). All maps must clearly identify the facility and its surroundings. The details map(s) should include nearby significant sources (e.g., highways, major roads) of FPM and precursors and sensitive receptors (e.g. health care facilities, schools, and residential areas). All maps must be in UTM/WGS84 datum coordinates. These maps may	Figure 2 shows the land use zoning within a radius of approximately 1.5 km of the facility. Although this figure does not show the full 3-kilometre radius required by the By-Law, the zoning map clearly shows the presence of residential zoning within 450 metres of the facility. School zoning is present within 1 km of the facility. The final document should show the 3-kilometre radius as required . XCG has noted that The Sanctuary Church is located at 2009 Wyecroft Road, Oakville. This church is located in a commercial building located approximately 100 metres west of the facility. It does not appear that this church offers any day care activities, and is therefore not considered sensitive.	New map attached with expanded zoning information. This is based on the most recent files available from the Town of Oakville. The Sanctuary Church building identified is not actually a place of worship. This building is the administrative offices for the Sanctuary Church; therefore it is not considered a sensitive receptor.
3.4 Raw Materials, Products and Processes	• Identify any raw materials that are relevant to estimating health-risk air pollutant air emissions; • Identify all processes (including a simplified process flow diagram) that are relevant to the air contaminants emitted from the facility; • Provide the maximum and average daily, monthly and annual process flow-through rates for any processes that may contribute to the major emission; • Provide information on the variability of process rates on an annual basis; • Provide the hours of operation (hours/day, days/week, weeks/year) for average and maximum operational activity; • Provide the relationship between the average and maximum process rate(s) and operating conditions/hours of operation; • Information on the variability of production rates around the average; and • Set out the planned maintenance periods.	Note the text in Section 2.6 incorrectly references Table 2 rather than Table 3. The selection of the quantity of recycled concrete received (MH_03) on an average basis as defined in Appendix C of the report is unclear. XCG provides additional details in Attachment A below. Additional justification/explanation is required.	Error in text reference noted. See comments in Section 2.0– Responses to Attachment A comments

3.6 Emission control equipment and procedures and emissions monitoring	• Summarize all relevant existing emission control devices (on stacks/vents) and emission or pollution prevention practices; • Associate each device/measure with pollutants emitted and emission sources; • Indicate the control efficiency for each device/practice; and • Indicate all continuous emission monitoring (CEM) and other monitoring to determine the effectiveness or efficacy of emission control(s).	The emission control factors for the crushing and screening activities include the use of two control efficiencies. As discussed in more detail in Attachment A, it seems inappropriate to apply an additional control efficiency of 90% for applying a water spray during the crushing operation. This would affect sources RCC_01 and RCC_02. Please provide further justification or explanation.	See comments in Section 2.0– Responses to Attachment A comments
3.7 Identification and quantification of substances released to air	Identify all health-risk air pollutants that would be emitted (proposed facilities) or are emitted (existing facilities) above major emission levels -be sure to include relevant speciated volatile organic compounds (VOCs) and directly emitted FPM; Quantify the average and worst-case rates of daily and annual emissions during operations and the operating conditions that lead to these emissions; and • Indicate the methods used to estimate emissions and provide detailed calculations and scenario descriptions	As discussed in Attachment A, there are several points for clarification in regard to the assumptions for the calculations of the average and worst case emissions from various sources. These points of clarification are for clarity purposes and will not significantly impact the results of the modelling.	See comments in Section 2.0– Responses to Attachment A comments
8. Additional Information	An applicant may wish to supply additional information if: it seeks an approval on the basis that the public interest favors allowing the major emission of the facility to occur.	None Provided	DCC provided a detailed summary of their involvement in the local community in Appendix A of the report. This information should be acknowledged.

Section 2.0: Responses to Attachment A Comments

The Section below summarizes the responses that require more detailed elaboration.

3.4 Raw Materials and Processes

Comment From Peer Reviewer	*Response*
The Applicant has assumed that the amount of recycled concrete received on-site by truck and stored in outdoor storage piles prior to transfer to the asphalt batch plant was equivalent to the quantity of material crushed. The maximum quantity of the crushed concrete received at the plant was assumed to be 50 percent of the crusher capacity as discussed in Section 2.8 of the Application and as shown in the Tables in Appendix C. This maximum value of recycled concrete received (Material Receipt MH_03) was assumed to be 72,964 tonnes/year, which does not match the maximum amount of material assumed to be crushed in a year. When calculating emissions from crushing (RCC-001) a maximum value of material crushed was assumed to be 145,927 tonnes/year. Thus, it is unclear if the maximum condition assumed for crushed concrete receipt (MH_03) is sufficiently conservative, since the Applicant has indicated that maximum rate of crushing is 145,927 tonnes/year. Please provide further justification/explanation. *The overall contribution of this source (MH_03) to the facility emissions is relatively small. XCG ran the model assuming that the maximum recycled concrete received was equal to the total maximum material crushed (145,927 tonnes/year). The resulting total maximum FPM emission did not significantly increase.*	The two sources of material that are received at the Facility and processed in the portable crusher include Recycled Asphalt Pavement (RAP) and recycled concrete. These were accounted for as sources MH_01 and MH_03, respectively. To determine the quantity of material received on site for the recycled concrete, historical production data was analysed and it was determined that approximately 50% of the material crushed on site is recycled concrete. The remaining material crushed is RAP that is fed to the process. It was assumed that the quantity of recycled concrete received on site would be equivalent to the quantity of recycled concrete crushed on site, which is 72,964 tonnes per year. The recycled concrete is not used in the HMA process. After crushing it is sold to off-site customers.

3.6 Emission Control Equipment and Procedures and Emissions Monitoring

Comment From Peer Reviewer	*Response*
Appendix C Activity - Emissions from Recycle Crushing Operations The Applicant has applied emission factors from the US EPA AP-42 Section 11.9.2 Crushed Stone Processing and Pulverized Mineral Processing for Primary Crushing. The specific emission factors were taken from Table 11.19.2-1. The emission factor used were for Tertiary Crushing (controlled), 0.00005 kg/Mg PM-2.5, and for Screening (controlled), 0.000025 kg/Mg PM-2.5. As noted in the document (see Table 11.19.2-1 note b), controlled sources (with wet suppression) are those that are part of the processing plant that employs current wet suppression technology similar to the study group. As such, it appeared that an emission control factor for the use of a wet suppression system is already included in the controlled emission factors selected by the Applicant. XCG also reviewed the US EPA AP-42 "Background Information for Revised AP-42 Section 11.19.2, Crushed Stone Processing and Pulverized Mineral Processing", dated May 12, 2003 and confirmed the study site did have we suppression in operation during the study and as such "controlled" emission factors were prepared as a result of the study. Therefore, it seems inappropriate to apply an additional control efficiency of 90 percent for applying a water spray during the crushing operation. This would affect sources RCC_01 and RCC_02. Please provide further justification or explanation. The overall contribution of these sources (RCC_01 and RCC_02) to the facility emissions is small and even without the additional 90 percent control efficiency will not contribute to an increase in the average and maximum emission estimates.	The factor provided in AP-42 Section 11.19.2 states that b. *Controlled sources (with wet suppression) are those that are part of the processing plant that employs current wet suppression technology similar to the study group. The moisture content of the study group without wet suppression systems operating (uncontrolled) ranged from 0.21 to 1.3 percent, and the same facilities operating wet suppression systems (controlled) ranged from 0.55 to 2.88 percent. Due to carry over of the small amount of moisture required, it has been shown that each source, with the exception of crushers, does not need to employ direct water sprays. Although the moisture content was the only variable measured, other process features may have as much influence on emissions from a given source. Visual observations from each source under normal operating conditions are probably the best indicator of which emission factor is most appropriate. Plants that employ substandard control measures as indicated by visual observations should use the uncontrolled factor with appropriate control efficiency that best reflects the effectiveness of the controls employed.* As stated above the primary consideration in defining a controlled and uncontrolled source is moisture content. The materials crushed both have moisture contents greater than 5%, thus the controlled emission factor was selected as most representative of the crusher emissions. The facility also applies water spray during crushing operations. To account for this additional control the control efficiency for water sprays was applied. As stated by the peer reviewer, the overall contribution of the affected sources is small therefore additional modelling is not required.

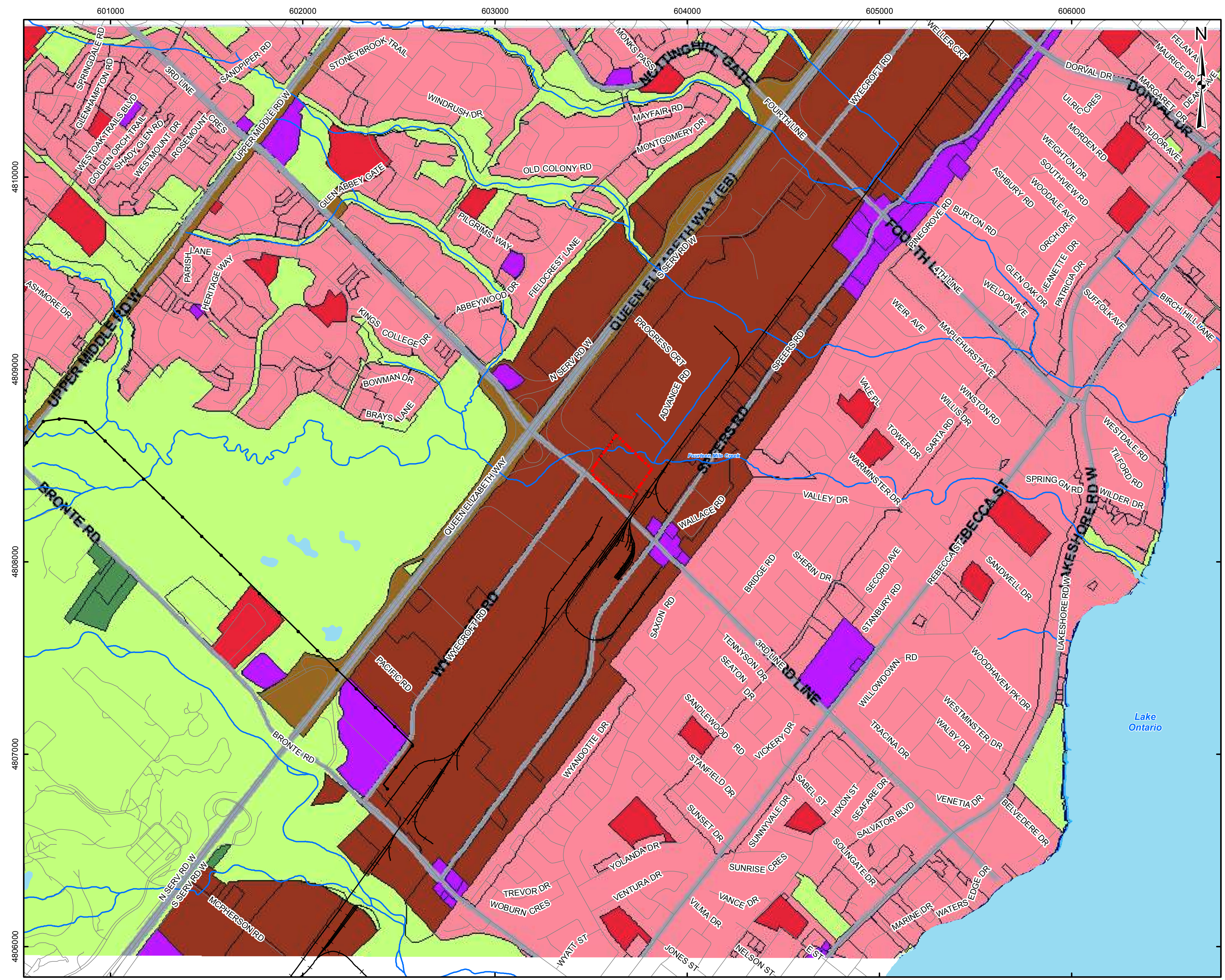
3.7 Identification and Quantification of Substances Release to Air

Comment From Peer Reviewer	***Response***
Appendix C - Activity - Emissions from Material Transfers Material Receipt The applicant has applied an emission factor calculated in accordance with US EPA AP-42, Section 13.2.4 Aggregate Handling and Storage document for emissions occurring during material transfer and receipt as shown in the Tables in Appendix C. The quality rating noted by the Applicant is a Quality Rating A. It is noted that the moisture content of recycled concrete (6.2 percent) is outside of the range of source conditions that were tested in developing the emission factor equation. Therefore, the quality rating is required to be dropped to a level B. The emission factor is still considered reasonable and conservative, as increased moisture should reduce fugitive emission further.	*Agree with comment – no further action required as it has no impact on the study.*
Appendix C Activity Emissions from Dryer Stack Batch Plant The Applicant indicates that the Emission factor for the emissions from Hot Mix Asphalt plant dryers/screens/mixer was taken from US EPA AP 42 11.1 Table 11.1-14. This reference is incorrect and should refer to Table 11.1-2 Summary of Particle Size Distribution for Batch Mix Dryer, Hot Screens, and Mixers. The calculations have used the appropriate emission factor and noted the appropriate Quality Rating E.	*The emission factor should be listed as Table 11.1-2*
Appendix C Activity - Emissions from Recycle Crushing Operations Diesel Generator The Applicant has applied emission factors from the Tier II Emission Standards for Non-Road Diesel Engines in order to calculate PM-2.5 emissions from the diesel generator used in the crushing operation. These emission factors seem appropriate for the engines and horsepower rating information provided. The applicant has calculated worst case emissions assuming that the generator operate 10 hours per day for 60 days per year. The Applicant has identified that crushing activities only occur for a maximum of 60 days per year. The average	*Average number of days crusher is operated is based on the average of the previous 3 years actual production data.*

PM-2.5 emissions from the generators have been calculated assuming that the generator operate 10 hours per day for 41 days per year. No justification has been provided for the selection of the average number of days that the crusher is operated. This assumption does not seem unreasonable; however, some additional explanation of the selection of the average number of days of crusher operation should be provided. Since the generator is a significant source of PM-2.5, the average concentration of FPM emitted from the facility may be impacted. This however, would not change the conclusion that the facility meets the Oakville Health Protection Air Quality By-Law criterion of 0.2 micrograms per cubic metres annually under worst case conditions.	
Appendix C Activity - Emissions from Support Operations - Welding The Applicant has applied an emission factors from the US EPA AP42 12.19 Electric Are Welding document. The emission factor selected seems appropriate for the welding rod noted (i.e. E7018). The process description in the table included in Appendix C is partially obstructed. The actual number of hours per day that the welding rod is assumed to be used has not been provided. Please clarify in the final version of the report	*Weld rod assumed to be used 5 hours per day.*
Appendix C Model Input Parameters The Applicant has prepared a summary of the model input parameters for the point sources and volume sources; including the average and maximum emission rates as calculated in Appendix C. XCG was unable to replicate the average and maximum emission rates in the units grams per second (g/s) for the sources that were identified to operate for 12 hours per day (i.e. MH_01, MH_02, MH_03, MH_04, MH_05, BP_01, BP_02, and RCC_03). The average and maximum emission rates could be replicated for the remaining sources which were identified to operate for 10 hours per day and 24 hours per day. Since the values calculated by Golder were slightly higher (more conservative) then the values produced by XCG, no further modelling is considered necessary. Golder should review the calculations completed and provide comment as necessary.	*No further action required*

3.7 Identification and Quantification of Substances Release to Air

Comment From Peer Reviewer	***Response***
4.2.1 FACILITY EMISSIONS ESTIMATE REQUIREMENTS/ ESTIMATION METHODS The Applicant modelled the emissions by splitting the sources into three main groups (the Batch Plant, Material Handling, and Recycle Crushing. They calculated the concentrations from each of the three main groups and that calculated a total concentrations resulting from combining the three source groups using a utility tool (Calsum). This procedure was used for both the average and maximum emission rates. XCG replicated the modelling using this method and found no issues with the modelling methodology. The emission estimates calculated by the Applicant were confirmed by the XCG model run	*Agree with comment – no further action required as it has no impact on the study.*



LEGEND

- Approximate Property Boundary
- Railways
- Watercourse
- Waterbody

ZONING DEFINITIONS

- Service Area-Employment
- Automotive Service
- High Density Residential
- General Urban
- Sub-Urban
- Neighbourhood Centre
- Institutional
- Existing Development
- Community Park
- Natural Heritage System
- Cemetery
- Holding
- Urban Cores
- General Employment
- Light Employment
- Agricultural
- Commercial
- Employment
- Industrial
- Open Space
- Parkway Belt
- Public Use
- Residential
- Lake Ontario

REFERENCE

Base Data - MNR NRVIS, obtained 2004, CANMAP v2006.4
Produced by Golder Associates Ltd under licence from
Ontario Ministry of Natural Resources, © Queens Printer 2008
Projection: Transverse Mercator Datum: NAD 83 Coordinate System: UTM Zone 17
Zoning data obtained from Town of Oakville website.

0.5 0.25 0 0.5 1
KILOMETERS
SCALE 1:20,000

PROJECT

BRONTE ASPHALT PLANT
HPAQB APPLICATION

TITLE

LAND USE ZONING DESIGNATION

Golder Associates
Mississauga, Ontario

PROJECT NO. 12-1151-0213			SCALE AS SHOWN	REV. 0.0
DESIGN	KD	20 Jan. 2011		
GIS	JR	6 Sep. 2012		
CHECK	CM	6 Sep. 2012		
REVIEW	TH	6 Sep. 2012		

FIGURE: 2

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