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**Re: Response to 2<sup>nd</sup> Comment Letter from Joint Agency Review Team (JART)  
Proposed Expansion of the Law Crushed Stone Quarry  
RWDI Reference No. 2202166**

Dear Mr. Lamb,

I have reviewed the air quality-related comments provided in the Comment Letter from Joint Agency Review Team (JART) – 2nd Submission of Technical Materials letter dated December 21, 2023.

**Table 1**, attached, provides the detailed responses to these comments.

Please do not hesitate to contact me if you have any questions.

Yours truly,

**RWDI AIR Inc.**

Brian G. Sulley, B.A.Sc., P.Eng.  
Technical Director, Principal

BGS/MMG/klm

Attach.



**Table 1: RWDI Responses to Comment Letter from Joint Agency Review Team – Air Quality Comments**

Index	Comment	RWDI Response
1	<p>1. Introduction:</p> <p>a) As the main purpose of the AQA report is to present dispersion modelling results, a short introduction to dispersion modelling is recommended, including atmospheric processes, modeling objectives and options related to the project. Comment not addressed. The JART does not agree with the response that “The report is intended for a qualified and experienced peer reviewer, not the general public.”</p> <p>b) The processes and limitations of selecting sensitive receptor locations should be described here based on the project requirements. Comment not addressed. Elements of the response would add useful information to the Sensitive Impact Locations section (#4) or at the beginning of the report.</p> <p>c) Please provide a list of references from the literature for the Best Management Practices Plan for dust. Practices include reducing the traffic, reducing the speed, improving road design, watering the road, covering the road with gravel, increasing the moisture content of the road surface, binding the road particles together, sealing unpaved roads, reducing exposed ground, and slowing the surface wind. Comment partially addressed. References should also be provided in the Report.</p>	<p>1. a) The process is now spelled out in detail.</p> <p>1. b) Additional clarity has been added.</p> <p>1. c) A fulsome list of references that cover all aspects of conducting air quality assessments and developing best management practices plans has been added, and a cross reference has been added.</p>
2	<p>2. SITE DESCRIPTION AND OPERATIONS</p> <p>a) Please detail the surrounding lands and emphasize that the eastern fence line of the current quarry is more than 2 km away from Port Colborne, i.e., the geographical location of the extension helps minimize the impact of emissions from the quarry on the City. Comment not addressed. Section 2 provides a few names of the roads close to the Project site. However, none of the maps includes names of the roads.</p>	<p>2. a) The Air Quality Assessment must be reviewed in conjunction with the Aggregate Resource Act Site Plans that accompany the application (Existing Features Plan, Operational Plan, Notes Plan, Rehabilitation Plan, and Cross Section Plan. These Site Plans provide all required information, and duplication of this information is not required. Text noting this has been added.</p> <p>2. b) No action is required.</p>



Index	Comment	RWDI Response
	<p>b) In the Introduction it is mentioned that the annual extraction limit will be 800,000 tonnes per year, which corresponds to a daily average of 2,200 tonnes. In paragraph 2 of the current section, it is written: “a maximum daily capacity of 8,000 tonnes per day”. Which one was considered for the conservative approach? Comment addressed.</p>	
<p><b>3</b></p>	<p>3. OPERATING SCENARIO</p> <p>a) The expression “conservative approach” could be introduced in the first paragraph to indicate that the AQ impact assessment is based on the “worst-case” scenario for the emissions and the dispersion. Comment Addressed.</p> <p>b) Please quantify the “peak day”, i.e., in terms of extraction and/or operations? Comment Addressed.</p>	<p>3. a) No action is required.</p> <p>3. b) No action is required.</p>
<p><b>4</b></p>	<p>4. SENSITIVE IMPACT LOCATIONS</p> <p>a) Detail the criteria to select receptors for this study. A good practice for locating receptors is to draw a 1-km circle over the main activity area and check what potential receptors are inside the circle and closer to the future extension of the quarry. Response noted. It continues to be recommended that adding elements which were included in the response would greatly improve the clarity of the document. However it is noted that this would not affect the conclusions and recommendations of the study.</p> <p>b) Residential buildings on the west side (along Graybiel Rd) and south side (along Highway 3) of the domain were included in the dispersion modeling study. Since there are not too many receptors, a short list detailing them could be included in this section: which ones are residential? Which ones are churches? Include their positions relative to the site (south, west, northeast), which is a key parameter when dispersion modeling results and impact on receptors are presented in a subsequent section. Comment addressed.</p>	<p>4. a) No action is required.</p> <p>4. b) No action is required.</p> <p>4. c) No action is required.</p>



Index	Comment	RWDI Response
	<p>c) Please specify why the 2 receptors in the southwest corner of Highway 3 and Rathfon Rd were not considered in the dispersion modeling exercise. Comment addressed.</p>	
<p><b>5</b></p>	<p>5. CONTAMINANTS AND SOURCES CONSIDERED</p> <p>a) It is common practice to include in the text a table listing the relevant air quality criteria and standards for the air pollutants of concern (NO<sub>2</sub>, TSP, PM<sub>10</sub>, PM<sub>2.5</sub>, silica) with proper references. Response noted. It continues to be recommended that adding a simple table listing current air quality standards pertinent to the project would greatly improve the clarity of the document. However it is noted that this would not affect the conclusions and recommendations of the study.</p> <p>b) Please modify. Dust emissions are mostly TSP, PM<sub>10</sub>, and PM<sub>2.5</sub>. However, NO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub> are key representatives of combustion products (we usually do not consider TSP in this case). Comment not addressed. The comment did not ask to remove TSP from the inventory. The comment meant that PM<sub>10</sub> and PM<sub>2.5</sub> are key components of combustion particles, not TSP. PM<sub>10</sub>, PM<sub>2.5</sub>, and TSP are related to dust particles.</p>	<p>5. a) A note has been added to direct the reader to the results tables which provides the relevant criteria.</p> <p>5. b) Combustion emissions still contribute to TSP, as TSP includes all particles less than 44µm, including both the PM<sub>10</sub> and PM<sub>2.5</sub> fractions. Therefore, including TSP in the discussion of combustion emissions remains appropriate. However, it appears that this comment has been clarified, and no further response required.</p>
<p><b>6</b></p>	<p>6. EMISSION ESTIMATION</p> <p>a) US Environmental Protection Agency's document "AP-42: Compilation of Air Emissions Factors" is the main reference to estimate emissions for this type of AQA study. Therefore, it should be cited in this section, such as (<a href="https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors">https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emissions-factors</a>, date of access; US Environmental Protection Agency, year). Comment not addressed. We do not agree that this is a "stylistic preference". The AQA relies on the emission factors/calculation/data provided in US EPA – AP-42, and this is not properly referenced in the text.</p>	<p>6. a) A note has been added.</p> <p>6. b) Text has been added to Section 8, with a cross reference to it provided in Section 6.</p> <p>6. c) No action is required.</p>



Index	Comment	RWDI Response
	<p>b) What data are included in the meteorological records used for the study? Which years are considered? 1996-2000? It is agreed that the AQA follows the MECP guideline. However, mentioning the years in the section emphasizes the fact that that the AQ assessment study is based on an old wind dataset (20+ years old) that may not be representative of the current situation at the site, in the context of rapid changing climate conditions in Canada.</p> <p>c) Text has been added to Section 8, with a cross reference to it provided in Section 6.</p>	
7	<p>7. DISCUSSION OF MITIGATION MEASURES</p> <p>a) "by maintaining a road surface moisture level of five times that of the ambient soil": Please indicate what the initial moisture level considered in the EPA study is. Comment addressed.</p>	7. a) No action is required.
8	<p>8. DISPERSION MODELLING</p> <p>a) Please indicate the date of the version for AERMOD such as "AERMOD version 19191 dispersion model (version date July 10, 2019)". Response noted. It continues to be recommended that the date be included for clarity. However it is noted that this would not affect the conclusions and recommendations of the study.</p> <p>b) In that section it should be specified that the dispersion simulation was conducted with the 95% level of control applied to the emissions. Response noted. It continues to be recommended that that the section should be revised. However it is noted that this would not affect the conclusions and recommendations of the study.</p> <p>c) The meteorological dataset was obtained from <a href="https://www.ontario.ca/page/map-regional-meteorological-and-terrain-data-air-dispersion-modelling">https://www.ontario.ca/page/map-regional-meteorological-and-terrain-data-air-dispersion-modelling</a> . Based on the location and characteristics of the project site, the file "West_Central_Crops",</p>	<p>8. a) The date has been added. Comment addressed.</p> <p>8. b) A note has been added referring the reader to the control efficiencies in the appendices. Comment addressed.</p> <p>8. c) The date has been added, as noted above. Comment addressed.</p> <p>8. d) RWDI agrees that the inclusion of a wind rose does not affect the conclusions and recommendations of the study, a wind rose has been included as Figure 4.</p> <p>8. e) No action is required.</p>



Index	Comment	RWDI Response
	<p>including the “London 1996-2000” dataset, seems to be the dataset required by MECP to run AERMOD. Is it the land use type used in the simulations with AERMOD? Comment addressed.</p> <p>d) The wind rose shown below indicates that the prevailing wind direction is mostly from the southwest, west, and northwest. Including the wind rose in the report would allow to indicate the x% of days that the sensitive receptors are downwind of the quarry. x% could be calculated from the wind direction data included in the meteorological records used to run AERMOD. Response noted. It continues to be recommended that presenting wind direction in % would show where the prevailing wind is blowing from, annually or seasonally. However it is noted that this would not affect the conclusions and recommendations of the study.</p> <p>e) Include the bibliographic reference for the Oxygen Limiting Method. Comment addressed.</p>	
<p><b>9</b></p>	<p>9. LOCAL EMISSION SOURCES</p> <p>a) This section includes important information that could be reorganized by sub-sections in order to make it clearer:</p> <ul style="list-style-type: none"> <li>i. 9.1 Reeb Quarry (across Highway 3).</li> <li>ii. 9.2 Kwik-Mix Materials Limited (next to the quarry).</li> <li>iii. 9.3 Other sources (such as the Vale Facilities in Port Colborne).</li> </ul> <p>b) Response noted. We do not agree that this is a “stylistic preference”. The comment was provided to help improve the readability of the section and to better communicate the results of the assessment.</p>	<p>9. a) Subheadings have been added. Additional commentary has been provided on the Kwik Mix facility, as RWDI has since prepared an ESDM for the site. Comment addressed.</p>
<p><b>10</b></p>	<p>10. BACKGROUND AIR QUALITY DATA</p> <p>a) “Nearest” is too vague: Please consider replacing it with the approximate distance between the quarry and the closest AQ monitoring station operated by MECP, such as: “The St. Catharines ambient air monitoring station (43°09’36” N, 79°14’05” W) is approx.</p>	<p>10. a) The distance is approximately 29km.</p> <p>10. b) No action is required.</p> <p>10. c) No action is required.</p>



Index	Comment	RWDI Response
	<p>located 30 km from the proposed Law Quarry site extension".            Response noted. It continues to be recommended that providing the actual distance would better communicate the methodology and assumptions of the report.</p> <p>b) The St. Catharines AQ station is considered an urban site. In general, background PM<sub>2.5</sub> and NO<sub>2</sub> levels (by-products of combustion processes, such as road traffic) are expected to be higher at an urban site than in a rural area where Law Quarry is located. Comment for information only.</p> <p>c) "A review of stations with similar land use profiles". Could you provide a list of the stations that were reviewed? Comment addressed.</p>	
<p><b>11</b></p>	<p>11. Conclusions and Recommendations:</p> <p>a) This section should emphasize that the mitigation measures (e.g., 95%) appear sufficient to significantly decrease dust emissions and to minimize their impact on local air quality (i.e., at the receptors). Comment addressed.</p> <p>b) It should also emphasize that the wind blows from SW and NW quadrants, which will help minimize the impact of operations on the closest receptors. Comment addressed.</p>	<p>11. a) No action is required.</p> <p>11. b) No action is required.</p>
<p><b>12</b></p>	<p>12. TABLES</p> <p>a) All Tables: Relevant Criteria, PM<sub>10</sub> row, top left of page. Should "Interim" be replaced with "24-Hour"? Comment not addressed. Specifying the averaging period of 24 hours is more relevant to the study. See section on Regulations and Guidelines at <a href="https://www.carexcanada.ca/profile/outdoor_air_pollution/">https://www.carexcanada.ca/profile/outdoor_air_pollution/</a>. For PM10 24-hr is indicated in the table, interim is provided as a footnote.</p> <p>b) Table 1: [1] corresponds to the air pollutants (i.e., PM<sub>2.5</sub>, O<sub>3</sub>, NO<sub>2</sub>) measured at the St Catharines' station. Writing [1] beside the title of</p>	<p>12. a) No, although RWDI agrees that the term "24-hour" could be added. The same could be said for silica. Ontario's AAQC for PM10 remains interim, so that wording is correct. This not material to the assessment however, as the tables clearly designate the averaging periods. No further action is required.</p> <p>12. b) No response required.</p> <p>12. c) No response required.</p>



Index	Comment	RWDI Response
	<p>the table is confusing. It would be better to write it in the relevant column headers, such as “PM<sub>2.5</sub>[1]”, “NO<sub>2</sub>[1, 4]” and “O<sub>3</sub>[1, 4]”</p> <p>c) Table 5: Correct “Cumulative”. Receptor 14, PM10 row; “number of predicted excursions above criteria over 5 years” should be &gt; 0 since “% of Relevant Criteria” is 111%.</p> <p>d) Summarizing dispersion modeling results show that operations (from all phases) have only a very limited (negligible?) impact on 24-hour TSP concentrations at receptors and that this impact would be mostly noticeable at receptors (1 to 8) located south of Highway 3. Is this impact mostly due to area sources in the Reeb Quarry?</p>	<p>12. d) No response required.</p>
<b>13</b>	<p>13. FIGURES</p> <p>a) It is recommended that the figures include the names of the roads in the area of the current Law Quarry site and its extension. Response noted. It continues to be recommended that the figures include the names of the roads in the area of the current Law Quarry site and its extension. However it is noted that this would not affect the conclusions and recommendations of the study.</p> <p>b) The location of receptor R17 is missing on Figure 1. Is R17 the residence beside R16 (i.e., northeast of extension)? Comment not addressed. Receptors which are not relevant should be removed from the document.</p>	<p>13. a) As noted above, the Air Quality Assessment must be reviewed in conjunction with the Aggregate Resource Act Site Plans that accompany the application (Existing Features Plan, Operational Plan, Notes Plan, Rehabilitation Plan, and Cross Section Plan. These Site Plans provide all required information, and duplication of this information is not required.</p> <p>13. b) Removed.</p>
<b>14</b>	<p>14. REFERENCES</p> <p>Please consider including a section at the end of the document listing the bibliographical references cited in the report. Response noted.</p>	<p>14. A fulsome list of references that cover all aspects of conducting fugitive dust assessments and developing best management practices plans has been added.</p>