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September 30, 2021

Ms. Jane Gurney
Region of Waterloo
Principal Planner
Community Planning

**Response to Peer Review of the Cumulative Impacts Air Assessment
Proposed Hallman Pit, Jackson Harvest Farms, Township of Wilmot**

Dear Ms. Gurney

1. Introduction

GHD has reviewed the Peer Review letter prepared by SLR Consulting (Canada) Ltd. (SLR), dated September 16, 2021, in regards to the Cumulative Air Assessment (Assessment), dated August 4, 2021, of the proposed Hallman Pit, Jackson Harvest Farms located in the Township of Wilmot. The following provides the SLR comments as well as GHD's responses.

SLR Comment #1

Section 2.1 of the Assessment states:

"The silica content from the Site operations is currently unknown. Based on other operations in the area it is expected to be less than 10%. However, as a conservative estimate the silica emissions were assumed to be equivalent to 17% of PM10 emissions, based on "PM4 Crystalline Silica and PM10 Particulate Matter Emission Factors for Aggregate Producing Sources", Richards, Brozell, Air Control Techniques, July 31, 2007."

While referencing research data from Californian geological sites is not representative of southern Ontario geology, SLR agrees that 17% is reasonable.

GHD Response

GHD agrees that 17% is a conservative estimate and no further action is required.

SLR Comment #2

Section 3.0 of the Assessment states:

"As part of the cumulative assessment the ambient air background concentrations were included. The MECP Station 28028 (Guelph, Ontario) was chosen as it was the closest station that was not in major city centre, such as Kitchener. This station is still located in a city but is expected to be more representative than a major city centre station would be. The ambient air stations located in cities are expected to have higher concentrations of all fractions of particulate matter due to the increase in traffic and industry. It should be noted that by completing the cumulative assessment by modelling the

surrounding pits and using the background data it could be counted as double accounting, therefore being an overly conservative assessment."

SLR agrees that the Guelph station would be representative of rural ambient air quality for the area. However, GHD then states that combining the background data with the emissions from the nearby Pits could be considered to be double counting. SLR disagrees with this statement. As GHD previously states the Guelph station was selected to be more representative of background levels outside of city centres. The monitoring station is located in a large public park in a medium density residential neighbourhood. There are no open pits or dust producing industrial sources near the Guelph station. Therefore, conducting modelling that accounts for fugitive dust from nearby Pits in combination with background levels is reasonable for downwind receptors.

GHD Response

No further action required.

SLR Comment #3

Section 5.6 of the Assessment states:

"The Site and all adjacent pits were modelled using AERMOD's Open Pit source. This source is a heavily modified area source designed to simulate pits where the majority of processes occur near the bottom of the pit, allow for containment and recirculation of pit derived emissions at the pit's surface opening and lip edge, and emissions along its surface opening. Source parameters were based on the following assumptions:

- Volume of pit*
- Maximum pit depth of 20 m*
- Process release height of 4 m above pit floor*

All pit sources were modelled individually."

It is our opinion that the use of the OPENPIT source type is inappropriate for aggregate extraction sites. The OPENPIT source is unique to deep pits and quarries where recirculation within deep walled quarries occurs and is not representative of the proposed operations. The OPENPIT source may also under-predict the impact from central processing plants where emissions come from a concentrated area. The OPENPIT source averages the total emission rate over the area of the source. GHD does not detail the area coverage of the source and how it is implemented in the model.

The MECP Guidance document A-11 should be followed for haul roads, and volume sources representing the processing equipment. This is also suggested in the Guidance document under the description for the OPENPIT source. It is also not clear how or why the sources were modelled individually for each site using the OPENPIT source type and how the results were combined to determine the worst-case point of impingement. It is SLR's opinion that the modelling should be revised to confirm the modelling methodology reasonably represents the worst-case impacts to ensure compliance under O. Reg. 419/05 will be met.

GHD Response

The cumulative assessment focused on the proposed Hallman Pit as well as the seven surrounding pit operations. Of the seven surrounding pits only three are currently active. The source types and locations for the surrounding pits are unknown and cannot be modelled using different source types as the sources and locations are unknown. As a conservative approach it was assumed that all the pits were operating at the maximum capacities.

The OPENPIT source combines all of the potential emission sources that are located below grade from within the operating pit into a single source input for the AERMOD air dispersion model. GHD has used the OPENPIT source type for numerous Environmental Compliance Approval (ECA) applications in Ontario that have been

reviewed and approved by the Ministry of Environment, Conservation and Parks (MECP). GHD has also used the OPENPIT source for numerous environmental assessments that were reviewed and approved by various provincial and federal regulators. A number of the other assessments that have been approved under Reg. 419/05 have been for pits that are not as deep as the proposed Hallman Pit.

The proposed Hallman Pit operations is the type of source that the OPENPIT source type is designed for. With a depth of 20 meters the pit is classified as a deep source where recirculation would occur. In addition, as the pit is not reflected in the terrain data the use of the OPENPIT is the appropriate source type. If the pit was reflected in the terrain data GHD would agree with SLR that other source types could be used, however the OPENPIT source would still be an appropriate option.

The emission rates for the other pits were based on the annual capacity and the assumption that the equipment and equipment types are similar to the proposed Hallman Pit. The emission rate assumption was provided in GHD's workplan that was previously reviewed and approved by SLR/Region of Waterloo.

The modelling of the pits using the OPENPIT source was provided in GHD's workplan that was previously approved by SLR. The workplan and subsequent SLR approval of the work plan identified that the pits would be completed using a single pit source. The workplan and SLR approval was provided in Appendix A of the Cumulative Air Assessment (GHD, August 4, 2021).

The air dispersion modelling was completed with all seven nearby pits (active and inactive) operating simultaneously at maximum capacity (e.g., an overly conservative assumption). The results were provided in the Cumulative Air Assessment and were shown to be less than the applicable air quality standards when also including ambient air data from a nearby station.

Based on this technical discussion, GHD is of the opinion that no further remodeling should be required.

SLR Comment #4

Section 7.3 of the Assessment states:

"The ambient air quality data was taken from a nearby city (Guelph) where the road traffic and industry are expected to result in higher ambient air concentrations. As the surrounding sources of emission, neighbouring pits, are included in the assessment as well the addition of the ambient air quality data to the modelled emission rates may be equivalent to double counting an emissions source."

This statement is misleading. As GHD previously states, the Guelph station was chosen as it is not located in a city centre but is located in the middle of a public park surrounded by residential neighbourhoods. There is minimal traffic and limited industry in the vicinity of the monitoring station. As previously stated, it is representative of background levels excluding nearby sources of fugitive dust and is not a 'double counting' of emission sources.

GHD Response

See response to SLR comment #2, no action is required.

SLR Comment #5

Section 8 of the Assessment states:

"The cumulative dispersion modelling assessment of the Hallman Pit and the neighbouring pits, and with consideration of representative ambient air monitoring data, indicates compliance with the MECP POI limit for TSP and silica, the MECP AAQC for PM10, and the CCME CAAQS for PM2.5."

Table 4 of the Assessment only presents the results of the cumulative effects study and does not clarify that the Hallman Pit will operate in compliance with O. Reg. 419/05. An emission summary of the maximum point of impingements from the Hallman Pit operations should be presented to show that the Pit will operate in compliance of O. Reg. 419/05.

GHD Response

The cumulative effects study provides the maximum concentration that would result from the proposed Hallman Pit in addition to the neighboring pits that were included in the assessment. GHD has provided a Table 5 in Attachment A showing the results for only the Hallman Pit. As provided in Table 5 the contribution of the Hallman Pit is well below the respective criteria.

2. Closing

As provided in the Cumulative Air Assessment (GHD, August 4, 2021) and the responses above, the operations at the proposed Hallman Pit and surrounding pits can operate in compliance with applicable air quality criteria and satisfies the Township of Wilmot Official Plan Policy 7.2.4.1a.

Regards



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Encl.

Attachment 1

Hallman Pit Results

Attachment 1

Hallman Pit Results

Table 5

**Maximum Predicted Concentration Summary - Hallman Pit Only
Jackson Harvest Farms, Hallman Pit Cumulative Assessment
Township of Wilmot, Ontario**

Air Contaminant	CAS No.	Total Emission Rate (g/s)	Air Dispersion Model Used	Max. Predicted Concentrations (ug/m3)	Averaging Period (hours)	MECP POI Limit (ug/m3)	Limiting Effect	Regulation Schedule	Percent of Limit (%)
Particulate Matter, total	n/a	2.01E+00	AERMOD v.19191	40.75	24	120	visibility	B1-standard	34.0%
Particulate Matter, PM10	n/a	6.93E-01	AERMOD v.19191	13.63	24	50	AAQC	n/a	27.3%
Particulate Matter, PM2.5	n/a	1.64E-01	AERMOD v.19191	1.93	24	27	CAAQS (1)	CCME	7.1%
	n/a	1.64E-01	AERMOD v.19191	0.62	annual	8.8	CAAQS (2)	CCME	7.0%
Silica, respirable (<10 microns), quartz	14808-60-7	1.18E-01	AERMOD v.19191	2.32	24	5	health	B1-guideline	46.4%

Notes:

AAQC - Ontario Ambient Air Quality Criteria

CAAQS - Canadian Ambient Air Quality Standard

CCME - Canadian Council of Ministers of the Environment

(1) Three year average of the annual 98th percentile of the daily 24-hour average concentrations.

(2) Three year average of the annual average concentrations.