

## CAPITAL PAVING INC. – SHANTZ STATION PIT

TOWNSHIP OF WOOLWICH, ONTARIO

BEST MANAGEMENT PRACTICES PLAN FOR DUST

RWDI # 1803181

May 11, 2021

### SUBMITTED TO

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## VERSION HISTORY

Index	Date	Pages	Author
1	January 30, 2020	All	Brian G. Sulley
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## REPORT SIGNATURES

A handwritten signature in black ink, appearing to read 'B. Sulley', written over a horizontal line.

Brian G. Sulley, B.A.Sc., P.Eng.



# 1 INTRODUCTION

## 1.1 Overview

This Best Management Practice Plan (“BMPP”) for dust was prepared for Capital Paving Inc. (the “Company”) for implementation at their Shantz Station Pit (the “Pit”) in the Township of Woolwich, in the Regional Municipality of Waterloo. This plan includes dust control measures that meet and/or exceed the current industry standards. Implementation of these measures will ensure that dust is effectively controlled and impacts to neighbouring residents are minimized.

## 1.2 Components of A Best Management Practices Plan

A BMPP is a detailed document that outlines the fugitive dust sources at a given site and describes the measures that shall be used to control emissions from these sources. The BMPP is used to manage fugitive dust emissions from sources such as on-site haul routes, material processing, material handling, and wind erosion. The Ontario Ministry of the Environment, Conservation and Parks (“MECP”) recommends that the BMPP be based on a process of “Plan, Do, Check Act”, as described in the Technical Bulletin: Management Approaches for Industrial Fugitive Dust Sources<sup>1</sup>. This BMPP is designed to meet the recommendations of the MECP in a form that provides clear and concise procedures for site personnel.

## 1.3 Size and Composition of Fugitive Dust at Sand & Gravel Operations

Typically, the dust at a sand and gravel operation has the following characteristics:

- Primarily composed of calcium carbonate, oxides of iron, magnesium and aluminum and/or silicon;
- Fraction of dust smaller than 10 micrometres (PM10), 19-55%<sup>2</sup>; and,
- Fraction of dust smaller than 2.5 micrometres (PM2.5), 3-14%<sup>2</sup>;
- Crystalline silica content of onsite material, estimated at less than 17%

## 1.4 Overview of the Best Management Practices Plan

This document provides a separate section for fugitive dust sources at the Pit, including a description of each source, complete with control measures applicable to each particular source.

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<sup>1</sup> Standards Development Branch, Local Air Quality Section, Ontario Ministry of the Environment and Climate Change (MOECC)

<sup>2</sup> Based on data from the AP-42 Compilation of Air Pollutant Emission Factors, published by the United States Environmental Protection Agency.



## 2 SITE PREPARATION & REHABILITATION

### 2.1 Activities Included

- Overburden removal using excavators, loaders and haul trucks.
- Berm construction using loaders, haul trucks and bulldozers.
- Rehabilitation using loaders, haul trucks and bulldozers.

### 2.2 Controls

- Avoid, if possible, overburden removal, berm construction and rehabilitation operations, if possible, during dry months, such as July, August and September and during peak periods of extraction and processing of aggregates.
- Stripping, berm construction and rehabilitation shall be monitored hourly when all of the following criteria are met:
  - Dry weather is anticipated;
  - Excavation and loading activities are within 200 m of a residence; and
  - Winds are anticipated to be blowing towards the residence.
- If visible dust is observed under these conditions, these operations shall be reduced, or additional mitigation measures shall be undertaken, such that visible dust is prevented from leaving the site.



## 3 AGGREGATE EXTRACTION

### 3.1 Activities Included

- Excavation of virgin aggregate at the active working face by excavators and / or front-end loader; and,
- Transfer of virgin aggregate to the portable crusher by excavators and / or front-end loader.

### 3.2 Controls

- Extraction, transfers, crushing and conveying shall be visually monitored when the following criteria are met:
  - Extraction is occurring within 200 meters of a residence;
  - Winds are blowing from the operations towards those residences; and,
  - Dry weather is anticipated (operations can proceed at full production under rainy conditions);
- If visible dust is observed blowing towards residences adjacent to the site, water should be applied as quickly as possible. Activities may need to be reduced or stopped completely if the dust cannot be mitigated.



## 4 AGGREGATE PROCESSING

### 4.1 Activities Included

- Crushing of virgin aggregate in the portable crusher;
- Conveying of crushed aggregate back to the main processing plant.
- Aggregate crushing, screening, washing and stockpiling at the main processing plant.
- Aggregate stockpile area and loading of trucks around the stockpiles.

### 4.2 Controls

- In Phases 4 and 5, the portable crusher shall only be located within the Portable Crusher Operating Zones shown on the Operational Plan.
- All processing equipment shall be equipped with dust suppressing or collection devices (such as a water spray system). If a water spray system is used, spray bars shall be located at crushers and screen decks.
- Dust suppressing or collection devices shall be operated at all times, except when precipitation is sufficient to offset the operations of the dust suppressing or collection devices.
- The dust suppressing or collection devices will be operated at a level sufficient to suppress visible dust.
- If water sprays are used for dust suppression, watering is not technically feasible due to possible icing of the equipment when the temperature is below 4°C. Under these conditions, operations may need to be reduced, or other mitigation measures implemented.
- For screenings and other high-fines materials, stackers will be kept as close to the tops of stockpiles as is feasible, to achieve a drop height of approximately 1m or less.
- The processing rate shall not exceed 4,800 tonnes/day.



## 5 UNPAVED HAUL ROUTES

### 5.1 Activities Included

- Unpaved haul routes for loader traffic from working face to portable crushing plant.
- Unpaved haul routes for shipping traffic from main processing plant to paved portion of haul route.

### 5.2 Controls

- A watering system (spray truck or suitable alternative) and sufficient water supply shall be available to provide water to all significant unpaved traffic areas.
- The watering system shall be able to deliver the water evenly over the haul route surface and shall have the capacity to deploy water on all active haul routes at a rate of at least 1.5 L/m<sup>2</sup>/hour.
- The actual watering rate shall vary, depending on surface moisture conditions and traffic conditions, and shall be triggered by the Operational Watering Forecasting guidance provided in Section 9 of this BMP Plan.
- At the start of each day, prior to trucks accessing the haul routes, the travel surfaces will be inspected, and water will be applied if dry conditions are found.
- A speed limit of 20 km/h shall be posted near the site entrance. Haul truck and highway truck operators will be directed to observe the speed limit.
- Application of chemical dust suppressants may be used in conjunction with application of water. The rate of watering may be reduced below the trigger levels in the Operational Watering Forecasting guidance provided in Section 9 of this BMPP, subject to the condition that no visible dust shall migrate off-site.



## 6 PAVED HAUL ROUTES

### 6.1 Activities Included

- Paved haul route for shipping traffic.
- Includes the portion of Shantz Station Road within 100 metres of the site entrance.

### 6.2 Controls

- The first 100 metres of the site entrance driveway, measured from Shantz Station Road, shall be paved.
- A speed limit of 20 km/h shall be posted near the site entrance. Haul truck and highway truck operators will be directed to observe the speed limit at all times.
- The facility shall have the capability to sweep and / or flush the on-site paved surface, as well as the portion of Shantz Station Road within 100 metres of the site entrance, or anywhere visible track-out of material from the Pit onto Shantz Station Road is observed.
- In dry weather, the paved entrance area and the portion of Shantz Station Road within 100 metres of the site entrance shall be inspected at the end of each day's shift and swept and / or flushed if necessary, to provide a clean entrance for the start of the next day's operations.
- The frequency of sweeping / flushing shall vary, depending on surface moisture conditions and traffic levels, and shall be triggered, as soon as practical, whenever routine inspections indicate that there is visible track-out on the pavement (may need to be swept / flushed once or twice per day, during peak operating periods).



## 7 WIND EROSION

### 7.1 Activities Included

- Wind erosion may occur at disturbed areas, or at stockpiles that have relatively high silt contents, such as screenings or granular aggregate
- Disturbed areas include the working face, areas that have been stripped but not yet extracted, and areas that have been extracted but not yet rehabilitated.
- Wind erosion of these piles will only occur when winds exceed a threshold wind speed level, which is typically on the order of 5-7 metres per second (18-25 km/h).

### 7.2 Controls

- The amount of disturbed area will be kept to the minimum necessary for extraction to proceed in an efficient manner. Progressive rehabilitation will be used to reduce erosion from previously extracted areas, in accordance with recommendations in Section 2: Site Preparation & Rehabilitation.
- Stockpiles of finer-grained material will be located on the eastern side of the plant area so as to be sheltered from prevailing winds by other piles.
- A row of conifers will be planted along the top of the berm adjacent to Receptor R3, on the portion of that berm located in Phase 1. This dwelling is owned by the owner of the gravel pit lands. If this dwelling becomes and remains vacant during the life of the site, then this tree screen will not be required.
- Where possible, existing tree screens should be maintained between the limit of extraction and the surrounding receptors.



## 8 EQUIPMENT SPECIFICATIONS

### 8.1 Activities Included

- These controls pertain to all diesel-fired off-road and stationary equipment at the site, including:
  - The on-site electrical generator set used to power the processing plant.
  - Front-end loaders used for extraction and loading.
  - Bulldozers, excavators, loaders, and haul trucks used for site preparation and rehabilitation.

### 8.2 Controls

- At a minimum, all equipment shall meet the Tier 3 emission limits, as established under the Canadian Off-Road Compression-Ignition Engine Emission Regulations.



## 9 OPERATIONAL WATERING FORECASTING

### 9.1 Activities Included

- The decision of when to conduct watering of haul routes and stockpiles requires the operator to use observations of meteorological conditions to ensure that dust is mitigated.

### 9.2 Conditions Under Which Watering is Required

- The site operator should monitor local weather conditions using local weather forecasts.
- The frequency of watering shall be determined approximately using the guidance provided in the table below:

Temperature	Relative Humidity	Hours Between Watering @ 1.5 L/m <sup>2</sup>
<b>Below 4°C</b>	Any	Watering not recommended
<b>4°C - 10°C</b>	75% or less	3
	75-90%	7
	90-100%	15
	Wet Weather (e.g., rain, drizzle)	Not required
<b>10°C - 20°C</b>	75% or less	1.5
	75-90%	3
	90-100%	7
	Wet Weather (e.g., rain, drizzle)	Not required
<b>Above 20°C</b>	75% or less	1
	75-90%	1.5
	90-100%	3
	Wet Weather (e.g., rain, drizzle)	Not required

- Regardless of the criteria above, watering will be implemented immediately if dust is observed to be blowing toward the residences adjacent to the site.
- When the temperature is below 4°C, watering is not recommended for safety reasons. Under these conditions, operations may need to be reduced, or other mitigation measures implemented.



## 10 ADMINISTRATION

### 10.1 Implementation Schedule

- All control measures should be in a state of readiness before operation of the pit commences.

### 10.2 Implementation Plan

- Formal training on new and existing operating procedures shall be provided to relevant new and existing staff at a minimum of once every 3 years, and in the event of changes to the BMPP.
- The company's management shall communicate the BMPP to responsible supervisors, who shall ensure personnel are following operating procedures defined in the BMPP.
- The Site Manager shall be responsible for ensuring the BMPP is followed.
- Management shall ensure the controls described in the BMPP are reviewed annually to maintain the levels of control outlined in the Air Quality Assessment, and to ensure operations will not have a negative environmental impact on the surrounding area.
- The BMPP shall be kept on file at scale house (or with other health and safety information and procedures on site).



## 11 INSPECTION & MONITORING

### 11.1 Inspection and Maintenance

- The water spray system for processing equipment should be inspected weekly;
- The paved road section will be inspected weekly, and maintenance will be performed as soon as practicable.

### 11.2 Monitoring

- Weather forecasts will be checked daily, to plan for current and next-day watering needs according to the Operation Weather Forecasting procedure described in Section 9.
- Visual inspection for dusty conditions shall occur at a minimum of twice daily.
- In accordance with Sections 2 and 3 of this BMPP, visual inspections shall be carried out hourly when overburden removal, berm construction, rehabilitation, excavation and loading operations are near a residence; dry weather is anticipated; and, winds are anticipated to be blowing towards the residence.
- The Site Manager or their delegate will be responsible for monitoring current conditions and weather forecasts from Environment & Climate Change Canada, to subsequently help plan for current and next day watering needs and other measures.

### 11.3 Record Keeping

- Records shall be kept of when and how dust control measures are implemented and when complaints are received, if any. As a minimum, the following activities or events shall be recorded:
  - Watering is applied on paved roads, unpaved roads and regularly travelled areas;
  - Visible dust is observed; and
  - A complaint is received.
- In addition, records shall also be kept of the results of all Inspection, Maintenance and Monitoring activities, including the following:
  - Inspection and maintenance of the water spray system for the processing plant;
  - Inspection and maintenance of the water truck, if applicable, and water delivery system;
  - Inspection and maintenance of the paved road surfaces; and,
  - Results of visual inspections including the time of the inspection and meteorological conditions at the time of the inspection.



## 12 COMPLAINT TRACKING AND RESOLUTION

### 12.1 Complaint Tracking

- A sign posted at the site entrance, and on the Company website, shall include a phone number for neighbours to call if they have concerns.
- The Company shall request that the local MECP office and the Township of Woolwich notify them immediately if they receive a complaint, to allow for prompt response and follow-up.
- Complainants shall be requested to identify the location of the incident as well as the time of day that it was detected and any other information that they feel is relevant.

### 12.2 Complaint Resolution

When a complaint is received, the Site Manager shall ensure the following steps are undertaken:

1. Inspect the site and surrounding area to identify possible sources of visible dust;
2. Obtain weather data for the time of the event; and,
3. Note all on-site activities at the time that the complaint was made.
4. If the information indicates that the facility is not the source of the dust complaint, the complainant shall be notified of this finding.
5. If it is determined that the complaint may, in fact, have been related to the facility operations, the following response procedures shall be followed, in the order provided below:
  - Level 1 - Correction of operations as soon as practical. The Site Manager shall ensure that all element of the BMPP are being followed. Control measures shall be stepped up or operations may be curtailed, as required.
  - Level 2 - Review of Best Management Practice Plan. If the Level 1 response does not adequately resolve the problem, the BMPP shall be reviewed to look for additional control measures to address the source of the dust complaint.
  - Level 3 - Operational modifications. If the Level 2 response does not adequately resolve the problem, the operator shall commit to making physical changes to the facility to address the source of the dust complaint, such as additional enclosures, relocation of equipment, or additional paving.