Environmental Management & Monitoring Program

(Version 4.0, updated January 20, 2026 to reflect current monitoring requirements of the Licence Holder's PTTW and ECA)

The Environmental Management and Monitoring Program (EMMP) is implemented to assist in the management of the pre-extraction, extraction and post-extraction environmental effects of the quarry. Key components include:

- Description of proposed mitigation measures;
- Methods for implementation of mitigation;
- Pre-operation, Ongoing and Post-operation monitoring requirements;
- Contingency measures, and
- Reporting requirements.

The following applies to the Licence holder, quarry operator, Permit to Take Water (PTTW) holder and/or holder of the Environmental Compliance Approval (ECA).

1.0 General Mitigation Measures

a) In addition to the requirements of this plan, the licensee will ensure that all mitigation measures outlined on the Site Plan documents are also implemented and adhered to.

b) The licensee will install and maintain silt fencing as needed to minimize the potential for sediment transport from perimeter berms, until such time as they are stabilized by vegetation.

c) Water takings at the site in excess of 50,000 L/day (all uses including: dewatering, dust suppression, process, etc.) will be managed under the auspices of a Permit to Take Water, issued by the Ministry of the Environment, Conservation and Parks (MECP) and will be subject to any conditions applied thereto.

d) Water from the quarry floor will be managed and treated by a properly engineered and designed settling pond treatment system (Industrial Sewage Works), subject to an Environmental Compliance Approval (ECA) from the MECP, (i.e., if flows >10,000 L/day).

e) The licensee will maintain the PTTW and ECA in good standing and will not let these instruments lapse while operations inside the licensed area are on-going.

f) Prevention of potential impacts related to spills or releases of contaminants depends on adherence to proper environmental management procedures and proper operational practices. Regular equipment inspections, maintenance, proper fuel handling, spill avoidance (and use of spill kits) and emergency planning will reduce the potential risks.

Best Management Practices (BMP's) for fuel handling on this site should be implemented and include the following:

i) Fuel management must be in compliance with Ontario statutes, including the Liquid Fuels Handling Code and the Environmental Management Protocol for Fuel Handling Sites in Ontario.

ii) Refuelling should never occur while equipment is in operation or within an area of standing water.

iii) Permanent refuelling areas should be designated with appropriate controls to prevent release of contaminated runoff and areas should be situated on asphalt, concrete or clay fill with easy access to spill cleanup equipment.

iv) Remote refuelling of stationary or infrequently moved equipment should be conducted on level ground and not above a fractured rock surface. Where practical, an impermeable material (e.g., tarp) should be used to contain any incidental releases.

v) Absorbent materials should be utilized to control minor spills as opposed to washing or hosing the affected area. Absorbents should be promptly and properly disposed of after use.

vi) Vehicle and equipment operators should receive training in spill cleanup procedures and appropriate fuel handling practices.

g) For dust suppression, water spray is the preferred approach. Only approved materials (e.g., calcium chloride) should be used as a supplementary dust suppressant and should be used only when necessary in high traffic areas.

h) Regular monitoring of surface water and groundwater is to be conducted by the Licence Holder, under the direction of a Qualified Person as outlined below. The monitoring program should continue until the rehabilitation program is complete (or as amended through review).

i) A Spills Action Plan should be implemented for the site. The plan should include a list of tasks to be undertaken in the event of a spill. These will include short-term actions, assessment, critical contact information, clean up procedures and access to related materials.

j) Other measures, as outlined in the Site Plan documents.

k) Unless permitted by the ECA Contingency Plan, all pumping activities/discharges from the quarry shall cease when a Flood Warning has been issued by the Quinte Conservation Authority (or successor authority/agency).

2.0 Mitigation Implementation

a) The quarry owner / operator will designate an Environmental Manager (EM) who will be responsible for performing the following duties, on behalf of the licensee:

- implement the Environmental Management and Monitoring Program (EMMP) and all Best Management Practices (BMP's);
- periodically review the EMMP program and revise as needed;
- ensure operations personnel and contractors are aware of all requirements;
- maintain all documents pertaining to the EMMP;
- ensure that all applicable approvals and permits are obtained;
- ensure all routine compliance reporting requirements are met;
- report all significant incidents of non-compliance to the appropriate authority and the operator/licensee;
- carry out clean-up, reclamation or restorative measures as required by the EMMP or as directed by the licensee and/or agency, and
- conduct other duties as required.

b) On behalf of the licensee, the EM will commence the monitoring components of this program prior to any significant clearing and/or extractive operations.

c) During the operations, terrain, soil and vegetation disturbances will be limited to those which are absolutely necessary to complete the work. Surface disturbances will be stabilized on an ongoing basis wherever possible to limit erosion and promote natural revegetation. Natural revegetation of surface disturbances will be encouraged and active revegetation will be pursued where needed, where terrain and soil conditions permit. The success of erosion control, revegetation, and other rehabilitation measures will be inspected periodically by the EM.

d) On behalf of the licensee, the EM will provide periodic EMMP reports to the stakeholders. Reports will summarize the results of current monitoring, environmental concerns and/or incidents, agency requests and current status of the quarry (e.g., operational/non-operational, current Phase, rehabilitation progress, etc.).

e) The EMMP will continue until completion of final rehabilitation.

f) The EMMP is transferrable.

3.0 Monitoring Program

3.1 General

a) The following monitoring requirements are based on the on-going monitoring programs conducted as a condition of compliance with Permit to Take Water (PTTW) No. 8664-D2DJK2 and Environmental Compliance Approval (ECA) No. 5583-DN5LCU issued for both the Long's and Melrose Quarries.

b) As the monitoring program is based largely on the requirements stipulated in the compliance conditions of the PTTW and ECA, this document should be updated to reflect any relevant changes to the PTTW or ECA, should those occur.

c) The EM shall obtain the services of a Qualified Person (either P. Geo. or P. Eng.) to oversee the monitoring program, ensure the accuracy of collected data, interpret the results and prepare any required reports. The monitoring program is to include an adaptive management process with regard to changing conditions, responses and/or observed effects.

3.2 Special Considerations

a) At least one (1) week prior to the commencement of dewatering each calendar year, the ECA Holder shall notify the District Manager of the Ministry of Environment, Conservation and Parks (MECP) in writing of the pending commencement date.

b) When a Low Water Advisory exists within the Quinte Conservation Authority (or successor authority/agency) watershed, the PTTW Holder is only allowed to pump out an amount of water equivalent to the precipitation that has fallen onto the site since the beginning of the Advisory. The amount of water is to be calculated from a properly calibrated on-site precipitation monitor and the estimated catchment area. The accumulated water is to be pumped out forthwith, subject to the water quality provisions of the ECA.

c) During periods of discharge from the industrial sewage works (i.e., settling pond and sump) that occur within 48 hours of a significant precipitation event (i.e., $\geq$25 mm of rain), the ECA Holder will ensure that the turbidity of the discharge water is monitored at least twice daily in accordance with the provisions of the ECA.

3.3 Regular Groundwater Monitoring

a) Monthly groundwater level measurements are to be obtained from representative accessible on-site and off-site wells within 500 m of the licensed area boundaries (where the well owner consents to participate). The monitoring will carry on for the life of the PTTW. Off-site well owners will be encouraged, but not compelled to participate.

During each monitoring visit, off-site well owners are to be questioned (if present and available) regarding any water quantity or quality problems and that information is to be catalogued.

The local well database will be updated as needed throughout the monitoring program.

b) In lieu of manual measurements (which may represent an inconvenience to some well owners), a water level datalogger can be installed. The datalogger may be programmed to collect water level data on a daily basis (for example). The collected data are to be

downloaded and checked on an approximately quarterly basis.

c) In the event that water takings for quarry dewatering cease or are temporarily shut down for more than three consecutive months (e.g., for seasonal shut down of quarry operations), monitoring rounds can be suspended until operations re-commence. Any well dataloggers in the field at that time would remain in place and would continue to be subject to quarterly downloading. During any such period, the Permit Holder would still be required to record daily water takings for all sources.

d) Any new wells or new ownership identified during the course of routine monitoring rounds within 500 m of the licensed area boundaries (where the owner consents to participate) will be documented and the (new) owner will be approached with regard to future participation in the on-going monitoring program. The new owner is to be encouraged, but not compelled to participate.

e) Baseline water quality sampling of representative private wells within 500 m of the licensed area boundaries (where the owner consents to participate) has been completed and the data can be made available to a responsible agency upon request. Should a complaint of impact to groundwater quality be made, these data will be utilized for comparison purposes.

3.4 Regular Surface Water Monitoring

a) Stream stage measuring stations have been established along Blessington Creek at approved locations as part of the ECA and PTTW monitoring requirements. The stream stage locations include a stilling well and low-range automatic water level recording device (datalogger).

Stream cross sections and manual stream velocity measurements are utilized at each location to determine the stream flow and to calibrate the dataloggers. The stream stage monitoring locations have been selected to represent upgradient conditions and conditions immediately below the outfall of the industrial sewage works.

b) Stream stage data from the dataloggers will be downloaded and checked on an approximately quarterly basis.

The dataloggers may be removed from the creek for the winter period to avoid damage to the instruments, however, should be re-installed as soon as the creek is ice-free in the spring.

c) Unless otherwise directed by a reviewing agency, as a minimum, annual water samples will be collected at each of the stage monitoring locations (referred to as S-1, S-2 and S-3)

plus the works discharge (subject to any other requirements of the ECA). All samples will be analysed by a qualified laboratory for the following parameters, as provided by ECA No. 5583-DN5LCU:

- Total Suspended Solids (TSS)
- Total Dissolved Solids (TDS)
- Total Kjeldahl Nitrogen (TKN)
- Total Ammonia Nitrogen
- Nitrate as N
- Nitrite as N
- Sulphate
- Chloride
- Sodium
- Iron
- Total Phosphorus
- Hydrogen Sulphide
- pH
- Conductivity
- Turbidity
- Colour
- field measurements of pH, Temperature, Conductivity and Dissolved Oxygen

In addition, a minimum of an annual sample from the works effluent discharge will be collected and subjected to laboratory analysis of fractions of Petroleum Hydrocarbons (PHC F1 to F4).

3.5 Water Takings

a) As required by the PTTW, a daily record of water takings from all Permitted sources must be maintained.

b) A totalizing flow meter will be utilized to monitor water takings from the quarry pond/sump. Water takings for dust control are not always pumped and as such, may be estimated and recorded by quarry personnel. Current domestic water use is supplied by a potable water hauling contractor that fills a cistern located on-site. It is not necessary to record water takings for domestic use.

Any requirement for future water takings for domestic use from a source other than the works is expected to be minimal (i.e., < 3,000 L/day) and as such, could be estimated by quarry staff.

c) Daily records for all sources will be maintained on-site and will be checked daily by the Permit Holder (or delegate) to ensure that the total allowable water takings are not exceeded.

d) Water taking data will be tabulated for review by a Qualified Person on an annual basis or as may be requested.

3.6 Reporting

The EM will have a Qualified Person complete the annual compliance report required by the PTTW and ECA. These reports will present all monitoring data (i.e., water takings, water levels, water quality, precipitation) and all related monitoring activities. An interpretation of the accumulated monitoring data will be outlined, including an annual water budget reconciliation, with recommendations for any changes to the monitoring program. The reports will also include a summary of any complaints, investigations and/or findings of impact, a description of how those were managed, their outcome and whether satisfactorily resolved.

The annual report will be provided to the MECP by March 31st of each following year while the Permit is in effect. Due to security and privacy concerns, copies of the reports (electronic) will only be made available to stakeholders upon request.

In addition to the annual compliance monitoring reports, a brief report will be prepared for each private (off-site) well owner, outlining the specific monitoring results for that well only, with a brief explanatory letter. Data will not be shared among well owners. Those reports will be distributed by the following May 1st.

Changes to the monitoring programs required by the PTTW and ECA will be allowed only with approval of the MECP.

4.0 Contingency Measures

4.1 Unacceptable Groundwater Impact

4.1.1 A 'trigger event' occurs where any of the following occur:

- any unusual change in aesthetic water quality (colour, taste, odour) reported by a well owner in the vicinity of the quarry;
- exceedances of a chemical parameter beyond the normal range of variability with respect to its baseline condition;
- exceedances of a parameter above any applicable standard or objective, or as provided in an ECA as determined through monitoring;
- sudden occurrence of non-potable conditions (i.e. bacteria or chemical), and
- a decline in the static (i.e. "at rest") well water level, exceeding 20% below the normal range of variation as determined by monitoring, not including normal seasonal variations.

With respect to establishing trigger levels for local wells, the following are defined:

a) "Normal Range of Variation" of static water levels in a monitored well is defined as

being two standard deviations from the mean of static water levels obtained during the approved Monitoring Program.

b) The "trigger level" (TL) for any monitored wells is defined as:

$$T_L = \bar{x} - (2SD + 0.2*2SD)$$

c) Mean ($\bar{x}$) and standard deviation (SD) statistics for the monitored wells will be reviewed annually and revised as needed based on the available monitoring data. The results of that review will be presented in the annual PTTW compliance reporting.

d) A copy of the annual PTTW compliance report can be provided to any designated stakeholder (electronically), for review upon request.

4.1.2 In the event of a reported claim that a trigger event has occurred or where the monitoring program identifies that a trigger event has occurred, the Permit Holder (or delegate) shall immediately undertake the following:

i) retain the services of a Qualified Person - QP (P. Geo. or P. Eng.) to assess the problem and recommend an acceptable solution;
ii) obtain an accurate description and chronological account of the incident (i.e., complaint or occurrence);
iii) provide a temporary potable water supply (if recommended by the Qualified Person);
iv) if the problem is deemed to be a potential or imminent impact, advise any agencies as required;
v) continue to supply potable water until the cause of the problem can be determined;
vi) act upon the Qualified Person's recommendations (could include cessation of water takings);
vii) if quarry operations (water takings) are determined to be responsible for the problem, continue to supply potable water until the affected well can be restored and/or an alternative acceptable water source developed (e.g., well deepening, implement water treatement or by construction of a new well), and
viii) provide a follow-up report to stakeholders, upon request.

4.1.3 In the event that sustained groundwater inflows into the quarry are significantly or noticeably greater than expected, the quarry operator will immediately advise the relevant agencies and undertake an investigation. Such an event could, for example, be recognized by visually observing unusual seepage/discharge on the quarry walls or through routine monitoring that identifies anomalous dewatering flows. The investigation will be conducted by a Qualified Person (P. Eng. or P. Geo.), familiar with the quarry. The scope of the investigation may include, but not be limited to the following:

- determine/verify location(s) of the unexpected inflow;
- measure inflow rate(s);

- assess whether inflows are transient;
- increase groundwater level monitoring frequency (could include installation of datalogging transducers);
- exploration of geological conditions by borehole drilling;
- assess hydrogeological conditions by well construction and hydraulic testing;
- conduct water quality assessment to compare seepage/discharge water to groundwater;
- conduct hydrogeological and/or engineering analyses;
- provide technical report to responsible agencies, and
- implement corrective measures and/or management solutions with approval of agencies.

If deemed necessary, quarrying operations may be suspended until the issue is resolved.

4.2 Unacceptable Surface Water Impact

4.2.1 Surface water impacts may be manifested by any of the following ("trigger events") in response to quarry operations and would trigger the contingency plan:

- unusual change in water quality of Blessington Creek (e.g., colour, odour, turbidity or chemical change above baseline conditions, exceedance of ECA water quality limits or objectives.
- fish or other faunal reduction or kill, vegetation stress or loss,
- sudden unexpected decline in groundwater levels between the quarry and the creek accompanied by similar increase in seepage into the quarry, and/or
- sudden unexpected or non-seasonal loss or reduction in stream flows accompanied by similar increase in seepage into the quarry.

4.2.2 In the event of an identified or reported impact on surface water resources, as per any trigger event outlined above, the Permit Holder (or delegate) will immediately undertake the following:

i) obtain an accurate description and chronological account of the incident (i.e., complaint or occurrence);
ii) retain the services of a Qualified Person to assess the problem and recommend an acceptable solution;
iii) if the problem is deemed to be a potential or imminent impact, advise any agencies as required;
iv) act upon the Qualified Person's recommendations;
v) if quarry operations (water takings or discharge) are determined to be responsible for the problem, alter operations as needed to alleviate condition (e.g., improve wastewater treatment prior to discharge; reduce discharge rate (etc.), and
vi) provide a follow-up report to stakeholders, upon request.

4.3 Spills

Please refer to the most recent *Spills Action Plan* included in the ECA Holder's Operations Manual.