

Water Management in Quarries

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Is that quarry going to dry up my well?



The short answer is no. Water well users located near pits and quarries are often concerned that extraction operations will impact their water supply. These users need to know that their water supply is protected under existing legislation. Scientific research and decades of monitoring quarry operations have shown that the “extent of influence” a quarry has on the groundwater flow regime is quite limited. Aggregate producers handle water as part of their day-to-day operations but the majority of water handled during aggregate operations is re-circulated. Excess water is returned to the watershed. **Very little water is actually consumed or lost.**

Quarries commonly extend below the groundwater table in order to extract rock. These below water quarries pump small amounts of groundwater out of the quarry to maintain a dry quarry floor for their operations.

Water management programs are developed to ensure the responsible use of water at the site and comply with the many legal requirements governing its use.

REGULATIONS AND LEGISLATION

In order to use water at a quarry the aggregate operator must apply for a Permit to Take Water from the Ministry of the Environment and Climate Change (MOECC). This is a legal requirement regulated under Section 34 of the Ontario Water Resources Act (OWRA). To discharge naturally occurring water from the quarry, the aggregate operator must apply for an Environmental Compliance Approval under Section 53 of the OWRA. The Ministry of Natural Resources and Forestry, local municipalities, conservation authorities and Fisheries and Oceans Canada may also place requirements and restrictions on water handling and on the release of water from a quarry.

Before the quarry can begin operations, extensive studies are carried out to assess the local influence on groundwater flow systems. The area around the quarry affected by the proposed extraction is referred to as the drawdown cone or the cone of depression. These studies determine whether private wells will be affected by the proposed drawdown cone. If it is determined that a well may be affected, a mitigation strategy must be developed for approval by regulatory agencies before the quarry will be authorized for operation. In short, a quarry is not permitted to impact an existing water well.



DUST SUPPRESSION: WATER TRUCK

Suppressing dust at a pit or quarry is the law. To minimize dust (a by-product of extracting and crushing rock) water is sprayed on internal haul roads, processing equipment, stockpiles and trucks exiting the site. Quarries have developed best management practices for water conservation that are designed to use only the amount of water that is needed to control dust.



AGGREGATE WASHING FACILITIES

Water may also be used to rinse fine sediments from the crushed rock (i.e., washing). Washing facilities use a closed-loop system design, where the rinse water is collected in a settling pond to be clarified and then recirculated back to the source pond to be re-used in the wash plant.

It is estimated that 92% to 98% of the water handled at an operation is returned to the local watershed. Only 2% to 8% of water used during the washing process is consumed (i.e. not returned to the watershed (Golder, 2006)). The industry responsibly reuses and recycles water extensively, and this means the quantity of water available in the watershed is not significantly impacted.



