

# Stepping Stones

THE DUNTROON QUARRY EXPANSION NEWSLETTER



Spring 2008

## Message From Walker Aggregates' Vice-President

Walker Aggregates is producing an extended version of our Stepping Stones newsletter this spring to bring our neighbours and other people involved in our proposed Duntroon Quarry expansion up to date on what has been happening, the issues being addressed, and what's coming next.

We recently hosted our first annual operations improvement workshops to provide an opportunity for our neighbours to discuss with our staff and technical consultants ideas for improving our operations. There was a lot of good dialogue and we are responding to what we have heard.

A workshop held on April 12, 2008, focused on water and the environment, while workshops on traffic and noise/vibration were held on May 3, 2008. Details about these workshops appear later in this newsletter.

As requested by the workshop participants, we will be having another traffic workshop June 7.

Walker is committed to the community, environment and tomorrow's generations.

We are continually seeking ways to improve our operations. We challenge our employees to look for ways to design our operations to reduce our impacts, we encourage our neighbours to provide us with advice and ideas, and we take financial responsibility for reducing impacts from our operations.

For more information about Walker Aggregates' proposed Duntroon Quarry expansion please call me at 705-445-2300, extension 224, or in Niagara at 905-227-4142, or visit our website at [www.walkerind.com/GeoAggExpansion/index.html](http://www.walkerind.com/GeoAggExpansion/index.html)

Ken Lucyshyn, Vice-President

## Groundwater Knowledge Shared at Water Workshop

Walker Aggregates' mid-April Water Workshop was held to encourage our neighbours to discuss with us their water quality/quantity and well issues. Seven neighbours came to the workshop to ask questions of - and share their concerns with - Walker's staff and consultants.

Questions included whether pumping the water from the new quarry would deplete water in wells and wetlands, whether water pumps would be noisy, how long it would take the lake to fill, whether local water quality would be affected and how monitoring would occur.

Walker appreciates our neighbours' concerns, since our Duntroon Quarry employees drink water from the same underlying aquifer. The more we all know about local groundwater conditions, the better

we can all work together to ensure a sustainable access to local groundwater resources.

The advantage to having a quarry operation close by is that there are water experts who constantly monitor the unique groundwater conditions in the vicinity of the Niagara Escarpment. Walker was pleased to have the opportunity to share some of that knowledge with those who live near our site.

Groundwater access around the escarpment presents seasonal and drought-related challenges at some properties. When our neighbours call us with problems, it is not uncommon for us to have our experts visit them to provide knowledge and recommendations that can resolve technical problems.

As a result of that workshop, we:

- are looking for ways to continue to share local knowledge of water quality and quantity issues
- are preparing fact sheets to summarize the information presented in the workshop
- have had our hydrogeologist visit with a few of our neighbours to discuss their specific well and water concerns
- have organized an operation tour that will focus on water on May 31.

## Issues with Water Below the Escarpment Brow

On numerous occasions residents living near the Town of Duntroon below the Niagara Escarpment have expressed to Walker concerns about their well water. The existing quarry does not - and the proposed expanded Duntroon Quarry will not - affect water quality or quantity below the escarpment (see article below).

Water issues for residents below the escarpment occur because the near-surface geology is markedly different from the area above the escarpment. Walker's hydrogeologist Andy Hims notes that the geology below the escarpment poses problems for residents who rely on wells for water.

Generally these residents have one of two types of wells.

The first type consists of relatively shallow, large-diameter, bored or dug wells that tap into the water table in the near-surface soils. These wells are usually about three feet in diameter.

The second type of well may be a deeper, drilled well that obtains water from within sand/gravel zones under the soil covering, or a drilled well that obtains water from fractures in the underlying shale bedrock. These drilled wells are typically six inches in diameter.

Another type of water supply may be some kind of surface water collection system that's developed in a low-lying groundwater spring or seepage area.

Because of the way in which the large-diameter, shallow dug or bored wells are constructed, they typically don't extend very far into the ground below the water table, and they rely on shallow groundwater seeping through the soil at the base of the well, and sometimes through the sides of the well, depending on the type of construction. These wells can provide significant storage capacity for the water due to their size, but they don't usually provide large quantities of water for sustained periods of time.

The water level in these wells can fluctuate significantly on a seasonal basis, and the wells can be prone to running short of, or even out of, water

in the late summer and early fall - particularly during dry years (2007 for example).

In addition to problems with quantity, water quality in shallow wells can be also quite variable on a seasonal basis, and can be affected by surface sources of chemical and bacterial contamination, particularly during the spring when snow melts and/or storms occur.

Andy notes that it's important to keep all surface water away from the wellhead to prevent it from entering the well. He also strongly recommends water treatment and regular testing of water quality, as well as regular inspection and maintenance of these types of wells to ensure a safe drinking water supply.

Drilled wells on the lower slopes below the escarpment brow typically obtain water from the fractured red shale rock (Queenston Shale) that lies under the soil. Where the soil layer is thicker, a drilled well might be developed in water-bearing sand and gravel zones. Where such granular zones exist and are reasonably extensive, water quality and quantity may be good.

However, most wells below the escarpment are drilled into the underlying shale bedrock and generally do not provide good water supplies. These wells can suffer from both quantity and quality problems. Depending on how fractured the shale rock is, drilled wells generally do not yield a lot of water and can often be pumped dry under normal residential use, particularly during dry summers.

Chemical water quality in the shale is normally reasonable-to-poor, depending on how fractured the rock is. Water quality usually deteriorates the deeper you go into the shale. Natural water quality in the shale usually is quite hard and mineralized or brackish, with elevated concentrations of sodium, chloride, iron, manganese and sulphate. Also, the water can have a characteristic hydrogen sulphide or "bad egg" odour, particularly in the summer when water levels in the well decrease and water is drawn from deeper zones in the rock.

Water treatment systems can improve the general quality of the water for residential usage, but it's difficult to improve the yield of these wells. Regular inspection and routine maintenance is

recommended for drilled wells, as well as water quality testing to ensure a safe water supply.

## **Quarry Expansion Won't Affect Well Water Supply or Surface Water Flows Below the Escarpment**

A continued supply of water is essential for all residents of the area around the proposed Duntroon Quarry expansion, and the expansion of the quarry will not interfere with water supplies below the Niagara Escarpment. The quarry extraction and water management systems will operate to preclude any interference with the groundwater and surface water systems below the escarpment.

Extraction of the rock on the quarry expansion property will result in a zone of influence on the local groundwater system in the dolostone bedrock adjacent to the quarry, as is the case with the existing quarry operations. Dolostone rock is the hard, erosion-resistant, cap-rock that forms the many vertical cliff exposures along the brow of the escarpment.

Extraction of the dolostone rock will occur to a depth below the local groundwater table, but it will not extend through the entire span of the dolostone cap-rock. Water pumping will occur in the dolostone rock adjacent to the quarry, but effects will not extend all the way eastwards to the brow of the escarpment or beyond, to the lower slopes of the escarpment.

Excess water that accumulates on the floor of the quarry will be pumped out and discharged onto the ground surface in a controlled manner into adjacent wetlands to maintain their seasonal moisture conditions. Some of the discharge water will infiltrate into the ground to the underlying dolostone rock formation, to help maintain flows of the groundwater springs that occur naturally at the

escarpment face. Those groundwater springs form part of the headwater tributary areas for the Batteaux Creek and Pretty River systems below the escarpment. Continued protection of the wetland features adjacent to the quarry and the groundwater springs at the escarpment will be a requirement of the quarry licence for the expansion.

Rock extraction and the dewatering operations at the expansion quarry will be confined to the dolostone cap-rock on top of the escarpment. Beneath the dolostone rock is a 10-metre (30-foot) thick layer of grey shale rock that prohibits the downward flow of groundwater. This layer of shale isolates the groundwater in the dolostone rock from the deeper rock units.

The residential water wells on the lower slope of the escarpment, below the brow, obtain their water supplies from either the soil or the underlying rock formations that are well below the base of the existing quarry and the proposed expansion quarry area. The dewatering operations at the existing quarry don't affect the groundwater systems to the east of the escarpment.

The wetland features and the springs on the escarpment, and the quantity of surface water and groundwater that occurs on the lower slopes will not be affected by the quarry operations on top of the escarpment.

Continued monitoring of conditions on and around the quarry property and at selected water supply wells below the brow will be an integral part of quarry operations, to ensure that those supplies are protected and maintained.

## **Why the Quarry is Located Here – and Why it Needs to Be**

Very few sources of rock in Ontario are of a high enough quality to be used as aggregates for building and construction.

Typical quality concerns when identifying the suitability of an aggregate source is the rock type, its hardness, susceptibility to freeze/thaw cycles, chemical stability, physical stability, and the purity of the rock formation in that area.

Aggregates are typically produced from either sand and gravel, or from bedrock formations. Sand

and gravel is glacial sediment that lies above bedrock formations. It is usually short on stone content, high on dirt content and very inconsistent.

Most bedrock is not suitable for aggregates. Dolostone rock (Dolomite) and some limestones, particularly high calcium limestone, are the best quality aggregates.

Geological mapping is done to identify potential sources of rock. Sources of this information include the Geological Survey of

Canada, the Ontario Geological Survey, the Ministry of Natural Resources and the Ministry of Transportation.

About 70 per cent of the high quality aggregates in Ontario is found along the Niagara escarpment and the Oak Ridges Moraine.

In addition to the quality of the aggregate, factors that are taken into consideration when locating a quarry include how close the rock is to the surface, the distance to market (transportation is a large portion of the cost of materials), the potential environmental impact, remoteness of the area and the supporting infrastructure. From an economic standpoint, quarries also need to be on a

large enough property to make extraction feasible and have a life span of at least 15 to 20 years.

There are several benefits to expanding existing quarry operations since there is a history of information to better predict the impacts of the business as well as the volumes of the business, and the local community already has an understanding of the existing business and how it operates.

To view a schematic, cross-section diagram of the rock formation from the Niagara Escarpment to the Beaver Valley, visit our website at [www.walkerind.com/GeoAggExpansion/index.html](http://www.walkerind.com/GeoAggExpansion/index.html)

## Cutting Down on Noise and Vibration

The focus of Walker Aggregates' Noise and Vibration Workshop was on explaining the science of sound and the craft of blasting. The company's technical consultants were on hand to describe how sound and vibration are measured, and the regulatory limits for industrial operations.

Walker's staff and consultants explained that the company is constantly seeking innovative ways to reduce the noise of our operations, particularly the sounds that reach our neighbours. We've heard your concerns in the past, and we've responded.

We've modified our truck back-up beepers to a different frequency, lined trucks and operations components with thick rubber, moved the plant itself to the quarry floor and enclosed some of the facilities. These and many other small changes have made the Duntroon Quarry one of the least noisy operations in the industry.



**The primary crushing plant has been moved to the quarry floor and enclosed to reduce noise impacts.**

Many of these improvements have proven to be win-win solutions both for our neighbours and for our business. For example, enclosing the plant has not only dampened the noise, it has increased

efficiency - not to mention being a much nicer place to work on a rainy or snowy day. We liked the new and less annoying back-up beepers so much that we purchased the exclusive rights to sell them in Ontario.

Blasting is an unavoidable aspect of our business. However, we carefully consider our neighbours when we plan a blast. We keep an eye on the weather, and the frequency of blasting is largely based on our attempts to reduce disturbances. When our neighbours call us with concerns, our experts often visit them to monitor blasts on their properties. This opportunity remains open to anyone with concerns around blasting.

At the workshop, our blasting specialists explained that each blast is carefully designed so that all of the energy released goes directly into the localized rock and does not escape as ground or air vibration. Energy lost to the ground or air is not only unpleasant for our neighbours, it is inefficient and is bad for our business.

Although the noise and vibrations of our operations and blasting already fall well below the regulatory limits in Ontario, we will continue to seek improvements as technologies advance.

Our technical consultants presented a lot of scientific information at the workshop. All of this material will be made available on our website <http://walkerind.com/DuntroonExpansion/index.html> and our consultants are preparing fact sheets that summarize the information they presented.

Please continue to share with us your ideas on how we can further reduce noise and vibration impacts.



## Traffic a Major Concern for Neighbours – Another Workshop Planned

Traffic is a major challenge for any industry that needs to move its products to market. At a traffic workshop held in early May we heard the concerns around road safety from the 15 local residents who attended, and we are sensitive to those concerns. Safety is our number one priority, hands down.

Trucks heading to and from the quarry are carefully monitored for excessive speed, safe driving practices, and truck condition. Our three-strikes-you're-out policy for drivers has been in effect since 2002. With these measures in place, the safety record for quarry trucks has been excellent.



**Walker Aggregates routinely monitors the speed of trucks traveling to and from the quarry.**

We understand that the noise of trucks can be heard by people who live on the haul route. We reduced this noise impact by banning straight tail pipes (trucks with no mufflers), by communicating to drivers that they should not use Concession 10, and by encouraging drivers to use their engine brakes sparingly.

At the traffic workshop, our mechanical specialist explained that engine brakes are an

important safety feature on trucks, especially when traveling down steep grades. Because of this, we work to educate drivers on the proper use of engine brakes.

Walker's traffic consultant, Nathalie Baudais, was on hand at the workshop to explain that the County designates roads such as County Roads 91 and 124 as goods hauling routes and that it is the County that posts speed limits. We understand that some Duntroon residents are asking for the speed limit on County Road 91 to be lowered west of Duntroon, a position Walker will support. We are also in discussion with the County to improve the condition of the road, and will make upgrades if the current quarry application is approved.

The time we had for the traffic workshop was not nearly enough to cover all of the concerns raised. Because we need more time to discuss important issues such as hours of operation and alternative routes in greater depth, we are planning a second traffic workshop for June 7<sup>th</sup>, 2008 from 9 - 11 am at the Church of the Redeemer School.

At this second workshop we'll continue where we left off, discussing the quality of life and safety issues of importance to our neighbours, and also to provide an opportunity for participants to brainstorm solutions. At this point, we don't have all the answers around traffic, and we are looking to you, our neighbours, for suggestions.

As Ken Lucyshyn, vice-president of Walker Aggregates, always says, "We might not be your favourite neighbour, but we want to be your best neighbour."

Thanks to all who participated in our first annual operations improvement workshops. We'll be following up on all of your suggestions, ideas and concerns in the coming weeks. Your input is valuable and we appreciate the time you gave from your weekend to attend.

**Stepping Stones is published quarterly. We welcome your questions and comments. Please contact Rosemary Ackermann at Walker Aggregates at 705-445-2300, ext. 223. The Duntroon Quarry is operated by Walker Aggregates Inc., a division of Walker Industries. ([www.walkerind.com](http://www.walkerind.com)).**