

Tackling the water myths

By Tom Venetis

Far from polluting, aggregate producers help protect ground water resources in Ontario



The aggregate industry in Ontario is hobbled by misconceptions regarding its impact on the environment and the province's vast watersheds. In this first article of a two-part series, *Avenues* examines these misconstructions and separates hard facts from fiction.

The truth is that thousands of pits and quarries across the province have been rehabilitated without damage or depletion of the province's water resources. In fact, the aggregate industry is one of the most heavily regulated in Ontario, with the bar often set higher for protecting the environment and water resources than many other industries.

So why do people persist in believing the industry has a negative impact on managing and preserving groundwater? That is a question often put to Kevin Kehl. As an environmental performance manager with Walker Industries, Kehl is well positioned to shed light on the phenomenon. "This issue is misconceived because of a basic misunderstanding of what is involved in the production of aggregates," he explains.

"The public thinks that aggregate producers come in and destroy the environment and leave a big hole behind, and then move on to the next project. This is not the case."

Tecia White, president and senior hydrogeologist for Whitewater Hydrogeology Ltd., agrees. She adds that the most common misread of the aggregate sector today remains that of its use of water. "The biggest misconception about the industry," she says, "is the mistaken beliefs surrounding the impacts associated with water management and water use at any given aggregate operation."

HANDLERS, NOT CONSUMERS

So what are some of the misguided beliefs out there on the aggregate industry and water usage and preservation? Topping the list is the impression that aggregate companies are consumers of water, when in fact they are merely handlers. "What is difficult for those not in the industry to understand is that water is *handled* and not *consumed*," says White. "The industry consumes very little water. But companies may require the use of large volumes of water as part of their operation."



“What is difficult for those not in the industry to understand is that water is handled and not consumed”



Tecia White, Whitewater Hydrogeology

Quarry or pit operations use water to control dust or to wash the material as it is extracted, and this water is fully recycled. It is not hauled off to be used for other purposes. Quarry dewatering is usually released into nearby streams or recharged into the groundwater system. Handling the water does not deplete the groundwater resources, so water losses at aggregate sites are in fact quite small.

Stephen Hollingshead, a former consultant to the aggregate industry and now retired, says that to understand how water is handled by aggregate producers, you need to look more closely at the different kinds of aggregate operations that can be found in Ontario.

Pits and quarries come in three major categories, notes Hollingshead. The majority extract sand, gravel and rocks from above the water table, so the operations do not reach far down enough to have any impact on the groundwater. With these operations, extraction actually helps in the recharge of the underlying aquifer. “When you create a hole and the water table is underneath that hole, you are in fact capturing and infiltrating more water into the ground,” Hollingshead explains.

A question often asked is whether the extraction of sand and gravel from a pit or quarry disrupts or even stops water from being filtered. The thinking being that water on the surface would normally pass through the sand and gravel, and in doing so get filtered before reaching the water table. The Ontario Ministry of Natural Resources released a study in 2006 that looked at reviews done worldwide on pit and quarry operations and found no instances of pits and quarries causing groundwater contamination.

Another major group is pits where sand and gravel are removed from below the water table. In this case, Hollingshead explains, “They don’t pump the water out. They actually dredge the sand and gravel out. You dip a bucket into the water and dredge out the sand and gravel. The water stays where it is, as you are only taking the sand and gravel. Years of monitoring such operations have shown that they do not impact the water table.”

The third kind of operation is a rock quarry. In this case, the water may have to be pumped out of the quarry so that blasting and digging can be done safely. However, most of the water is not consumed in the operation, but discharged onto the surrounding surface (after water has been clarified of sediment in settling ponds) where it filters back into the ground or is sent to nearby rivers or lakes.

HIGHLY REGULATED

There are very strict regulations that need to be followed whenever water has to be moved or used in Ontario. Before any licences are granted for an aggregate operation, comprehensive studies must be conducted to examine possible disruptions to watersheds.

To put it into perspective, the province’s aggregate industry comes under more than 25 provincial and federal acts that apply to the management of aggregate resources. The protection of groundwater is specifically covered under several acts, including the *Clean Water Act*, the *Environmental Protection Act*, the *Aggregate Resources Act*, and the *Ontario Water Resources Act*.

Hydrogeological assessments are conducted before a site can obtain a licence to operate under the *Aggregate Resource Act*. Impacts to water wells, streams, wetlands and other environmentally sensitive areas close to where the operation will take place are carefully studied. The assessments must show that there will be no adverse impacts on the natural functions of the ecosystem, water availability and use of water by others.

As noted by Kehl, “With each approval or permit that is issued comes an annual reporting requirement. Data from an approved monitoring program is compiled and summarized in those reports. They are then reviewed by technical staff at the various government agencies.”

“The volume of water that can be moved is strictly regulated,” adds Kehl. “All water volumes are recorded on a daily basis to ensure that these volumes are not exceeded.”

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To ensure that water meets or exceeds quality standards, it is discharged into a settling pond onsite to allow sediment to be removed prior to discharge offsite

Another common misconception is that the manufacture of aggregate onsite must involve the use of chemicals or other corrosive agents. This too points to a misunderstanding of how aggregates are made because aggregate extraction is largely a mechanical process. Rocks and gravel are usually crushed, screened and then blended.

There are no chemicals added to the products, or the water, so watersheds or water resources are not contaminated with pollutants. If there is a potential source of contamination, it would be no different than the sort commonly found on any large industrial or construction site – primarily in the form of fuels and lubricants used in machinery. And those contaminants are closely regulated under the *Technical Standards and Safety Act*.

In the end, Ontario’s aggregate industry is one that is strictly regulated and takes its role as a handler of a precious natural resource, namely water, very seriously. Very little water is actually consumed at aggregate operations. Yes, the industry does use water, however most is returned to the watershed. In this case, the facts point to a healthier environment than what many people believe. ●

Part 2 of this special series on water and aggregates will appear in the next issue of Avenues magazine. It will focus on the industry’s active role in protecting source water and creating water assets through rehabilitation.

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