Between a Rock and a Hard Place
by David Bruser, Toronto Star - October 3, 2005

From this moonscape, carved 27 metres into the ground, springs the lifeblood of the GTA development boom.

At one end of this white, dusty 232-hectare hole in the ground, front-end loaders lift blasted rock into massive million-dollar dump trucks.

The trucks rumble to the other end, where a crusher churns the rocks, breaking down the limestone and feeding a warren of conveyor belts that feed still more crushers and sieves that continually make and separate stones of different sizes.

The din of machinery is ceaseless, the movement relentless. For 16 hours each day, dump trucks, each carrying 100 tonnes of blasted rock, continually haul to the crusher.

This is Lafarge Corp.'s flagship Ontario limestone quarry in Dundas, third biggest in the province, according to an industry publication. Some of Canada's biggest quarries and gravel pits pock the land west and north of Toronto, and close to the GTA municipalities that need the sand and rock for roads and buildings.

"To simplify our business, we make small rocks out of big rocks. But, I mean, that's the extreme simplicity," says Lafarge plant manager Ron Graham.

Yet Lafarge and other major producers have never felt more misunderstood.

"We like to say that it's one of the commodities least understood by the general public while at the same time one of the most essential to the quality of life that we enjoy as Ontarians," said Carol Hochu, president of the Mississauga-based Aggregate Producers' Association of Ontario (APAO).

Hochu, who once worked in public relations for a major tobacco company, admits she likes taking on industries with "challenging profiles." This year, the APAO has stepped up its public relations efforts, and this month will run ads in newspapers that underscore the need for aggregates.

The ad, which also appeared in June, depicts a couple with their newborn son, and reads, "In the first year he'll need 2,000 diapers, 225 litres of milk and 14 tonnes of aggregate."

Fourteen tonnes is the per capita average of how much sand, stone and gravel Ontarians consume each year, according to the industry.

"We're trying to see if we can move the needle on public perception," Hochu said.

There is an urgency to the public relations push, according to many in the business. They say the current limestone supply ? the sturdy rock is increasingly required by contractors, producers claim ? is fast running out while housing development, public opposition to new sites and a battery of environmental protection laws are crimping access to plentiful resources on the Niagara Escarpment and Oak Ridges Moraine. Finding sources further out is unappealing because that means more fuel and environmental costs to haul the product greater distances.

Not everyone accepts this stance. Earlier this year, Gord Miller, Environmental Commissioner of Ontario, wrote in the Star that there is no looming sand, gravel and rock shortage, that government officials have no accurate picture of aggregate demand and it is not known how much can still be extracted from the existing 2,800 licensed pits and quarries in the province.

Miller reiterated those points in an interview for this story, but added he's not blind to the need for aggregates and urged all stakeholders to start planning for an environmentally friendly way to mine aggregates further afield.

Quarries produce rock that is blasted loose while pits contain unconsolidated sand and rounded gravel stones that requires no drilling or blasting, only digging. Both blasted rock and gravel are used in ready-mix concrete. By volume,

asphalt is 95 per cent sand and gravel or crushed stone. Building foundations, road bases, sewer pipes and bridges all rely heavily on aggregates.

Roads and highways alone account for 53 per cent of annual Ontario aggregate consumption, the industry estimates.

"Did you know 12 per cent of people in Ontario actually know what the word aggregates means?" says Greg Sweetnam, resources manager for James Dick Construction Ltd., which supplies ready-mix concrete in addition to producing aggregates.

Driving along Winston Churchill Blvd. near Belfountain in Peel Region, he's headed to one of his company's gravel pits, and on the way passes the site of the Rockfort limestone deposit James Dick Construction is trying to win a license to mine.

Signs tacked to trees along the road read, "Pits No More" and "Stop Rockfort Quarry."

"Just look at this drive we're taking right now, look at all the stones we're driving over. It's like gazillions of them in the road here," Sweetnam says. "Driving into Toronto, there are millions, maybe billions of tonnes of aggregate absolutely everywhere and yet people are going about their day-to-day life not knowing."

Roadbuilders who shop for road material at Dufferin Aggregates' limestone quarry in Milton typically shop for rocks measuring between 19 and 9.5 mm to lay atop a base of 50 mm rocks. The varied sizes, crushed so they're not round but jagged, pack more firmly than round rocks of uniform size.

Landscapers use 6.7 mm stones to make interlocking brick. The smallest customer, homeowners, can drive into the quarry or some of the company's depots to buy smaller amounts for driveways or other uses.

Products range from $5 to $15 a tonne plus another $6 for delivery.

This quarry produces about 4 to 5 million tonnes per year. A few years ago, during a peak of Highway 407 construction, the quarry moved 54,000 tonnes in one day.

To blast rock chunks from a 60-metre-wide section of quarry wall, Dufferin workers drill about 15 holes in the ground above, just a metre back from the precipice. A tanker drives in from off-site daily and fills the hole with an explosive mixture that includes ammonium nitrate.

The mixture in each hole detonates microseconds apart to ensure the rock fractures into pieces instead of falling from the wall in one big chunk.

The blast can be felt 1 kilometer away and sometimes heard up to 3 kilometres from the quarry, says the company, which monitors the vibrations off site.

"The mine plan is not from the back of a napkin," says general manager William Galloway. "It's very scientific."

From the "muck pile" created by the blast, front-end loaders shovel the rock into the giant dump trucks that cart the load to the crusher.

At Lafarge's quarry, the crusher, made of manganese steel and set in the ground, gyrates only 4 centimetres from centre. But the movement is enough to press the rocks against the walls surrounding the crusher, breaking all chunks into 25 centimetres or less.

"It's just pressure," Graham says as rocks cascade from the back of a truck into the crusher pit.

As Graham watches, a large and ornery rock threatened to stick between the crusher and the wall. Above, a worker manoeuvring a 12-metre jackhammer that looks like an oversized dentist's tool zeroes in on the rock.

"There she goes," Graham says as the big hammer strikes, tat-tat-tat-tat, breaking the rock into pieces.

More than 20 metres underground, the material settles onto a conveyor belt that feeds it to the processing area.

From this site, the conveyor rolls about 3 kilometres south, above ground and below roads to the processing area.

It finally reaches a maze of more conveyors resembling a rollercoaster. The conveyors feed rock to vibrating screens or sieves that separate pieces of different sizes, Graham explains while driving around the site. Finally, conveyors take the sorted rocks to their respective piles ? 13-metre-high stalagmites of limestone rocks, some of uniform size and others a recipe of varied sizes as specified by the customer.

"Clear as mud?" Graham says.

And all the blasting, crushing and moving of rock creates a lot of dust. At Lafarge's Dundas quarry, trucks spray water on the quarry bottom throughout the day. At Dufferin's Milton quarry, customers must stop their trucks on the way out to have their wheels sprayed down. This helps prevent trucks from tracking dust onto public roads.

Big producers like Dufferin and James Dick promote their environmental stewardship, describing their pits and quarries as an "interim" land use, and trumpet their rehabilitation efforts.

They are sensitive to the perception that their pits and quarries are merely moneymaking holes in the ground.

Dufferin has rehabilitated 90 hectares of its Milton quarry, including a wetlands environment with cliff faces and re-forested slopes. About 4 per cent of Dufferin's operating expenses goes toward rehabilitation.

Such efforts don't impress the Coalition on the Niagara Escarpment (CONE), which is currently fighting Dufferin's efforts to expand its Milton quarry.

"Rehabilitation areas look nice. There's cliff faces, wetlands, but it's not natural. It's a constructed environment. It's sculpted," said executive director Bradley Shaw. "You strip all the natural vegetation, you dig a big hole. It takes 60-80 years for a mature forest in this area to return to being a forest."

But Dufferin's William Galloway says the industry has come a long way, saying that a little more than a decade ago, "we wouldn't have been talking about a dragonfly in a wetland."