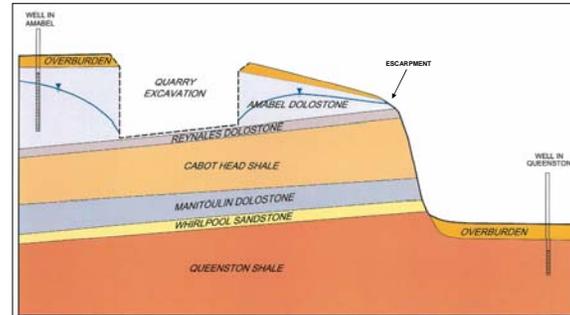


Response to Water Questions

Issues raised at the November 19th meeting:

- Where does the quarry water come from?
- Why does the quarry have a large water taking limit?
- Does the quarry consume or divert water?

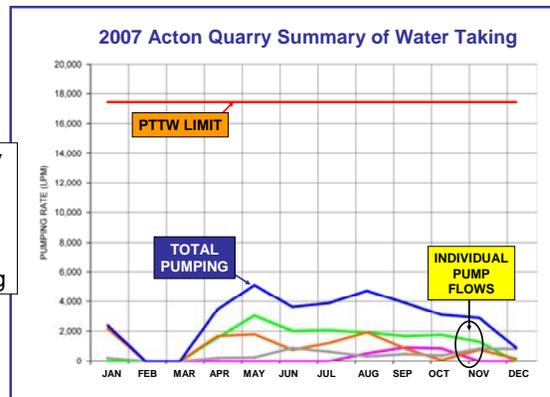
Quarry dewatering influences Amabel Aquifer



- Amabel Dolostone is a regional aquifer and a source of high quality groundwater and aggregate.
- Amabel is underlain by the low permeability Cabot Head Shale aquitard that separates the groundwater flow in the Amabel from the flow in the formations below.
- Quarry extends below the water table and lowers groundwater levels in nearby areas within Amabel aquifer in close proximity to the quarry.
- Quarry does not influence deeper groundwater flow system below Cabot Head Shale.

Quarry consumes small amount of water

- Most water comes from precipitation and snow melt. Smaller groundwater contribution. Quarry is dewatered to keep dry working conditions.
- Large water taking limits are necessary to handle peak flows such as spring freshet as well as water re-circulation for “closed loop” aggregate washing.
- Actual pumping is far less than PTTW¹ limit.



MOE accepted industry study indicates consumption typically:

- 1% of PTTW, or
- <5% of Total Pumping

1 - PTTW – Permit to Take Water
2 - Certificate of Approvals

Water returns to the environment



- Water is returned back to the watersheds, 16 Mile Creek and Black Creek, according to permits.
- Discharge of dewatering flow is regulated by the approving agencies, MOE (PTTW¹ & COA²), NEC and MNR.



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Response to Low Water Concerns

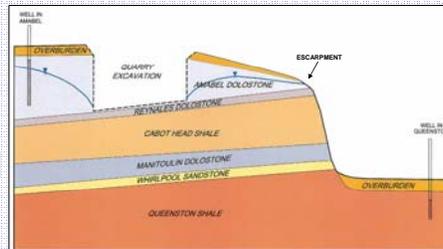
Issues raised at the November 19th meeting:

- What is causing water supply shortages and lowered pond levels?
- Why do some areas have more water supply problems than others?



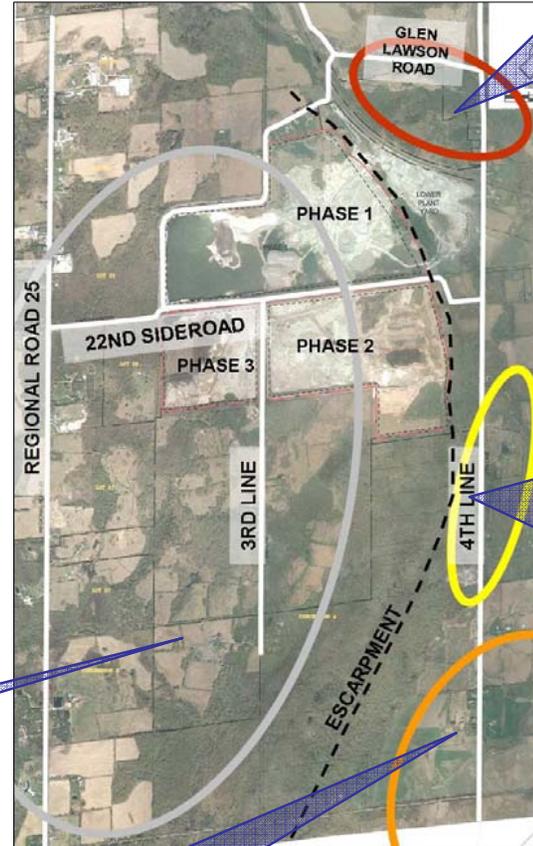
Amabel

- good quality and quantity.
- straight-forward well installation and maintenance.



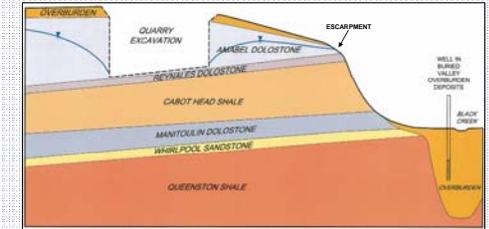
Water supply varies across region

- Geology dramatically affects both quantity and quality of groundwater supply.
- Well construction and maintenance also strongly affect original and long-term supply.
- Wells with limited supplies are more affected by climate.



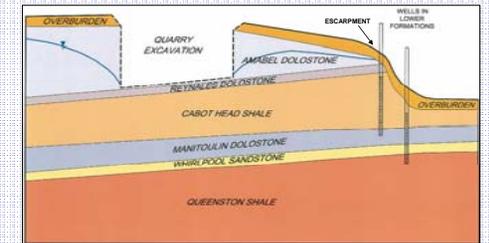
Bedrock Valley Overburden

- good availability of water; well construction is critical.
- fine sands can block well.



Transitional

- availability varies by local condition and well construction.
- well maintenance is a common issue.



Queenston

- commonly issues with quality and quantity.
- well maintenance is a common issue.

Response to Low Water Concerns

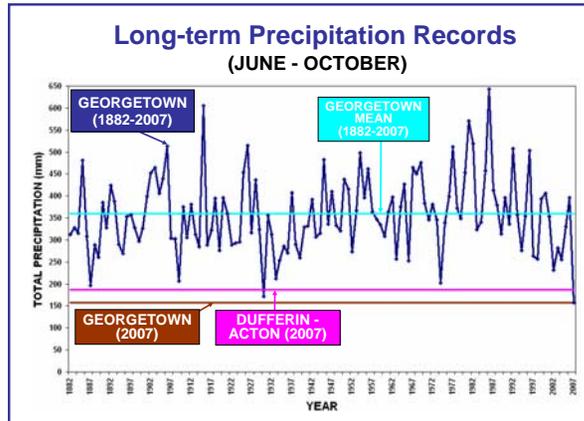
Issues raised at the November 19th meeting:

- What is cause of water supply shortages and lowered pond levels?
- What has / will Dufferin do to help address my water concerns?

Assisting neighbours

- Dufferin supplied water to some residents to help address problem in short term.
- Dufferin is willing to conduct long-term monitoring of water resources features on neighbouring properties for characterization and baseline.

2007 was a record drought



- Drought resulted in water shortages, lower pond levels, and increased drying of creeks.
- Water levels recovering with increased precipitation and recent snowmelt.

- 2007 experienced lowest precipitation levels since 1930, second lowest since measurements started in 1880.



- “Southern Ontario's drier weather could only be rivaled by conditions not seen in the region since the 1930s.”
- “Moreover, it was a 10-month drought. Between January 1 and October 31, the GTA experienced its second driest on record... To the north in York Region, it was even drier.... In Hamilton, between May and August inclusive, 141 mm of rain fell, which is only 37 per cent of the normal accumulation. It was the lowest rainfall total since record-keeping began in 1959, smashing the record set in 1966.”

Conclusions on water shortages

- Overall there is plenty of water available in the area of Acton Quarry. However, some locations are problematic to obtain /maintain reliable water supply.
- 2007 was a record drought and exacerbated water supply conditions. Well construction and maintenance are also factors.
- Acton Quarry was not the cause of the problems experienced by some residents.
- MOE investigation reached the same conclusion and have ended their investigation.



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