



***Councillor McCarthy's Public Meeting on the  
St. Mary's Quarry Proposal***

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# Introduction

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- Who is WESA?
- Scope of Review
- Overall Conclusions
- Discussion and Questions



# Introduction to WESA

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- Staff of 95 engineers, hydrogeologists, environmental auditors, industrial hygienists, and health & safety specialists
- Established in 1976 and now have 8 offices in Ontario and Quebec
- Ian – B.Sc. (Geology) & M.Sc. (Hydrogeology) from U of W
- Principal and Hydrogeologist, 20 years of experience, P.Geo., Councillor SW Ontario for APGO



# Introduction to WESA

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- ❑ Phased Environmental Assessments and Audits;
- ❑ Municipal and Industrial Water Supply
- ❑ Groundwater Protection Studies
- ❑ Soil and Groundwater Contamination Characterization;
- ❑ Environmental, Health and Safety Management Systems;
- ❑ Remediation Design, Implementation and Operation;
- ❑ Waste Management;
- ❑ Atmospheric Emission Assessment and Approvals;
- ❑ Industrial Hygiene & Occupational Health/Safety



# Scope of Review

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- Review of proponent's hydrogeological submission and reviews by others – not hired by the City or interest groups
- Expressly for this meeting as an independent review and as a basis for discussion or questions
- Does not include a detailed review of all supporting material except as required



# Initial Thoughts

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- Do not dismiss the GLL report – there is a lot of good hydrogeological and modelling work – more to do
- Major shortcoming is the mitigation measures – purely at the conceptual stage
- Reviews completed by the City (Jagger Hims) and by FORCE (Interra) are very well done



# Overall Conclusions

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- GLL conclusion:
  - Unmitigated development of the quarry would have an unacceptable impact of the wetland and local residential wells
- In our opinion, the magnitude of these impacts have been underestimated
  - No monitors in the most productive zone of the bedrock
  - Could significantly change the aquifer properties
  - Aquifer properties used in the groundwater flow model
  - Additional field investigations are required



# Overall Conclusions

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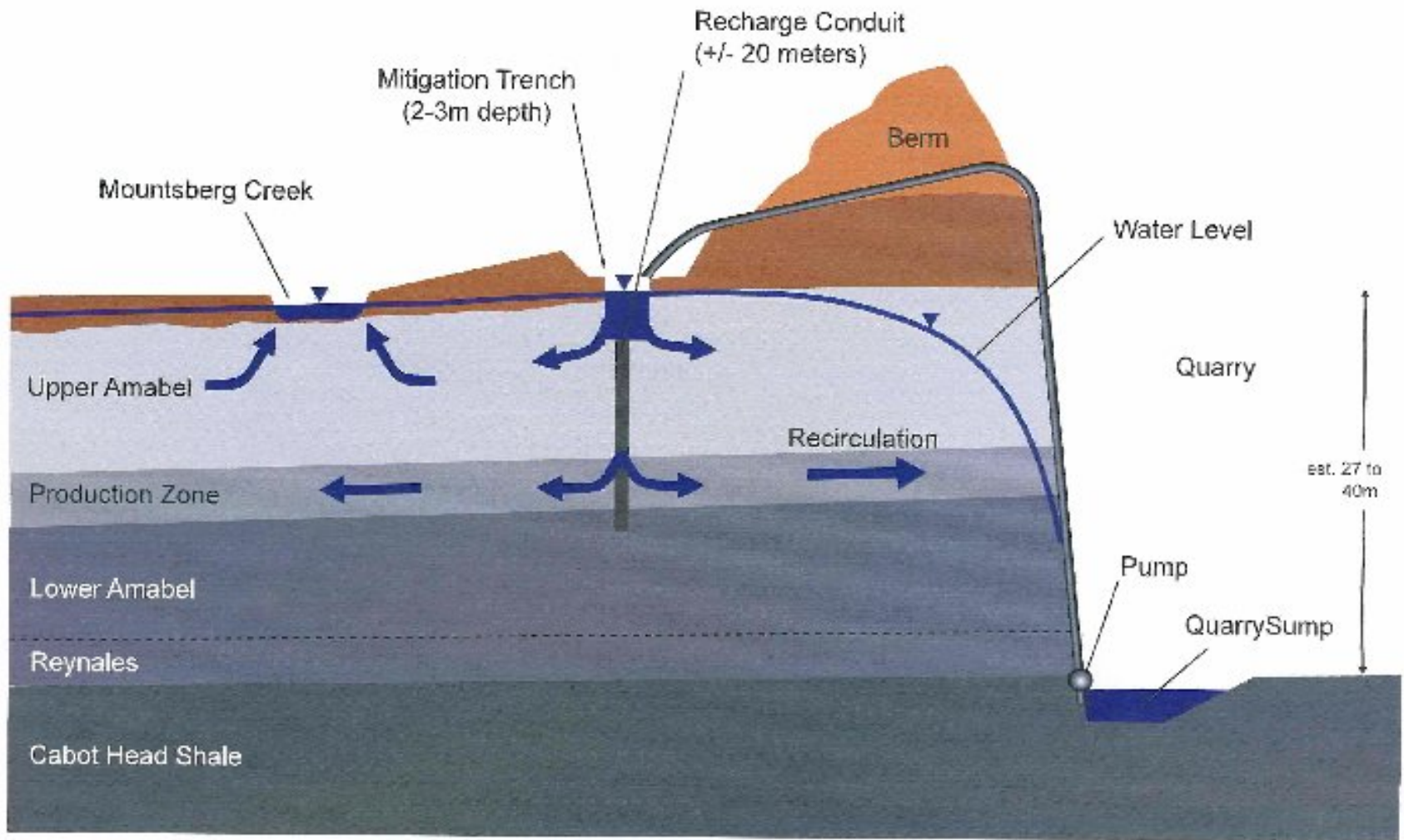
- GLL conclusion:
  - There will be no impact to Carlisle's municipal water supply
- Cannot agree with the statement at this time
  - Magnitude of dewatering underestimated so could influence municipal supply
  - Possible change in the capture zone which could impact quality and quantity
  - Would mean more work for the City of Hamilton in terms of GUDI assessment and groundwater protection areas
  - Differences between GLL modelling and City modelling (SNC-Lavalin)



# Overall Conclusions

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- Can the GLL model reproduce the SNC model at current conditions?
- Modelling may not have been done at current permitted rates and certainly not at long term, full development rates
- More modelling of post quarry conditions is required
- Big difference if quarry is within the 2 year capture zone or the 25 year capture zone
- Modelling conflicts are being addressed by the City



Not to Scale

 Gertner Ltd

**Conceptual Mitigation System**

**DRAFT FOR DISCUSSION**

sheet  
**17**  
Project 21-827  
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# Mitigation Measures

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- Proposed mitigation system is to recirculate water
  - System is untested and conceptual at this point
  - No known use of this system in fractured limestone
  - No data to indicate whether or not it will be successful
  - Proponent is aware it is conceptual and not intended to be the final design



# Mitigation Measures

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- Harder to get water back into the bedrock than it is to extract it – hydraulics, dissolution, precipitation
- Possible introduction of bacteriological contamination to the subsurface and to surface waters
- Will likely be an increase in temperature impacts to surface water (very critical) and groundwater (not as much of an issue but dependent on location)
- Issues with the water budget
  - amount of dewatering will not be enough to run GRS and discharge to surface water
  - Dependent on precipitation – drought? Too much rain? Storage?



# Mitigation Measures

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- ❑ Measures said to be adaptive – can change or modify the GRS as quarry development proceeds – Do not know at this stage if it is possible
- ❑ Will be very hard to get water to move away from quarry with such strong gradients towards it
- ❑ Proponent will have to do more field investigations to prove GRS works
- ❑ Will the GRS have to be operated for ever? Or let it just re-equilibrate and see how things re-adjust?



## Summary

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- ❑ Unmitigated quarry operations will have a detrimental impact to wetlands, local water supplies and possible municipal supply
- ❑ Mitigative measures are not proven and will require extensive additional investigation
- ❑ Aggregate Resources Act vs. Clean Water Act
- ❑ Questions or Discussion?