

MEMO

To:	Natalie Kotyck
From:	Garry T. Hunter, M.A.Sc., P.Eng.
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Subject	Proposed Strada Quarry – Deep Gasport Aquifer Water Quality Sampling – September 11, 2024

Natalie,

This communication continues the iterative Peer Review of the proposed Strada Quarry pending application.

Plots of water quality are enclosed for the recent Strada Sept 11, 2024 deep Gasport Aquifer sampling on Sept 11, 2024 (Fig H.29). This Figure may be compared to Peer Review previously prepared Upper Aquifer water quality sampling (see Matrix).

1.0 Pristine Deep Groundwater

Deep Groundwater Monitor Wells screened in the Gasport Aquifers including OW 25C(D1), OW26C(D1), OW28C(D), OW29C (D1) have very low Hardness (136 to 236 mg /L), Nitrates as N less than 0.05 mg / L, low chlorides and low sodium. The deep groundwater at these locations is pristine, evolved, excellent quality, older and not influenced by post settlement anthropogenic human activities. OW30C(D1) sampling is still required. The elevated Sodium at 57.9 mg/ L in OW28C (D1) is currently considered to be the result of natural chemical evolution along the deep groundwater flow path. Similarly the elevated sodium at OW29C(D1) is likely due to flow path evolution not road salt.

This low Nitrate as N data indicates that leakage through the Goat Island Aquitard to the Gasport Aquifer is extremely slow at these four (4) monitor locations and likely at OW30C(D1) as well. Proposed Quarry surface infiltration facilities at these locations will not effectively recharge the deep Gasport Aquifers.

2.0 Local 4th Line Leakage / Recharge Window

On the other hand, Groundwater Monitor Wells OW24C(D1) and OW27C(D1) have Hardness at 364 and 348 mg/ L and Nitrates as N at 6.46 and 4.10 mg/L respectively. This ground water chemistry indicates leakage from the Upper Guelph / Eramosa Aquifers. These sampled monitor wells are in the vicinity of Monitor Well OW19C(D1) screened in the upper Bedrock Aquifers but with static water levels similar to the Gasport Aquifers. This coincidental data indicates a local recharge window through the Goat Island Aquitard in the vicinity of this underground stream along the 4th Line in the McTaggart Farm and Prince Pit areas.

Mixing of the Upper and Deep Aquifer waters within the proposed quarry excavation will decrease water quality (increased AN/FO, Nitrate as N and Hardness) in the deep Gasport Aquifers flowing towards Horning's Mills Gasport springs and water wells.

3.0 Conclusion

This water quality sampling is very useful for independent interpretation of site hydrogeological conditions and for groundwater model validation.

This analytical work is high value to the application process.