Subject: Strada Peer Review - Site Specific Real Data Exhibits - Email 2 of 2.
From: Garry Hunter <ghunter@hunter-gis.com>
Date: 2024-09-11, 11:44 a.m.
To: Natalie Kotyck <nkotyck@gmail.com>
CC: Alicia Kimberley <akimberley@tathameng.com>, Dirk Kassenaar <dirk@earthfx.com>, Gabriel Bacca Cortes <gabrielbc@earthfx.com>, James Newlands <jnewlands@mhbcplan.com>, Kevin Powers <kevinp@campbellstrategies.com>
BCC: Carl Cosack <cosack@zing-net.ca>

Natalie,

We enclose a number of complementary Peer Review prepared Illustrative exhibits related to Strada's Appendices ABCDE current documents. These exhibits do not duplicate any of the Strada consultants actual or promised productions to date.

Fig H.4

This exhibit is a repeat of my March 11 proposed stream flow monitoring station. I note that the River Road Genivar Station DP SW10 would be an acceptable alternative to my Mulmur 2nd Line WHS Pine River Station. Provision of continuous monitoring at this site would facilitate subsetting of the groundwater model to this station for more accurate local flow virtual baseline predictions and to permit employment of higher resolution grid cells to further improve the accuracy of model results.

Fig H.9

The Model predicted virtual base line condition at zero (0.0 L/s) for dry weather flows is not credible at the Newell / Funston MECP permitted Commercial Aquaculture site. Why didn't the modellers identify and report this invalid condition?

The ABCDE Appendices report Genivar's Mean Flows at 350 L/s at this station, an obvious error. There can be little (no) confidence in Strada's Groundwater Model Scenarios until the stream base flow virtual condition predictions are improved and validated at multiple Pine River headwater locations.

Fig H.10

These water quality plots prepared from Genivar (2011) Mega Quarry Data illustrate Nitrate issues and ODWS exceedances in stream flow. This Peer Review previously compiled and prepared

spatial bar graphs of groundwater Nitrate (as N) as contained in the Strada Compliance Report stack (See Matrix).

Although mainly farm ambient source related, Nitrate (as N) increases due to quarry village groundwater flow reductions and Quarry effluent AN/FO increases will likely result in Strada owning this issue with respect to treatment and discharge of Quarry pumped effluent water at about 50 % of ODWS 10 mg/L.

This is a drinking water quality source protection issue for Hornings Mills Village and Rural Residents.

The Strada consultants do not understand this issue as demonstrated by the absence of any meaningful water quality analyses in Appendix AB, recent Sept 6 slide deck meeting questions and the entirely quantity focused Model Scenario 1 Extraction Impact Assessment

Fig H.13

This Topographic Shaded Relief Figure prepared from the LiDAR DTM with selected spot elevations shows primarily the worked out glacial till surface in the pits south of the undisturbed Prince Pit on this Oct / Nov 2022 LiDAR DTM image). It also shows Strada non compliant extraction below the water table + 1.5 m within W 1/2 Lot 11.

Fig H.14

This Figure, compiled by spatially subtracting previously forwarded (see Matrix) Fig H.1 (Model Layer 4) and Fig H.2 (Model Layer 6) real and synthetic legacy interpolated one metre contour water level surfaces, illustrates the Hydraulic Head difference across the Goat Island Aquitard. This Hydraulic head is negative (upward gradients) in the southwest corner of the pit and positive (downward recharge gradients) further north.

Despite Strada consultants frequent Matrix statements that the site monitoring well distribution network is excellent, this statement is apparently based only on the totality of the map surface expression of the undifferentiated legacy and recent monitor sites. There is no apparent consideration that one third of the site monitors are not active or the more limited active monitor screens present within the multiple Model Layers.

Peer Review Fig H.1 and H.2 and earlier plots (see Matrix), even with incorporation of synthetic legacy water levels to attempt to patch the water level data gaps, clearly illustrates together with Fig

H.14, the effects of 'no data' gaps.

Hydraulic head differences at the 4th Line Prince Pit frontage area reflect serious water level data gaps both in the Model Layer 4 / Model Layer 6 flow convergence zones. These hydraulic head differences across the Goat Island Model Layer 5 at the Strada site are much less than the modellers oft quoted 25 m difference at the remote Shelburne Municipal wells. Conditions at the Strada site are different than at Shelburne.

There are no equivalent interpolated one meter contour Model Layer water level surface maps in the Strada Reports received to date. The precise monitor water levels (20 cm) have been blended into and degraded into the much less accurate 5 m virtual water level contours generated by the Groundwater Model. Why do all the continuous expensive site groundwater monitoring if this is how the data is treated?

Strada consultants have refused to compile the early legacy ground water level manual observations for the Strada Pits prior to the installation of data loggers. They have also refused to provide water level monitoring data after March 2024. This data is require to further patch water levels and update Peer Review Fig H.1, H.2 and H.14 in the absence of new monitor construction.

The Strada consultants have also refused to provide specific Model Layer error statistics for the Strada Site as well as the model input data for Peer Review audit purposes.

Fig H.15

Strada's Groundwater Model Based Scenario 1 Impact Assessment Extraction Phasing by Lift is opaque, poorly described and not transparent for the NDACT community and the public.

This Figure H.15 provides 'first cut' at 3D Visualization, Oblique Perspectives and Fly Throughs for the Strada modellers Extraction Plan (s). This Fig H.15 visualization only shows the full quarry extraction based on Peer Review Fig H.3.

These Peer Review visualizations will be updated and improved when Strada decides to offer further clarity on its proposed operational extraction phases for its Vertical Barrier Wall Model Scenario 1 and for other comparative Scenarios. The modelers have refused to provide the geological formation 'picks' to facilitate insertion of lift phasing information into this evolving visualization.

Resolution of the above issues will allow clearance of a number of Matrix

items.

Yours truly,

Garry T. Hunter M.A.Sc. P.Eng.
President

Hunter and Associates / Hunter GIS
2285 Dunwin Drive, Unit 18
Mississauga, ON L5L 3S3

Tel (905) 607-4120
Fax (905) 607-1132
Email ghunter@hunter-gis.com
Website http://www.hunter-gis.com

Attachments:

Fig H.4 Proposed Stream Flow (Base) Monitoring Locations_Hunter20240311.pdf	3.7 MB
Fig H.9 Figure 3.22 from Strada Impact Assessment Report V12.pdf	1.2 MB
Fig H.10_Nitrate and Sodium_20240910.pdf	1.9 MB
Fig H.13 LiDAR8k.pdf	4.0 MB
Fig H.14 GroundwaterContour_20240712-ManualB_D.pdf	3.0 MB
Fig H.15 3DModel_20240910dwg-3DModelExcavation.pdf	412 KB