Response to Mediation Questions

Proposed Shelburne Pit/Quarry

Prepared for:

Strada Aggregates
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Concord, Ontario L4K 4R1

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April 14, 2025

Mr. Grant C Horan
Strada Aggregates Inc.
30 Floral Parkway, Suite 400
Concord, Ontario
L4K 4R1

RE: Response to Mediation Questions
Proposed Shelburne Pit/Quarry

Dear Sir:

Earthfx Incorporated is pleased to provide this response to mediation questions as requested following the March 6, 2025 technical meeting.

This document addresses all of the outstanding Six Major Issues as identified by NDACT in a memo dated January 10, 2025.

If you have any questions, please do not hesitate to call.

Yours truly
Earthfx Incorporated

Dirk Kassenaar, M.Sc., P.Eng.
President

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Director of Modelling Services

Table of Contents

List of Tables

List of Figures

Response to Mediation Questions
Shelburne Pit/Quarry

Executive Summary

Introduction

In 2022, the North Dufferin Agricultural Community Taskforce (NDACT) hired Garry Hunter as a community-trusted advisor (CTA) to oversee the hydrogeologic planning for Strada Aggregates' proposed Shelburne Pit/Quarry. This role was unprecedented in Canada: The CTA gained direct access to hydrogeologic studies as they unfolded, a level of involvement unique in quarry applications. Embedded for three years, the CTA provided real-time input, shaping the groundwater analysis and site plan designs to prioritize surface and groundwater protection—reflecting NDACT's push for community safeguards. Draft reports were provided to NDACT for review and additional field investigations and analysis was undertaken in response to comments. By January 2025, after extensive collaboration, the CTA narrowed his concerns to six key hydrogeology issues, presented at a meeting with Strada and a third-party hydrogeologist and mediator.

Strada and its hydrogeology team began tackling these immediately. On March 6, 2025, Strada's hydrogeology team again met with the CTA and the mediator to review and address the CTA's concerns. Since then, Strada has refined its approach, detailed in this document, addressing the CTA's issues head-on.

Summary of Responses to Hunter's Six Major Issues

1. **Groundwater Model Fitness**: The CTA questioned the model's predictive power, citing unchanged parameters and underestimated flows.

   Strada demonstrated that the model has been updated with new drilling data over the course of the CTA review period and that the calibration has been significantly improved. Results presented at the March 6, 2025 meeting confirmed that the model does not underestimate flows, and closely matches both historic and recent field measurements at multiple stream gauges around the site (with the exception of a former MNR fish hatchery that was unknown and not explicitly modeled).

2. **Pine-to-Boyne Water Diversion**: The CTA worried about flow cuts (up to 37% in a small headwater stream) at Horning's Mills, harming trout and effluent.

   Strada shows that impacts to the Pine are minor (2% downstream), with negligible ecological effects per NRSI (the project's ecological experts), and changes in the Boyne are similarly limited to the site's southeast (Appendix E).

3. **Water Quantity Management**: The CTA flagged perceived weak operational plans.

   Strada shows the mitigation system ensures steady flows in Horning's Mills, with permitting controls pending regulatory finalization (Tatham updates).

4. **Water Quality Standards**: The CTA noted missing quality data and criteria.

   Strada points to Appendix B—nitrates and sodium are tracked, manageable via ECA monitoring and treatment options discussed in January.

5. **Geotechnical Contingencies**: The CTA saw risks in quarry floor stability.

   Strada incorporated geotech advice, adding site plan rules to maintain 2 m of rock cover and address uplift if needed (Appendix E).

6. **Monitoring Network**: The CTA criticized monitoring placement and naming.

   Strada expanded its approved network based on input from the CTA, clearly documented spatial coverage and legacy naming, and will be subject to final review and approval from MOE and MNR.

Conclusion

Three years of unique community oversight has produced a robust, community-informed hydrogeology plan. The six issues, refined through mediation and Strada's March 6 responses, are addressed in this April 2025 update. Strada's investment and iterative fixes ensure groundwater protection aligns with community and regulatory standards.

This report will be reviewed by the third-party mediator to ensure it thoroughly addresses the six concerns from the community-trusted peer reviewer, and that it is technically sound and accurate.

Detailed Response to Issues

1 Issue 1: Is the current October 2024 Groundwater Model Fit for Predictive Purposes?

Hunter Comment 1.1 *The current model, despite the four cycles of Peer Review comments, have not incorporated any change in Model Layer Aquifer Parameters since the 2022 Shelburne Report or any change in Calibration statistics since my first cycle Peer Review.*

RESPONSE: The model surfaces and layer parameters were updated multiple times during the course of this study as new drilling, coring results, and water level data were collected.

- The groundwater and surface water calibration updates are documented in detail in Appendix D Sections 3.6 and 4.10.
- Compared to the Shelburne WHPA model, the Strada model Mean Error (average difference between observed was reduced from -1.31 m to -0.97 m.
  - See Shelburne Report Table 5.5, Page 142
  - See Strada Report, Appendix D, Table 4.4 Page D-109

Hunter Comment 1.2 *The current model underestimates dry weather groundwater and stream flows by two to three times where direct comparison of Model STR virtual and actual dry weather stream flows are available.*

RESPONSE: The comparative analysis between observed streamflow measurements and simulated streamflow that was presented at the March 6, 2025 meeting showed that this discrepancy does not exist. Slides demonstrated that both historic measurements (at GENIVAR stations) and 2024 Tatham streamflow measurements are in agreement with simulated streamflows. As it was discussed that day, the only station that was significantly underestimated was Tatham's SW6 which was identified by Garry Hunter as being located downstream from a MNR fishery hatchery operation that discharges groundwater flow through three connected lakes. The details of this fish farm operation are unknown and it was not simulated in the model henceforth the streamflow at this station was underestimated.

Hunter Comment 1.3 *No confirming on site pump tests have been provided.*

RESPONSE: The data compilation in Appendix Page A-13 introduces the two on-site pumping tests (Goffco, 2005 and Goffco, 2007), plus the long-term pumping and observation data at Well PW1.

Appendix Page C-99 presents the on-site pumping test data and a discussion of three additional off-site pumping tests at the Bonnefield Property, Shelburne Municipal Wellfield, and the Highland transient test data. In addition, the borehole packer test data is presented as it relates to the conceptual model.

Efforts were undertaken to verify the model calibration against to the above noted pumping tests. Appendix Page D-123 present the results of the model validation to the above noted pumping tests.

Hunter Comment 1.4 *My Dec. 10 request to Strada sought to systematically compare the Strada Model dry weather STRs [streamflows] to observed dry weather flows at Mega Quarry (Genivar), NVCA and Strada stream gauging sites.*

RESPONSE: This question was addressed in detail at the meeting held on March 6th, 2025. Additional streamflow information was provided by Hunter after the March 6th meeting for three Pine River stations that were part of the Niagara Escarpment Baseflow Study (NVCA, 2009). The stations are located between Tatham monitoring station SW25 and the long-term Water Survey of Canada (WSC) gauge at Everett. Calibration to SW25 was discussed on March 6th, and detailed calibration to the long-term WSC Everett gauge is discussed on Appendix Page D-58. The NVCA stations contain only three months of measurements collected between July 10th, 2008 to October 13th, 2008.

Figure 1 shows the location of the most relevant Pine 1 NVCA streamflow station downstream of Horning's Mills and Tatham monitoring stations SW14 and SW25. The Pine 1 station is downstream of a large power dam pond that is now referred to as the Pine River Provincial Fishing Area. The weir conditions, bathymetry, and operation of the dam are unknown but likely moderate natural streamflow response at the Pine 1 station.

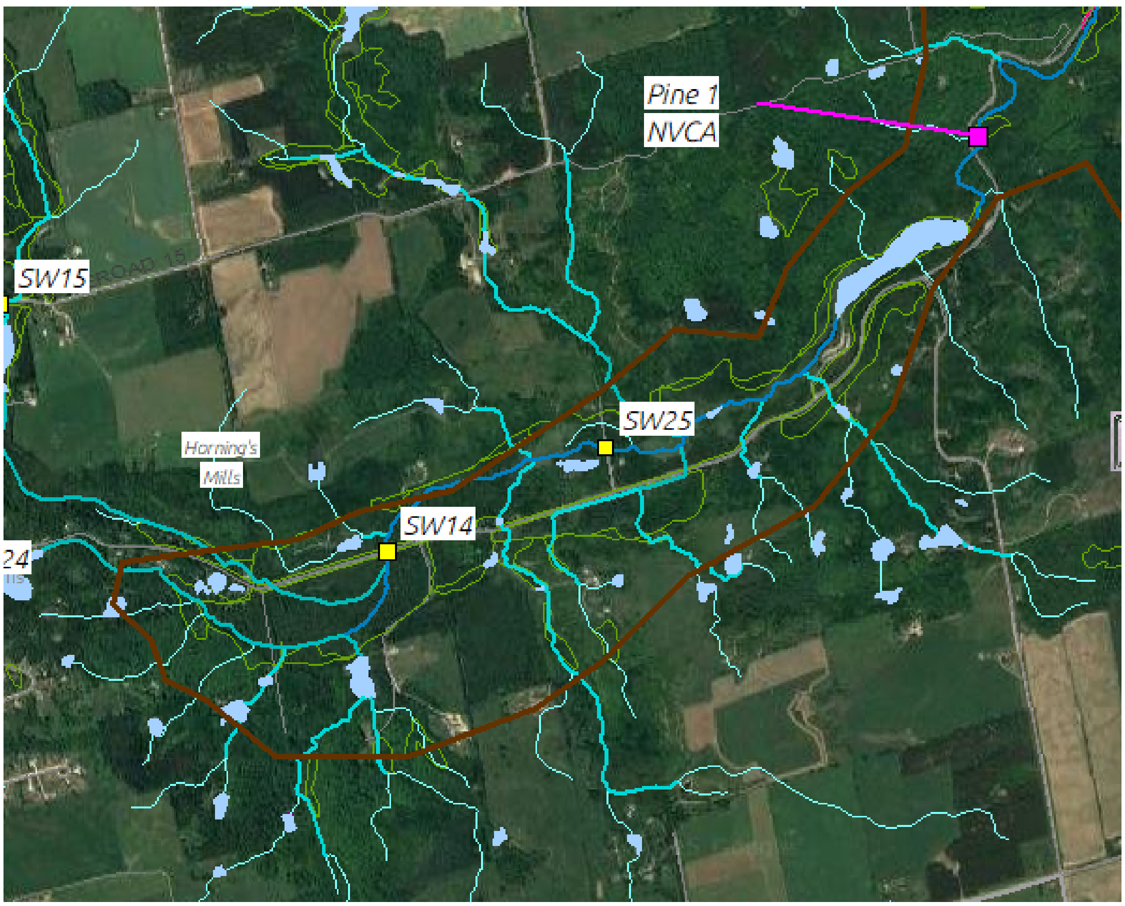

Figure 1: Location of the NVCA Pine 1 streamflow station.

Figure 2 shows the three months of NVCA streamflow data spanning the end of summer and beginning of fall of 2008. The hydrograph shows a steady baseflow of about 0.6 m^3/s, with two distinct storm flow events.

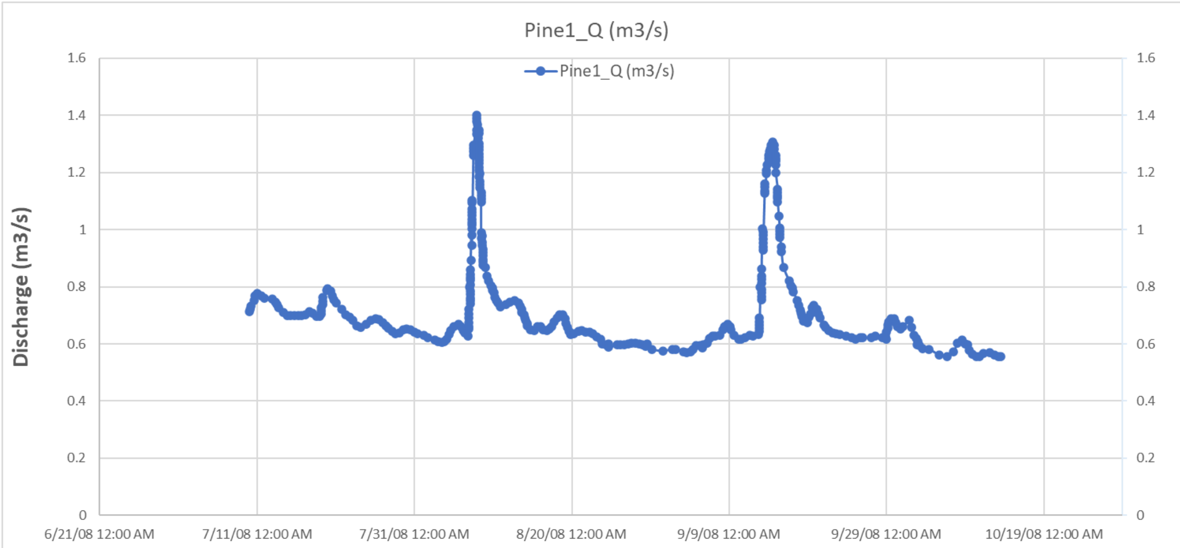

Figure 2: Figure showing streamflow data from Pine 1 NVCA station.

Figure 3 shows the annual and mean annual precipitation in the watershed, and illustrates that 2008 was a relatively wet year.

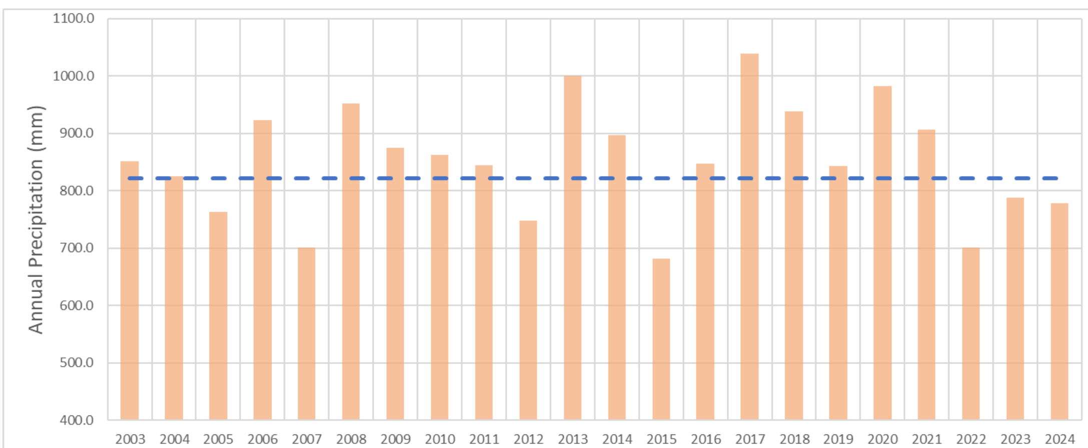

Figure 3: Figure showing annual and mean annual precipitation in the watershed.

Figure 4 compares observed streamflow at the Pine 1 NVCA station and simulated streamflow at the same location. Like the results at SW14 and SW25 discussed on March 6th, the Pine 1 simulated streamflow falls within the range of measured values reported by NVCA at this station. This demonstrates that the model simulation at Pine 1 is consistent with the limited Pine 1 observation data.

NVCA Pine River stations 2 and 3 are further down stream and nearer the long-term WSC Station at Everett. Given their proximity to the extensive calibration analysis at Everett (page D-58), they provide limited additional value for assessing the quality of the model calibration.

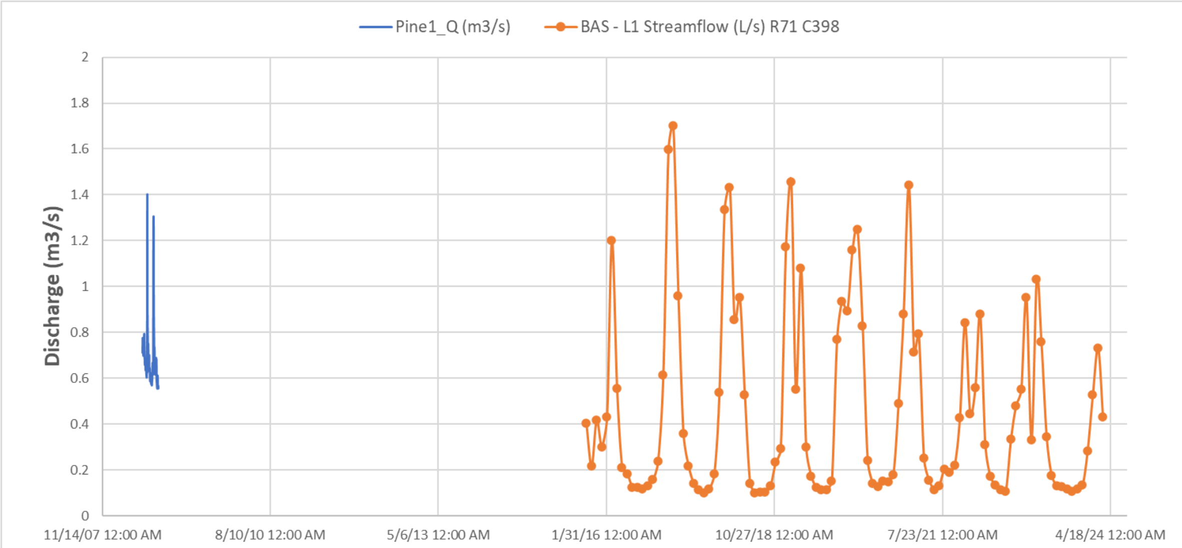

Figure 4: Comparison of Pine River Station 1 flows (blue) to model simulated flows (red).

Hunter Comment 1.5 *The current model underestimate of groundwater flows likely means that the Oct 2024 Site Plan Infiltration Capacity is undersized and the Impact Assessments compromised.*

RESPONSE: As discussed in detail at the March 6th meeting, simulated flows at numerous gauges in the study area fall well within the range of observed measurements. The Hunter conclusion that the model underestimates flow is not substantiated by these observations.

2 Issue 2: Is Quarry Diversion of Pine River groundwater headwater tributary stream flows to the Boyne River tributaries acceptable?

Hunter Comment 2.1 *Is Quarry Diversion of Pine River groundwater headwater tributary stream flows to the Boyne River tributaries acceptable?*

RESPONSE: Surface water basin delineations are based on topography which controls surface drainage. However, local and regional groundwater patterns control the direction of groundwater flow and groundwater basins cannot be delineated by topography alone. Accordingly, evaluating groundwater flow patterns from a surface watershed boundary perspective is of limited value, however Earthfx did address this question in detail in the report:

- Appendix E Section 3.9.6 addresses the effects of the proposed quarry on the Boyne Watershed, and concludes:
  - The simulated change in flow in a headwater tributary near the Strada site at location STR14 (See Appendix E, Figure 2.11) under Phase 2C will temporarily reach 4.2%.
  - Under the Rehabilitation scenario, the simulated long-term change in flow at that location will be 0.4% of baseline
  - Neither of these changes in headwater flows have been deemed significant by NRSI.

At the watershed scale, the changes in flow are negligible at the downstream Boyne River gauge at at Earl Rowe Park:

- Under Phase 2C, the simulated 1.1 L/s (litres per second) increase in flow at STR14 will increase flow at Earl Rowe Park by **0.05%.**
- Under the Rehabilitation scenario, the simulated 0.1 L/s increase in flow at STR14 will increase flow at Earl Rowe Park by **0.0045%.**

Hunter Comment 2.2 *Strada's current Oct 2024 Groundwater Model (at face value) and Oct 2024 Site Plan Infiltration Design reduces groundwater and stream flows at Horning's Mills Main Street by as much as 50% for some extraction phases. This reduction has adverse implications for dilution of village effluents and for maintenance of Brook Trout Habitat. Corresponding measurable decreasing flow reductions may be anticipated as far downstream as the Pine River Provincial Fishing Area.*

RESPONSE: Recent Tatham flow measurements and comments at the March 6 meeting indicate that inflows into the Horning's Mills Pond are likely greater from the south, where a newly identified MNR fish farm operation is/was located (see location STR10 in Figure 5). Further, new 2024 Tatham measured streamflows upstream of STR9 are negligible, indicating that any future drawdowns in that area, and corresponding decreases in flow at STR9, would have limited impact in terms of total inflow to the Horning's Mills pond.

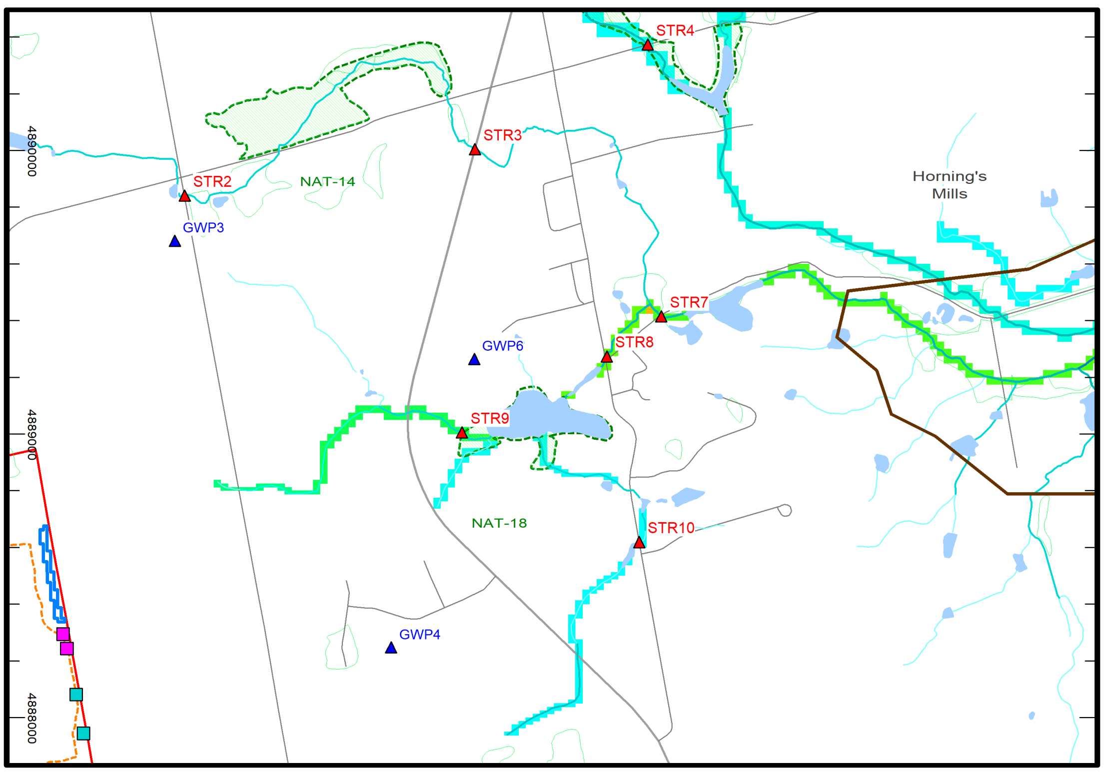

Figure 5: Location of STR9, STR8 and STR7

To address Hunter's original comment, the Hunter quoted 50% change in flow is incorrect:

- The largest change in streamflow is not 50% as stated by Hunter, but 37%, at STR9. This station is on a small tributary <u>upstream</u> of Horning's Mills Pond (see Figure 5 below). The model estimates limited flow at this location and, as noted above, recent 2024 field measurements by Tatham report negligible flow at this location.

- Table 1 notes that average flow reduction at STR8 is 21% of average flow and 10% at STR7
- NRSI has stated that these changes will have no impact on ecological function.

Table 1: Simulated Change in Flow at STR9, STR8 and STR7.

Location	Average Flow (m3/sec)	Change in Flow (m3/sec)	Percent Reduction under Phase 4A
STR9	0.029		
STR9 - Phase 4A	0.019	0.011	37%
STR8	0.074		
STR8 - Phase 4A	0.058	0.016	21%
STR7	0.140		
STR7 - Phase 4A	0.125	0.014	10%

The impact on flows at Pine River Fishing Area can be evaluated by comparing the change in flow at STR7 (0.014 m^3/s from Table 1) to average baseflow at the newly identified NVCA Pine 1 station discussed above (Figure 2). The average measured baseflow at the Pine 1 station is approximately 0.6 m^3/s (Figure 2), so the average change in flow at the Pine 1 station would be 2.3%. It would be impossible to measure a 2.3% change in streamflow the field or distinguish that from natural variation. The Hunter conclusion that there would be an impact at the Fishing Area is not supported by the detailed flow analyses conducted with the Earthfx integrated groundwater/surface water model.

Hunter Comment 2.3 *Corresponding flow increases and water table rises may be anticipated in the Boyne River headwater and tributaries and wetlands with adverse implications for residential lots, lots of record, and contiguous agricultural fields and tile drainage outlets.*

RESPONSE: The Earthfx analyses indicated that the changes induced by the infiltration sites on the surrounding areas was limited to the southeast and south areas of the Strada Property. This was discussed in detail in Appendix E Section 3.9.4 through 3.9.6 (page E145).

Hunter Comment 2.4 *Strada may not have even modelled the critical groundwater and stream flow reduction scenario. My Dec 10 request for supplemental Model Runs included a contingency for Lift 2 Quarry floor rupture (analogy Woods Quarry west of Kingston) and for the period immediately following Quarry Closure when the Site Plans contemplate Strada's ill-advised complete, withdrawal from Infiltration compensation for Horning's Mills community and Pine River headwater streams.*

RESPONSE: This was addressed in the January, 2025 meeting. As was noted, Strada will continue to manage the site and operate the dewatering systems as appropriate until rehabilitation is deemed complete my MNR. There will be no interim period of site abandonment or unattended operation as postulated by Hunter.

Hunter Comment 2.5 *Optimal Site Plan relocation of Infiltration infrastructure would significantly reduce the hydrogeological impacts and improve the acceptability of this Quarry Site Plan proposal.*

RESPONSE: Earthfx considered Hunter's suggestions for modification to site operations as suggested in his July, 2024 memo. Tens of model runs were conducted with the objective to find the optimal size and location of the proposed infiltration system. Model results were evaluated in order to arrive at a configuration that provided the most effective reduction of impacts to surrounding streams and properties. Other site constraints relating to blasting and air quality were also taken into consideration.

3 Issue 3: Do the October 2024 Site Plans incorporate appropriate Water Quantity Management and Operational Performance Criteria?

Hunter Comment 3.1 *The October 2024 Site Plans are based on 'Run of the Quarry' water management. Quarry sump contact water pumped to infiltration infrastructure facilities as required to keep the operating quarry floor dry and intercepted 4th line upper aquifer water as available passively by gravity flow to injection wells. No consideration in Site Plan notes to the 24/7/365 need for infiltration compensation as required to maintain existing groundwater flows to the Horning's Mills community and Pine River headwater streams for the life of the Quarry and beyond.*

RESPONSE: The Strada model was developed to address the needs of the Quarry/Pit license application and provide an effective plan to contain and manage all the incoming water during its entire operation. The proposed water management system was specifically designed to address the maintenance of groundwater and surface water flows at and near the Horning's Mills community, while preventing impacts on nearby properties.

Hunter Comment 3.2 *No operational quantity performance criteria and infraction penalties are proposed by the Oct 2024 Site Plan notes.*

RESPONSE: This question and others related to site plan conditions have been addressed by Tatham and will, if necessary, be finalized with the regulatory agencies. The updated Permit to Take Water and Environmental Compliance Approval (ECA) applications will address other operational issues related to water quality and quantity.

4 Issue 4: Do the October 2024 Site Plans incorporate appropriate Drinking Water Aquifer and Protection of Aquatic Life Water Quality Infiltration / Injection Operational Performance Criteria?

Hunter Comment 4.1 *Strada's October 2024 Level 1 and 2 Hydrogeological Assessment is devoid of water quality data and analysis despite the collection of considerable data during Pit Compliance Monitoring and in September 2024.*

RESPONSE: Groundwater geochemistry is discussed in detail in Appendix B Section 8.7. This analysis, based on available water quality data, identified the local groundwater as calcium bicarbonate water, except for OW28C (deep well), which was classified as sodium bicarbonate water. Historically elevated concentrations of nitrate, attributed to legacy farming operations, are discussed on Page B-39.

There are many years of on-site water quality monitoring. Recent monitoring, as reported in the draft 2024 Compliance Report (Tatham, March 2025), notes that observation wells OW4A/B, OW5A, OW6A, and OW8A did not meet the Ontario Drinking Water Standards (ODWS) limit of 10 milligrams per litre (mg/L) for nitrate (measured as nitrogen). This suggests that nitrate in the shallow aquifer may be migrating from the southwest to the southeast direction, as OW5A and OW6A were not previously identified in older compliance reports. The options for nitrate treatment, if necessary and required by the ECA, were discussed at the January 2025 mediation meeting.

Besides nitrate, elevated sodium concentrations have been noted in the shallow sand and gravel and till units at OW5A/B and OW4B, and in 2024 in OW28C. |The OWDS aesthetic objective for sodium in drinking water is 200 mg/L, and concentrations exceeding 20 mg/L must be reported to the Medical Officer of Health. The elevated sodium concentrations are likely associated with local road salt applications along County Road 17, or possibly a more regional source.

Water quality will continue to be monitored and managed under an ECA license issued by the regulatory agency.

Hunter Comment 4.2 *The October 2024 Site Plans do not include any Drinking Water Quality performance criteria for proposed infiltration/ injection of Quarry contact and non contact agriculturally contaminated water into the community Drinking Water Aquifers via the 4th Line Interceptor Drain. No water treatment has been proposed.*

RESPONSE: Water quality monitoring and treatment was discussed at the Project Mediation Meeting in January, 2025. Water quality will be monitored and managed under an Environmental Compliance Approval (ECA) license issued by the regulatory agency.

Hunter Comment 4.3 *Strada might also consider the alternative use of SCADA controlled extraction (Pressure Relief in Geotechnical vernacular) Wells to bypass the high quality Gasport Aquifer flows through the proposed Quarry. This would reduce the need for Vertical Hydraulic Barriers.*

My Dec 10 request for additional deep aquifer water quality information was intended to further evaluate Strada's single Sept 2024 water quality sample analyses on the 4th Line deep aquifer monitors as well as complete deep aquifer natural water quality analyses in the southeast corner of Melancthon Pit No 2 area.

RESPONSE: Our extensive model analysis has indicated that hydraulic barriers offer improved water management with significantly reduced requirements for pumping and injection. Barriers will also be incorporated into the process of progressive quarry rehabilitation. Supervisory Control and Data Acquisition (SCADA) monitor and control systems can be designed and implemented, as necessary, at the site operational design phase to monitor and regulate the proposed infiltration sites and wells.

Water quality monitoring and treatment was discussed at the Project Mediation Meeting in January, 2025. As noted by the mediation expert, treatments options can, if necessary, be implemented at the operational design phase to meet ECA requirements.

5 Issue 5: Do the October 2024 Site Plan Notes Adequately incorporate the Geotechnical Consultant Contingencies?

Hunter Comment 5.1 *The Site Plan notes do not incorporate the full range of Geotechnical Consultant contingencies with respect to the proposed vertical Hydraulic Barrier wedges and the potential for Lift 2 Quarry Floor rupture (analogy Woods Quarry west of Kingston).*

The variable conditions described by the Geotechnical Consultant are unlikely to have been captured by Strada's groundwater model which contemplates uniform underground conditions not affected by blasting events.

RESPONSE: The Geotechnical Consultants reviewed the proposed quarry design and provided recommendations which were incorporated into the model simulations and analysis (see Appendix E, Page 234).

To ensure ongoing geotechnical review during quarry operations, the following text will be added to the Site Plan Conditions:

> *In Phase Two, at least 2.0 m of the Ancaster/Niagara Formation is to remain above the Gasport unit as shown on the maximum depth of extraction on the operational plan. The effects of groundwater uplift are to confirmed in Phase Two when final depths of extraction area reached. If groundwater uplift is anticipated, the thickness of the Ancaster/Niagara Formation in the remaining phases shall be increased based on the assessment or pressure relief sumps may need to be constructed within the extraction area. The assessment of groundwater uplift shall be provided to MNR and, if required, a site plan amendment will be submitted to MNR to implement the recommendations of the assessment.*
>
> *In Phase Four, uplift potential within the Cabot Head Formation is not anticipated. However, if fractures or bulging due to groundwater uplift are observed, depressurization sumps or drainage galleries should be constructed within the extraction area*.

To support the geotechnical assessment noted in the Site Plan Condition presented above, we recommend an update of the groundwater model be completed prior to the proposed geotechnical review. That update will be able to include additional monitoring data and insights from the Phase 1 rock extraction.

6 Issue 6: Does the Quarry Groundwater Monitoring Network meet the requirements for Efficient Long Term water level (potentials) monitoring requirements?

Hunter Comment 6.1 *The Site Plan groundwater monitoring network has not been rationalized to long term efficient Quarry needs. Many monitors are located in areas not protected from future quarry activities including a number of deep recently constructed expensive multi-level monitors. There are a number of redundant legacy pit monitors which may be eliminated.*

RESPONSE: The current network was approved for monitoring gravel extraction operations. It also provides significant insight into long-term site conditions. This network has been expanded to include deeper formation monitoring around the perimeter of the site, as well as off-site private well monitoring. Further, the Wellness program for monitoring conditions at private wells in the surrounding area is being implemented (for well locations, See Strada Level 2 report Figure A.6).

The expanded monitoring network, including the hydrostratigraphic layers and unit names, is listed in Table 2. (Note that Table 2, below, is the same as Table A1 in the Strada Level 2 application with the addition of addition of the layer numbers.) All of the hydrostratigraphic aquifer units are monitored, except for Layer 5, the Ancaster/Niagara Falls aquitard, which would not provide any useful hydrologic response.

Figure 6, Figure 7 and Figure 8 illustrate that the monitoring network spatially covers the entire site for each aquifer layer. While there remain a few active monitors in the central portion of the current pit, the majority of the monitors in all layers are located in the peripheral area outside of the proposed extraction area and will provide long term information.

Table 2: Monitoring Network including Hydrostratigraphic Layers and Units

Current Well Nest ID	Current Well Monitor ID	2016 Pit Name	Status[2]	Well Tag Number	MECP ID	Easting	Northing	Survey Elevation (masl)[1]	Stick up (m)	Top of Casing (masl)	Borehole Depth (m)	Borehole Bottom Elevation (masl)	Top Monitor Depth (m)	Bottom Monitor Depth (m)	Top Monitor Elevation (masl)	Bottom Monitor Elevation (masl)	Hydrostratigraphic Model Layer	Hydrostratigraphic Unit
PW1	PW1	PW1	Inactive	A006812	17-06267	561425	4888246	503.37	0.48	503.85	48.76	454.61	20.11	48.76	483.26	454.61	Layer 3 - Layer 6	Weathered Bedrock - Gasport
OW1	OW1	OW1	Inactive	A006830	17-06269	561395	4888238	504.12	0.21	504.33	48.76	455.36	18.28	48.76	485.84	455.36	Layer 3 - Layer 6	Weathered Bedrock - Gasport
OW2	OW2A-08		Destroyed	A047161	71-06056	561215	4887224	509.69	0.55	510.24	25.60	484.09	7.05	10.10	502.64	499.59	Layer 1	Shallow Overburden
OW2	OW2B-08		Destroyed	A047161	71-06056	561215	4887224	509.69	0.55	510.24	25.60	484.09	22.55	25.60	487.14	484.09	Layer 2	Till
OW2-07	OW2C-07		Destroyed	A049591	70-43351	561218	4887224	509.48	0.64	510.12	72.24	437.24	26.52	72.24	482.96	437.24	Layer 3 - Layer 6	Weathered Bedrock - Gasport
OW3	OW3A-08		Dry	A047166	71-06057	561273	4886844	504.47	1.41	505.88	12.80	491.67	2.44	3.96	502.03	500.51	Layer 1	Shallow Overburden
OW3	OW3B-08		Active	A047166	71-06057	561273	4886844	504.47	1.41	505.88	12.80	491.67	9.75	12.80	494.72	491.67	Layer 2	Till
OW3-C	OW3C-07		Active	A049601	70-45010	561271	4886844	504.04	0.37	504.41	15.54	488.50	12.49	15.54	491.55	488.50	Layer 3	Weathered Bedrock
OW4	OW4A-08		Active	A047165	71-06048	561355	4886425	505.52	0.63	506.15	13.72	491.80	5.14	7.92	500.38	497.60	Layer 1	Shallow Overburden
OW4	OW4B-08		Active	A047165	71-06048	561355	4886425	505.52	0.63	506.15	13.72	491.80	10.54	13.72	494.98	491.80	Layer 2	Till
OW4-C	OW4C-07		Active	A049604	70-45013	561359	4886425	505.38	0.56	505.94	17.06	488.32	13.41	16.46	491.97	488.92	Layer 3	Weathered Bedrock
OW5	OW5A-08		Active	A047164	71-06047	561738	4886523	493.51	0.65	494.16	10.67	482.84	2.50	5.70	491.01	487.81	Layer 1	Shallow Overburden
OW5	OW5B-08		Active	A047164	71-06047	561738	4886523	493.51	0.65	494.16	10.67	482.84	7.00	10.05	486.51	483.46	Layer 2	Till
OW5-C	OW5-C		Active	A049603	70-45012	561738	4886520	493.61	0.69	494.30	13.10	480.51	10.00	13.10	483.61	480.51	Layer 3	Weathered Bedrock
OW6	OW6-A		Active	A146152	72-21960	561663	4886939	494.13	0.62	494.75	7.90	486.23	1.80	7.80	492.33	486.33	Layer 1	Shallow Overburden
OW7	OW7-A		Active	A146161	72-21961	561771	4886674	497.18	0.64	497.82	10.15	487.03	2.13	10.05	495.05	487.13	Layer 1	Shallow Overburden
OW7	OW7-C		Active	A133144	72-21962	561773	4886668	496.98	0.78	497.76	30.60	466.38	18.00	30.60	478.98	466.38	Layer 4	Guelph
OW8	OW8-A		Active	A172376	72-39322	561282	4887057	504.93	0.94	505.87	12.60	492.33	4.00	12.00	500.93	492.93	Layer 1	Shallow Overburden
OW9	OW9A-08		Dry	A047160	71-06055	561798	4887451	496.51	0.42	496.93	18.59	477.92	3.40	6.40	493.11	490.11	Layer 1	Shallow Overburden
OW9	OW9B-08		Active	A047160	71-06055	561798	4887451	496.51	0.42	496.93	18.59	477.92	15.20	18.20	481.31	478.31	Layer 2	Till
OW10	OW10A-08		Dry	A047162	71-06053	561632	4887297	495.45	0.57	496.02	19.51	475.94	2.00	3.00	493.45	492.45	Layer 1	Shallow Overburden
OW10	OW10B-08		Active	A047162	71-06053	561632	4887297	495.45	0.57	496.02	19.51	475.94	16.00	19.20	479.45	476.25	Layer 2	Till
OW11-A	OW11-A		Destroyed	A133145	72-21963	561574	4886478	494.70	1.20	495.90	16.50	478.20	2.90	8.60	491.80	486.10	Layer 1	Shallow Overburden
OW11-C	OW11-C		Destroyed	A133145	72-21964	561578	4886480	494.80	1.20	496.00	16.50	478.30	13.50	16.50	481.30	478.30	Layer 3	Weathered Bedrock
OW12	OW12A-08		Active	A047149	71-06054	561882	4887192	495.70	0.87	496.57	7.62	488.08	4.57	7.62	491.13	488.08	Layer 1	Shallow Overburden
OW12	OW12B-08		Active	A047149	71-06054	561882	4887190	495.13	0.53	495.66	21.64	473.49	17.98	21.03	477.15	474.10	Layer 2	Till
OW13	OW13-A	MW1A	Active	--	--	561140	4887598	506.78	0.75	507.53	19.00	487.78	11.34	14.34	495.44	492.44	Layer 2	Till
OW13	OW13-C	MW1B	Active	--	--	561140	4887598	506.78	0.75	507.53	19.00	487.78	15.94	18.94	490.84	487.84	Layer 3	Weathered Bedrock
OW14	OW14-A	MW2A	Dry	A006815	17-06268	561763	4887841	496.82	1.01	497.83	20.10	476.72	9.60	12.40	487.22	484.42	Layer 1	Shallow Overburden
OW14	OW14-C	MW2B	Active	A006815	17-06268	561763	4887841	496.82	1.01	497.83	20.10	476.72	17.00	20.00	479.82	476.82	Layer 3	Weathered Bedrock
OW15	OW15-A	MW5A	Destroyed	A006826	17-06274	561431	4887669	510.48	1.13	511.61	30.80	479.68	18.00	20.50	492.48	489.98	Layer 1	Shallow Overburden
OW15	OW15-C	MW5B	Destroyed	A006826	17-06274	561431	4887669	510.48	1.13	511.61	30.80	479.68	26.87	29.87	483.61	480.61	Layer 3	Weathered Bedrock
OW16	OW16-A		Active	A115091	71-85600	561726	4887994	497.06	0.56	497.62	11.81	485.25	10.29	11.81	486.77	485.25	Layer 3	Weathered Bedrock
OW16	OW16-C	MW8B	Active	A115091	71-85600	561726	4887993	497.11	0.56	497.67	27.30	469.81	8.00	27.30	489.11	469.81	Layer 3 - Layer 4	Weathered Bedrock - Guelph
OW17	OW17-B		Destroyed	A193020	72-79229	561472	4887382	502.61	1.00	503.61	27.50	475.11	20.40	23.60	482.21	479.01	Layer 2	Till
OW17	OW17-C		Destroyed	A193020	72-79229	561472	4887382	502.61	1.00	503.61	27.50	475.11	24.30	27.50	478.31	475.11	Layer 3	Weathered Bedrock
OW18	OW18-A		Active	A193021	72-79230	561653	4887685	501.21	0.66	501.87	23.70	477.51	17.00	19.80	484.21	481.41	Layer 2	Till
OW18	OW18-C		Active	A193021	72-79230	561653	4887685	501.21	0.66	501.87	23.70	477.51	20.40	23.70	480.81	477.51	Layer 3	Weathered Bedrock
OW19	OW19-A		Active	A218812	72-88078	561036	4888192	510.32	1.12	511.44	35.50	474.82	11.20	14.40	499.12	495.92	Layer 2	Till
OW19	OW19-C		Active	A218813	72-88079	561036	4888192	510.32	1.12	511.44	35.50	474.82	34.00	35.50	476.32	474.82	Layer 3	Weathered Bedrock

Current Well Nest ID	Current Well Monitor ID	2016 Pit Name	Status	Well Tag Number	MECP ID	Easting	Northing	LiDAR Elevation (masl)	Stick up (m)	Top of Casing (masl)	Borehole Depth (m)	Borehole Bottom Elevation (masl)	Top Monitor Depth (m)	Bottom Monitor Depth (m)	Top Monitor Elevation (masl)	Bottom Monitor Elevation (masl)	Hydrostratigraphic Unit	Hydrostratigraphic Unit
OW20	OW20-A		Dry	A218820	72-88077	561544	4888333	509.30	1.18	510.48	26.40	482.90	20.12	21.64	489.18	487.66	Layer 2	Till
OW20	OW20-C		Active	A218819		561544	4888333	509.30	1.18	510.48	26.40	482.90	25.00	26.40	484.30	482.90	Layer 3	Weathered Bedrock
OW21	OW21-A		Dry	A218822	72-88038	561593	4888680	511.41	0.95	512.36	25.30	486.11	20.80	22.20	490.61	489.21	Layer 1	Shallow Overburden
OW21	OW21-C		Active	A218823	72-88076	561593	4888680	511.41	0.95	512.36	25.30	486.11	23.60	25.30	487.81	486.11	Layer 3	Weathered Bedrock
OW22	OW22-A		Dry	A218821	A-218821	561384	4888890	513.66	1.01	514.67	27.50	486.16	22.80	24.30	490.86	489.36	Layer 2	Till
OW22	OW22-C		Active	A218818	A-218818	561384	4888890	513.66	1.01	514.67	27.50	486.16	26.00	27.50	487.66	486.16	Layer 3	Weathered Bedrock
OW23	OW23-A		Dry	A218815	72-88037	560938	4888787	510.31	0.75	511.06	29.50	480.81	18.90	20.40	491.41	489.91	Layer 2	Till
OW23	OW23-C		Active	A218816	72-88036	560938	4888787	510.31	0.75	511.06	29.50	480.81	27.90	29.50	482.41	480.81	Layer 4	Guelph
Core #3	OW24-H		Inactive	A353622	A-353622	560965	4888558	508.90	0.41	509.31	71.02	437.88	25.00	71.02	483.90	437.88	Layer 3 - Layer 6	Weathered Bedrock - Gasport
Core #3	OW24-A		Active	A353622	A-353622	560965	4888558	508.90	0.41	509.31	71.02	437.88	27.52	30.57	481.38	478.33	Layer 3	Weathered Bedrock
Core #3	OW24-C		Active	A353622	A-353622	560965	4888558	508.90	0.41	509.31	71.02	437.88	63.64	66.69	445.26	442.21	Layer 6	Gasport
Core #1	OW25-H		Inactive	A266920	17-04295	561648	4888161	490.62	0.68	491.30	50.47	440.15	4.00	50.47	486.62	440.15	Layer 3 - Layer 6	Weathered Bedrock - Gasport
Core #1	OW25-A		Active	A266920	17-04295	561648	4888161	490.62	0.68	491.30	50.47	440.15	16.18	19.23	474.44	471.39	Layer 3 - Layer 4	Weathered Bedrock - Guelph
Core #1	OW25-C		Active	A266920	17-04295	561648	4888161	490.62	0.68	491.30	50.47	440.15	43.03	46.08	447.59	444.54	Layer 6	Gasport
Core #2	OW26-H		Inactive	A353621	A-353621	561231	4887427	499.22	0.40	499.62	62.41	436.81	25.00	62.41	474.22	436.81	Layer 3 - Layer 6	Weathered Bedrock - Gasport
Core #2	OW26-A		Active	A353621	A-353621	561231	4887427	499.22	0.40	499.62	62.41	436.81	27.36	30.41	471.86	468.81	Layer 4	Guelph
Core #2	OW26-C		Active	A353621	A-353621	561231	4887427	499.22	0.40	499.62	62.41	436.81	51.83	54.88	447.39	444.34	Layer 6	Gasport
OW27-C	OW27-C		Active	A391976	A-391976	560927	4888785	510.26	0.61	510.87	71.88	438.38	68.83	71.88	441.43	438.38	Layer 6	Gasport
OW28-A	OW28-A		Active	A391975	A-391975	561602	4888675	511.51	1.05	512.56	37.18	474.33	34.13	37.18	477.38	474.33	Layer 4	Guelph
OW28-C	OW28-C		Active	A391972	A-391972	561602	4888678	510.98	0.35	511.33	67.59	443.39	64.54	67.59	446.44	443.39	Layer 6	Gasport
OW29-A	OW29-A		Active	A391974	A-391974	561413	4886532	499.80	0.98	500.78	25.96	473.84	22.91	25.96	476.89	473.84	Layer 3	Weathered Bedrock
OW29-C	OW29-C		Active	A391973	A-391973	561412	4886533	499.90	0.93	500.83	62.76	437.14	59.71	62.76	440.19	437.14	Layer 6	Gasport
OW30	OW30-C		Active	A374686	A-374686	561634	4886901	494.35	0.60	494.95	56.62	437.73	53.57	56.62	440.78	437.73	Layer 6	Gasport
Legacy wells included in compliance reports dating back to 2007. Ground elevation does not correspond to LiDAR nor to the most current survey but to elevations taken from compliance reports.																		
MW3	MW3A-04	MW3A	Dry	A006796	17-06273	561740	4887987	508.33	0.70	509.03	22.86	485.47	23.39	26.43	484.94	481.90	See Note 4	
MW3	MW3B-04	MW3B	Dry	A006796	17-06273	561740	4887987	508.33	0.70	509.03	22.86	485.47	29.18	32.23	479.15	476.10	See Note 4	
MW4	MW4A-04	MW4A	Destroyed	A006827	17-06272	561230	4888243	510.28	0.91	511.19	24.07	486.21	13.64	16.40	496.64	493.88	See Note 4	
MW4	MW4B-04	MW4B	Dry	A006827	17-06272	561230	4888243	510.28	0.91	511.19	24.07	486.21	18.53	21.58	491.75	488.70	See Note 4	
MW7	MW7A-07		Destroyed	A047147	71-06065	561284	4887645	507.00	--	--	18.28	--	4.20	7.25	502.80	499.75	See Note 4	
MW7	MW7B-07		Destroyed	A047147	71-06065	561284	4887645	507.00	--	--	18.28	--	14.26	17.31	492.74	489.69	See Note 4	
MW9	MW9-A	MW9A	Destroyed	A115096	71-85598	561634	4887857	498.35	--	--	8.23	--	1.46	4.51	496.89	493.84	See Note 4	
MW9	MW9-B	MW9B	Destroyed	A115096	71-85598	561634	4887857	498.35	--	--	8.23	--	4.81	7.86	493.54	490.49	See Note 4	
MW10	MW10-A	MW10A	Destroyed	A115117	71-78110	561271	4887681	500.63	0.80	501.43	10.80	489.83	4.13	6.13	496.50	494.50	See Note 4	
MW10	MW10-B	MW10B	Destroyed	A115117	71-78110	561271	4887681	500.63	0.80	501.43	10.80	489.83	7.63	10.43	493.00	490.20	See Note 4	
Domestic wells currently involved in the Target Participation Area (TPA) for long-term monitoring. Elevation obtained from Provincial LiDAR coverage.																		
DW1	DW1		Active	A000438	17-06362	562951	4886286	479.67	--	--	--	--	--	--	--	--	See Note 4	
DW2	DW2		Active	A104771	71-99024	562704	4888248	482.36	--	--	--	--	--	--	--	--	See Note 4	
DW3	DW3		Active	--	--	562373	4887677	493.92	--	--	--	--	--	--	--	--	See Note 4	
DW4	DW4		Active	A051672	71-22047	562197	4890008	486.02	--	--	--	--	--	--	--	--	See Note 4	
DW5	DW5		Active	--	--	559538	4889095	517.26	--	--	--	--	--	--	--	--	See Note 4	

Notes: [1] Originally surveyed on the vertical datum CGVD28, then converted to CGVD13 using the Canada Geoid Model HT2_2010v70 (CGVD28), and the NAD83 Canada Molodensky Transformation.

[2] The ground elevations of destroyed monitoring locations were assumed to be in the CGVD28 datum and a gross conversion factor of (0.37m) was applied to the original elevations.

[3] (-H) Suffix refers to initial open hole condition at the borehole. A water level timeseries was measured during this period and labeled -H as well.

[4] Domestic Well construction is under review as part of the Wellness Survey. Legacy wells are not part of the current monitoring program.

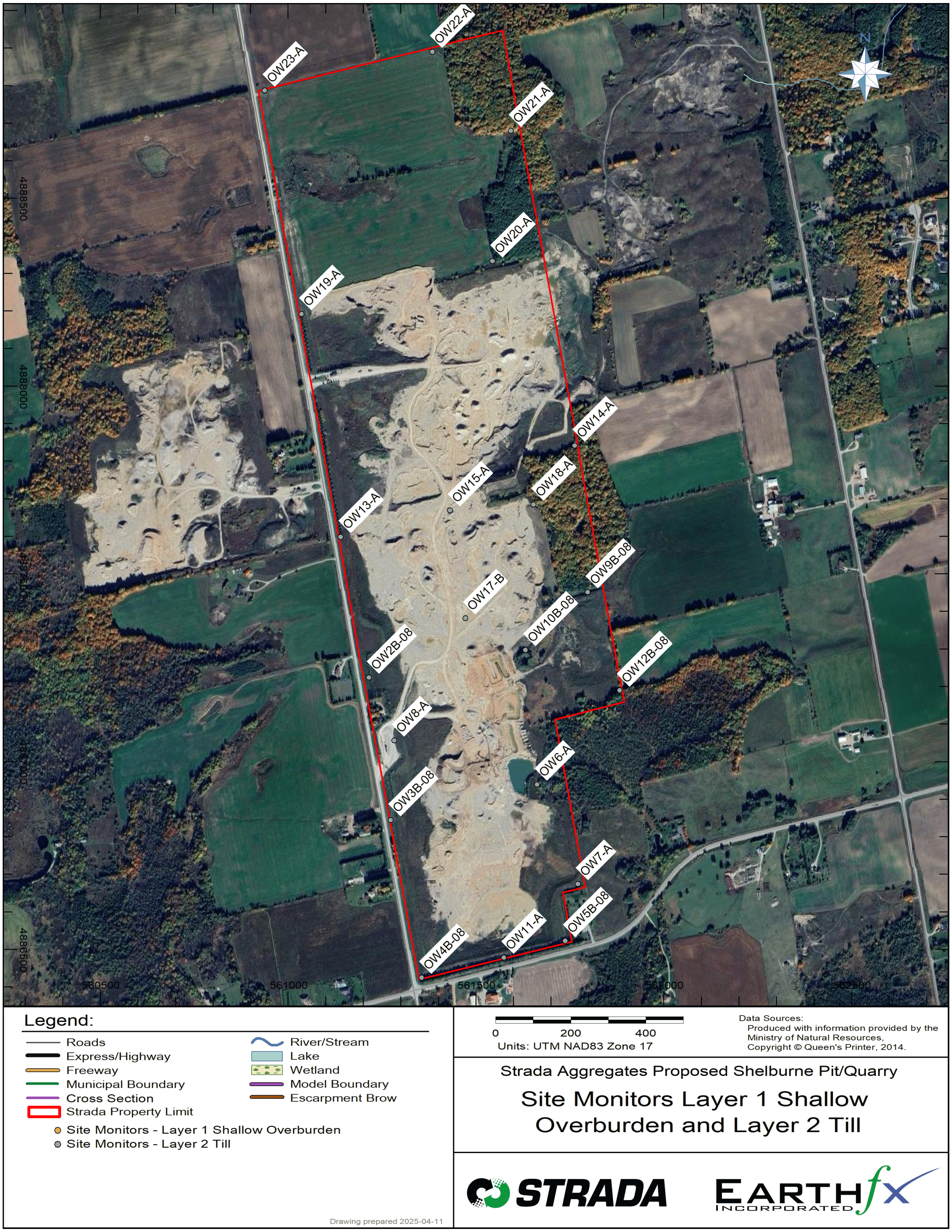

Figure 6: Site monitors in Layers 1 and 2

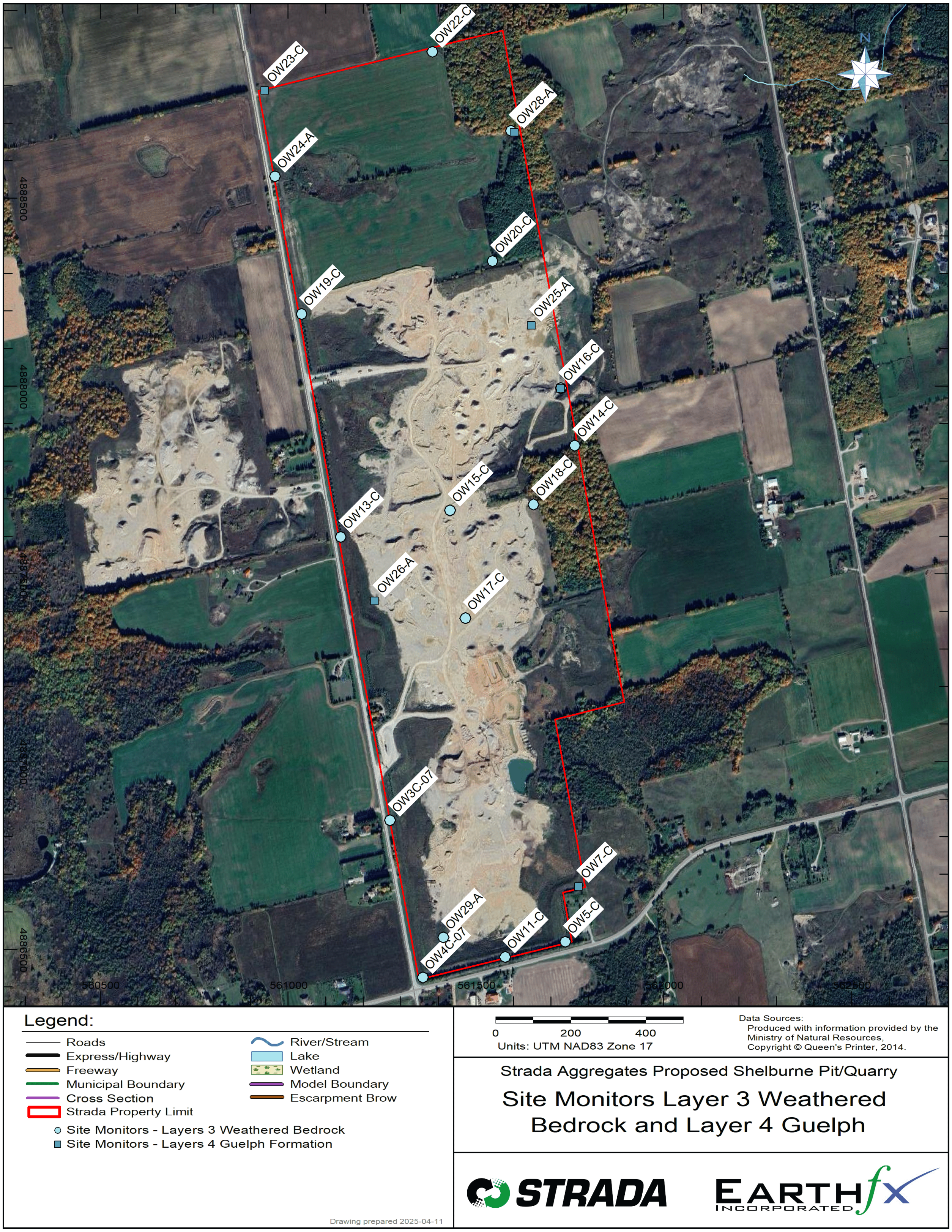

Figure 7: Site monitors in Layers 3 and 4

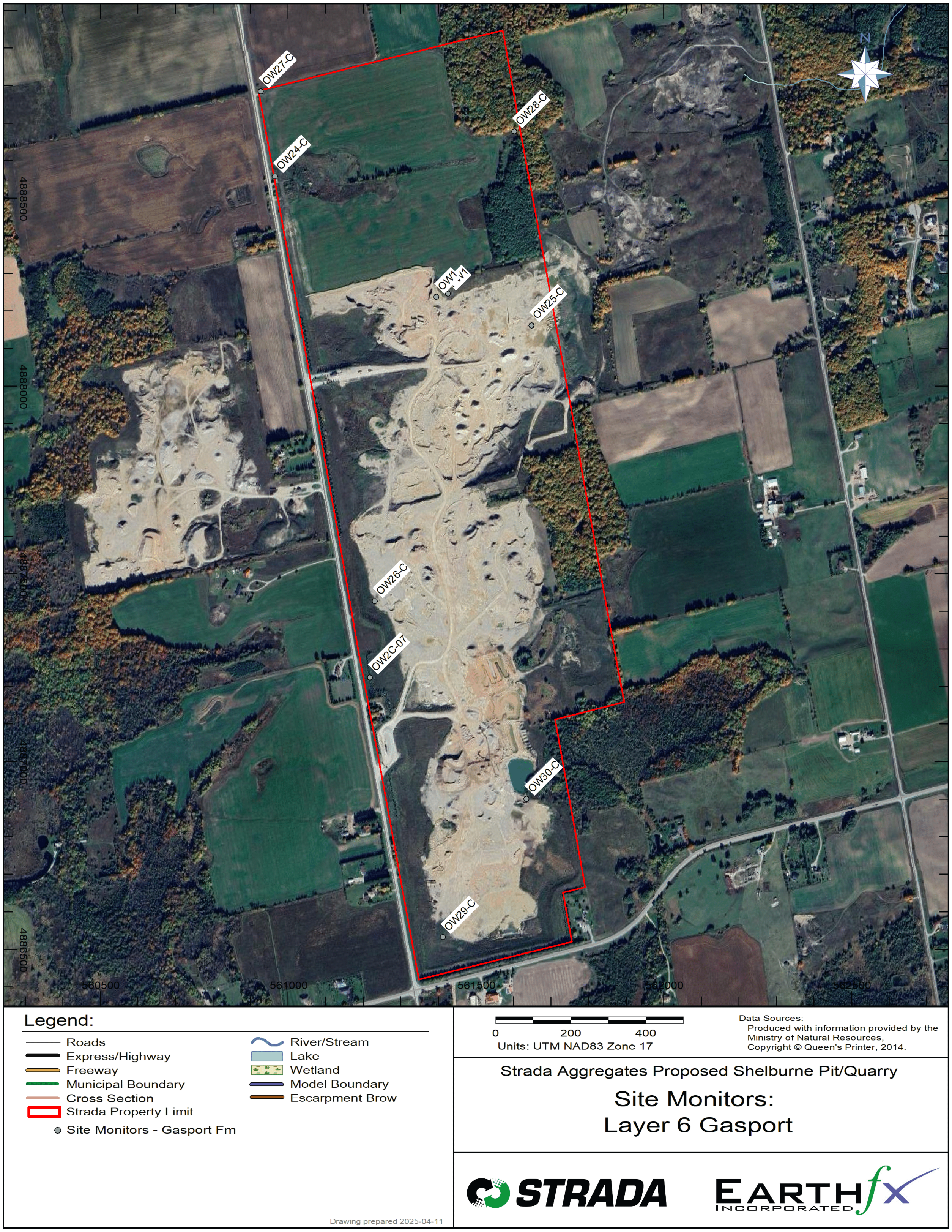

Figure 8: Site monitors in Layer 6

The monitoring program will be reviewed and optimized with the MECP as part of the Permit to Take Water application and further refined with MNR as part of the development of an Adaptive Management Plan. It is expected that monitors in the centre of the site will be replaced as deeper extraction progresses, however those monitors continue to provide useful data at this time and should not be rationalized (i.e., made more efficient by removing monitors).

Hunter Comment 6.2 *Legacy pit monitor nomenclature is confusing and does not reflect the now accepted geological formation / model layer nomenclature.*

RESPONSE: The monitoring network at the site is the result of a 20-year history of various monitoring programs and managers. The current monitor nomenclature is the result of trying to preserve some of the original identifiers and, at the same time, simplify the original naming convention to one consistent with current needs and recent network expansion. A comprehensive monitoring details table was included in Appendix A, Page A-9, and includes current names, old well names, and legacy wells, along with their current status (active/inactive). A comprehensive database was built to organize all well construction, geologic information, and monitoring data for the site. This database will aid in the ongoing and future monitoring of the site.

Hunter Comment 6.3 *There are significant monitor screen network gaps within the Model Aquifer Layers, especially in the underground stream area.*

RESPONSE: The extensive coring program, and subsequent installation of multi-level monitors has provided a comprehensive network of monitoring wells across all aquifer layers. The cored well OW25, and long-term operational pumping at PW1 and monitoring at OW1, along with the neighbouring monitoring wells provided extensive information in the central portion of the site.

Hunter Comment 6.4 *Monitor screen vertical and horizontal location needs to be rationalized by Model Layer to provide full site coverage while at the same time reducing Strada's monitoring and agency review efforts.*

RESPONSE: See responses to the preceding comments 6.2 and 6.3.