



January 31, 2023

To: Mississippi Valley Conservation Authority

Re: MVCA Technical Review Memorandum (dated July 8, 2022, Revised July 15, 2022)
SWM Engineering Review

Hilan Village Residential Subdivision Application,
38 Carss Street, Almonte Ontario
File Number 09-T-22003

The following engineering review comments have been provided by the Mississippi Valley Conservation Authority in response to the Stormwater Management Plan prepared by Kollaard Associates Inc. in support of the Hilan Village Subdivision Application. Kollaard Associates Inc.'s response is provided in italics immediately after each comment for clarity.

MVCA recommends the following comments be addressed prior to moving forward:

1. The Professional Engineers of Ontario (PEO) logo should be removed from any reports per their requirements.

Kollaard Associates has confirmed with PEO that the use of the Logo in the manner Kollaard Associates has is entirely in keeping with their regulations.

2. Include details of all components of the proposed SWM measures until the post-development runoff safely discharges to its ultimate outlet location while adhering to the SWM criteria for the site development criteria. There are two drainage areas, the retained parcel (1.5 ha) and the areas including parc blocks 3 and 2, areas west of the development area along the valley slope (approximately 1.77 ha) not accounted for in the analysis. It is stated that the retained area of 1.5 ha is out of the scope of the SWM plan. Pre-development flows should be calculated for all drainage areas. The pre-development flows from 1.5 ha and 1.77 ha areas should be considered in the design of the constructed swale or to evaluate the capacity of the existing swale (whichever is applicable) to convey the post-development flows from the development areas and the pre-development flows from the other two areas (1.5 ha + 1.77 ha).

*Please note that the **Conceptual** Stormwater Management Report was prepared to demonstrate the feasibility of the development in order to support an application for Plan of Subdivision and obtain Draft Plan Approval. Further discussion of the areas not previously considered in the SWM will be provided in the Final SWM report to the satisfaction of MVCA prior to registration of the subdivision.*

At this time it is noted that the approximately 1.77 hectares of land on the valley slope essentially



drains directly into the Mississippi River with only minimal contribution to either the constructed swale or the existing swale.

It is further noted that even though the Conceptual SWM report does not evaluate the capacity of the existing swale through the 1.5 hectare retained parcel, the SWM plan does show that about 4.99 hectares of offsite contributing area as well as about 1.46 ha of onsite area have been removed from the catchment contributing to the existing swale. It is acknowledged that there is increased impervious area in the catchment of the existing swale along the rear of the lots immediately east of Park Block 2. However this slight increase in impervious area is more than offset by the removal of about 6.45 ha of contributing area. Furthermore, capacity of the existing swale will be reviewed as part of the detailed SWM prior to registration.

3. It is recommended to show the flow path, SWM components (ditch, swales, storms etc.), water quality treatment units (mark with details), and discharge point to the valley slope/ Mississippi River in the post-development drainage area plan.

Noted. Will be added to the final design drawing.

4. Did the post-development flow analysis consider a 25% increase in the runoff coefficients?

The post development conditions were evaluated using Visual OTTHYMO which does not use the runoff coefficient in its analysis.

5. Erosion control measures are proposed for the first portion of the channel to prevent erosion of the side slopes and bottom of the water course. Please provide details of the erosion control measures in the report, and the design details with elevations and cross-section profiles are to be provided in an engineering drawing.

Noted. Will be added to the final design drawings and report.

6. It is noted that a shallow swale located at the rear yards of the dwellings along the north property line will direct runoff from the rear yards to the Mississippi River. Will this runoff remain the same as that under existing conditions? If not, please demonstrate how the required water quality is achieved for this runoff.

The quality of the runoff will remain the same during post development conditions as pre-development conditions. The only surfaces of the development contributing runoff to this shallow swale will be vegetated landscaped surfaces and building roofs. Neither of these areas are considered to be significant sources of sediment loading or contaminates.

Discussion with respect to the rear yard swale along the north property line will be added to the final SWM design report.

7. Rear yards of the dwellings along the east side of the 'retained parcel' will have runoff directed west towards the 'retained parcel.' It is stated that runoff from the rear yards of these dwellings will be less than the runoff currently being conveyed. However, please review the conveyance capacity of the swale/outlet channel mentioned in comment # 2 to validate that there is no negative impact on the 'retained parcel' area.



Noted: Discussion will be added to the final design report. Also please note response to Comment #2

Analysis of the flow demand on the proposed swales as well as the capacity of the proposed swales will be presented in the detailed SWM report prior to registration of the subdivision. It is intended that the swales will be designed to accommodate the flow demands placed on them.

8. It is stated that storm sewers are designed to convey flows up to and including 100-year storm. However, the storm design sheets in Appendix B show that the proposed storm sewers, CA-2 outlet to the watercourse (channel), and CA-3 to watercourse (channel) cannot convey 131 L/s and 71 L/s, respectively. Please review and correct as required.

Noted. The storm sewer design sheet provided in Appendix B is preliminary. It demonstrates that the 5 year storm will be conveyed by gravity flow. The storm sewer design sheet indicates gravity flow conditions only. The report states that the 100 year will be conveyed below the level of the footings. Hydrostatic pressure will increase the flow capacity during a 100 year event.

Detailed calculations with respect to the sizing of the storm sewers will be completed during final design. Additional pipe sizing details will be provided in the detailed SWM report prior to registration of the subdivision.

9. Provide calculations of the water quality flows for which the treatment units are designed.

Calculations will be provided in the final design report. The catchment areas were provided to Echelon Environmental who are distributors of the CDS treatment units for preliminary sizing and discussion of feasibility. Final design information provide to Echelon Environment will be included in the Appendix of the Final Design Report.

10. Include design details and fact sheets of the water quality treatment units.

This information will be included in the final Design Report

11. Recommendations on operation maintenance of the SWM elements are provided in section 5.5. Include details on who will be responsible for each component's maintenance.

The recommendations will be included in the final Design Report. All infrastructure will be operated, maintained and, when required, replaced by the municipality following registration of the subdivision.

12. The sediment and erosion control section (section 6.0) should include catch basin inserts to all catchbasins and manholes, and the locations should be marked in the drawing.

The requirement for catch basin inserts will added to the sediment and erosion control section of the report. The catchbasins and manhole locations will be included on the Sediment and Erosion Control Drawing

13. MVCA recommends that Low Impact Development (LID) measures as part of the stormwater management plan should be implemented where feasible. Please refer to Runoff Volume Control



Targets for Ontario Final Report (MOECC, October 2016) for LID Stormwater management guidelines. The guideline discusses the following hierarchy: Retention (Infiltration, evapotranspiration, rainwater harvesting and reuse), Volume Capture and Release at a reduced rate, and Other Volume Detention and Release measures.

Opportunities for the incorporation of low impact design techniques will be reviewed during the preparation of the subdivision approval drawings and documents. The low impact design techniques will be incorporated where possible and indicated on the final design drawings.

A section discussing low impact design techniques will be added to the detailed SWM report prior to registration of the development.

The Conceptual SWM design will however be completed giving no credit for low impact design techniques as a conservative estimation of the quantity and quality of the storm water to be incorporated within the SWM works.

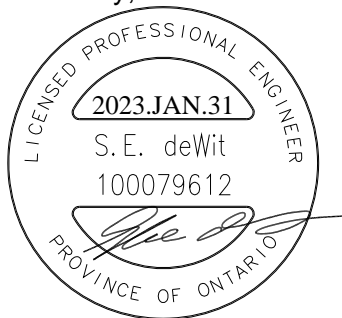
14. It is recommended to provide a table detailing the OttHymo model links of the proposed post-development SWM scheme. Also, provide the VisualOttHymo model files for review.

A more comprehensive OttHymo model will be prepared for the final design of the SWM works within the development. A schematic of the model as well as a table detailing each element in the model will be provided.

It is noted that the first page in Appendix A following the appendix A cover page contains the schematic and schematic summary table. The schematic summary table provide details of the OttHymo model elements

We trust that this response provides sufficient information for your present purposes. If you have any questions concerning this response letter please do not hesitate to contact our office.

Sincerely,



Steven deWit, P.Eng.
Kollaard Associates Inc