NOVATECH
Engineers, Planners & Landscape Architects

February 22, 2024

Mississippi Valley Conservation Authority
10970 Highway 7
Carleton Place, ON
K7C 3P1

Attention: **Diane Reid**

Reference: **Appleton Shores**
Response to Mississippi Valley Conservation Authority Comments
Our File No.: 114165

The following is in response to the Mississippi Valley Conservation Authority (MVCA) comments on the following report, which was submitted with the Draft Plan of Subdivision application.

- Appleton Shores Subdivision Servicing Options and Conceptual Stormwater Management Report, prepared by Novatech, dated September 2, 2022.

MCVA Recommendations and Conclusions (from MVCA letter to County, dated October 25, 2023):

Item 1: Adherence to the recommendations in the MVCA Technical Review, SWMP & SSA, issued October 2023. *See Novatech responses to the SWMP comments, below. Slope stability comments will be addressed by Paterson.*

Item 2: Adherence to the recommendations in the MVCA Technical Review of EIS, issued October 2023. *These comments will be addressed by CIMA+.*

Item 3: Incorporation of LID features into the SWMP. *See Novatech response, below.*

Item 4: Discussion of the impacts of altering the hydrologic balance in the wetland by reducing the post-development flows for the 5 and 100-year events. Mitigation measures should be included as necessary. *See Novatech response, below.*

Novatech Responses to Items 1, 3 and 4:

Item 1. Adherence to the recommendations in the MVCA Technical Review, SWMP & SSA, issued October 2023, dated January 30, 2023.

SWMP

1) **MVCA comment**: It is understood that the PCSWMM model used the SCS method with CN number in estimating the flows. Is climate change impact considered in post-development flow calculation, for example, a 25% increase in runoff coefficient when using

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the rational method?

***Novatech response**:*
The 1 in 100 year design storms were modelled to address post development stormwater quantity control, controlling the post development runoff to pre-development levels. At the time of detailed design, a "stress-test" analysis will be performed where the peak intensity and total rainfall volume of the 100-year storm is increased by 20% to simulate the potential effects of climate change. The intent of the stress test is to ensure the development will not experience any significant adverse impacts associated with climate change. The roadside ditches and/or easements will be designed to convey the stress-test flows, and the terrace elevations (proposed grades at the house) will be set to be above the stress-test water levels.

2) **MVCA comment**: Maximum storage of 13 m^3 and 20 m^3 is provided for outlets C1 and C2, respectively (as per Table 6.2). However, these values are labelled as 'required' volume in the calculation section provided in Appendix B (it is assumed that provided storage). Please provide calculations of the required storage volume for both outlets C1 and C2.

***Novatech response**:*
The Provided Max. Storage (m^3) values in Table 6.2 and the Required Volume of the Swale (m^3) values in Appendix B indicate the same thing. They are the storage volume required in the C1 and C2 outlet swales to control runoff to pre-development levels. This clarification will be included in the detailed Stormwater Management Report prepared to address draft conditions.

At the time of detailed design, the outlet swales will be designed to accommodate this required storage. Swale cross-sections and calculations for the associated volume provided will be included.

3) **MVCA comment**: It is stated that the proposed linear SWMFs will control post-development flows to the north PSW to pre-development levels for all storm events, except for a 25mm water quality event, as the impact of 4-5 L/s increase in flow to the wetlands is expected to be negligible. What kind of water quality measure is proposed to treat the first flush flow to the wetland in reducing the TSS load?

***Novatech response**:*
Enhanced level water quality control, 80% total suspended solids reduction, will be provided in the roadside ditches, upstream of the stormwater management facilities. Therefore, the first flush will be treated to this level before entering the north wetland. Details of the quality control analysis is provided in section 6.4.2 of Novatech's September 2022 report.

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4) ***MVCA Comment***: The post-development drainage area plan shows the 100-year flood elevation as 119.8m (interpolated from the topographic survey). However, MVCA completed a floodplain mapping study for the Mississippi River in 2019 (updated in 2022); per the study, the 100-yr flood elevation within the subject site is 124.8 – 124.82 m. Using the 100-yr flood elevation from the floodplain mapping study is recommended in designing the SWM plan.

Novatech response:
We have prepared a figure to demonstrate the subdivision location relative to the MVCA's updated 100 year regulatory flood elevations (Figure 114165-FPM, February 2024, attached). The 124.8 to 124.82m elevations referenced in the MVCA's comment are upstream of the dam. The cross-sections downstream of the dam are elevation 119.4m.

West side of subdivision:
The 119.8m flood line shown on the Post-development Drainage Area Plan is from information we received from the MVCA in 2016. The newer 2022 mapping was provided to us in November 2022, after completion of our September 2022 report.

The newer mapping shows the 100 year elevation at 119.4m. We have updated the Concept Plan (now 114165-CP2021, rev.7) accordingly and have attached a copy. As the newer elevation is lower, it does not affect the conclusions of our September 2022 report. We will, however, make the update to elevation 119.4m in our detailed design report.

East side of subdivision:
Floodplain mapping upstream of the dam shows an elevation of 124.8m. The flood plain in this area is outside the limits of the subdivision.

5) **MVCA comment**: Design details, capacity analysis of the roadside ditches, and proposed linear stormwater management facilities (in lots 5 and 9) are to be submitted in detailed design.

Novatech Response*: Noted. This information will be provided at the detailed design stage.*

Item 3: Incorporation of LID features into the SWMP.

Novatech response:
Low impact development (LID) measures have been incorporated into the design of the subdivision as follows. This information will be added to our detailed design report.

- *The development is rural, with relatively low density and associated relatively low impervious area.*
- *Roof leaders would be directed to grassed areas. The leaders would discharge onto the ground adjacent to the houses and travel through grassed areas prior to reaching a swale or ditch system which will promote infiltration.*
- *Storm drainage would be conveyed via grassed roadside ditches, at minimum grade,*

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providing a means of infiltration and water quality treatment via filtration.

- *Driveway culverts would be designed to accommodate the 5 year runoff, holding back the larger storms, providing additional opportunity for infiltration.*
- *Drainage to the north wetland will be controlled to pre-development levels before being discharged to the wetland.*

Item 4: Discussion of the impacts of altering the hydrologic balance in the wetland by reducing the post-development flows for the 5 and 100-year events. Mitigation measures should be included as necessary.

Novatech response:
Table 6.1 of Novatech's 2022 report summarizes the pre and post development peak flows to the Mississippi River (Outlet A), to Wilson Street (Outlet B) and the Wetland Area (Outlet C).

With regards to the wetland (Outlet C), our conceptual analysis shows that the 5 year and 100 year flows are slightly lower than pre-development levels, about 80% to 90% of the pre-development flows. Although the peak flow may be slightly less, the volume of water directed to the wetland should be similar due to the increase in impervious area but a reduction in total area. We don't anticipate that any mitigation measures would be required, however we would review this at the detailed design stage.

Yours truly,

NOVATECH

Susan M. Gordon
Director | Land Development

Attachments:
- MVCA Floodplain Map MarkUp (114165-FPM, February 2024)
- Appleton Shores Concept Plan (114165-CP2021, rev. 7)

Cc: Tracy Zander – Zander Plan
John Southwell – Southwell Homes Ltd.

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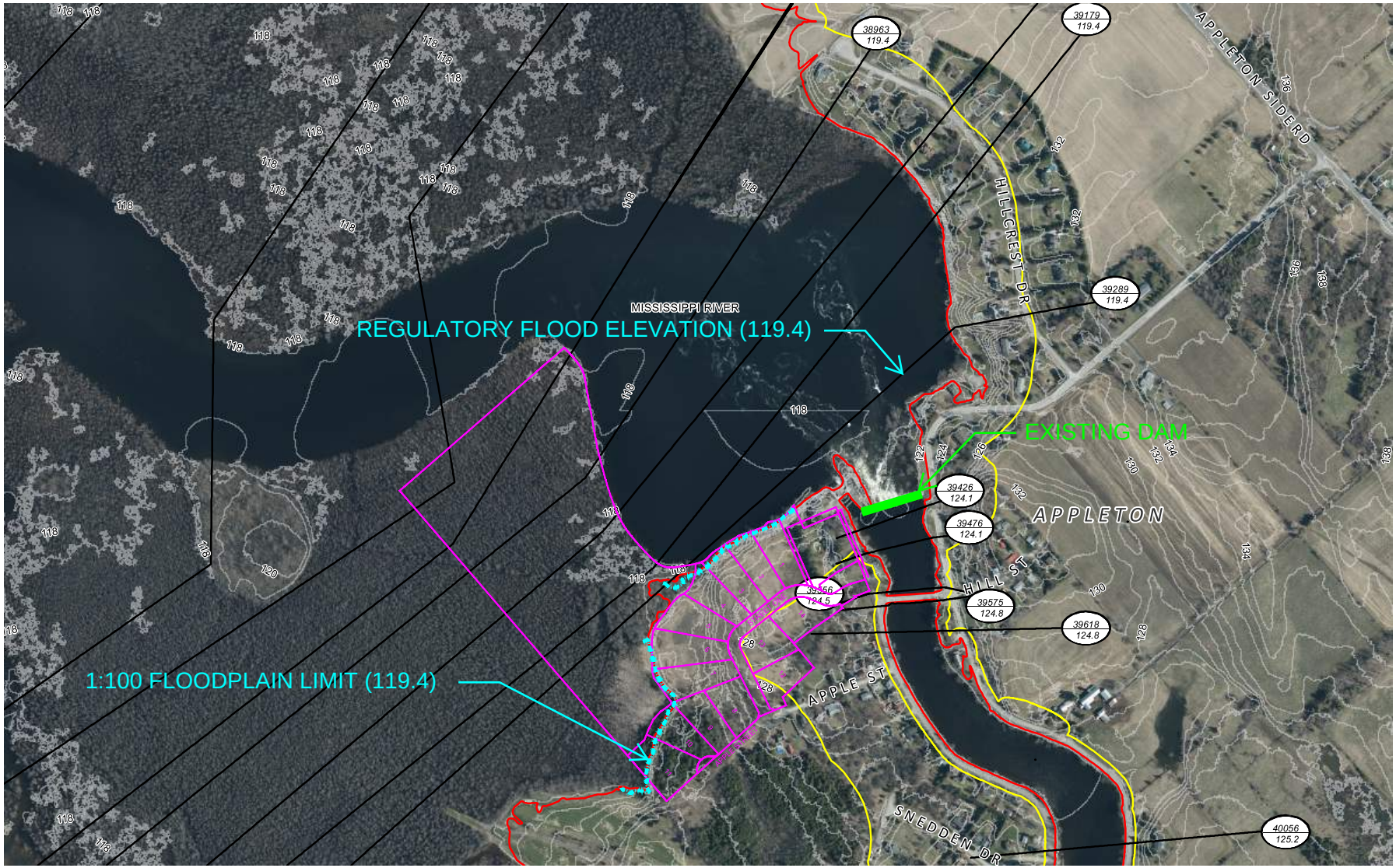

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NOVATECH MARKUP: MVCA FLOOD HAZARD AND REGULATION MAP - MISSISSIPPI RIVER MAP No. 13 (revision 3, Apr 13, 2022)

APPLETON SHORES SUBDIVISION

MVCA FLOODPLAIN MAP MARKUP

SCALE: N.T.S.

DATE: FEBRUARY 2024

FIGURE: 114165-FPM

SHT8X11.DWG - 216mmx279mm

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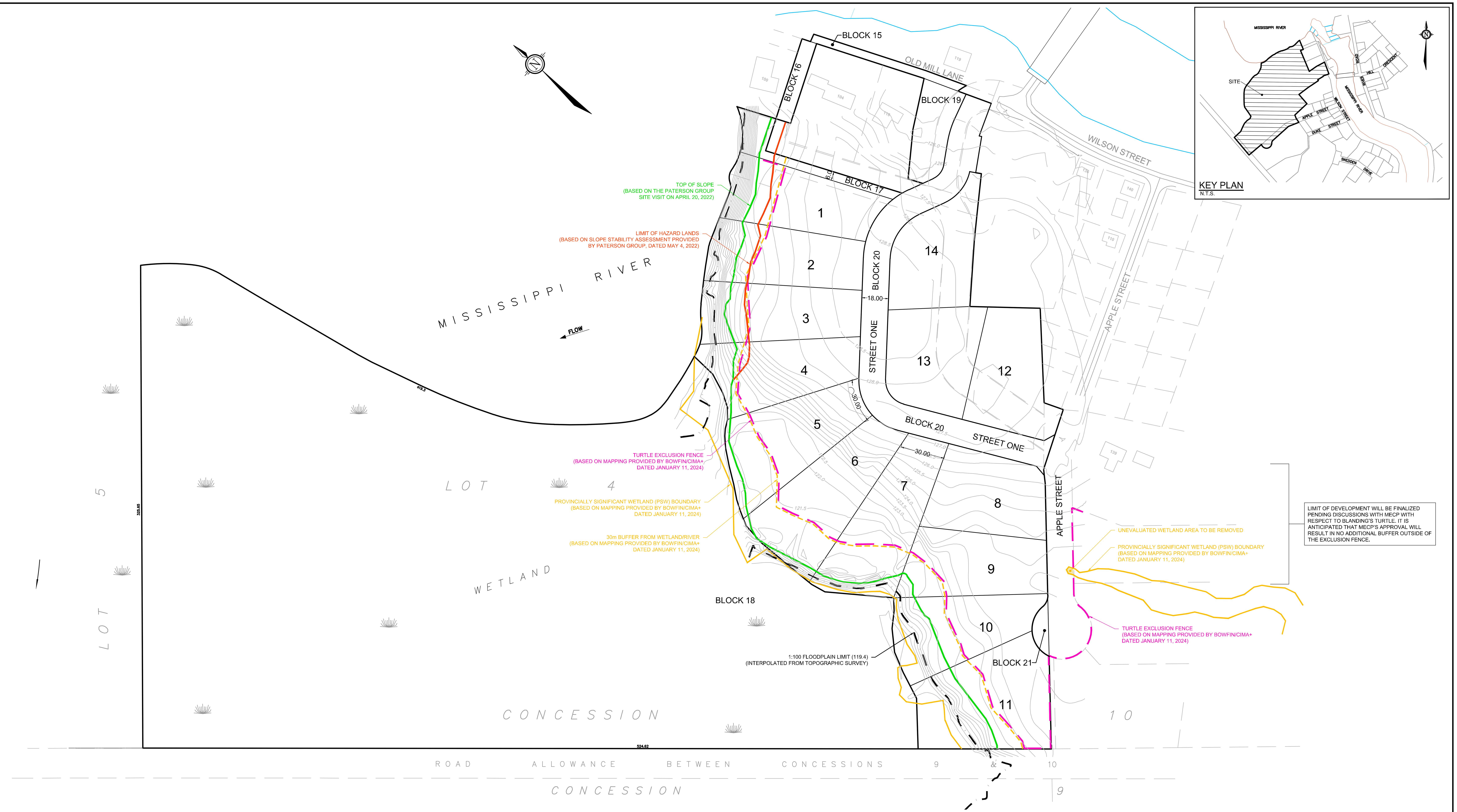

SOURCE REFERENCE:
Legal Information: *Draft Plan of Subdivision*
Callon Dietz OLS / August 12, 2022 / NAD83 MTM Zone 9
Topographic Information: *Draft Plan of Subdivision*
Callon Dietz OLS / August 12, 2022 / NAD83 MTM Zone 9

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

No.	REVISION	DATE	BY
7.	REVISED PER MVCA FLOOD HAZARD AND REGULATION MAP (REVISED APRIL 2022)	FEB 21/24	SMG
6.	ISSUED FOR COORDINATION	FEB 13/24	SMG
5.	ISSUED FOR COORDINATION	SEP 1/22	SMG
4.	ISSUED FOR COORDINATION	AUG 25/22	SMG
3.	ISSUED FOR COORDINATION	AUG 17/22	SMG
2.	ISSUED FOR COORDINATION	JUL 21/22	SMG
1.	ISSUED FOR COMMENT	SEP 08/21	SMG

SCALE
1:1250 (A1) / 1:1500 (11x17)
1:1250
0 10 20 30 40 50

FOR REVIEW ONLY

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MUNICIPALITY of MISSISSIPPI MILLS
APPLETON SHORES

DRAWING NAME
CONCEPT PLAN - 14 Lots

PROJECT No. 114165-00
REV: REV #7
DRAWING No. 114165-CP2021

PLAN24x36.DWG - 914.4mmx609.6mm

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