TATHAM ENGINEERING

115 Sandford Fleming Drive, Suite 200
Collingwood, Ontario L9Y 5A6

T 705-444-2565
E info@tathameng.com
tathameng.com

File 121088

July 10, 2026

John Rodgers
Rhemm Properties Ltd.
119 Fieldcrest Court
Clarksburg, Ontario, N0H 1J0

Re: 372 Grey Road 21, Town of The Blue Mountains
Flood Assessment Brief – West Parcel

Dear John:

Tatham Engineering Limited (Tatham) has been retained by Rhemm Properties Ltd. to complete a flood assessment for the proposed residential development located at 372 Grey Road 21 in the Town of The Blue Mountains. This brief has been prepared to summarize the existing flood conditions at the proposed development site and present recommendations to confirm the development can be constructed in a manner which ensures it will be protected from flooding and mitigate any potential impacts of the proposed development on flooding.

STUDY AREA

The study area encompasses Watercourse 1 and Watercourse 6 from Monterra Road to the watercourse outlets at Georgian Bay with a focus on the west end of the subject property where the residential development is proposed. The proposed development site is bounded by the Georgian Trail to the north, the future Eden Oak Development to the west, and undeveloped future development lands to the south and east.

BACKGROUND AND DESIGN CRITERIA

This assessment has been prepared to assess the existing flood conditions at the proposed development site and present recommendations to floodproof the proposed development and mitigate any impacts on flooding conditions. The assessment has considered the following applicable guidelines and background documents:

- *Policies for the Administration of the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Ontario Regulation 151/06*. Grey Sauble Conservation Authority (January 13, 2010); and

- *Drainage Master Plan Existing Conditions Report – Town of The Blue Mountains (Draft).* Tatham Engineering Limited (August 22, 2025).

The main branch of Watercourse 6 flows along the Georgian Trail north of the development site and a tributary of Watercourse 6 is located immediately west of the development site along the perimeter of the future Eden Oak development. This tributary has a drainage area of approximately 34 ha and was re-routed around the proposed Eden Oak development site via a perimeter ditch. This ditch directs the tributary to the Eden Oak stormwater management (SWM) pond. The GSCA regulated area associated with the main branch of Watercourse 6 extends onto the proposed development site.

As part of the Town of The Blue Mountains Drainage Master Plan (DMP) project, Tatham completed hydrologic and hydraulic analysis of the watercourses in the vicinity of the study area which will be referred to for this assessment.

PROPOSED DEVELOPMENT

The proposed development includes a total of 47 single family detached homes and 6 semi-detached homes. Road access to the site will be provided by the future Eden Oak development to the west of the site. The proposed development is shown on the Development Concept Plan attached.

HYDROLOGIC ANALYSIS

As mentioned, hydrologic analysis of the surrounding area has been completed by Tatham as part of the Town DMP project. The hydrologic analysis considered the entirety of the Watercourse 6 and Watercourse 1 (Townline Creek) watersheds which can potentially impact the subject property. The Watercourse 6 main branch adjacent to the development site has a drainage area of approximately 496 ha and there is a spill from Watercourse 1 which impacts Watercourse 6 at this location. This spill is accounted for in the model. Review of the Visual OTTHYMO hydrologic model created for the DMP determined the Timmins storm event is the governing storm event for the study area. We note the current hydrologic model from the DMP has not been calibrated and thus is generating flows that are believed to be conservative. The Regional (Timmins) Storm peak flows at key points of interest (POI) are as follows:

- Watercourse 6 west branch + east branch south of Georgian Trail: 43.1 cms (POI A);
- Spill from Watercourse 6 over the Georgian Trail: 17.5 cms (POI B);
- Watercourse 6 main branch adjacent to development site: 23.7 cms (POI C);
- Watercourse 6 west branch upstream of development site: 14.3 cms (POI D), potential spill directed towards development site: 2.0 cms;
- Tributary of Watercourse 6 west of development site: 1.8 cms (POI E);
- South property line (Proposed conditions): 0.9 cms (POI F); and
- West property line (Proposed conditions): 1.1 cms (POI G).

The points of interest described above are shown on the markup of the 2D Model Hydraulic Analysis Schematic (Markup of Drawing 2D-REG) enclosed for reference.

HYDRAULIC ANALYSIS

For this assessment, existing conditions and proposed conditions hydraulic models were created and compared to demonstrate that the proposed development can be constructed with no negative impact to flood levels or extents on adjacent properties. Due to the complexity of the study area hydraulics and the flood spills identified, a 2D HEC-RAS hydraulic model was used for assessment of the study area.

Existing Conditions

As discussed, the existing conditions 2D HEC-RAS hydraulic model developed for the Town of The Blue Mountains DMP project was used to determine the existing flood conditions in the study area. To improve the accuracy of the existing conditions model at the subject property, the DMP model terrain was updated using a combination of 2022 Ontario DTM LiDAR and topographic survey information collected on the proposed development property and the existing ditch conveying the tributary of Watercourse 6 along the south limit of the Eden Oak development site. The 2022 Ontario DTM LiDAR was in the CGVD2013 Datum and was adjusted by a factor of +0.375 to coincide with the site topographic survey data (CGVD28 Datum). An additional update was made to the model to add the flows of the west branch of Watercourse 6 into the model at a location further upstream to better assess if a spill from the west branch towards the proposed development site could occur.

Based on the above analysis, we confirmed that under existing conditions the proposed development site is potentially subject to flooding due to flow spilling from the existing tributary of Watercourse 6 along the Eden Oak property line and flow spilling from the west branch of Watercourse 6 south of the site. The maximum flood elevation in the Watercourse 6 main branch adjacent to the development site ranges from 182.21 m at the southeastern extent to 181.71 m at the northwestern extent. Based on these flood elevations, under existing conditions there is a small area (approximately 7 m^2) located at the rear of proposed lots 50 and 49 which would be subject to minor flood inundation at the maximum flood elevation of 181.80 m adjacent to these lots.

Proposed Conditions

The proposed conditions hydraulic model was created by updating the existing conditions 2D HEC-RAS hydraulic model with the proposed development plan. The model terrain was updated to reflect the preliminary proposed site grading. To address local drainage and protect the proposed development from flooding, the following measures are proposed:

- The existing interceptor ditch which conveys the tributary of Watercourse 6 along the south property line of the Eden Oak Development lands should be improved to prevent flows from spilling from this ditch. Proposed twin 600 mm Ø smooth walled culverts will be installed across the proposed street

and SMWF maintenance trail as part of the construction of the proposed street connecting from the Eden Oak Development to ensure flow in this tributary is conveyed to the SWMF in accordance with the area drainage plan;

- The site grading will be raised above the existing ground level along the western and southern property lines. Proposed swales will be provided along the interior of the western and southern property lines along the bottom of the slope down from the raised site grading. The proposed western and southern swales will be located within drainage easements in favour of the lot owners. The proposed raised grading and swales will direct external surface runoff and spill flow northwards along the western property line back into the main branch of Watercourse 6 and eastwards along the southern property line back into the main branch of Watercourse 6. In future conditions, development of lands to the west and south of the site will significantly reduce flows conveyed by these swales;
- An inlet structure consisting of a 600 mm x 1200 mm Ditch Inlet in Type 'B' configuration per OPSD 706.031 will capture drainage from the western property line south of the proposed street connecting from the Eden Oak development and a 900 mm Ø concrete storm sewer will convey this drainage back into Watercourse 6 as occurs under existing conditions. The inlet structures are capable of conveying the Regional storm flows of approximately 1.1 m^3/s below the road, accounting for 50% blockage of the inlets. Approximately 0.01 m^3/s will be directed to the Eden Oak SWMF. As the SWMF does not provide quantity control during major storms, it is not expected to affect the pond's performance; and
- The grade along the rear of lots 49 and 50 will be raised to prevent flood inundation from encroaching onto these properties and provide freeboard from the rear of these lots to the maximum flood elevation. This raised grading will result in a total of approximately 0.11 m^3 of fill being placed below the Regional flood elevation. This negligible fill will be more than offset by the grading of the ditch downstream of the 900 mm concrete storm sewer which will provide an additional 10.6 m^3 of floodplain storage.

It is noted the spill flows and external overland flow which could enter the existing development site are surface water spill flows and therefore the site is not considered floodplain and the external flows do not have to be accepted by the development property. As such, the proposed solution of raising the site with cut-off swales along the bottom of slopes will serve to direct drainage along the periphery of the development site to appropriate outlets to Watercourse 6 to mimic existing conditions without adversely impacting neighbouring properties. The proposed flood mitigation measures, spill extents and floodplain extents are illustrated on the Flood Hazard Plan (FH-1) enclosed for reference. The proposed conditions hydraulic model confirms the site itself is not floodplain and the proposed development can be safely floodproofed with the implementation of the measures described above and will have no negative impact on flooding conditions elsewhere in Watercourse 6 or on neighbouring properties.

CLOSING

A flood assessment was completed for the proposed development located at 372 Grey Road 21 to establish the existing flood conditions and determine flood mitigation measures for the proposed development. The existing analysis determined there is the potential for existing flooding of the development site due to a potential spill from the existing re-aligned tributary of Watercourse 6 west of the site and a potential spill from the west branch of Watercourse 6 south of the site. To address local drainage and protect the proposed development from flooding, improvements should be made to the existing interceptor ditch at the south limit of the Eden Oak Development and proposed 600 mm Ø culverts will be installed to convey flow to the SWMF. Site grading will be raised and swales will be provided along the bottom of slope along the western and southern property limits of the site and an inlet structure with a 900 mm Ø storm sewer will be constructed to convey spill flow from the western property line across the proposed street back into Watercourse 6 per existing conditions. Additionally, a negligible amount of fill (0.11 m^3) will be placed within the floodplain at the rear lots of 49 and 50, offset by a 10.6 m^3 cut from the grading of the ditch downstream of the 900 mm concrete storm sewer, and these lots will be raised to provide floodproofing separation from the maximum flood elevation. With implementation of the measures described above, the development will be safely floodproofed and will not adversely impact flood conditions elsewhere in Watercourse 6 or on neighbouring properties.

We trust this assessment is sufficient for your review and approval of the proposed development at 372 Grey Road 21 from a flooding perspective. In the meantime, if you have any questions or require further information, please do not hesitate to contact the undersigned.

Yours truly,
Tatham Engineering Limited

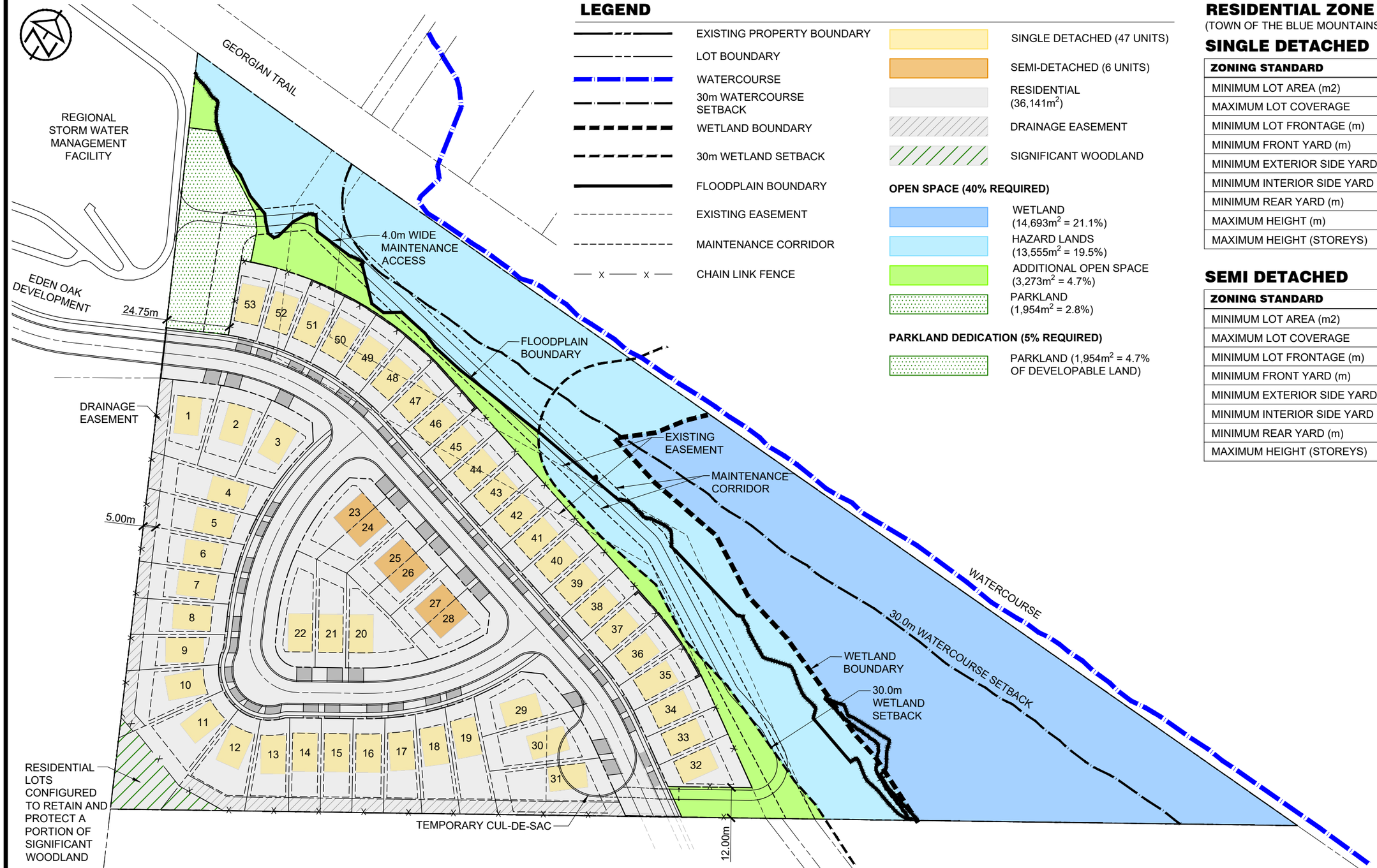


Grace Trombino, B.Eng.
Engineering Candidate

Dan Hurley, B.A.Sc., P.Eng., LEED AP
President

GT/DJH:rlh
Encl.

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LEGEND

- EXISTING PROPERTY BOUNDARY
- LOT BOUNDARY
- WATERCOURSE
- 30m WATERCOURSE SETBACK
- WETLAND BOUNDARY
- 30m WETLAND SETBACK
- FLOODPLAIN BOUNDARY
- EXISTING EASEMENT
- MAINTENANCE CORRIDOR
- CHAIN LINK FENCE

- SINGLE DETACHED (47 UNITS)
- SEMI-DETACHED (6 UNITS)
- RESIDENTIAL (36,141m^2)
- DRAINAGE EASEMENT
- SIGNIFICANT WOODLAND

OPEN SPACE (40% REQUIRED)

- WETLAND (14,693m^2 = 21.1%)
- HAZARD LANDS (13,555m^2 = 19.5%)
- ADDITIONAL OPEN SPACE (3,273m^2 = 4.7%)
- PARKLAND (1,954m^2 = 2.8%)

PARKLAND DEDICATION (5% REQUIRED)

- PARKLAND (1,954m^2 = 4.7% OF DEVELOPABLE LAND)

RESIDENTIAL ZONE STANDARDS

(TOWN OF THE BLUE MOUNTAINS ZONING BY-LAW 2018-65)

SINGLE DETACHED

ZONING STANDARD	R1-3
MINIMUM LOT AREA (m2)	360
MAXIMUM LOT COVERAGE	40%
MINIMUM LOT FRONTAGE (m)	12
MINIMUM FRONT YARD (m)	6
MINIMUM EXTERIOR SIDE YARD (m)	2.4
MINIMUM INTERIOR SIDE YARD (m)	1.2
MINIMUM REAR YARD (m)	6
MAXIMUM HEIGHT (m)	8
MAXIMUM HEIGHT (STOREYS)	2

SEMI DETACHED

ZONING STANDARD	R2
MINIMUM LOT AREA (m2)	350
MAXIMUM LOT COVERAGE	N.A.
MINIMUM LOT FRONTAGE (m)	9
MINIMUM FRONT YARD (m)	6
MINIMUM EXTERIOR SIDE YARD (m)	3
MINIMUM INTERIOR SIDE YARD (m)	1.2
MINIMUM REAR YARD (m)	6
MAXIMUM HEIGHT (STOREYS)	2.5

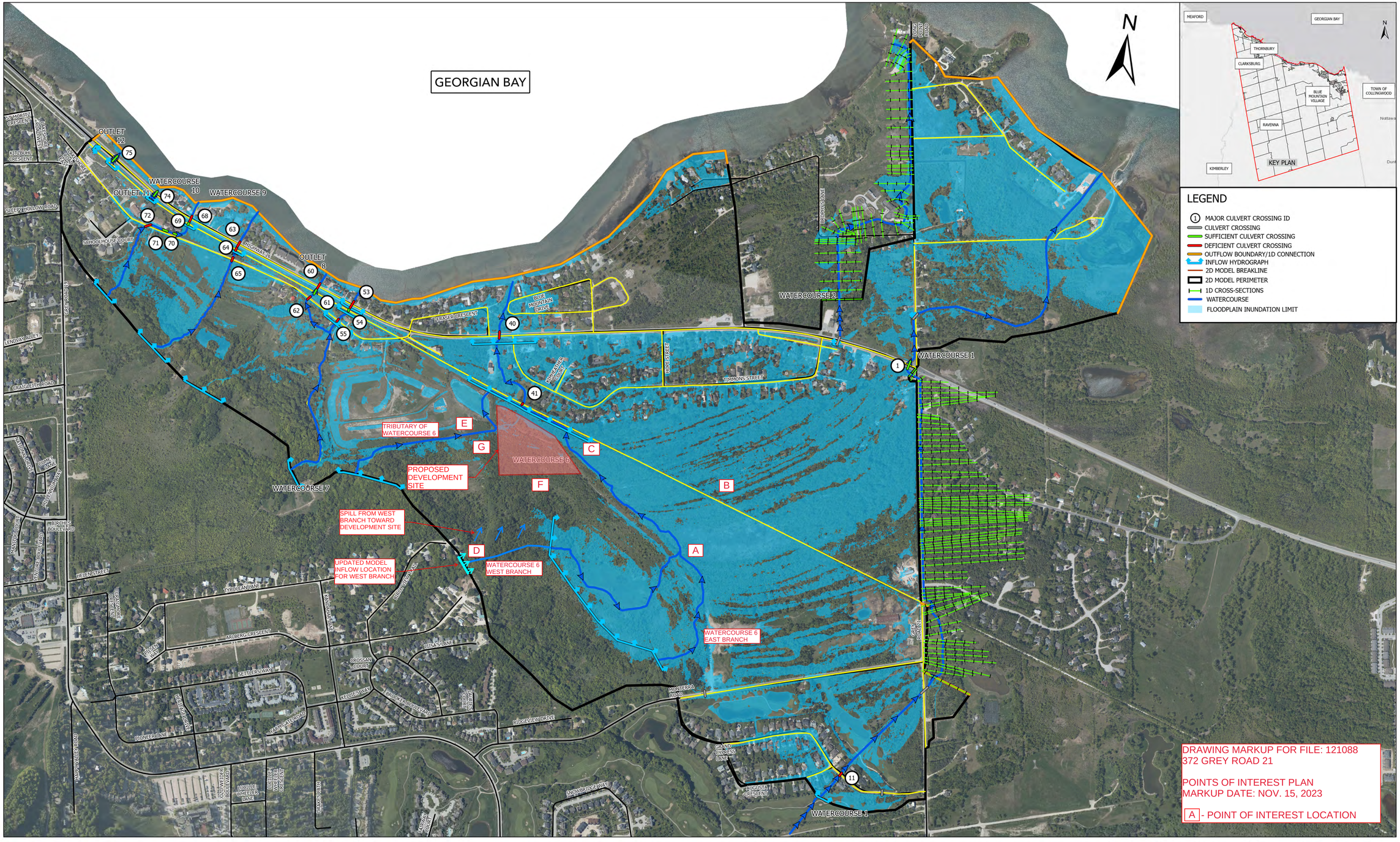
NOTE:
1. BASE PLAN PREPARED BY TATHAM ENGINEERING LTD. (JUNE, 2026).
2. LAND USE AREAS PROVIDED BY J.D. BARNES (JULY, 2026).
3. ALL DIMENSIONS IN METRES UNLESS OTHERWISE NOTED.

ENVISIONTATHAM
115 Sandford Fleming Drive, Suite 200, Collingwood, ON L9Y 5A6
Tel. 705.445.0422 inquiry@envision-tatham.com

NO.	REVISIONS	DATE	INITIAL
18.	RESUBMISSION IN SUPPORT OF DRAFT PLAN APPROVAL	JULY 24/26	AB
17.	REVISED LOT FABRIC	JUNE 25/26	AB
16.	REVISED PARKLAND DEDICATION	APR. 21/26	AB

SCALE: 1:1500
DRAWN: GEC
REVIEWED: AB
DATE: MAR 14, 2023

PROJECT: **372 GREY ROAD 21 WEST**
JOB NO. ET121015-1
DWG. **CONCEPT**



LEGEND

- (1) MAJOR CULVERT CROSSING ID
- CULVERT CROSSING
- SUFFICIENT CULVERT CROSSING
- DEFICIENT CULVERT CROSSING
- OUTFLOW BOUNDARY/1D CONNECTION
- INFLOW HYDROGRAPH
- 2D MODEL BREAKLINE
- 2D MODEL PERIMETER
- 1D CROSS-SECTIONS
- WATERCOURSE
- FLOODPLAIN INUNDATION LIMIT

DRAWING MARKUP FOR FILE: 121088
372 GREY ROAD 21

POINTS OF INTEREST PLAN
MARKUP DATE: NOV. 15, 2023

A - POINT OF INTEREST LOCATION

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NOTE
THIS MAP IS NOT A REGULATORY FLOODMAP. THIS MAP HAS BEEN PREPARED TO ESTIMATE THE EXTENT OF FLOODING IN THE AREA SHOWN FOR THE TOWN OF THE BLUE MOUNTAINS DRAINAGE MASTER PLAN ONLY.

No.	REVISION DESCRIPTION	DATE
1.	EXISTING CONDITIONS REPORT (30% SUBMISSION)	NOV 2021
2.	EXISTING CONDITIONS REPORT (60% SUBMISSION)	SEPT 2022

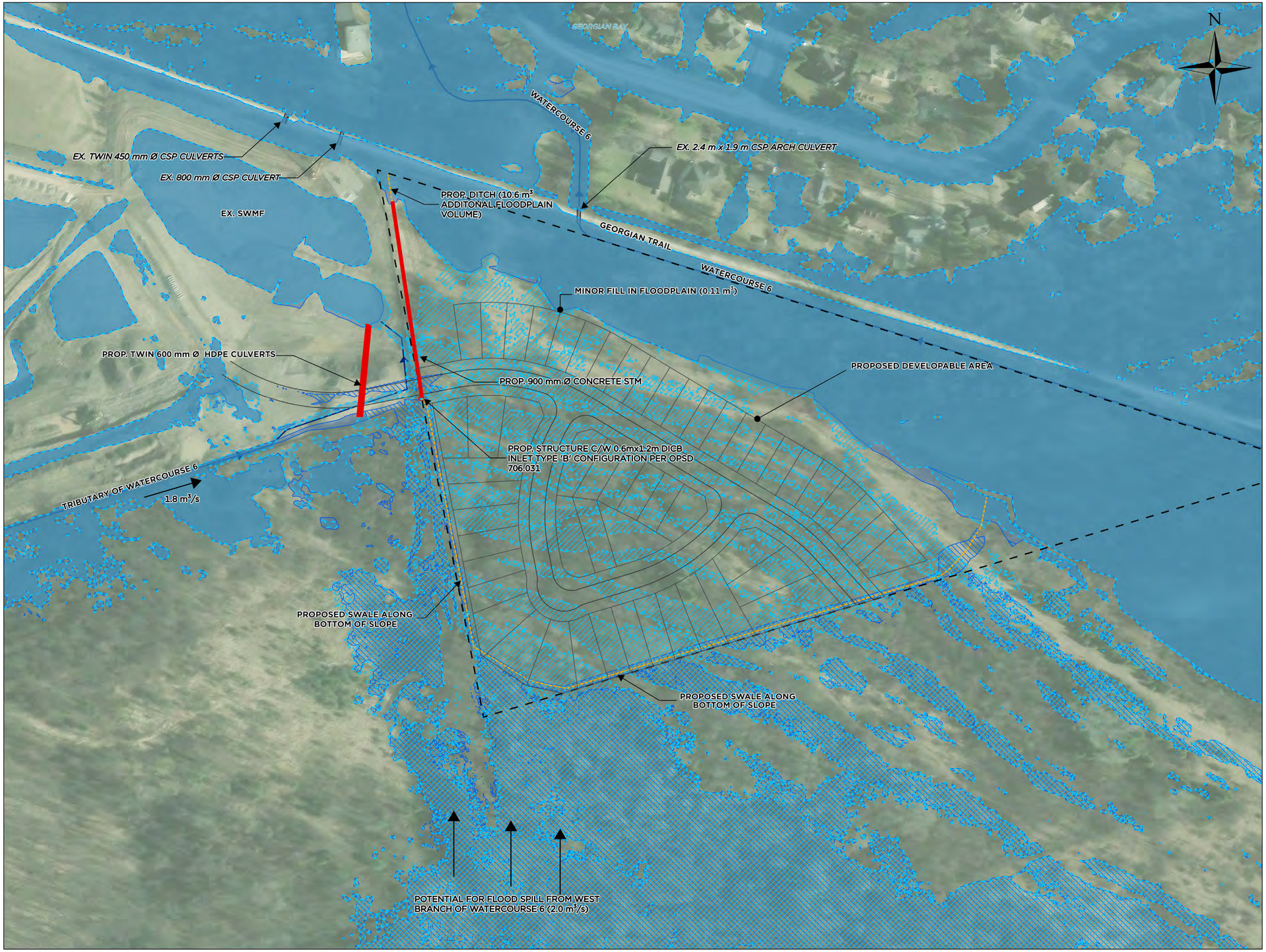
ENGINEERS STAMP

TOWN OF THE BLUE MOUNTAINS DRAINAGE MASTER PLAN

2D MODEL HYDRAULIC ANALYSIS SCHEMATIC

TATHAM ENGINEERING

DESIGN: DAM	FILE: 121076	DWG:	
DRAWN: KKS	DATE: OCT 2021	**2D-REG**	
CHECK: DRT	SCALE: 1:5,500		





LEGEND

- FLOW ARROW
- EXISTING CULVERT
- WATERCOURSE
- PROPOSED SWALE
- PROPOSED INTERNAL STREETS
- PROPOSED CULVERT
- SUBJECT PROPERTY
- PROPOSED REGIONAL SPILL
- PROPOSED REGIONAL FLOOD EXTENTS
- EXISTING REGIONAL SPILL
- EXISTING REGIONAL FLOOD EXTENTS

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NOTES:

1. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

No.	REVISION DESCRIPTION	DATE
1.	DRAFT PLAN PRE-CONSULT	JUL. 2024
2.	DRAFT PLAN APPROVAL	JUL. 2025
3.	UPDATED FOR DRAFT PLAN APPROVAL	APR. 2026

ENGINEERS STAMP

372 GREY ROAD 21 - WEST

TOWN OF BLUE MOUNTAINS

REGIONAL (TIMMINS) STORM FLOOD HAZARD PLAN

TATHAM ENGINEERING

DESIGN: GT	FILE: 121088	DWG:	
DRAWN: GT	DATE: DEC. 2023	**FH-1**	
CHECK: DJH	SCALE: 1:1,000		

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TATHAM ENGINEERING

Inlet Capacity

Project Details

372 Grey Road 21	121088

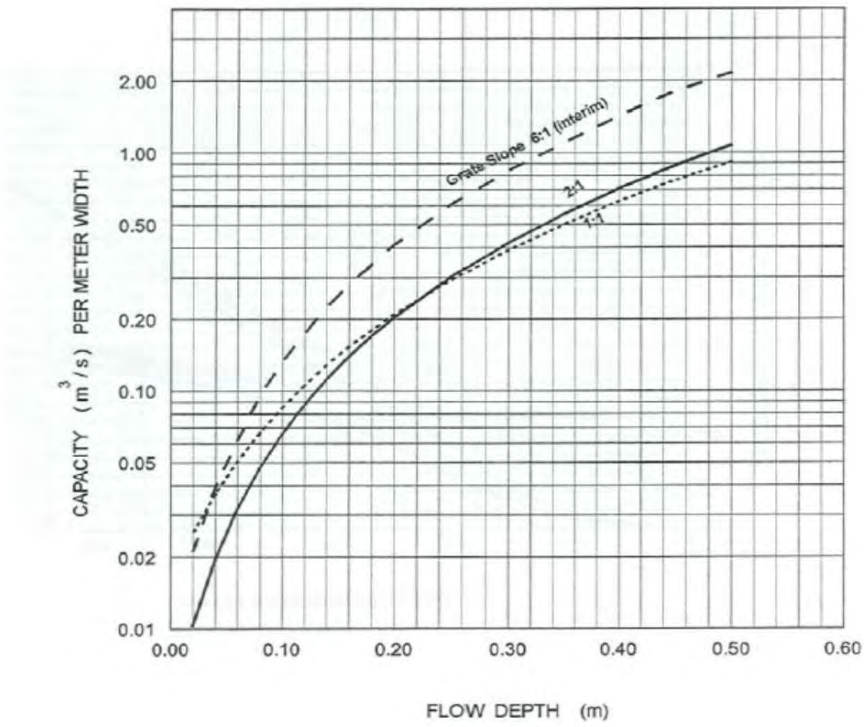
Prepared By

JM	December 7, 2023

Municipality

Town of The Blue Mountains

Design Chart 4.20: Ditch Inlet Capacity



Inlet Configuration:	0.6 m x 1.2 m Type 'B' Ditch Inlet (1.2 m total width per chart 4.20)	
Grate Slope (H:V):	2:1	
Inlet Capacity Function:	$Q = 3.7753d^2 + 0.2546d + 0.0026$	(flow per metre width)
Inlet Capacity (50% Obstruction):	$Q = 0.6*(3.7753d^2 + 0.2546d + 0.0026)$	(50% Obstruction, 0.6 m width avilable)
Regional Flow (m^3/s):	1.10	
Required Ponding Depth (m):	0.95	
Capacity with 50% Obstruction (m^3/s):	1.10	