April 16, 2025

Sam Mizrahi
Mizrahi Developments
133 Hazelton Avenue
Toronto, Ontario M5R 0A6

Attn: **Sam Mizrahi**
President

Re: **DRAFT Terms of Reference for Hydrogeomorphic Assessment**
Tributaries of Sulphur Creek
159 and 163 Sulphur Springs Road, Ancaster (Hamilton)
GEO Morphix Proposal Number: PP-25-100

GEO Morphix Ltd. (GEO Morphix) is pleased to provide the following Terms of Reference (TOR) for a Hydrogeomorphic Assessment in support of the proposed development at 159 and 163 Sulphur Springs Road in Ancaster, Ontario.

GEO Morphix previously completed a fluvial geomorphological assessment and erosion hazard delineation of the subject property (GEO Morphix, 2024). The assessment included a desktop review of historical and recent aerial photographs, existing geology and topographic mapping, and reach delineation. Erosion hazard delineation was completed for the main tributary through the northern portion of the subject property.

Our understanding is that the Planning and Economic Development Department of the City of Hamilton (the City) reviewed the above-referenced document as part of the development application for the subject lands. In a letter dated March 5, 2025, the City noted that the subject lands cover a relatively small area and that a subwatershed study (SWS) of Sulphur Creek is unnecessary. In lieu, the City recommended a sub-catchment scale study focused on the receiving watercourses. In particular, the City recommended further study of the potential impacts of the proposed development on the northern pond and requested that the project team liaise with the Hamilton Conservation Authority (HCA) regarding the Stewardship Plan for Sulphur Creek.

This TOR outlines the purpose, scope, and deliverables of a study to address the City's recommendation for a sub-catchment scale study focused on the receiving watercourses.

Purpose and Objectives

The purpose of the proposed study is to provide a sub-catchment scale assessment of the potential impact of the proposed development on the hydrogeomorphic function of the surface water features at the site and on the receiving watercourses downstream of the proposed development. Potential impacts will be assessed via a detailed hydrogeomorphic assessment of the receiving watercourses, including modelling of the potential impact of changes in pre- and post-development runoff to these watercourses. The scope of work for this study is detailed below.

Study Area

The subject lands are bounded by Sulphur Springs Road and residential development to the south and west, natural areas to the east, and the provincially significant Sulphur Creek Valley Life Science Area of Natural and Scientific Interest (ANSI) to the north. Portions of the ANSI extend onto the northern extent of the subject lands. Two low-order tributaries of Sulphur Creek traverse the subject lands, one across the northern portion of the site and the other which drains the southern portion of the site. Each of the tributaries drains an onsite pond with the larger of the two ponds located in the northern portion

of the site. The Mount Mary Wetland Complex, which is evaluated but not provincially significant, is situated to the east of the site and receives runoff from the southern tributary.

Current land use consists of residential dwellings, wooded and natural areas, and the two aforementioned ponds which will be retained post-development. The development concept proposed for the site consists of single detached units (16) and townhouse block residential units (61), parkland and open space blocks, private right-of-way allowances with road, sidewalk and parking, natural heritage lands, and landscaped areas, a sewage pumping station, and underground stormwater management facilities. Two underground stormwater management facilities are proposed; SWM Facility 1 (SWM1 north) and SWM Facility 2 (SWM2; south). SWM1 will outlet to the subject sites northern pond, and SWM2 will outlet to Reach SCT1-2 which contributes flow to the Mount Mary Wetland Complex.

Following from Credit Valley Conservation guidance (CVC, 2012) for assessing the potential downstream impact of development projects on stormwater management, the downstream extent of the study area will be defined to where the total accumulated drainage area of the receiving watercourse is at least 10 times the watercourse drainage area occupied by the subject land.

Scope of Work

To achieve the purpose and objectives of the proposed study the following specific tasks will be completed:

- Characterization of the watershed and existing watercourse conditions via desktop review of available background reports and mapping, and via field studies (as detailed below)
- Determination of the most sensitive reach(es) along the receiving watercourse based on results from rapid geomorphic field assessments (access permitting)
- Complete two (2) detailed geomorphological field assessments (access permitting) along the most erosion-sensitive reaches of the receiving watercourses (as detailed below)
- Erosion threshold and erosion exceedance analysis (as detailed below)
- Liaison with the City and HCA regarding the Stewardship Plan for Sulphur Creek

Roles and Responsibilities

Geo Morphix will lead and complete all aspects of the proposed assessment and liaise with the **City of Hamilton** (City) and the **Hamilton Conservation Authority** (HCA) regarding the Stewardship Plan for Sulphur Creek.

Mizarhi Developments and **Crozier & Associates Inc.** (Crozier) will: (i) provide background information; ii) facilitate access to the study area; and (iii) liaise with the City and the HCA regarding the Stewardship Plan for Sulphur Creek. **Crozier** will provide pre- and post-development hydrological simulation modelling for the receiving watercourses.

The **City** and the **HCA** will provide technical review and regulatory input.

Standards and Guidelines

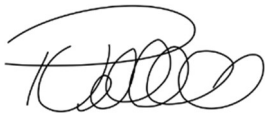
The study will be conducted in accordance with:

- Fluvial Geomorphology Terms of Reference (City of Hamilton, 2023)
- Erosion and Sediment Control Guide for Urban Construction (Toronto and Region Conservation Authority, 2019)
- Ontario Stream Assessment Protocol – Version 10 (L. Stanfield, 2017)
- Credit Valley Conservation Fluvial Geomorphic Guidelines (Credit Valley Conservation, 2015)
- Evaluation, Classification and Management of Headwater Drainage Features Guidelines (Credit Valley Conservation and Toronto and Region Conservation, 2014)
- Stormwater Management Planning and Design Manual (Ministry of the Environment, 2003)
- Credit Valley Conservation Stormwater Management Criteria (Credit Valley Conservation, 2012)

- Technical Guide – River & Stream Systems: Erosion Hazard Limit (Ministry of Natural Resources, 2002)

We trust this TOR meets your requirements. Should you have any questions, please contact the undersigned.

Respectfully submitted,



Paul Villard, Ph.D., P.Geo., CAN-CISEC, EP, CERP
Director, Principal Geomorphologist

Jan Franssen, Ph.D.
Senior Watershed Scientist, Technical Lead