Welcome

Saugeen Valley Conservation Authority
Municipality of West Grey
Durham Creek Flood Hazard Mapping Project
Public Meeting No. 1

October 2, 2023

Please sign in and take a comment sheet.

Feel free to provide written input or comment using the comment sheets provided or by contacting the identified representatives of the Saugeen Valley Conservation Authority or its consultant for this project (D.M. Wills Associates Limited).

Representatives of the Saugeen Valley Conservation Authority and D.M. Wills Associates Limited are available to discuss questions or concerns you may have regarding this project.

Flood Hazard Mapping Purpose and Guidelines

What is a Floodplain?

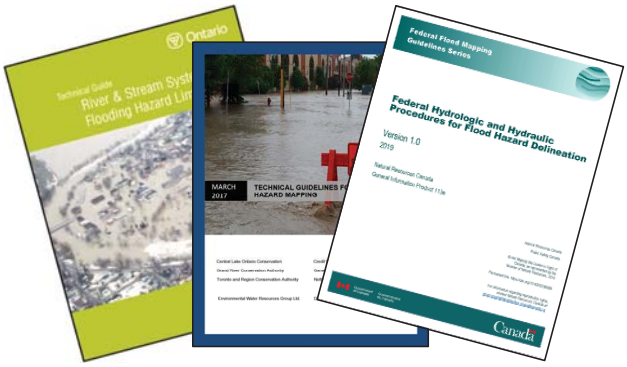
- A floodplain is a flat or gently sloping area of land near a waterbody (creek, river, lake, etc.) that is inundated during periods of high water (i.e., during large rainfall or snowmelt events).
- Floodplains are natural features that allow flow to spread across the landscape.

What is a Flood Hazard Map and How is it Used?

- Flood hazard maps identify areas that may be susceptible to riverine, urban, or coastal flooding during large storm events.
- Flood hazard mapping is an important tool used for the protection of property and human life from flooding.
- Flood hazard mapping is used by the SVCA and the Municipality of West Grey for:
  - Flood forecasting and warning.
  - Emergency planning and response.
  - Planning and prioritization of flood mitigation works.
  - Community planning and land use decision making.

Flood Hazard Mapping Guidelines

- Technical Guide – River and Stream Systems: Flooding Hazard Limit (MNR, 2002)
- Technical Guidelines for Flood Hazard Mapping (Environmental Water Resources Group, 2017)
- Federal Floodplain Mapping Guideline Series (Natural Resources Canada, 2019)



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Flood Hazard Mapping Process

1 Data Collection and Review

- Review existing floodplain mapping, if available.
- Obtain available GIS data (LiDAR DTM, land cover, soils).
- Obtain hydrometric data (rainfall, streamflow, level).
- Complete topographic survey of hydraulic structures (i.e., bridges, culverts, dams).
- Complete bathymetric survey of river/creek cross-sections.

2 We are here — Hydrology Study

- Develop analytical approach.
- Prepare hydrologic model using HEC-HMS (catchment delineation / parametrization).
- Calibrate hydrologic model (rainfall and stream flow data, flood frequency analysis).
- Validate hydrologic model.
- Select peak flows for hydraulic modelling.
- Prepare report.

3 Hydraulic Modelling

- Develop modelling approach (1D vs. 2D HEC-RAS).
- Prepare hydrologic model (cross-sections or 2D flow area, Manning's n values, hydraulic structures, buildings.
- Calibrate / validate hydraulic model results (water level).
- Input peak flows from hydrology study and execute model runs.

4 Flood Hazard Delineation

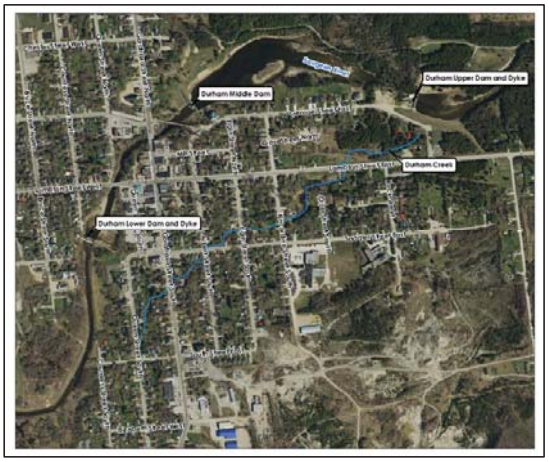
- Generate flood lines using tools available in HEC-RAS based on the LiDAR DTM.
- Import flood lines into GIS software and edit / refine to produce the final flood lines.

5 Reporting and Consultation

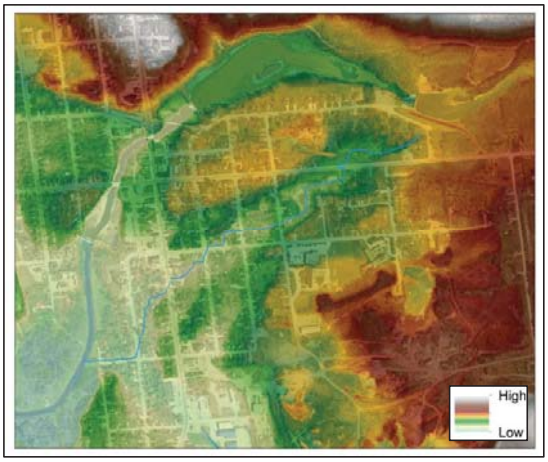
- Develop Draft Flood Hazard Mapping Report and Maps.
- Complete Public Consultation.
- Finalize Flood Hazard Mapping Report and Maps.

The target completion date for this project is March 2024

Primary Study Area



Southwestern Ontario Orthophogography Project (SWOOP)
2015 Aerial Imagery



Southwestern Ontario Orthophogography Project (SWOOP)
2015 Aerial Imagery with LiDAR DTM

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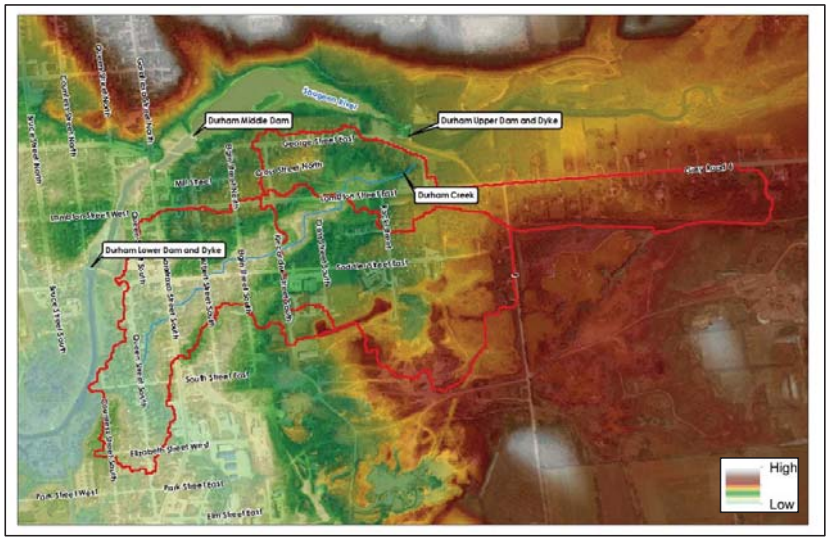
Durham Creek Sub-Watershed Boundaries



Durham Creek Sub-Watershed Boundaries showing SWOOP 2015 Aerial Imagery and LiDAR DTM

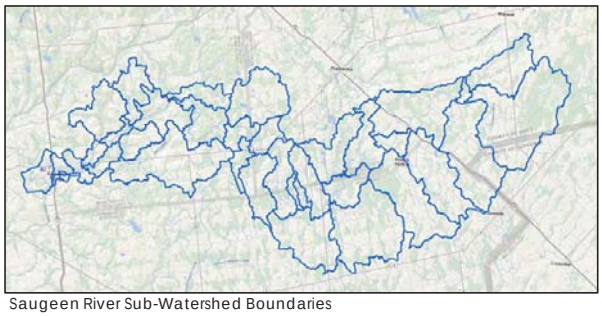
Secondary Study Area and Hydrologic Model Development

Saugeen River and Saugeen River Watershed

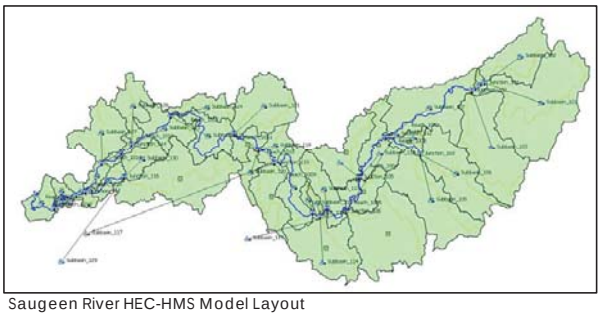
- The Saugeen River and Saugeen River Watershed is the secondary study area for this project.
- The secondary study area is being incorporated into the Durham Creek flood hazard mapping project because the Saugeen River influences Durham Creek.
- This influence exists at the downstream end of Durham Creek where the water level in the Saugeen River affects the water level in Durham Creek and at the upstream end where there is the potential for a spill from the Saugeen River into Durham Creek at the Durham Upper Dam and Dyke.

Hydraulic Model Development

- The development of the hydrologic model requires the following inputs:
  - Provincial land cover, soils, and LiDAR DTM data.
  - Municipal official plan and zoning data.
  - Climate and hydrometric data.
- Sub-watersheds are delineated using the tools within HEC-HMS and are characterized using available data.
- Channel routing elements are defined using the LiDAR DTM.



Saugeen River Sub-Watershed Boundaries



Saugeen River HEC-HMS Model Layout

Next Steps and Project Contacts

Next Steps

- Complete Hydrologic Model and Hydrology Report.
- Complete Hydraulic Model and Hydraulic Modeling Report.
- Prepare Draft Flood Hazard Mapping Report and Draft Flood Hazard Maps.
- Public Meeting No. 2.
- Prepare Final Flood Hazard Mapping Report and Final Flood Hazard Maps.

Public Input and Comment

- Feel free to provide written input or comment(s), for consideration by the project team, using the comment sheets provided or by contacting the individuals identified below.
- Information and comments received are collected under the authority of the Municipal Act and will be subject to the requirements of the Freedom of Information and Protection of Privacy Act.
- If you have any questions during the project, or if you would like additional information, please contact the individuals identified below.

Thank you for attending.

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