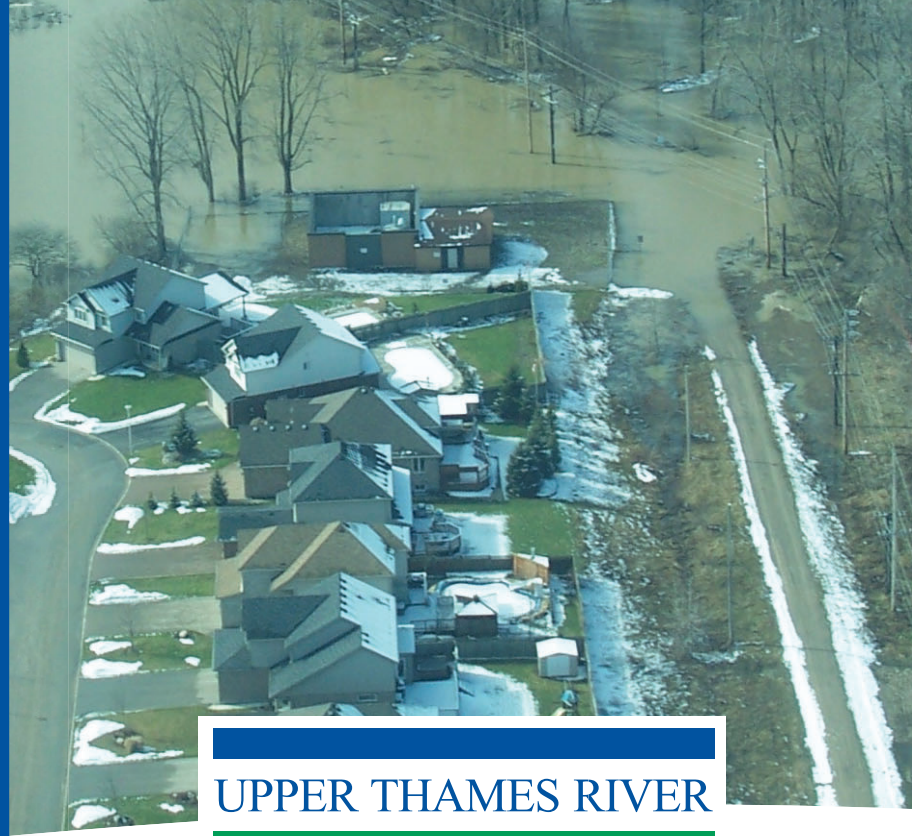




UTRCA Regulated Areas

Protecting People and Property



UPPER THAMES RIVER
CONSERVATION AUTHORITY

Ontario's municipalities and conservation authorities work to protect people and property from natural hazards, including flooding and erosion hazards, as well as wetlands and the area surrounding them.

The Upper Thames River Conservation Authority (UTRCA) regulates development in or near natural hazards and associated features under the *Conservation Authorities Act* and Ontario Regulation 41/24: Prohibited Activities, Exemptions and Permits. Proposed development in regulated areas may require a permit from the UTRCA.

What is a Regulated Area?

Ontario Regulation 41/24 applies to lands within the following areas:

- Watercourses,
- Hazardous lands,
- Wetlands,
- River or stream valleys,
- Areas adjacent or close to an inland lake that may be affected by flooding, erosion, or dynamic beach hazards, and
- Other areas, including areas within 30 metres of a wetland.

Examples of Regulated Areas



Watercourses

A watercourse, as described in O. Reg. 41/24, refers to a defined channel, having a bed and banks or sides, in which a flow of water regularly or continuously occurs. Altering a watercourse can impact its ability to move water, resulting in flooding and erosion downstream.



Hazardous Land

Hazardous land, as defined in O. Reg. 41/24, refers to land that could be unsafe for development because of naturally occurring processes associated with flooding, erosion, dynamic beaches, or unstable soil or bedrock.



Flooding Hazard

Flooding occurs when a watercourse overflows its banks and spills onto adjacent low-lying land known as floodplains. These areas act as a natural extension of the watercourse during times of high flow to transport and store excess water. Development in a floodplain can alter the flow of water and cause or worsen flooding elsewhere, increasing the risk to life and property.



Wetlands

A wetland is land that is saturated with water, either seasonally or permanently, contains water tolerant plants, hydric soils (poorly drained), and is directly connected to a watercourse. Wetlands and the area surrounding them (30 metre buffer) are regulated due to their critical role in flood management as they store water and reduce downstream flows (hydrologic function). Wetlands may also pose a risk to development due to the presence of a high-water table or unstable soils.



River or Stream Valleys

In O. Reg. 41/24, river or stream valleys are described as areas having depressional features associated with a river or stream, whether or not they contain a watercourse. Rivers and stream valleys are continually being shaped by erosion and flooding, resulting in a loss of land which can endanger life and property.

Regulated Area Maps

To illustrate the approximate location of the regulated area, the UTRCA develops maps that depict properties that may be affected by the regulation (O. Reg. 41/24). The regulated area maps are available online at maps.thamesriver.on.ca and in-person at the Watershed Conservation Centre. They are based on the best available information at the time of map production and/or map update.

Who Uses Regulated Area Maps?

UTRCA staff reference regulated area maps when reviewing development applications to determine if a permit is required under the *Conservation Authorities Act*.

The UTRCA's member municipalities use the regulated area maps when reviewing development proposals under the *Planning Act* and Building Code, updating Official Plans and Zoning By-law schedules, and undertaking infrastructure and emergency management planning.

The public can view regulated area maps to determine if the property they own or want to purchase is within a regulated area.

Why Update Regulated Area Maps?

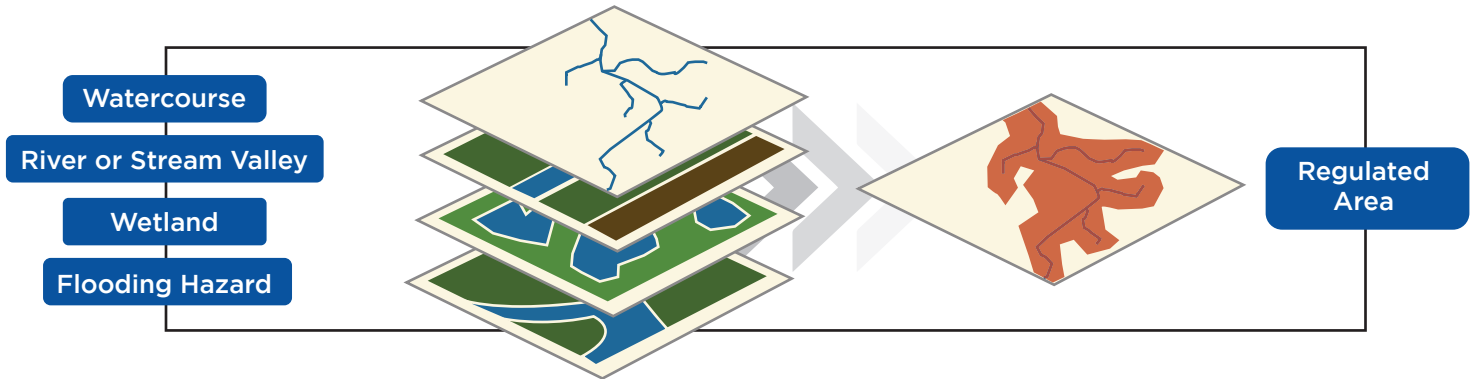
The UTRCA is undertaking a comprehensive review and update of its regulated area maps. Updating these maps is an important and ongoing process that enables the conservation authority and its municipal partners to use the most current information to identify hazards, assess risk, and guide land use decisions.

New data has greatly increased the accuracy of hazard identification. Advances in computer technology and software have also improved the UTRCA's ability to model and map hazard areas, especially flood and erosion hazards.



How are Regulated Area Maps Generated?

The UTRCA determines the location and boundaries of individual hazards, such as flooding hazards or river and stream valleys, through extensive data collection, statistical analysis, modelling, and various mapping techniques. Throughout this process, staff follow technical guidelines prepared by the Ministry of Natural Resources (MNR) and Conservation Ontario. Using a Geographic Information System (GIS), the completed map layers are overlaid, and an allowance is added to produce the regulated area.



When a map is updated, the extent of the regulated area might change or be refined. This can occur when new information (e.g., land use changes, bridge or culvert upgrades, new aerial photography, etc.) or analysis becomes available. As a result, additional regulated areas may be identified, or previously identified areas may be modified or removed.

The text descriptions in O. Reg. 41/24 override the mapping if there is a conflict. The UTRCA will notify or engage with member municipalities, the public, and other interest-holders as part of the update process to ensure compliance with the regulation.

How is Each Map Layer Created?

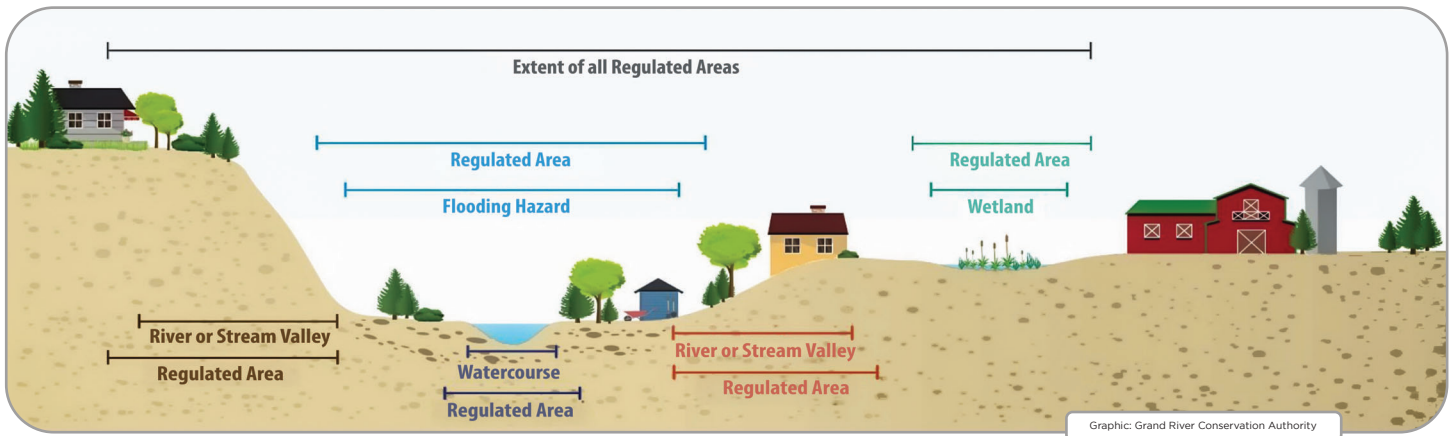
Flooding Hazard Layer

To produce the flooding hazard map layer, a science-based method of field surveys and computer modelling is completed. Field surveys provide detailed information and elevation data about riverbeds, riverbanks, bridges, and culverts. This information improves the accuracy of flood models by defining the physical characteristics of each watercourse and determining the effect that bridges and culverts may have on flood flows.

To calculate flood flows, engineers undertake statistical analysis of long-term stream flow data. If an area does not have long-term stream flow data or is experiencing rapid land-use change (most urban areas), a hydrologic model is built to estimate flows during storm events to represent how much water would drain off the landscape. Flood flows are then entered into a hydraulic model to determine flood levels by simulating how water moves through a watercourse.

Staff compile the following data to update the flooding hazard map layer:

- Digital elevation data (remote sensing, air photo interpretation),
- Land use and land cover (air photo interpretation),
- Surface geology and soil data,
- Impervious surfaces (where water cannot soak into the ground),
- Observed precipitation and stream flow data records,
- Watercourse cross-sections, profiles, and features (field survey),
- Size and description of culverts and bridges (field survey), and
- High water mark data collected during previous flood events.



Flood water levels generated by the hydraulic model are merged with topographic data to create maps that illustrate regulated flooding hazard areas. All modelling and mapping use the 1937 Flood Event Standard (1:250-year return flood), which has a 0.4 percent chance of occurring in any given year. This standard is based on an actual flood that occurred on the Thames River in April 1937.

River or Stream Valley Layer

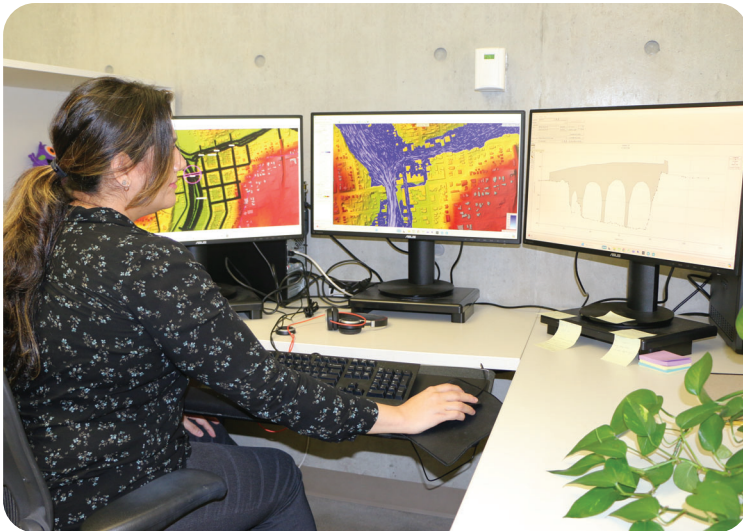
Using GIS technology, staff identify and map river and stream valleys by delineating the top and bottom of valley slopes on aerial photographs and topographic maps. A combination of manual and computer-based mapping techniques is then used to estimate the predicted long-term stable slope plus required regulatory allowances. The shape and type of river or stream valley also determine how this process is completed.

Watercourse Layer

The watercourse layer is updated every five years when the UTRCA receives new air photo imagery for the watershed. Using photo interpretation, the centre line of each watercourse is adjusted to reflect any changes.

Wetland Layer

The location of wetlands in the Upper Thames River watershed is determined using various information sources including the MNR. This involves field evaluations by qualified professionals using provincially recognized criteria as well as manually mapped areas that indicate where a wetland may be present. Wetland indicators include vegetation inventories, soil information, surface elevations, groundwater data, and air photo interpretation.



We can help!

Pre-consultation with the UTRCA is an important early step in any development. Contact us before starting any construction or alterations on your property. UTRCA staff will work with you to understand your proposed project and determine if a conservation authority permit is required.

Questions?

Email: regulationsinquiry@thamesriver.ca