



Conservation Halton Physical Top of Bank Staking Protocol

This Protocol describes Conservation Halton's (CH) current practice for staking the physical top of bank of river and stream valleys in the field. It also includes administrative procedures to be undertaken by the proponent and CH staff prior to and after the staking exercise. Typically, a top of bank staking takes place as part of CH's permitting process or through the planning process.

The physical top of bank can generally be described as the first main point of inflection or start of downward valley slope as observed from the adjacent tableland and does not include plateaus within the valley corridor with secondary points of inflection.

Step 1: CH staff reviews ARL Mapping and background information

CH staff will review CH's Approximate Regulation Limit (ARL) mapping and any available information on file to determine whether a top of bank staking may be needed, if the proposed development is likely to meet CH's regulatory policies, and to identify the need for a geotechnical slope stability assessment to delineate the stable top of bank.

Step 2: Site visit scheduled for CH staff to stake physical top of bank

CH staff and the applicant will arrange a time for site visit.

The landowner and/or their agent, the landowner's Ontario Land Surveyor (OLS), municipal staff (where required), and CH staff will meet at the site. The landowner is responsible for arranging for an OLS to be present, with wood stakes, flagging tape, and any other measures necessary for field staking. Staff must be able to safely access the area of interest (e.g. gates are open; an unobstructed pathway to the feature(s) of interest is available).

Staking the physical top of bank is the responsibility of CH planning and regulations staff, who may consult with CH technical staff, as necessary.

Step 3: Site Visit

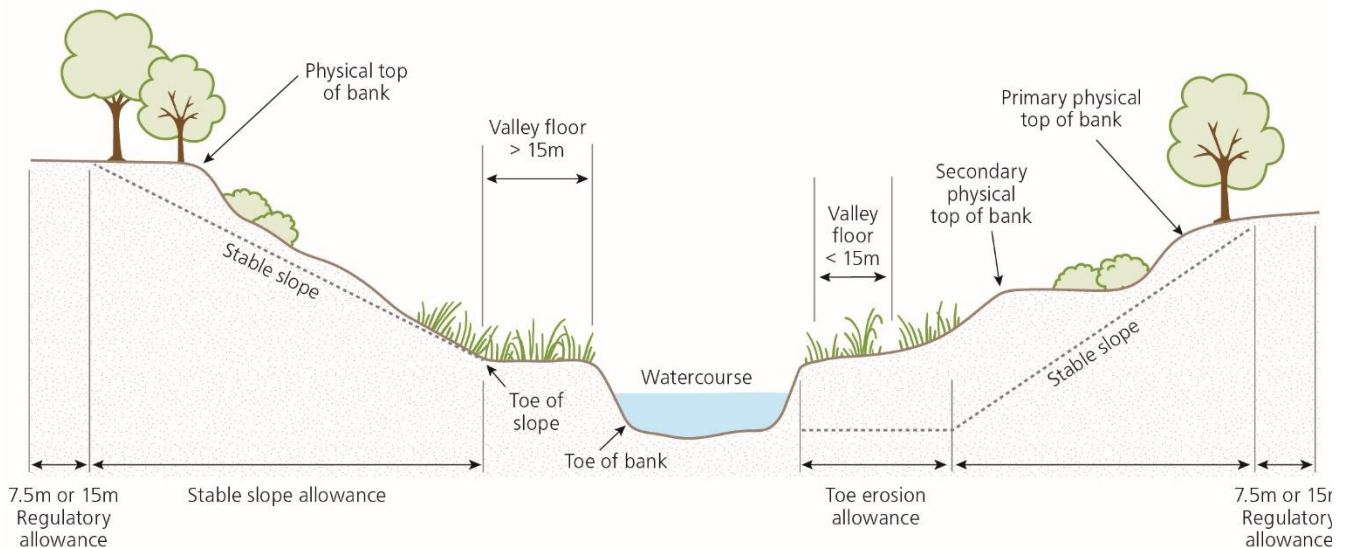
CH staff will stake physical top of bank based on CH staff's professional judgement and based on the following considerations:

- **Systems approach:** Staff will look upstream and downstream, across the valley and consider the overall feature (and survey contours, if available). The staked top of bank should be consistent with the elevation trend up and downstream. Stakes will be placed where there is a visible change in grade in the defined valley corridor. In simple terms, this is where a toboggan would begin sliding down the valley on its own.
- **Confined vs. Unconfined Systems:** Where the watercourse is not located within a valley corridor with discernable slopes, but is relatively flat or includes gently rolling plains, the system is considered unconfined. Staff will stake a physical top of bank when the valley is around 2 metres or greater from the toe of slope and where there is a discernable slope (as

depicted on Figure 1 below). Where a confined system (>2 metres in height) transitions to an unconfined system (<2 metres in height), only the confined portion of the system will be staked.

- **Alterations to Valley Features:** Delineation of the physical top of bank is based on existing conditions at the time of staking, which may also include areas of historic filling. Minor fill piles will not be staked; however, where significant filling or grade alteration has occurred and altered the original top of bank or toe of slope, pre-disturbance topography may need to be confirmed and evaluated as part of a geotechnical slope stability assessment to determine the stable top of bank and/or toe of slope.
- **Terraced Valley Features:** Where the valley is terraced CH staff will consider up and downstream and stakes along the contour that aligns with the elevation trend of the natural valley system, based on the primary top of bank (as depicted on Figure 1 below). The entire valley feature will be considered when staking top of bank.

FIGURE 1.



- **Buildings/Structures Within the Valley:** Where buildings/structures are located within the top of bank, staff stakes on either side of the buildings/structures along the valley contour line (e.g., houses with walkout basements).
- **Draw Features:** A draw feature is a small valley that is usually dry but may collect water and funnel it towards the main valley features during storm events. Draws may contain ephemeral or intermittent watercourses. Draw features are generally not included in the staking; however, the draw feature may need to be assessed through the geotechnical slope stability assessment.
- **Other Slope Features:** CH regulates slopes associated with river or stream valleys whether or not they contain a watercourse. Slopes associated with other landforms (e.g. moraines, drumlins, escarpments, etc.) will not be staked by CH.

CH's regulation limit extends from the greater of the physical top of bank as staked in the field or the stable top of bank as determined by a geotechnical slope stability assessment.

Step 4: CH confirms if Slope Stability Assessment is required

Based on a review of CH's ARL mapping and/or site observations, staff will confirm the need for a geotechnical slope stability assessment to delineate the stable top of bank. Staff will also confirm if a fluvial geomorphological assessment is required for any unconfined watercourse reaches.

Step 5: Applicant submits survey to CH and CH inputs into ARL mapping

The applicant will need to provide a stamped and signed survey by an OLS to CH following the staking (recommended within 2 weeks) to ensure the survey is on file to inform the development application. The survey must delineate and label the feature(s) as staked by CH and indicate the date of the staking.

The applicant must provide CH with a digital copy of the survey data. Digital data should be delivered in one of the following formats:

- ESRI geodatabasev10.x (or newer) feature classes
- ESRI shape file format.
- AutoCAD DWG or DXF Format, version 2019 or earlier
- Digital data must be provided in UTM NAD 83 Zone 17 NAD 83 datum.

CH will review the staked top of bank presented on the survey, compare with the topographic information/contours, and adjust the staked top of bank points, as necessary. Where it has been determined that a system is unconfined, a fluvial geomorphological assessment is required.

If the staked slope is deemed stable, CH will update ARL mapping based on the data received within a year.

Additional Notes:

- Under *Ontario Regulation 162/06*, CH regulates a distance of 15 metres from the stable top of bank of major valley systems, and 7.5 metres from the stable top of bank of minor valley systems. Within CH's watershed, there are three major valley systems (Bronte, Grindstone and Sixteen Mile Creeks and all their tributaries), while the remainder of the creek systems within CH's watershed are minor valley systems.
- If the applicant is not the landowner, written permission from the landowner is required prior to the site visit, giving permission for CH to access/stake features on their property.
- Prior to the site visit, the applicable fee and payment will be due to CH.
- Stakings may need to be rescheduled due to inclement weather (e.g. storms, extreme heat or cold, etc.). The staking will need to be rescheduled if staff cannot clearly see the feature(s) of interest on site. Top of bank stakings should occur when the ground is not significantly snow-covered. Where crops or vegetation is thick, stakings may need to occur at a time when leaves/vegetation have fallen and/or crops have been harvested.