



Report
Staff Report
The Corporation of the City of Brampton
6/19/2024

Date: 2024-05-28

Subject: **Beaver Management in Stormwater Ponds and Watercourses (RM 57/2022)**

Contact: Olivia Sparrow, Manager, Stormwater Programs
Environment & Development Engineering Division

Report number: Planning, Bld & Growth Mgt-2024-495

RECOMMENDATIONS:

1. That the report from Olivia Sparrow, Manager, Stormwater Programs Environment & Development Engineering Division to the Committee of Council Meeting of June 19, 2024, re: **Beaver Management in Stormwater Ponds and Watercourses (RM 57/2022)**, be received; and
2. That staff develop standard operating procedures and update guidelines relating to beaver management in stormwater ponds and watercourses.

OVERVIEW:

- **On December 7, 2022, Committee of Council requested staff report on the impact and costs related to beaver population in stormwater ponds. Since this time, staff have consulted with the Province and undertaken best practice research discussed in this report.**
- **Beavers enhance the environment by creating wetlands, reducing erosion, and improving fish habitat. Beaver dams can cause drainage issues in watercourses and stormwater ponds, but these rarely become a high risk to the public, unless flooding threatens critical infrastructure (e.g. roads, railways).**
- **There have been a number of instances where beaver dams have impeded drainage and City staff have resolved these issues as they have arisen.**
- **Consultation with the Ministry of Natural Resources and Forestry, as well as a survey of practices in other municipalities, confirm the best practice**

in beaver management across Ontario is to share your property with beavers. As a City we are looking to coexist with beavers through public education, preventative measures to deter beavers, and only using removal as a last resort in extreme circumstances that present high risk to critical infrastructure such as roads or railways.

- **Sufficient funding is available for the annual cost of beaver management in Brampton. Any additional funding required for additional actions, such as tree replacement or dam removal, will be contemplated through future budget processes.**

BACKGROUND:

Beavers are the largest rodent in North America. They usually live in small lakes, rivers or wetlands but are also found in engineered stormwater ponds in urban areas of Brampton. Beavers build dams to widen and deepen water around their lodges, where they are safe from predators. The dams are constructed with sticks, branches, brushwood, stones, and mud which the beaver collects from the surrounding area. The dams also provide ecosystem services in Brampton's Natural Heritage System by creating new wetlands, reducing erosion, and enhancing fish populations.

Beavers are herbivores (vegetarians) and prefer to eat leaves, bark, twigs, duckweed, roots, and aquatic plants. In the summer they eat more non-woody vegetation like leaves, buds, water vegetation, and underwater roots. In the winter they eat more woody vegetation such as the bark of trees and shrubs. In preparation for the winter, beavers will store the woody vegetation in an underwater cache near their lodge. Generally, beavers prefer deciduous over coniferous trees. Coniferous trees are used only to avoid starvation; however, beavers are unable to rely on conifers alone and will force the beaver to relocate. Preferred food is aspen, poplar, birch, sugar maple, alder, and willow, especially willow live stakes. Conifers, red maples, Sitka spruce, ninebark, elderberry, and twinberry are less desirable.

In recent years, the City has dealt with instances of beavers building dams across the outlets of stormwater ponds and watercourses, which impedes efficient operation of the facility and can cause high water levels and flooding. These incidents are typically resolved by the installation of baffler pipes or cages to drain the excess water. Removal of the dam as well as removal of the beaver is only undertaken as a last resort. Staff from Animal Services, Road Operations, Parks Maintenance & Forestry, and Environment & Development Engineering are involved in responding to these incidents of beaver activity.

CURRENT SITUATION:

On December 7, 2022, Committee of Council requested staff report on the impact and costs related to beaver population in stormwater ponds. The following sections describe

the impact of beavers on ponds and watercourses, best practices for beaver management, and the cost of these impacts across multiple Departments.

Impacts of Beavers

Beavers provide irreplaceable ecosystem services in Brampton's Natural Heritage System by creating new wetlands, reducing erosion, and enhancing fish populations.

Through their endeavors to collect food and fortify their homes, beavers can inadvertently become a nuisance in urban and rural areas. Their dams can cause drainage issues along watercourses and in stormwater ponds with a variable degree of risk. These drainage issues often have minimal risk to public safety and instead cause service disruptions, such as temporarily flooding trails near watercourses. High risk to public safety is rare and occurs when ponding water behind the dam threatens critical infrastructure (e.g. roads, railways) due to potential flooding or washout. Beavers can also harvest significant numbers of trees and some tree damage can become a safety hazard near public areas.

In general, these issues are increasing with the growing beaver population across Peel Region and with continued development, leading to more residents living adjacent to the Natural Heritage System. However, the more frequent issues reported do not outweigh the ecosystem benefits of beavers.

Regulatory Framework

The *Species at Risk Act* and the *Endangered Species Act* in Ontario limits the steps you can take to remove beaver dams where dam removal could threaten protected habitat. For example, many watercourses throughout Brampton contain Redside Dace or habitat for this endangered fish. Removing beaver dams in these areas is only permissible between July 1st to September 15th unless the dam is threatening critical infrastructure, such as roads and railways.

The *Fish and Wildlife Conservation Act (FWCA)* allows for a property owner to protect their property from wildlife causing (or about to cause) damage. A landowner or their agent may harass, capture or kill wildlife that is causing damage to the property. Relocation of wildlife is limited to 1 kilometre from point of capture, in similar habitat, and landowner permission must be obtained prior to relocating an animal onto private property. However, the Ministry does not promote the relocation of beavers. These animals are highly territorial and relocation is generally a more inhumane option than destruction, as moving to an area that is already inhabited by beavers, the resident animals will either drive the intruder out which will result in that animal having to search for a new location (risk vehicle collision, predation, etc.) or the residents could potentially kill the intruding animal. Removing beaver is allowed under the FWCA from October 25th to April 30th the following year.

Best Practices

Overall there are two choices for dealing with beavers: share your property with the beavers or remove them. Consultation with the Ministry of Natural Resources and Forestry, as well as a survey of practices in other municipalities, confirmed that the best practice in beaver management across Ontario is to share your property with beavers. This practice has evolved from a regulatory framework in Ontario which limits the steps you can take to remove beavers and dams in order to protect endangered species such as Redside Dace. Removing beaver dams in these areas is prohibited at most times of the year because it would release sediment into the creeks and rivers, which would clog fish gills, kill fish, reduce visibility for fish to catch prey, and bury or kill fish eggs laid on the bottom of the watercourse. Whenever dams are removed in these sensitive habitats, they must be removed gradually to prevent release of sediment. City staff and contractors currently follow the [Code of Practice for Beaver Dam Breaching and Removal](#) (Fisheries and Oceans Canada, 2022). Furthermore, removing beaver dams has a domino effect in watercourses after sediment behind the dams is released downstream. Those released sediments can create new blockages and associated issues within Brampton or in our neighbouring municipalities.

In addition, removing beaver to address drainage issues is considered futile because a new beaver will quickly re-inhabit these areas and continue causing similar issues in the same area. This cycle continues until the conditions in an area that originally attracted the beaver, such as types of trees, are exhausted and the beaver moves onto another area. Beaver populations are not controlled by the City, neighbouring municipalities, or the Ministry of Natural Resources and Forestry. Beaver removal is allowed under the *Fish and Wildlife Conservation Act* from October 25th to April 30th, however relocation is limited to a 1 km radius and is discouraged by the MNR because it is more inhumane than destruction. As such, beaver “removal” in Brampton refers to trapping and destruction of the beaver.

As a City we are looking to coexist with beavers through public education, preventative measures to deter beaver activity, and only using removal as a last resort in extreme circumstances. Coexistence measures comply with applicable regulations, align with best practices, and mitigate costs. They are implemented through a collaborative effort between City staff from Environment & Development Engineering, Parks Planning & Open Space, Parks Maintenance & Forestry, Animal Services, and Public Works & Engineering.

Current beaver management practices used by the City of Brampton on City-owned land include the following:

- Baffle installation and replacement to drain water behind beaver dams without removing the dams;
- Beaver protection cage installation and replacement at culverts and stormwater pond outlets to prevent beavers from blocking these pipes and outlets;
- Maintain inventory of bafflers and wetlands in the City’s [stormwater asset database](#);
- Inspect bafflers annually and maintain as needed;

- Monitor and map areas of current and historic beaver activity (50 locations so far);
- Strategic tree species selection for new ponds, Natural Heritage Systems and restoration projects;
- Occasional tree removal, replacement and wrapping;
- Public education;
- Dam and lodge removal; and
- Beaver removal

City staff look to continually improve these practices based on the latest guidelines and lessons learned. Upcoming improvements to beaver management in Brampton include the following:

- Review and update engineering standards and design details where possible to deter beavers.
- Review and update the City's [Landscape Development Guidelines \(2019\)](#) so that tree and shrub guidance for Natural Heritage Systems (Section 1.3) and stormwater ponds (Section 1.4.2) helps deter beaver activity. Apply these guidelines in new subdivisions as well as in restoration plantings undertaken by the City or partners within City-owned stormwater ponds and the Natural Heritage System.
- Develop and periodically update a Standard Operating Procedure (SOP) for beaver management in watercourses and ponds.
- Develop a Wildlife Management Strategy to guide internal and external stakeholders on wildlife management best practices.
- Retain a contractor for dam removal in high risk circumstances that is familiar with applicable regulations, guidelines, and best practices.
- When new or renewed beaver activity concerns are reported, staff will attend each area to assess the concerns and put in place an action plan in accordance with applicable SOPs and in coordination with the Tree Protection Program to mitigate damage or safety concerns. Action plans may include monitoring the condition of the area and communicating temporary service disruptions to the public.
- If there is a high risk to public safety or critical infrastructure in the specified area:
 - Animal Services will work with a licensed trapper for trapping and destruction of the beavers in the area.
 - Public Works will coordinate staff, contractors and Regulators to reduce flood risk in compliance with applicable regulations.
 - Forestry will remove high risk tree hazards.

Cost of Current Best Practices

The 2024 Operating and Capital Budget accounts for the following costs of beaver management in Brampton:

- Inspections and site visits - \$10,000 per year (staff time)
- Baffle installation/replacement and beaver removal - \$35,000 per year
- Tree wrapping - \$3,000 per year

The City only sparsely replaces trees lost due to beaver activity because the majority of this activity is within valley lands and around ponds where typical tree replacements do not occur. The approximate cost to remove and replace a tree is \$1000 per tree.

In high flood risk circumstances, Public Works & Engineering would coordinate removal of the dam in compliance with applicable regulations and following best practices for dam removal. At present, staff do not have cost estimates for this work as we currently avoid the need for it through deterrents.

CORPORATE IMPLICATIONS:

Financial Implications:

Sufficient funding is available for the annual cost of beaver management in Brampton. Any additional funding required, will be contemplated through forthcoming budget processes.

STRATEGIC FOCUS AREA:

The City of Brampton's beaver management practices are in alignment with the strategic focus areas for Health & Well-being and Environmental Resilience & Sustainability. These practices enable residents to co-exist with beavers while protecting them from extreme flood risks.

CONCLUSION:

Beavers enhance the environment by creating wetlands, reducing erosion, and improving fish habitat. Beaver dams can cause drainage issues in watercourses and stormwater ponds but these rarely become a high risk to the public, unless flooding threatens critical infrastructure (e.g. roads, railways).

The City of Brampton deters beaver activity in stormwater ponds and watercourses using multiple best practices which are continually improving based on evolving guidelines and lessons learned. Beavers and their dams are only removed as a last resort where critical infrastructure, such as roads or railways, are at a high risk of flooding or washout.

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