Healthy Shorelines Planting Guide

For compliance with the Growth Plan for the Greater Golden Horseshoe S.4.2.4

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Environmental Stewardship Starts With You

Otonabee CONSERVATION

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1.0 The Importance of a Healthy Shoreline

Your shoreline is a transitional area between land and water. A healthy or natural shoreline should consist of a vegetated upland, riparian and littoral zones, characterized by native, deep-rooted plants, snags, rocks, and woody debris. Limiting human disturbances like lawns and non-natural beaches, or hardened surfaces like accessory structures, armour stone walls, and asphalt parking or boat launches to 10 to 25% of your total shoreline area is recommended. This means leaving the remaining 75% in a natural state to reap the benefits of a healthy shoreline and to improve the ecological health of our lakes.

Goals for a naturalized shoreline:

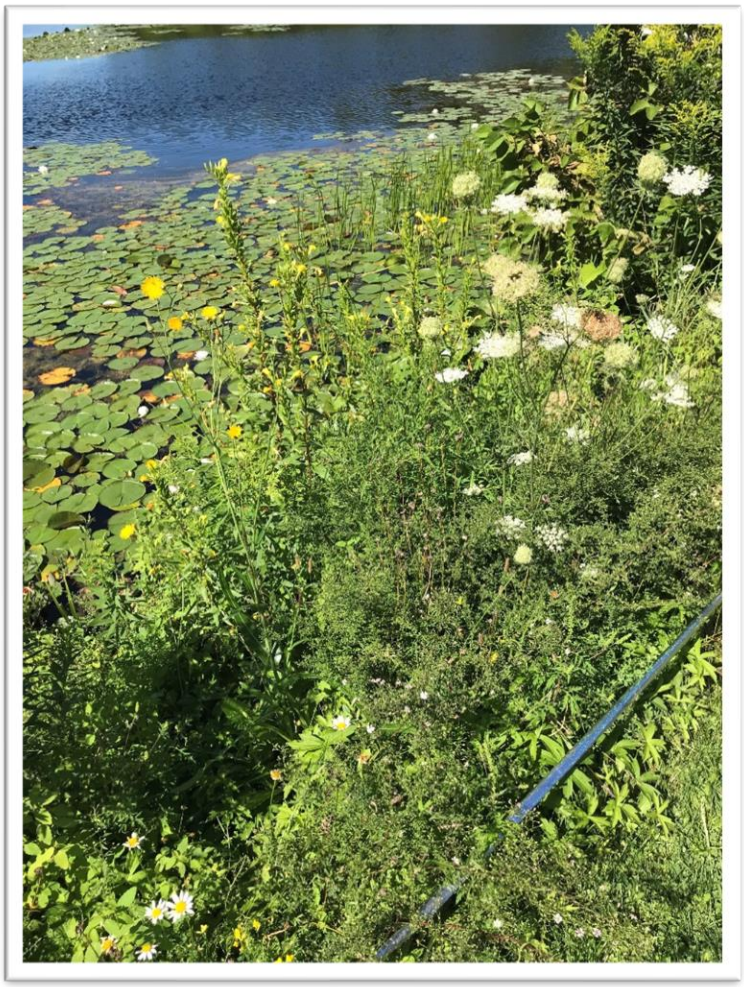
- ✓ Stabilize shoreline and stream banks with native species to increase shade and encourage aquatic plants;
- ✓ Improve ecological function and resilience to climate change;
- ✓ Enrich habitat for native birds, butterflies, mammals, and to increase species diversity;
- ✓ Help to link and connect areas for future habitat enrichment

The value of a natural shoreline includes the following services, which contribute to the 'health' of the lake and overall enjoyment of your property:

1. **Preserves Water Quality**: Shoreline plants and soil slow or trap runoff from the property or non-permeable surfaces, reducing the number of nutrients and pollutants entering the water. Plants also provide shade, which cools the littoral zone supporting the thermal regime of the lake and your dwelling, which reduces operating costs.
2. **Slows Erosion**: Shoreline plant roots stabilize loose soil and sediment, reducing the chances of the shoreline washing away from waves, ice jams, and changing water levels.
3. **Creates Habitats**: 70% of land-based wildlife and 90% of aquatic life depend on shorelines for parts of their survival.
4. **Reduces the Impacts from Flooding**: Shoreline plants can intercept precipitation moving over non-permeable surfaces (runoff).
5. **Maintains Property Value**: Shoreline plants can protect against unappealing erosion damage. They can help maintain the natural aspect of the shoreline.

When landowners inadvertently interfere with shoreline services by clearing native vegetation for lawns, boathouses, rock walls or rip raps, dredging, and others similar activities, landowners are contributing to poor lake health by accelerating the transfer of nutrients into the lake.

These interact with chemical, physical and biological cycles within the lake resulting in increased plant and algae growth, sedimentation, change in water clarity/quality, and a reduction of useable oxygen for fish. Provincial and regulatory agencies recognize the importance of a healthy shoreline in protecting against poor lake health.



Policies such as A Place to Grow - Growth Plan for the Greater Horseshoe (policy 4.2.3.1 e), 4.2.4.1, 4.2.4.2, 4.2.4.3, & 4.2.4.5) and the Planning Act Provincial Policy Statement (policy 2.1.4 a), 2.1.5, 2.1.6, 2.1.8, and 2.2.1) were developed to protect, improve, or restore biodiversity and ecosystem function, slow down the aging process of lakes, avoid natural hazards, AND mitigate against climate hazard risks from intense storms, wind, rain, freeze/thaw, and others.

When you apply for a planning act application with your municipality, you are required to adhere to the above policies. In order to assist you in doing this, Otonabee Conservation is providing this document to assist you in becoming a healthy shorelines champion and to ensure your project meets provincial requirements.

Here's how you can help minimize the impact of development to your shoreline:

✓ **Maintain or replant natural vegetation along the shoreline.**

- Shorelines erode for various reasons: flow, waves, ice (freeze and thaw), and human alteration. When vegetation is removed and lawns mowed to the water's

edge, the stabilizing effects of root systems is lost, which exposes the land to the natural processes of erosion and shorelines begin to wash away.

- Minimize tree cutting (<10%) by creating viewing corridors and avoid cutting or trimming trees during the breeding season (no removals between April 1 and August 31). Trees provide shade which mitigates against climate hazards.
- Leave the vegetation, rocks and wood in the water – this is habitat for fish and wildlife protected under a variety of provincial regulations.
- Enhance your shoreline with a robust planting plan of native species or seed mixes (see Section 2 below).

✓ **Naturalize your existing lawn.**

- Lawns are typically monocultures or non-native species mix (low biodiversity), requiring lots of water, may introduce weeds to your property or contribute nutrients to the lake through fertilization. The root systems of a lawn are also short and therefore do not bind soil, which encourages erosion.
- Replacing short grass with native grasses, and wildflowers. Moving the lawn further back from the shoreline and planting shrub borders along the edges will reduce the impact on the shoreline. Finally, leaving sections of the lawn to grow higher will encourage deeper root systems reducing the effects of erosion.

✓ **Avoid hardening your shoreline.**

- Natural erosion forces cannot be prevented with sloped rock or stone walls, these hardened solutions are temporary and may deflect the problem elsewhere along your shoreline, or towards your neighbour's property.
- Bioengineer erosion prone areas with natural materials like river rock, tree trunks, plantings, biodegradable coir logs, brush mats, live stakes from water-loving shrubs like dogwoods and willows, and other site-specific techniques.[JG2][JG3]

✓ **Limit impervious surfaces on your property.**

- Surface drainage runoff from rain and snowmelt carry pollutants or nutrients from your property into the lake. This contributes to eutrophication of the lake and can contaminate/impact the quality of your drinking water.
- Lakeshore properties that are disturbed from hardened development, or naturally steep, will contribute more runoff to the lake, which increases the risk of shoreline erosion. Retaining the natural vegetation and reducing paved surfaces is the best way to reduce runoff. The natural shoreline vegetation and soil will help filter the runoff before it enters the lake. [JG4]

✓ **Choose the right location for shoreline structures.**

- Shoreline structures like patios, docks and boathouses should be placed in an area that will have the least impact on the shoreline habitat and not limit your enjoyment of the lake. Keep in mind that any structures should remain well within your property boundary to avoid conflicts with your shoreline neighbours. Always consult with your municipal zoning requirements, local conservation authority, and other agencies (TSW, MNRF...) prior to construction.
- Choose materials that minimize risk from climate hazards and your ecological footprint on the lake. Good material choices like untreated hemlock or cedar wood have natural preservatives that can protect them from rotting and minimize chemical pollutants leaching into the lake.
- Install sediment and erosion controls during construction.

2.0 Planning for Planting [JG5]

2.1 Assessing your Shoreline

- Determine how do you use your shoreline (ex. Where do you access the water?)
- Locate the high-water lines and identify areas with erosion issues
- Determine the soil moisture and access to sunlight
- Look at what is already growing on your shoreline (this will help with choosing the right companion plants)

(It is always recommended to avoid planting near or within the vicinity of a septic system)

2.2 How to Plan your Planting

1. Choose access routes to the water
2. Mark planting spots
3. Consider different plants for different areas (ex. Low growing plants to maintain the view of the water)
4. Consider planting in existing sod

2.3 Choosing the Right Species

- Select native plants that are right for your soil and site condition (this is dependent on access to sunlight, moisture and soil composition)
- Choose flowering plants for the most wildlife benefits
- Select the number of plants
- Shrubs can be planted 1 m part, trees can be planted 2.5 m apart, and flowers can be planted 20 cm apart

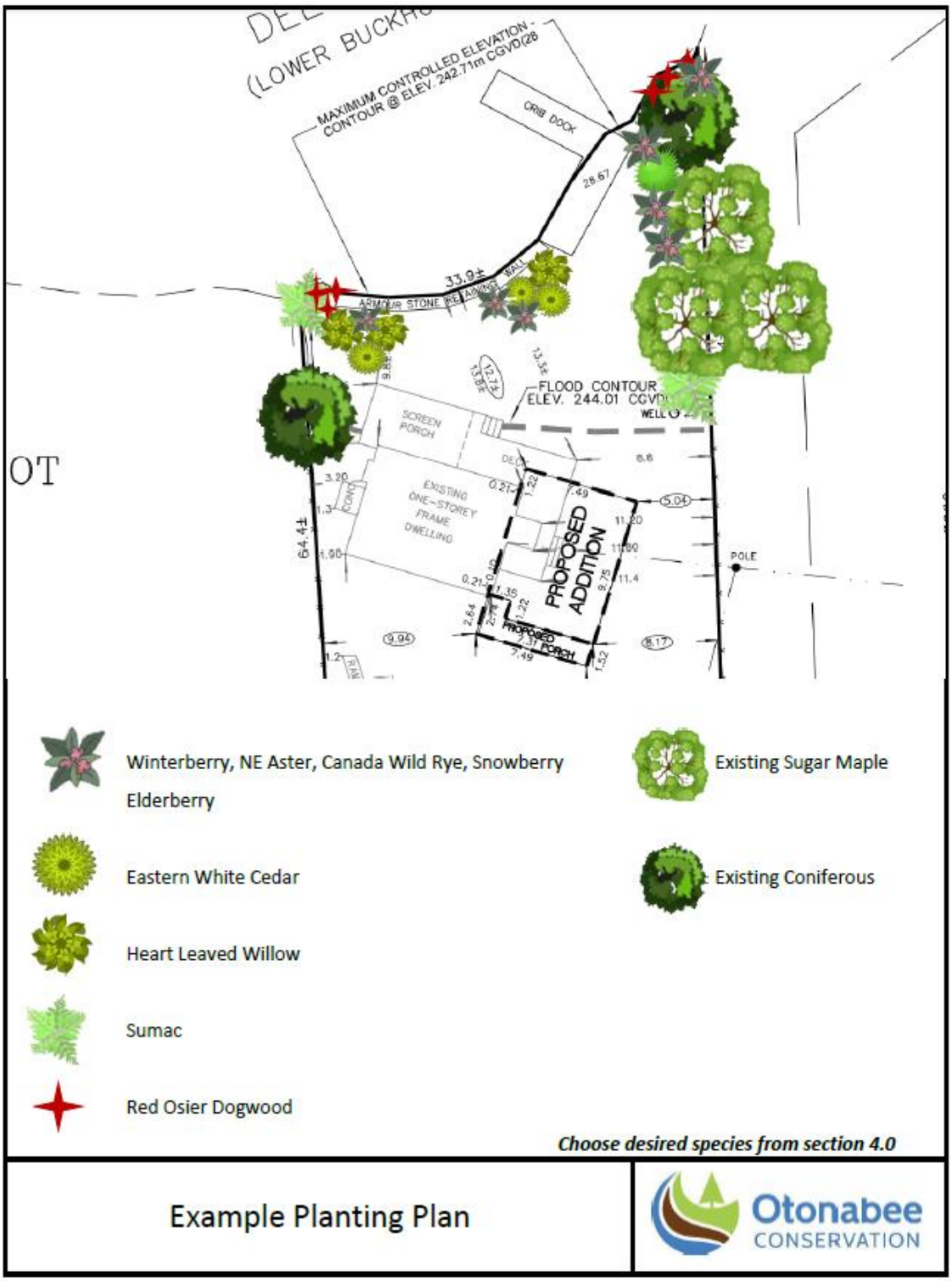
2.4 Planting: Rooted Plants

1. Dig a hole that is same depth as the rootball, but it should be 2 times wider for the roots to expand
2. Plant trees and shrubs close together, in groups of 3 to 5
3. Plant trees, shrubs, grass and wildflowers above the root collar
4. Following planting compact the soil around the plant to remove air pockets [JG6]

2.5 Planting: Live Staking

1. Stakes should be 2-4cm in diameter and 1 m in length
2. Cut at the bottom of the stake to indicate the correct side of the stake to plant
3. Lightly trim off the branches, leaving the single main branch
4. Prior to planting make sure to soke the cuttings for 7-10 days to allow root development
5. Insert three-quarters of the stake into the ground
6. Two stakes should be planted for each square meter
7. Make pilot holes before inserting the stakes to break up compacted soil

3.0 Example Planting Plan



4.0 Native Species List

Speckled Alder

Grows best in full sun to very light shade, moist, nutrient-rich soil.
Strong root system great for disturbed site rehabilitation, providing streambank stability and erosion control

Downy Arrow Wood

Prefers shade to partial shade, well drained less-fertile soils without excessive moisture.
Drought tolerant and cold hardy

Bearberry

A ground-hugging shrub that grows well in sun to partial shade.
Does best in rocky or sandy acidic soil

Buttonbush

Grows best in full sun to partial shade and soil that is constantly moist or even wet.
Great for marshy areas and damp shorelines

Red Chokecherry

Loves full sun to partial shade.
Tolerates a wide range of soils, from boggy to dry.
Perfect along ponds and streams

Chokecherry

Performs best in full sun to partial shade.
Tolerates high pH and clay soils.
Very resilient under variable growing conditions

Highbush Cranberry Grows best in moist, well-drained soil and full sun but tolerates a wide range of soil conditions. A low maintenance shrub that is attractive to birds and butterflies			
Alternate Leaf Dogwood Tolerates full sun but does best in partial shade. Best in acidic, well-drained soil with medium moisture, but tolerates poor soils and clay			
Black Chokeberry A full sun to part shade lover. Grows in many soil types from boggy and wet to dry and sandy. Drought, salt and pollution tolerant species perfect for raingardens or near pond and streams			

Red Osier Dogwood Performs best in full sun to part shade. Grows best in moist, well drained soil. Easy to grow and care for. Makes great shrub boarders along ponds and streams	 		
Silky Dogwood Full sun to part shade but will tolerate close to full shade. Liked medium to wet, slightly acidic, well drained soils. Great shrub for rain	 		
Common Elderberry Performs best in full sun to partial shade. Likes medium to wet, well drained soils but is also very drought tolerant.	 		

Red Elder Likes full sun to part shade and medium to wet, well drained soils. Great for moist woodlands and stream banks			
Meadowsweet Loves full sun but will tolerate part shade. Grows in acidic, medium to wet soils and can survive temporary standing water Great for bogs, streams, ponds or water gardens			
Grey Dogwood Prefers full sun to part shade and medium wll drained soils but is tolerant of heavy shade and dry to wet soil conditions. Great choice for shrub boarders, rain gardens, streams and ponds.			

Nannyberry Grows in full sun and part shade with medium moisture, well drained soils. Very adaptable to a wide range of soil textures and pH and is moderately heat and drought tolerant. This species performs well in urban landscapes			
Ninebark Blooms best in full sun but appreciated partial shade in hot summers. Likes slightly acidic, well drained soil with medium moisture content. A fantastic species to plant on bank and slopes for erosion control			

Potentilla Likes full sun or part shade. Needs well drained soils but is not particular about soil types. Will tolerate drought, salt, and poor soil conditions.			
Black Raspberry Likes sheltered, sunny locations for best yield. Grows best in rich organic, slightly acidic soils that are moist but well drained. This species dislikes waterlogged and shallow, chalky soils.			
Saskatoon Loves full sun or partial shade, this plant grows well in moist well drained, acidic soils . It is tolerant of harsh dry or alkaline conditions and drought. Makes an excellent windbreak when planted close together and can be used for erosion control			

Snowberry Loves full sun to partial but will tolerate full shade. Tolerates a range of soil conditions including poor and dry soils and clay. This species is drought and pollution tolerant and is excellent in open woodland areas	 		
Fragrant Sumac Grow the best in full sun to part shade. extremely adaptable to varied soils, tolerating dry rocky and clay soils provided they are well drained. Drought and salt tolerant once established, this plant is great as ground cover or for stabilizing embarkment's.	 		

Staghorn Sumac Likes full sun or part shade, and moist well drained soils but is tolerant of dry and rocky soils provided they are well drained. Drought tolerant and fast growing, this is a fantastic option for erosion control on	 		
Sweetgale Grows best in full sun to partial shade and medium to wet loamy soils. this water loving shrub grows well in wet, rocky locations and boggy areas and is perfect for edging streams and ponds	 		
Wintergreen Loves full to partial shade. This plant grows best in rich organic, acidic soils that are moist but well drained. Perfect for banks and slopes as and also does well in urban and container gardens	 		

Winterberry Prefers full sun or part shade and moist to wet, well drained acidic soils. Tolerates poorly drained soils and boggy conditions well but does poorly in neutral or alkaline soil. Excellent for along ponds and streams		
Various Willow Species Most willows like full sun to partial shade and thrive in damp boggy soils. They are tolerant of both flooding and drought and their extensive root system makes them ideal for preventing or remediating soil erosion.	 	 

Bunchberry Grows well in conditions from sun to shade, moist acidic soils makes an excellent ground cover in cool, damp, places			
Blackeyed Susan Thrives in full sun with dry to moist, well drained soils. Drought tolerant but will not flower as well without irrigation. Food for gardens, prairies and meadows			
Butterfly Milkweed Loves full sun and well drained, medium moisture soils. Tolerates poor quality, dry soils. Perfect for pollinator gardens as it attracts bees, butterflies and hummingbirds			

Cardinal Flower

Performs best in medium to wet soils with full sun to partial shade. Will tolerate damp soil with poor drainage and can grow in water up to 3in (7cm) deep.
Great addition to pollinator gardens, bog gardens, rain gardens and near ponds and streams

Joe Pye Weed

Thrives with full sun to part shade in fertile moist to we soils.
Excellent choice for pollinator gardens and rain gardens

Swamp Milkweed

Likes full sun and medium to wet soils but will tolerate any well-drained soil.
Great addition to a pollinator garden as milkweeds are critical for monarch butterflies. Also good for rain and bog gardens and streams

New England Aster Prefers full sun and moist, well drained soils. Needs good air circulations to prevent mildew. Very attractive to pollinators making them excellent for pollinator gardens		
White Beardtongue Grows well with sun or part shade in well drained sandy or gravelly soils. Drought tolerant and dislikes damp conditions. Attracts many beneficial pollinators making it good for pollinator gardens		
Swamp Rose Likes full sun to light shade in acidic, organic, wet boggy soil. Tolerant of seasonal flooding, making it a great addition to bog gardens and rain gardens.