Overall Landscape Strategy with Water Turbidity/Pollution Gradient
1:1000

settle

A natural recluse within the urbanscape of upper Cambridge where pollutants have the chance to settle – and you can, too.

The Grand River is notorious for being one of the most polluted waterways in Canada. Its sources are mostly indirect – a slurry of agricultural pesticides, heavy metals from industrial activity, road salts, chemicals from gasoline – which suggests a profound relationship between the urbanscapes we reside in, the natural public spaces we retreat to, and ultimately, the water we use and interact with everyday. Stormwater is the vessel through which pollution enters our water systems, putting strain on our infrastructure and threatening the health of wildlife and humans alike. Softscaping provides a solution to stormwater management that allows the land to bear some of this burden, using natural elements to filter water and forming spaces of relaxation, observation, and play that exposes the intersection between human infrastructure and landscape to the public eye.

Native Plants Used, Aquatic to Mesic

Cattail
A marshy, halophytic plant that absorbs phosphorus and mercury and excess salts out of the environment.

Fringe Sedge
A grass-like plant that aids in preventing soil erosion and enjoys shallow water.

Spotted Joe-Pye
A pollinator species that grows in soils that are saturated for most of the year.

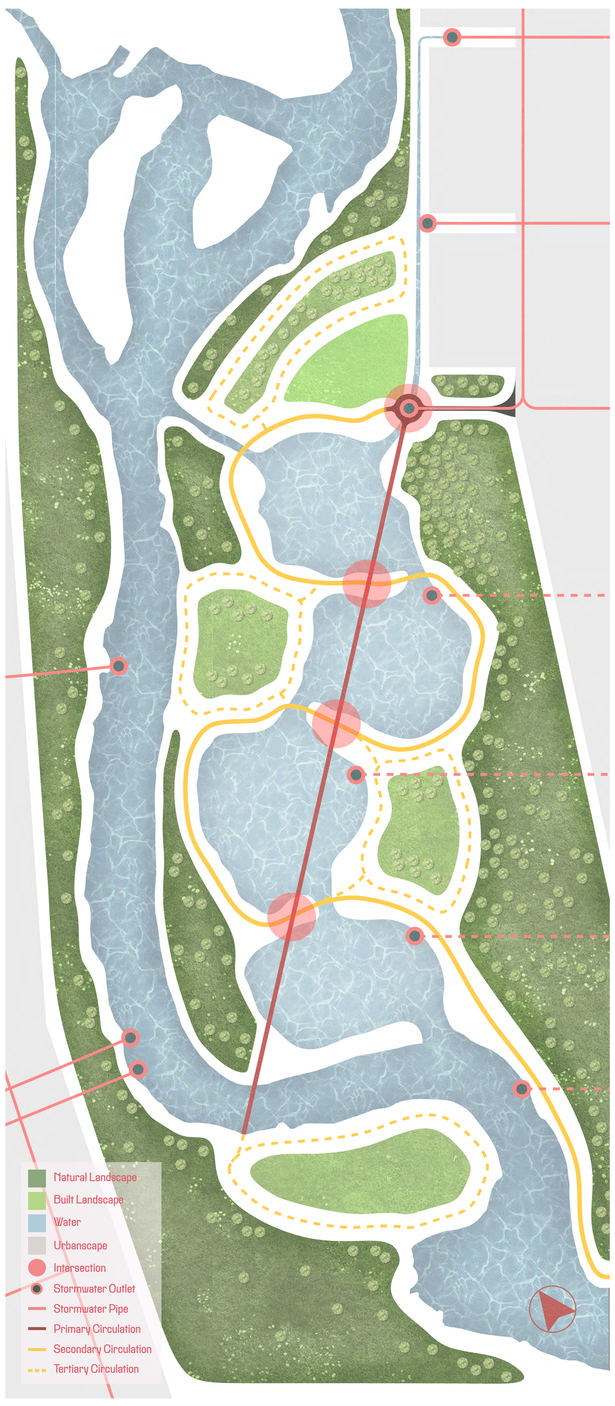
Marsh Marigold
A pollinator species that grows in soils that are sometimes saturated, but dry in the summer.

Willow and Poplar
These trees aid in phytoremediation through the absorption of nitrogen and phosphorus.

Butterfly Milkweed
A pollinator that attracts butterflies, hummingbirds, and grows during the spring and early summertime.

Black-Eyed Susan
A perennial pollinator with a long flowering period, lasting until the fall.

Landscaping and Circulation Programmatic Plan



Cambridge Stormwater Drainage System
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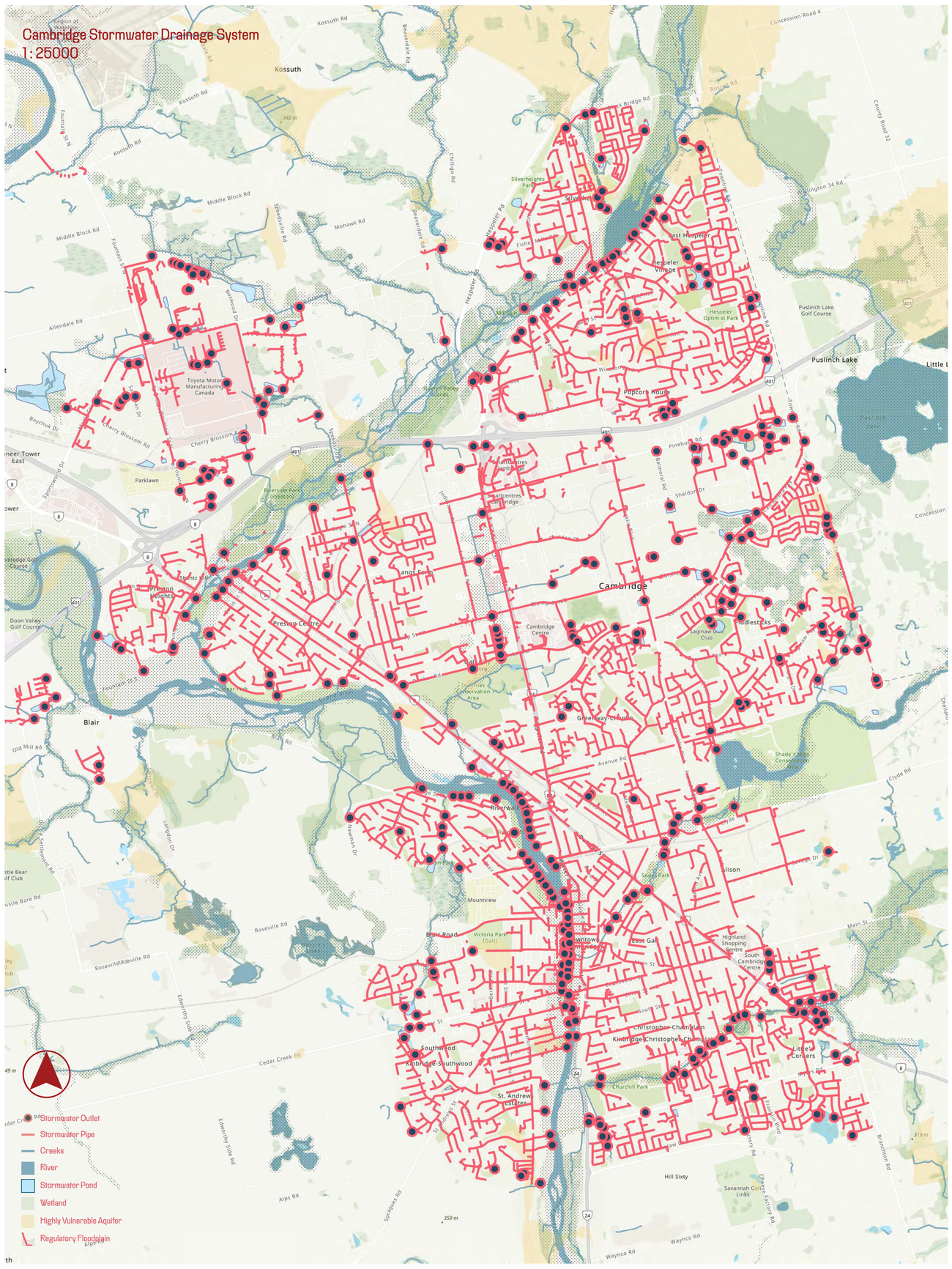
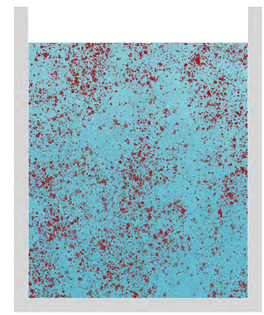


In order to bridge the gap between water infrastructure and the landscape it caters to, this intervention seeks to directly address the pollution that flows out of the surrounding storm-water pipes and the existing pollution in the Grand River. These two separate streams of water meet before merging into a series of four filteration ponds, separated to mimic the stages of a stormwater treatment plant at a rudimentary level.

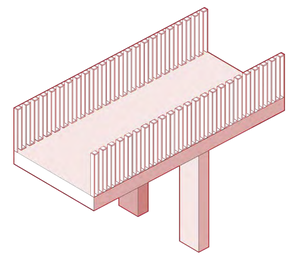
Step 1: Coagulation

The topography is shaped so that the first filtration pond is the deepest, where it comes in closer contact with the calcium-rich bedrock below.



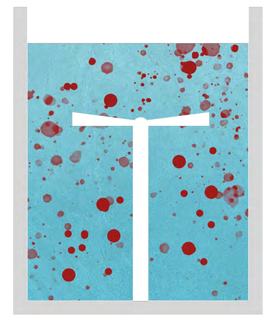
Associated Human Infrastructure

The bridge, which serves as the primary circulation on this site, allows visitors to intimately engage with the filtration ponds. The corten steel railings weather as water and rain come into contact with it.



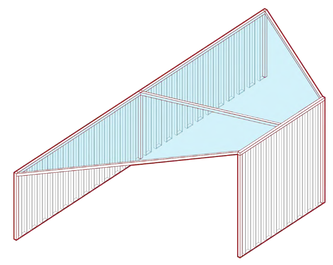
Step 2: Flocculation

Calcium has a positive charge and bonds to nitrogen and phosphorus, forming clumps with the help of a rotating mixer that agitates the water.



Associated Human Infrastructure

Rainwater pavilions located on the two observation hills have sloped PVC roofs that facilitate the movement of fresh rainwater into the filtration ponds, and allow visitors to view it from the inside.

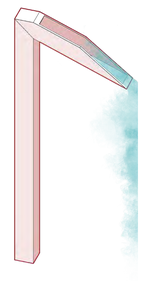


Step 3: Sedimentation

Heavy particles of sediment are formed and sink to the bottom of the pool, allowing the clean(er) water on top to flow out into the Grand River.

Associated Human Infrastructure

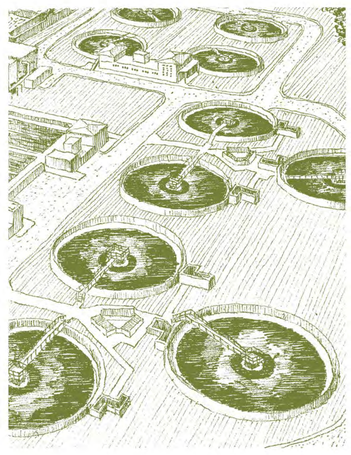
Aeration tubes bring water from the riverbed to the surface, encouraging movement and incorporating oxygen in order to prevent algae blooms and the accumulation of pollutants. They become a feature at the play area, allowing visitors to enjoy the water they just observed being cleaned.



Vignettes of Existing Stormwater Infrastructure

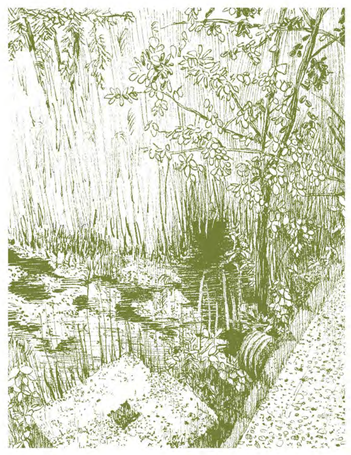
The Dam

The Riverside Dam is currently in a state of deterioration, and the questio of whether or not its restoration would be beneficial to the local watershed requires an examination of how it has altered the river's ecosystem overtime. It originally generated electricity and was built to counteract extreme flooding and droughts. Now, we see a disruption in sediment flow and fish migration upstream that ends up counteracting the original [and even outdated] benefits of the dam.



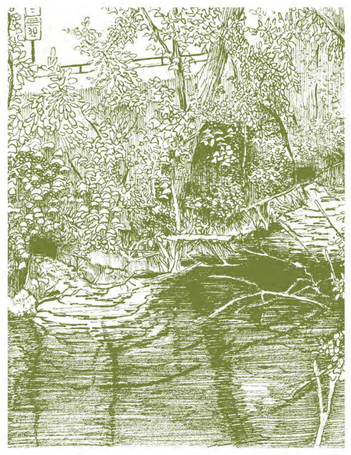
The Treatment Plant

Several treatment plants in the Waterloo Region filter household wastewater so that it can be discharged into the Grand River, representing a portion of the water cycle that is heavily infrastructure-reliant. This process moves from sorting out large debris to ultraviolet sanitization; the circular tanks pictured are clarifiers that allow organic waste to settle at the bottom, leaving water on top ready to be taken for further sanitization.



The Retention Pond

Stormwater retention ponds are small bodies of water that may permanently contain water, but have the capacity to take on overflow during stormwater surges and period of flooding. Because these ponds are still, they are often seen surrounded by bugs, overgrown plants, and covered in algae, rendering the water dangerous for human activity. Thus, barriers are usually constructed around these ponds for protection.



The Stormwater Drain

Treated wastewater and stormwater flow out of their respective drains located along the Speed River, or an auxiliary creek as pictured here. Water treatment only filters out certain contaminants. Viruses, pharmaceutical products, and industrial chemicals remain in the water cycle, and their volumes in the Grand River can reveal a plethora of information about our population.