

# Crosby Lakes and Hill Ditch Lake and Stream Restoration Project

## Post-project Fact Sheet

Fall 2014

Toledo Botanical Garden (TBG) is a 66-acre public garden visited by more than 180,000 people annually. It is located in Toledo, Ohio in the Ottawa River watershed within the Maumee Area of Concern. Hill Ditch is a perennial stream that flows west to east through the center of TBG.

Crosby Lakes were created through the installation of two dams in 1988. In just over 20 years, the lakes accumulated sediment turning much of the pond areas into shallow pools lacking aquatic habitat, diversity and general health.

TBG applied for and received an Ohio EPA 319(h) Nonpoint Source Pollution Control grant in October 2011 to implement the Crosby Lakes and Hill Ditch Restoration Project. The objectives were to:

- **Improve** the biological & chemical **water quality**
- **Restore a natural stream channel**
- **Expand** and/or enhance **wetlands**
- **Enhance** portions of **Crosby Lake**
- **Create a sustainable system**

The objectives would need to be accomplished through a project that would:

- ✓ **Educate the public** on sustainable natural ecosystems
- ✓ Provide a place where **people can interact** directly with a high-quality natural stream, wetlands, and a rejuvenated Crosby Lake
- ✓ **Adhere to the TBG Master Plan**

### The Big Picture

This restoration project included the removal of the two dams to allow for the natural free flow of water through Hill Ditch. Removal of the dams meant that fish would again move throughout the watershed without being blocked by barriers. With this removal, fish can now move from Lake Erie through the Ottawa River, into Hill Ditch and further upstream to spawn in even smaller tributaries. To restore Hill Ditch to a free flowing stream it had to be separated from the man-made Crosby Lakes. The shallow areas upstream of the wooden bridge were a part of the old smaller lake. These areas were restored to streamside wetlands and now provide storage for floodwaters during large storm events. In fact, the restoration work at TBG serves to lower the 100 year flood elevation upstream, a benefit to the community and environment. The new design provides many new opportunities and vistas for visitors in addition to the environmental benefits.



# Crosby Lakes and Hill Ditch

## Lake and Stream Restoration Project

### Key Features

The renovation and restoration of Hill Ditch and Crosby Lakes was undertaken in the Fall/Winter of 2012/13, so as to minimally impact the use of the gardens. The restoration work included several key features to enhance the Garden and increase access to the water while improving habitat and water quality.



- **Wetlands** [🌸] - Upstream of the Formal Garden and wooden bridge the smaller Crosby Lake area has been restored to wetlands with a stream running through them. The wetlands provide opportunities for rare species of plants and help to store excess storm water. This area can be viewed from a series of sandstone boulders that serve as access and observation for both the wetland and stream.
- **Channel Bank Protection** [💎] – Upstream of the wooden bridge and in front of the Formal Garden are a series of boulders that were placed to create a new stream bank. This narrows the stream to a more natural size; helping to restore natural stream function. The area between the new bank and Formal Garden serve as a mini wetland, visually softening the steel sheet-pile wall, providing an area for wetland flowers and plants and providing more flood water storage area. This area can also help to remove suspended sediment in floodwaters
- **Bendway Weirs** [★] – Along with the channel bank protection and throughout the stream you may see either large single stones jutting out in the water like fingers or further downstream similar objects are visible but composed of multiple smaller stone. These features help to direct the streams flow towards the center of the channel to reduce bank erosion. The bendway weirs are quite effective, though barely noticeable in most cases. Their effects can easily be seen even after a small storm.
- **Rock Riffles** [🌊] - All rivers, streams, and ditches flow downhill, but this change in elevation can be hard to see, especially in northwest Ohio. Once the dams were removed, the change in elevation had to be mediated to prevent erosion. Three rock riffles were built to help ease the elevation change downstream. The riffles are located roughly in the positions of the former dams with one in between. The riffles allow fish to easily move up and downstream. This movement was not possible when the dams were in place. The riffles have also added the sound and visual element of moving water to the garden, something many people enjoy.
- **Stone Fish Ledges** [🐟] – These ledges can be seen just downstream of the wooden bridge and rock riffle. The large rocks overhang the water and provide an open space below them. Fish and other aquatic organisms can use these open areas as cover to protect themselves from predators above, such as Great Blue Heron often seen at TBG. Similar to an undercut stream bank in a natural stream, these ledges provide shade and cool water. This undercut bank and rock ledge offer the protection, but don't contribute to soil erosion.
- **Crosby Lake** [🟠] – The larger Crosby Lake was dredged and deepened to it's original designed depths. The eroded banks were re-graded and vegetated to hold soil in place. Much of the lake has shallow areas along the edges where emergent plants such as lotus have been planted.

Samples collected one year after the project are showing biological and habitat improvements. It will take a few years for nature to fully recover from the disturbance of construction, but early results are positive.

### Want to Learn More?

TBG would love to tell you more about this project and/or answer any questions you might have. Contact TBG at 419-536-5566 or visit their website at [www.ToledoGarden.org](http://www.ToledoGarden.org).