

1. Why is green infrastructure needed in the Clifton Springs Historic District?

2. What are the green infrastructure practices and techniques suitable for this area? Where should these practices be implemented?

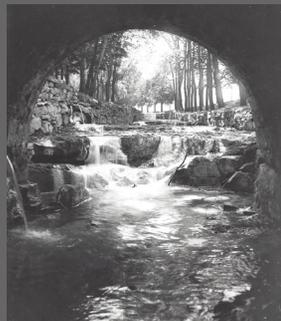
3. What are the advantages of implementing these practices?

4. What are examples of successful green infrastructure practices here and in other historic districts?

History

The Clifton Springs Sanitarium Historic District was officially recognized as a district by the National Register of Historic Places in 1990. The Historic District includes the Sanitarium (1896), Foster Cottage (1865, 1899, 1920 additions), the YMCA (1879), Maxwell Hall (1926), and the Woodbury Building (1927).

Gardening played a critical role as part of the occupational therapy offered at the Sanitarium. Because of such emphasis on gardening, the Sanitarium (first photograph), and Foster Cottage (second photograph) hosted extensive gardens, including a labyrinth, which utilized the precious water from the natural sulfur springs. Extensive roof-top gardens that used to be in this district had provided a myriad of economic and health benefits by reducing stormwater run-off, filtering pollutants, as well as helping cut heating and cooling costs.



Acknowledgements

Support for this project was provided by the Ontario County Water Resource Council's 2013 Special Projects Fund, Hobart & William Smith Colleges, the Isabel Foundation, and the Finger Lakes Institute. This project is a partnership with the Finger Lakes Institute - Community Design Center (FLI-CDC) and the Genesee/Finger Lakes Regional Planning Council (G/FLRPC).

About the FLI-Community Design Center (FLI-CDC)

The Finger Lakes Institute, in partnership with Hobart & William Smith Colleges has created a community design center that strives to provide Finger Lakes communities with innovative, creative, and sustainable design solutions that improve the built environment and quality of life, while protecting the natural environment.

Communities throughout the Finger Lakes region share similar economic, environmental, and social characteristics mainly as a result of the natural assets and history of the region. The current and future state of communities relies on improving quality of life for all citizens, being good stewards of natural resources, and fostering the responsible growth of the built environment. To support these efforts, we offer comprehensive sustainable community development planning and design services to communities throughout the Finger Lakes region.

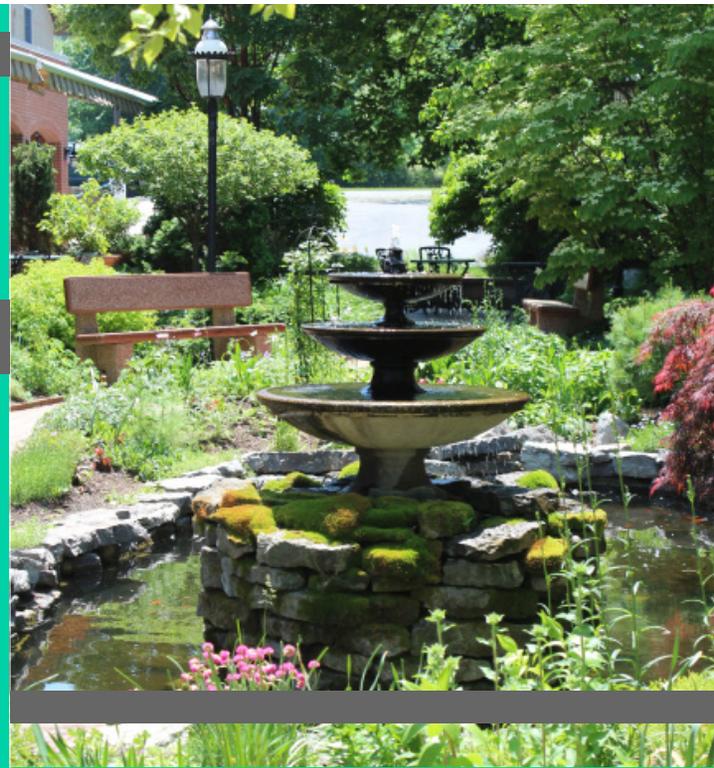
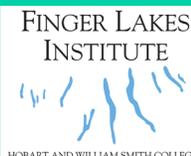
It is our mission to:

- Raise awareness of the benefits and potential of sustainable community development and design for small towns, villages, cities and other entities;
- Encourage preservation and protection of natural resources and the built environment;
- Facilitate regional planning and collaboration among communities, businesses, non-profits, higher education institutions, and other entities;
- Foster community resilience by providing an active resource center for holistic community planning and design and disseminating our expertise nationally.

Please contact us at fli@hws.edu for more information.

About this Project

The primary goal of Green Infrastructure for Historic Districts is to provide assistance to municipalities and residents who wish to incorporate the concepts and practices of green infrastructure into their structures while maintaining the historic integrity of the individual buildings and the overall character of their community.



How to Grow a Green Community

A Guideline for Stormwater Management

Clifton Springs Sanitarium Historic District

1. In the context of stormwater management, the term **“green infrastructure”** includes a wide array of practices at multiple scales to manage and treat stormwater, maintain and restore natural hydrology and ecological function by infiltration, evapotranspiration, capture and reuse of stormwater, and establishment of natural vegetative features.

As impervious ground cover increases with development, such as roadways, buildings and sidewalks, run-off from rain and snow events increases. As this run-off travels across these surfaces, it collects pollutants and contaminants. With traditional grey infrastructure, it travels to sewers and pipes, and is often deposited untreated into local waterbodies, harming the ecosystem. Green infrastructure provides opportunities to reuse that water, filter it and re-charge the groundwater aquifer, protecting the natural environment. Many green infrastructure practices today actually were common place in the Clifton Springs Sanitarium Historic District in the 19th century, pre-industrialization.

The green infrastructure techniques recommended are intended to improve the absorption of water, reduce risk of flooding, and minimize the spread of pollutants and contaminants. The recommended techniques are meant to blend in with existing infrastructure and also help preserve the historic feel of this area.

2. The **green infrastructure techniques** proposed and recommended for Clifton Springs Sanitarium Historic District include:

Porous Pavement, Storm Water Planters, Rain Barrels, Rain Gardens, Roof Gardens, Stream Daylighting, and Cisterns.

- **Porous, or permeable pavement** is material that allows storm water to move through the surface and be absorbed rather than flow over the surface.



- **Stormwater planters** are small landscaped storm water treatment devices that can be placed above or below ground and can be designed as infiltration or filtering practices. Three versions of storm water planters exist: contained planters, infiltration planters, and flow-through planters.



- **Rain barrels** are water tanks used to collect and store rainwater runoff, typically from rooftops via rain gutters. Barrels usually range from 50 to 80 gallons and have a spigot for filling watering cans and a connection for a soaker hose.



- **Stream daylighting** is the process of exposing the once concealed stream into an above ground surface. The enclosing of rivers and streams historically took place in urbanized areas with the purpose of maximizing the potential for development.



- **Rain gardens** are shallow depressions in the landscape that are planted with deep rooted native plants and grasses. Rain gardens should be placed around edges of a building, near downspout outlets, or frequently wet and soggy areas of yards.



- **Roof gardens** are any kind of gardens that are grown on the roof of a building. They normally consist of a waterproof membrane, drainage layer, a thick layer of soil (typically 12 inches or more), and vegetation.



- **Cisterns** are large-scale rain barrels used in commercial and industrial settings. A cistern is a waterproof receptacle built to catch and store rainwater. Cisterns are distinguished from wells by their waterproof linings.



3. The **benefits** of implementing these green infrastructure techniques include: minimizing the spread of pollutants, filtering out pollutants, reducing erosion, slowing the speed of water, recharging ground water, collecting and storing free water resources for use, improving aesthetics, reducing the heat island effect, and strengthening the local ecosystem.

Specifically, **porous pavement** is effective at taking out heavy metals from water and restoring ground water levels. Installing **stormwater planters** is a creative way to incorporate “gardens” into urban areas. Hanging planters in front of storefronts and homes are always an aesthetic addition to an area, and storm planters are just another way to achieve this effect on a larger scale. **Rain barrels** are useful tools for saving money and reducing stormwater run-off. They easily collect water for gardening, car washing, pet washing, and other lawn care utilities, which reduced the amount you are billed for each month. **Rain gardens** improve water quality and reduce storm water pollution by collecting and using rain water that would otherwise be drained into the sewer system. **Roof gardens** are also beneficial in reducing rain run off and reduce the overall heat absorption of the building, which then reduces energy consumption. **Stream daylighting** restores natural habitats, promotes infiltration, reduces pollutant load and alleviates runoff as it increases the storage size of the natural system. Attaching a **cistern** to a water system decreases the amount of water needed and consumed from the municipal water systems and saves a significant amount of money for individuals.

4. The extensive gardens and rooftop gardens used for occupational therapy are **examples** of “green infrastructure” that existed pre-industrialization. These are considered stormwater management techniques at Clifton Springs because the gardens helped soak up more rainwater and naturally filtered out pollutants, and allowed it to penetrate back into the ground, rather than allowing it run off and into a stream bed, or fall off rooftops onto bare soil where it could cause foundation damage and/or flooding. Sulphur Creek was also not originally channelized. This meant that the stream had a larger holding capacity during heavy rainfall events, vegetation could grow on banks and inside of the creek which helped slow the flow of rushing water, and filter out harmful contaminants.