Policies to Promote Green Infrastructure

All municipalities manage stormwater in some way whether it involves permitting new development, ditching and grading gravel roads, conserving a town forest or promoting a community-wide stormwater awareness program. By applying green infrastructure concepts to its bylaws, property management, road maintenance and conservation and outreach, municipalities can achieve more comprehensive and effective flood prevention in the long term.

Why it Matters

Green infrastructure can help communities become more resilient to the impacts of climate change and help to address stormwater-related problems faced by towns and cities, such as erosion of streams, localized flash flooding, road washouts, and incidents of combined sewer overflows.

How to Promote Green Infrastructure

Municipalities can take the following steps and apply the tools and examples below to harness the benefits of green infrastructure.

1. **Update Municipal Plan** – Include specific language in the plan to recognize the importance of forests, wetlands, floodplains and other natural features in preventing flood damage, and in applying green infrastructure and landscaping techniques for new development and redevelopment. Evaluate and propose the regulatory, conservation and funding strategies that work best for your community.
2. **Update Zoning and Subdivision Regulations** – Many local bylaws need updating to prevent new development from harming the natural features that help absorb stormwater and to require green stormwater infrastructure when new construction takes place. Municipalities can adopt the following types of bylaws for this purpose:

REGULATE DEVELOPMENT ON STEEP SLOPES

Warren, Vermont regulates development on steep slopes with the following requirements:

- Conditional use review for development on slopes over 15%.
- Prohibition on development on slopes over 25% with some use exemptions.
- A grading and erosion control plan required.
- Standards defined for drainage, driveways, disturbance periods and cut and fill during and after construction.

See Warren Land Use and Development Regulations, Section 3.4 Erosion Control and Development on Steep Slopes.

- **Steep Slope Development Regulations** – Communities increasingly recognize that development on steep slopes can increase the flow of stormwater and are adopting standards that discourage or prohibit development on very steep slopes. In Vermont, many local bylaws impose a maximum slope requirement for roads and driveways but fewer regulate development of land with steep slopes.
- **River Corridor and Buffer Requirements** – In Vermont, River Corridor regulations are recommended for most rivers and streams, for the protection of areas along rivers and streams where they are likely to move. Disaster relief benefits are available to municipalities that adopt River Corridor regulations. Buffer regulations are usually designed to require a heightened level of review and impose restrictions on areas along streams and rivers or around wetlands, ponds and lakes. Effective buffer regulations typically restrict removal of vegetation and prohibit buildings and construction from disturbing the waterfront trees and soils.
- **Green Stormwater Infrastructure Requirements** – While the State of Vermont regulates stormwater runoff for development projects involving over one acre of earth disturbance or creating one acre of impervious surfaces, the stormwater from many developments of less than one acre can cumulatively cause flooding and pollution. Municipalities can fill the gap by regulating the stormwater impacts of smaller development projects through zoning and subdivision regulations.

3. **Conserve Key Parcels of Land** – Municipalities can acquire and conserve areas of upland forests, wetlands. River corridors and floodplains that hold and store stormwater can reduce the likelihood and intensity of downstream flooding. Land trusts and other conservation organizations may partner with municipalities to acquire the land or to purchase easements that restrict the use of portions of private land to activities that support flood resilience functions. In villages and cities, municipalities may target areas that frequently flood for federal buyouts to remove existing structures and convert the land to conservation use or for low-intensity recreation.

REGULATE LAND ALONG WATERWAYS

Williston, Vermont creates watershed protection buffers along waterways and water bodies where the following restrictions apply:

- Buffers are 150 feet above the ordinary high water mark of named waterways, ponds and lakes, and 50 feet from any wetlands and unnamed streams.
- The land area within the buffer cannot be used for density calculations.
- Restrictions defined on cutting and removing vegetation, creating impervious surfaces, outdoor storage and use of lawn chemicals.
- Provides specific provisions for variances and nonconforming uses and structures.

See Section 29, Watershed Health, in the Williston Unified Development Bylaw.

MODEL BYLAWS FOR LOCAL STORMWATER REGULATION

The Vermont League of Cities and Towns (VLCT) provides model bylaws and other tools on its Water Resources Assistance webpage for municipalities that want to protect and improve green infrastructure through riparian buffers, low impact development (LID), stormwater standards, shoreland protection and general environmental resource standards for subdivisions. An updated stormwater management bylaw will be available in Fall 2015.

Resources:

- Vermont Land Use Planning Implementation Manual:
  - Open Space and Resource Protection Programs – explains how municipalities can undertake land conservation activities.
  - Green Infrastructure - describes green infrastructure from a historical standpoint and how the term is now more often associated with stormwater management practices that use or mimic natural processes.
- VNRC Video on Using Natural Flood Protection, How the Otter Creek Floodplain Responded to Irene – shows how conserved wetlands above Middlebury minimized flood damage.

4. **Fund Green Infrastructure Initiatives -** Municipalities in Vermont and around the country are finding ways to fund projects and programs that address stormwater concerns. In larger communities, stormwater user fees may be an option while in both large and small towns state and federal grants may be available to help.

Resources:

- Vermont Flood Ready Funding page – access to the wide range of funding sources available to assist Vermont communities with becoming more flood resilient.
- Vermont Ecosystem Restoration Program – provides grants and other resources for green infrastructure projects.
- EPA Green Infrastructure for Municipalities Funding page – provides an overview of funding opportunities.

PARTICIPATE IN URBAN AND COMMUNITY FORESTRY

Vermont towns and cities, large and small can keep street trees, park plantings and town forests healthy and functioning in top form as green infrastructure for stormwater control by participating in the Urban and Community Forestry Program. Information, training, technical assistance and grants are all available to help municipalities.

Photo at right – Land recently conserved within the Third Branch river corridor will allow the river to move and help reduce flooding in downtown Bethel, Vermont. See the toolkits for River Corridors and Preparation Matters for more on what municipalities can do to conserve land and use green infrastructure to prevent flood damage to settlements.

GREEN INFRASTRUCTURE PLANS FOR NORTHFIELD

Northfield plans to address the flood devastation along Water Street through the creation of a new park that will provide downtown Northfield with an outstanding new recreational amenity that will protect the floodplain function, offer other green infrastructure benefits and enhance the livability and resilience of the community.

Tropical Storm Irene flooded 80 out of 100 homes along Water Street in the village. The town worked diligently with landowners to obtain Hazard Mitigation Grants from FEMA, securing buyouts for 12 houses with assistance from the state and regional planning commission. Besides helping landowners to move out of harm's way, the buyouts allowed the town to assemble a 4-5 acre contiguous area of floodplain next to the Dog River.

In 2013, Northfield hosted a Vermont Downtown Action Team (V-DAT) project that brought a team of design, planning and economic development experts to help foster economic recovery. Based on what they learned from residents in a multi-day workshop, the V-DAT team developed ideas for how Northfield could improve the vitality and resilience of their village. The resulting master plan includes a proposed park for the buyout area with community gardens and neighborhood open space, pathway connections between downtown and Norwich University and streetscape enhancements along Wall Street, better linking the new park with the Common.

Northfield's work to create a place where the river can flood, where once there were homes, offers a good example of green infrastructure restoration, but the plans for the park go even further to propose a wide range of green landscaping techniques to help slow and store stormwater, such as riparian buffer plantings along the river and bio-retention swales and rain gardens to accommodate runoff from parking areas.