

Connecticut NEMO Newsletter

Nonpoint Education for Municipal Officials
Winter 2007

The Community Resource Inventory (CRI) is Now Online!

Natural resource-based planning is a mantra that runs through most NEMO workshops. Simply put, this approach to land use planning starts with an inventory of your town's natural and cultural resources, prioritizes those resources through the development of open space plans or plans of conservation and development, and implements those plans through regulations or town policies. Although the concept is simple, we've found that starting the first step—the resource inventory—is often a stumbling block for communities that lack staff, resources and geographic information system (GIS) technology.

No longer. Thanks to funding from the CT DEP, the NEMO program has created a dedicated website to help bridge the GIS technology gap. Called the Community Resource Inventory (CRI) Online, the website provides mapping resources, tutorials, examples and other resources that will assist you in getting started with natural

resource-based planning. By working through the website, you will be able to develop a basic inventory of your town's natural and cultural resources, upon which you can build.

This issue of the newsletter is dedicated to the CRI Online website. Look inside to learn more. ☀



The CRI Online website is accessible from the Tools and Resources section of the NEMO website (nemo.uconn.edu/tools.htm).

Do Rain Gardens Work in the Winter?

- Article by Michael Dietz, CT NEMO

Although we are nearing the end of another Connecticut winter, a frequent question asked is about the winter performance of low impact development (LID) systems, especially rain gardens. The common perception is that because of frost in the ground, water will not infiltrate, and therefore the systems won't function in the winter. Fortunately, research has shown that these systems DO function as designed through the winter months.

The results of my research here in Connecticut showed that a bioretention system, the technical term for rain gardens, functioned as designed through the winter months, retaining 99% of inflow over a two year period (see nemo.uconn.edu/research/raingarden.htm). Frost penetration was up to 7 inches during one winter of study. In general, if the ground is frozen, any precipitation will be in the form of snow. However, occasionally the ground has frost, and a rain event occurs. Interestingly, when an event like this happens, meltwater ponds for a short time, then infiltrates into the system. (This phenomenon was captured on video last winter at the Haddam rain garden. The clip can be viewed on the website above.) The soil media in the bioretention system thawed out very quickly, and allowed infiltration into lower layers. The frost in the system was not solid. This was due to the nature of the coarse, sandy-organic soil mixture and the non-compacted, planted surface. These systems are different from wetlands, which have poorly drained, organic soils

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Spotlight On...

Tour the CRI Website!

nemo.uconn.edu/tools.htm

STEP 1 Build Your CRI

The engines of the CRI website are in the Build Your CRI and Interactive Map sections. In the **Build Your CRI** tab, you are

given a choice of which Connecticut town to inventory by either clicking on a town (on the Connecticut map) or choosing the town on a pull down menu.

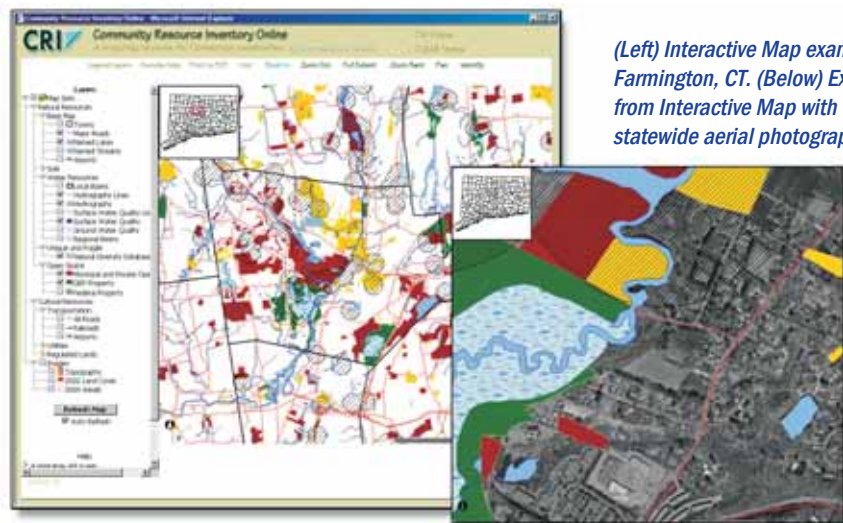
After selecting a town, you can click through a series of natural and cultural resource maps for that town (See box for complete list of map options). Each map has a legend, a description and links to get further information on the data source. You can print out a single map, or click on the Print Your CRI button to get to the final page of the inventory (see Step 3).

(Image, right) A selection of natural and cultural resource maps available in the Build Your CRI page. From top to bottom, the map set for the town of Farmington, CT includes; Land Cover, Surface Water, Topography, Wetland Soils, Open Space and Regulated Lands.



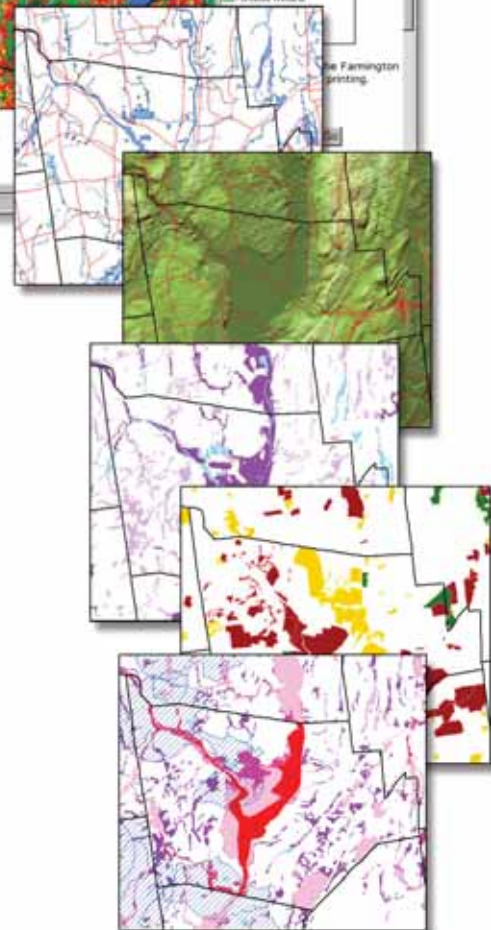
- Natural Resources**
- 1. Base Map
 - 2. Topography
 - 3. Land Cover
 - 4. Soils
 - Wetland Soils
 - Farmland Soils
 - 5. Water Resources
 - Watersheds
 - Surface Water
 - Water Quality
 - Ground Water
 - 6. Unique & Fragile
 - 7. Open Space
- Cultural Resources**
- 1. Transportation
 - 2. Utilities
 - 3. Regulated Lands

STEP 2 Interactive Map



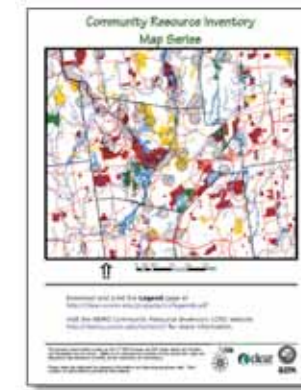
(Left) Interactive Map example for Farmington, CT. (Below) Example from Interactive Map with the 2004 statewide aerial photograph.

Having a set of resource maps can be a handy reference for land use planning decisions, but the real power of this information is looking at the relationships of one map layer to another. The Interactive Map allows you to combine the map layers in your CRI to create unique maps. The tools in the **Interactive Map** window allow you to zoom, pan and identify specific layers in a map. You can also print out the new customized map to add to your CRI. Additionally, if you zoom in far enough you will be able to use the 2004 statewide aerial photographs to get site-level details.



STEP 3 Print Your CRI

From the **Print Your CRI** page, you can either print single maps, or the whole set complete with a title page.



(Above) Include custom made maps in your CRI using the Interactive Map section of the website.



(Right) Sample pages from the Print Your CRI page for Farmington, CT.

EXPLORE

Use & Enhance Your CRI

Comparing, contrasting and overlaying data brings you beyond the inventory stage to the analysis stage, which then leads to planning, which is what CRI Online is all about. Examples of how CRI maps can be used for local planning analyses can be found in the **Use Your CRI** section.

The data on the CRI Online website are statewide available map layers. There are many other types of local map data you may want to add to the inventory. To help you get started in further customizing

your inventory, we have added the **Enhance Your CRI** section. In this section you can download the freely available ArcExplorer to directly access both the CRI map data and your own local GIS map data. With this capability, you will be able to add local information, such as parcels or zoning, to your resource inventory.

Look for additional updates to this section in the near future!

that are not conducive to infiltration when frozen. Rob Roseen at the University of New Hampshire (see www.unh.edu/erg/cstev/) has performed similar research, but on a larger bioretention facility. He has confirmed, with detailed monitoring data, the rapid thawing of the soil media during a melt event, and subsequent re-freezing after. Overall, their bioretention system has performed very well in that northern climate.

There is also concern about the performance of porous paving alternatives through the winter months. Specifically, people are concerned about frost heaving. The key to avoiding frost heaving on any pavement is the installation of a proper base course. Rapid drainage is essential beneath any road, so just as with asphalt, specifications for most alternative porous pavements call for a base that is designed to infiltrate water rapidly. Once this water passes through the coarse surface materials

and into the base, any freezing will not cause heaving of the pavement surface. There are many examples in cold regions of porous pavements that have survived numerous winters without obvious damage. The Ecostone® paver road at the Jordan Cove project here in Connecticut is a local example; the pavers were installed in 2000, and the surface is still in excellent condition.



Haddam, CT rain garden in winter.

In contrast to the LID systems, a typical dry detention pond, with its highly compacted soils, will likely provide very little infiltration through the winter. In general, research has shown that a properly designed and installed bioretention or porous pavement system will provide for rapid drainage, without excessive ponding or overflow, even through the winter months.

Questions? Contact Mike Dietz, NEMO's stormwater specialist, at 860-345-5219 or email michael.dietz@uconn.edu. ☀

NEMO Welcomes Juliana Barrett - Article by Peg VanPatten, CT Sea Grant

In her new position as Assistant Extension Educator for UConn's Department of Extension and Connecticut Sea Grant, Dr. Juliana Barrett will give decision-makers in coastal communities a helping hand by crafting outreach education programs on coastal habitat quality.

She is also part of UConn's NEMO (Nonpoint Education for Municipal Officials) team, and will help NEMO expand its educational offerings in coastal areas. Barrett will use recent land cover and invasive species research results generated by the UConn Center for Land Use Education and Research (CLEAR) to develop her programs.



Juliana Barrett joins the NEMO Team.

The programs that Barrett plans to develop will be offered to assist coastal community leaders with technical matters relating to the impact of land use on coastal habitats, including riparian buffers, and restoration of coastal habitats.

Barrett has a Ph.D. from the University of Connecticut Department of Ecology and Evolutionary Biology, a master's degree from the Department of Earth and Planetary Sciences at Johns Hopkins University and a bachelor's degree from Smith College.

Barrett may be reached at Sea Grant by phone at 860-405-9106 or via e-mail at juliana.barrett@uconn.edu. ☀

Check This Out!

Coming in 2007

- New presentation on wetlands;
- Buildout analysis publication;
- New research—riparian buffer analysis;
- Statewide LID conference.

Don't Forget...

- The **CT NEMO Impact Report *Putting Communities in Charge*** is available online on the NEMO Publications page or by contacting the NEMO program at nemo@uconn.edu.
- **Statewide aerial images** are now available for viewing on the CLEAR website. Visit clear.uconn.edu/data.html for:
 - Black/white Orthophotos
 - True-color Coastal Imagery
 - False-color Infrared Coastal Imagery.

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