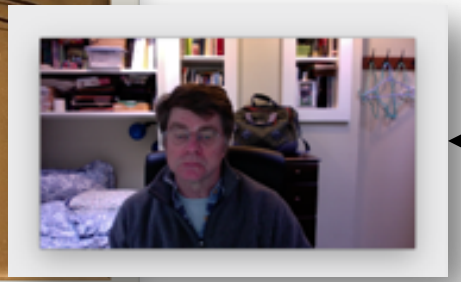
Radio Free Ivoryton

High priced webinar consultants

Desktop relocated from office

Yours truly, in appropriately sized window



Environment Corps: harnessing undergrad power to help communities

Chet Arnold, Marisa Chrysochoou, Todd Campbell, John Volin, Peter Diplock, Juliana Barrett, Bruce Hyde, Maria Chrysochoou, Nefeli Bompoti, Mike Dietz, Dave Dickson, Mike Willig, Mark Boyer, Jason Vokoun, Carol Atkinson-Palumbo

2015-ish: Looking into the local climate change response

LOCAL ENVIRONMENT, 2017
VOL. 22, NO. 1, 67–85
http://dx.doi.org/10.1080/13549839.2016.1160372

Routledge
Taylor & Francis Group

The climate adaptation imperative: local choices targeting global problems?

Mark A. Boyer[a], Melanie Meinzer[b] and Andy Bilich[c]

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ABSTRACT
When confronted with the demands of global climate change, what causes some policy-makers to move the climate adaptation agenda forward in their communities, while others seemingly get little accomplished? To answer this question, we first discuss work on policy-drivers in a coupled human–natural systemic context. This summary review of past research helps us develop a set of competing and complementary explanations for why some communities aggressively pursue climate adaptation policies, while others do less. Following the discussion of policy-drivers, we then undertake an aggregate-level analysis of data collected across the 169 towns in Connecticut regarding climate adaptation, thus linking policy to its fundamental global cause. The quantitative data are augmented with interview data from policy-makers and activists from around the New England region.

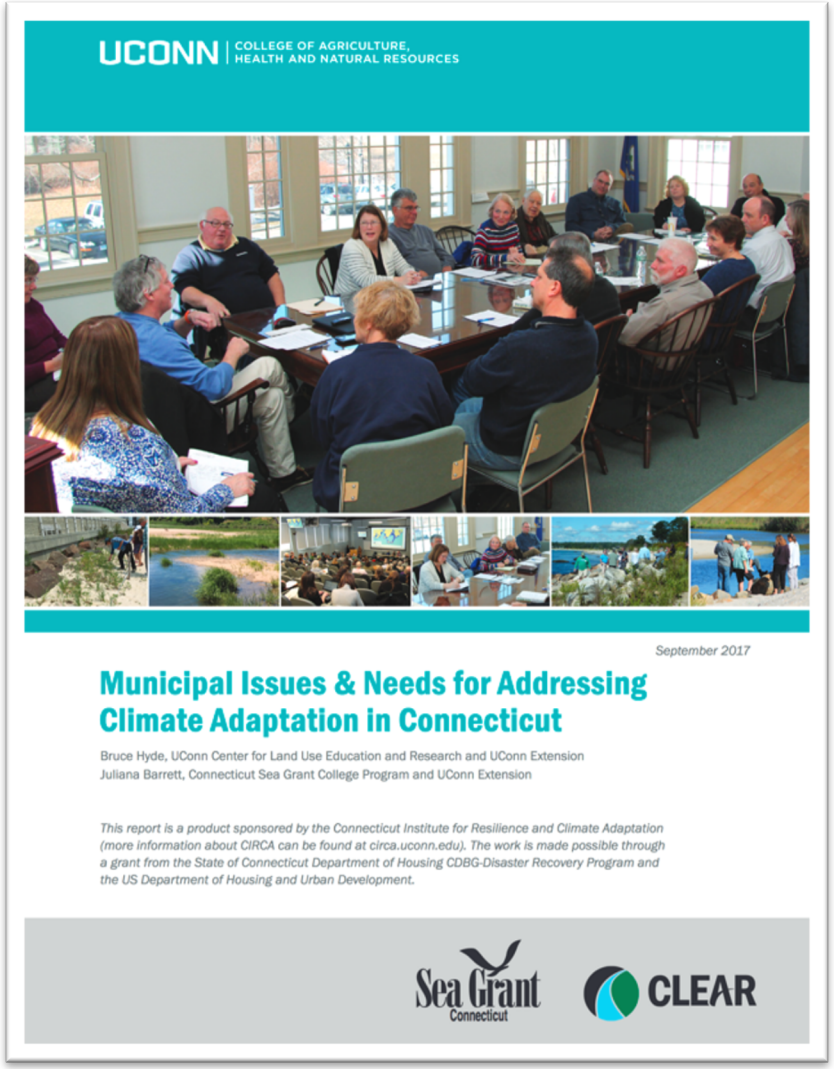
ARTICLE HISTORY
Received 15 June 2015
Accepted 9 February 2016

KEYWORDS
Climate change adaptation; global–local linkages; climate policy; policy-drivers

Ecologists recurrently point to the importance of systems in understanding environmental dynamics in the living world. Oddly, many social scientists downplay the impact of systems when seeking to understand human dynamics. That tendency within the social sciences might be best attributed to the notion that humans are the most intellectually independent species of all and thus are less constrained by the actors, structures, and processes around them. But when studying environmental issues in a social science context, it is conceptually difficult (and perhaps impossible) to separate humans from the questions at hand. It is more helpful to recognise explicitly the coupling of human, natural, and even built systems, if we are to begin to understand the problems facing contemporary decision-makers and then develop effective solutions to those problems.

The intellectual and policy challenges presented by interactions between human, natural, and built systems are no more demanding than when we engage the issues of climate adaptation. Humans have created conditions over the past 200 years that have dramatically altered natural climatic processes and have hastened the need to cope with the challenges posed by climate change. They have also built structures throughout the world with too little forethought to their implications for environmental health and human welfare in the short, medium, and longer terms. Thus, decision-makers are now faced with evaluating options in a world where systems (in all three categories) constrain their freedom of choice. These constraints manifest themselves when human systems prevent the adoption of policy choices because of needs to balance political preferences with economic vitality and ecological desirability. They manifest themselves when the built environment, and those humans who wish to maintain the status quo, stand in the way of wiser coastal development policies, even in the wake of devastating weather systems. And they manifest themselves when scientifically informed policy

CONTACT Melanie Meinzer melanie.meinzer@uconn.edu



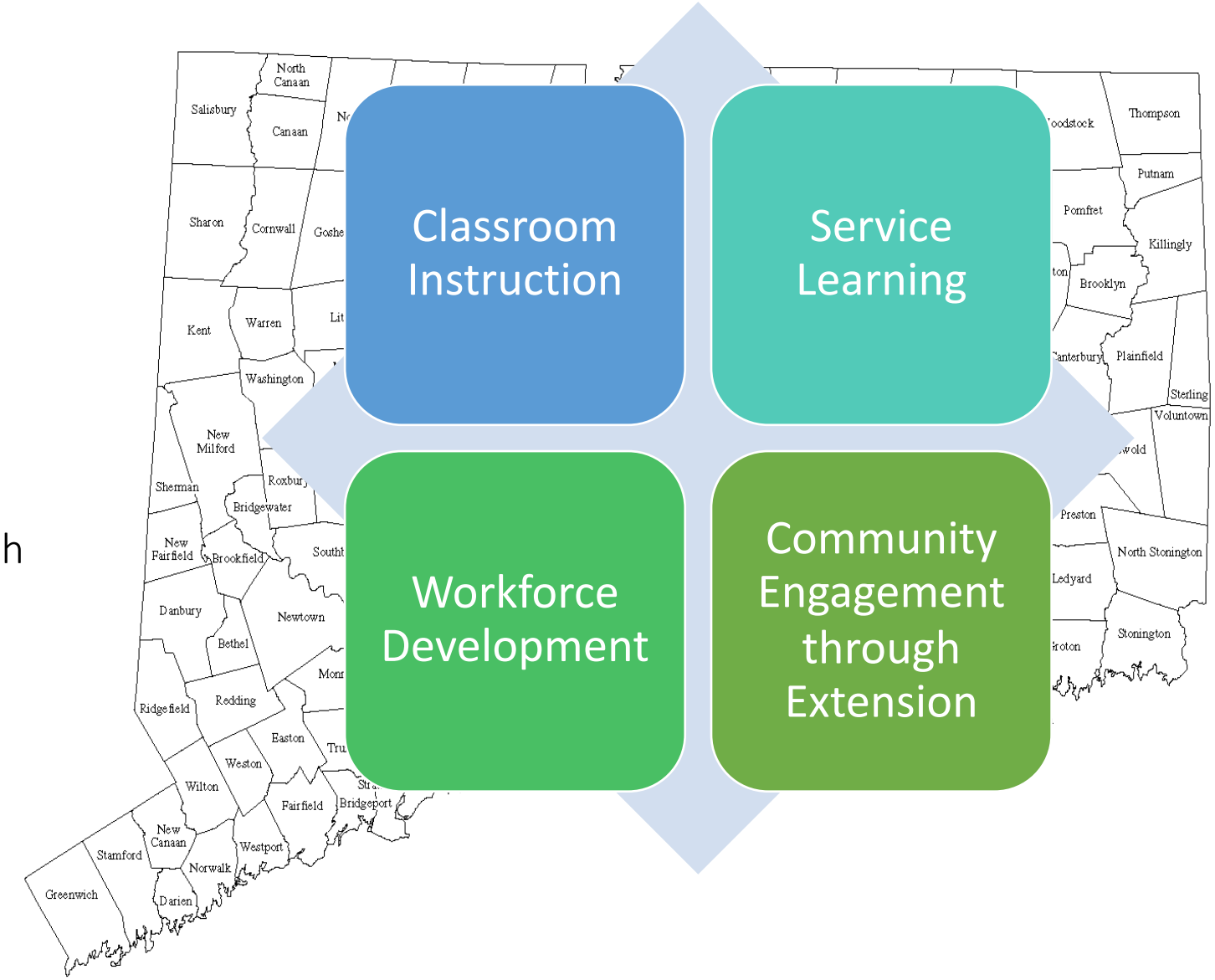
The “Capacity Gap”

It’s not that we don’t take climate change seriously, it’s that small towns are faced with sinking budgets, and have a number of statutory mandates they have to satisfy. Small towns are less likely to have the money to pay for a climate change study, especially when there is an ongoing debate over climate change.

Local official (from Boyer et al. 2017)

The Climate Corps
(2017)

- Environmental Studies (Geography)
- Environmental Sciences (NRE)
- Environmental Engineering (CEE)
- Center for Land Use Education & Research
- Connecticut Sea Grant College Program



UConn Climate Corps

A focus on the local perspective

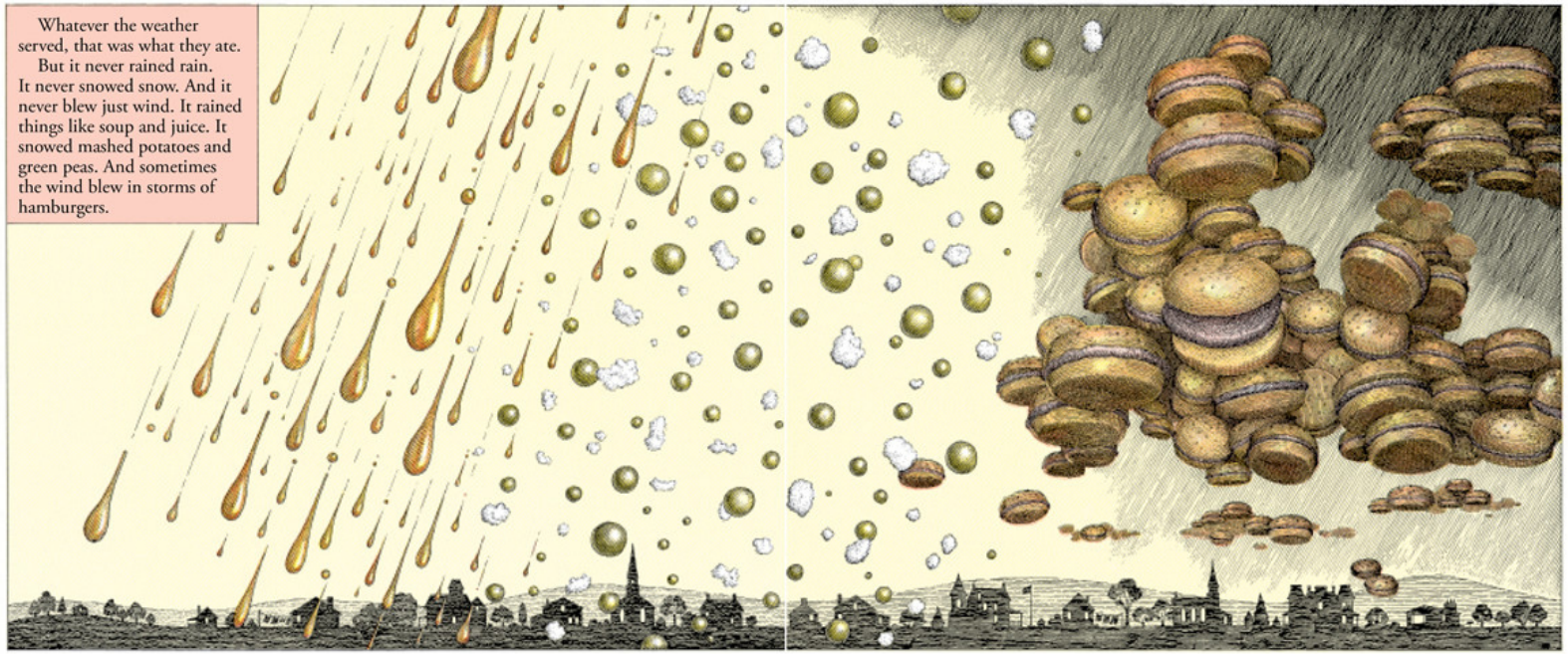
Fall Semester: class

Spring Semester: practicum

Climate Resilience and Adaptation: Municipal Policy and Planning

EVST/ENVE/ENVS 3100

- Climate indicators & impacts
- Sea level rise
- Land use trends
- Stormwater
- Environmental health & ethics
- Local policy making
- Online tools
- Working with towns



Cloudy with a Chance of Meatballs

Emphasizing local impacts & responses

- Guest (practitioner) lectures
- Current events from the media
- Experiencing a town meeting
- Team exercises & projects:
  - *Cost of Sea Level Rise project*
  - *Role-playing exercise*

East Southport Public Hearing

What should be done about the recurrent flooding in a coastal neighborhood?

Climate Corps town projects

Madison Surf Club Resilience Plan

The Climate Corps worked with the Town of Madison to develop a Resilience Plan for the Madison Surf Club, a 45-acre town park along Long Island Sound with a host of amenities including a beach, picnic area, playground, and athletic fields and courts. The Plan analyzes various alternatives to dealing with the impacts of climate-change induced sea level rise and intensified storms.

READ REPORT

Mansfield Runoff Reduction Plan

The Climate Corps worked with the Town of Mansfield to identify opportunities for "disconnection" of impervious surfaces on town properties through the use of Low Impact Development (LID) practices. LID helps to reduce stormwater runoff, which is a growing concern as climate change results in more intense storms events.

READ REPORT

Stonington Runoff Reduction Plan

Another Corps student team worked with the Town of Stonington to conduct a project similar to the Mansfield project, identifying opportunities for the use of LID stormwater practices. The Climate Corps reports identify multiple potential LID sites, chosen using online imagery analysis followed by field assessments.

READ REPORT

seCTer Business Resiliency Brochure & Map

A Climate Corps team worked with the Southeastern Connecticut Enterprise Region (seCTer), a private nonprofit economic development organization serving the businesses, residents and municipalities of southeast Connecticut. The team created an educational brochure aimed at businesses about climate change preparedness, and laid the groundwork for an interactive online map to help businesses determine their most likely types of risk, depending on their location.

READ Brochure

Waterford Beach Resiliency Plan

A UConn graduate student, Jason Zylberman, created a Living Shorelines Site Suitability Tool to determine site potential for living shorelines along the Connecticut coast. The tool examines fetch, bathymetry, erosion history, and marsh data. Fetch is the distance wind travels uninterrupted over water in one direction. Bathymetry measures the depth of water near the shoreline. An ideal site for a living shoreline will have a low fetch (low wave energy) and shallow waters with a gradual slope (Zylberman 2015).

The parts of Waterford beach included in the study were found to be suitable for beach and marsh enhancement (Figure 15). Beach enhancement includes beach nourishment and dune restoration to protect the shore. Marsh enhancement focuses on adding new marsh vegetation and creating room for marsh to expand.

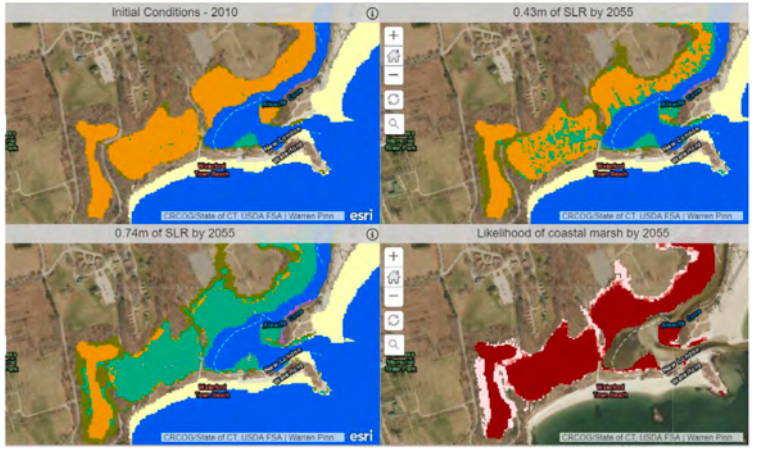
Figure 15

(Zylberman 2015)

Improved Methods of Beach Maintenance

Beach raking

If the practice of beach raking is used as maintenance of dunes, as grooming, raking, sieving, or cleaning sand, we suggest specific measures to be taken. Beach raking may be necessary for the economic, safety, and sanitary benefits of a beach but there must be a balance made between properly maintaining the beach and preserving ecological stability as well as dune effectiveness. Mechanical beach raking usually is deadly for beach plants. It is suggested that marine debris in the form of waste left behind by beach guests or man-made waste washed up on the beach from the ocean be taken care of and removed. Since marine debris has no value to the beach, it is suggested that the beach staff or small groups of volunteers can be properly trained in how to remove marine debris by hand without disturbing natural plants. However, removing other forms of possible beach material like larger rocks and seaweed (wrack), should be avoided as much as possible. Wrack can be necessary for many ecological reasons as well as beach preservation/building while larger rocks help slow down the process of eroding beaches



Legend

Figure 17 *Source: SLAMM Viewer, 2010*

- Swamp
- Inland Fresh Marsh
- Tidal Fresh Marsh
- Transitional Salt Marsh
- Regularly-flooded Marsh
- Estuarine Beach
- Tidal Flat
- Ocean Beach
- Ocean Flat
- Rocky Intertidal
- Inland Open Water
- Riverine Tidal
- Estuarine Open Water
- Open Ocean
- Irregularly-flooded Marsh

3.2 Recommendations for protection of existing marsh from erosion and impacts, hydrologic impacts of SLR

The slightest increase in sea level rise can have huge changes and potential complications for the marsh ecosystem. When the sea rises, the frequency and duration of tidal flooding will increase throughout the marsh causing low-lying areas of salt marsh to potentially become inundated. Areas of low marsh may transition to intertidal flats causing the boundary of low marsh and high marsh to shift. Similar changes will occur in the upland margin. Figure 17 is an image taken from the Sea Level Affecting Marshes Model or SLAMM Viewer. This model is used to predict potential changes in marsh habitat as sea level rise increases. The top-left photo shows the initial conditions as of 2010, outlining the area in orange where the marsh is irregularly-flooded. The second two images, top-right and bottom-left, show the same outline of irregularly-flooded marsh in 2055 with two possible sea level rise predictions: 0.43m and 0.74m. With this change we first see an increase in regularly-flooded marsh as well as areas that are predicted to be transitional salt marsh. With the second sea level rise prediction, we see a more widespread increase in regularly-flooded marsh. The last image outlines the likelihood of existing coastal marsh in 2055 in red, as well as the predicted marsh migration with regard to the potential conditions at that time in light pink.

Our main challenge…

A clash of time scales.

SEMESTER

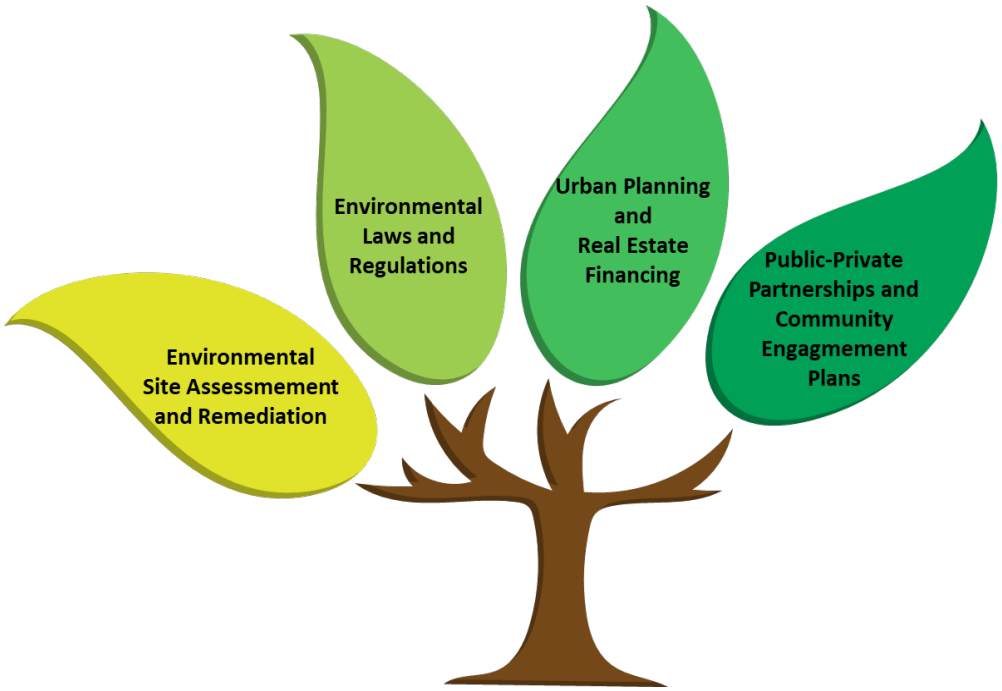
MUNICIPAL OPERATIONS

Brownfields Corps

(2018)

UCONN SCHOOL OF ENGINEERING
CIVIL & ENVIRONMENTAL ENGINEERING

ENVE 3995 Special Topics in Environmental Engineering: Brownfield Redevelopment



- ✓ Provide ***training and support*** for CT stakeholders on brownfields remediation and redevelopment.
- ✓ Create a ***trained workforce of graduates*** with hands on experience on brownfields.
- ✓ Enable ***public-private industry, academia, and government*** collaboration.

Fall semester

Lecture & Project

Support EPA grant proposals

- Environmental Law and Regulatory Framework
- Financing of real estate development and brownfields, funding sources and process
- Urban planning: zoning, decision making process
- Site investigation and remediation: overview of the different phases and factors
- Policy: how do municipalities make decisions and what are operational aspects influencing the process
- Community involvement and Environmental Justice

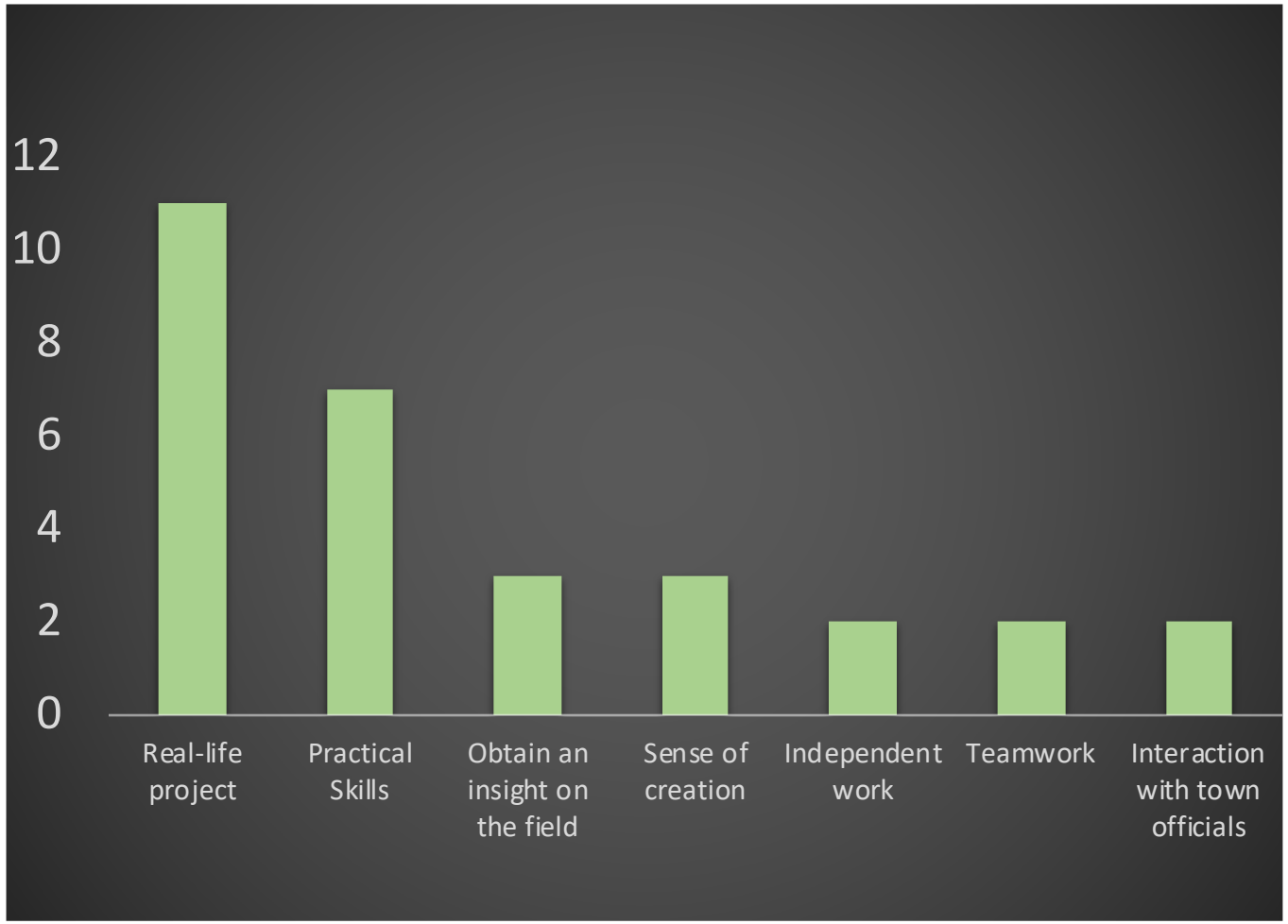
Spring semester

Practicum

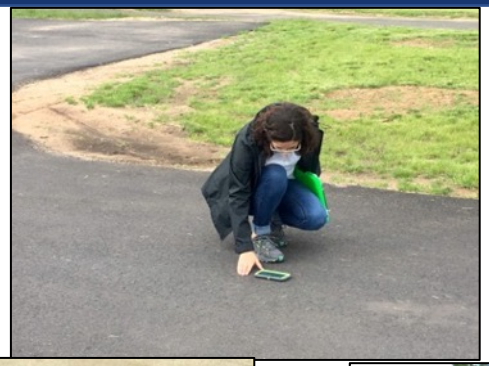
Phase I assessments, inventories, outreach materials

- ✓ Collect data for specific brownfield sites (partial Phase I Environmental site investigation)
- ✓ Review previous site investigation reports and prepare summaries and presentations for a particular site
- ✓ Develop draft Scope of Work and budget estimates for Phase II investigation for a particular site
- ✓ Prepare an EPA clean up grant proposal or other grant proposals
- ✓ Evaluate redevelopment options and priority for sites in a municipality or region
- ✓ Conduct community outreach/ prepare educational materials for brownfields
- ✓ Create Brownfield inventories for CT communities (detailed lists, GIS maps)
- ✓ Prepare submissions for Sustainable CT under Brownfields Category

The most positive aspect of Brownfields Corps according to our students...



> I appreciated this project. Not many instructors arrange real-life projects like this one. It has been incredibly useful. I feel as though this class is one that will stick with me in the next few years as I start a career in remediation.
>
> -- Environmental Engineering Senior



Stormwater Corps (2020)

SW Corps Pilot Project, 2018-2020

NFWF

Projects & Results

Cheshire

Learn More

Hamden

Learn More

North Haven

Learn More

Milford

Learn More

West Haven

Learn More

SW Corps Report

Drainage Area (sq ft)	Suggested Green Infrastructure	Annual Gallons Treated	Annual Nitrogen Reduction (lb N/yr)	Annual Phosphorus Reduction (lb P/yr)	Suggested Practice Size (sq ft)
8,389	Rain Garden	213,366	1.45	0.103	1,398

For this location, we recommend implementing a rain garden inside the barrier on the northeast side of the parking lot. The curb would be cut to allow access into the rain garden since the water flows naturally to the area. Also, the existing drain would be raised for the bypass system. In order to maintain safety it is recommended that the area be fenced in to prevent anyone from entering the garden.

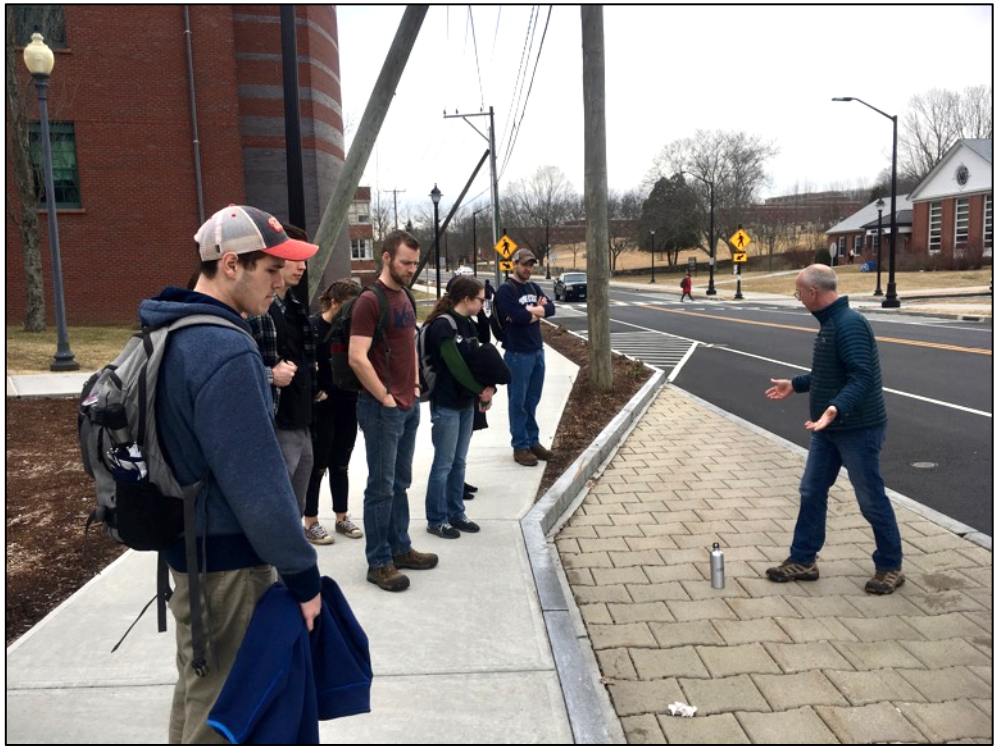
Cheshire Fire Department

North Haven
Elementary School

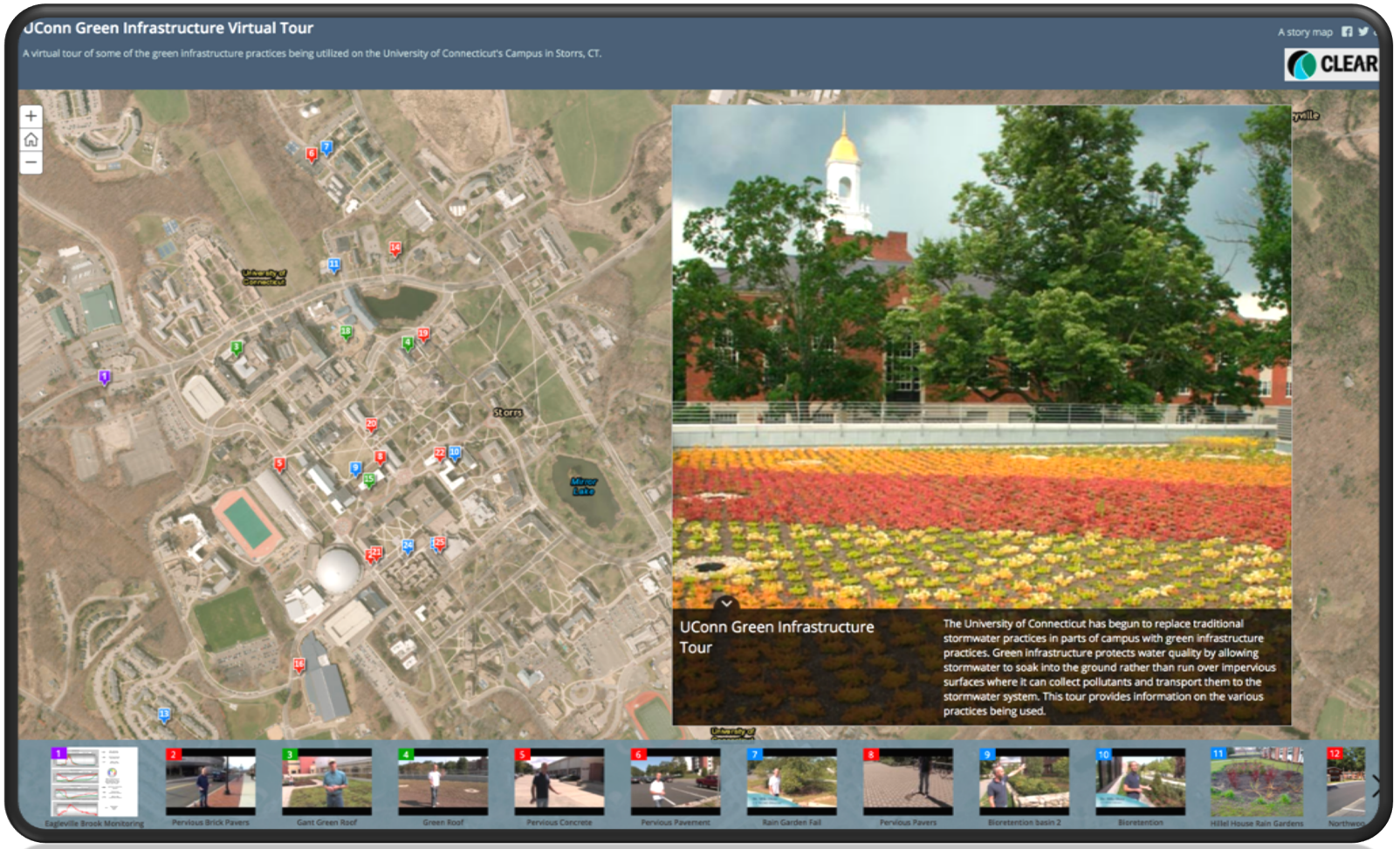
NRE 4695: Green Stormwater Infrastructure Practices

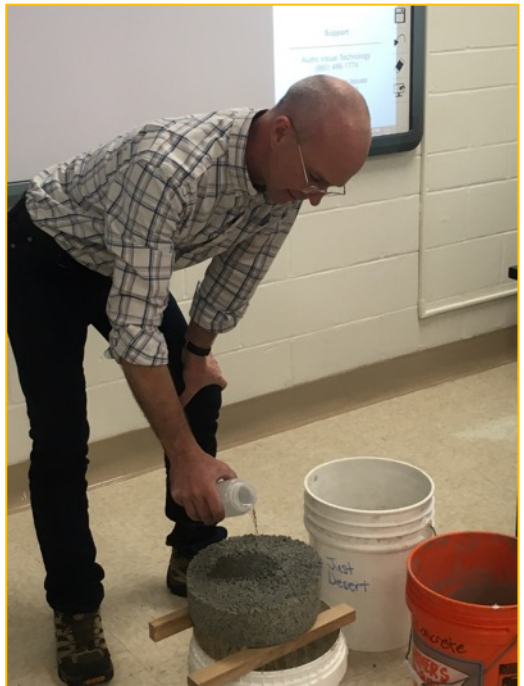
PART 1: Stormwater, Land Use, and Water Resources
PART 2: GSI Practices: Design and Application
PART 3: Conducting a Runoff Reduction Action Plan

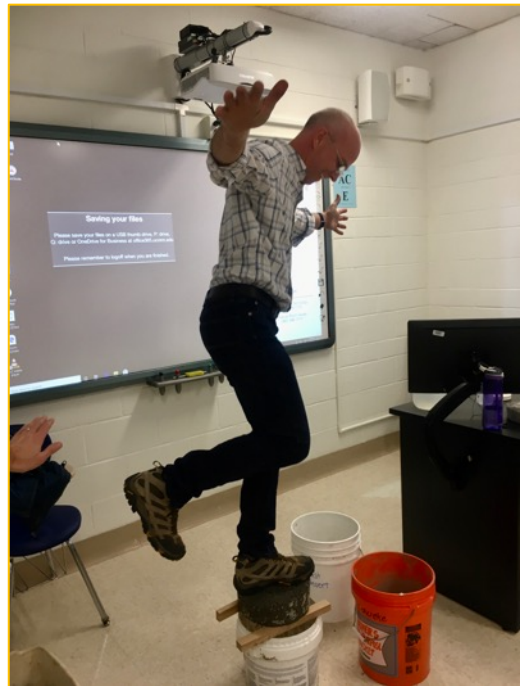
Class includes small group exercises, field trips, ”real world” lecturers, role playing, online tools



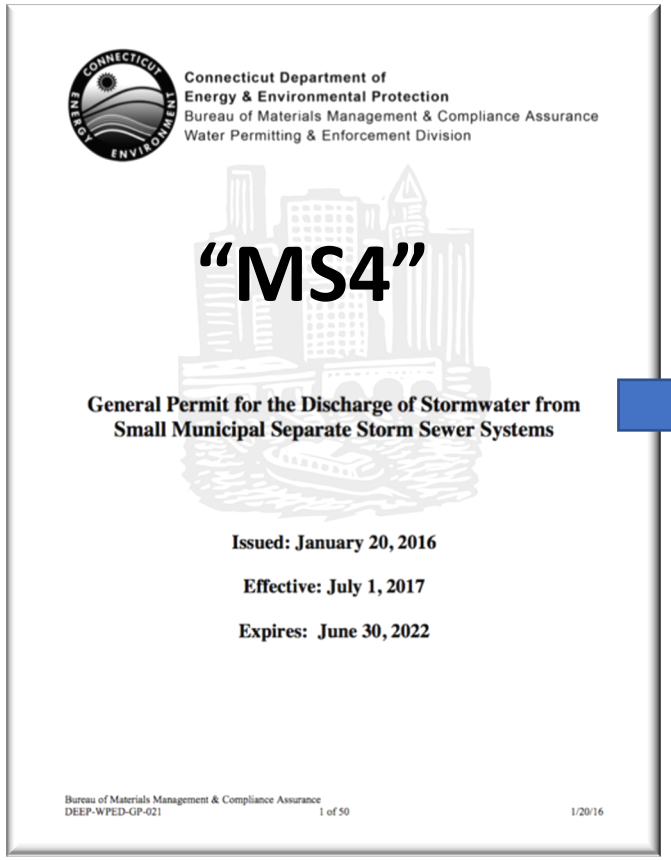
Easy field trips…






Saving your files

Next Fall: Stormwater Reduction Plans


Connecticut Department of
Energy & Environmental Protection
Bureau of Materials Management & Compliance Assurance
Water Permitting & Enforcement Division

"MS4"

General Permit for the Discharge of Stormwater from
Small Municipal Separate Storm Sewer Systems

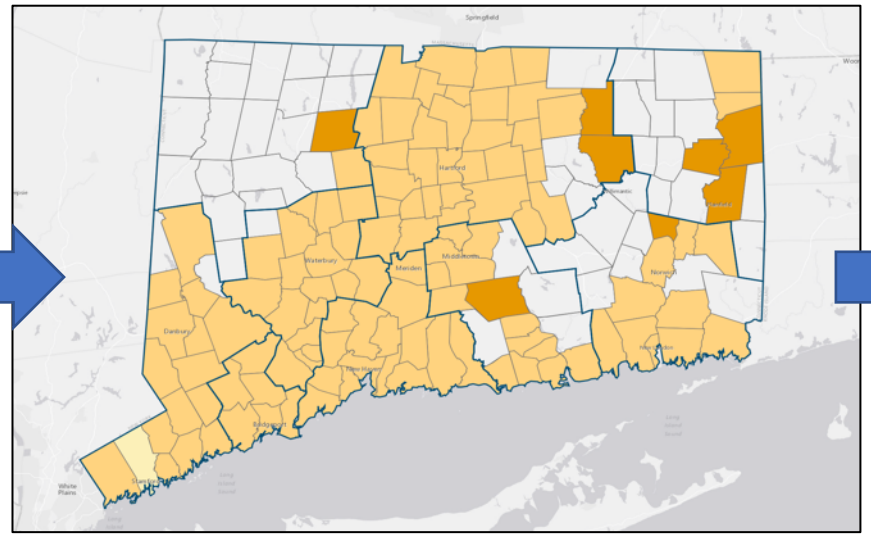
Issued: January 20, 2016

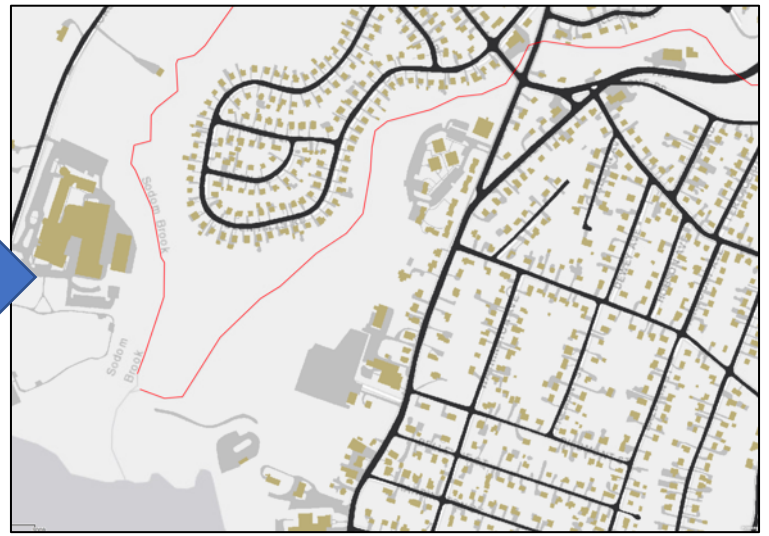
Effective: July 1, 2017

Expires: June 30, 2022

Bureau of Materials Management & Compliance Assurance
DEEP-WPED-GP-021 1 of 50 1/20/16

121 towns





2% DCIA reduction by 2021

ENVIRONMENT CORPS

E-Corps goals

1. Consolidate & enhance existing E-Corps classes

2. Explore possibilities for additional E-Corps classes

3. Study the impact of the E-Corps model on:
   - ✓ Students
   - ✓ Instructors
   - ✓ Communities
   - ✓ UConn community

4. Try like hell to keep it going
("institutional sustainability")

E-Corps partners

5 Departments

- Dept of Extension
- Dept. of Geography
- Dept. of Natural Resources & the Env.
- Dept. of Civil & Env. Eng.
- Dept. of Curriculum & Instruction

(All) 3 Environmental Programs

- Environmental Studies Program
- Environmental Sciences Program
- Environmental Engineering Program

4 Centers

- CLEAR
- Institute of the Environment
- Center for Excellence in Teaching & Learning
- CT Sea Grant

University Admin

Office of the Provost

4 Schools/Colleges

- CAHNR
- CLAS
- School of Engineering
- Neag School of Education

Majors of our students

ENVE
ENVS
ENVS and Anthropology as 2nd
ENVS and Business Management and Marketing
ENVS and Environmental Econ and Policy as 2nd
EVST
EVST and Urban Studies as 2nd
EVST and Sustainable Community Food Systems
EVST and American Sign Language & Deaf Cult.
EVST/English as 2nd
EVST/Appl Res Econ as 2nd

ACES – Exploratory
Biological Sciences
Enviro Studies/Geography
CCS non-degree International Student Exchange
Chemical Engineering
Chemical Engineering/ENVE as 2nd
Civil Eng
Civil Eng/Const Eng and Management/ENVE
Economics
Economics/Enviro Studies as 2nd
Economics/American Studies/Spanish
English
Geoscience/Enviro Studies; Poly Sci/GIS as 2nd
Human Rights
Landscape Architecture
Molecular & Cell Biology
Natural Resources
Natural Resources/Applied Resource Econ as 2nd
Plant Sciences – landscape architecture
Political Science
Political Science/EVST as 2nd
Urban and Community Studies

Student feedback…

This class has actually given me an idea of what I would like to do after college, and how I would like to apply my degrees to working on resilience strategies and solutions at the local level…

I feel as though I am finally figuring out what it is I want to do with my life, and I am thankful for the Climate Corps class for helping me realize where it is that I belong.

I might never have realized this career path was an option without your help. This course was different than almost every other class I have taken at UConn.

E-Corps towns

CLIMATE CORPS

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STORMWATER CORPS

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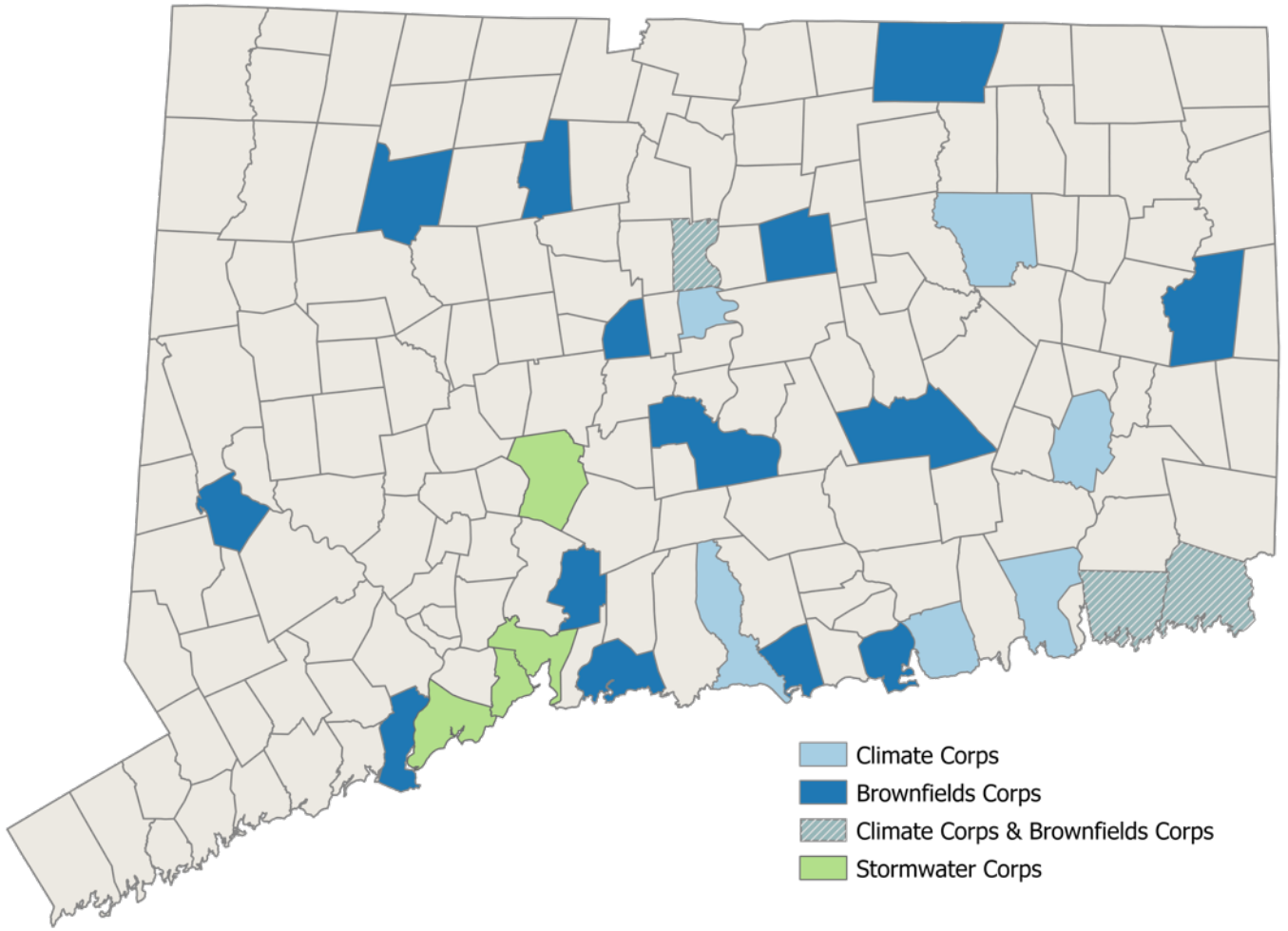

Questions or Comments?