

# Green Infrastructure Success Stories



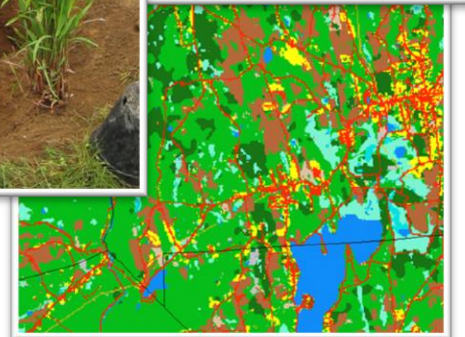
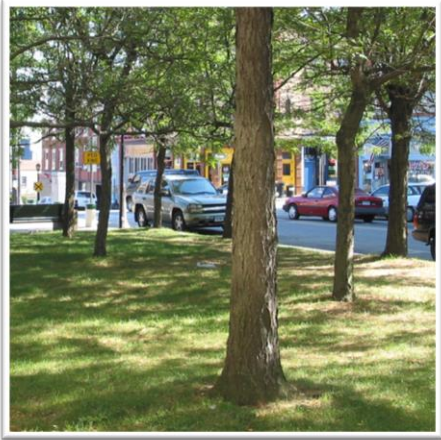
Michael Dietz, Ph.D.  
UConn NEMO Program

*University of Connecticut*

*Still River Watershed Summit*  
11/12/14



**CLEAR's Mission:**  
**To provide information,  
education and assistance  
to land use decision  
makers in support of  
balancing growth and  
natural resource  
protection.**



**University of Connecticut**

- College of Agriculture, Dept. of Extension
- College of Agriculture, Dept. of Natural Resources & the Environment
- Connecticut Sea Grant

- Connecticut NEMO
- National NEMO Network
- Geospatial Training Program
- Land Use Academy
- Extension Forestry Program
- Lab for Earth Resource Information Systems

**<http://clear.uconn.edu>**

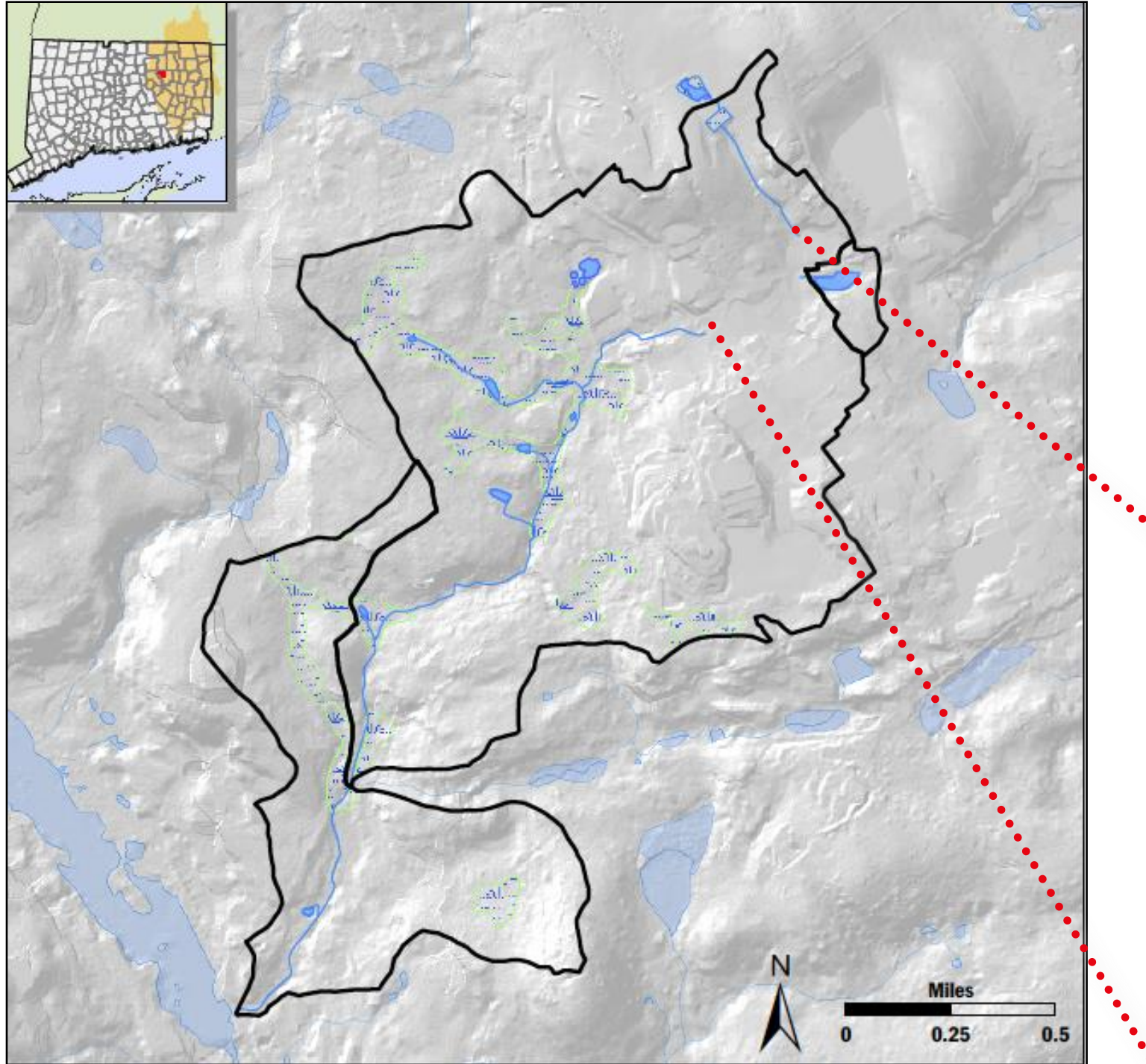


# Eagleville Brook, Storrs CT





# Eagleville Brook, Storrs CT



\* brook runs underground below much of campus



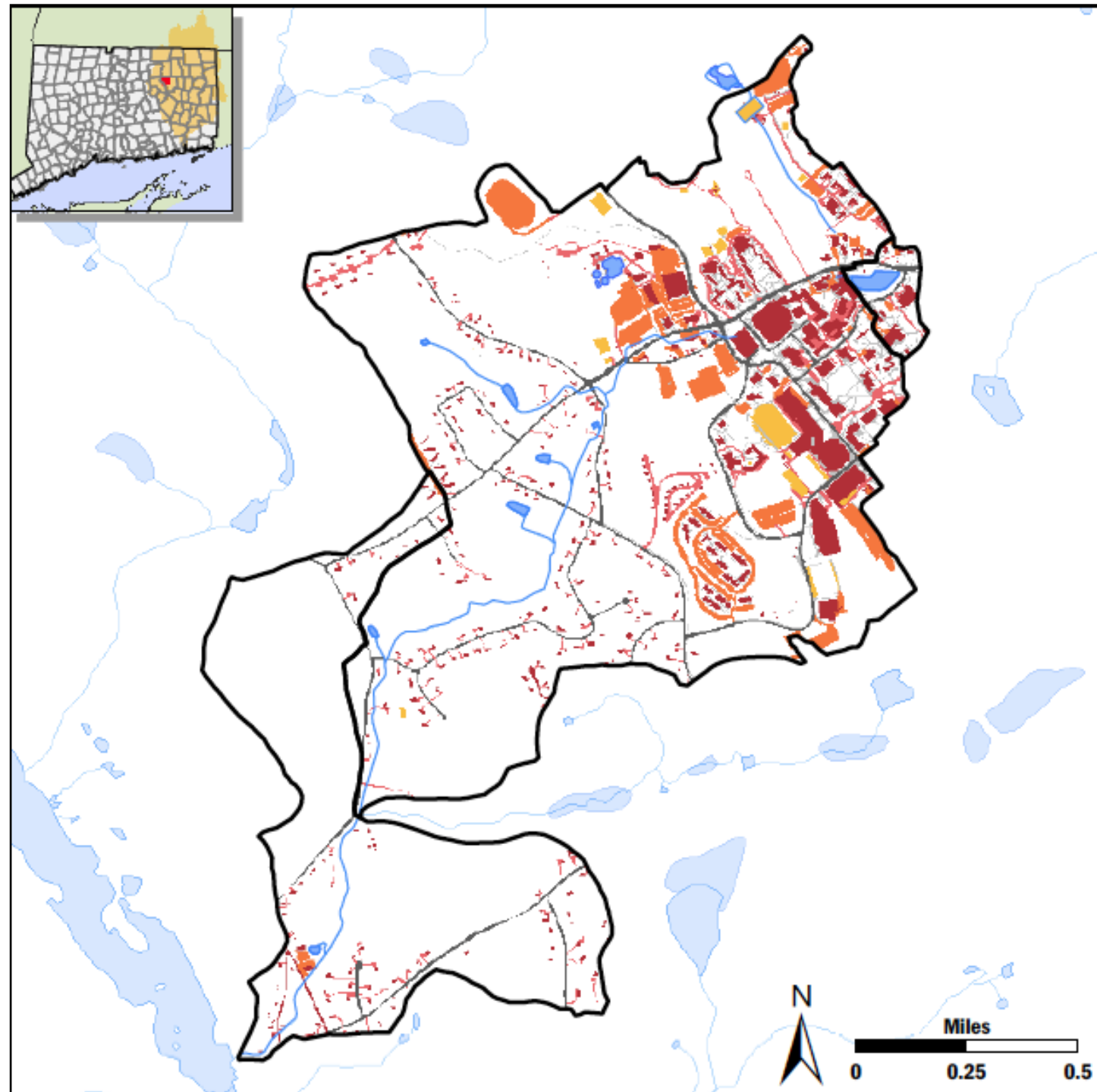


# Eagleville Brook downstream from Campus





# IC in the watershed





# Enter the IC-TMDL


*“Since the impairment cannot be attributed to a specific pollutant, impervious cover (IC) was used as a surrogate measure of the complex array of pollutants transported by stormwater...”.*

- IC can be used as surrogate
- Target is 11% impervious cover (12 – 1)
- Benefits of using IC
  - ✓ Good correlation between IC and stream health
  - ✓ IC data available statewide
  - ✓ Measurable

**A Total Maximum Daily Load Analysis  
for  
Eagleville Brook, Mansfield, CT**

Final: February 8, 2007

This document has been established pursuant  
to the requirements of Section 303(d)  
of the Federal Clean Water Act

	<p>Amey Marrella _____ Date _____ Deputy Commissioner</p> <p>Betsy Wingfield, Chief _____ Date _____ Bureau of Water Protection and Land Reuse</p>
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STATE OF CONNECTICUT  
DEPARTMENT OF  
ENVIRONMENTAL PROTECTION  
79 Elm Street  
Hartford, CT 06106-5127  
(860) 424-3420  
Gina McCarthy, Commissioner

**\*\*There are drawbacks to and detractors of this method\*\***



# Implementation to Date

- Website
- Watershed Plan
- Eagleville Brook monitoring
- Many projects installed since TMDL was approved



# Project Website: Documents, Potential Retrofits



## Welcome to the Eagleville Brook Impervious Cover TMDL Website

In 2007, the Connecticut Department of Environmental Protection issued the first total maximum daily load (TMDL) in the country based on impervious cover (IC).

What does an "IC-TMDL" mean, and how does one respond to it? This website describes the Eagleville Brook watershed TMDL, a project designed to answer these questions.

## POPULAR DESTINATIONS

[Interactive Watershed Map](#)

[Google Maps "Mashup" of Recommended Stormwater Retrofit Sites](#)

[Google Maps "Mashup" of Implementation Projects](#)

[Eagleville Brook Real-Time Monitoring](#)

[Guide to Responding to an Impervious Cover TMDL](#)



The IC-TMDL Project is a partnership of the Connecticut Department of Energy and Environmental Protection (CT DEEP), the University of Connecticut, and the Town of Mansfield, CT. Major funding has been provided by CT DEEP's Clean Water Act Section 319 Nonpoint Source Program and the University of Connecticut. The Town of Mansfield has also provided funding.  
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[clear.uconn.edu/projects/tmdl](http://clear.uconn.edu/projects/tmdl)



# Towers Dorms Parking Lot





# Northwoods Apartments





# MSB Green Roof (Jack Clausen)



roof on stormwater runoff and water quality. *Ecological Engineering*. Vol. 37, pp. 963-969.

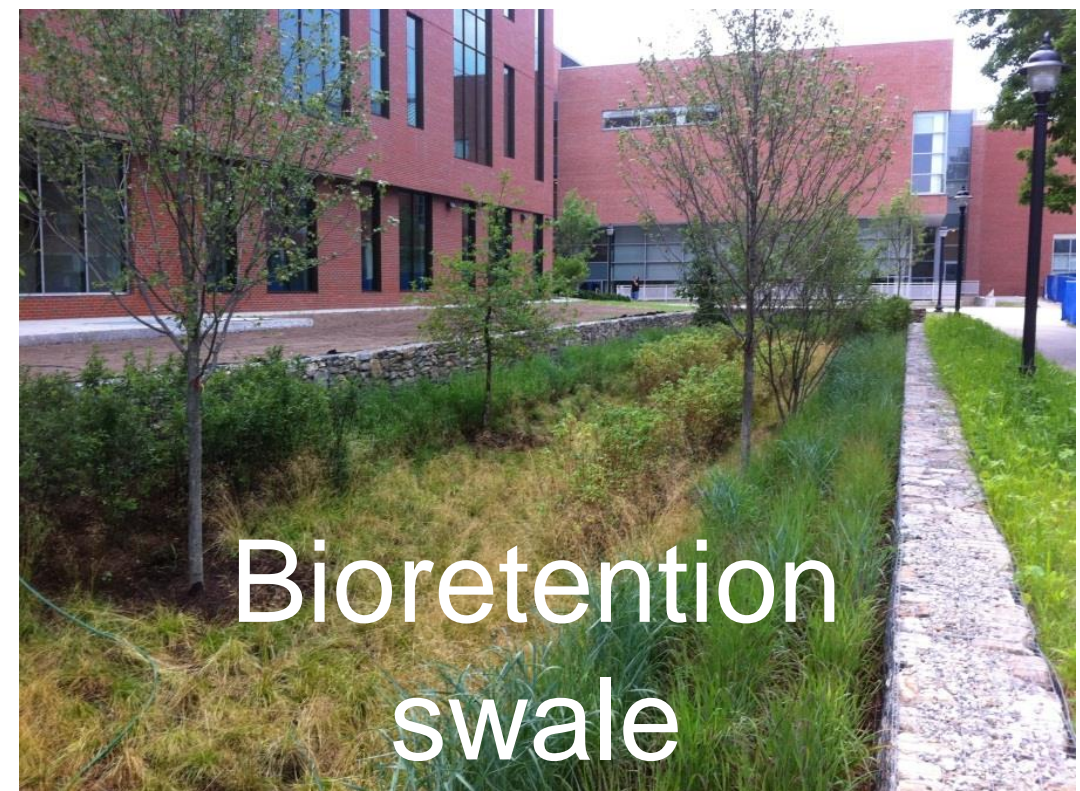


# Laurel Hall

Green  
roof



PICP  
patio



Bioretention  
swale







# PICPs in action





# “Snow shelf” by Gampel





# Recent Bioretention by Grad School





# Storrs Hall green roof









# Oak Hall









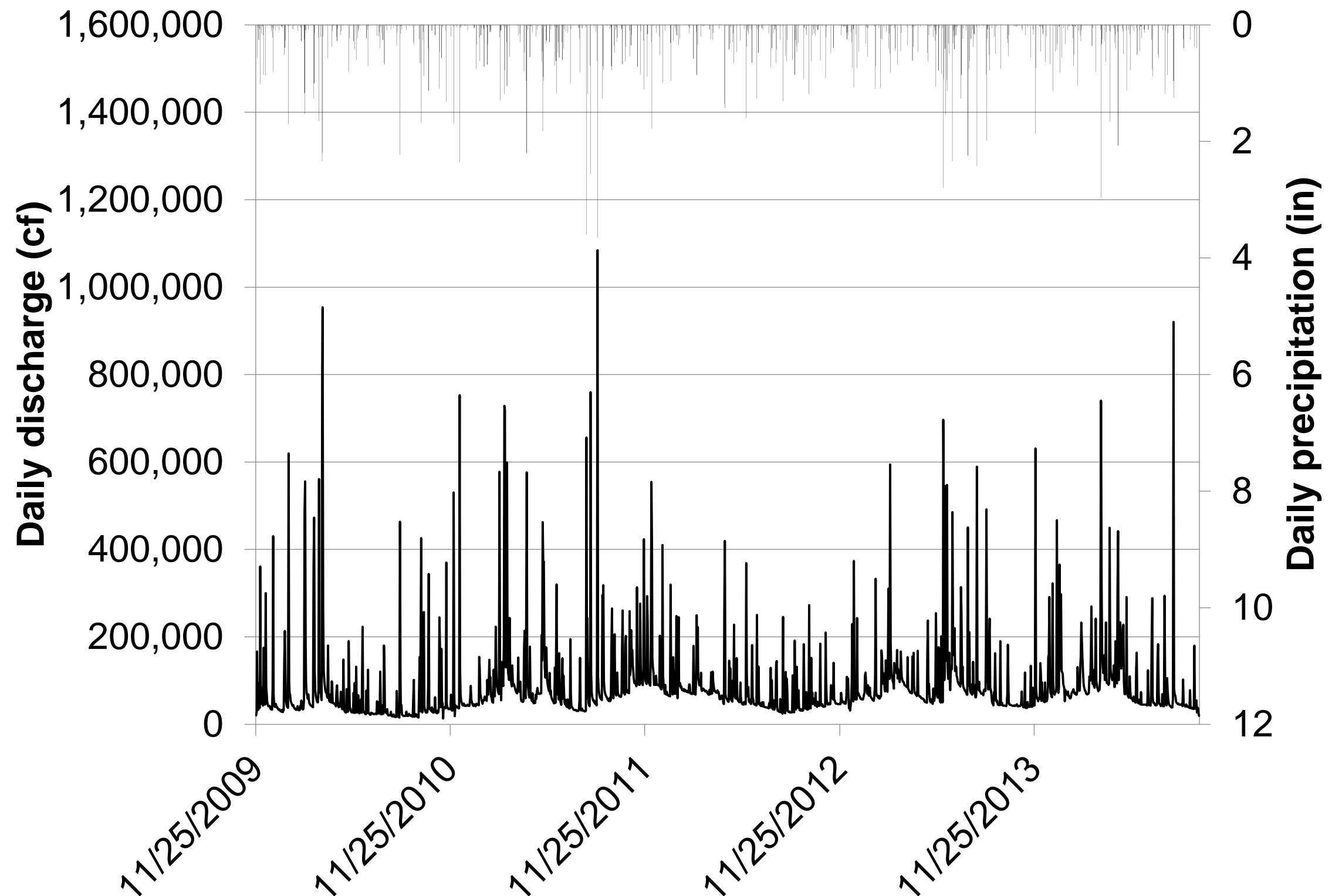
# Monitoring weir



- Collaboration with Jack Clausen in NRE
- Real-time equipment installed in 2011

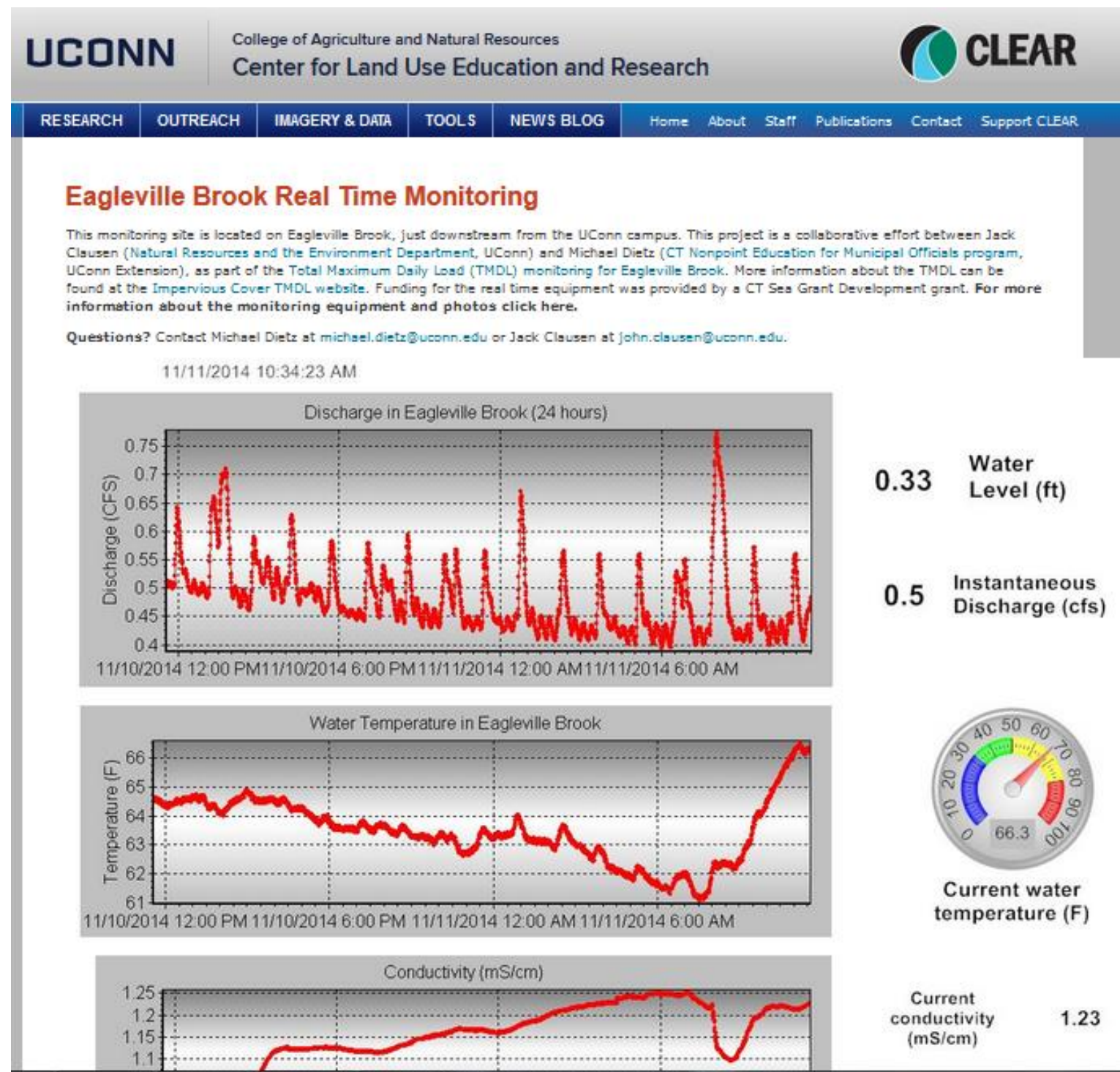


# 5 years of discharge data





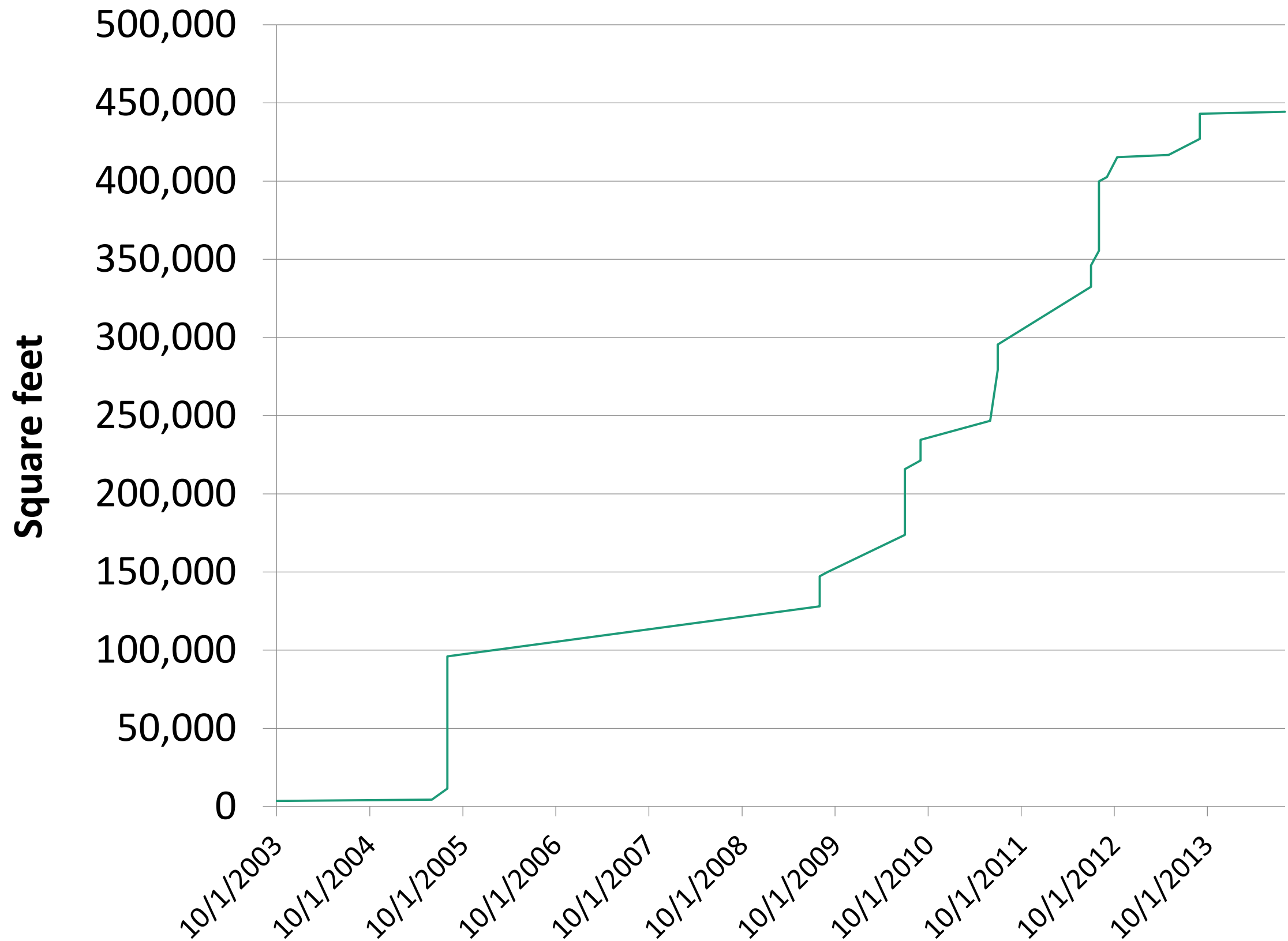
# Real time data available



<http://clear.uconn.edu/projects/eagleville>



# Cumulative area treated with LID practices





# Tracking Stormwater Impacts

Location	Watershed	Type	Date Installed	Stormwater treated to date (ft <sup>3</sup> )	Stormwater treated to date (gal)
Towers dorms	Eagleville	Bioretention	Oct-03	111841	836685
Towers dorms	Eagleville	Pervious asphalt	Aug-09	534243	3996675
Lakeside apartments	Eagleville	PICP	Jun-05	33845	253193
Hilltop dorms	Eagleville	Bioretention	Aug-05	176443	1319969
Burton-Shenkman	Eagleville	Bioretention	Aug-05	2599404	19446139
Field House	Eagleville	Pervious concrete	Aug-09	40054	299642
MSB	Eagleville	Green roof	Sep-09	28911	216284
Northwoods apartments	Eagleville	Bioretention	Jul-10	175143	1310245
Northwoods apartments	Eagleville	Pervious asphalt	Jul-10	538703	4030033
Hillside Rd. snow shelf	Eagleville	PICP	Jun-11	138399	1035366
Hillside Rd. snow shelf	Eagleville	PICP	Aug-12	26943	201562
Hillside Rd. snow shelf	Eagleville	PICP	Oct-12	78590	587931
Laurel Hall	Eagleville	Bioretention	Jul-11	336532	2517596
Laurel Hall	Eagleville	PICP	Jul-11	44255	331070
Laurel Hall	Eagleville	Green roof	Jul-11	85725	641308
Water reclamation facility	Eagleville	Bioretention	Jul-12	255320	1910049
Water reclamation facility	Eagleville	Water harvest	Jul-12	118535	886763
Sundial	Eagleville	PICP	May-13	8247	61695
			<b>Total</b>	<b>5,331,133</b>	<b>39,882,205</b>
Mansfield apartments	Fenton	Bioretention	Sep-10	37474	280341
Mansfield apartments	Fenton	Bioretention	Sep-10	111245	832224
Storrs Hall	Fenton	Pervious asphalt	Aug-12	63666	476289
Storrs Hall	Fenton	Green roof	Sep-12	11017	82418
Oak Hall	Fenton	Bioretention	Aug-12	57409	429480
Oak Hall	Fenton	Bioretention	Aug-12	48553	363224
Oak Hall	Fenton	PICP	Aug-12	25140	188070
Whetton	Fenton	Bioretention W	Sep-13	8393	62789
Whetton	Fenton	Bioretention E	Sep-13	37574	281088
Whetton	Fenton	Pervious asphalt	Sep-13	19981	149477
			<b>Grand Total</b>	<b>5,751,585</b>	<b>43,027,605</b>

**Over 43  
million  
gallons  
treated to  
date!**





Maintenance is extremely important!

Examples of bioretention “bypass  
surgery” at UConn







2004





# Maintenance is so bittersweet...





# In Conclusion

- Implementation efforts have been successful so far
- Some difficulties remain in quantifying the IC reductions
- Some monitoring will continue
- UConn looks to continue implementation in all areas of campus into the future



# Project Partners

- Center for Watershed Protection
- Horsley & Witten Group
- UConn Architectural & Engineering Services
- UConn Office of Environmental Policy
- CT DEEP TMDL & Nonpoint Source Programs
- Town of Mansfield



Funded in part by the Connecticut Department of Energy and Environmental Protection through a United States Environmental Protection Agency Clean Water Act Section 319 Nonpoint Source Grant



# Questions?

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