

## AGENDA

Mansfield Conservation Commission

Wednesday, June 16, 2010

Audrey P. Beck Building

CONFERENCE ROOM B

7:30 PM

1. Call to Order
2. Roll Call
3. Opportunity for Public Comment
4. Minutes
  - a. May 19, 2010
5. New Business (see update memo from Director of Planning)
  - a. IWA Referral: W1455 - St. Jean - Hickory Lane - above ground pool in buffer
  - b. UConn application to DEP for utility work between Lakeside Apts. and Towers (6/2/10 report from IWA Agent attached)
  - c. Other
6. Continuing Business (see update memo from Director of Planning)
  - a. UConn Agronomy Farm Irrigation Project
  - b. USDA Animal Health Research Facility- UConn Depot Campus
  - c. Swan Lake Discharge and other UConn Drainage Issues
  - d. Eagleville Brook Impervious Surface TMDL Project
  - e. Conservation Commission Administrative Issues; Term Limits, Role/Responsibility, Communications, etc. (meeting with Town Council Committee on Committees scheduled for 6/21/10)
  - f. PZC Proposed Zoning Regulation Revisions (public hearing closed)  
-Invasive Species - Aquifer and Public Water Supply Protection - Pleasant Valley Area Zoning
  - g. Natchaug River Basin project (Committee work in progress)
  - h. UConn Hazardous Waste Transfer Station (no new information)
  - i. Water Supply Issues -(no new information)
  - j. Ponde Place Student Housing Project (no new information)
  - k. CL&P "Interstate Reliability Project" (No new information)
  - l. Other
7. Communications
  - a. Minutes
    - Open Space (5/19/10)
    - PZC (5/17/10 & 6/7/10-available at mtg.) • IWA (6/7/10-available at mtg.)
  - b. Inland Wetland Agent Monthly Activity Report
  - c. Connecticut Federation of Lakes May 2010 Newsletter
  - d. 6/7/10 Press Release: Greenway Achievement Award for Mansfield
  - e. Other Correspondence
8. Other
9. Future Agendas
10. Adjournment

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Town of Mansfield  
**CONSERVATION COMMISSION**  
Meeting of 19 May 2010  
Conference B, Audrey P. Beck Building  
**(DRAFT) MINUTES**

*Members present:* Robert Dahn, Peter Drzewiecki {from 8:00p}, Quentin Kessel, Scott Lehmann, Frank Trainor. *Members absent:* John Silander, Joan Stevenson. *Others present:* Grant Meitzler (Wetlands Agent); Neil Faccinetti, John Rickards (Storrs Heights Neighborhood Assn., Agronomy Farm Committee).

1. The meeting was **called to order** at 7:32p by Chair Quentin Kessel.

**2. Public Comment.** Eugene Roberts has responded to questions posted by Neil Faccinetti on his website concerning production and monitoring wells at UConn's Agronomy Farm. Mr. Faccinetti distributed a map showing the locations of these wells and a handout with the questions and answers, along with follow-up questions, which he summarized for the Commission.

- It remains unclear how the two failed production wells – one (MW-2) dry, the other (PW-2) collapsed – can supply useful information as monitoring wells. Accordingly, it appears that two additional deep monitoring wells are needed.
- It remains unclear how data will be collected from the monitoring wells, as no devices appear to be installed yet.
- What is the rationale for criteria announced for curtailing pumping? If they are based on the 3-day pump test performed in October 2009, they may be too permissive, since that test lasted only 3 days and did not occur in a dry season.
- Are water levels in the production wells going to be monitored in advance of any pumping from them, so as to establish baseline water levels as a function of season?
- Concerning the monitoring program for water quality utilizing shallow wells, how often will water be tested? how will test results be made available to interested parties? which “agricultural chemicals” will be applied to the fields and which will be tested for?
- Has the Agronomy Farm developed contingency plans and SOPs for dealing with adverse situations that may arise?

Kessel reported that the Town-Gown Committee has decided that it is the most suitable forum for a Q&A session on Agronomy Farm water issues, probably at its meeting on 6/8/10. {Mr. Faccinetti & Mr. Rickards left the meeting.}

3. The draft **minutes of the 21 April 2010 meeting** were approved, with the substitution of “Can data from these defective wells really indicate whether the new production wells are mining groundwater (i.e., withdrawal rate exceeds recharge rate)?” for the garbled second sentence of the first bullet in item 2.

**4. IWA referral: W1453 (Gottman, Gurleyville Rd).** The applicants propose to add to the back of their house a large deck, which would be about 63' from a wetland at its closest point. The Commission unanimously agreed (**motion:** Dahn, Trainor) that no significant impact on the wetland is likely, provided care is taken in drilling holes for the support posts.

**5. Charter Communications box lights.** Some people apparently don't find the green LEDs on Charter Communications' pole boxes as fascinating as Gatsby found the green light that

beckoned from the end of Daisy's dock in F. Scott Fitzgerald's novel. However, among those present, there was not sufficient interest in complaining about them to Charter.

**6. Communication policy.** Kessel and other Commission members have been invited to a meeting of the Committee on Committees at 7:00p on June 21 to discuss the Council's request that advisory committees and commissions not communicate with outside agencies.

#### **7. PZC referrals.**

**a. Invasive plant species.** The Commission applauds proposed revisions to the zoning and subdivision regulations that would prohibit use of invasive species (as determined by the DEP) in landscaping.

**b. Aquifer and public water supply well protection.** The Commission likewise approves of proposed revisions to zoning and subdivision regulations that would give more prominence to protecting aquifers and public water supply wells.

**c. Pleasant Valley rezoning.** Concerning the proposed rezoning of the area south of Pleasant Valley Road, the Commission unanimously agreed (**motion:** Kessel, Dahn) to make the following comments:

- The Commission supports requiring a 500' setback from Pleasant Valley Road for development in the PVRA and PVCA zones to preserve existing agricultural land and scenic vistas.
- The Commission supports authorizing the PZC to require designating up to 50% of prime agricultural land for permanent agricultural use in developments proposed for the PVRA and PVCA zones. It urges the PZC to attempt to coordinate these designations with the 500' setback so that preserved agricultural land is, to the extent possible, not fragmented.
- The Commission notes that the only kind of development expressly prohibited in the PVCA zone is "auto salvage operations" (U.3.h). Whether we get development that does protect this area's "special agricultural, floodplain, wetland, and aquifer characteristics" and "scenic character" (U.1) will depend on how the PZC exercises its considerable discretion.

#### **8. UConn drainage issues.**

**a. Mirror Lake dredging.** Kessel will draft and circulate a letter to UConn, DEP, and Baystate Environmental Consultants, thanking them for responding to the Commission's questions and concerns about this project.

**b. Swan Lake outfall.** Yesterday Rich Miller responded to DEP's 4/20/10 request that he address concerns raised in the Commission's letter of 3/17/10. In his response to Denise Ruzicka, Mr. Miller:

- Concedes that the Swan Lake outfall to Valentine Meadow discharges into a watercourse, and corrects a contrary indication in UConn's application for a permit to undertake erosion control work at the outfall;
- Concedes that the outfall discharges within 100' of a watercourse that contributes to a public water supply, and that a DPH permit will be required for discharging runoff from "55 acres" of the Eagleville Brook watershed into the Roberts Brook watershed via Swan Lake, as proposed in UConn's storm-water management plan;
- Notes that no DEP permit was required for diverting runoff from the Swan Lake watershed into Roberts Brook by raising the Swan Lake outlet to Eagleville Brook in 1990, since the Swan Lake watershed is only 16 acres, well below the 100-acre minimum for diversions requiring DEP permits.

- Notes that no DPH discharge permit for this 1990 diversion was obtained and reports that DPH will not grant one retroactively – suggesting that discharges resulting from the 1990 diversion are (legally speaking) now so much water over the dam.
- Provides documentation to show that the Town did receive timely notice (8/17/09) of UConn's permit application to DEP for erosion control work at the Swan Lake outfall.
- Observes that the Commission received a copy of this application in its 12/16/09 meeting packet and that the permit was granted on 2/22/10, more than the legal minimum of 35 days after notice to local officials, even if the date of such notice is set at 12/16/09 rather than 8/17/09.

Kessel distributed the draft of a response to DEP, which Commission members should review before the June meeting.

c. **Eagleville Brook TMDL.** A public information session on steps to reduce pollution and sedimentation in Eagleville Brook will be held from 09:30 – 12:00 on 6/4/10. Someone from the Commission should attend, but Kessel cannot do so.

9. **Adjourned** at 9:25p. Next meeting: 7:30p, Wednesday, 16 June 2010

Scott Lehmann, Secretary, 21 May 2010

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**TOWN OF MANSFIELD  
OFFICE OF PLANNING AND DEVELOPMENT**

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GREGORY J. PADICK, DIRECTOR OF PLANNING

Memo to: Mansfield Conservation Commission  
From: Gregory Padick, Director of Planning  
Date: 6/10/10  
Re: 6/16/10 Conservation Commission Agenda Items



The following comments provide more information on a number of the 6/16/10 agenda items:

1. **New IWA Referral**

The packet includes application materials describing an above ground pool on Hickory Lane. A field trip has been scheduled for Tuesday 6/15/10.

2. **Proposed UConn Utility Work north of North Eagleville Road**

A copy of the DEP application was submitted to the Planning Office last week for the Conservation Commissions review. The packet contains selected pages and a report the Inland Wetlands Agent prepared for the Inland Wetlands Agency. At their 6/7/10 meeting the IWA briefly discussed this project but took no action. Subject to appropriate E&S controls, staff reviews do not anticipate any significant impacts.

3. **Agronomy Farm Irrigation Project**

A project update was provided by UConn representatives J. Coite and E. Roberts at a 6/8/10 Town-University Relations Committee meeting. Chairman Kessel was in attendance. A 5/14/10 letter from Mr. Roberts and a 6/19/10 email providing a 6/14/10 sampling program are included in the packet. Ongoing testing/monitoring data will be posted on UConn's website. UConn representatives committed to identifying a contact person and addressing a number of questions that were raised at the 6/8/10 meeting.

4. **USDA Animal Health Research Facility**

A public information session was May 18<sup>th</sup>. A draft Environmental Assessment is expected to be distributed in late June. Town officials will have a thirty (30) day comment period.

5. **Swan Lake Outfall Project**

A 5/18/10 letter from R. Miller to DEP is included in the packet.

6. **Eagleville Brook TMDL Study**

A public update meeting was held on June 4<sup>th</sup>, Conservation Commission Secretary Lehman attended. Black and white copies of colored handouts are included in the packet. Colored copies will be made upon request.

7. **PZC Proposed Zoning and Subdivision Regulation Revisions**

Proposed Zoning and Subdivision revisions were presented at a 6/7/10 public hearing which has been closed. Chairman Kessel attended. The PZC will begin post hearing discussion on 7/6/10.

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APPLICATION FOR PERMIT  
 MANSFIELD INLAND WETLANDS AGENCY  
 4 SOUTH EAGLEVILLE ROAD, STORRS, CT 06268  
 TEL: 860-429-3334 OR 429-3331  
 FAX: 860-429-6863

FOR OFFICE USE ONLY  
 File # W 1455  
 Fee Paid \$ 175-  
 Official Date of Receipt 6-3-10

*Applicants are referred to the Mansfield Inland Wetlands and Watercourses Regulations for complete requirements, and are obligated to follow them. For assistance, please contact Grant Meitzler, Inland Wetlands Agent at the telephone numbers above.*

Please print or type or use similar format for computer; attach additional pages as necessary.

**Part A - Applicant**

Name Mike + Patty St. Jean

Mailing Address 43 Hickory Lane, Mansfield Center CT 06250

Zip \_\_\_\_\_

Telephone-Home 860 487 2663 Telephone-Business \_\_\_\_\_

Title and Brief Description of Project  
27' dia above ground used pool

Location of Project 43 Hickory Lane - back yard

Intended Start Date Actually done - didn't realize we had to have permit

**Part B - Property Owner (if applicant is the owner, just write "same")**

Name Same

Mailing Address \_\_\_\_\_

Zip \_\_\_\_\_

Telephone-Home \_\_\_\_\_ Telephone-Business \_\_\_\_\_

Owner's written consent to the filing of this application, if owner is not the applicant:

Signature \_\_\_\_\_ date \_\_\_\_\_

Applicant's interest in the land: (if other than owner) \_\_\_\_\_

Part C - Project Description (attach extra pages, if necessary)

1) Describe in detail the proposed activity here or on an attached page. (See guidelines at end of application - page 6.)

Please include a description of all activity or construction or disturbance:

- a) in the wetland/watercourse
- b) in the area **adjacent** to (within 150 feet from the edge of) the wetland/watercourse, even if wetland/watercourse is **off** your property

No activity in the wetland area.  
27' dia above ground pool to be located 50-55' from the wetlands limit line.  
Area fairly level to start with. Brought in approximately 32 wheelbarrow loads of silt as a base for the pool. Silt is completely covered by the pool (not exposed at all). 18" band of pea stone around the pool and grass around the pea stone and pool. Grass is around 100% of pool perimeter. This area was the most level area nearby the house. The land does taper off towards the wetlands but there is grass coverage and a stone wall buffer.

2) Describe the amount or area of disturbance (in square feet or cubic yards or acres):

- a) in the wetland/watercourse
- b) in the area **adjacent** to (within 150 feet from the edge of) the wetland/watercourse, even if wetland/watercourse is **off** your property.

Pool covers: 573 ft<sup>2</sup> of area, 50-55' from wetlands

3) Describe the type of materials you are using for the project: silt (very fine sand), pea stone

- a) include **type** of material used as fill or to be excavated \_\_\_\_\_
- b) include **volume** of material to be filled or excavated approx 32 wheelbarrow loads

4) Describe measures to be taken to minimize or avoid any adverse impacts on the wetlands and regulated areas (silt fence, staked hay bales or other Erosion and Sedimentation control measures).

Lawn around pool perimeter

Part D - Site Description

Describe the general character of the land. (Hilly? Flat? Wooded? Well drained? etc.)

Flat, well drained



- 2) Notice to Adjoining Town. If your property is within 500 feet of an adjoining town, you must also send a copy of the application, on the same day you sent one to Mansfield, to the Inland Wetlands Agency of the adjoining town, by certified mail, return receipt requested.
- 3) The Statewide Reporting Form (attached) shall be part of the application and specified parts must be completed and returned with this application.

**Part J - Other Impacts To Adjoining Towns, if applicable**

- 1) Will a significant portion of the traffic to the completed project on the site use streets within the adjoining municipality to enter or exit the site? \_\_\_ Yes  No \_\_\_ Don't Know
- 2) Will sewer or water drainage from the project site flow through and impact the sewage or drainage system within the adjoining municipality? \_\_\_ Yes  No \_\_\_ Don't Know
- ~~3) Will water run-off from the improved site impact streets or other municipal or private property within the adjoining municipality? \_\_\_ Yes  No \_\_\_ Don't Know~~

**Part K - Additional Information from the Applicant**

Set forth (or attach) any other information which would assist the Agency in evaluating your application. *(Please provide extra copies of any lengthy documents or reports, and extra copies of maps larger than 8.5" x 11", which are not easily copied.)*

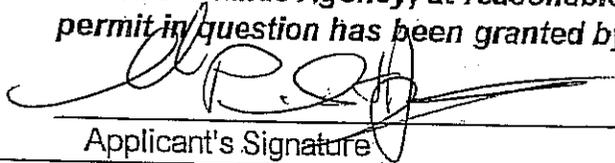
**Part L - Filing Fee**

Submit the appropriate filing fee. (Consult Wetlands Agent for the fee schedule available in the Mansfield Inland Wetlands and Watercourses Regulations.)

\_\_\_ \$385. \_\_\_ \$110. \_\_\_ \$60. \_\_\_ \$25. \$185

*Note: The Agency may require you to provide additional information about the regulated area which is the subject of the application, or about wetlands or watercourses affected by the regulated activity. If the Agency, upon review of your application, finds the activity proposed may involve a "significant activity" as defined in the Regulations, additional information and/or a public hearing may be required.*

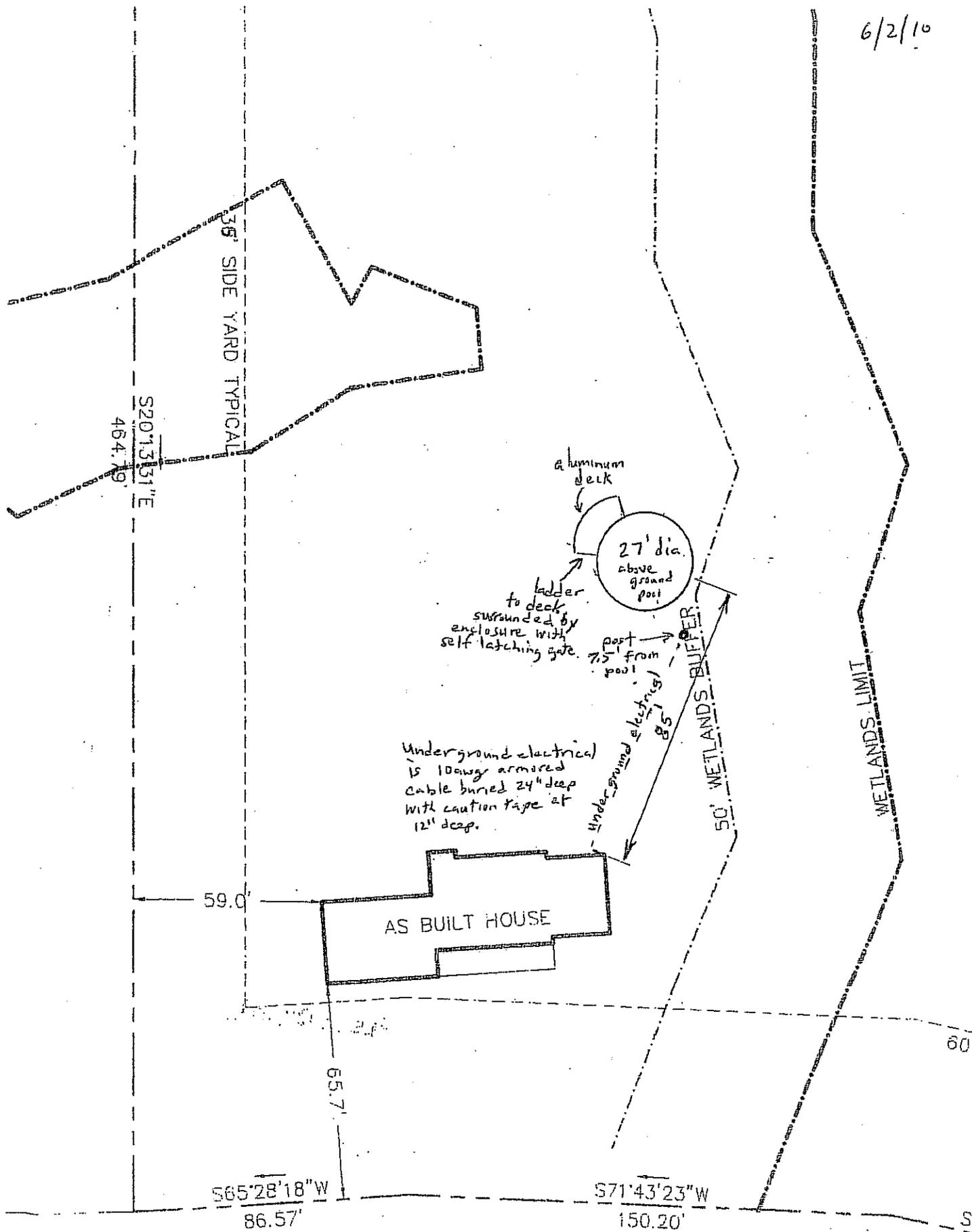
**The undersigned applicant hereby consents to necessary and proper inspections of the above mentioned property by members and agents of the Inland Wetlands Agency, at reasonable times, both before and after the permit in question has been granted by the Agency.**



Applicant's Signature

5/29/10  
Date

6/2/10



Underground electrical  
 is 10 gauge armored  
 cable buried 24" deep  
 with caution tape at  
 12" deep.

ladder  
 to deck  
 surrounded by  
 enclosure with  
 self-latching gate.

post  
 7.5' from  
 pool

Underground electrical  
 85'

50' WETLANDS BUFFER

WETLANDS LIMIT

1" = 40'

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Memorandum:

June 2, 2010

To: Inland Wetland Agency  
From: Grant Meitzler, Inland Wetland Agent  
Re: New Business for the June 7, 2010 meeting

**New Application:**

**W1455 - St.Jean 0 Hickory lane - above ground pool in buffer**

	yes	no
	-----	-----
fee paid .....	X	
certified receipts .....	X	
map dated .....		6.02.10

This application requests approval for an above ground pool located within the 150' regulated area adjacent to wetlands. The actual separation distance is 55'.

Receipt and referral to the Conservation Commission is appropriate.

**W1456 - DEP application - UConn Notice of Utility work  
vic. building opposite Swan Lake**

This is a referral of a permit now before the DEP for work near the Lakeside Apts. building on North Eagleville Rd next to St.Marks Church and opposite Swan Lake. The application describes installation of a 16 inch water main connecting the Lakeside water main to a water main in the Towers complex to the north. A second part of the proposed work is relocation of electrical lines to underground in this area.

The word drainage work mentioned in the title appears due to DEP requirement for standard titles. This application does not include any drainage work - it is limited to the utility work described in the application.

There are two wetland areas that will be crossed by utility trenches:

1. Wetland A is a wetland we looked at when we reviewed parking improvements for the St.Marks Church. The area is directly behind the Lakeside Building near and under a small area of parking spaces. This is noted as a "former wetland" it having been reworked by landscaping in the past. Parking spaces, lawn and landscaping have been placed over it. Dealing with this area is of negligible consequence now.
2. Wetland B is directly east of (behind) a chain link fence along the east edge of the St.Marks parking area. The 16" waterline and electrical lines are to run along the chain link fence through this area which does retain wetland appearance. The application and the soil scientist's recommendations indicate restoration of this area, with appropriate seeding, after the water main is installed.

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STATE OF CONNECTICUT  
 DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 Central Permit Processing Unit  
 79 Elm Street  
 Hartford, CT 06106-5127

CPPU USE ONLY
App #: _____
Doc #: _____
Check #: _____

# Permit Application Transmittal Form

Please complete this transmittal form in accordance with the instructions in order to ensure the proper handling of your application(s) and the associated fee(s). Print legibly or type.

## Part I: Applicant Information:

- \*If an applicant is a corporation, limited liability company, limited partnership, limited liability partnership, or a statutory trust, it must be registered with the Secretary of State. If applicable, applicant's name shall be stated exactly as it is registered with the Secretary of State.
- If an applicant is an individual, provide the legal name (include suffix) in the following format: First Name; Middle Initial; Last Name; Suffix (Jr, Sr., II, III, etc.).

Applicant: University of Connecticut	
Mailing Address: 31 LeDoyt Road, U-3055	
City/Town: Storrs	State: CT Zip Code: 06269-3055
Business Phone: 860-486-5446 ext.:	Fax: 860-486-5477
Contact Person: Richard Miller	Phone: 860-486-5446 ext.
E-Mail: richard.miller@uconn.edu	
Applicant (check one): <input type="checkbox"/> individual <input type="checkbox"/> *company <input type="checkbox"/> federal gov't <input checked="" type="checkbox"/> state agency <input type="checkbox"/> municipality	
*If a company, list company type (e.g., corporation, limited partnership, etc.):	
<input type="checkbox"/> Check if any co-applicants. If so, attach additional sheet(s) with the required information as supplied above.	
Please provide the following information to be used for <i>billing purposes only</i> , if different:	
Company/Individual Name:	
Mailing Address:	
City/Town:	State: Zip Code:
Contact Person:	Phone: ext.

## Part II: Project Information

Brief Description of Project: <i>(Example: Development of a 50 slip marina on Long Island Sound)</i>					
Utilities General Permitting involved with 16" water main, electrical manhole and conduit installation.					
Location (City/Town): Mansfield					
Other Project Related Permits ( <i>not</i> included with this form):					
Permit Description	Issuing Authority	Submittal Date	Issuance Date	Denial Date	Permit #



ADDITIONAL INFORMATION  
PART V: Site Information

Item 7 – Existing Conditions

- a. Describe the present and intended use(s) of the property on which the subject activity is proposed?

**Response:** This area is part of the University of Connecticut main campus at Storrs. The project area involved in this permit can be broken down into two specific land uses, as shown in the photographs in Appendix J3. Former Wetland Area A is part of the first area, while Wetland Area B is part of the second area.

The first area is a developed area behind the Lakeside building, which consists of paved parking, a mowed lawn area, and a landscaped area which is used primarily by Lakeside building personnel. As shown on the site plan in Appendix B, and further identified in Appendix J-1, part of this area contained wetland soils, which were disturbed during the prior 2005 Lakeside Building renovation to the current state. These previous wetland locations are identified as Former Wetland Area A on the drawings and in this application. A DEP Inland Wetlands and Watercourses permit # IW-200501956 was issued for this project, a copy of which is in Appendix J-1. Refer to photos in Appendix J-3.

The second area is a grassed field at the base of a gentle slope, where a small pocket of wetland soil (approximately 20' x 45') exists. This grassed area is immediately adjacent to a chain link fence which separates University property (within the field) on the east from a paved parking area on the property of St. Mark's Church to the west. During construction, underground water mains and electrical conduits will be installed, with the trench area restored to original grades, and vegetated. In the area of flagged wetlands, wetland soils will be segregated into a separate stockpile for replacement, with a special "wet meadow" grass seed mixture utilized, in order to replicate the area of disturbance as best possible.

- b. Describe all natural and man-made features including wetlands, watercourses, fish and wildlife habitat, floodplains and any existing structures potentially affected by the subject activity. Such features should be depicted on the site plan (Attachment B).

**Response:** As described above, Former Wetland Area A (the area immediately behind the Lakeside Building) presently has paved parking, mowed lawn, and landscaped areas. This area will be restored to its present conditions, once the utility improvements are constructed.

The second area is a tall grass field at the base of a slope, with a pocket of wetlands, characterized by hydric soils, at the base of the slope and immediately against a chain link fence. The area will be restored to its current condition as much as possible, once the utility improvements are constructed. See photos in Appendix J-3.

**Part VI: Project Summary (cont.)**

c. *Dam Characteristics:*

Maximum height: \_\_\_\_\_ feet

Total length: \_\_\_\_\_ feet

Type of construction (e.g., earth, concrete masonry, timber etc.):

Type of spillway (e.g., weir, drop inlet, ogee, etc.):

d. *Fill in Watercourses:*

Does the subject activity involve placement of fill material in the existing brook, stream, river or impoundment?     Yes     No

If yes, describe the volume of such fill, its engineering characteristics and intended purpose:

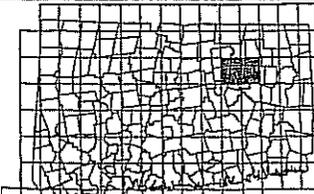
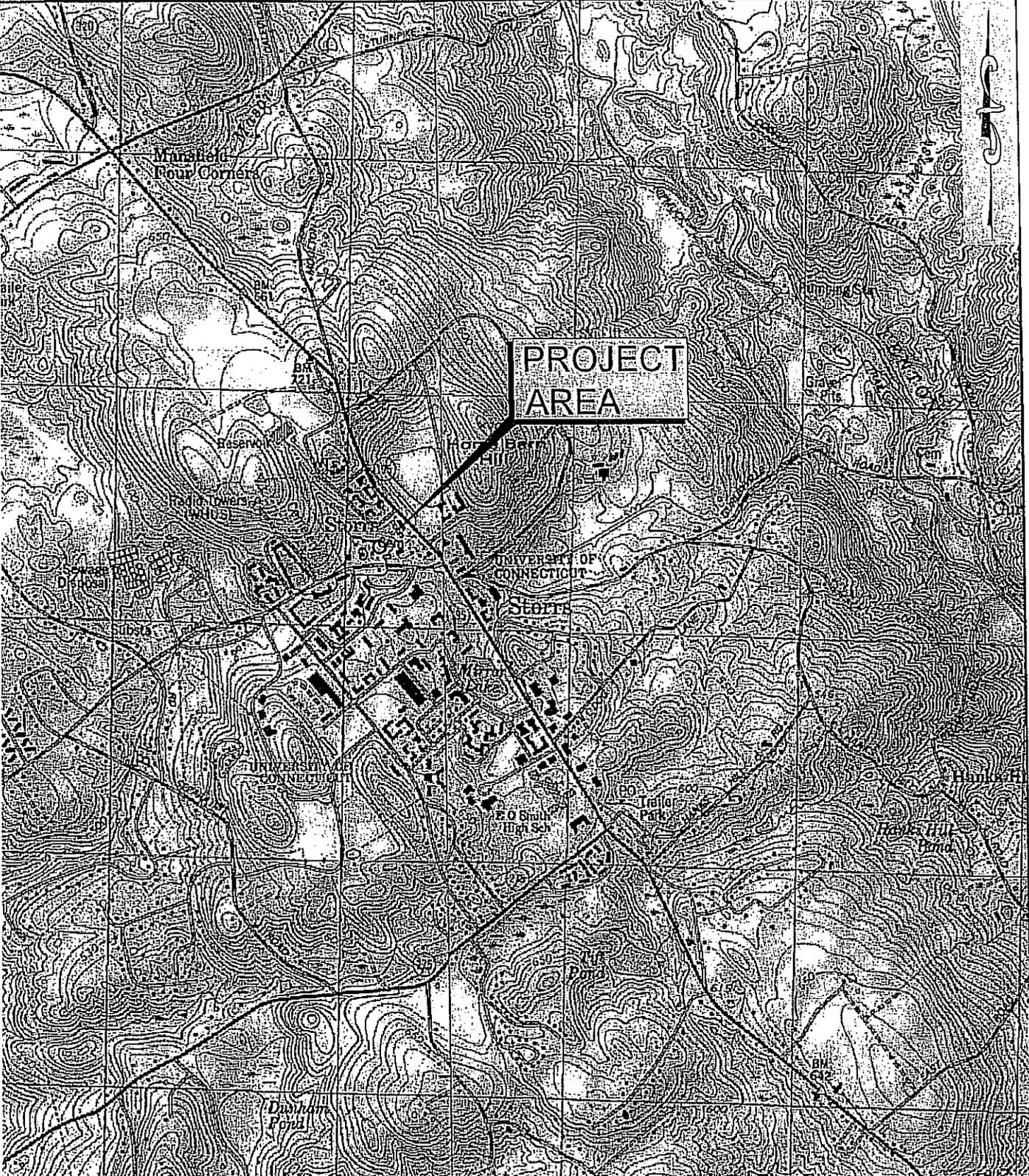
Check if *additional* sheets are attached to this page.

9. **Best Management Practices**

Describe the pollution prevention and best management practices that will be implemented during construction and operation of the proposed activity to: minimize disturbance and pollution of floodplains, wetlands, and watercourses; maintain an uninterrupted stream flow; and prevent flooding or other environmental damage. Show erosion and sedimentation controls in Attachment B, include pretreatment of stormwater runoff.

**The construction activity is scheduled to take place between June and October, 2010, the dry period of the year. Silt fencing will be placed along the toe of the slope in the vicinity of Wetland Area B, and catch basin protection will be provided, to minimize the impacts of construction to storm water discharges. In addition, erosion control matting will be placed on the steep slope immediately above Wetlands Area B, to encourage re-vegetation and minimize the potential for erosion.**

Check if additional sheets are attached to this page.



Source:  
 USGS TOPOGRAPHIC MAP  
 Coventry, CT QUADRANGLE  
 Spring Hill, CT QUADRANGLE

# ATTACHMENT A

## USGS TOPOGRAPHIC QUADRANGLE MAP

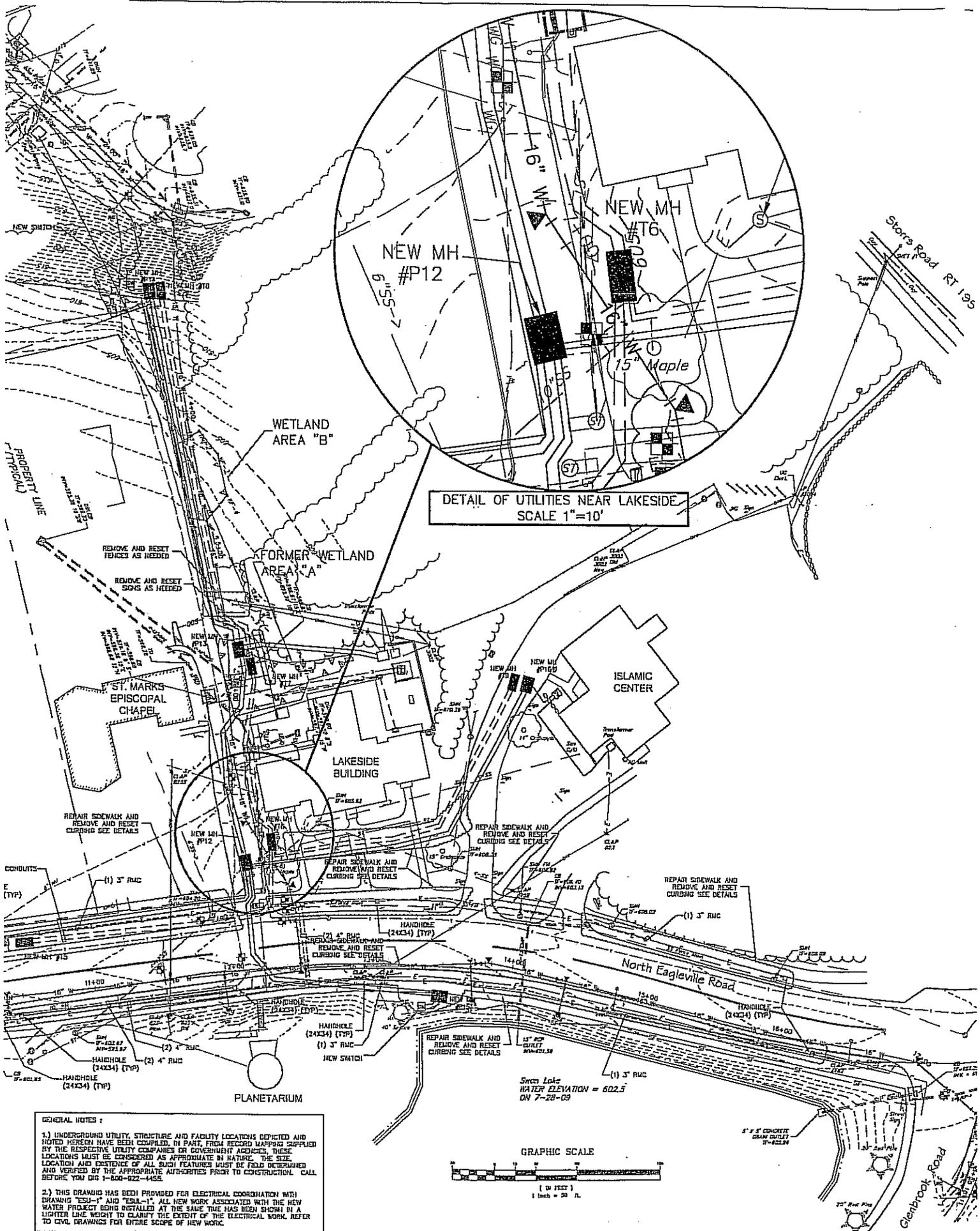
16" Water Main and Electrical Manhole / Conduit Installation

STORRS, CT

Scale 1"=2000'



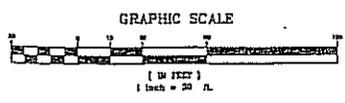
**Lenard Engineering, Inc.**  
 Storrs, CT



DETAIL OF UTILITIES NEAR LAKESIDE  
SCALE 1"=10'

**GENERAL NOTES :**

- 1.) UNDERGROUND UTILITY, STRUCTURE AND FACILITY LOCATIONS DEPICTED AND NOTED HEREON HAVE BEEN COMPILED, IN PART, FROM RECORD MAPPING SUPPLIED BY THE RESPECTIVE UTILITY COMPANIES OR GOVERNMENT AGENCIES. THESE LOCATIONS MUST BE CONSIDERED AS APPROXIMATE IN NATURE. THE SIZE, LOCATION AND EXISTENCE OF ALL SUCH FEATURES MUST BE FIELD DETERMINED AND VERIFIED BY THE APPROPRIATE AUTHORITIES PRIOR TO CONSTRUCTION. CALL BEFORE YOU DIG 1-800-822-4455.
- 2.) THIS DRAWING HAS BEEN PROVIDED FOR ELECTRICAL COORDINATION WITH DRAWING "ESU-1" AND "ESU-1". ALL NEW WORK ASSOCIATED WITH THE NEW WATER PROJECT BEING INSTALLED AT THE SAME TIME HAS BEEN SHOWN IN A LIGHTER LINE WEIGHT TO CLARIFY THE EXTENT OF THE ELECTRICAL WORK. REFER TO CIVIL DRAWINGS FOR ENTIRE SCOPE OF NEW WORK.



Switch Lake  
WATER ELEVATION = 622.5  
ON 7-28-09

5' x 5' CONCRETE  
DRAIN OUTLET  
T-60234



University of Connecticut  
*Administration and Operations Services*

Facilities Operations

May 14, 2010

Mr. Neil Facchinetti  
6 Storrs Heights Road  
Storrs, CT 06268

Dear Mr. Facchinetti:

As you know, the University has met with the Storrs Heights association on three occasions since the proposal to install three new irrigation wells was first introduced. These meetings included detailed history of water quality monitoring at the farm. Dr. Gary Robbins has also presented the scope and results of his scientific hydrogeologic study for the farm and surrounding area at these meetings. At the last such public meeting the University committed to abide by the recommendations of Dr. Robbins' study, and made several other commitments to further investigate the quality of groundwater.

With the exception of the letter dated January 27, 2010 from the UConn Plant Science department and a follow-up visit to the farm by several Storrs Heights residents on February 9, 2010, there has not been a formal update on the progress of our commitments. We'll take this opportunity to address all of your questions, reprinted here as they appear on the "Information for Neighbors of the UConn Farm" website followed by our responses in italics.

Water Quantity Questions

- 1) Of the four (4) deep wells designated for testing, only two (2) have the potential for yielding useful data; one of the four is dry and the other collapsed at 60 feet. What are the plans for achieving a total of four (4) deep test wells?

*It is true that PW-2 partially collapsed, making it impossible to use as a production well. However, it is still perfectly suitable for monitoring purposes, and it is one of the four wells that will be used to measure the depth of groundwater. The other deep wells are MW-3 and MW-4, located along the Storrs Heights boundary, and MW-2 (see attached map).*

*An Equal Opportunity Employer*

25 LeDoyt Road Unit 3252  
Storrs, Connecticut 06269-3252  
Facsimile: (860) 486-1486

Mr. Neil Facchinetti

May 14, 2010

Page 2

- 2) We understand that data collection from the 4 test wells will be performed manually by visiting each test well periodically. How often will these readings be conducted? How can we routinely receive notification of testing and test results? We want the opportunity to observe data collection at the deep test wells and to receive the results promptly.

*The water level data will be continually collected by instruments installed in the four deep test wells. The data will be continually transmitted to the office at the farm and automatically uploaded to a UConn Plant Science website that will be fully accessible to you and the public essentially in "real time."*

*In addition, Dr. Robbins study prescribed operating conditions that should make it highly unlikely for the farm's irrigation to affect the nearby residential wells. The pump rates and operating times of the irrigation wells will also be on the website. The Storrs Heights association shall be notified when the website is active.*

- 3) What are the criteria by which pumping will be curtailed or suspended? Initial recommendations called for 15 feet and 25 feet as suspension and cessation thresholds, respectively. How are these criteria established? Should they be more restrictive to provide better protection for neighboring water supplies? Drops of 15 and 25 feet in our shared aquifer would be a massive loss of water resources for surrounding residential communities.

*If groundwater levels at the property line as measured at MW-3 and MW-4 drop 15 feet from the seasonal norm, pumping will be curtailed. If groundwater levels drop 25 feet beneath the seasonal norm, all irrigation pumping will be suspended. Fluctuations on the order of 15 feet represent natural variations in bedrock well water levels in the area as noted in Dr. Robbins' study. Given the height of the water columns in the bedrock wells in the Storrs Heights community, as noted in Dr. Robbins's hydrogeologic study, a decrease of this magnitude at the property line represents an immaterial portion of the available water. Wells that are further away from the property line should be affected even less or not at all.*

- 4) Apparently the three (3) deep production wells will be in service before the 4 test wells are fully functional. We question the usefulness of data from test wells without initial baseline measurements conducted in the absence of pumping from the production wells.

*There will be no pumping from the irrigation wells until the four deep monitoring wells are capable of reporting actual data to the Plant Science website. Water level readings will be used to establish threshold water levels to evaluate the water level fluctuations in MW-3 and MW-4... The threshold estimates will be clearly displayed on the website for comparison to the actual "real time" groundwater levels.*

- 5) To date we have not discussed methods for applying water to the plots from these new wells. Certainly some methods are more efficient than others. Will the farm take steps to conserve water by using the most efficient and latest irrigation systems that minimize waste?

*The farm will continue to implement several measures it already deploys to reduce the need to use the supply wells.*

- *The irrigation systems used for both turfgrass and nursery plants are controlled by “rain-out” meters – these irrigation systems will automatically turn off water if more than a ¼” to ½” of rain is measured by these meters.*
- *More irrigation heads and watering hose hookups were recently installed and a mobile irrigation sprinkler was recently purchased. These features allow the farm to water only the small areas that need water the most.*
- *Potted plants are watered using drip-irrigation systems as much as feasible. Emitters placed in each pot that water only the plant, not the surrounding ground.*

*In addition, the farm has also expanded its irrigation pond as part of the commitments made to the community. The purpose of this is to capture more rain water during the wetter months, which gives the farm more water in storage and delays when the new wells are needed to supplement the natural supply.*

Water Quality Questions: Two (2) shallow (20’) test wells are planned along the border between Storrs Heights and the farm. We have several questions regarding these shallow test wells:

- 1) Will these shallow test wells be ready for testing before new irrigation wells go into production and before the next and subsequent applications of agricultural and experimental chemicals? They should be online before increased irrigation takes place.

*The two shallow water-quality wells have already been installed next to the deeper wells MW-3 and MW-4 (see attached map). The groundwater from these wells will be tested before the irrigation wells are used. Limited spring applications of agricultural chemicals typical of previous years have already occurred.*

- 2) Who will conduct these tests and how often will these tests be conducted? Will we be notified of these tests and have the opportunity to be present when samples are drawn and tested?

*A private environmental consulting firm will collect the samples. The quality analysis will be performed by a private laboratory. We will notify the Storrs Heights association and the Eastern Highlands Health District when the sampling is scheduled so that any interested persons can be present.*

- 3) How will we gain reliable access to these results?

*The laboratory reports shall be forwarded to the Storrs Heights association, the Eastern Highlands Health District and any other persons who request the data.*

- 4) Will pond water be tested?

*The pond consists primarily of stormwater run-off from the wooded area southeast of the farm. There are no plans to test the pond water.*

- 5) In a letter of January 27th from UConn, in response to questions from neighbors of the farm, we learned that tests for water quality will be limited to nitrate detection. We question whether this is adequate when we consider the grave consequences of toxic chemical slipping underneath the "radar," especially for children and pregnant women. It was stated in the UConn letter that the measurement of only nitrates is an "accepted and approved indication" of well contamination. By whom is it accepted and approved and is this approval based on expediency and commercial pressures on regulators or on sound scientific evidence?

*The groundwater samples will be analyzed for nitrates and agricultural chemicals. The list of pesticides used on the farm has been reviewed with the CT Department of Public Health testing lab and several private laboratories. The consensus has been to test the groundwater using several EPA-approved drinking water test methods designed to detect pesticides and herbicides.*

- 6) Concrete action plans need to be developed to ensure a rapid and effective response in the event chemicals are detected in the water. Under what test criteria will applications be suspended and remedial actions taken? Specifically, how will neighboring wells be protected in light of positive tests? In the UConn letter of January 27th, it was stated that "we [UConn] would institute any necessary remediation in consultation with the appropriate state agency including the installation of carbon trap filters if recommended," in response to neighbors' concerns. This statement leads us to several more questions: a) What state agency would be consulted? Who in that agency would be involved in decision making? B )Does this agency have established criteria and related remedial actions for chemical contamination? c) Are these agency criteria and remedial actions simply recommendations or are they backed by formal compulsory regulations? d) Where would funding be found for implementing remedial steps?

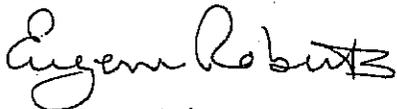
*Should any contaminants be detected in the monitoring wells, the results shall also be forwarded to the CT Department of Environmental Protection. More specifically, the Remediation Division of the Bureau of Water Protection and Land Reuse will be consulted, since this division administers the State's Remediation Standard Regulations, which include established criteria for remediating contamination. UConn shall abide by any requirements or recommendations made by DEP.*

Mr. Neil Facchinetti  
May 14, 2010  
Page 5

It's my understanding that the questions on the "Information for Neighbors of the UConn Farm" website are generally more comprehensive than those posed at the Mansfield Conservation Commission on April 21, 2010. However, in reviewing the minutes from that meeting, it appears that there is an additional question regarding provisions for monitoring any neighborhood wells. The intent is to operate the farm in a manner such that there could only be minimal affects at the property line, and this shall be confirmed with our monitoring. Private wells that are further away from the property line should be affected even less or not at all. As such, we have no plans to interfere with any private wells.

Should you have any questions or wish to discuss further, please contact me at 860-486-3185 or [eugene.roberts@uconn.edu](mailto:eugene.roberts@uconn.edu).

Sincerely,



Eugene B. Roberts  
Director of Facilities Operations

CC (electronic): Quentin Kessel, Mansfield Conservation Commission, Chair  
Greg Padick, Mansfield Director of Planning  
Matt Hart, Mansfield Town Manager  
Rob Miller, Eastern Highlands Health District Director  
Natalie Minlutti, President, Storrs Heights Association  
Steve Olsen, UConn Plant Science Farm Manager  
Karl Guillard, UConn Professor, Department of Plant Science and Landscape Architecture  
Mary Musgrave, UConn Professor and Head, Department of Plant Science and  
Landscape Architecture  
Gary Robbins, UConn Professor of Geology, Department of Natural Resources and the  
Environment  
Rich Miller, UConn Director of Environmental Policy  
Alexandria Roe, UConn Director of Planning and Project Development  
Tom Callahan, UConn Health Center  
Barry Feldman, UConn Vice President/COO

Monitoring Well and Production Well Locations  
University of Connecticut  
Plant Science Research and Education Facility



## Gregory J. Padick

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**From:** Robert L. Miller  
**Sent:** Wednesday, June 09, 2010 3:28 PM  
**To:** Matthew W. Hart; Gregory J. Padick; Grant Meitzler  
**Subject:** FW: groundwater sampling at the UConn Plant Science farm  
FYI

-----Original Message-----

**From:** Coite, Jason [mailto:jason.coite@uconn.edu]  
**Sent:** Wednesday, June 09, 2010 2:24 PM  
**To:** Robert L. Miller; Natalie Miniutti  
**Cc:** Quentin Kessel; nfacch@me.com; Olsen, Stephen; Guillard, Karl; Robbins, Gary; Gene Roberts; Musgrave, Mary; Roe, Alexandria; Tussing, Timothy; Peter Pezanko; Richard Miller  
**Subject:** groundwater sampling at the UConn Plant Science farm

Rob, Natalie:

On Monday June 14, 2010, technicians from Halley & Aldrich will be at the UConn the Plant Science Research and Education Facility on Agronomy Road.  
H&A will be on-site at approximately 10:00 a.m.  
Groundwater samples will be collected from our two shallow wells along the northern property line. The samples will be delivered to Phoenix Environmental Laboratories in Manchester, CT.  
The samples will be analyzed of pesticides and herbicides using standard drinking water test methodologies.  
You will be forwarded the analytical results.

Anyone interested in seeing the sample collection should visit the farm at that time.

Rob, as the director of EHHD, and Natalie, as the president of the Storrs Heights homeowner's association, you should feel free to distribute this email.

I have copied Quentin Kessel and Neil Facchinetti on this invitation. They should feel welcome to forward this as well.

-Jason

---

Jason Coite  
Environmental Compliance Analyst  
Office of Environmental Policy  
University of Connecticut  
ph. 860.486.9305

PAGE  
BREAK



University of Connecticut  
*Office of the Vice President and  
Chief Operating Officer*

Office of Environmental Policy

Richard A. Miller, Esq.  
*Director*

May 18, 2010

Ms. Denise Ruzicka  
Director Inland Water Resources Division  
CT Department of Environmental Protection  
79 Elm Street  
Hartford, CT 06106-5127

**RE: Swan Lake Drainage Outfall Improvement**

Dear Ms. Ruzicka:

As you know, DEP IWRD issued General Permit authorization IW-200903033GP permitting UConn to install a plunge pool where Swan Lake drains to Valentine Meadow. A drainage pipe from the portion of campus east of Rt. 195 and north of Gurleyville Road also daylights at the proposed plunge pool location. A retaining wall and pipe extensions were included in the design. The plunge pool is an erosion control measure designed to correct existing erosion and to prevent future erosion related to increased flow as a result of full implementation of our Drainage Master Plan/Campus-Wide Flood Management Certification.

As you specified in your letter dated April 20, 2010, we have suspended all actions related to the general permit authorization. Before we proceed with the proposed activity, your letter requires UConn to respond to the three items of concern which are copied below in italics and followed by our responses.

- *Correct, as necessary, information or materials submitted in its request for authorization.*

We have attached copies of corrected pages from the original general permit application. Corrections are noted in red text in the attachment and consist of the following.

*An Equal Opportunity Employer*

31 LeDoye Road Unit 3055  
Storrs, Connecticut 06269-3055

Telephone: (860) 486-8741  
Facsimile: (860) 486-5477  
e-mail: rich.miller@uconn.edu

On page 6, part V, #2 of the application we had inadvertently indicated that the discharge and the proposed plunge pool location were in an area that formed the headwaters of Roberts Brook. In fact, Roberts Brook runs perpendicular to and 520' south of the Swan Lake outfall. The subject activity is to a storm drainage trench that has effectively become an unnamed, intermittent watercourse and a tributary to Roberts Brook, and we have revised the application to indicate as such. This correction is made throughout the application, specifically on Page 7a - Additional Information and on Page 8, Part VI, #1.

On page 7, part V, #6a of the application we had indicated that the subject activity was not within a watercourse or floodplain. The subject activity is not within a mapped floodplain. However, while most if not all of the water flowing through the area of the subject activity is derived from storm drainage, the subject area would appear to technically meet the criteria for an intermittent watercourse defined in CGS 22a-38. As such, we have revised the application to indicate that the subject activity is within a watercourse by checking off "yes." The total land surface area draining to the site of the subject activity is approximately 102 acres.

On page 8, part VI, #2 of the application, the initiation of activity was reported to be Fall 2009. We have revised the application to indicate that we plan to initiate activity in the summer of 2010.

- *Provide documentation that a copy of the request for authorization was provided to the inland wetlands agency, zoning commission, planning commission or combined planning and zoning commission, and conservation commission of each municipality which is or may be affected by the subject activity.*

The Town of Mansfield has an inland wetlands agency (IWA), which is also its combined planning and zoning (P&Z) commission, and a separate conservation commission. On August 17, 2009, two copies of the permit application were hand delivered to the Mansfield town planning office. The copies were intended for the wetlands agency and combined P&Z commission, as page 12 of 13 of the permit application indicates. A receipt of delivery was not obtained, however the IWA's September 7, 2009 meeting agenda (attached) lists the Swan Lake permit application, and several pages from the application are included in the agenda packet (available at [http://www.mansfieldct.gov/filestorage/1904/5335/2166/20090908\\_packet.pdf](http://www.mansfieldct.gov/filestorage/1904/5335/2166/20090908_packet.pdf)). Note, the membership for Mansfield IWA is the same as that for its P&Z commission.

The conservation commission was not directly provided a copy of the application by UConn. This was inadvertent and unintentional. However, the permit application was discussed with the Commission when UConn presented our Drainage Master Plan at their November 18, 2009 meeting. In addition, the Swan Lake outfall permit application appears on their December 16, 2009 meeting agenda (attached) and a copy was included in the December meeting packet (available at [http://www.mansfieldct.gov/filestorage/1904/5335/2134/20091216\\_packet.pdf](http://www.mansfieldct.gov/filestorage/1904/5335/2134/20091216_packet.pdf)).

As you know, page 12 of the general permit application clearly states that DEP cannot authorize the proposed activity until thirty-five days after the date of service to the appropriate municipal agencies. Based on the published meeting agendas, the Mansfield IWA (and the P&Z by virtue of having the same membership) and the Conservation Commission received the applications and had more than thirty-five days to comment before the general permit authorization was issued on February 22, 2010.

- *Please provide information responsive to the attached letter[s] from Mr. Quentin Kessel on behalf of the Mansfield Conservation Commission.*

Chairman Kessel's Letter dated March 17, 2010

This letter relates to the Swan Lake drainage outfall improvements by referring to previous alterations made to Swan Lake in the early to mid-1990's. At that time, Swan Lake's outlet to Eagleville Brook was slightly raised, thereby increasing flow through the pond's outlet to Valentine Meadow – the subject area of the proposed activity. The Commission's letter assesses that the erosion observed downstream of the Swan Lake's Valentine Meadow outlet, one of the principal reasons for the proposed activity, is due to this outlet alteration. Note, the drainage area for Swan Lake is sixteen acres, far less than the 100-acre threshold for diversion permitting. Further, raising Swan Lake's Eagleville Brook outlet is Flood Management certified since it was included as an existing feature in our Drainage Master Plan, which was recently approved as a campus-wide Flood Management Certification.

This letter also notes that increasing the flow from Swan Lake into a watercourse that contributes to a public drinking water supply should have necessitated a permit from the Department of Public Health (DPH). Although DPH requires a permit for any new stormwater discharge within 100' of a watercourse that contributes to a public water supply, DPH staff have advised us that retro-actively permitting this discharge is not possible. At DPH's request, we have submitted a stormwater discharge application for the Swan Lake drainage outfall work, noting that there is no actual new stormwater discharge as a result of this work. Also at DPH's request, this application includes supplemental information on the Swan Lake alteration completed in the 1990's.

Any diversion of runoff from the North Campus area (proposed "55-acre diversion") several years from now in accordance with our Drainage Master Plan would also require such authorization from DPH.

Chairman Kessel's Letter dated March 18, 2010

The Conservation Commission lists two concerns with the Swan Lake drainage outfall permit application. The first refers to Page 7, Part V, #6a of our general permit application in which we indicated that the erosion-prevention measures proposed at the Swan Lake outfall were not within a watercourse. The subject area would technically appear to meet the criteria for an intermittent watercourse defined in CGS 22a-38 (see above, paragraph 2, page 2). As such, we have revised the application to indicate that the subject activity is within a watercourse by checking off "yes."

The second concern posed in this letter relates to the lack of documentation confirming that the appropriate municipal agencies received copies of the Swan Lake outfall general permit application. This is addressed in our response to your request for documentation that the application was delivered to the appropriate town agencies (see above, paragraph 2, page 3).

Chairman Kessel's Letter dated March 19, 2010

This is a cover letter to several attachments, including photographs of the Swan Lake outfall area that is the location of the permitted activity. While the photos may illustrate the heavy volume and rate of discharge during peak storm events and the current need for the Swan Lake outfall improvements, we believe the Commission intended to illustrate that the discharge was to an intermittent watercourse. As previously stated, we have revised our permit application to indicate the work area is within an intermittent watercourse. Regarding the necessity of the project, the UConn Drainage Master Plan documents the existing erosion problem caused by the flows of water through this channel. The installation of the proposed plunge pool will slow down the flow and allow the downstream channel to restore itself over time. Further, the plunge pool has been sized to safely accommodate any additional flows. All required permits for the diversion work will be applied for at the proper time.

It should be noted that in addition to this written response, UConn has attended two Mansfield Conservation Commission meetings in which we discussed the Drainage Master Plan and the Swan Lake outfall improvements. Also, we have met separately with the Commission's chair on this subject three times since last November.

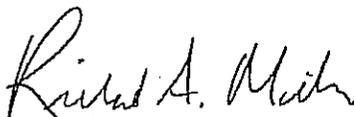
RE: Swan Lake Drainage Outfall Improvement

Page 5

May 18, 2010

We look forward to receiving your approval to proceed with already permitted Swan Lake outfall project. Our permit application and our discussions with the Commission demonstrate that the outfall project is a necessary improvement that will be a benefit to Roberts Brook. The permit applications for our future drainage projects will continue to demonstrate that any affects to the Roberts Brook watershed as a result the flood and water quality improvements to Eagleville Brook will be environmentally permissible.

Regards,



Richard Miller

Director of Environmental Policy

Attachments

Cc: Quentin Kessel, Mansfield Conservation Commission, Chair  
Greg Padick, Mansfield Director of Planning

**Attachment 1**

**Copies of Corrected Pages from  
Swan Lake Drainage Outfall Improvements,  
Request for Authorization, General Permit Authorization for Utilities and Drainage**

**Part V: Site Information**

1. **Site Location:**

a. Name of facility, if applicable:  
Street Address or Description of Location: **Intersection of Gurleyville Road and Horsebarn Hill Road**  
City/Town: **Storrs** State: **CT** Zip Code: **06269**  
Project No., if applicable:

b. Tax Assessor's Reference: Map Block Lot  
(Assessor's reference is not required if requester is an agency of the State of Connecticut.)

c. Latitude and Longitude of the approximate "center of the site" in *degrees, minutes, and seconds*:  
Latitude: **72-14'-43" N** Longitude: **41-48'-11" W**  
Method of determination (check one):  GPS  USGS MAP  Other  
If a USGS Map was used, provide the quadrangle name: **Spring Hill**

d. In case of an existing dam structure, the CT Dam Inventory Number:

2. Name of the wetland or watercourse involved with or adjacent to the subject activity:  
**Roberts Brook** unnamed tributary to Roberts Brook, which is ~520' downstream from the outfalls

3. Is the subject activity located in a public water supply watershed?  Yes  No  
If yes, provide the name of the water utility: **Windham Water Works**

4. Is the activity which is the subject of this registration located within the coastal boundary as delineated on DEP approved coastal boundary maps?  Yes  No  
If yes, and this registration is for a new authorization under the general permit or for a modification of an existing general permit, you must submit a *Coastal Consistency Review Form* (DEP-APP-004) with your registration as Attachment C.  
For forms or assistance, please call the Permit Assistance Office at 860-424-3003.

5. Is the project site located within an area identified as a habitat for endangered, threatened or special concern species as identified on the "State and Federal Listed Species and Natural Communities Map"?  
 Yes  No Date of Map: **June 2009**  
If yes, complete and submit a *Connecticut Natural Diversity Data Base* (CT NDDDB) *Review Request Form* (DEP-APP-007) to the address specified on the form.  
When submitting this request for authorization, please include copies of any correspondence to the NDDDB, including copies of the completed CT NDDDB Review Request Form, any field surveys, and any other information which may lead you to believe that endangered or threatened species may or may not be located in the area of your existing or proposed permitted activity, as Attachment D.  
Has a field survey been conducted to determine the presence of any endangered, threatened or special concern species?  Yes  No If yes, provide:  
Biologist's Name:  
Address:  
*and* submit a copy of the field survey with your application as Attachment D.

**Part V: Site Information (cont.)**

6a. Is the subject activity within a watercourse or floodplain?  Yes  No

If yes: Provide the land surface area draining to the site of the subject activity:

acres or square miles

6b. Will the subject activity be within a FEMA floodway?  Yes  No

(i) If yes, and the subject activity is the construction of a culvert or a bridge, submit, as Attachment E, the certification by a licensed engineer, together with the hydraulic analysis in support thereof, that such culvert or bridge is designed in accordance with accepted engineering practices and conforms to the applicable flood management standards and criteria under 44CFR Chapter 1, Part 59 through 79, inclusive.

(ii) If the requester has a Flood Management (FM) Certification for the subject activity, provide the FM certification number:

An FMC application accompanies this GP application.

**7. Existing Conditions**

a. Describe the present and intended use(s) of the property on which the subject activity is proposed.

The property is part of the University of Connecticut's Storrs campus. The project site currently receives stormwater flows from two sub-watersheds on campus, and will continue to receive stormwater flows from these sub-watersheds, in addition to flows from a ~57-acre watershed in the future. This project was included in the University's April 2006 Campuswide Drainage Master Plan, submitted as a Flood Management Certification application.

Check if additional sheets are attached to this page.

b. Describe all natural and man-made features including wetlands, watercourses, fish and wildlife habitat, floodplains and any existing structures potentially affected by the subject activity. Such features should be depicted on the site plan (*Attachment B*). In the case of maintenance and repair or improvements to an existing dam, describe the condition of the structure which necessitates such work.

Approximately 700 square feet of wetland and watercourse will be affected by the activity. Some trees will be removed for the proposed construction to stabilize the slope. The existing 30" and 36" drain lines will be relocated, a new head wall and preformed scour hole will be constructed. The relocated drain lines will be extended no more than 5' from their existing location.

Check if additional sheets are attached to this page.

approximately 520' away.

ADDITIONAL INFORMATION  
PART V: Site Information

that converges with

Item 6a. Is the subject activity within a watercourse or floodplain?

Response: ~~No.~~ The project location consists of the combined discharge locations for the Swan Lake overflow piping, as well as a pipe ~~with~~ <sup>which</sup> drains the Horsebarn Hill Watershed. These pipes discharge adjacent to each other, into a small channel, ~~and form the headwaters of Roberts Brook.~~ These discharges only flow generally when there is a storm event, after which there is no significant flow in the channel. ~~Therefore, we believe the area immediately downstream of the discharge location should not technically be a watercourse.~~

We also reviewed the FEMA flood plain maps, and our project is well outside the limits of the mapped FEMA floodplain.

## Part VI: Project Summary

### 1. Regulated Activity

Describe the activity which is the subject of this request for authorization including the reason for conducting or maintaining the activity. If the subject activity is to be conducted on an existing dam, describe the specific nature and location of maintenance, repair or improvement activities relative to the dam structure itself.

The existing storm drainage outlets into <sup>an unnamed tributary to</sup> Roberts Brook are showing signs of erosion and the proposed project will correct that erosion, as well as provide additional erosion protection at the outlet suitable for the proposed increased stormwater flows as described in the attached sheet.

Check if additional sheets are attached to this page.

### 2. Initiation of Activity

When does the requester plan to initiate construction of the subject activity?

~~Fall, 2009~~ Summer 2010

### 3. Construction Activity Details

Provide the following information about the subject activity's impact on wetlands, watercourses or floodplains (all such details must also be depicted on the site plan included in this request for authorization as Attachment B):

- a. Volume of proposed fill: cubic yards
- b. Area of proposed fill: acres
- c. Volume of proposed excavation: cubic yards
- d. Area of proposed excavation: 0.016 acres
- e. Area of any clearing, grubbing of land, or other alteration of the land: 0.15 acres
- f. Describe the volume and area of any temporary fill, the purpose of such fill, and when it will be removed.

Check if additional sheets are attached to this page.

**Attachment 2**

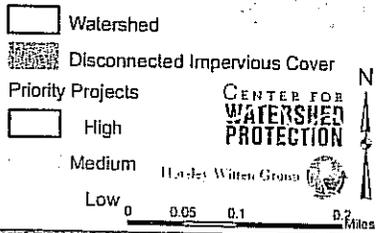
**Copies of Mansfield IWA September 7, 2009 Meeting Agenda  
and Mansfield Conservation Commission December 16, 2009 Meeting Agenda**

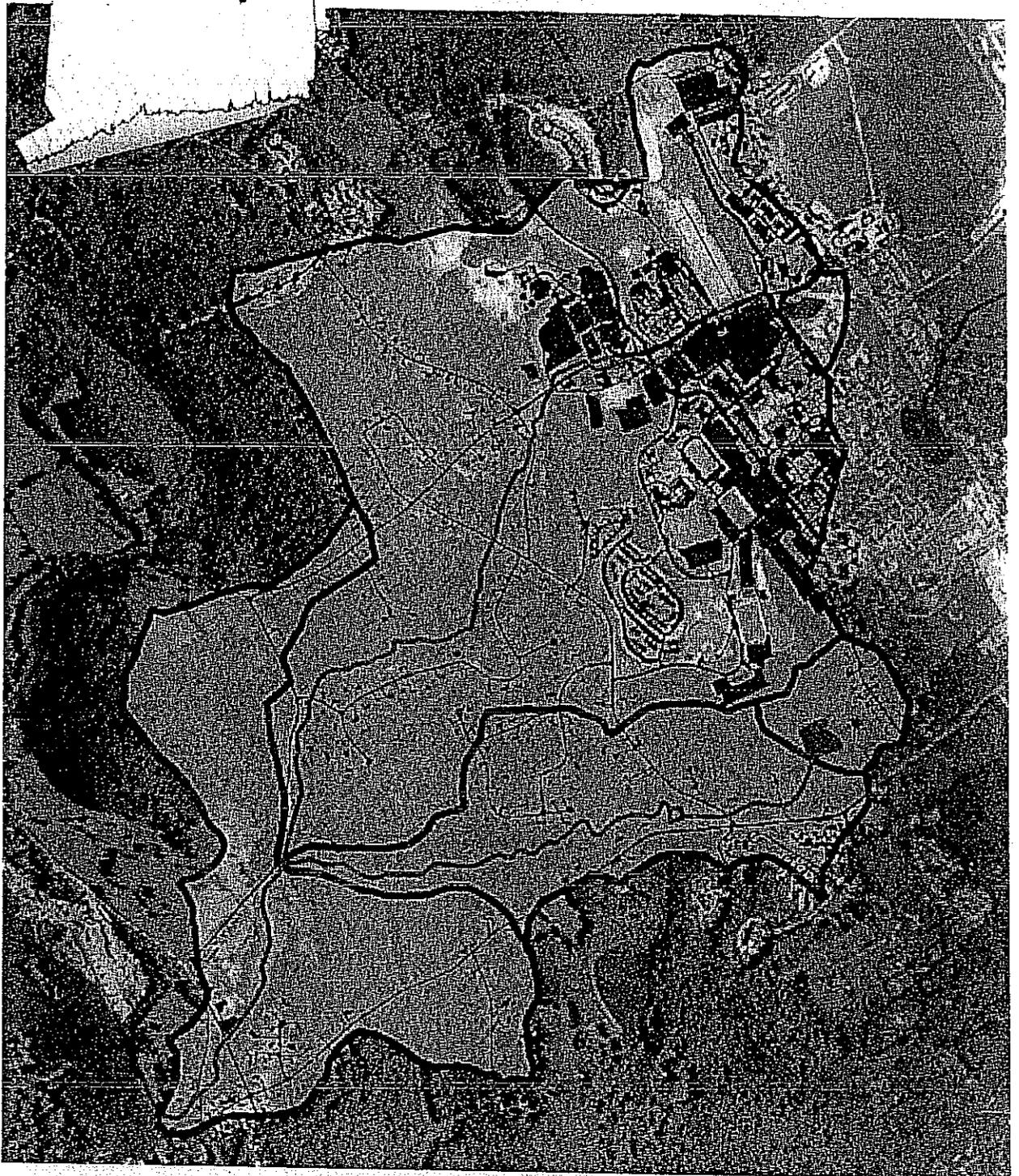
## AGENDA

Mansfield Conservation Commission  
Wednesday, December 16, 2009  
Audrey P. Beck Building  
CONFERENCE ROOM B  
7:30 PM

1. Call to Order
2. Roll Call
3. Opportunity for Public Comment
4. Minutes
  - a. November 18, 2009
5. New Business
  - a. IWA Referrals: (memo from Inland Wetlands Agent)
    - W1444 - Hillel House - sidewalk and parking alternations
    - W1445 - Chernushek - add'l gravel removal
    - W1446 - Kielbania - Mansfield City R - SF house in buffer
  - b. Proposed Telecommunication Tower, Daleville Road, Willington (memo from Director of Planning)
  - c. Proposed State Streamflow Standards and Regulations (email from River Alliance of CT and draft Regulations attached)
  - d. Other
6. Continuing Business
  - a. UConn Master Drainage Plan/Memorandum of Agreement with DEP/Swan Lake Drainage Outfall Report
  - b. Water Supply Issues (Willimantic Wellfield Study Technical Advisory Committee meeting postponed to January)
  - c. Invasive Plantings (PZC has agreed to revise Zoning Regulations)
  - d. Protecting Mansfield's Aquifers (Conservation Commission recommended revisions to Zoning Regulations to be incorporated into Spring 2010 revision proposal)
  - e. CL&P "Interstate Reliability Project" (See attached email from CL&P)
  - f. Proposed UConn Composting Facility (site work has started and facility expected to be in operation in early 2010)
  - g. Ponde Place Student Housing Project (well drilling and testing has started)
  - h. Natchaug River Basin project (no new information)
  - i. Eagleville Brook Impervious Surface TMDL Project (no new information)
  - j. Conservation Commission Administrative Procedures
  - k. Other

**Map A.1.**  
**Stormwater Retrofit Opportunities**  
**in the Eagleville Brook Watershed**





# Site A3/4: F Lot

Terraced Parking Lot Bioretention

Project Summary		
		
Parameter	A3	A4
Impervious Cover Treated (acres)	1.64	1.13
Runoff Reduction Volume (cu ft per 1" rain event) <sup>1</sup>	1130	550
TN Removal (lb/yr)	19.91	13.75
TP Removal (lb/yr)	2.31	1.6
TSS Removal (lb/yr)	500.81	345.9
Estimated Cost	\$89,000	\$41,000
<sup>1</sup> Although this project has no actual infiltration a reduced level of runoff reduction is calculated to account for extended filtration and evapotranspiration.		

### Site Description

The proposed retrofit concept is located on the UConn Campus in the F Lot. The site is a terraced parking lot, with an upper and lower parking area separated by a grassed slope (Figure 1). The site is over a former landfill with an impervious cap.

### Existing Conditions

Runoff from both lots is captured in an enclosed storm drain system, which discharges directly to Eagleville Brook. Grassed areas, including a sloped island between the upper and lower parking areas and below the lower parking area, currently receive no runoff from the parking lot.

### Proposed Concept

Install two bioretention areas, one in the sloped island between the upper and lower parking area (Site A3), and one below the lower parking area (Site A4). Figure 2 shows locations of proposed practices as seen in the field. Convey runoff to each practice using paved flumes. Each of the filters will allow 6-9" of ponding depth above the filter. Two bioretention filters, constructed in fill (i.e., above

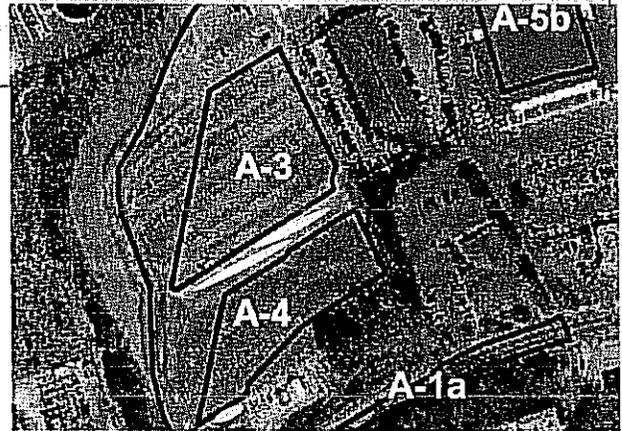


Figure 1. Drainage areas to proposed bioretention cells.



Figure 2. Location of terraced A3 bioretention down slope between two parking areas (upper photo), Location of A4 bioretention cell near entrance to parking lots (lower photo).

the landfill cap) will capture runoff from the upper parking lot. The filter bed will be sloped, ranging from 6" to 18", constructed above the existing grade. An underdrain will be installed at the lower

end of each filter. This underdrain will tie into an overflow structure which will then convey stormwater to a very deep storm drain system.

At the lower site A4, the practice will be excavated to a filter depth of 12", then captured in an underdrain and conveyed to Eagleville Brook. The site overflow for this practice is a spillway which allows overland flow to the Brook.

**Preliminary Concept Designs**

A 25% concept design for the proposed retrofit can be found in attachment B, which includes preliminary plan views, cross sections and project details. These initial plans will require field survey and more information on drainage pipes, utilities, and soils (among other things) before going to construction plans.

**Preliminary Hydrologic Calculations**

Preliminary sizing of the bioretention area was completed based on guidance provided in the 2004 Connecticut Stormwater Quality Manual. These computations are summarized in the following table.

Sizing Calculations for Sites A3/A4		
Parameter	Value	
	A3	A4
Drainage Area, A (acres)	1.64	1.13
Imperviousness, I (%)	100	100
Volumetric Runoff Coefficient, Rv	0.95	.95
Rainfall Depth, P (in)	1	1
Water Quality Volume, WQv (cf)	5,648	3,901
Depth of the Filter Bed, d (ft)	1	1
Hydraulic Conductivity, k (ft/day)	1	1
Max. Ponding Depth, hmax (in)	9	9
Average Ponding Depth, h (ft)	0.375	0.375
Drawdown Time, t (days)	2	2
Surface Area Required, Af (sq. ft)	2,054	1,418
Surface Area Provided (sq ft)	3,125	500
Treatment Provided (% of 1")	100	35

**Design Considerations**

For site A3, the greatest design constraint is the landfill cap below the filter proposed in the sloped median between the two parking areas. The proposed design assumes that the filter is completely in fill, with the bottom of the filter adjacent to the existing ground surface. Designers should investigate the possibility of excavating

slightly into the landfill cap, providing a flat filter bottom at a depth of 18".

Three potential constraints need to be investigated:

- Electric lines are in the vicinity of the proposed filter, and their locations need to be confirmed.
- The filter is shallow due to potentially high groundwater table. Need to confirm depth of high groundwater.
- Available mapping suggest that the landfill cap does not extend to this area of the F Lot site. Need to confirm.

**Maintenance**

Maintenance is important for bioretention areas, particularly in terms of ensuring that they continue to provide measurable stormwater management benefits over time. The routine maintenance activities typically associated with bioretention areas are summarized in the table below.

Maintenance Activities for Sites A3/4	
Activity Schedule	Frequency
<ul style="list-style-type: none"> <li>• Water once a week during the first two months, and then as needed and depending on rainfall to promote plant growth and survival.</li> <li>• For the first six months following construction, the site should be inspected at least twice after storm events that exceed a half-inch. Inspectors should look for bare or eroding areas in the contributing drainage area or around the bioretention area, and ensure they are immediately stabilized with grass cover.</li> </ul>	As Needed (following construction)
<ul style="list-style-type: none"> <li>• Prune and weed bioretention area to maintain appearance.</li> <li>• Remove accumulated trash and debris.</li> </ul>	Regularly (Monthly)
<ul style="list-style-type: none"> <li>• Inspect inflow area for sediment accumulation and remove any accumulated sediment or debris.</li> <li>• Inspect bioretention area for dead or dying vegetation. Plant replacement vegetation as needed.</li> </ul>	Annually
<ul style="list-style-type: none"> <li>• Remove and replace existing mulch</li> </ul>	Every 2 to 3 Years

# Site A-5: Warehouse and Motor Pool

Perimeter Sand Filter/ Green Roof at Stormwater Hotspots

Project Summary		
Parameter	A-5a	A-5b
Impervious Cover Treated (acres)	1.33	0.93
Runoff Reduction Volume (cu ft per 1" rain event)	0	1,444
TN Removal (lb/yr)	4.63	8.0
TP Removal (lb/yr)	1.25	1.1
TSS Removal (lb/yr)	212.96	284
Estimated Cost	\$56,000	\$545,400

### Site Description

The proposed retrofit concept is located on the UConn Campus at the motor pool and warehouse east of the facilities building (Figure 1). The motor pool's parking area is entirely impervious, with some indications of oil spillage near the fueling area. The warehouse has a large, flat roof.

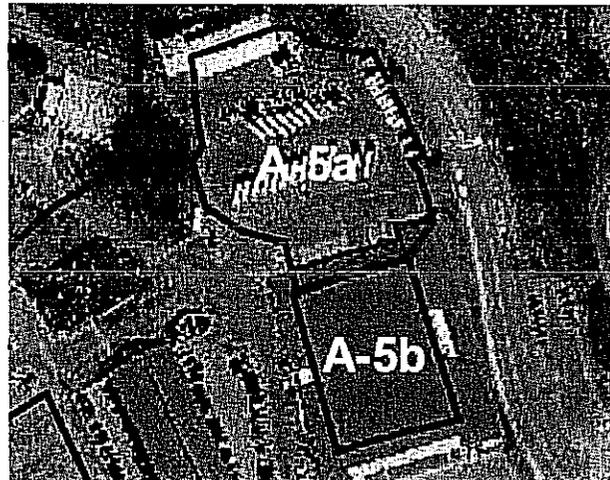
### Existing Conditions

Runoff from this site is captured in an enclosed storm drain system. Although there appears to be a trap to capture drainage from inside the building, presumably leading to the sanitary sewer system, there is currently no stormwater treatment on the site. Consequently, the potential for automotive contaminants (i.e., oil, antifreeze, brake fluid) to come into contact with stormwater is high (Figure 2).

### Proposed Concept

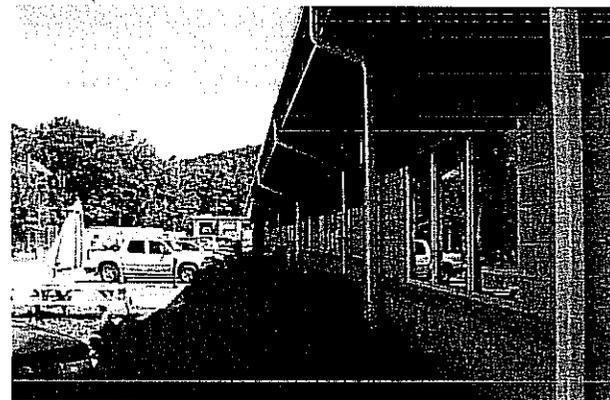
Install a perimeter sand filter to capture motorpool parking lot runoff (Site A5a), and a green roof on the rooftop (Site A5b). Convey overflow from these practices to the existing storm drain system.

Figure 1. Drainage areas to two proposed practices, a sand



filter (A5-a) and green roof (A-5b).

Figure 2. Motorpool parking lot (top) and existing external



rooftop drains from warehouse to storm drain (lower).

**Preliminary Concept Designs**

A 25% concept design for the proposed retrofit can be found in attachment B, which includes preliminary plan views, cross sections and project details. These initial plans will require field survey

and more information on drainage pipes and utilities before going to construction plans.

**Preliminary Hydrologic Calculations**

Preliminary sizing was completed based on guidance provided in the 2004 Connecticut Stormwater Quality Manual. These computations are summarized in the following table.

Sizing Calculations for Sites A-5a/b		
Parameter	Value	
	A-5a	A5-b
Drainage Area, A (acres)	0.92	0.93
Imperviousness, I (%)	97	100
Volumetric Runoff Coefficient, Rv	0.92	0.95
Rainfall Depth, P (in)	1	1
Water Quality Volume, WQv (cF)	4,600	3,208
Porosity	—	0.4
Depth of the Filter Bed, d (ft)	1.5	—
Hydraulic Conductivity, k (ft/day)	3.5	
Max. Ponding Depth, hmax (in)	12	
Average Ponding Depth, h (ft)	0.5	
Drawdown Time, t (days)	1	
Surface Area Required, Af (sq. ft)	986	
Media Depth Required (in)	—	2.5
Surface Area Provided (sq ft)	600	40,520
Treatment Provided (% of 1")	61	100

**Design Considerations**

For site A-5a, the depths and locations of storm drainage needs to be confirmed. Available storm drain infrastructure maps suggest that no storm drains exist within the parking lot, or in the adjacent road, but field investigations indicate at least one storm drain structure in the parking lot, and an additional structure near the entrance of the lot treated by practice A-5a. Mapping needs to be validated.

In addition, the filter at site A-5a is relatively close to mapped water and electric lines. The specific location of these utilities needs to be verified in the field.

For site A-5b, the roof's structural integrity needs to be verified to confirm that a green roof is a feasible option. Lessons learned from other green roof installations on campus should be incorporated into planning, construction, and long-term maintenance.

**Maintenance**

The routine maintenance activities typically associated with sand filters (A-5a) and green roofs (A-5b) are summarized in the tables below.

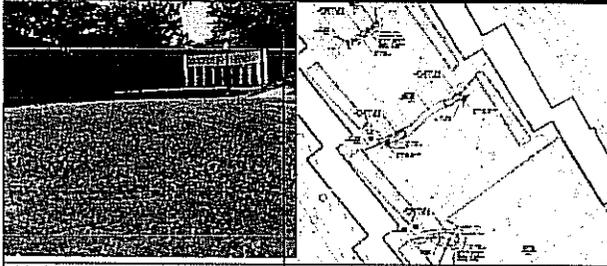
Maintenance Activities for Sandfilters	
Activity Schedule	Frequency
<ul style="list-style-type: none"> <li>Remove blockages and obstructions from inflows.</li> <li>Relieve clogging.</li> <li>Stabilize contributing drainage area and side-slopes to prevent erosion.</li> </ul>	As Needed (following construction)
<ul style="list-style-type: none"> <li>Inspection and cleanup.</li> </ul>	Annually
<ul style="list-style-type: none"> <li>Cleanout wet sedimentation chambers.</li> </ul>	Every 2 to 3 Years
<ul style="list-style-type: none"> <li>Replace top sand layer.</li> </ul>	Every five years

Maintenance Activities for Green Roofs	
Activity Schedule	Frequency
<ul style="list-style-type: none"> <li>Water to promote plant growth and survival.</li> <li>Inspect the green roof and replace any dead or dying vegetation.</li> </ul>	As Needed (Following Construction)
<ul style="list-style-type: none"> <li>Inspect the waterproof membrane for leaking or cracks. Repair as needed.</li> <li>Inspect outflow and overflow areas for sediment accumulation. Remove any accumulated sediment or debris.</li> <li>Inspect the green roof for dead, dying, or invasive vegetation. Plant replacement vegetation as needed.</li> </ul>	Semi-Annually (Quarterly During First Year)

# Site A8: Hurley Hall

## Rooftop Disconnection with Bioretention

### Project Summary



Parameter	A8a	A8b	A8c
Impervious Cover Treated (acres)	0.51	0.81	0.88
Runoff Reduction Volume (cu ft per 1" rain event)	184	212	304
TN Removal (lb/yr)	1.62	1.86	2.68
TP Removal (lb/yr)	0.19	0.21	0.31
TSS Removal (lb/yr)	40.79	46.9	67.39
Estimated Cost	\$4,900	\$15,900	\$22,800

### Site Description

The proposed concepts are located in the quad area of the Hurley Hall Student Residences, which are located on the UConn Campus on the north side of N Eagleville Road. The quad area is terraced and slopes toward Eagleville Rd.

### Existing Conditions

Runoff from the walkways along the quad area drain to the central grass quad area. Gully erosion is evident in the quad area and along walkways, and sand and gravel has accumulated on the paths. Yard inlets in the quad area are full of sediment. Rooftop runoff from the residences is conveyed via internal roofdrains in the storm drain system.

### Proposed Concept

Install bioretention areas in three locations in the quad area to capture walkway runoff. These three locations are shown in Attachment B. Install trench drains across the walkway to intercept runoff and convey it into the bioretention practices.

Construct a forebay area at the bioretention inlets to dissipate the energy and velocity of the runoff entering the bioretention areas. The bioretention areas should have a filter depth of 24 inches and provide 6-9 inches of ponding depth.

Site A8. Hurley Hall



Figure 1. Runoff from quad walkways resulting in erosion (top); Sediment accumulation on walkways and in quad area (bottom).

Due to the compacted nature of the quad soils, an underdrain should be included in the design of the larger bioretention areas. The underdrain and overflow should tie into existing yard drains. The smaller areas in the center of the quad can be designed to overflow into existing yard inlets.

Soils in the quad should be amended as shown on the site plan to improve porosity and infiltration. Landscaping can be incorporated into these amended areas.

### Preliminary Concept Designs

25% concept designs for the proposed retrofit can be found in attachment B. Preliminary plan views and project details are included. These initial plans will need to be further refined as this project proceeds towards construction.

### Preliminary Hydrologic Calculations

Preliminary sizing of the bioretention area was completed based on guidance provided in the 2004 Connecticut Stormwater Quality Manual. These computations are summarized in the table below.

Sizing Calculations for Site A8			
Parameter	Value		
	A8a	A8b*	A8c
Drainage Area, A (acres)	0.51	0.81	0.88
Imperviousness, I (%)	92	51	21
Volumetric Runoff Coefficient, Rv			
Rainfall Depth, P (in)	1	1	1
Water Quality Volume, WQv (cf)	1631	798	760
Depth of the Filter Bed, d (ft)	2.5	2.5	2.5
Hydraulic Conductivity, k (ft/day)	1	1	1
Max. Ponding Depth, hmax (in)	9	9	9
Average Ponding Depth, h (ft)	0.375	0.375	0.375
Drawdown Time, t (days)	2	2	2
Surface Area Required, Af (sq. ft)	709	347	330
Surface Area Provided (sq ft)	200	230	400
Treatment Provided (% of 1")	28.2	66.3	100

\*note two bioretention areas are combined

### Design Considerations

- While utility constraints are expected to be minimal, detailed utility mapping should be obtained before completing the final project design.
- This project presents an opportunity for students and faculty at Uconn to be involved in the final design and construction of this project.

### Maintenance

- Maintenance is important for bioretention areas, particularly in terms of ensuring that they continue to provide measurable stormwater management benefits over time. The routine maintenance activities typically associated with bioretention areas are summarized in the table below.

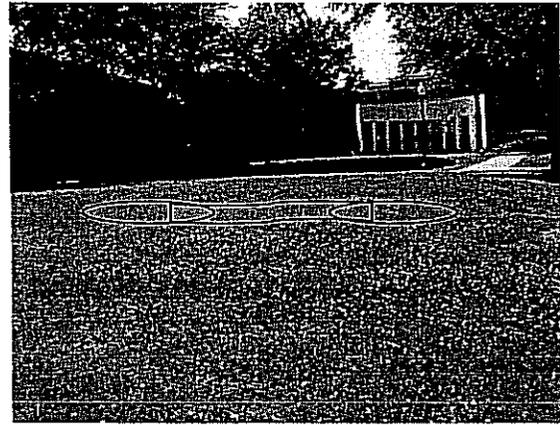


Figure 2. Proposed location of bioretention areas at site A8b (top) and A8c (bottom).

Maintenance Activities for Bioretention	
Activity Schedule	Frequency
<ul style="list-style-type: none"> <li>• Water once a week during the first two months, and then as needed and depending on rainfall to promote plant growth and survival.</li> <li>• For the first six months following construction, the site should be inspected at least twice after storm events that exceed a half-inch. Inspectors should look for bare or eroding areas in the contributing drainage area or around the bioretention area, and immediately stabilized with grass cover.</li> </ul>	As Needed (following construction)
<ul style="list-style-type: none"> <li>• Prune and weed bioretention area to maintain appearance.</li> <li>• Remove accumulated trash and debris.</li> </ul>	Regularly (Monthly)
<ul style="list-style-type: none"> <li>• Inspect inflow area for sediment accumulation and remove any accumulated sediment or debris.</li> <li>• Inspect bioretention area for dead or dying vegetation. Plant replacement vegetation as needed.</li> </ul>	Annually
<ul style="list-style-type: none"> <li>• Remove and replace existing mulch</li> </ul>	Every 2 to 3 Years

# Site A-11: Lot 9

## Parking Lot Bioretention

### Project Summary

	
<b>Parameter</b>	<b>A11a-d</b>
Impervious Cover Treated (acres)	1.39 acres
Runoff Reduction Volume (cu ft per 1" rain event)	1,538 cf
TN Removal (lb/yr)	16.02 lb/yr
TP Removal (lb/yr)	1.90 lb/yr
TSS Removal (lb/yr)	409.61 lb/yr
Estimated Cost	\$51,700

### Site Description

The proposed retrofit concept is located on the UConn Campus in Lot 9, across from the Visitors Center. The parking lot is heavily used, and in relatively poor condition.

### Existing Conditions

Runoff from the site is captured in an enclosed storm drain system, and conveyed to the north. Small landscaped areas to the north receive no drainage from the lot or other impervious areas.

### Proposed Concept

Install linear bioretention areas (grassed swales) in medians between existing parking areas. Convey stormwater to these swales using curb cuts. Install 6" check dams along the swale. Existing storm drain structures will act as overflow for large storm events.

Construct two small bioretention cells in the existing landscaped areas. Use curb cuts to receive direct parking lot runoff. In addition, capture small storm runoff from swales in the median via a 6" dip within the swale. Yard drains in these structures will be tied in to existing storm drain structures in the road.

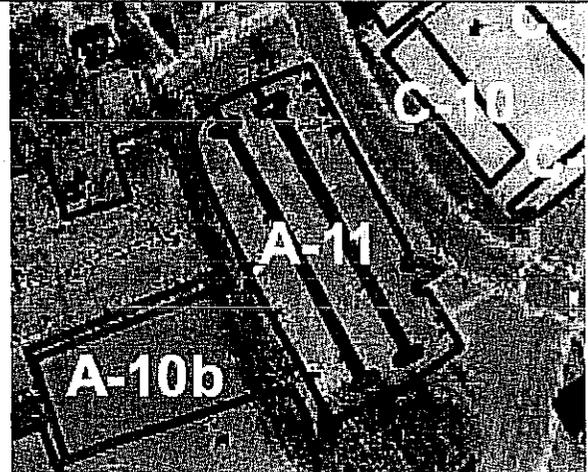
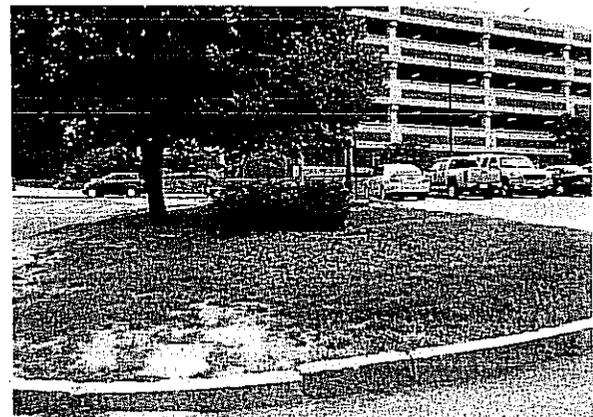


Figure 1. Total drainage area to proposed retrofit practices in Lot 9.

Figure 2. Current parking configuration looking north



(above), and existing northeast landscaped area to be converted to bioretention (below).

### Preliminary Concept Designs

A 25% concept design for the proposed retrofit can be found in attachment B, which includes preliminary plan views, cross sections and project details. These initial plans will need to be further refined as this project proceeds towards construction.

**Preliminary Hydrologic Calculations**

Preliminary sizing of the bioretention area was completed based on guidance provided in the 2004 Connecticut Stormwater Quality Manual. These computations are summarized in the following table.

Sizing calculations for Site A11		
Parameter	Value*	
	A-11c/d (Swales)	A-11a/b (Bio)
Drainage Area, A (acres)	1.41	1.41
Imperviousness, I (%)	98	98
Volumetric Runoff Coefficient, Rv	0.93	0.93
Rainfall Depth, P (in)	1	1
Water Quality Volume, WQv (cf)	4,790	4,790
Depth of the Filter Bed, d (ft)	—	2.5
Bottom width (ft)	2	—
Side slopes	3:1	—
Hydraulic Conductivity, k (ft/day)	—	1
Drawdown Time, t (days)	—	2
Max. Ponding Depth, hmax (in)	—	9
Average Ponding Depth, h (ft)	0.5	0.375
Cross-Sectional Area (ft)	1.75	—
Length Required (ft)	2,740	—
Length Provided (ft)	650	—
Surface Area Required, Af (sq ft)	—	1,495
Surface Area Provided (sq ft)	—	1,550
Treatment Provided (% of I")	24	75

\*Note: Table summarizes total length of both swales and bios

**Design Considerations**

Some key design considerations include the following:

- Confirm location of underground electric lines at northeast filter area.
- The proposed filters will require a parking lot reconfiguration. Angled parking, combined with one-way traffic, may be needed to accommodate these swales.
- Available mapping does not indicate how storm drainage from the parking lot connects to the storm drain network in the street and needs to be field-verified.

- The Sasaki Landscaping Plan indicates that tree plantings at the eastern edge of Lot 9 may reduce the lot size. This design does not account for that parking lot loss. An alternative design may utilize only one swale, or an alternative to parking lot swales, such as parking lot tree planters.

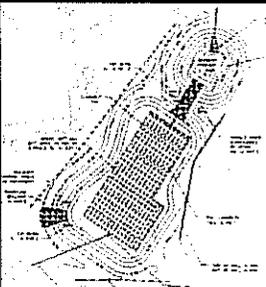
**Maintenance**

Maintenance is important for bioretention areas and grassed swales. The routine maintenance activities typically associated with bioretention areas are summarized in the following tables below.

Maintenance Activities for Site A-11	
Activity Schedule	Frequency
<ul style="list-style-type: none"> <li>• Water once a week during the first two months, and then as needed and depending on rainfall to promote plant growth and survival.</li> <li>• For the first six months following construction, the site should be inspected at least twice after storm events that exceed a half- inch. Inspectors should look for bare or eroding areas in the contributing drainage area or around the bioretention area, and make sure they are immediately stabilized with grass cover.</li> </ul>	As Needed (following construction)
<ul style="list-style-type: none"> <li>• Prune and weed bioretention area to maintain appearance.</li> <li>• Remove accumulated trash and debris.</li> </ul>	Regularly (Monthly)
<ul style="list-style-type: none"> <li>• Inspect inflow area for sediment accumulation and remove any accumulated sediment or debris.</li> <li>• Inspect bioretention area for dead or dying vegetation. Plant replacement vegetation as needed.</li> </ul>	Annually
<ul style="list-style-type: none"> <li>• Remove and replace existing mulch.</li> </ul>	Every 2 to 3 Years

# Site B3: Christian Field/Batting Cages

## Gravel-based Wetland Systems

Project Summary	
	
Parameter	B3
Impervious Cover Treated (acres)	15.1 acres
Runoff Reduction Volume (cu ft per 1" rain event)	0
TN Removal (lb/yr)	49.19
TP Removal (lb/yr)	13.28
TSS Removal (lb/yr)	2,262.73
Estimated Cost	\$250,100

### Site Description

The proposed retrofit concept is located by the baseball fields and batting cages in the southeastern portion of the UConn Campus.

### Existing Conditions

Existing drainage pipe system collects runoff from pervious and impervious surfaces for 55 acre drainage area and discharges into Red Brook (Figure 1). Existing 24 inch pipe runs along open field areas with inlets, likely under baseball field and across Stadium Road. Some of this area is currently managed by upgradient stormwater BMPs. Because a portion of this conveyance appears to have been a former stream, there is likely a shallow depth to groundwater. The location of inlets or manholes in the vicinity of the site were not found. The pipe invert at the outfall is less than 5 feet.

### Proposed Concept

Proposed installation of a gravel based wetland system with forebay, designed offline with approximately 5,050 sq ft of available surface area (Figure 2). Use a diversion manhole to divert flows from existing drain line into pretreatment forebay with outlet structure that discharges into bottom of chambered, gravel wetland system. Flows are

forced up through gravel filters to a vegetated wetland surface where additional pollutants can be removed via plant uptake. Overflow from the wetland is discharged back into existing stormdrain. An emergency spillway drains into existing low area/wetland to the southwest.

This project is feasible and very attractive, as few locations on campus offer the ability to manage significant volumes of runoff and impervious surfaces. Available surface area limits available treatment capability; however additional retrofit projects in the drainage area (i.e., B5a/b) may help reduce sizing requirements.



Figure 1. Drainage areas to proposed gravel wetland system include additional proposed retrofits.

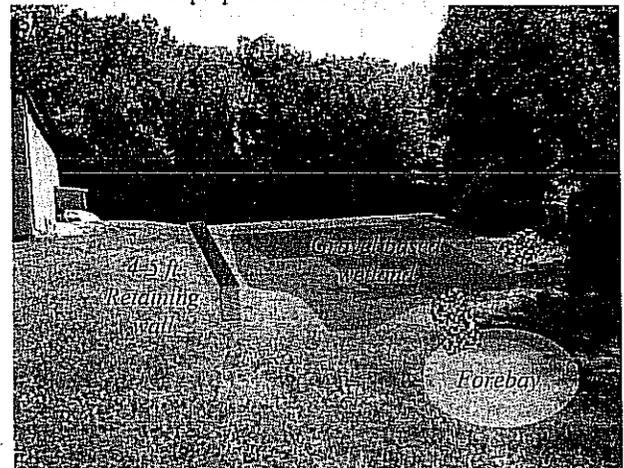


Figure 2. Gravel based wetland system with underground chambers, pretreatment sediment forebay, and retaining wall.

### Preliminary Concept Designs

A 25% concept design for the proposed retrofit can be found in attachment B, which includes preliminary plan views, cross sections, and project details (Figure 3). These initial plans will require field survey and more information on drainage pipes, utilities, and soils (among other things) before going to construction plans.

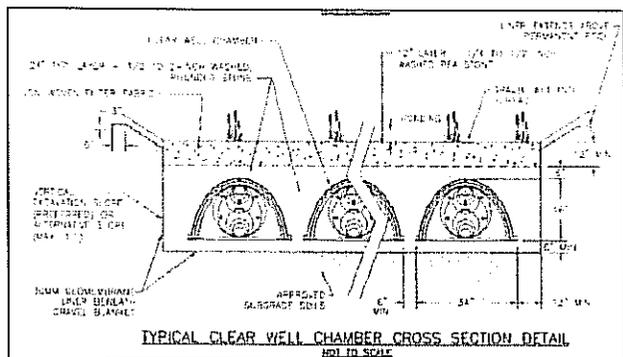


Figure 3. Typical cross section of gravel wetland showing underground storage chambers and vegetated surface where water pushed up from below is designed to pond.

### Preliminary Hydrologic Calculations

Preliminary sizing of the gravel based wetland system was completed based on guidance provided in the *2009 Rhode Island Stormwater Manual (public review draft)* and are summarized in the table below.

Sizing calculations for Site B3	
Parameter	Value
Drainage Area, A (acres)	55.0
Imperviousness, I (%)	27
Volumetric Runoff Coefficient, Rv	0.30
Rainfall Depth, P (in)	
Water Quality Volume, WQv (cf)	59,345
Surface Area Required, Af (sq. ft)	8,386
Surface Area Provided (sq ft)	5,050
Treatment Provided (% of I")	60

### Design Considerations

- Sizing of facility is constrained by space and grade. Note the height of retaining wall, depth of forebay, and available head driving upflow filter. Sizing of facility can potentially be reduced if additional retrofits are installed within the drainage area upgradient.

- Must verify location of all existing storm drain infrastructure. Double check potential utility conflicts (i.e., sewerline).
- Final design to include cleanouts for gravel wetland and maintenance access for forebay.
- May need to relocate existing fence and install guardrail along road.

### Maintenance

Maintenance will generally be related to landscaping practices and sediment removal from pretreatment forebay to prevent clogging. Inspect semi-annually for the first year of operation and annually after the first year as well as after major storm events. The routine maintenance activities typically associated with gravel-based wetlands are summarized in the table below.

Maintenance Activities	
Activity	Schedule
• Replant vegetation to original design standards if less than 50% of the original vegetation is established	After two years
• Remove and replace ill-established, dead, or severely diseased plants	Annual
• Inlets, outlets, and overflow spillway will be checked for blockage, structural integrity, and evidence of erosion • Sediment build up at the cleanout pipe will be removed	Routinely and after major storm events
• Clean and remove debris at cleanout pipe • Sub-surface storage chambers shall be flushed and/or snaked	As needed (if standing water is observed 48 hours after storm event)

### Cost Considerations

\$30/sf, not including utility/ main drainage pipe relocation.

# Site B5: Parking Lot Y

## Managing Parking Lots with Bioswales

### Project Summary

Parameter	B5a	B5b
Impervious Cover Treated (acres)	1.32	0.5
Runoff Reduction Volume (cu ft per 1" rain event)	2,485	1,044
TN Removal (lb/yr)	14.6	6.13
TP Removal (lb/yr)	1.69	0.71
TSS Removal (lb/yr)	367.18	154.29
Estimated Cost	\$43,500	\$18,300



Figure 1. Drainage areas to two proposed bioretention cells.

### Site Description

The proposed retrofit sites are located in the grassed area along the western edge of Parking Lot Y on the UConn campus. The Y Lot is a large parking lot (upper lot) currently draining to existing inlets that discharge toward Lot 8 then, ultimately, towards Site B3 (proposed gravel based wetland).

### Existing Conditions

The entire lot (2.2 acres) drains towards the western edge of the parking area to one of two inlets along the curb (~1.8 impervious acres). These inlets convey stormwater northward to an underground detention pipe system with an offline Vortech device (WQ Unit) in Lot 8.\* Snow storage for Lot Y is over the hill and results in large sand deposits beyond the parking lot edge.

\*Lot 8 surface drainage appears to bypass inlets at low end of parking lot, likely contributing to slope damage of reinforced slope.

### Proposed Concept

Remove existing curb at each side of double inlets and install paved flumes to allow surface drainage from parking lot to enter forebays of two bioretention cells excavated in existing grassed areas (Sites A and B, Figure 1). Install curb cuts/paved flumes at other strategic locations to better distribute runoff into practices (Figure 2). Bioretention designed with sediment forebays, underdrains, and an overflow mechanism back into existing inlets (Figure 3).



Figure 2. Proposed location of bioretention/swale system in grassed edge of Parking Lot Y. Curb cuts allow inflow to forebays at strategic locations along system.

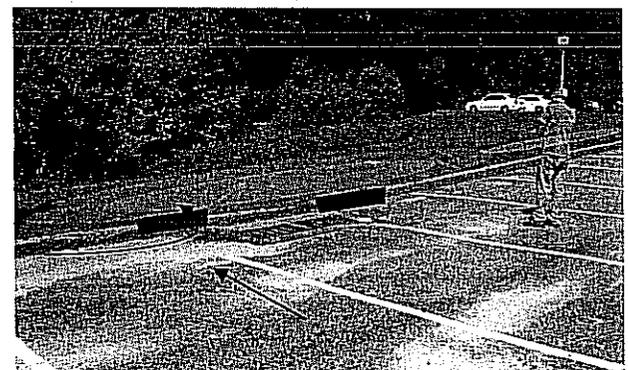


Figure 3. Remove curb along sides of double inlets to allow surface runoff into bioretention area through paved flume with riprap channel. Primary overflow where ponded water "backs up" into existing inlet (blue arrow).

Emergency spillways provided (into wooded area). Use shallow swales along full length of parking lot to convey flow to bioretention. Use riprap channels to convey runoff from curb cuts/paved flume to small pretreatment forebays and to dissipate the energy and velocity of runoff. Existing inlet acts as primary overflow and emergency spillway provided for overflow into wooded slope. The bioretention areas should have a filter depth of 24 inches and provide 6-9 inches of ponding depth. Due to the compacted nature of the soils, include an underdrain that ties back into the existing drains.

**Preliminary Concept Designs**

A 25% concept design for the proposed retrofit can be found in attachment B, which includes preliminary plan views, cross sections and project details. These initial plans will require field survey and more information on drainage pipes, utilities, and soils (among other things) before going to construction plans.

**Preliminary Hydrologic Calculations**

Preliminary sizing of the bioretention area was completed based on guidance provided in the 2004 Connecticut Stormwater Quality Manual. These computations are summarized in the table below.

Sizing calculations for Site B5		
Parameter	Value	
	B5a	B5b
Drainage Area, A (acres)	1.5	0.6
Imperviousness, I (%)	85	77
Volumetric Runoff Coefficient, Rv	0.82	0.74
Rainfall Depth, P (in)	1	1
Water Quality Volume, WQv (cf)	4591	1740
Depth of the Filter Bed, d (ft)	2.50	2.50
Hydraulic Conductivity, k (ft/day)	1	1
Max. Ponding Depth, hmax (in)	9	9
Average Ponding Depth, h (ft)	0.375	0.375
Drawdown Time, t (days)	2	2
Surface Area Required, Af (sq. ft)	1996	757
Surface Area Provided (sq ft)	1800	1500
Treatment Provided (% of 1")	90	100

**Design Considerations**

- A retrofit of the Y Lot would help reduce the volume ultimately discharging to Site B-3.
- Possible conflict with electric cables and existing light pole(s).
- Compare feasibility of various design alternatives for raising exiting inlet structures.
- Incorporate educational signage.

**Maintenance**

Maintenance is important for bioretention areas, particularly in terms of ensuring that they continue to provide measurable stormwater management benefits over time. The routine maintenance activities typically associated with bioretention areas are summarized in the table below.

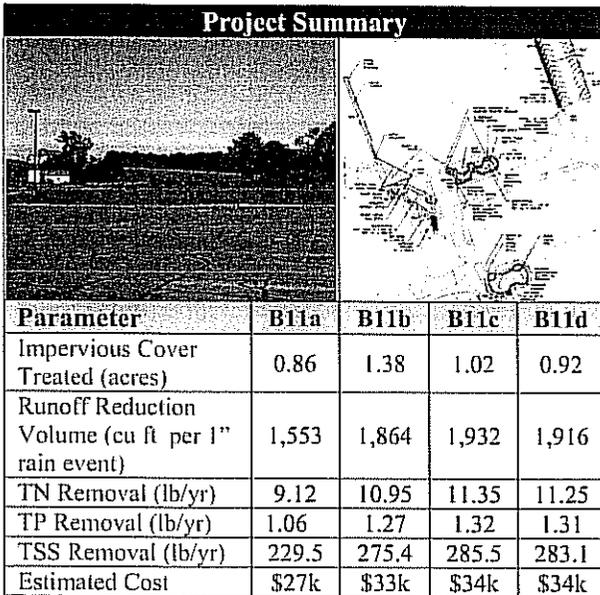
Maintenance Activities	
Activity Schedule	Frequency
<ul style="list-style-type: none"> <li>• Water once a week during the first two months, and then as needed and depending on rainfall to promote plant growth and survival.</li> <li>• For the first six months following construction, the site should be inspected at least twice after storm events that exceed a half-inch. Inspectors should look for bare or eroding areas in the contributing drainage area or around the bioretention area, and make sure they are immediately stabilized with grass cover.</li> </ul>	As Needed (following construction)
<ul style="list-style-type: none"> <li>• Prune and weed bioretention area to maintain appearance.</li> <li>• Remove accumulated trash and debris.</li> </ul>	Regularly (Monthly)
<ul style="list-style-type: none"> <li>• Inspect inflow areas/forebays for sediment accumulation and remove any accumulated sediment or debris.</li> <li>• Inspect bioretention area for dead or dying vegetation. Plant replacement vegetation as needed.</li> </ul>	Annually
<ul style="list-style-type: none"> <li>• Remove and replace existing mulch.</li> </ul>	Every 2 to 3 Years

**Cost Considerations**

Added costs if new overflow inlets are required; relocation of electrical lighting a possibility.

# Site B11: Parking Lot W

## Managing Parking Lots with Bioretention



### Site Description

The proposed retrofit concepts are located in Parking Lot W in the northern portion of UConn campus near the reservoir and Greek Housing area. This large parking lot is showing signs of decay and is, reportedly, underused.

### Existing Conditions

The upper northwest and eastern portions of the parking lot drain out of the watershed. The remaining portions of the lot (~ 6 acres) are divided into four separate catchments that drain to surface inlets. There are currently no stormwater practices treating the runoff. Soils at this site appear suitable for infiltration.

### Proposed Concept

Concepts to use bioretention facilities to capture and treat runoff from the four drainage areas:

Area A: Block inlets and use curb cuts/sidewalk cross drains to direct runoff into forebay and bioretention area. Shape cell to avoid existing trees. Overflow to manage/treat drainage area of approximately 1 acre. Underdrain and outlet overflow back into existing stormdrain.

Area B: Remove pavement to install a 5 ft wide bioretention to manage/treat parking lot and upslope

pervious area of approximately 2.6 acres. Restripe parking area, bioretention located in island between travel lanes as shown on sketch; no pretreatment, stone check dams.

Area C: Grass channel and/or forebay for pre-treatment flowing into bioretention along edge of lot. Convert existing inlet to manhole at low point, provide positive drainage to grass channel/forebay flowing into bioretention. Overflow via rip rap spillway back into existing drainage feature.

Area D: Block existing inlet and divert runoff to bioretention area via curb cuts/paved flume into forebay then into bioretention. Overflow ties back into existing drainage inlet. No underdrain required. May need to relocate existing electric lines.

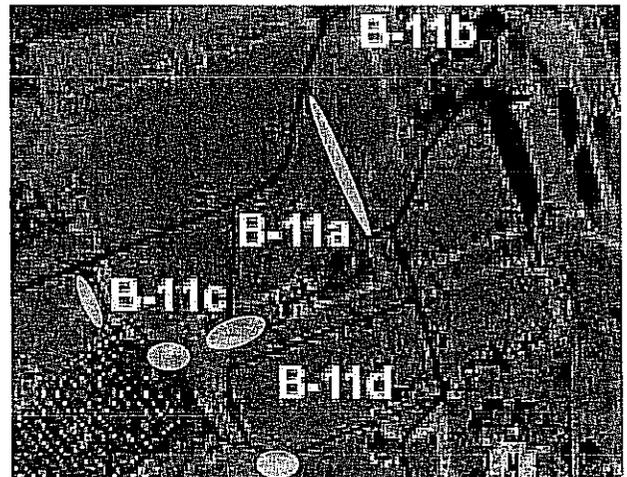


Figure 1. Location of proposed bioretention cells. Two portions of lot drain out of the Eagleville Brook watershed (outside of pink line).



Figure 2. Approximate location of proposed bioretention cells in parking lot. Restriping of lot will be required around landscape island bioretention to alter current traffic flow patterns. Loss of only four or five spaces anticipated.

**Preliminary Concept Designs**

25% concept designs for proposed retrofits can be found in attachment B, which includes preliminary plan views and project details. These initial plans will require field survey and more information on drainage pipes, utilities, and soils (among other things) before going to construction plans.

**Preliminary Hydrologic Calculations**

Preliminary sizing of the bioretention area was completed based on guidance provided in the 2004 Connecticut Stormwater Quality Manual. These computations are summarized in the table below.

Sizing calculations for Site B11				
Parameter	Value			
	A	B	C	D
Drainage Area, A (acres)	0.98	2.57	1.38	1.09
Imperviousness, I (%)	88	54	74	84
Volumetric Runoff Coefficient, Rv	0.84	0.53	0.72	0.81
Rainfall Depth, P (in)	1	1	1	1
Water Quality Volume, WQv (cf)	2972	4962	3598	3193
Depth of the Filter Bed, d (ft)	2.50	2.50	2.50	2.50
Hydraulic Conductivity, k (ft/day)	1	1	1	1
Max. Ponding Depth, hmax (in)	9	9	9	9
Average Ponding Depth, h (ft)	0.375	0.375	0.375	0.375
Drawdown Time, t (days)	2	2	2	2
Surface Area Required, Af (sq. ft)	1292	2157	1564	1388
Surface Area Provided (sq ft)	1125	1350	1400	2200
Treatment Provided (% of 1")	87	63	90	100

**Design Considerations**

- Existing water lines and drainage pipes at site A to be verified in order to finalize location of inlet and determine if culvert under access road is required.
- Try to protect existing trees during excavation.
- At Site B, the only location for bioretention is island constructed between travel lanes, most runoff will enter in the upper portion, so provide forebay in first cell, may require check dams to terrace facility. Raise existing inlets to act as overflow.

- Design and excavation of bioretention and inlet structures at site C to save large tree.
- Feasible and likely cost effective, though site B is undersized given contributing watershed.
- No significant loss of parking spaces, though lot will need to be restriped.

**Maintenance**

Maintenance is important for bioretention areas, particularly in terms of ensuring that they continue to provide measurable stormwater management benefits over time. The routine maintenance activities typically associated with bioretention areas are summarized in the table below.

Maintenance Activities	
Activity Schedule	Frequency
<ul style="list-style-type: none"> <li>Water once a week during the first two months, and then as needed and depending on rainfall to promote plant growth and survival.</li> <li>For the first six months following construction, the site should be inspected at least twice after storm events that exceed a half-inch. Inspectors should look for bare or eroding areas in the contributing drainage area or around the bioretention area, and make sure they are immediately stabilized with grass cover.</li> </ul>	As Needed (following construction)
<ul style="list-style-type: none"> <li>Prune and weed bioretention area to maintain appearance.</li> <li>Remove accumulated trash and debris.</li> </ul>	Regularly (Monthly)
<ul style="list-style-type: none"> <li>Inspect inflow area for sediment accumulation and remove any accumulated sediment or debris.</li> <li>Inspect bioretention area for dead or dying vegetation. Plant replacement vegetation as needed.</li> </ul>	Annually
<ul style="list-style-type: none"> <li>Remove and replace existing mulch</li> </ul>	Every 2 to 3 Years

**Other Considerations**

It was reported that a stormwater master plan has been proposed that will divert stormwater from this area to Swan Lake, and ultimately out of the watershed.

# Site C4/5: Education/Gentry Buildings and Sundial Garden

Integrating Stormwater and Landscape Management

## Project Summary

Parameter	C4/5-a	C4/5-d	C4/5-e
Impervious Cover Treated (acres)	0.12	0.07	0.34
Runoff Reduction Volume (cu ft per 1" rain event)	162	101	474
TN Removal (lb/yr)	1.42	0.89	4.17
TP Removal (lb/yr)	0.16	0.1	0.48
TSS Removal (lb/yr)	35.73	22.25	104.98
Estimated Cost	\$11,000	\$3,000	\$13,000

## Site Description

The proposed retrofit concept is located on the UConn Campus at the Education and Gentry Buildings. These two buildings are mirrored in design, and are separated by the Sundial Garden quad area.

## Existing Conditions

The roof leaders from both buildings are directly connected to the stormdrain system. The adjacent green space in the Sundial Garden is highly compacted. Across the walkway in the student center quad, the soils are somewhat compacted. Several areas of localized soil erosion were noted.

## Proposed Concept

Several retrofit opportunities were identified at each building (Figure 1). The locations of these projects are shown in attachment B:

- C4/5 (a) – Direct the front roof leaders into raised stormwater planter beds.
- C4/5 (b) – Direct the two downspouts near the main building entrances into cisterns. Water from the cistern can be used to water the building landscaping.
- C4/5 (c) – Amend the soils to restore the pervious area in the Sundial Garden and plant trees and a vegetative buffer along the southwest edge of the garden to reduce runoff and soil erosion.
- C4/5 (d) – Divert the two downspouts above the building side entrance into a bioretention area in the Sundial Garden. These bioretention areas can be incorporated into additional landscaping plans for this Garden.

- C4/5 (e) – Construct a large linear bioretention area along the walkway. Divert the walkway and terrace runoff into the area using berms or trench drains.

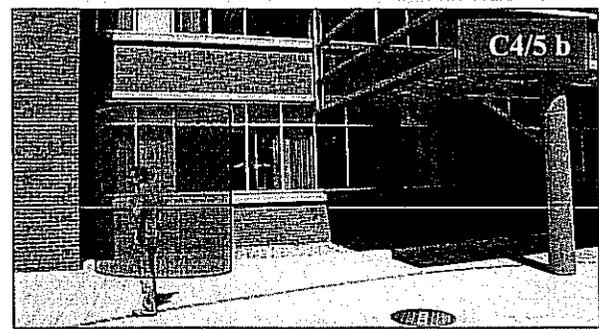
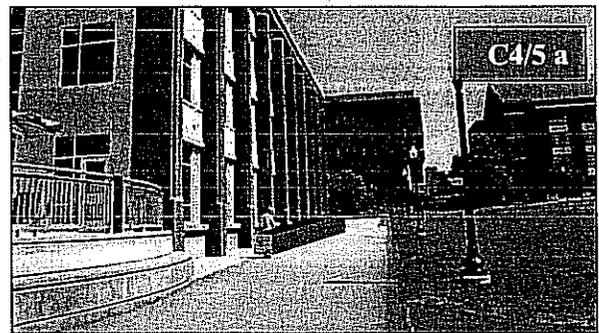


Figure 1. (C4/5-a) Potential location for stormwater planter boxes. (C4/5-b) Potential location for a cistern. (C4/5-c/d) Compaction in the Sundial Garden area and the proposed location of soil amendments and bioretention. (C4/5-e) Proposed location of larger bioretention project.

**Preliminary Concept Designs**

25% concept designs for the proposed retrofits can be found in attachments B. Preliminary plan views and project details are included. These initial plans will need to be further refined as this project proceeds towards construction.

**Preliminary Hydrologic Calculations**

Preliminary sizing of the bioretention areas was completed based on guidance provided in the 2004 Connecticut Stormwater Quality Manual. These computations are summarized in the table below.

Sizing Calculations for Site C4 and C5			
Parameter	Value		
	C4/5-a*	C4/5-d*	C4/5-e
Drainage Area, A (acres)	0.12	0.07	0.47
Imperviousness, I (%)	100	100	72
Volumetric Runoff Coefficient, Rv	0.95	0.95	0.70
Rainfall Depth, P (in)	1	1	1
Water Quality Volume, WQv (cf)	403	251	1184
Depth of the Filter Bed, d (ft)	2.5	2.5	2.50
Hydraulic Conductivity, k (ft/day)	1	1	1
Max. Ponding Depth, hmax (in)	3	9	6
Average Ponding Depth, h (ft)	0.125	0.375	0.25
Drawdown Time, t (days)	1	2	2
Surface Area Required, Af (sq. ft)	384	113	538
Surface Area Provided (sq ft)	400	1000	1,215
Treatment Provided (% of 1")	100	100	100

\*note, planters and sundial garden practices combined

**Design Considerations**

- Site soils are compacted, so underdrains are needed in the bioretention and planter box designs.
- While utility constraints are expected to be minimal, detailed utility mapping should be obtained before completing the final project design.
- Construction of a new building being planned for a nearby site in the student center quad area may affect the project design for concept C4/5 (e). Therefore, the construction of project C4/5 (e) should not occur until after the new building is constructed.
- Projects (b) and (d) are good opportunities for student involvement and education. Students and

Sites C4 and C5. Education Building, Gentry Building, and Sundial Garden

faculty at Uconn can be involved in the final design and construction of this project.

- The Sasaki landscape architecture company has developed a landscaping plan for the Sundial Garden area. These plans can be incorporated with the proposed stormwater and soil amendment projects into a final design for this area.

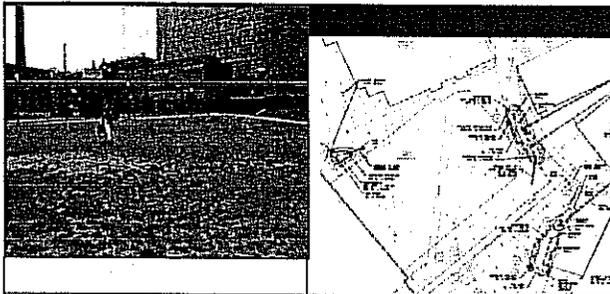
**Maintenance**

Maintenance is important for bioretention areas, particularly in terms of ensuring that they continue to provide measurable stormwater management benefits over time. The routine maintenance activities typically associated with bioretention/planter boxes areas are summarized in the table below.

Maintenance Activities for site C4/C5	
Activity Schedule	Frequency
<ul style="list-style-type: none"> <li>• Water once a week during the first two months, and then as needed and depending on rainfall to promote plant growth and survival.</li> <li>• For the first six months following construction, the site should be inspected at least twice after storm events that exceed a half-inch. Inspectors should look for bare or eroding areas, and make sure they are immediately stabilized.</li> </ul>	As Needed (following construction)
<ul style="list-style-type: none"> <li>• Prune and weed bioretention area to maintain appearance.</li> <li>• Remove accumulated trash/debris.</li> </ul>	Regularly (Monthly)
<ul style="list-style-type: none"> <li>• Inspect inflow area for sediment accumulation and remove any accumulated sediment or debris.</li> <li>• Inspect bioretention area for dead or dying vegetation. Plant replacement vegetation as needed.</li> </ul>	Annually
<ul style="list-style-type: none"> <li>• Remove and replace existing mulch.</li> </ul>	Every 2 to 3 Years

# Site C17/C16: Chemistry Building Quad

## Rooftop Disconnection with Bioretention



Parameter	C17a/b	C16
Impervious Cover Treated (acres)	0.51	0.28
Runoff Reduction Volume (cu ft per 1" rain event)	707	115
TN Removal (lb/yr)	6.23	3.46
TP Removal (lb/yr)	0.72	0.4
TSS Removal (lb/yr)	156.7	87.07
Estimated Cost	\$18,600	\$10,300

### Site Description

The proposed concept is located on the UConn Campus in a quad area between the Chemistry Building and the Pharmacy/Biology Building. The quad is grassed and contains a few small trees, but otherwise lacks landscaping. Soils are extremely compacted, and several dirt and concrete pathways traverse the area. The perimeter is characterized by bare soils and sediment deposition.

### Existing Conditions

Runoff from the Chemistry building rooftop is conveyed underground and into the stormdrain system via external roof drains. Yard drains located in the quad area capture surface runoff from the quad and adjacent impervious areas (paved pathways, driving lanes, and wide sidewalks). On the northwest corner of the quad, runoff from the Life Sciences parking lot is conveyed to an inlet located along the quad. Runoff from these areas is conveyed directly to Eagleville Brook, which is piped deep underneath the quad area, approximately 20-22' below grade.

### Proposed Concept

Install three bioretention areas in the quad area to capture rooftop and impervious area runoff. Direct the external roof downspouts from the Chemistry Building to the proposed bioretention areas by

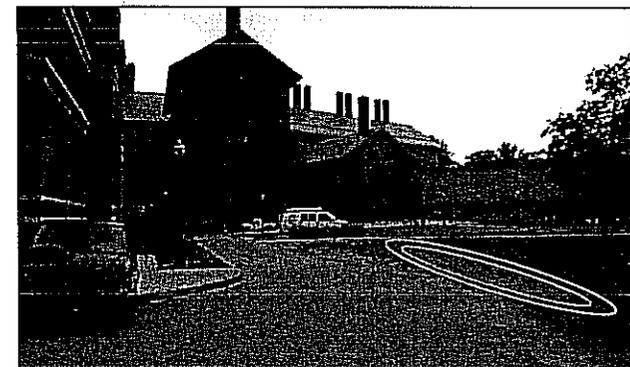
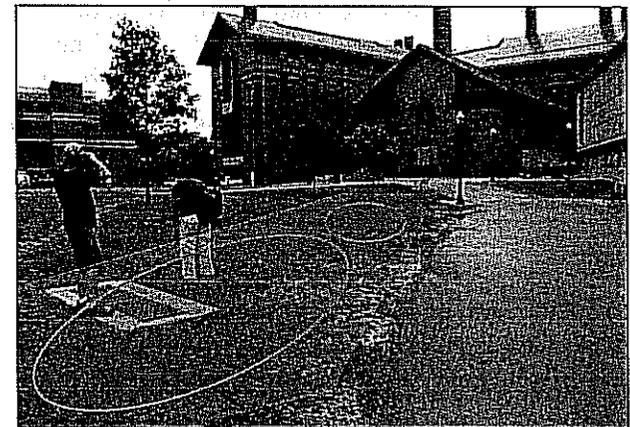
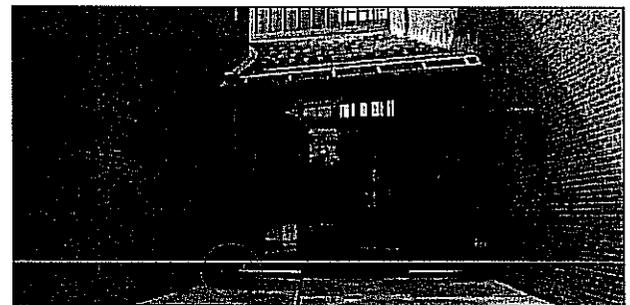
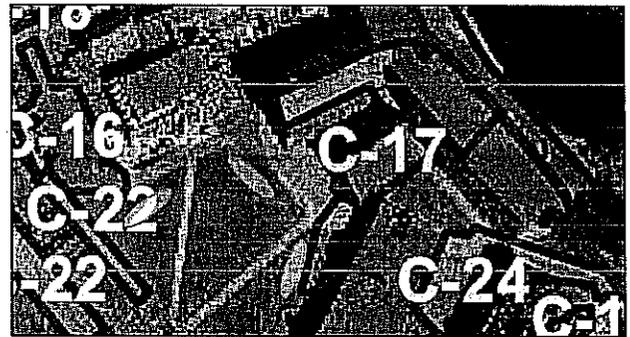


Figure 1. Drainage area (top); External roof drains and proposed retrofit locations for bioretention areas with forebays in the grassy quad area adjacent to the Chemistry Building (middle), location of C16 (bottom).

installing a new pipe to convey the roof runoff from a portion of the building.

Construct a forebay area at the pipe outlet to dissipate the energy and velocity of the runoff entering the bioretention areas. Runoff from the adjacent impervious areas can enter the bioretention areas via sheetflow. The bioretention areas should have a filter depth of 24 inches and provide 6-9 inches of ponding depth. Due to the compacted nature of the soils, an underdrain is needed for the design. The underdrain and overflow should tie into existing yard drains.

**Preliminary Concept Designs**

25% concept designs for the proposed retrofit can be found in attachments B. Preliminary plan views and project details are included. These initial plans will need to be further refined as this project proceeds towards construction.

**Preliminary Hydrologic Calculations**

Preliminary sizing of the bioretention area was completed based on guidance provided in the 2004 Connecticut Stormwater Quality Manual. These computations are summarized in the table below.

Sizing Calculations for Site C-17/16		
Parameter	Value	
	C17/a/b*	C16
Drainage Area, A (acres)	0.55	0.32
Imperviousness, I (%)	92.8	88.7
Volumetric Runoff Coefficient, Rv	0.89	0.85
Rainfall Depth, P (in)	1	1
Water Quality Volume, WQv (cf)	1767	982
Depth of the Filter Bed, d (ft)	2.50	2.5
Hydraulic Conductivity, k (ft/day)	1	1
Max. Ponding Depth, hmax (in)	9	9
Average Ponding Depth, h (ft)	0.375	0.375
Drawdown Time, t (days)	2	2
Surface Area Required, Af (sq. ft)	768	427
Surface Area Provided (sq ft)	1145	500
Treatment Provided (% of I")	100	29
*note two bioretention areas are combined		

**Design Considerations**

- There is a building below the quad which may limit the size and extent of concept.
- While utility constraints are expected to be minimal, detailed utility mapping should be obtained before completing the final project design. The main stormdrains are 20-22' below grade and may not constrain the project, however, there may be shallower connection pipes that will need to be avoided.
- This project presents an opportunity for students and faculty at Uconn to be involved in the final design and construction of this project.

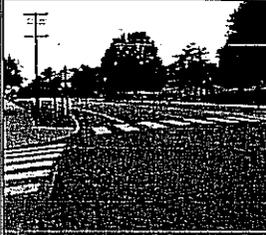
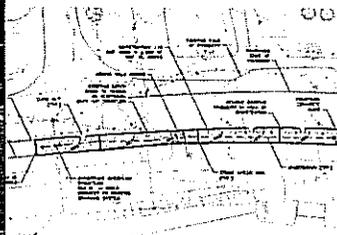
**Maintenance**

Maintenance is important for bioretention areas, particularly in terms of ensuring that they continue to provide measurable stormwater management benefits over time. The routine maintenance activities typically associated with bioretention areas are summarized in the table below.

Maintenance Activities for Bioretention	
Activity Schedule	Frequency
<ul style="list-style-type: none"> <li>• Water once a week during the first two months, and then as needed and depending on rainfall to promote plant growth and survival.</li> <li>• For the first six months following construction, the site should be inspected at least twice after storm events that exceed a half-inch. Inspectors should look for bare or eroding areas in the contributing drainage area or around the bioretention area, and immediately stabilized with grass cover.</li> </ul>	As Needed (following construction)
<ul style="list-style-type: none"> <li>• Prune and weed bioretention area to maintain appearance.</li> <li>• Remove accumulated trash and debris.</li> </ul>	Regularly (Monthly)
<ul style="list-style-type: none"> <li>• Inspect inflow area for sediment accumulation and remove any accumulated sediment or debris.</li> <li>• Inspect bioretention area for dead or dying vegetation. Plant replacement vegetation as needed.</li> </ul>	Annually
<ul style="list-style-type: none"> <li>• Remove and replace existing mulch</li> </ul>	Every 2 to 3 Years

# Site C-18: North Eagleville Road

Integrating Stormwater, Landscaping, and Traffic Calming Measures

Project Summary	
	
Parameter	C18
Impervious Cover Treated (acres)	1.25 acres
Runoff Reduction Volume (cu ft per 1" rain event)	881
TN Removal (lb/yr)	7.76
TP Removal (lb/yr)	0.9
TSS Removal (lb/yr)	195.25
Estimated Cost	\$23,100

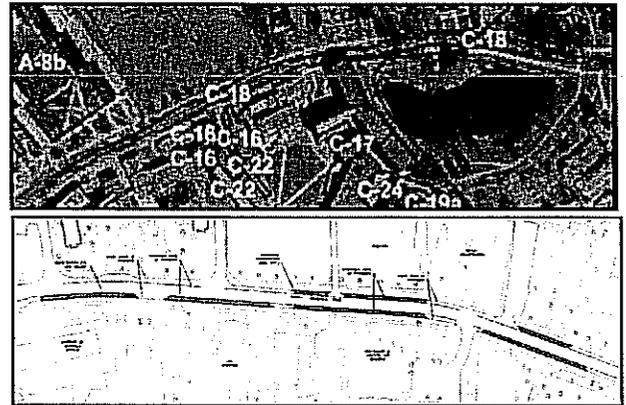


Figure 1. Drainage area (top) and proposed location(s) of street filter designs along North Eagleville Road.

## Site Description

The proposed retrofit concept is located on the UConn Campus along North Eagleville Road. This road runs through campus and separates Central Campus and Swan Lake from North Campus, several student housing residences, and privately owned churches (Figure 1).

## Existing Conditions

Runoff from the crowned roadway drains to catch basins that are located along the edge of the street. The existing roadway is very wide, up to 44 feet from curb to curb in some locations. The University has expressed concern over a dangerous situation with high pedestrian and vehicle traffic along this roadway, and has taken action by painting no driving areas along the edge of the roadway in an attempt to slow car traffic. Some of these areas are used in the project design.

## Proposed Concept

In select areas along the edge of the roadway, remove impervious cover and install street planter areas. These areas should contain a perimeter 6" curb and curb cuts installed to direct the roadway runoff into these areas. The planter areas should provide 6 inches of ponding depth as measured from the roadway surface to the low point in the filter surface. The filter media depth should be 6-12 inches deep. An underdrain is needed for the design of each street filter. The underdrain and overflow should tie into the stormwater network.

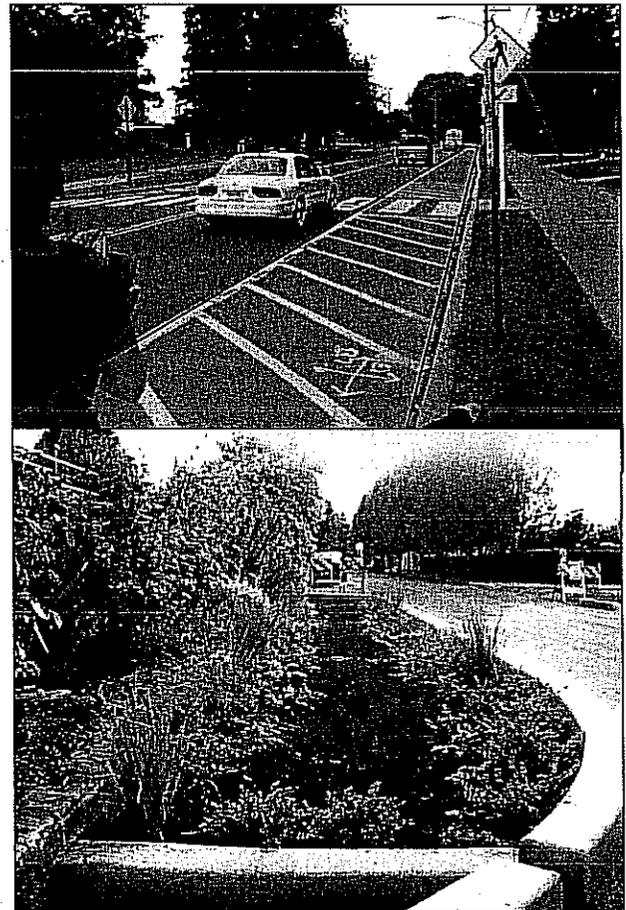


Figure 2. Remove pavement along existing road shoulder to edge of existing curb (top). Example street planters with curb cuts from Portland, OR (bottom).

### Preliminary Concept Designs

A 25% concept design for the proposed retrofit can be found in attachment B, which includes preliminary plan views, cross sections and project details. These initial plans will require field survey and more information on drainage pipes, utilities (among other things) before going to construction plans.

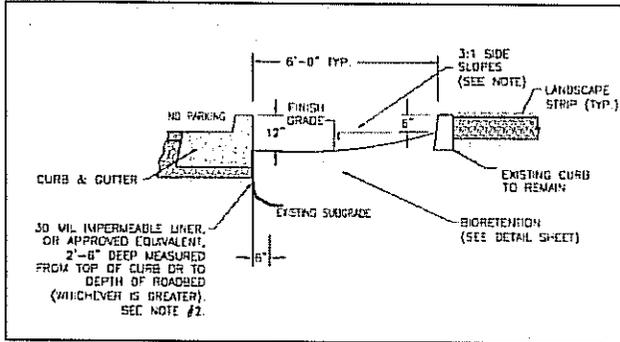


Figure 3. Sample cross section detail from Appendix B.

### Preliminary Hydrologic Calculations

Preliminary sizing of the street filter area was completed based on bioretention guidance provided in the 2004 Connecticut Stormwater Quality Manual. These computations are summarized in the table below.

Sizing Calculations for Site C-18	
Parameter	Value
Drainage Area, A (acres)	1.25
Imperviousness, I (%)	100
Volumetric Runoff Coefficient, Rv	0.95
Rainfall Depth, P (in)	1
Water Quality Volume, WQv (cf)	4,300
Depth of the Filter Bed, d (ft)	2.50
Hydraulic Conductivity, k (ft/day)	1
Max. Ponding Depth, hmax (in)	6
Average Ponding Depth, h (ft)	0.25
Drawdown Time, t (days)	1
Surface Area Required, Af (sq. ft)	3909
Surface Area Provided (sq ft)	2,000
Treatment Provided (% of 1")	51

### Design Considerations

- While utility constraints are expected to be minimal, detailed utility mapping should be obtained before completing the final project design.
- At cross walk areas, pedestrian bridges can be incorporated into the design so that people can cross over the street filter area.
- Current concept design sets a 24' road width, uniform along Eagleville rd. Wider road (and bike

lanes) can be obtained by either narrowing the filters themselves or expanding into the sidewalk.

- Designs can serve to calm traffic along the roadway. This project should be integrated with University efforts to calm traffic along the road and also with the Sasaki Landscape Plan.

### Maintenance

Maintenance is important for these street filter areas, particularly in terms of ensuring that they continue to provide measurable stormwater management benefits over time. The routine maintenance activities typically associated with bioretention areas are summarized in the table below.

Maintenance Activities for site C-18		
Activity Schedule	Frequency	
<ul style="list-style-type: none"> <li>• Water once a week during the first two months, and then as needed and depending on rainfall to promote plant growth and survival.</li> <li>• For the first six months following construction, the site should be inspected at least twice after storm events that exceed a half-inch. Inspectors should look for bare or eroding areas in the contributing drainage area or around the street filter area, and make sure they are immediately stabilized.</li> <li>• Trim trees to prevent line of sight issues.</li> </ul>	As Needed (following construction)	
<ul style="list-style-type: none"> <li>• Prune and weed the filter area to maintain appearance.</li> <li>• Remove accumulated trash and debris.</li> </ul>	Regularly (Monthly)	
<ul style="list-style-type: none"> <li>• Inspect inflow area for sediment accumulation and remove any accumulated sediment or debris.</li> <li>• Inspect filter area for dead or dying vegetation. Plant replacement vegetation as needed.</li> </ul>	Annually	
<ul style="list-style-type: none"> <li>• Remove and replace existing mulch</li> </ul>	Every 2 to 3 Years	

Mansfield Open Space Preservation Committee  
Minutes for May 19, 2010

1. Chairman Jim Morrow called the meeting to order at 7:40 PM
2. Members present:  
Vicky Wetherell, Jim Morrow, Michael Allison, Steve Lowrey, Ken Feathers
3. Allison/Lowrey: Motion to approve the minutes of April 20, 2010, Wetherell amended Section 7 to clarify that Paula Stahl's Power Point presentation was made to the Lebanon Town Council not the Mansfield Town Council. Motion passed as amended
4. Public Comment: No public present.
5. Old Business:
  - Bonding referendum was discussed. The expiration of bonding was discussed and the specific wording of the question was discussed; the Committee prefers the wording used in the 2006 referendum, the use and the location of the word "municipal" in the question was discussed and how its location may change the interpretation of the question.
6. New Business:
  - Discussion of the proposed amendment to the Zoning Regulations and Zone change for the Pleasant Valley area. The Committee is not fully in favor of the proposal and will work on preparing a response to the PZC
7. No reports from staff
8. No Communications
9. No other discussions
10. No discussion of future agendas
11. Wetherell/Lowrey: to adjourn, motion carried. Meeting adjourned at 9:28 PM

Respectfully submitted  
Stephen Lowrey

PAGE  
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## MINUTES

### MANSFIELD PLANNING AND ZONING COMMISSION

Regular Meeting, Monday, May 17, 2010

Council Chamber, Audrey P. Beck Municipal Building

Members present: R. Favretti (Chairman), M. Beal, J. Goodwin, R. Hall, K. Holt, G. Lewis, B. Pociask, B. Ryan  
Members absent: P. Plante  
Alternates present: K. Rawn  
Alternates absent: F. Loxsom, V. Stearns  
Staff Present: Curt Hirsch (Zoning Agent)

Chairman Favretti called the meeting to order at 7:00 p.m. and appointed Rawn to act in Plante's absence. Favretti acknowledged an e-mail from Plante stating that he would miss three or more consecutive meetings including this evening. The Commission agreed by consensus to waive the attendance requirements upon receipt of proper notice from the absentee member, as per the PZC Bylaws [Article IV, Section 1].

#### Minutes:

5/3/10-Hall MOVED, Pociask seconded, to approve the 5/3/10 minutes as written. MOTION PASSED UNANIMOUSLY.

#### Zoning Agent's Report:

Particular attention was given to the decision letter from the Citation Hearing Officer, R. Meehan, regarding the E. Hall citations. Hirsch stated that the last trailer was removed the day of the hearing and he will continue to monitor the site to ensure no trailers re-appear.

#### Old Business:

##### 1. Special Permit Application, Permanent Agricultural Retail Sales, 483 Browns Road, o/a B. Kielbania, File #1292

Hall MOVED, Holt seconded, to approve with conditions the special permit application (file 1292) of Bryan Kielbania for a farm stand and associated agricultural uses on property located at 483 Browns Road, in an RAR-90 zone, as submitted to the Commission and described in application submissions, including a 4/15/10 Statement of Use and site plans dated 3/22/10 revised through 4/19/10, and as presented at Public Hearings on April 19, and May 3, 2010. This approval is granted because the application as hereby approved is considered to be in compliance with Article V, Section B and other provisions of the Mansfield Zoning Regulations, and is granted with the following conditions:

1. This approval, which authorizes certain agriculturally-oriented commercial uses within a residential zone, is specifically tied to the application submissions and conditions cited in this motion. Unless modifications are specifically authorized, approved uses of this property are limited to those uses and activities described by the applicant, including restrictions on hours of operation. Based on May 3<sup>rd</sup> testimony by the applicant's attorney, activities and events that may generate additional traffic, such as hayrides, sleigh rides and corn mazes, shall not take place unless prior PZC approval has been obtained.

Any questions regarding authorized uses of this property shall be reviewed in advance with the Zoning Agent and Director of Planning, and as appropriate, the PZC. Any significant changes or expansions of use, shall require additional special permit approval;

2. All agricultural uses shall comply with all applicable permitted use provisions of Article VII, and other Zoning requirements. In the event existing regulations regarding on-site sales are revised, the applicant shall have the right to utilize new provisions.

3. The applicant shall be responsible for obtaining all applicable State of Connecticut approvals, including authorizations from the Department of Agriculture regarding restricted development rights on the subject property.
4. The applicant shall be responsible for meeting all applicable permit requirements from Eastern Highlands Health District and Mansfield's Building and Fire Marshal's Offices.
5. Vehicular and pedestrian safety are primary issues that will necessitate careful monitoring and management. Parking along Browns Road will reduce sightlines and may result in safety problems, as well as inappropriate neighborhood impact. Accordingly, the applicant shall be responsible for monitoring vehicular traffic into and out of the site and providing adequate on-site parking for the subject agricultural use. If, based on observed use, the PZC determines that additional on-site parking is necessary, a revised parking plan with additional spaces shall be prepared by the applicant, submitted for PZC approval and implemented by the applicant.
6. To help reduce potential neighborhood impacts an evergreen landscape buffer shall be planted along the westerly property line between the approved parking and driveway area and the adjacent residence on property N/F Loukas/Despina. Proposed plantings, including the number and species of proposed evergreen plants and planting size, shall be depicted on final plans and approved by the PZC Chairman with staff assistance. In addition, there shall be no outside speakers used in association with the proposed agriculture use.
7. Final plans shall include the following revisions:
  - A. Landscape details as required by condition #6
  - B. Notation of the estimated amount of fill that will be needed for parking areas and other site work.
  - C. More specific details regarding the surfacing of the handicap parking space and access-way to the retail sales area. State requirements for surface material shall be met.
  - D. An increase in the proposed handicap parking space width to sixteen (16) feet which is required by the State Building Code.
8. All site work indicated on final plans, including parking and driveway improvements, pedestrian access improvements, signage and buffer landscaping, shall be completed prior to the issuance of a Certificate of Compliance.
9. It is anticipated that the applicant will want to install and maintain directional signage at nearby street intersections. The PZC Chairman, with staff assistance, is authorized to approve directional signage that complies with Zoning standards.
10. This permit shall not become valid until the applicant obtains the permit form from the Planning Office and files it on the Land Records.

This approval waives the front setback requirements for parking as depicted on final plans. This waiver is based on site and neighborhood characteristics. In addition, this approval waives several site plan submission provisions of Article V, Section A.3.c., since the information submitted is sufficient to determine compliance with applicable approval criteria.

MOTION PASSED UNANIMOUSLY.

2. **Draft Revisions to the Zoning Map, Zoning and Subdivision Regulations, PZC File 907-33**
  - a. Rezoning of Industrial Park Zone and Associated Regulation Revisions
  - b. Aquifer and Public Water Supply Protection Regulations
  - c. Invasive Plant Species Regulations

Item tabled, pending a Public Hearing on 6/7/10.

3. **Draft Revisions to the Zoning Regulations Definitions of Family and Boarding House; Political Signs, PZC File 907-32**

Item tabled, pending Public Hearing Continuation on 6/7/10.

**New Business:**

None.

**Reports of Officers and Committees:**

Chairman Favretti noted the next Regulatory Review Committee meeting will be on 5/25/10 at 2pm.

**Communications and Bills:**

Noted.

**Adjournment:**

Chairman Favretti declared the meeting adjourned at 7:18 p.m.

Respectfully submitted,

Katherine Holt, Secretary

PAGE  
BREAK

Memorandum:

June 2, 2010

To: Inland Wetland Agency  
 From: Grant Meitzler, Inland Wetland Agent  
 Re: Monthly Business

**W1419 - Chernushek - hearing on Order**

3.10.09: The hearing on the Order remains open and should continue until the permit application under consideration is acted upon.

(The Order was dropped on approval of the application required in the Order.)

4.30.09: Former rye grass seeding is beginning to show green. I spoke with Mr. Chernushek this afternoon who indicated health problems that delayed his starting but indicated he will be working this weekend. I will update on this Monday evening.

5.26.09: A light cover of grass growth has come in. Mr. Chernushek indicates health problems and two related deaths have delayed his start of work since the permit approval was granted. It appears that some light work has started. He has further indicated that he will start a vacation on June 22, 2009 to finish the work.

6.13.09: Work is underway.

6.21.09: Bulldozer work has been completed - finish work remains. The additional silt fencing has been placed along the northerly wetlands crossing, and the additional pipe under the southerly crossing has been installed. Remaining work includes finish grading along edges, spreading stockpiled topsoil, and establishing grass growth.

7.01.09: I spoke with Mr. Chernushek who indicated he expects work to be completed by September 1, 2009. (Site photo attached).

9.03.09: Mr. Chernushek has been working on levelling and grading. The formerly seeded areas have become fairly thick growth surrounding the central wet areas. He has further indicated that with the combination of weather and the slower moving of earth with the payloader compared to the earlier rented bulldozer has led him to contact contractors for earth moving estimates which have not yet been received. The site is not yet finished but has remained quite stable.

9.12.09: I met with Mr. Chernushek today and discussed again what his plans are for stabilizing this work site.

10.01.09: Mr. Chernushek indicated he has not heard back from the contractor he had spoken with about removing material, and is in progress of contacting others. In discussion is removal of material from the site either within the 100 cubic yard limit or obtaining a permit for such removal.

10.28.09: Mr. Chernushek has indicated he has made arrangements with DeSiato Sand & Gravel to remove 750 cubic yards of material. Staff is in the process of clarifying permit requirements.

**W1445 - Chernushek - application for gravel removal from site**

11.30.09: Packet of information representing submissions by Mr. Chernushek, Mr. DeSiato and myself is in this agenda packet as Mr. Chernushek's request for modification.

12.29.09: Preparation of required information for PZC special permit application is in progress. Tabling any action until the February 1, 2010 meeting is recommended.

1.12.10: 65 day extension of time received.

- 2.18.10: No new information has been received.
- 2.25.10: This application has been withdrawn.

**Mansfield Auto Parts - Route 32**

- 1.16.09: Inspection - no vehicles are within 25' of wetlands.
- 2.24.09: Inspection - no vehicles are within 25' of wetlands.
- 3.06.09: Inspection - no vehicles are within 25' of wetlands.
- 4.14.09: Inspection - no vehicles are within 25' of wetlands.
- 5.11.09: Inspection - no vehicles are within 25' of wetlands.
- 6.10.09: Inspection - no vehicles are within 25' of wetlands.
- 7.16.09: Inspection - no vehicles are within 25' of wetlands.
- 8.12.09: Inspection - no vehicles are within 25' of wetlands.
- 9.14.09: Inspection - no vehicles are within 25' of wetlands.
- 10.27.09: Inspection - no vehicles are within 25' of wetlands.
- 11.30.09: Inspection - no vehicles are within 25' of wetlands.
- 12.28.09: There are two cars that need to be moved. Mr. Bednarczyk indicates their payloader is down for repairs and the cars will be moved as soon as it is repaired.
- 1.27.10: No change - the payloader is apart with parts on order to complete repairs. It is of 1986 vantage and finding parts is a major proposition.
- 2.18.10: Same - they are in the process of rebuilding the engine on the payloader.
- 3.30.10: Same - Mr. Bednarczyk indicates a contuing problem finding engine parts.
- 4.13.10: Owner indicates the payloader is operating again.
- 4.15.10: Owner indicates he will have the cars moved this week.
- 4.23.10: **No vehicles are within 25' of wetlands.**
- 5.17.10: Inspection - no vehicles are within 25' of wetlands.
- 6.02.10: Inspection - no vehicles are within 25' of wetlands.



# CFL News

Volume 15, Issue 2—May 2010

## 2010 Membership Drive

Your membership dues and tax-deductible donations help CFL to provide educational information to our members through our web site, conferences and special mailings of books and magazines. We appreciate and need your ongoing support.

Act now to join or renew your membership in the CFL with the application found in this newsletter.

We appreciate your support of the Connecticut Federation of Lakes in 2010.

## INSIDE THIS ISSUE

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## Lake Association Grants Available – Deadline Extended

The deadline for applying for the lakes capacity building grants available to Connecticut Lake Associations has been extended. Please visit our website, [www.ctlakes.org](http://www.ctlakes.org), to find more information on qualifying projects and the application process. Contacts for questions or assistance in completing an application are also located on the website.



## President's Message

God's Lakes. Our Hands. We are the problem and we are the solution. If it is to be, it is up to you and me. What we can conceive and believe, we can achieve. Caring for God's creation requires more than clever words. Worthy goals, careful planning, resources of time and money, a realistic strategy, passionate volunteers, public awareness, a public health problem or scare, severe economic impacts, a part-time executive director, a bigger membership and "political" clout are necessary for progress. Working effectively with the federal (EPA), the state (DEP, legislators, DPH, governor) and local town governments (boards and commissions) are critical to helping lakes. Healthier lakes result when lake association volunteers serve on their local Conservation, Inland Wetlands, Water Pollution Control Authority, Public Health, and Planning and Zoning committees.



## Beyond Walden

By Bruce Fletcher

Beyond Walden is a highly recommended book for those interested in Lakes. It was written by Robert M. Thorson, PhD, UConn Professor of Geology, a regular Hartford Courant environmental columnist, a passionate lifelong lover of lakes, and fortunately a friend of the CFL, Inc. He has a special fondness for kettle lakes; in fact, the subtitle for his book is "The Hidden History Of America's Kettle Lakes and Ponds."

This book connects Henry David Thoreau's beloved Walden Pond (a kettle) in Massachusetts to all our precious lakes even Garrison Keillor's fictional Lake Wobegon (a kettle no doubt) in Minnesota by illuminating their geological, ecological and cultural similarities. Thorson's expertise in geology, climatology, glaciology, chemistry, limnology, botany and paleozoology is apparent when he reviews the last North American ice age some 10,000 years ago which shaped the upper tier of the U.S. from New England to Montana. In this area are thousands of kettle lakes and ponds which were formed when huge masses of glacial ice buried in glacially transported earth melted. Most kettles are "sandy sinkholes" with no inlet or outlet streams. Kettle lakes were not "gouged out" by glaciers. There are one or more small ordinary kettles in just about every Connecticut town. Two of note in CT are Linsley Pond in Branford (the "birthplace of limnology and ice-age climatology in North America") and Great Pond in Glastonbury.

In the second half of the book he has a thoroughly enjoyable chapter on "Family Lake Culture" which most of us will recognize as familiar. The chapter on "How Lakes Work" is a short course on lake science presented with clarity and loaded with very useful, practical information.

Time has not been kind to lakes. As more and more people have spent more and more time on lakes with their camps, cottages, outhouses and now year-round McMansions, lakes have changed, aged and become nutrient rich. In the final chapters "Loving Lakes Too Much" and "Lake Futures" he describes the negative changes which threaten water quality, lake health and public health. He bemoans the pollution from fertilizers, pets, poor septs, excessive impervious surfaces, invasive flora and fauna, runoff sedimentation, shoreline habitat destruction, acid rain, climate change,

chemical "contamination by toxic metals and synthetic organic compounds including pharmaceuticals," farms with livestock feedlots, equestrian facilities, duck and geese feeding, etc, etc.

Thorson has suggestions for lakes that have reached the "tipping point" between healthy and unfit. One alternative is to put the lake on a "strict diet from all external sources of nutrients" – phosphorus! This approach may take decades to work he acknowledges. The more radical alternative is to remove the phosphorus in the bottom muck by powerful vacuums. He calls it "lake liposuction." Keeping jet skis and high horsepower motorboats only in deep water will "reduce the stirring up of sediment and the phosphorus flux by about half." His assessment is that 1/3 of lakes are in good shape and the rest are between "significantly compromised and poor to terrible."

In "Lake Futures" he reviews the three harmful megatrends "coming at us like freight trains" to threaten our lakes. In addition, he offers four broad lake management recommendations. He advocates top down federal and state laws that regulate "on-site wastewater disposal, minimize chemically treated lawns, insist on mandatory checks for hitchhiking invasives, require a buffer of wetland plants along the shoreline," etc. He feels each lake should have its own association and that each association become stronger, more responsible and more pro-active in its dealings with the state and local governments and in its education of its stakeholders. Outdoor classes on pontoon boats for kids and adults will produce positive results. Neighbors must pay attention and "agree on what to do" so the lake does not lose.

Of local note in his acknowledgments he thanks Chuck Lee of the DEP, our indispensable liaison to the CFL, Professor Peter Rich, PhD and limnologist George Knoecklein, PhD. Both Rich and past CFL president Knoecklein are current CFL board members.

Everyone interested in Lakes should have Beyond Walden.



## State Water Quality Revision

By Rick Canavan

The CT DEP is in the process of revising the state Water Quality Standards. The Water Quality Standards are required by the Clean Water Act and include Standards, Criteria and Mapping. In the preface to the revisions the CT DEP summarizes the function and goals of the Water Quality Standards as follows:

- Protect surface and ground waters from degradation.
- Segregate waters used for drinking from those that play a role in waste assimilation.
- Restore surface waters that have been used for waste assimilation to conditions suitable for fishing and swimming.
- Restore degraded ground water to protect existing and designated uses.
- Provide a framework for establishing priorities for pollution abatement and State funding for clean up.
- Adopt standards that promote the State's economy in harmony with the environment.

A public comment period has just been completed. The proposed revisions to the standards and public comments are posted on the internet [http://www.ct.gov/dep/cwp/view.asp?a=2719&Q=452434&depNav\\_GID=1654](http://www.ct.gov/dep/cwp/view.asp?a=2719&Q=452434&depNav_GID=1654)

There are several parts of the revisions relevant for lakes, including potentially changing the term 'eutrophic' to 'cultural enrichment' and changes to the phosphorus standard. A narrative standard for Phosphorus in freshwater is proposed. This narrative standard develops a process where an acceptable phosphorus load to a waterbody can be calculated based on the 2002 land use cover of the watershed and the application of loading rates for each area.

There is debate among those submitting comments about the narrative phosphorus standard. Some commenters, including US EPA, call for a single numeric standard, which is an approach used in the Standards for many other elements. The CT DEP writes that the wide range of naturally occurring phosphorus concentrations makes it difficult to establish a defensible single numeric value. Personally, I think the watershed approach has promise because it can account for regional and

historical differences between waterbodies to allow for realistic water quality goals. A major drawback of a watershed approach is that it is complex and introduces many other components that must be estimated. In this process highly variable conditions such as 'how much phosphorus is exported from urban land' or 'how much phosphorus removal can be expected by adding BMPs' are estimated as single numbers. Phosphorus recycling from lake sediment, often referred to as internal loading, can also confound a watershed loading approach.

Additional revisions and clarifications may be made to the Water Quality Standards before they are officially revised by CTDEP.

## Spring is Here and the Lakes Are Ice-free!

By Chris Mayne

It's time to start collecting Secchi disk data again! The CFL and I would like to thank all of those volunteers who provided data over the past six years. The program could not succeed without your participation and your support. I am asking that you send in your 2009 Secchi disk data so that I may write the 2009 report. I will also incorporate data from previous years as well. Data should include the name of the waterbody, the sampling date, and depth with units (inches, feet, or meters). You can find previous Secchi disk reports on the CFL website ([www.ctlakes.org](http://www.ctlakes.org)) under current projects. We are always looking for more volunteer lakes to participate in this program. All lakes and ponds in Connecticut are welcome to participate in this program. If you have any questions, please do not hesitate to ask me. Thank you very much!

Please forward all data to my e-mail address: [goodworksPMC@sbcglobal.net](mailto:goodworksPMC@sbcglobal.net).

## Lakes Awareness Week July 11-17

Lakes Awareness Week in Connecticut is July 11-17. We encourage you to work with your lake association to proclaim the same in your town or on your lake.

## Organic Land Care Is Lake Smart

NOFA, the Northeast Organic Farming Association, defines organic land care as that without synthetic pesticides, synthetic fertilizers or synthetic soil amendments thereby protecting the local ecosystem and benefitting the whole web of life. Just as in health care, the primary principle is "DO NO HARM."

Consider using compost and compost tea, doing soil tests, choosing the "right plant in the right place," using water properly and rethinking lawns.

For more information contact NOFA at 203-888-5146, P.O. Box 135, Stevenson, CT 06591. [www.organiclandcare.net](http://www.organiclandcare.net)



## Road De-Icer Alternative

*Hartford Courant Spring 2010*

Middletown's Public Works Commission will consider changing the way the city treats snow-covered roads.

Cargill's "Clean Lane" product, a de-icer made of calcium magnesium acetate, is being used in West Hartford and other towns because it, unlike salty sand, doesn't corrode car bodies and doesn't require spring sweeping and catch basin cleanouts. Although slightly more expensive, it should be studied for your lake community.



## Save The Date

When: Friday September 17, 2010, 5-7pm

What: CFL Road Show Conference

Where: Jacques Cartier Club on Wilson Street in the Jewett City section of Griswold CT. This facility known as the "French Club" sits on the edge of Ashland Pond (as impoundment of the Pachaug River) which contains fanwort and two milfoil species. An excellent program is being planned with refreshments, snacks and a cash bar.



## Just Released - Must Have Guide to Invasive Aquatic Plants in Connecticut

The Connecticut Agricultural Experiment Station (CAES) has just released a wonderful identification guide to Connecticut's invasive aquatic and wetland plants. It can be downloaded via the below link (.pdf format, 8.8 MB). A limited number of printed copies are available from CAES on request (Email: [Martha.Balfour@ct.gov](mailto:Martha.Balfour@ct.gov)).

[http://www.ct.gov/caes/lib/caes/invasive\\_aquatic\\_plant\\_program/pdf\\_reports/aquatic\\_and\\_wetland\\_guide\\_2010\\_gregrev.pdf](http://www.ct.gov/caes/lib/caes/invasive_aquatic_plant_program/pdf_reports/aquatic_and_wetland_guide_2010_gregrev.pdf)

[http://www.ct.gov/caes/lib/caes/invasive\\_aquatic\\_plant\\_program/pdf\\_reports/aquatic\\_and\\_wetland\\_guide\\_2010\\_gregrev.pdf](http://www.ct.gov/caes/lib/caes/invasive_aquatic_plant_program/pdf_reports/aquatic_and_wetland_guide_2010_gregrev.pdf)

This is a must have publication for any CFL newsletter reader concerned about aquatic invasive plants. It provides crisp clear photos and keys to the identification of all invasive plants found by the CAES scientists as part of their statewide survey of invasive aquatic plants in Connecticut lakes and ponds. So far the CAES scientists have studied 162 Connecticut lakes and ponds as part of an intensive Statewide invasive aquatic plant study.

The guide identifies the origins of each plant and shows where these plants have been found or reported in Connecticut lakes. Prepared by Experiment Station Scientists Greg Bugbee and Martha Balfour it also explains what you should do if you find a plant in your lake.

It is very important for all lake residents and lake users to become familiar with the invasive aquatic plants that threaten the habitat and recreational values of our lakes. Download this guide and use it. It should be an essential part of your local invasive aquatic plant educational and prevention program.

The following from the introduction to the guide explains why it is important to prevent the spread of these plants, summarizes the CAES findings to date and key provisions of the State Invasive Plant law.

"Because invasive species are not native, they have few natural enemies. Their dramatic growth rates can clog water intakes, decrease recreational opportunities, reduce local real estate values, and alter

native ecosystems (Connecticut Aquatic Nuisance Species Working Group, 2006, Fishman et al. 1998).

Recent vegetation surveys of 162 lakes and ponds, by the Connecticut Agricultural Experiment Station Invasive Aquatic Plant Program (CAES IAPP), found one or more invasive plants in nearly two-thirds of the water bodies (CAES IAPP, 2010). Approximately three-quarters of the invasive aquatic plant species in southern New England were introduced as cultivated plants (Les and Mehrhoff, 1999).

These introductions come from recreational boating (Couch and Nelson, 1985), dumping of unwanted plants in aquariums, water gardening, and plant fragments mixed with live bait used by fishermen. Spread of invasive plants from one lake to another also occurs naturally by wildlife and downstream flow.

Once established, eradication of invasive aquatic plants is extremely difficult. Preventing introductions by inspections, early detection and rapid response is critically important. This guide is intended to provide information on the identification and distribution of the 22 aquatic plants listed as invasive or potentially invasive (Table 1) by the Connecticut General Statute (Sec. 22a-381d). The sale of these plants, with the exception of common waterhyacinth (*Eichhornia crassipes*) and water lettuce (*Pistia stratiotes*), is also banned by State Statute and their transport is limited to activities associated with control and education. Fines of up to \$75.00 can be imposed for each violation."



## **Connecticut Lake Water Clarity Estimation from Satellite Imagery**

**By James D. Hurd, Research Associate**

Center for Land use Education And Research (CLEAR) Laboratory for Earth Resources Information Systems (LERIS) Department of Natural Resources and the Environment The University of Connecticut

As reported in the January 2010 Newsletter, the Center for Landuse Education and Research (CLEAR) at the University of Connecticut has started a research project to estimate lake water clarity from Landsat

satellite imagery for the state of Connecticut. This project is being led by James Hurd and Daniel Civco from UConn's Department of Natural Resources and the Environment. Similar projects have been conducted successfully in other parts of the country, particularly in the northern plains states of Minnesota, Wisconsin and Michigan. The primary goal of the year long project will be to develop historical estimates of lake water clarity from existing lake transparency data and Landsat satellite imagery dating back to the early 1970s.

Why use satellite imagery to estimate lake water clarity? The simple answer is that it provides the ability to systematically assess lake water clarity for all sizable lakes (typically larger than 5-10 acres in surface area) for a given date throughout the state. It is cost prohibitive to conduct in situ sampling of every lake in Connecticut over time, let alone on a regular basis. By sampling a few lakes, a relationship can be derived between the transparency measurements of those lakes with the reflectance characteristics of the lake water surface and water column in the Landsat satellite imagery. This relationship can then be extrapolated to other lakes within the satellite image to provide statewide estimates of lake water clarity which serves as an indicator of lake water quality.

In addition to producing historical estimates of lake water clarity, a secondary goal of the project will be to conduct a statewide estimate for 2010. To be successful, however, in situ samples of lake water transparency from 20-30 lakes will need to be collected during the mid-July through mid-September 2010 time period. To accomplish this, we will need the help of volunteers to collect transparency data about once a week during the two month period. As such, we are hoping to develop an "informal" collaboration with the CFL to help with the transparency data collection. In addition, it is hoped that during this two month period a usable (cloud free) Landsat satellite image will be acquired. Currently there are two Landsat satellites collecting data providing the ability to acquire an image of Connecticut every seven to eight days.

James is planning on attending the May meeting of the CFL to provide additional information about the project. If you are interested in learning more, we hope you can attend the meeting. Funding for this project is provided by the Connecticut Institute of Water Resources. James can be reached at: [james.hurd\\_jr@uconn.edu](mailto:james.hurd_jr@uconn.edu).

To learn more about CLEAR, visit:  
<http://clear.uconn.edu/>

To learn more about similar projects in the northern plains states, visit:

Minnesota:  
<http://www.dnr.state.mn.us/lakefind/index.html>

Wisconsin: <http://www.lakesat.org/statewide.php>

Michigan:  
<http://mi.water.usgs.gov/splan1/sp00301/remotesensing.php>

## **About the Connecticut Federation of Lakes**

**By Bruce Fletcher**

Everyone agrees that healthy lakes are highly valued natural assets whose beauty and recreational offerings make them irresistible to so many each season of the year. Towns with attractive lakes annually collect higher property tax revenues and benefit each year from months of "trickle down economics". These precious resources are fragile, and need constant monitoring and preventive and corrective programs. So it is no wonder that individuals, families, lake associations, towns and states proactively work to help their lakes and recognize that unprotected lakes may become damaged beyond repair.

The Connecticut Federation of Lakes (CFL) was formed in 1995 to help individuals, steering committees and established lake associations with needed guidance, advice and support. In addition, the CFL fosters an alliance of Connecticut's many pond and lake protective organizations so that Connecticut lakes can speak with a unified voice.

The CFL board members are dedicated volunteers who have first hand experience in dealing with lake and association issues. Since some board members are professional lake managers and others have masters & doctorate credentials in the science of limnology, the CFL can and does help. Recently the CFL helped pass legislation geared to curb the establishment of invasive aquatic plants in Connecticut. Boat launch monitoring, on site waste water management guidelines, and model municipal

regulations and ordinances for watershed protection are current initiatives.

The CFL publishes newsletters for members full of technical information, lake profiles, management tips and news from the Connecticut Department of Environmental Protection (CT DEP). Chuck Lee of the DEP, an environmental analyst in the Bureau of Water Protection and Land Reuse, 860-424-3716, attends all the CFL Board meetings. The CFL works with the Governor to designate the annual Lakes Awareness Week and hosts educational conferences for CFL members and friends. In addition the CFL is an active full participant in NEC-NALMS (the New England Chapter of the North American Lake Management Society). We participate in their programs annually and host the 3 day conference on a rotating basis.

Lakes in Connecticut need to receive more preventive medicine. In other New England states the citizenry and legislators have pushed through bigger and better programs for lakes. If you treasure your lake, please join the CFL. With your help the CFL will continue to make a difference locally and statewide.



## **Contact the CFL**

For more information regarding the Connecticut Federation of Lakes, visit our web site at [www.ctlakes.org](http://www.ctlakes.org), contact [Penny@Ctlakes.org](mailto:Penny@Ctlakes.org), or write to P.O. Box 216, Windsor, CT 06095.



## **Attention Lake Lovers**

**By: Larry Marsicano & Robin Zitter**

According to the US EPA's recently released Draft National Lakes Assessment Report (see [www.epa.gov/owow/lakes/lakessurvey/](http://www.epa.gov/owow/lakes/lakessurvey/)) poor habitat conditions along the lakeshore is one of the two most significant stressors of lakes. The other was high levels of the nutrients nitrogen and phosphorus. Translated... riparian buffers play an important role in maintaining the ecological well-being of your lake or pond. What does your buffer look like these days... lawn with an ornamental plant here and there or a mix of trees, shrubs and groundcovers that contribute to good habitat conditions that reduce the amounts of

nutrients, sediments and other pollutants from reaching the water?

There are native plants that will accommodate whatever site conditions you may have. Check your site conditions and consider the following recommendations:

1. For **shady, but dry shorelines** consider Sweetshrub, Honeysuckle, Witchhazel, or the Blue Blaze Viburnum (otherwise known as Arrow-wood viburnum,). Mix and match just as nature intended.
2. For **average soil conditions with ample sun** we suggest Red Chokeberry, Summer Wine Ninebark (#31), American Cranbury Viburnum, or Blueberries. You may consider several set of blueberries to improve both pollination and harvest for blueberry pancakes!
3. For **moist to wet soils** we would like to offer two concepts. The first has a red theme which will look terrific especially in winter against a white background – Bailey's Red Twig Dogwood and the Winterberries. The other concept promises to please your sense of smell – Sparkler Azalea and Bayberry. Like the blueberries, planting several of the winterberry or bayberry greatly improves the probabilities of these plants bearing fruit.

We also recommend that you check out the UCONN Plant Database for information and pictures of the plants you are considering at [www.hort.uconn.edu/plants/index.html](http://www.hort.uconn.edu/plants/index.html). For more information on riparian buffers, a list of trees, shrubs and other plants to consider for your buffer, and how to install them, see the Candlewood Lake Authority's Buffer Guidelines by going to [www.candlewoodlakeauthority.org](http://www.candlewoodlakeauthority.org), clicking on *Publications and Documents* under *Information Resources*, and then clicking on *Buffer Garden Publication*.

*Robin Zitter is a landscape designer with expertise in native plants and serves on Sherman, CT Inland Wetlands and Watercourse Commission.*

*Larry Marsicano is the Executive Director of the Candlewood Lake Authority, serves on the Board of the Connecticut Federation of Lakes as Vice President, and serves on the Board of the Northwest Conservation District.*

## **CFL Board**

Bruce Fletcher, President – Bashan Lake  
Larry Marsicano, Vice President – Candlewood Lake  
Penny Hermann, Secretary, – Lake Williams  
Chick Shifrin, Treasurer, - Columbia Lake  
George Benson  
John Burrell, -Columbia Lake  
Richard Canavan – CME Associates  
Mary Ellen Diluzio - Bashan Lake  
George Knoecklein – Limnologist  
Bruce Lockhart, - Certified Lake Manager  
Larry Marsicano, - Director, Candlewood Lake  
Chris Mayne, - Certified Lake Manager  
Tom McGowan, - Lake Waramaug  
Peter Rich - Limnologist  
Mieke Schuyler  
George Walker - Lake Lillinonah

## **Newsletter Committee**

The Newsletter Committee welcomes your input and your articles. Please send suggestions or articles to CFL, P.O. Box 216, Windsor, CT 06095 or e-mail to [Penny@Cflakes.org](mailto:Penny@Cflakes.org).

The newsletter committee includes:

Bruce Fletcher  
Penny Hermann  
George Knoecklein

## CFL Application - 2010

Yes! I want to be a member of the CFL!

(Please make check payable to Connecticut Federation of Lakes)

Individual (\$25/year)

Lifetime - for individuals only (\$500)

Lake Association (\$150/year)

Tax Deductible Donation

Name \_\_\_\_\_

Address \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Telephone \_\_\_\_\_

e-mail \_\_\_\_\_

Who may we thank for your referral?  
\_\_\_\_\_

Mail to: CFL, P.O. Box 216, Windsor, CT 06095

## Calendar

Upcoming Board Meetings – 3<sup>rd</sup> Wednesday of April, May, June, September, October, January and March 7PM at Northeast Utilities

Lake Awareness Week – July 11-17

CFL Road Show - an educational seminar open to the public – September 17, 2010

Connecticut Federation of Lakes

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# TOWN OF MANSFIELD



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## For immediate release

POC: (your name), (phone number)

The Town of Mansfield was honored with a special achievement award by Gov. Jodi Rell and the Connecticut Greenways Council on June 4<sup>th</sup>. Matt Hart, Town Manager, and Jennifer Kaufman, Parks Coordinator, accepted the award, which was given in recognition of the town's dedication to the development of greenways. Mansfield is fortunate to have a dedicated Open Space Preservation Committee, Parks Advisory Committee, Recreation Advisory Committee, Agriculture Committee, Town Council, Planning and Zoning Commission, and a supportive citizenry. It is through the dedication, expertise, and hard work of these groups in conjunction with Town staff that the town has preserved 2,785 acres of open space, created numerous parks, and developed a Town-wide trail system. Mansfield encourages the use of this system through the town's website where maps, guides, and information are available. In addition, the Town works in partnership with numerous organizations in the region to accomplish its goals. These groups include Joshua's Trust, Natural Areas Volunteers, the Last Green Valley Heritage Corridor, Friends of Mansfield parks, the Willimantic River Alliance, Ct Forest and Park Association, and Friends of Mansfield Hollow.

DEP Deputy Commissioner Susan Frechette joined Connecticut Greenways Council Chairman Bill O'Neill, Vice-Chair Mark Paquette, and CT DEP's Trails and Greenway Corridor Laurie Giannotti for the ceremony, which took place at the Rotary Park Bandstand in Putnam.

*Photo: Matt Hart, Putnam Mayor Bob Viens, Jennifer Kaufman, Susan Frechette, and Bill O'Neill.*

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