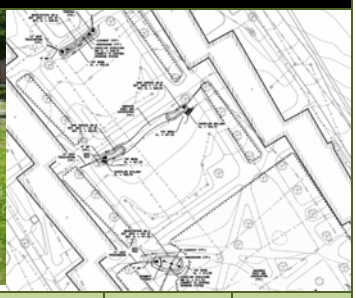
Site A8: Hurley Hall

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.

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.

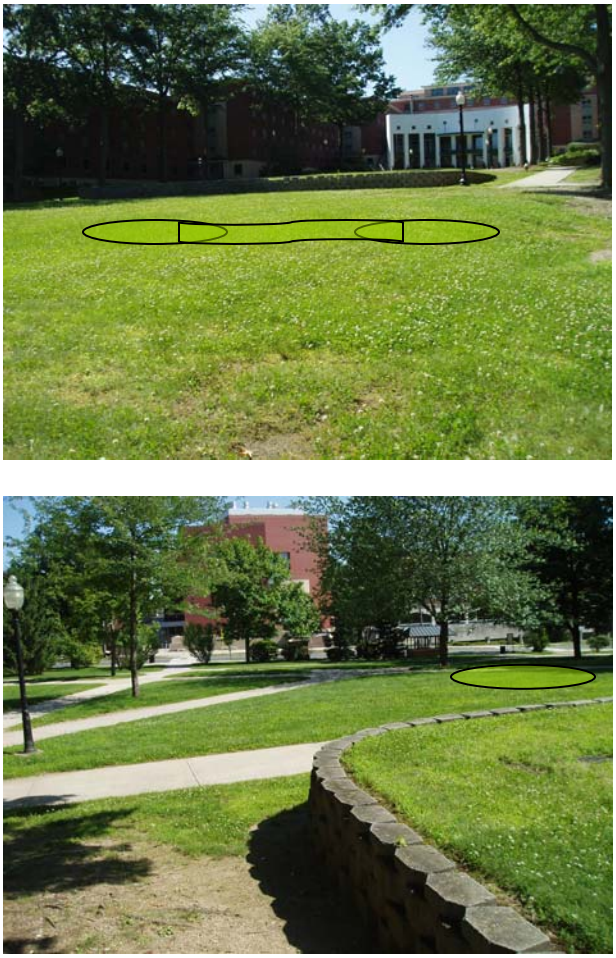


Figure 2. Proposed location of bioretention areas at site A8b (top) and A8c (bottom).

Maintenance Activities for Bioretention	
Activity Schedule	**Frequency**
• Water once a week during the first two months, and then as needed and depending on rainfall to promote plant growth and survival. • 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.	As Needed (following construction)
• Prune and weed bioretention area to maintain appearance. • Remove accumulated trash and debris.	Regularly (Monthly)
• Inspect inflow area for sediment accumulation and remove any accumulated sediment or debris. • Inspect bioretention area for dead or dying vegetation. Plant replacement vegetation as needed.	Annually
• Remove and replace existing mulch	Every 2 to 3 Years