

Continuing development of the campus has created many problems with storm drainage into Campus Creek. Poor water quality and degradation of the creek are problems that the university wanted to address. A charette was held with students, faculty, and design professionals to address the concerns of Campus Creek and offer possible solutions. Fifteen teams were divided over thirteen areas within the campus watershed, each addressing the specific needs and concerns of their assigned area. Each team formulated several conceptual design solutions that were presented to the campus planning staff. This presentation unifies individual concepts identified during the charette and uses them to create a unified vision for the campus watershed. Three specific areas of the campus watershed are addressed in this presentation.



Ecologically Sensitive Stormwater Management Charette



AREA 1: AGRICULTURE AREA

This area is currently in cattle grazing/field/breeding production and encompasses the highest point in the watershed. Significant topographic changes occur within the boundary. The entire area has been plowed for production agriculture in the past. A rock quarry, located north of the existing stock pond, is used by the Department of Facilities Planning. Proposed development is planned along the eastern edge of the area within the Technological Park and north of the Veterinary Medicine Complex for the planned Bio-Food Safety facility.

AREA 6: DORMITORY PARKING AREA

This area includes parking, agricultural education facilities, and a livestock area. Pedestrian circulation from the parking lots to dorm facilities, which are located to the south, is critical. Proposed development will likely include a parking structure.

AREA 13: QUINLAN NATURE AREA

The dedicated Quinlan Nature Area is considered the most natural looking portion of this Campus Creek corridor. Significant erosion has occurred along the channel and is more evident near the campus underground exit on the eastern edge of the study site.

A Village Tradition
 Sometimes walking through campus, it is possible to think back to the turn of the twentieth century. Climbing west through limestone gates and up a gently sloping, shaded hill, my focus is always on the bell tower of Anderson Hall. An occasional splash of sunlight escapes foliage from the large specimen evergreens and oaks. This building, home to the university president's office, and its tower is the landmark for this small academic village just as the towers of churches and cathedrals have been the focus for villages around the world. The tightly clustered structures are oriented north to south and centered in the middle of open fields and maturing orchards. A wooded creek winds through campus, providing a pleasant place to walk and carrying storm water away from the village. Of course, for a village to operate it needs its hinterland to support it. In that way this campus almost appears to be self-sufficient in its agricultural pursuits.
 The arrangement of this academic village did not happen by chance. One of the university's first presidents adopted Frederick Law Olmsted's principles of campus planning, envisioning "an Agricultural College looking so much like the grounds and buildings of a prosperous farmer . . . that we . . . would mistake it for a little hamlet of thriving artisans built in the heart of rich and well tilled fields" (Turner, page 150).



Group Fourth Place Award

Kansas State
Jeffery Stoecklen
Kimberly Olsen
Nathan Dunham

Judges Comments

- Well thought out solution
- Interesting fusion of land-use planning and LID
- Integrated design solution
- Good site characterization

Group Fourth Place Award

Kansas State
Jeffery Stoecklen
Kimberly Olsen
Nathan Dunham

A Village Divided

Taking another path, I make my way through 1930's era residents and over a crosswalk, I pass through small limestone gates before climbing a short hill. Again, my focus is immediately directed to the large tower above Anderson Hall. But on this walk, I must maneuver through a sea of parking. The village is disrupted by hundreds of cars and pedestrians are blinded by the harsh reflection of light dancing off gleaming chrome. Some of the largest open spaces are concrete fields designed for the temporary storage of vehicles. Agricultural fields are the new sites of athletic and academic buildings.

The campus is bisected by streets, busy with vehicles trying to make the afternoon rush to their garages a few blocks or miles away. All of these hard surfaces contribute to an overloaded stream that bends its way through campus carving out steep banks. Flash flooding can even be a problem as the water escapes the concrete during a storm, like a stadium whose main event has just ended. The village has been divided into domains that serve the car but not the pedestrian.

AREA 1: AGRICULTURE AREA

Site Problems:
Impervious Cover - Less than 10% by structures, parking and roads
Pervious Cover - 90% or greater, however grading of the land has made for a reduction in the permeability of the soil and an increase in runoff
Sewer Water - no methods employed to reduce runoff or filter contaminants before entering Campus Creek

Site Solution:
Runoff speed and intensity decreased by implementing a treatment chain consisting of detention basins and berms
Water quality improved by filtering agricultural contaminants through a series of vegetated detention basins
Vegetative cover increased for aesthetic quality and filtration
Pedestrian paths provide access to water amenities and open space



AREA 6: DORMITORY PARKING AREA

Site Problems:
Impervious Cover - 70% buildings, parking, and paving
Sewerwater - no methods employed to reduce runoff volume or rate of flow
Pedestrian circulation - conflicts between traffic, stormwater runoff, and pedestrian
Vegetation - little or no vegetation in parking lots for shade or stormwater reduction
Water Quality - no methods employed to reduce runoff contamination from running into campus creek

Site Solution:
Runoff speed and intensity decreased by implementing a terraced parking configuration with bays separated by bioswales
Water quality improved by filtering runoff before it enters into campus creek
Vegetative cover increased for aesthetic quality and shade
Pedestrian paths increased to remove conflicts with vehicular traffic
Parking garage with a green roof added to replace lost parking and allow for growth
Grey water from rooftop collected and re-circulated for irrigation



AREA 13: QUINLAN NATURE AREA

Site Problems:
Water speed causing erosion of stream bank
Invasive plants are crowding out desirable vegetation
Close proximity of road to stream is causing runoff pollution
Pedestrian paths do not allow users to explore the corridor
Educational opportunities are being overlooked
Flooding is a problem in large storm events

Site Solution:
Water speed decreased by restoring a more natural meandering to stream
Stream banks stabilized through bioengineering to prevent erosion
Invasive species replaced by natives that have filtering and soil stabilization abilities
Portion of road closest to creek removed and entry drive moved southward to avoid creek
Pedestrian paths open the length of the park corridor to allow exploration
Educational prairie area added to enhance user experience
Raingarden demonstrates alternative storm water treatment
Flooding reduced by lengthening channel, decreasing water velocity, and providing raingarden for overflow events.



SITE ANALYSIS

2004 National Low Impact Development Student Design Competition

Group Fourth Place Award

Kansas State
 Jeffery Stoecklen
 Kimberly Olsen
 Nathan Dunham

A Modern Village Tradition

But the unity of the village can be regained. Attention to this academic village's storm water drainage provides a way to recapture the green village of the past while improving the quality of the contemporary campus. The ultimate goal of this plan is the increase of permeable surfaces that slow the movement of water in the watershed and filter it at the same time. Existing parking can be divided with green space that can accept water and clean it before allowing it lower into the watershed. New amenities can be created like water features as a part of treatment chains. Pedestrian links can be centered around these features and increase the quality of circulation within the campus. The creek trail can become an educational tool, returning this university's original intent to build a campus that is shaped by the curriculum.

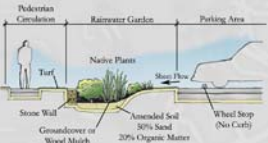
By limiting the number of streets and returning them to use as pedestrian links and additional porous surfaces, the campus can be reunited and the quality of the watershed strengthened. By providing shuttle services to existing parking areas located away from the central campus, parking surfaces can be reduced in the core of the campus adding to effectiveness of the low impact methods planned. LID techniques illustrated on these plans are used throughout the Campus Creek watershed. This proposal allows the campus to regain its village character.



AREA 1: AGRICULTURE AREA



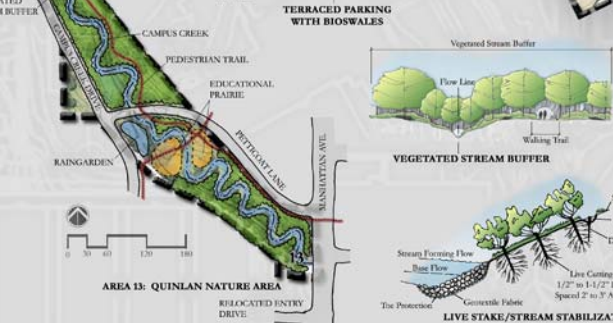
STORMWATER TREATMENT CHAIN



TYPICAL RAINGARDEN/
 PARKING AREA



TERRACED PARKING
 WITH BIOSWALES



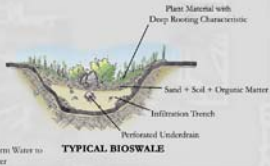
AREA 13: QUINLAN NATURE AREA



PROBLEM SOLUTIONS



PARKING STRUCTURE/GREENROOF
 WITH TYPICAL ECO-ROOF SECTION



TYPICAL BIOSWALE



AREA 6: DORMITORY PARKING AREA



VEGETATED STREAM BUFFER



LIVE STAKE/STREAM STABILIZATION



KEY MAP

2004 National Low Impact Development Student Design Competition

Group Fourth Place Award

Kansas State Jeffery Stoecklen, Kimberly Olsen, and Nathan Dunham

FROM FARM TO CAMPUS CAMPUS CREEK-Stormwater MANAGEMENT & ECOLOGICAL DESIGN

Campus Creek Stormwater Management and Ecological Design Charter

Continuing development of the campus has raised many problems with storm drainage into Campus Creek. Past water quality and distribution of the creek are problems that the students wanted to address. A charter was held with students, faculty, and design professionals to address the concerns of Campus Creek and offer possible solutions. Stormwater runoff should not increase water volume in the creek watershed. Land should be developed in a way that does not increase the amount of impervious surface. Land use development should be designed to reduce runoff. This presentation outlines individual concepts identified during the charter and sets them in a context within the campus watershed. These specific areas of the campus are noted and addressed in the specific areas.

CAMPUS MASTERPLAN/ WATERSHED DELINEATION



AREA 1: AGRICULTURE AREA

This area is currently in early growth/land/forestry production and encompasses the highest portion of the watershed. Significant opportunities change occur within the boundary. The area will be developed for production of timber. The site is currently in early growth/land/forestry production and encompasses the highest portion of the watershed. Significant opportunities change occur within the boundary. The area will be developed for production of timber. The site is currently in early growth/land/forestry production and encompasses the highest portion of the watershed. Significant opportunities change occur within the boundary. The area will be developed for production of timber.

AREA 2: DOMESTIC PARKING AREA

This area includes parking, residential buildings, and a livestock area. Pedestrian circulation from the parking lot to these facilities, which lay beyond the creek, is critical. Proposed development will help reduce a parking situation.

AREA 3: QUINLAN NATURE AREA

The dedicated Quinlan Nature Area is considered the most important habitat within the campus watershed. Significant opportunities change occur within the boundary. The area will be developed for production of timber. The site is currently in early growth/land/forestry production and encompasses the highest portion of the watershed. Significant opportunities change occur within the boundary. The area will be developed for production of timber.



A Village Divided

Taking another path, I make my way through 1930's era residential and enter a crosswalk. I pass through small dimensions before climbing a short hill. Again, my focus is immediately directed to the large trees above Anderson Hall. But as this walk, I must maneuver through a sea of parking. The village is disrupted by hundreds of cars and pedestrians are hindered by the heavy reflection of light dancing off glazing windows. Some of the largest open spaces are concrete fields designed for the temporary storage of vehicles. Agricultural fields on the west side of athletic and academic buildings.

The campus is littered by streets, busy with vehicles trying to make the afternoon rush to their groups at the blocks or walk way. All of these hard surface contribute to an overwhelmed stream that leads to my way through campus carrying too many loads. Flash flooding can occur like a pandemic as the water escapes the concrete drainage system. Like a stadium whose main event has just ended, the village has been divided into streams that serve the car but not the pedestrian.

AREA 4: AGRICULTURE AREA

Site Problem: Impervious cover, runoff, erosion, and water quality. **Site Solution:** Rainoff reduced and intensity decreased by implementing a treatment chain consisting of detention basins and bioretention. Water quality improved by filtering agricultural contaminants through a series of vegetated detention basins. Vegetative cover increased for aesthetic quality and erosion. Permeable paving permits access to water infiltration and open space.

AREA 5: DOMESTIC PARKING AREA

Site Problem: Impervious cover, runoff, erosion, and water quality. **Site Solution:** Rainoff reduced and intensity decreased by implementing a treatment chain consisting of detention basins and bioretention. Water quality improved by filtering agricultural contaminants through a series of vegetated detention basins. Vegetative cover increased for aesthetic quality and erosion. Permeable paving permits access to water infiltration and open space.

AREA 6: DOMESTIC PARKING AREA

Site Problem: Impervious cover, runoff, erosion, and water quality. **Site Solution:** Rainoff reduced and intensity decreased by implementing a treatment chain consisting of detention basins and bioretention. Water quality improved by filtering agricultural contaminants through a series of vegetated detention basins. Vegetative cover increased for aesthetic quality and erosion. Permeable paving permits access to water infiltration and open space.

AREA 7: QUINLAN NATURE AREA

Site Problem: Impervious cover, runoff, erosion, and water quality. **Site Solution:** Rainoff reduced and intensity decreased by implementing a treatment chain consisting of detention basins and bioretention. Water quality improved by filtering agricultural contaminants through a series of vegetated detention basins. Vegetative cover increased for aesthetic quality and erosion. Permeable paving permits access to water infiltration and open space.



A Village Tradition

Sometimes walking through campus, it is possible to think back to the heart of the twentieth century. Climbing west through four-story granite and on a gravelly sloping, shaded hill, my focus is drawn to the half tower of Anderson Hall. An occasional splash of sunlight escapes foliage from the large open-air pergolas and arches. This building, home to the university president's office, and its tower is the landmark for this small academic village just as the towers of churches and cathedrals have been the focus for villages around the world. The tightly clustered structures are oriented north to south and centered in the middle of open fields and meandering walkways. It would seem to walk through campus providing a pleasant place to walk and carrying storm water away from the village. Of course, for a village to prosper it needs its foundation to support it. In that way this campus almost appears to be self-sufficient in its agricultural potential.

The management of this academic village did not happen by chance. One of the university's first presidents adopted Frederick Law Olmsted's principles of campus planning, commissioning "An Agricultural College Looking to Nature" as the grounds and building of a progressive frontier. "The art... would include it in a little number of showing serene built in the heart of rich and well-wooded hills" (Olmsted, page 135).

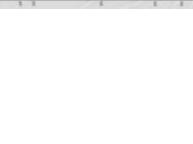
PROBLEM STATEMENT



SITE ANALYSIS



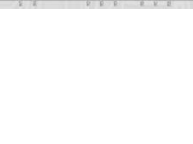
PROBLEM SOLUTIONS



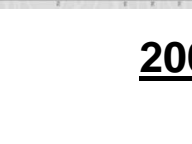
PROBLEM SOLUTIONS



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