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The University of Tennessee, Knoxville seeks to become a leader in the stewardship of the region’s shared water resources through the adoption and advancement of innovative stormwater management approaches and infrastructure practices across the campus.

**INTRODUCTION**

The strategic implementation of a stormwater management plan begins at the site level through campus renovation projects and during the design of new campus facilities. The SWMP strives to employ best management practices that offer the greatest social, economic, and environmental value with respect to campus, district, and project site needs while ensuring continued adherence to MS4 regulatory requirements.

The vision begins with not only addressing the challenges of an urban campus that directly influence the Tennessee River, but also realizing and distinguishing the opportunities Existing within the unique setting rich in historical and cultural presence that makes up the University of Tennessee. The expanding benefits of our commitment to improve stormwater management will enhance quality of life for individuals on campus as well as residents throughout the Tennessee Valley.

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The University of Tennessee acknowledges its role in the stewardship of our region’s water resources. The objective of the Stormwater Management Program is to establish itself as a leader in research, innovation, and practice. The university campus is a Phase II Municipal Separate Storm Sewer System (MS4). The State of Tennessee governs MS4 entities through the National Pollutant Discharge Elimination System (NPDES) permitting process. This permit is a requirement by the Tennessee Department of Environment and Conservation (TDEC) as mandated by the EPA under the Clean Water Act of 1972. By continuing to develop, implement, and enforce a Stormwater Management Program (SWMP) to protect water quality and to satisfy the appropriate water quality requirements of the Clean Water Act, the university is enriching a preexisting culture of environmental accountability and precaution.

The University of Tennessee acknowledges its role in the stewardship of our region’s water resources. The objective of the Stormwater Management Program is to establish itself as a leader in research, innovation, and practice. The university campus is a Phase II Municipal Separate Storm Sewer System (MS4). The State of Tennessee governs MS4 entities through the National Pollutant Discharge Elimination System (NPDES) permitting process. This permit is a requirement by the Tennessee Department of Environment and Conservation (TDEC) as mandated by the EPA under the Clean Water Act of 1972. By continuing to develop, implement, and enforce a Stormwater Management Program (SWMP) to protect water quality and to satisfy the appropriate water quality requirements of the Clean Water Act, the university is enriching a preexisting culture of environmental accountability and precaution.
Management of stormwater beginning at the project site level assures that the most advantageous practices for the intended development are implemented. Stormwater best management practices (BMPs) are most effective when designed as functioning replacements which mimic previously altered natural hydrological processes. Chosen management types may translate into direct benefits such as increased aesthetic value for students, faculty and visitors and a reduction of municipal water demand for domestic water uses such as toilet flushing and irrigation. The practical use of rainwater to satisfy a pre-established site need in contrast to discharged stormwater and substituted supplies promotes the functionality of BMPs and provides a number of project site benefits realized by those who utilize a particular site.

CAMPUS DISTRICTS

While the execution of stormwater management begins at the site level, the campus masterplan and anticipated development and redevelopment projects are considered from the very beginning. This allows for identification of hydrologically and infrastructurally defined stormwater management districts and ultimately results in contextually informed decision making regarding the management practices that will be utilized. District based stormwater solutions involving strategies that realize economies of scale while being spatially efficient are used to balance and compensate management volume when practical.

To the city of Knoxville, the Tennessee River is not only a source of recreation and habitat to countless aquatic and terrestrial species, but also the source for the city’s municipal water supply. With more than 1.4 million inhabitants, the city supplies its citizens with 34 million gallons of clean water each day by means of appropriate from campus stormwater. Cleaner effluent from campus translates to cleaner intake for water treatment. Just as it is concerned with downstream water quality, UT is dedicated to its watersheds throughout the region by eliminating pollutant loads and decreasing discharge events and the erosion of stream banks.

The campus Stormwater Management Plan is instrumental in uniting socioeconomic growth of The University of Tennessee with the environmental regulatory requirements of the Environmental Protection Agency (EPA) governed by the Tennessee Department of Environment and Conservation through the National Pollutant Discharge Elimination System (NPDES) Permit. The NPDES permit requires development of the stormwater management program which includes the implementation of outreach, public involvement/participation, education and enforcement. The Stormwater Management Plan promotes the functionality of BMPs and provides a number of project site benefits realized by those who utilize a particular site.

While the execution of stormwater management begins at the site level, the campus masterplan and anticipated development and redevelopment projects are considered from the very beginning. This allows for identification of hydrologically and infrastructurally defined stormwater management districts and ultimately results in contextually informed decision making regarding the management practices that will be utilized. District based stormwater solutions involving strategies that realize economies of scale while being spatially efficient are used to balance and compensate management volume when practical.

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The Stormwater Management Plan takes a holistic approach to managing water on campus. Because the SW95 fosters practices that employ a range of ecosystem services, campus becomes progressively more efficient as the university continues to develop and grow. These benefits are welcomed by students, faculty and visitors who wash their laundry or enjoy the green spaces and enhanced landscape provided by stormwater BMPs. Improved water quality and clean water delivered by the SWMP delivers permit compliance while making strides to provide economic efficiencies and a reduction of pollution prevention/good housekeeping. To develop and maintain a sustainably productive and relevant stormwater management program the campus Stormwater Management Plan promotes the functionality of BMPs and provides a number of project site benefits realized by those who utilize a particular site.

2016 CAMPUS MASTERPLAN UPDATE

The 2016 Master Plan strategies and recommendations are a result of detailed analysis completed during the master planning process. They are organized into a three-phase implementation plan: Near Term, Mid Term, and Long Term. The Phases define a list of projects within generally understood year ranges. Every effort has been made to provide flexibility in the phasing recommendations so that if the timing for approvals or funding changes, project sequence can shift to meet that need. Near term projects are those anticipated to begin within five years. Mid term projects are reasonably expected to begin within five to fifteen years. Long term is understood as the period more than fifteen years away. Improvements within these phases include facility renovation, the addition of new space and site improvements including such systems as open space, campus edges, entrances, districts, transportation, parking, utilities, and land acquisition. The priority lists are not intended to be a proposed order of construction. For example, a project listed at the end may be executed at the beginning of its recommended phase. The list’s hierarchy is structured first by Campus (UTK or UTIA), second tier is Funding Source (State or Other), third tier is Project Type (Building or Site) and the ordering tier is Alphabetically.

CAMPUS MASTERPLAN GOVERNING PRINCIPLES

- Align campus improvements to support UTK’s Strategic Plan
- Assume student population needs
- Continue to develop a safe, accessible, and more pedestrian-friendly campus
- Optimize limited space on campus
- Promote energy and environmental responsibility
- Expand and improve the east-west spine with better linkages north-south
- Accommodate vehicles at the periphery of campus and reinforce the pedestrian core.
- Continue to develop the campus transit system
- Encourage preservation of historic and cultural resources
- Recommend refinements to various campus design guideline documents
- Maximize connections to surrounding communities
- Coordinate with Cherokee Campus Master Plan
The non-hierarchical guiding principles of the Stormwater Management Program yield a diverse system that works to provide the best outcomes with respect to the complexity of campus. The individual principles work in unison to ensure that the Stormwater Management Plan functions optimally and effectively safeguarding the sustainability and quality performance of the program as a whole.
As the flagship research-based, land-grant university in the state, UT embodies the spirit of excellence in teaching, research, scholarship, creative activity, outreach, and engagement attained by the nation’s finest public research institutions. The University of Tennessee seeks to enrich and elevate the citizens of the state of Tennessee, the nation, and the world.

The stormwater management program at UT serves as an ambassador striving to embody the university’s mission, vision, and values by recognizing its accountability for the environmental and ecological health of our water systems. At the core of the SWMP are the five ‘Volunteer Values’:

- Seeking Knowledge
- Leading with Innovation and Integrity
- Advancing Diversity and Inclusion
- Engaging Locally and Globally
- Embracing Responsible Stewardship of Resources

For guidance, UT’s SWMP also utilizes the six minimum control measures for MS4’s:

- Public Education and Outreach
- Public Involvement and Participation
- Illicit Discharge Detection and Elimination
- Construction Site Stormwater Runoff
- Pollutant Control
- Permanent Stormwater Management New Development and Redevelopment Projects
- Pollution Preventers/Good Housekeeping for Municipal Operations

A CAMPUS APPROACH

By incorporating stormwater infrastructure that is complimentary to the collective vision and landscape, stormwater mitigation becomes an integral component of the campus environment. Mitigation efforts serve to enrich and beautify the campus while maintaining regulatory compliance. The campus stormwater vision and mission are implemented incrementally through strategic and planned campus projects. This approach to stormwater management and stormwater infrastructure will influence the efficiencies, opportunities, and unique hydrologic economies of scale throughout the university.

The Campus Stormwater Advisory Committee functions as a mechanism that gathers input from different avenues throughout campus. The committee is comprised of two appointed faculty members, one student representative, Campus Stormwater Coordinator, Campus Sustainability Coordinator, and Directors from the Institute for Secure and Sustainable Environments, Environmental Health and Safety, and Facilities Design Services or their designees. The makeup of the committee provides opportunity to be aligned with contemporary and advancing research, the expertise of practicing professionals, and the voice of the campus population.

This level of cooperation and unification results in stormwater infrastructure that is complimentary to the collective campus vision and landscape, becoming an integrated component within the system.
In unaltered systems, rainfall is infiltrated into the ground where it is naturally filtered, becoming subsurface flow and recharging the water table. Landscape alteration through urbanization, however, translates to increased impervious surfaces that result in reduced infiltration and increased runoff volume. As an essential component of the complex system in which it exists, rainfall is best managed at the site in which it falls. The restrictions and challenges associated with heavily developed areas have inspired more holistic approaches to stormwater management.

Bioretention is a superior answer to stormwater issues that commonly plague urbanization. Living systems provide the opportunity to filter and reduce runoff volume in a non-invasive, chemical free manner in the location in which it presently exists. Functioning similarly to natural terrestrial ecosystems and their purifying processes, bioretention is a living, biological system. Careful design within the landscape system allows for the inclusion of these ecosystem services which treat and prevent the creation of stormwater. Stormwater infrastructure that focuses on biological systems and natural hydrologic practices utilize these living and working landscapes to manage runoff volume in addition to reducing contamination. The university’s Stormwater Management Program prioritizes these complex green infrastructure approaches over consolidated end-of-pipe solutions.

The campus’ investment in stormwater infrastructure not only seeks to comply with hydrologic performance requirements, but also to maximize functional potential of the campus landscape. Due to the necessity for seamless integration and optimization, stormwater infrastructure is commonly designed with the intention of being beneficial in multiple ways. Diversification of functionality maximizes returns through the presentation of layered economic, aesthetic, and environmental benefits. Through use of varying stormwater management practices that are based on the needs of particular sites and campus areas, the stormwater management plan establishes a unification of these benefits.

Sites featuring green infrastructure such as rain gardens and vegetated roofs meet runoff volume reduction requirements by allowing infiltration and retaining rainfall to be utilized by the vegetation. Plant varieties are selected to maximize water uptake, carbon sequestration, as well as provide an aesthetic value to an otherwise under performing space. Economically, greenroofs and reuse initiatives are ways to greatly reduce energy and water usage. Well developed and coordinated stormwater features on campus are also tools in educating the campus and its visitors on the meaning and importance of stormwater management.
Campus Stormwater Management compliance pathways are performance based. Pre and post development runoff volumes are calculated to determine comparative change in runoff volume. It is presumed that pollutants and volume are correlated, and therefore increased volume due to development results in greater contaminant levels in the natural water system. Best management practices selected for a particular site should be designed to reduce overall runoff volume, resulting in a reduction of target pollutants. Correspondingly, preference should be given to BMPs which attempt to mimic natural hydrological processes.

The Campus Runoff Reduction Policy seeks to address permanent stormwater runoff by regulating the stormwater discharged from the MS4. Through use of this policy, the Stormwater Management Program further regulates the contribution of pollutants from new and re-development projects that disturb an area of 1 acre or greater. Standards require that designed management measures are built and maintained to evaporate, harvest, or re-use 100% of the first inch of precipitation.

Synchronization of the campus master plan and the stormwater management plan is paramount and is achieved by their integration through planning and design processes. Stormwater management practices are considered and incorporated from conception through development, ensuring that the unique needs and requirements for each project and compliance regulations are met with confidence.

All new and redevelopment projects are rigorously reviewed by the Campus Stormwater Coordinator and Project Managers within the Stormwater Management Program. Involvement at this level allows for stormwater management features that are designed to entice their potential as integrated elements of campus and building systems. This results in stormwater infrastructure incorporated within the unified aesthetic of the university’s landscape, rather than serving as isolated, accessory, or cursory infrastructures.
STORMWATER MANAGEMENT
IMPLEMENTATION BASELINE

To establish a basis for comparing and measuring campus stormwater management infrastructure, the following baseline information was compiled. Campus areas were first categorized by permeability. Impervious areas were then further classified into categories: Impervious Roof Surfaces, Paved Surfaces, and Stormwater Offset. Areas displayed as stormwater offset feature stormwater management infrastructure which prevents stormwater discharge by infiltration, retention or reuse practice.

BASELINE + PROJECTIONS

US ENVIRONMENTAL PROTECTION AGENCY

TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION

National Pollutant Discharge Elimination System (NPDES)
Municipal Separate Storm Sewer Systems Permit (MS4)
Campus
Regulates: Active Construction & Permanent Stormwater Infrastructure
First Inch is the Water Quality Treatment Volume
Total Suspended Solids (TSS) Must remove Maximum Extent Practicable (MEP) approaching 100% with 80% TSS removal
Construction General Permit
Contractors
Regulates: Active Construction

Office of the State Architect
High Performance Building Requirements
All State construction: Total Suspended Solids (TSS) Requires 80% removal
Higher requirements than TDEC: Requires 25% reduction of pre-construction run-off on new developments

UTK Stormwater Program
Run-off Reduction Policy
Illicit Discharge Policy

2017 STORMWATER REGULATING AUTHORITIES AND DOCUMENTS

STORMWATER MANAGEMENT
IMPROVEMENTS
IMPERVIOUS vs PERVIOUS SURFACE - 2017

**IMPERVIOUS SURFACES OFFSET**

- IMPERVIOUS ROOF SURFACE: 5,326,865 sqft
- IMPERVIOUS STREET SURFACE: 1,667,711 sqft
- IMPERVIOUS SIDEWALK SURFACE: 46.1 acres
- IMPERVIOUS PARKING SURFACE: 83 acres

**NEW PROJECTS**

- Volunteer Streetscape Phase 1a: Bio-swales, 60 Cells
- RecSports Complex: Bio-swales
- Strong Hall: 3 Tanks, 21,000 gallons
- The Village Phase 1: 3 Tanks, 35,000 gallons
- UT Gardens: SW Treatment Wetland, 4 Cells

**PERMEABLE PAVING SURFACE**

- 38,480 sqft

**GREENROOF SURFACE**

- 14,622 sqft

**STORMWATER CISTERN REUSE**

- 79,000 gal. from 7 units

**PERVIOUS CAMPUS SURFACES**

- 8,820,804 sqft

**CAMPUS CANOPY COVER**

- 33% Canopy Coverage

- **3% of IMPERVIOUS SURFACES OFFSET**

- **70.1% of CAMPUS IS IMPERVIOUS SURFACES**

- **29.9% of CAMPUS IS PERVIOUS SURFACES**

- **33% Canopy Coverage**

- **83% NO CHANGE IN SURFACE PARKING LOT AREA**
PROJECTED IMPERVIOUS vs PERVIOUS SURFACE

IMPERVIOUS ROOF SURFACE 5,348,271 sqft
IMPERVIOUS STREET SURFACE 1,596,093 sqft
IMPERVIOUS SIDEWALK SURFACE 46.9 acres

IMPERVIOUS SURFACES
69.8% of CAMPUS IS IMPERVIOUS SURFACES

PERVIOUS CAMPUS SURFACES
8,818,877 sqft

STORMWATER CISTERN REUSE 120,000 gal.
from 9 unit

GREEN INFRASTRUCTURE 49,609 sqft
area offset by Silva cells

PERVIOUS SURFACES OFFSET 30.2% of CAMPUS IS PERVIOUS SURFACES

NEAR TERM PROJECTIONS

PROPOSED PROJECTS
Volunteer Streetscape Phase 1b+Final
Bio-swales
The Village Phase 2
2 Tanks 41,000 gallons
Pedestrian Mall Phase 2
Clement Hall
Silva Cells 4 Trees
Estabrook Hall
Melrose Hall
Neyland Stadium
College of Nursing
Parking Lot S9

IMPERVIOUS SURFACES OFFSET
8% of IMPERVIOUS SURFACES OFFSET

UNDER CONSTRUCTION
Impervious Roof
Impervious Pavement
Pervious Surface
Impervious Surface
Stormwater Offset

8% of IMPERVIOUS SURFACES OFFSET
8% of CAMPUS IS IMPERVIOUS SURFACES

30.2% of CAMPUS IS PERVIOUS SURFACES
POLICIES & STORMWATER PERFORMANCE ENVELOPE

Numerous considerations are necessary during the BMP selection process. The policies and stormwater performance envelope represents this progression and demonstrates the cyclical review processes employed when making a final selection. Ultimately, the performance envelope results in a BMP that satisfies the project program while considering individual site conditions and maintaining regulatory compliance.

COMPLIANCE PATHWAYS

Maintaining compliance throughout campus while managing the needs and parameters of each individual new and redevelopment site can be challenging. Here, the avenues that may be used to achieve site compliance are illustrated. Further discussion of the Stormwater Mitigation Management Plan, as it pertains to volume compensation can be found on page 26.
## BMP Selection Matrix

### Building
- Does the building have a roof with a low pitch or other features to support a green roof? **Yes**
- Does the building function suit the reuse? **Yes**
- Does the project have a courtyard, plaza, or outdoor space? **Yes**
- Is the building function suitable for reuse? **Yes**
- Does the project disturb an acre or greater? **Yes**

### Site
- Are sidewalks, streets or roadways included in the project scope? **Yes**
- Does the site have areas available for stormwater infrastructure? **Yes**
- Does the project have a courtyard, plaza, or outdoor space? **Yes**
- Can the plaza or outdoor area double as a vegetative roof? **Yes**
- Are sidewalks, streets or roadways included in the project scope? **Yes**

### Project Evaluation
- The project has no regulatory requirement. **No**
- Can this project be used as volume mitigation banking for a future project? **No**
- Does the site have areas available for stormwater infrastructure? **Yes**
- Does the project disturb an acre or greater? **Yes**
- Does the building function suit the reuse? **Yes**
- Does the project have a courtyard, plaza, or outdoor space? **Yes**
- Is the building function suitable for reuse? **Yes**
- Does the project have a roof with a low pitch or other features to support a green roof? **Yes**

### Envisioning a Responsible Campus Environment

Reaching compliance and becoming a more responsible campus in regards to stormwater management is our vision. The BMP selection matrix is to be used as a tool that can help guide everyone from designers to administrators by providing stormwater practices that move towards compliance. The vision of the stormwater master plan is to have a variety of interventions on campus. The intent of the matrix is not to limit BMP selection to these current practices. Innovative management proposals are encouraged so that the campus can truly become a model in stormwater initiatives.

### Compliance
- Will one or a combination of these achieve stormwater management to the MEP? **Yes**
- Does the building program support indoor domestic use? **Yes**
- Can this project be used as volume mitigation banking for a future project? **No**
- Does the site have areas available for stormwater infrastructure? **Yes**
- Does the project disturb an acre or greater? **Yes**
- Does the building function suit the reuse? **Yes**
- Does the project have a courtyard, plaza, or outdoor space? **Yes**
- Can the plaza or outdoor area double as a vegetative roof? **Yes**
- Are sidewalks, streets or roadways included in the project scope? **Yes**

### BMPs
- Regional Cistern
- Building Cistern
- Green Roof
- Centralized Green Space
- Naturalized Landscape Zone
- Vegetative Detention Basin
- Dry River Bed
- Vegetative Swale
- Surface Water Retention
- Rain Garden
- Permeable Paving
- Bio-retention Cell
- Street Trees
- Regional Cistern
- Building Cistern
- Green Roof
- Centralized Green Space
- Naturalized Landscape Zone
- Vegetative Detention Basin
- Dry River Bed
- Vegetative Swale
- Surface Water Retention
- Rain Garden
- Permeable Paving
- Bio-retention Cell
- Street Trees

### Compliance
- Return to design phase or investigate stormwater mitigation banking options? **No**
- Will one or a combination of these achieve stormwater management to the MEP? **Yes**
- Does the building program support indoor domestic use? **Yes**
- Can this project be used as volume mitigation banking for a future project? **No**
- Does the site have areas available for stormwater infrastructure? **Yes**
- Does the project disturb an acre or greater? **Yes**
- Does the building function suit the reuse? **Yes**
- Does the project have a courtyard, plaza, or outdoor space? **Yes**
- Can the plaza or outdoor area double as a vegetative roof? **Yes**
- Are sidewalks, streets or roadways included in the project scope? **Yes**

## BMP Selection Matrix

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<thead>
<tr>
<th>BMP Type</th>
<th>Yes</th>
<th>No</th>
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<tr>
<td>Regional Cistern</td>
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## Compliance

- Return to design phase or investigate stormwater mitigation banking options? **No**
- Will one or a combination of these achieve stormwater management to the MEP? **Yes**
- Does the building program support indoor domestic use? **Yes**
- Can this project be used as volume mitigation banking for a future project? **No**
- Does the site have areas available for stormwater infrastructure? **Yes**
- Does the project disturb an acre or greater? **Yes**
- Does the building function suit the reuse? **Yes**
- Does the project have a courtyard, plaza, or outdoor space? **Yes**
- Can the plaza or outdoor area double as a vegetative roof? **Yes**
- Are sidewalks, streets or roadways included in the project scope? **Yes**
The University of Tennessee has developed an off project site mitigation program and payment-in-lieu-of fund to offer National Pollutant Discharge Elimination System (NPDES) compliant options for development and re-development projects incapable of meeting site requirements within the project limits of construction. Projects satisfying the requirements set forth in Section A of the university’s Stormwater Mitigation guidance documents that disturb an area greater than one acre may apply for approval by the Stormwater Executive Committee to participate in this program. If approved, the required stormwater mitigation may be performed or installed on a campus location other than the project site to offset the inability to address the required stormwater management volume at that particular site.

Sites which satisfy the project requirements outlined in the university’s Stormwater Mitigation Program Policy may seek Stormwater Advisory Committee Mitigation Program approval.

Stormwater Advisory Committee Mitigation Review

Stormwater volume calculated

Project cannot meet NPDES regulatory permit requirements

Sites not approved by the Stormwater Advisory Committee must manage the required volume on-site.

Sites seeking approval must have proven it to be technically infeasible of achieving the on-site volume performance standard outlined in the university’s Runoff Reduction Policy. Approved capital projects must address water quality stormwater discharge, meeting the MEP TSS removal, in addition to participation in the Stormwater Mitigation Program.

In the event that a primary project is able to manage only a portion of the required volume, partial participation is an option. A minimum of 10,000 gallons of water must be purchased to participate.

As a incentive for the stormwater to be managed on a projects site, the volume requirement is increased by an offset rate. The current offset rate is 150% of the projects calculated on site volume.

Off Project Site Mitigation

Stormwater Advisory Committee approves management of offset stormwater volume on supplemental redevelopment or retrofit site.

Supplemental site now manages the first inch of the supplemental site rainfall plus the determined offset stormwater volume preceded by 72 hours of no measurable precipitation.

If site has surplus gallons not allocated to a current capital project, the remaining volume may be sold at current market rate.

In-lieu-of Fee

Offset stormwater volume & open market price per gallon used to determine the “in-lieu-of” contribution.

In-lieu-of fund used to construct stormwater management features beneficial to campus.

STORMWATER CREDITS GENERATED
IMPLEMENTATION PROCESS

Realization of the Campus Stormwater Vision does not start with runoff management. Through creative planning and design at campus, district and site scales, effort should first be focused on avoiding its creation and minimizing its volume, thus maximizing the efficiency and minimizing the space and investment required for management infrastructure.

Stormwater management at the University of Tennessee, Knoxville is implemented by a cyclical process through which the campus' water management vision and goals can be achieved. There is no start to the process, and there is no end. Where as past approaches may have limited stormwater management activities to the site design and implementation phases of an individual project's life cycle, a cyclical process is now adopted that embraces a rigorous, systematic, and holistic approach to campus planning, site design, implementation, management, and evaluation. This process is dynamic; enhanced on an ongoing basis through continuous improvement and feedback loops, and operates within the environment of leadership, innovation, and accountability created by the Stormwater Vision Plan and the resultant effective stormwater management policies.
Project program and scopes of work must follow campus stormwater vision and guiding principles so that each project makes a productive contribution towards reaching articulated goals.

The University should seek to work with qualified professional consultants who will bring the expertise, project experience, and collaborative spirit necessary to develop and implement innovative stormwater management solutions and realize the campus stormwater vision.

A culture of critical inquiry should be embraced to establish a planning framework that acknowledges the campus position on hydrologic and infrastructural systems and enables creative, innovative and complimentary solutions to design of the campus’ physical environment.

A thorough, transparent review process should be implemented to ensure that the outcomes of campus planning initiatives and design activities are compliant with effective stormwater management policy and in alignment with the Campus Stormwater Vision, Goals and Guiding Principles.

The lessons learned offered by existing projects should be studied to shape future water management approaches, policies and identify needs for future stormwater infrastructure investments.

The performance of the campus’ stormwater infrastructure should be continuously monitored to provide qualitative and quantitative data to inform adaptive management strategies and future planning and design initiatives. Maintenance approaches should be enhanced and personnel should be properly trained so as to ensure the long-term performance and vitality of innovative stormwater management investments across the campus landscape.

A project’s commitment to water resource stewardship is realized and demonstrated through the level of care, craftsmanship and accountability demonstrated during the implementation and commissioning process.
Stormwater - Non-infiltrated rain water that travels to waterways via overland flow or through stormwater infrastructure.

MS4 – Municipal Separate Storm Sewer System; Rather than a combined system in which stormwater and waste water are combined and treated before discharged as effluent, the storm water infrastructure and the waste water infrastructure are separate.

River Basin – Describes a geographical area or boundary which drains to a common large river. A river basin is composed of a number of smaller watersheds.

Watershed – A watershed is a geographical area or boundary in which water falls and drains to a single larger body of water. A watershed may be subdivided into many multiple watersheds.

TSS – Total Suspended Solids; A measurable factor indicating the relative amount of suspended particles found in water. Used as an assessment of water quality.

MEP – Maximum Extent Practicable
BIG ORANGE
BIG IDEAS