

7/28/04
Long Term Water Efficiency Plan
University of North Carolina at Chapel Hill

A. Commitment

UNC Chapel Hill has an active sustainability program that addresses long term water conservation. State Executive Order 26 and House Bill 1215 further reinforce this concern. State Executive Order 26 requires state agencies and universities to evaluate non-essential water use, set baselines for water use and identify potential water savings. House Bill 1215 declares that all North Carolina state agencies must reduce water consumption by 10 percent.

Additionally, sustainable water use is an important part of the UNC Development Plan. Two positions were created to identify, develop and implement water sustainability measures. These positions are the UNC Sustainability Coordinator and the UNC Water, Wastewater and Stormwater Manager. Both positions have both been filled and staff are working on these issues.

B. Scope of Plan

This water efficiency plan focuses on the UNC Chapel Hill Campus.

C. Baseline Water Consumption

The following numbers are based on UNC Chapel Hill size and population in FY 1999-2000. This baseline was selected as it was pre-drought. UNC Chapel Hill is growing in size and population. This baseline is relative to the square footage and population in FY 1999-2000.

Functional Area	Baseline Usage
Academic Affairs	197,905,000 gallons/year
Athletics	19,258,000 gallons/year
Commercial	34,072,000 gallons/year
Enterprise	156,264,000 gallons/year
General Administration	2,588,000 gallons/year
Health Affairs	252,080,000 gallons/year
Housing	101,814,000 gallons/year

The University of North Carolina at Chapel Hill receives its water from the Orange Water and Sewer Authority: OWASA: (919) 968-4421.

D. Previous Water Conservation Measures

1. Reviewed water consumption on campus and identified potential areas to maximize results of conservation efforts.
2. Reviewed cooling and temperatures required. Adjusted to minimize excess water usage.
3. Reviewed heating and temperatures required. Adjusted to minimize excess water usage.
4. Reviewed preventive maintenance with additional emphasis on water savings.
5. Studied possibility of recycling cooling tower blow-down water.
6. Studied waste stream reuse at Cogeneration Facility.
7. Conducted joint study with OWASA to evaluate use of wastewater treatment plant effluent for cooling towers and irrigation re-use.
8. Conducted joint study with OWASA to evaluate use of water treatment plant process water waste for Cogeneration Facility re-use.
9. Revised building design standards to maximize water conservation. Researched the most efficient fixtures.
10. Requested campus community to report leaks, drips or water running in storm drains.
11. Conducted water use audits for Cogeneration Facility and Chilled Water Facilities.

12. Conducted annual sustainability awareness/education outreach to student population with Green Games.
13. Held “Water Wars” competition between residential housing groups to increase awareness for water conservation needs.
14. Revised outdoor planting time to seasons which allow for best establishment of plantings with less water usage. Mid-Fall to Late-Winter identified as optimum seasons for the majority of plantings.
15. Restricted watering of athletic fields and turf areas to amount needed for turf, but not excessive. Identified alternate water sources where possible.
16. Installed rain sensors so irrigation systems allow for precipitation as part of irrigation.
17. Adjusted toilet and urinal flush valves to use 1.6 or less gallons per flush.
18. Installed low flow shower heads in all student housing.
19. Placed plastic bottles in toilets with tanks to reduce volume per flush.
20. Changed out equipment requiring high amounts of water for more efficient equipment (including, but not limited to: ice machines, stills, chillers).
21. Changed laboratory cooling system at the Cogeneration Facility to recycle cooling water.
22. Optimized condensing operation at the Cogeneration Facility.
23. Implemented aggressive program to cycle HVAC systems off during periods that buildings or spaces were not occupied.
24. Discontinued use of water based heat pumps.
25. Upgraded hot water loops to reduce leakage and diminish run time.
26. Repaired identified water leaks in water system, chilled water system, and steam system.
27. Purchased 300 waterfree urinals, began installation and offered for installation in new state supported buildings. Approximately 200 have been installed to date.
28. Repiped stills in five laboratory buildings to install closed loop cooling systems.
29. Constructed rainwater reuse cistern under intramural field for irrigation water.
30. Converted land cover to reduce landscaping water needs and increase water infiltration back into aquifers.
31. Discontinued washing dishes at dining halls during drought and used disposable dishware and utensils.
32. Discontinued washing of state-owned vehicles during drought conditions.
33. Discontinued use of water for washing hard outdoor surfaces.
34. Turned off all decorative outdoor fountains using domestic water during drought conditions.
35. Preventative Maintenance Work Orders issued in 2003 on equipment related to water efficiency.

E. Conservation Opportunities

The UNC Chapel Hill program emphasizes:

1. Long-Term Conservation and Sustainability
2. Education and Increased Sustainability Awareness
3. Evaluation and Identification of Specific Functional Areas that Offer Potential for Reduced Water Use.
4. Identification of Major Facilities Groups and Specific Facilities for Water Savings Measures
5. Evaluation of Non-essential Water Use

Under these general areas the following implementation items have been identified.

1. Long Term Conservation and Sustainability
Sustainability coordinator to spearhead identification of conservation opportunities as well as public education opportunities.

2. **Education and Increased Sustainability Awareness**
Notify all University groups about water sustainability and conservation concerns by e-mail, handouts, published articles, and other methods, such as: stickers, buttons, and posters. A Conservation Awareness Team has been created to focus on disseminating information about the importance of water conservation.
3. **Evaluation and Identification of Specific Functional Areas that Offer Potential for Reduced Water Use.**
 - a. Conduct audits to determine how water is currently used.
 - b. Identify potential areas for reduced use and best practices to replicate.
4. **Identification of Major Facilities Groups and Specific Facilities for Water Savings Measures.**
Break down of major groups into Utilities, Laboratories, Classrooms, Residential, and Other.
5. **Evaluation of Non-essential Water Use**
See D. Previous Water Conservation Measures, above, for list.

F. Target Reduction Goal:

Reduce water use by 10% or more relative to 1999-2000 baseline for square footage and population of facilities.

G. Selected Actions and Timelines

1. Jointly evaluating with OWASA the feasibility of reusing wastewater effluent for cooling towers and irrigation. If feasible, the timeline is July 2007 for system to be on-line.
2. Install waterless urinals, where feasible, in new men's restrooms.
3. Capture and store rainwater for reuse in irrigation, where feasible.
4. Continue education and awareness measures.
5. Continue requirement for low water use fixtures in restrooms.
6. Continue requirement for water efficient equipment.

H. Employee Education and Awareness Program

UNC Chapel Hill Conservation Awareness Team was created to focus on the dissemination of the importance of water conservation and the education of the University community in the need to conserve water. UNC will provide notification across University to all groups of water sustainability and conservation concerns by e-mail, handouts, published articles, and other materials such as: stickers, buttons, and posters

I. Maintenance Program

UNC Chapel Hill staff have a high awareness of water conservation concerns and the individual facility maintenance personnel are alerted to the need for quick response to reporting of leaks. Facilities Services has an active preventive maintenance program that includes regular routine checks of water consuming equipment to minimize waste.

Through the University, the Main Response is the UNC Work Management system, which is available by telephone, or on-line:

Work Management Work Request Line: (919)962-3456

On-line Work Request: <http://www.fac.unc.edu/CustomerService/workReq.asp>

J. Important Contacts

Main Water Sustainability Contacts:

UNC Sustainability Coordinator:

Cindy Pollock Shea

cpshea@fac.unc.edu (919)843-5251

UNC Water, Wastewater and Stormwater Manager:
Margaret D. Holton
mdholton@energy.unc.edu (919)843-0364

Facilities Services Contacts:

Director of Building Services
Steve Copeland
(919)962-4633
stevec@fac.unc.edu

Lab Mechanic II
Durwood House
(919)201-7757
dhouse@fac.unc.edu

Preventive Maintenance, Work Management:
Donnie Apple
(919)962-4616

K. Essential Water Uses

Bathrooms	Food Services
Chilled Water System	Housekeeping
Classrooms	Irrigation
Cogeneration Facilities	Laboratories
Drinking Fountains	Patient Care Facilities

L. Continuous Improvement

For FY 2004-2005, designated key members of UNC Chapel Hill including: EHS, Energy Services, Facilities Services, Grounds, Housekeeping, Sustainability, and Water, Wastewater and Stormwater will semiannually evaluate progress on specific actions, communicate successes, and designate new targets as necessary. This will be facilitated by the Water, Wastewater and Stormwater Manager. At the beginning of each subsequent fiscal year, the team will meet to reevaluate water conservation at UNC facilities, analyze progress and identify new targets for water efficiency. UNC will also review drought stages for the area and maintain awareness of drought status and any local regulatory changes affecting water use.

In the event of a projected water shortage, UNC will follow the OWASA guidelines and restrictions, plus additional restrictions as noted in this plan.

Implemented this 28th day of July, 2004.

Director, Energy Services

Director, Facilities Services

Associate Vice Chancellor, Campus Services

This document serves as a Memorandum of Agreement to support Water Efficiency Planning for state government.

Director, State Energy Office

Date