

ADOPTION AND IMPLEMENTATION OF OUTDOOR WATERING SCHEDULES

EPD Guidance Document
AUGUST 2007

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Georgia Environmental Protection Division
Watershed Protection Branch

Guidance Document

Adoption and Implementation of Outdoor Watering Schedule

Developed by the Georgia Environmental Protection Division (EPD)
To support the “*Coastal Georgia Water and Wastewater Permitting Plan for Managing Saltwater Intrusion*”

August 2007

This guidance document is intended for entities in the 24-county area of Georgia’s coast addressed in the “Coastal Georgia Water and Wastewater Permitting Plan for Managing Saltwater Intrusion”, located in Sub-Regions 1, 2 and 3, that are:

- Private Industrial Transient and Non-Transient Non-Community Water Systems (TNCWS and NTNCWS) with an Operating Permit and a Water Withdrawal Permit; or
- Private Industrial Transient and Non-Transient Non-Community Water Systems (TNCWS and NTNCWS) with ONLY an Operating Permit
- Privately Owned or Operated Public Community Drinking Water Systems with ONLY an Operating Permit;
- Public Community Water Systems (CWS) with Water Withdrawal and/or Operating Permits;
- Governmentally Owned or Operated Public Drinking Water Systems with an Operating Permit; or
- Governmentally Owned or Operated Transient Non-Community (TNCWS) or Non-Transient Non-Community Public Water Systems (NTNCWS) with either an Operating Permit and/or a Withdrawal Permit.

When to use this guidance document: This document is designed to guide the adoption and implementation of an outdoor watering schedule for all customers of the community water systems listed above. The permittee must adopt and implement an outdoor watering schedule consistent with the Rules for Outdoor Water Use (Chapter 391-3-30) or an alternate outdoor watering schedule approved by EPD. A copy of the adopted outdoor watering schedule must be submitted to either the Georgia Environmental Protection Division Brunswick or Savannah District Office no later than 12 months from the permit issue date. The Rules for Outdoor Water Use are available on line at http://www.gaepd.org/Documents/rules_exist.html. Contact information for the Coastal District offices can be found at <http://www.gaepd.org/Documents/wpb.html>.

How to use this guidance document: This guide is organized into three parts: Part 1 provides a summary of outdoor water use issues and frequently asked questions about outdoor water use. Part 2 provides a detailed description of outdoor water use program elements and things customers can do to minimize their use. Part 3 provides a detailed procedure for evaluating the effectiveness of an outdoor watering schedule and a form for tracking and reporting the outdoor watering schedule adopted by a water system. This form should be submitted with the adopted outdoor watering schedule to the appropriate Georgia Environmental Protection Division District Office no later than 12 months from the permit issue date.

EPD contact: If you have any questions, or require additional information, please contact the EPD Water Withdrawal Program, at 404-675-1680. As the 2006 Coastal Plan is implemented, EPD will welcome feedback from permittees regarding this guidance document.

Part 1: Overview

SUMMARY

In an effort to protect and conserve Georgia's limited water resources, the Board of Natural Resources adopted Rules For Outdoor Water Use, Chapter 391-3-30, on May 26, 2004. The rules went into effect on August 1, 2004. All permitted water supply providers and their customers in Georgia are expected to comply with the established outdoor water use restrictions, as required by this rule.

In general, the Rules for Outdoor Water Use apply to any entity, and its customers, permitted by the Georgia Environmental Protection Division (EPD) for water withdrawal or for the operation of a public drinking water supply system. The rules provide schedules for outdoor water use during non-drought periods and declared drought periods. Certain exemptions are provided for established landscapes, newly installed landscapes, golf courses and commercial uses.

All water users must be made aware of the required restrictions for outdoor water use. Furthermore, all local governments must adopt appropriate ordinances to implement these rules in their communities. The adopted ordinances must maintain enforcement authority with the local governments for proper implementation of the rule. If they choose, the local and regional water providers are also authorized to implement additional outdoor water use restrictions within their jurisdictions. Water providers may also consider developing system integration and interconnection to reduce drought vulnerability; placing additional water use restrictions on specific commercial uses; putting water conservation based rates in place (increasing block/ summer surcharge); and, placing additional restrictions on outdoor water use.

Historically, Georgia's local governments and other water providers have played a key role in getting citizens to comply with outdoor water use schedules. Participation by all Georgians in this important mission is necessary to preserve our water resources.

FREQUENTLY ASKED QUESTIONS

Why do we need watering restrictions? Outdoor water use can account for up to 50 % of total water use for a household during the summer months. Homes with automated irrigation systems are more likely to overuse outdoor water. Outdoor irrigation use can easily be reduced by applying water only when and where it is needed.

Don't I need to water more heavily during drought? Over-irrigation can damage plants or make plants unhealthy by making them more susceptible to disease and pest infestations. In Georgia, the average rainfall is 54 inches a year. Often no supplemental watering is necessary to maintain a landscape. Supplemental irrigation is typically needed only when installing plants and in the summer on annuals that can dry up in the heat.

Why are we implementing outdoor watering restrictions if there is no drought?

Instituting outdoor water use policy during non-drought periods will make water conservation behavior a part of Georgia culture and leave enough water available for when there is a drought.

How do outdoor watering restrictions benefit the water utilities? Outdoor watering restrictions:

- Smooth out peak demands.
- Reduce the frequency and length of low water pressure in distribution systems.
- Postpone the need for capital investments to address higher seasonal demands.
- Leave more water in the streams and aquifers.
- Postpone or eliminate the need for expanding existing water sources.
- Help local governments meet water demands and reduce the cost of production.

How do State regulations differ from local restrictions?

Local restrictions can be the same as or stricter than State restrictions, but not less strict. It is important that the customers check with their local water provider to know what local restrictions are.

Will these outdoor restrictions reduce water revenues?

This depends on your water rate structure. If conservation-oriented rate structures are in place, watering restrictions can reduce water revenues. However, well-crafted conservation-oriented rate structures will minimize any serious financial impacts to the provider. For more information on conservation-oriented rate structures, please see EPD Guidance Document “Conservation-oriented Rate Structures”, available on line at <http://www.gadnr.org/>

Part 2: Outdoor Watering Schedule Program Elements

Outdoor watering schedules work best when property owners are educated and informed about how to best use water on lawns and landscaping. Most successful programs focus on minimizing outdoor water use by the proper selection and location of plants and grasses; maintaining soil moisture; targeted irrigation; and, of course, limited watering times. Educating customers on the practices is an essential element to any outdoor watering schedule program.

10 EASY TIPS TO REDUCE OUTDOOR WATER USE

1. Adjust sprinklers to avoid watering pavement and other things that don't grow.
2. Don't water when it's windy or raining.
3. Avoid daytime watering. It's best to water between midnight and sunrise.
4. Sprinklers are great for grass, but use drip irrigation or soaker hoses on flowers, shrubs, gardens and trees.
5. Spread mulch around flowers, shrubs, trees and garden plants to retain soil moisture.
6. Don't plant grass on steep slopes.
7. Don't put grass in areas less than 10 feet wide.
8. Hand-water dry spots rather than over-watering the entire lawn.
9. Install a shutoff nozzle on your hose.
10. Xeriscape (i.e. place native, drought resistant plants where they'll get the most water and light naturally)

WHAT ELSE CAN CUSTOMERS DO?

Maintain three to five inches of mulch on their landscape. Mulch holds moisture in the soil and prevents evaporation from the soil surface. Fine-textured mulches, such as pine straw, mini-nuggets and shredded hardwood mulch do a better job of conserving moisture than coarse-textured mulch. Apply mulch to as large an area as possible under the plant. Remember the roots of established woody ornamentals extend two to three times the canopy spread. Consider placing two to three sheets of newspaper under mulch. Pull back existing mulch with a leaf rake, moisten the paper and rake back the mulch over the newspaper. This practice will help retain moisture.

Use a hand-held hose to apply water only to those plants that show signs of wilt. Priority should be given to newly planted trees and shrubs (those installed within the past four months). Water these plants every seven to 10 days during the absence of rainfall.

Avoid shallow watering. The worst thing one can do for plants is to water them frequently and shallowly. Shallow frequent watering encourages a weak root system and reduces the drought tolerance of plants.

Direct water to the roots - not the leaves. Avoid wetting the foliage of ornamental plants if possible. Wetting the foliage encourages diseases and results in evaporative water loss.

Use drip or trickle irrigation or a soaker hose. Drip irrigation uses 50% less water than conventional sprinkler irrigation and applies water slowly and directly to the root system.

Install a timer and a rain sensor on outdoor irrigation systems. A rain sensor detects when rain is falling and turns the irrigation system off and on. Rain sensors are add-on equipment, but are inexpensive and usually re-pay their cost in water savings in a couple of years. If the existing system does not have a rain sensor, one can purchase it at a local home improvement store. You can install it yourself or have an irrigation contractor install one for you. Place the rain sensor in a location not covered by building eaves and that does not get hit with irrigation water. For homes, a location where there are no trees for interference attached to the roof edge works well.

Let rainfall be the main water source for your landscape whenever possible. The easiest way to make good use of rainfall is to have a rain sensor connected into your control system. Of course, irrigation needs will change from year to year according to how much rainfall occurs. Watering needs also change with the seasons. A good controller will let you adjust for the seasons by using a percentage conversion on the standard program.

For tips on maintaining healthy lawns and gardens while using less water, information of indoor water audits, and many creative ideas about conserving water in Georgia, go to Conserve Water Georgia at www.conservewatergeorgia.net/. Additional information and related educational materials can be found at <http://www.gadnr.org/>; <http://www.conservewatergeorgia.net/>; and <http://www.caes.uga.edu/topics/disasters/drought/>.

GENERAL INFORMATION ON WATER EFFICIENT LANDSCAPES

Water providers should initiate special projects to encourage practices that would result in reduced outdoor water use. One special area where this can be accomplished is in the maintenance of lawns and landscapes. As stated previously, lawn and landscape maintenance often requires large amounts of water. Nationally, lawn care accounts for about 32 percent of the total residential outdoor use. Other outdoor uses include washing automobiles, maintaining swimming pools, and cleaning sidewalks and driveways.

Landscape Irrigation. One method of water conservation in landscaping uses plants that need little water, thereby saving not only water but labor and fertilizer as well. A similar method is grouping plants with similar water needs. Scheduling lawn irrigation for specific early morning or evening hours can reduce water wasted due to evaporation during daylight hours. Another water use efficiency practice that can be applied to residential landscape irrigation is the use of cycle irrigation methods to improve penetration and reduce runoff. Cycle irrigation provides the right amount of water at the right time and place, for optimal growth. Other practices include the use of low-precipitation-rate sprinklers that have better distribution uniformity, bubbler/soaker systems, or drip irrigation systems.

Xeriscape Landscapes. Careful design of landscapes could significantly reduce water usage. Xeriscape landscaping is an innovative, comprehensive approach to landscaping for water conservation and pollution prevention. Traditional landscapes might incorporate one or two principles of water conservation, but xeriscape landscaping uses all of the following: planning and design, soil analysis, selection of suitable plants, practical turf areas, efficient irrigation, use of mulches, and appropriate maintenance.

Benefits of xeriscape landscaping include reduced water use, decreased energy use (less pumping and treatment required), reduced heating and cooling costs because of carefully placed trees, decreased storm water and irrigation runoff, fewer yard wastes, increased habitat for plants and animals, and lower labor and maintenance costs.

Turf area reduction. Grass lawns typically account for most of the irrigation water demand for home yards and other landscapes. Simply reducing turf areas, to where they are most needed, can produce significant water savings. Other, less water intensive plantings and treatments are available for ground covers where turf is not essential.

Low-water use landscapes/plants. Native plants tend to use much less water and tolerate drought better than non-native species, and their use should be encouraged.

Drought-resistant vegetation. Landscapes that use plants adapted to or suitable for Georgia’s climate reduce summertime water demands. Many such plants can withstand prolonged periods without watering, giving landowners and water providers flexibility in dealing with periodic drought conditions.

Efficient irrigation equipment. Surface and subsurface drip irrigation, micro-spray systems, bubblers and soaker hoses are typically more efficient than sprinkler systems, especially conventionally installed sprinklers. The type, spacing and aiming of sprinkler heads greatly affect the application uniformity and therefore the potential efficiency of sprinkler systems. With all irrigation systems, proper zoning to match the different water needs of different portions of a landscape is important. Irrigation experts typically find substantial water savings are possible from changing the type, spacing and zoning of irrigation equipment in both residential and larger landscapes.

Efficient irrigation scheduling. Even with the very best irrigation equipment, poor scheduling is all too common. Irrigation schedules should be based on evapotranspiration (ET), which refers to the water requirements of plants and associated soil, and varies by plant, time of year, and weather. Water application in excess of ET requirements is wasteful. Many people water all of their landscape the same amount, and typically more than necessary, throughout the irrigation season. Water utilities or other agencies can calculate ET requirements of representative local landscapes on the basis of typical changes in plant ET requirements from the beginning to the end of the irrigation season, or actual changes based on recent weather, and distribute watering guidelines through a variety of means. Programmable irrigation timers provide a crude but “much better than nothing” approach to ET-based irrigation by allowing irrigation schedules to be automatically adjusted for typical ET requirements through the irrigation season. Unfortunately, many people do not know how to properly program their timers, so education must be provided.

Rain sensor. When connected with irrigation controllers, these devices can automatically turn off irrigation systems when rain occurs, saving partial or entire irrigation cycles.

Soil moisture sensor. These devices turn off or delay cycles on an irrigation controller when soil moisture is adequate. Thus, they partially gauge ET and help schedule irrigation in closer agreement with actual plant needs.

Remote dispatch of irrigation systems. Irrigation scheduling can be optimized by centralized computer control. These systems maintain a running water balance based on actual precipitation and actual ET requirements resulting from recent weather, as measured by one or frequently several small weather stations within the districts they serve. They also incorporate a database of the ET requirements of each particular zone in the irrigation systems they control. The computer then dispatches each zone’s irrigation equipment according to actual ET needs and recent precipitation, via cable hookups, phone lines or other telemetry. One model for provision of this service is by subscription, just as one subscribes to cable or other services.

Part 3: Outdoor Watering Schedule Development and Implementation

CRITICAL ELEMENTS OF OUTDOOR WATERING SCHEDULES

The 2006 Coastal Permitting Plan requires that permittees must adopt and implement an outdoor watering schedule consistent with the Rules for Outdoor Water Use (Chapter 391-3-30) or an alternate outdoor watering schedule approved by EPD. Implementation of outdoor watering schedules should consist of at least the following actions:

1) Water systems should adopt an outdoor watering schedule as described in this paper, and submit a “certification of implementation statement” to EPD no later than 12 months from the permit issue date. An alternate outdoor watering schedule may be used by the water system with prior approval of EPD, provided the proposed schedule offers similar or better results.

Water use related to the implemented outdoor watering scheduled must be tracked and its effectiveness reported when required by EPD. The *Outdoor Watering Schedule Tracking and Reporting Form*, at the end of this Guidance

Document, can be used for that purpose. This form should be completed no later than January 31st of each year and also be available for review during EPD inspections and sanitary surveys.

- a) Local governments should adopt appropriate ordinances to implement the EPD Rules For Outdoor Water Use in their communities. The adopted ordinance(s) must maintain enforcement authority with local governments for proper implementation of the rule. If they choose, local and regional water providers are also authorized to implement additional outdoor water use restrictions within their jurisdictions.
- b) Private water providers must adopt the “outdoor watering schedule”, outlined in the Rules For Outdoor Water Use for implementation in their service areas.

2) Effectiveness of the adopted outdoor watering schedule should be evaluated by comparing metered average water use during the high-irrigation season to the average water use during the rest of the year. For this comparison, the “high-irrigation season” is considered to be from May 1st through September 30th. The rest of the year shall be considered as the “low-irrigation” season.

3) For community public water systems with residential customers, the water use comparison between the low and high irrigation season should be accomplished as follows:

- a) Using data from submitted monthly operating reports and/or water billing data and the number of households served, determine the average volume of water used per household during the “high-irrigation” season for the previous 3 years in your service area. The result will reflect monthly average volume of water used by each household during the specified season.
- b) Repeat this step for the “low-irrigation season”.
- c) Calculate the monthly average percent increase in water use by each household during the “high-irrigation season” by using results obtained from 3(a) and (b) above. That is:

$$\text{Average Percent Increase in Water Use (\%)} = \frac{3(a) - 3(b)}{3(b)} \times 100$$

- d) The *Outdoor Watering Schedule Tracking and Reporting Form*, included at the end of this Guidance Document, can be used to record, report and track the seasonal water use.
- e) If there is no change in seasonal water use, it should be indicated so on the form.

4) For non-community public water systems, including industrial and commercial facilities, average percent increase in water volume during the “high-irrigation” season can be determined, as described above under item 3, by using either water use or water production data from monthly operating reports or semi-annual reports submitted to EPD.

5) During “Sanitary Surveys” and “On-Site Inspections” conducted by EPD, water providers should be prepared to discuss outdoor watering-related activities being practiced in their service areas. These include:

- Coordination with other local communities to develop programs that limit outdoor water use.
- Promotion of water efficient landscapes and water efficient practices
- Separate metering of outdoor use
- Adoption of practices banning the installation of automatic sprinkler irrigation systems on new construction
- Implementation of water conservation rates for all customers
- Other options are requirements that all in-ground irrigation systems be equipped with rain shut-off devices, moisture sensors, and automatic timers, or limits to the area that can be covered with grass.

OUTDOOR WATER USE REPORTING AND TRACKING FORM

I. GENERAL SYSTEM INFORMATION

Reporting Period (Year)	
Water System Permit #	
Water System Name	
Water System Address	
Contact Person Name	
Contact Person Phone #	
Description of Water Use	

II. SOURCES OF WATER SUPPLY

Please give amounts withdrawn in gallons per minute (gpm), per day (gpd) or million gallons per day (mgd).
 Source Type: SW = Surface supply, GW = Ground supply, P = Purchased supply

Name of Source	Source Type	Pumping Capacity

III. AVERAGE WATER USE DATA FOR THE PREVIOUS 3 YEARS

Use the following information to complete the average water use calculations:

- A) High-irrigation Season: May, June, July, August, September
- B) Low-irrigation Season: January, February, March, April, October, November, December
- C) Average volume per month: Total volume of water used during the season divided by the number of months
- D) Average volume per month per household (avghouse): that is, the average volume per month (see C) divided by the number of households
- E) Percent Increase (%); that is, avghouse (high season) – avghouse (low season) / avghouse (low season) X 100

Year _____	Average volume per month	Average volume per month per household (avghouse)
No. of Households: _____		
Average volume per month during High-irrigation Season		(A)
Average volume per month during Low-irrigation Season		(B)
Percent (%) increase:	A - B / B X100	_____ %

Year _____	Average volume per month	Average volume per month per household (avghouse)
No. of Households: _____		
Average volume per month during High-irrigation Season		(A)
Average volume per month during Low-irrigation Season		(B)
Percent (%) increase:	A - B / B X100	_____ %

Year _____	Average volume per month	Average volume per month per household (avghouse)
No. of Households: _____		
Average volume per month during High-irrigation Season		(A)
Average volume per month during Low-irrigation Season		(B)
Percent (%) increase:	A - B / B X100	_____ %

IV. CERTIFICATION OF OUTDOOR WATERING PROGRAM:

To be signed by the owner or official of the water system operating this water system.

I hereby certify that the information provided on this form is true and accurate to the best of my knowledge and belief.

Date: _____ Signature: _____ Title: _____