Xeriscape Practice in Georgia

Marjorie Palmer
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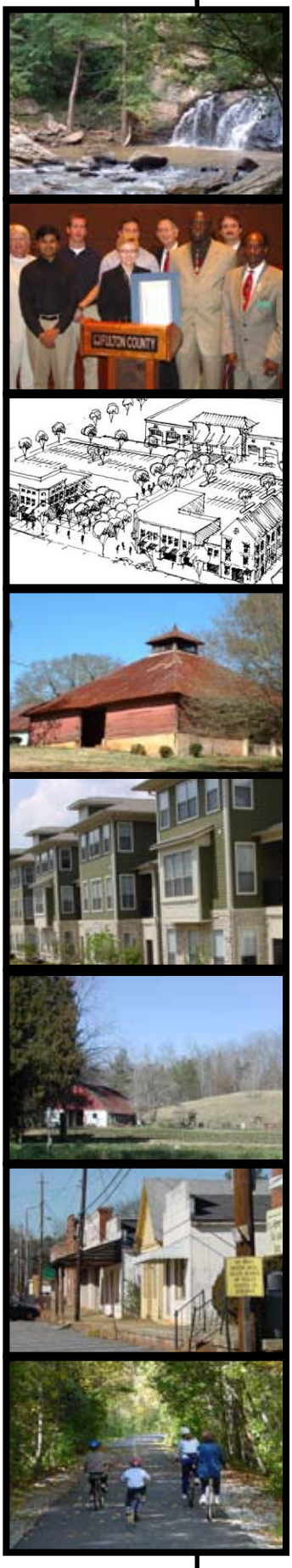

Land Use Clinic

university of georgia
School of Law & College of Environment and Design

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For more information about the UGA Land Use Clinic contact:

Jamie Baker Roskie, Managing Attorney
UGA Land Use Clinic
110 Riverbend Road, Room 101
Athens, GA 30602-1510
(706) 583-0373 • Fax (706) 583-0612
jroskie@uga.edu

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Author: Marjorie Palmer

Editor: Jamie Baker Roskie
University of Georgia Land Use Clinic

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I. Introduction: the Georgia Drought and Water Use

The State of Georgia continues to endure the historic drought that began in 2007.[1] In September of 2007, the Georgia Department of Natural Resources declared a level four drought response for counties in north Georgia, prohibiting "most types of outdoor water use."[2] Until recently, the State of Georgia even mandated that counties reduce water use by 10 percent.[3] To more effectively address the water supply problem caused by the drought, an option for Georgia municipalities is to incorporate wise water use practices and other Xeriscape[4] principles into existing ordinances or to enact new Xeriscape ordinances.

This paper provides background on the Xeriscape concept and offers examples of Xeriscape practice in the Southeast[5] and elsewhere in the United States. Further, this paper describes how Georgia counties may integrate Xeriscape practice into local land use law and offers some examples of Xeriscape species appropriate for Georgia.

II. Background on Xeriscape Landscaping Practice

A. Xeriscape Goals and Principles

Xeriscape practice, which seeks to protect the environment by conserving water through efficient landscape design, "can reduce outdoor water consumption as much as 50 percent."[6] Municipalities in the Southeast and elsewhere have begun to enact Xeriscape ordinances to limit water use in hopes of conserving their water supply.[7]

In general, a Xeriscape landscape includes Xeriscape plants – those with low water needs for a particular

1 See Georgia Drought, http://www.caes.uga.edu/topics/disasters/drought/ (last visited Feb. 19, 2008).

2 Press Release, Georgia Department of Natural Resources, Citing Historic Drought, Georgia EPD Bans Most Outdoor Water Use in North Georgia (Sept. 28, 2007) *available at* http://www.caes.uga.edu/topics/disasters/drought/pdf/sep2807.pdf.

3 In 2007, Governor Perdue issued a directive requiring certain counties in Georgia to reduce water consumption by ten percent. Press Release, Georgia Department of Natural Resources, Level Four Drought Response Continues for Most of North Georgia (May 6, 2008) *available at* http://www.gaepd.org/Files_PDF/news/News%20Release%20Drought%20Committee%20050608.pdf. Due to compliance with restrictions set by EPD along with "voluntary water conservation," the state expects a reduction by at least ten percent and the "directive is no longer in effect." *Id.*

4 In the early 1980s, the water utility for Denver, Colorado, in collaboration with local industry and academics, coined the term "Xeriscape" in developing a set of water-conserving landscape principles. *See* Conni Kunzler, *Laws of the Land: Communities are Turning to Landscape Regulations to Help Conserve Water,* American City & County, October 2004, at 42-47. The term fuses the word "Xeros," which means "dry" in Greek, with the word "landscape." *See, e.g.* Gary L. Wade et al., *A Guide to Developing a Water-Wise Landscape* 1 (2007), *available at* http://pubs.caes.uga.edu/caespubs/pubcd/B1073.htm.

5 Currently, no jurisdictions in Georgia appear to have enacted Xeriscape ordinances. *See* E-mail from Gary Wade, Professor and Extension Program Coordinator, Department of Horticulture, University of Georgia to Marjorie Palmer, Student, University of Georgia School of Law (Mar. 2, 2008, 21:40 EST) (on file with author) (stating unawareness of Xeriscape ordinances in Georgia but that he does not closely track local or county ordinances); E-mail from Jeff Christie, Liason: Cooperative Extension/Association of County Commissioners of Georgia, University of Georgia, to Marjorie Palmer, Student, University of Georgia School of Law, (Mar. 9, 2008, 21:10 EST) (on file with author) (stating uncertainty as to whether any jurisdictions in Georgia have adopted Xeriscape ordinances); Email from Jackie Jackson Teel, Natural Resources Administrator for Chatham County, Savannah, Metropolitan Planning Commission, to Marjorie Palmer, Student, University of Georgia School of Law, (Mar. 17, 2008, 11:07 EST) (on file with author) (stating that neither Chatham County nor any of the jurisdictions in that area have adopted a Xeriscape ordinance). However, the Metropolitan Planning Commission "handles education on water conservation [which] includes Xeriscape" principles. Email from Jackie Jackson Teel, Natural Resources Administrator for Chatham County, Savannah, Metropolitan Planning Commission, to Marjorie Palmer, Student, University of Georgia School of Law, (Mar. 17, 2008, 11:07 EST) (on file with author).

6 Wade *supra* note 4, at 1.

7 Kunzler, *supra* note 4, at 42.

region.[8] More specifically, Xeriscape landscaping incorporates seven basic principles: (1) planning and design, (2) soil analysis and improvement, (3) practical turf areas, (4) appropriate plant selection, (5) efficient irrigation, (6) mulching, and (7) appropriate maintenance.[9] By adhering to these principles, a Xeriscape landscape requires little maintenance, saving both time and money without sacrificing beauty.[10]

The first principle, planning and design, requires long term planning to achieve the primary goal of the Xeriscape landscape – water conservation.[11] Good planning involves defining use areas of a property and thinking ahead to future seasons and years.[12] Also, for an individual property owner, design involves choosing particular species for certain use areas defined in the planning process.[13]

Soil analysis and improvement, the second principle, requires an assessment of the soil on a property and developing a strategy for improving soil to allow each "plant [to] use all the moisture available to it, promoting the plant's vigor and water-use efficiency."[14] Soil improvement may involve changing the physical structure of the soil – perhaps making the soil sandier or more clay-like depending upon the needs of the planned species for the plot.[15] Altering the chemistry is another soil improvement method; however, since Xeriscape landscaping ideally yields a low-maintenance yard, "it's far better to select plants that can grow in the range of your soil's [chemistry] than to try to alter it substantially."[16]

The third principal, practical turf areas, encourages careful planning, considering water needs of specific grass types and the resident's preferred level of maintenance.[17] In the Southeast, several grass types can survive without excessive watering.[18] A practical turf area uses a species appropriate for the region, and is "large enough to be functional but with the smallest possible perimeter."[19]

Appropriate plant selection is the fourth and most subjective principle of Xeriscape practice. Doug Welsh, an expert in landscape water management, states, "Every plant can be a Xeriscape plant. If the plant is adapted to the region in terms of heat, cold, soil, etc., and is thus appropriate, then it can fit into a Xeriscape landscape."[20] Native species along with slow-growing perennials and shrubs are often the most appropriate plant selections.[21] For example, an invasive species, such as English Ivy, is a poor choice not only because it is not drought-resistant, but also since it may overtake other species in the landscape.[22]

Efficient irrigation is another important principle of Xeriscape practice, which is commonly required by Xeriscape ordinances.[23] Separate irrigation of plants with different water needs and use of drip irrigation, especially for newly planted shrubs and trees, are efficient water-use techniques.[24] Another technique is to adjust sprinkler heads in order to reduce over watering and excess spray.[25] Watering turfgrass only upon visual exhibition of moisture stress is yet another efficient irrigation practice.[26]

The sixth principle, mulching, is an important element of a Xeriscape landscape.[27] Use of mulches lowers soil temperatures and prevents evaporation, thus conserving soil moisture.[28] Mulching protects plant roots and "help[s] discourage soilborne diseases that stress plants and cause them to have a higher demand for water."[29] Organic mulches may include bark,

8 Connie Lockhart Ellefson, Thomas L. Stephens & Doug Welsh, *Xeriscape Gardening* 6 (1992).
9 *Id.* at 9; Wade *supra* note 4, at 1.
10 Wade, *supra* note 4, at 1.
11 Ellefson, *supra* note 8, at 11.
12 *Id.*
13 *Id.* at 12.
14 *Id.* at 33.
15 *Id.* at 35-36.
16 *Id.* at 39.
17 *Id.* at 45.
18 *Id.* at 45, 153. *See also infra* Part IV(c).
19 Ellefson, *supra* note 8, at 46.
20 *Id.* at 9, 73.
21 *Id.* at 74.
22 *Id.* at 76.
23 See, *e.g.,* Kunzler, *supra* note 4, at 46 (discussing watering restrictions in Volusia County's Xeriscape ordinance). *See also infra* Part II(b).
24 Wade, *supra* note 4, at 11, 14.
25 *Id.* at 12.
26 *Id.* at 14.
27 Ellefson, *supra* note 8, at 117.
28 *Id.*; Wade, *supra* note 4, at 14.
29 Wade, *supra* note 4, at 15.

wood chips, pine needles, and peat moss, among other materials.[30]

The last Xeriscape principle, appropriate maintenance, is aimed towards reducing plants' water needs by "discourag[ing] water-demanding new growth."[31] In terms of actual gardening requirements, appropriate maintenance involves "weeding, feeding, pruning (this includes mowing), pest control, and watering."[32] However, low-level maintenance is one of the hallmarks of any Xeriscape landscape; appropriate Xeriscape maintenance requires minimization of watering and fertilizer application.[33]

B. Sample Xeriscape Ordinances

Volusia County, Florida along with Tucson, Arizona and Lafayette, Colorado are a few of the localities through the United States that have adopted Xeriscape ordinances.[34] These ordinances represent different approaches to incorporating Xeriscape practice into local landscaping laws. The primary goal of each of these ordinances is to reduce water use in response to scarce water resources.[35]

Volusia County, Florida serves as an example of Xeriscape practice in the Southeast.[36] The Volusia County Xeriscape ordinance divides landscaped areas into three zones according to irrigation needs.[37] Knowing that Saint Augustine grass was popular in residential areas, ordinance drafters determined the irrigation needs of that grass species.[38] Under the ordinance itself, half of a landscaped area may require that amount of water per week.[39] One-fourth of the landscaped area may use half that amount of water, and the last one-fourth may only use a fourth of that amount.[40]

Over the course of three years, Volusia County held numerous large, public meetings for all interested parties to attend along with smaller meetings with particular stakeholders.[41] By allowing numerous opportunities for answering questions and addressing concerns, the County successfully promoted public understanding and approval of Xeriscape practice and ultimately the Xeriscape ordinance.[42]

Similarly Tucson, Arizona's Xeriscape ordinance allows for an "oasis" of high-water use plants but limits the zone to 10 percent of the landscaped area.[43] The Tucson Xeriscape ordinance only allows plants with low water needs in the remaining landscaped area.[44] The City of Tucson maintains a list of approved plants while "an advisory board reviews requests to add or remove plants from the list."[45] Under the ordinance, builders must submit landscape plans for development projects, and upon completion of construction city officials inspect the property to verify compliance with the landscape plan.[46] To help builders with meeting their customers' needs while also complying with the requirements of the ordinance, the City of Tucson water department offers landscape designers the opportunity to enroll in a free Xeriscape training class at the University of Arizona.[47]

Taking a slightly different approach, Lafayette, Colorado's Xeriscape ordinance requires designation of four "hydro zones" for plants with high, medium, low, and very low water needs.[48] The high "hydro zone" may include species needing up to twenty gallons of water per square foot in a given season while species in the low "hydro zone" only require irrigation when first planted but eventually thrive

30 Ellefson, *supra* note 8, at 120-21.
31 Wade, *supra* note 4, at 16.
32 Ellefson, *supra* note 8, at 124.
33 Wade, *supra* note 4, at 16-17.
34 See generally Kunzler, *supra* note 4 (discussing these ordinances).
35 *Id.* at 42.
36 *Id.* at 42, 46.
37 *Id.* at 46.
38 *Id.*
39 *Id.*
40 *Id.*
41 *Id.*
42 *Id.*
43 *Id.* at 44.
44 *Id.*
45 *Id.*
46 *Id.* at 44-45.
47 *Id.* at 45. *See also*, The University of Arizona, Pima County Cooperative Extension, SmartScape Training Series, http://cals.arizona.edu/pima/smartscape/workshops.html (last visited Mar. 9, 2008); Email from Kathryn Hahne, Program Coordinator, University of Arizona Cooperative Extension SmartScape Program, to Marjorie Palmer, Student, University of Georgia School of Law (Mar. 3, 2008, 11:00:00 EST) (on file with author).
48 Kunzler, *supra* note 4, at 44-45.

without regular irrigation.[49] By grouping species according to water needs, this approach allows for efficient irrigation of plants within each zone.[50] Lafayette's Xeriscape ordinance requires builders to submit a "hydro zone" map to the City as well as calculations that the average water requirements for the landscaped area will not exceed fifteen gallons per square foot in a season.[51] The City reviews the "hydro zone" map to ensure that each zone includes appropriate species.[52]

III. Integration of Xeriscape Principles into Current Land Use Law

Most Georgia counties could effectively integrate Xeriscape practice and principles into current land use ordinances, such as those for landscaping. Specifically, local law could impose water restrictions, provide for division of residential property into water use zones, and permit use of mulches. Further, individual counties could develop a list of approved Xeriscape species and establish a process for revising that list.

Perhaps Lafayette, Colorado's "hydro zone" approach[53] would work well in Georgia. With the "hydro zones" approach, local governments could require builders to submit plans for grouping species based on water needs within the currently required landscape plan. By reviewing such plans, municipalities may verify compliance with Xeriscape principles set forth by regulation. This procedure will likely allow for efficient monitoring and enforcement, more so than watering restrictions alone.

Providing the public with sufficient information about Xeriscape practice is essential to the success and acceptance of the integration of Xeriscape principles into current regulations.[54] Educating the public on planning and design, soil analysis and improvement, practical turf areas, appropriate plant selection, efficient irrigation, mulching, and appropriate maintenance will allow residents to incorporate Xeriscape practice into their individual approaches to gardening and lawn care in order to save both money and water.[55]

Local land use regulations may currently include lists of approved species. In addition to such a list, a local land use ordinance could include a list of Xeriscape species for the area and could even establish a process for adding and removing species from the list.[56] Such a list will assist the residents in making appropriate choices in their process of planning and designing Xeriscape landscapes. Likewise, offering guidance to builders and developers, possibly in the form of a training program, not unlike the one Tucson offers to landscape designers, will allow local government to effectively implement any new Xeriscape design-based requirements.[57] Changes and additions such as these could enable a Georgia municipality to successfully integrate Xeriscape landscaping practice into current land use regulations.

49 *Id.*
50 *Id.*
51 *Id.* at 46.
52 *Id.*
53 *Id.* at 45-46.
54 See *id.* at 46 (discussing the high level of public involvement in passing a Xeriscape ordinance in Volusia County, Florida).
55 See Wade, *supra* note 4, at 1 (explaining that implementation of the seven Xeriscape principles by individuals reduces water consumption while also saving time by reducing maintenance requirements); see also Kunzler, *supra* note 4, at 47 (emphasizing that communities enacting Xeriscape ordinances should also provide education and training to provide the public with "the tools and knowledge to implement the ordinance").
56 See, *e.g.,* Kunzler, *supra* note 4, at 44 (describing Tucson's system maintaining a list of approved Xeriscape species, which involves an advisory board to review proposals to add or remove species).
57 See *id.* at 45 (noting that the landscape designers and builders in Tucson may enroll in a Xeriscape training class at the University of Arizona).

IV. Xeriscape Species for Georgia

Many popular tree, shrub, grass, ground cover, and other plant species may qualify as Xeriscape species in certain areas of Georgia due to their low to medium irrigation needs. A plant species that qualifies as Xeriscape in one region of Georgia, however, may not qualify elsewhere.[58] Therefore, individual municipalities must explore what species may be appropriate for their particular region.[59] What follows is a general discussion of the types of tree, shrub, grass, and ground cover species that qualify as Xeriscape in most parts of Georgia.

A. Trees

Local landscaping ordinances may set requirements for tree density and size. Such requirements may be met with durable, low maintenance Xeriscape tree species. Smaller trees, such as Silverbell, Savannah Holly, Saucer Magnolia, and Virginia Pine, are appropriate Xeriscape species throughout most of the State.[60] Hetz and Pfitzer Juniper, Southern Magnolia, and Red Maple are just a few examples of larger tree species that have low irrigation needs in most regions of Georgia.[61]

B. Shrubs

Xeriscape practice also encourages use of drought-tolerant shrubbery to add variety to a landscape.[62] A Xeriscape landscape could include evergreen shrubs with low water needs.[63] Smaller evergreen shrubs with low water needs include Lavender cotton and several species of Holly.[64] With low irrigation needs, flowering Oakleaf Hydrangea and Winter Jasmine would meet Xeriscape standards in most regions of Georgia.[65] Azalea hybrids and Southern Indian Azalea also have low water needs in certain regions and could add color to a Xeriscape landscape.[66]

C. Grasses

Of the popular grass types, Bermudagrass is a good choice in terms of drought resistance in Georgia.[67] Tifway Bermuda, in particular, requires "very low" water use and is in the "very high" range in terms of drought resistance.[68] In cold weather, Bermudagrass will not brown as quickly as other grass-types.[69] Another grass type with low water needs is Meyer Zoysia; however, its "low" range drought resistance renders it a slightly less durable grass choice.[70]

D. Ground Cover

A Xeriscape landscape in Georgia may include numerous ground cover species. Many ornamental grasses, such as upland sea oats and several varieties of fountain grass, have low water needs and qualify as Xeriscape species.[71] Other Xeriscape ground cover species include Shore Juniper, Aaronsbeard St. Johnswort, and Evergreen Candytuft.[72]

As this summary reveals, a Xeriscape landscape need not be sparse, dull or in any way aesthetically displeasing. Rather, a Xeriscape design may include a range of textures and colors, with flowering species, evergreens, annuals, and perennials thriving in varied levels of shade and sunlight.

58 See generally, Wade, *supra* note 4 (dividing Georgia into hardiness zones, listing Xeriscape plant species, and indicating the particular zone or zones where each species may be appropriately incorporated into a Xeriscape landscape).
59 In particular, *A Guide to Developing a Water-Wise Landscape* by Gary L. Wade et al., cited throughout this paper, provides region-specific information on Xeriscape species for Georgia. See generally *id*.
60 *Id.* at 25.
61 *Id.* at 25.
62 *Id.* at 4 (noting how many popular shrub species "grow well in low-water use zones where they are not irrigated once they are established").
63 *Id.* at 21-22.
64 Ellefson, *supra* note 8, at 157-158; Wade, *supra* note 4, at 21-23.
65 Wade, *supra* note 4, at 22
66 *Id.* at 21, 23.
67 Ellefson, *supra* note 8, at 153.
68 Wade, *supra* note 4, at 10.
69 Ellefson, *supra* note 8, at 153.
70 Wade, *supra* note 4, at 10.
71 *Id.* at 20.
72 *Id.* at 20, 30.

V. Conclusion

As the historic drought in Georgia continues, counties face the challenge of reducing water consumption.[73] Integration of Xeriscape principles into local land use regulations will better equip counties to reduce water consumption and conserve Georgia's water resources.[74] Other jurisdictions' Xeriscape ordinances and educational programs offer significant guidance for Georgia in its efforts to incorporate Xeriscape principles into land use law and policy.[75] With a few changes, Georgia counties may integrate Xeriscape practice into land use law to meet their shared goal of conserving water resources.[76]

73 See *supra* Part I.
74 *Id.*
75 *See* Part II(b).
76 *Id.*

Land Use Clinic
University of Georgia River Basin Center
110 Riverbend Road, Room 101
Athens, GA 30602-1510
(706) 583-0373 • Fax (706) 583-0612
http://www.law.uga.edu/landuseclinic/