

comment through a **Federal Register** "Notice, Review & Comment." This guidance, as written by the interagency taskforce, represents the culmination of discussions among interested parties, industry and government, and the responses to the **Federal Register** Notice.¹

The principles identified here provide a framework for the use of environmentally and economically beneficial landscape practices on managed federal lands and federally-funded projects. They are meant to improve and expand upon current principles of landscape design, implementation and management. They are intended to assist in federal planning and decision-making and can be incorporated into federal agency guidance/policy for landscape management practices.

As identified in the memorandum the guidance focuses on 5 (five) guiding principles: (1) Use regionally native plants (see definition below) for landscaping; (2) Design, use or promote construction practices that minimize adverse effects on the natural habitat; (3) Seek to prevent pollution; (4) Implement water and energy efficient practices; (5) Create outdoor demonstration projects.

This guidance is intended to promote principles of "sustainable landscape design and management" which recognizes the interconnection of natural resources, human resources, site design, building design, energy management, water supply, waste prevention, and facility maintenance and operation. In general, sustainable design embodies the concept that,

* * * human civilization is an integral part of the natural world and that nature must be preserved and perpetuated if the human community is to sustain itself indefinitely.² Sustainable landscape management seeks to minimize impact on the environment and maximize the value received for the dollars expended.

Sustainable landscape design is economically beneficial in its principle of evaluating and optimizing the full life-cycle of products and processes: cost is considered from initial design through the life of the project. For example, although sustainable site design and development may have a higher initial cost, it may prove economical over the life of the project.

[FRL-5275-6]

Office of the Federal Environmental Executive; Guidance for Presidential Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federal Landscaped Grounds

AGENCY: Office of the Federal Environmental Executive, EPA.

ACTION: Notice.

SUMMARY: This document announces guidance developed by the interagency workgroup under the direction of the Federal Environmental Executive to assist federal agencies in the implementation of environmentally and economically beneficial landscape practices. This guidance is in response to the requirements of the executive memorandum on Environmentally and Economically Beneficial Landscape Practices on Federal Landscaped Grounds.

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SUPPLEMENTARY INFORMATION: On April 26, 1994, the President issued a memorandum to Federal agencies addressing landscape management practices on federal landscaped grounds. In developing the implementing guidance, the Federal Environmental Executive sought public

¹ **Federal Register**, Vol. 59, No. 161, Monday August 22, 1994. The Executive Memorandum was incorporated and printed in the Notice, Review & Comment.

² p. 4. *Guiding Principles of Sustainable Design*, U.S. Department of the Interior, National Park Service, Denver Service Center, September 1993.

In this example, a well-designed and implemented plan can result in healthier, longer-lived plantings which rely less on pesticides and fertilizers, minimize water use, require less maintenance, and increase erosion control. Sustainable landscape design considers the characteristics of the site and soil, intended effect and use of the developed area, in addition to the selection of plants.

It is not the intent of this guidance to supersede federal agency directives, policy, or other guidance which relate to the mission of that agency or to health and safety concerns. It is not intended to supersede agency objectives or guiding principles such as those pertaining to the National Park Service's four primary management zones—natural, cultural, park development, special use—and their subzones; or those pertaining to the Forest Service's National Hierarchy and Recreation Opportunity Spectrum classification systems. Finally, this guidance does not advocate replacement of existing landscapes, unless it is cost-effective to do so.

Intent of Guiding Principles

The following describes the intent of the implementing guidance and discusses opportunities for federal initiatives. These opportunities are not all-inclusive and federal agencies are encouraged to investigate other initiatives for environmentally and economically beneficial landscaping practices.

1. Use Regionally Native Plants for Landscaping

In the selection of plants for managed federal lands and federally-funded projects, the federal government has the opportunity to choose plants which are aesthetically pleasing, require minimal care, and reflect a "sense of place," i.e. the physical, or symbolic representations of a community or area. By carefully selecting the "right plants for the right place" and matching plant characteristics to site and soil conditions, federal agencies can promote sustainable landscapes. Characteristics of sustainable landscapes include: minimizing water use, reducing the need for pesticides and fertilizers, reducing maintenance costs, utilizing hardy plants, and increasing erosion control. Where the appropriate conditions exist, regionally native plants offer the advantages of natural adaptation to the climatic and geologic environments. In addition, use of regionally native plants can promote regional identity, and enhance wildlife habitat and biodiversity.

2. Design, Use or Promote Construction Practices That Minimize Adverse Effects on the Natural Habitat

Construction practices can adversely affect and alter natural and other habitat. Federal projects can be sited, designed, and constructed to minimize that impact. Federal agencies can incorporate elements of sustainable design into their architectural and engineering plans and specifications for projects planned, designed, and constructed by federal agency or contractor personnel.

Structures can be integrated with the existing plant and animal communities and cultural (human) environments. Considerations include such elements as: ecology of the site; human factors (i.e. historic issues, mission, adjacent land use, and local culture, neighboring communities); water/energy use; pollution prevention and other special issues.

Impact on existing vegetation can be minimized by protecting and integrating plants into the site design. Analyses of the soil and subsurface material are important to the later success of existing and future plantings. These analyses can also indicate the existence of toxic or other undesirable material.

Additional beneficial construction practices which minimize adverse impacts to natural habitat include the proper disposal of construction waste and debris such as paints and other chemicals, concrete, and other building material.

3. Seek to Prevent Pollution

Pollution prevention is a national policy and one of the principles of sustainable landscape management. The primary tenet is: whenever feasible, pollution should be prevented or reduced at the source, and where pollution cannot be prevented, it should be recycled in an environmentally safe manner. Executive Order 12856, "Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements" was issued to ensure that

* * * all Federal agencies conduct their facility management and acquisition activities so that, to the maximum extent practicable, the quantity of toxic chemicals entering any wastestream, including any releases to the environment, is reduced as expeditiously as possible through source reduction; that waste that is generated is recycled to the maximum extent practicable; and that any wastes remaining are stored, treated or disposed of in a manner protective of public health and the environment * * *

³ Executive Order 12856 of August 3, 1993 "Federal Compliance with Right-to-Know Laws and

In keeping with the executive order and the principles of sustainable landscapes practices, the following initiatives have been identified as having a salutary effect on landscape management.

Manage Pesticides and Fertilizers

The improper use of pesticides and fertilizers contributes to the pollution of both surface and groundwater in the United States. Using effective landscape management practices, and appropriate application of pesticides and fertilizers, federal agencies may minimize that impact on water quality as well as to other aspects of the environment.

Further, federal agencies may better manage soil amendments and fertilizers by utilizing soil and plant tissue samples analyses which can indicate soil deficiencies and nutrient use. The recommended method of managing pests and pesticides is called Integrated Pest Management or IPM as described below.

Use IPM

Through the use of appropriate control measures and proper application, IPM can result in a reduction in the use of chemicals contained in pesticides which may adversely impact human health and the environment. Integrated Pest Management is a decision-making process which considers cultural, mechanical, biological, and chemical controls of pests. Control mechanisms are selected as each situation warrants. Where chemical control is used, specific pest populations are targeted when they are most vulnerable rather than indiscriminate application of these chemicals.

Minimize Runoff

Uncontrolled runoff adversely impacts the environment: (1) As a major contributor to soil erosion; and (2) the primary vehicle for chemical pollutants to be introduced into the environment (particularly non-point source runoff). Federal agencies can ameliorate adverse impacts associated with run-off through a variety of preventative mechanisms: physical, vegetative, and operational. For example, grasses have been demonstrated to be a viable mechanism for minimizing run-off and controlling soil erosion. A viable method of managing the pollutants associated with the first flush of stormwater run-off is bioretention of the storm water in an appropriately landscaped area.

Pollution Prevention Requirements". *Federal Register* Vol. 58, No. 150, Friday, August 6, 1993.

Recycle Landscape Trimmings

Federal agencies have the opportunity to effect both good landscape management practices and good waste management practices by recycling and using recycled landscape trimmings. A significant portion of what is treated as waste is comprised of leaves, grass clippings, plant trimmings, and woody material. These elements are a desirable resource for composted material, mulches, and landscape amendments. By using these products, federal agencies can effectively and economically enrich the soil, promote plant growth, preserve soil moisture, reduce erosion, and inhibit weed growth.

4. Implement Water and Energy Efficient Practices

Irrigating lawns and landscapes can account for a significant proportion of total water use, particularly during peak watering season. Reducing the inefficient irrigation of lawns and landscapes with potable water can reduce water cost, and the energy usage/cost associated with water pumping. In addition, water use efficiency can relieve the increasing demand being placed on water resources, distribution systems, and wastewater treatment systems.

Federal facilities can effectively reduce water use and conserve potable water through a number of practices. For example, water usage can be reduced through the use of mulches and careful selection and siting of plants. Plants adapted to local conditions can be selected so supplemental water will not be required after an initial establishment period of 3-5 years. Other water-efficient landscape practices include: determining the water requirements for discrete water-use zones; using and maintaining efficient irrigation systems; and watering only as needed. A water-efficient and cost-effective manner of irrigation which is becoming increasingly popular, where available, is the use of recycled or reclaimed water.

Recent legislation, as well as recent executive orders, reflect the federal government's commitment to energy and water conservation. Water-efficient landscape practices contribute two-fold: first, to the conservation of fresh, potable water; and second, to the conservation of energy associated with the distribution and treatment of water. Landscape practices may also directly impact energy conservation by siting plants to provide shade and cooling to paved surfaces and building structures resulting in reduced building cooling

loads. Conversely, plants may also be sited such that they optimize solar heat gain and inhibit heat loss during cooler periods to reduce building heating loads.

To assist agencies in meeting the energy and water conservation requirements mandated by the Energy Policy Act of 1992 [Public Law 102-486, October 24, 1992], the Department of Energy was directed to establish the Federal Energy Efficiency Fund. Administered by the Federal Energy Management Program office, the fund provides grants to agencies for energy and water conserving projects. Grant proposals are competitively assessed for their technical and economic effectiveness. Water conserving landscapes are eligible to compete for grants under this fund.

5. Create Outdoor Demonstration Projects

Landscape demonstration projects promote public awareness and education and can be a catalyst for similar initiatives by the general public as well as other governmental agencies. They can also aid in the development and expansion of beneficial techniques and technologies. Outdoor demonstration projects are an effective method of promoting and sharing information about environmentally sensitive landscape approaches and the use of environmentally and economically beneficial landscape practices. Outdoor demonstration projects can also showcase partnership opportunities among industry, academia, and other governmental agencies. Cooperative agreements can assist in the development of technologies and techniques in such areas as recycled or reclaimed water use.

Other Initiatives

To further promote and demonstrate that environmentally beneficial practices can be both beautiful and economical, the Executive Memorandum identified a number of initiatives. These include: (1) The establishment of annual awards to recognize outstanding efforts in site design, and development, landscaping management practices of agencies and individual employees; and (2) the requirement for the Department of Agriculture to conduct research on the sustainability, propagation and use of native plants.

• Establishment of Annual Award

The Office of the Federal Environmental Executive in conjunction with the Department of Energy's Federal

Energy Management Program (FEMP), has established an annual award recognizing outstanding efforts by agencies and individual employees in the demonstration of beneficial landscape management practices. This annual award has been incorporated into FEMP's Annual Federal Energy and Water Conservation Award Program. In October 1995, the winners of the first annual Beneficial Landscape Practices award will be announced.

• Research by the Department of Agriculture in Cooperation With Other Agencies on Suitability, Propagation and Use of Native Plants for Landscaping

As identified in the *National Performance Review, Accompanying Report: Reinventing Environmental Management*, barriers to the use of native plants include: limited availability of native plants; lack of knowledge about the use, maintenance, and propagation of native plants; the more prevalent use of exotic species; and the spread of invasive exotics. The U.S. Department of Agriculture possesses experience and expertise in the development of plants, management of federal lands, and conservation of soils. By working with other federal agencies, universities, botanic gardens, arboreta, and commercial nurseries, the USDA's Agricultural Research Service and Natural Resource and Conservation Service can further the use of native plant species in the landscape. In addition, the USDA has been directed to make information available to agencies and the public on the suitability, propagation and use of native plants for landscaping.

Guidelines

Applicability

These guidelines are meant to assist Federal decision-making at the agency and facility level. Where cost effective and to the maximum extent practicable, they shall be incorporated into agency guidance and policy and reflected in agency landscape management practices, site design, and development. These guidelines apply to decisions regarding landscape management practices, site design, and development on Federal grounds and at Federal projects in any state of the United States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, American Samoa, the United States Virgin Islands, the Northern Mariana Islands, and any other territory or possession over which the United States has jurisdiction. Federal facilities located outside the customs territory of

the United States and Federal agencies at overseas U.S. facilities are encouraged to abide by the principles set forth in the Executive Memorandum and these guidelines. Where Federal funding is provided to support landscaping projects on non-federal lands, these guidelines shall also apply.

The policies and recommendations set out in this document are not final action, but are intended solely as interpretive guidance for implementation of the Executive Memorandum on Environmentally and Economically Beneficial Landscape Practices on Federal Landscape Grounds by affected Federal government agencies. This Guidance does not supersede Federal agency policies or directives or established regulation. Nothing in this document shall create any right or benefit, substantive or procedural, enforceable by any party against the United States, its agencies or instrumentalities, its officers or employees, or any other person.

Definitions

Native Plant

A native plant species is one that occurs naturally in a particular region, ecosystem and/or habitat without direct or indirect human actions.

Pesticide

A pesticide is "any substance or mixture of substances: (a) For preventing, destroying, repelling, or mitigating any pest, or (b) for use as a plant regulator, defoliant, or desiccant." [FIFRA Section 2(u)]

Pest

A pest is "(1) any insect, rodent, nematode, fungus, weed, or (2) any other form of terrestrial or aquatic plant or animal life or virus, bacteria, or other micro-organism (except viruses, bacteria, or other micro-organisms on or in living man or other living animals) which the Administrator declares to be a pest." [FIFRA Section 2 (t)]

Compliance With the National Environmental Policy Act (NEPA)

The National Environmental Policy Act (NEPA) provides a mandate and a framework for federal agencies to consider all reasonably foreseeable environmental effects of their actions. Where Federal projects or federally-funded activities or projects considered in the NEPA process include landscape considerations, draft and final NEPA documentation and Record of Decision for the proposed action and alternatives, as applicable, shall reflect the recommendations established in this Guidance.

1. Use of Regionally Native Plants for Landscaping

Federal agencies, Federal projects or federally-funded projects, shall incorporate regionally native plants in site design and implementation where cost-effective and to the maximum extent practicable. Federal agencies shall strive to avoid or minimize adverse impacts of proposed actions or projects on existing communities of native plants.

Federal agencies shall ensure that the appropriate site and soil analyses are performed during pre-design stages of the project. To aid in proper plant selection and to ensure success of the plantings, analyses should match plant characteristics with site and soil conditions. Site design and implementation as well as plant selection shall incorporate such considerations as their biological needs, minimal plant care, low water use, and minimal need for fertilizers and pesticides.

Plants selected shall be in character with the project site plant communities. Those plants selected for Federal landscape projects or federally-funded landscape projects shall be nursery propagated from sources as close as practicable to the project area. Native plants collected from existing indigenous populations shall not be used unless they are salvaged from an area where they would otherwise be destroyed in the near-term. Where native plant seeds are to be used for federal projects, they should be unadulterated by other plant species. Federal agencies should ensure that appropriate actions are taken to support the success of native plant species used for Federal or federally-funded landscaping projects.

2. Design, Use, or Promote Construction Practices That Minimize Adverse Impacts on the Natural Habitat

Federal agencies, Federal projects or federally-funded projects shall avoid or minimize adverse impacts to natural habitat. During preliminary selection of sites for Federal or federally-funded projects, Federal agencies shall avoid sites which are relatively undisturbed. If such areas cannot be avoided, Federal agencies should employ construction practices and procedures which minimize adverse impacts to natural habitat and incorporate existing vegetation and associated natural habitat into the project. Where new projects require use of a relatively undisturbed site, site clearing and preparation should be limited in order to prevent unnecessary adverse impacts.

Where adverse impacts to natural habitat occur as a result of Federal or federally-funded projects, Federal agencies shall mitigate impacts to natural habitat on-site where feasible. On-site and off-site compensatory mitigation shall fully reflect lost natural habitat values.

Federal site design and development should consider: environmental elements, human factors, context, sustainability, and pertinent special issues. Development of the site should include assessments of the soil and subsurface material.

Project decision-makers, including designers, contract supervisors, contractors, field inspectors, site or facility master planners, and maintenance personnel shall either be knowledgeable of or informed of likely project related impacts to natural habitat. Where existing plantings are incorporated into the site design, they shall be adequately protected from construction activities. Project plans and specifications shall include explicit direction regarding construction practices to meet the goals of this guidance. On-site project managers and contractors shall ensure that practices which minimize impacts to natural habitat are followed during project construction. Such practices may include site management to control soil erosion and non-point source run-off and proper disposal of construction material and debris. Where practicable, personnel responsible for on-site construction practices, including contractors and construction inspectors, shall be knowledgeable about natural habitat resources.

3. Seek to Prevent Pollution

Federal agencies, Federal projects or federally-funded projects shall use chemical management practices which reduce or eliminate pollution associated with the use of chemical fertilizers and pesticides. Wherever practicable, Federal agencies shall employ practices which avoid or minimize the need for using fertilizers and pesticides. These practices include, but are not limited to: selection of plant species that do not require chemical fertilizers and pesticides; use of landscape management products and practices that limit growth of "weed" species; use of integrated pest management techniques and practices; use of chemical pesticides which biodegrade, and use of slow-release fertilizers.

Federal agencies shall recycle and/or compost leaves, grass clippings, and landscape trimmings for further use as both soil amendments and mulches. Woody debris such as tree trunks.

stumps, limbs, etc., resulting from federally-funded activities shall also be recycled as appropriate.

Federal agencies shall use landscape management practices, including plant selection and placement, which control and minimize soil erosion, runoff of chemicals, and pollution of groundwater. Federal agencies shall also consider energy and water conservation benefits in the siting and selection of plants.

Federal agencies and facilities subject to the requirements of Executive Order 12856 shall identify those chemicals used at their facilities for landscape management and develop alternative landscape management practices to reduce or eliminate the use of those chemicals.

4. Implement Water and Energy Efficient Landscape Practices

Federal agencies, Federal projects or federally-funded projects, shall use water-efficient landscape design and management practices. These practices (such as Xeriscape) shall include planning and designing landscaping projects with consideration to: watering requirements, existing vegetation, topography, climate, intended use of the property and water-use zones. In addition, facility managers shall conduct soil analyses and, as appropriate, amend the soil at the project site to improve its ability to support plants and retain water. Initial site design as well as the addition of plants in established areas shall seek to establish water-use zones and promote efficient irrigation practices.

Where irrigation systems have been installed, irrigation scheduling should be adjusted seasonally to the evapotranspiration rate (ET) for the plants in that particular climate.

Irrigation with recycled or reclaimed water, where practicable, shall serve as a preferred alternative to the use of potable water. Finally, Federal agencies and facilities, Federal projects and federally-funded projects, are encouraged to use water audits to identify additional opportunities for water-efficient landscape practices.

5. Create Outdoor Demonstration Projects

Federal agencies, Federal projects or federally-funded projects, shall create and maintain outdoor demonstration projects exhibiting and promoting the benefits of economically and environmentally sound landscaping practices. These exhibits may include the selection and use of native plant species and the use of water-efficient and energy-conserving practices.

Exhibits may include small scale projects, such as interpretive or wildlife gardens, that focus on environmentally sound landscape management practices, site design, and development appropriate for residential, commercial, and institutional application. Additionally, demonstration projects may highlight larger projects, such as wetland or grassland restoration or woodland rehabilitation, that are more likely implemented by groups or state and local governments. Federal agencies are encouraged to form public/private partnerships with groups such as educational institutions, arboreta, commercial nurseries, botanic gardens and garden clubs, to advance the goals of the Executive Memorandum. Federal agencies are encouraged to work with and share information with other interested nonfederal parties to promote the use of environmentally and economically sound landscaping practices.

Fran McPoland,

Federal Environmental Executive.

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