RUSSIAN RIVER-FRIENDLY LANDSCAPE GUIDELINES

Sustainable Practices for the Landscape Professional

"A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community."

SOURCE: ALDO LEOPOLD, A SAND COUNTY ALMANAC

The *Russian River-Friendly Landscape Guidelines* were created for landscape professionals in the Russian River region by the Russian River Watershed Association (RRWA), with permission and assistance from StopWaste.Org in Alameda County. *The Russian River- Friendly Landscape Guidelines* are a Russian River revision of the *Bay-Friendly Landscape Guidelines,* originally published by StopWaste.Org in 2003.

The *Russian River-Friendly Landscape Guidelines* are intended to aid landscape professionals in the protection and conservation of the Russian River waterways, in the reuse and reduction of plant debris, and to support an integrated approach to environmentally-friendly landscaping.

The *Guidelines* are organized around seven principles for protecting the environment. By viewing the landscape through the lens of these seven principles, we can see it in a different light, such as how plant selection can create or decrease waste or how soil preparation can prevent or increase runoff. There are fifty-three practices listed under these seven principles. The practices themselves each include many examples of applications. The applications are meant to be a starting point but are not meant to be comprehensive. It is likely that there are many additional applications for each practice.

Some of the practices are repeated under different principles because one practice can be integral to more than one principle. In other words, there are a number of critical practices that can protect the environment in more than one way. Using mulch, for example, reduces waste, nurtures the soil, conserves water, and creates wildlife habitat.

Disclaimer:

The information in these *Guidelines* is provided for consideration by landscape professionals in the course of designing, constructing and maintaining new or existing landscapes. It is presented as a public service by the Russian River Watershed Association in an attempt to support environmental benefits and reduce costs. The practices in these *Guidelines* are strictly for use on a voluntary basis. They are not a substitute for the exercise of sound judgment in particular circumstances and are not intended as recommendations for particular products or services.

The principles and practices included in the original *Bay-Friendly Landscape Guidelines* were selected with guidance from many public and private landscape architects and contractors, representatives from Alameda County public agencies, nonprofit organizations, and the staff of StopWaste.Org. Acknowledgements for the many individuals, businesses, and agencies involved in the development of both the *Russian River-Friendly Landscape Guidelines* and *Bay-Friendly Landscape Guidelines* are listed on page 66.

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PRINTED BY FOLGERGRAPHICS INC., HAYWARD, CA

AUGUST 2010

Table of Contents

Table of Tips

1

Introduction to Russian River-Friendly Landscaping

BASIC PRINCIPLES OF NATURAL SYSTEMS

1. Natural systems are inherently beautiful.
2. Nothing goes to waste.
3. Inputs are limited and are primarily defined by the natural resources on site.
4. The more diverse they are, the more stable they are.

ADAPTED FROM: DAVID MCDONALD, DESIGN WITH NATURE: LANDSCAPE DESIGN AS THOUGH THE ENVIRONMENT MATTERED, SEATTLE PUBLIC UTILITIES.

PHOTO: MIKE HEACOX, LUCIOLE DESIGN

Russian River-Friendly Landscaping is...

A whole systems approach to the design, construction and maintenance of the landscape in order to support the integrity of one of California's most rich and diverse ecosystems, the Russian River Watershed.

The Russian River-Friendly landscape professional can create and maintain healthy, beautiful and vibrant landscapes by:

- ✓ Landscaping in harmony with the natural conditions of the Russian River Watershed
- ✓ Reducing waste and recycling materials
- ✓ Nurturing healthy soils while reducing fertilizer use
- ✓ Conserving water, energy and topsoil
- ✓ Using integrated pest management to minimize chemical use
- ✓ Reducing stormwater runoff and air pollution
- ✓ Protecting and enhancing wildlife habitat and diversity

A well designed and maintained Russian River-Friendly landscape can cost less to maintain in the long run by consuming fewer resources. For public spaces, Russian River-Friendly landscapes embody community values for health, wildlife and the environment.

PHOTO: CITY OF SANTA ROSA

For private property, Russian River-Friendly landscaping addresses issues that your clients care about, such as less maintenance and decreased water usage, as well as increased environmental benefits. It can lead to increased customer satisfaction and referrals to new clients.

As a landscape professional you can be proactive. You can be part of the environmental solution rather than waiting for more severe water conservation and pollution controls that are increasingly likely with our growing population.

Conventional Landscaping

Commercial, public and residential landscapes can benefit the owner and the community through their beauty, the recreation they offer, and their positive environmental effects. Trees, for example, can provide shade and reduce energy consumption, absorb greenhouse gases, reduce stormwater runoff and add to property values.

On the other hand, landscaping activities can cause damage to the environment by consuming fossil fuels, contributing to pollution of the soil, air and water, and burdening landfill space.

Conventional landscaping often relies on large lawns, non-native plants, abundant irrigation, and heavy use of fertilizers and pesticides. It frequently requires significant mowing, blowing, trimming and removal of plant debris.

Removing all plant debris from the site is one example of an especially damaging practice. It removes food and habitat for birds, insects and beneficial soil organisms. It mines our local soils of nutrients and degrades soil health. Often, the result is an increased dependency on fertilizers and irrigation, as well as greater stormwater runoff, possibly leading to pollution of our creeks and rivers, erosion, and global warming.

Keeping plant debris on-site can:

- Foster living soils
- Increase the organic matter in the soil
- Improve soil structure and reduce compaction
- Retain and restore topsoil
- Create healthier plants
- Reduce the need for irrigation, fertilizers and pesticides
- Conserve landfill space
- Reduce air pollution and the emission of greenhouse gases from transporting plant debris long distances to be processed or landfilled
- Reduce greenhouse gas emissions caused by plant debris decomposing without oxygen in landfills
- Restore the soil's ability to absorb and filter water, improving water quality and reducing stormwater runoff into local creeks, the Russian River and ultimately the Pacific Ocean

While it may not be possible to keep all plant debris on site, there are more opportunities to reuse plant debris in our landscapes than are commonly practiced.

"Our challenge is to create landscapes that inspire a shift, to not only sustainable practices, but to a land approach that is highly productive and filtering. Effective, beautiful landscapes can produce clean water, clean air, nutritious food and medicine, fiber, building materials, etc. while sequestering carbon, moderating climate, and providing habitat.

How long will it take for our landscapes to replace the ecological, social, and economic value of the resources used for their construction?"

— Geoff Hall, Co-Founder, Sentient Landscape, Inc., Sebastapol

"In Sonoma County, 92,000 tons of plant debris was turned into compost instead of landfilled in 2008. But that same year, an additional 24,000 tons of plant debris that could also have been turned into compost and used to nurture the soil was instead wasted in the landfill."

— Karina Chilcott, Waste Management Specialist, Sonoma County Waste Management Agency, Santa Rosa

Why is Russian River-Friendly Landscaping Important?

Over the last two decades, there has been a significant reduction in plant debris landfilled in the Russian River Watershed, due in large part to residential recycling programs and because many households practice backyard composting. This positive trend reflects the interest of residents in recycling plant debris and reducing waste.

But more needs to be done, as tons of plant debris are still thrown away each year. Twenty-three states have banned or limited the disposal of plant debris in their landfills; however, California has not and statewide, 2.7 million tons of plant debris are landfilled each year. Leaves and clippings alone are sixth out of the ten most prevalent material types in California's overall disposal waste system.

Other types of waste, including plastics and hazardous wastes, are also generated by conventional landscaping practices. The horticultural industry in the US throws away almost a half-billion pounds of greenhouse film, plastic pots and plastic groundcover each year. Annual disposal of leftover pesticides used by residents costs tens of thousands of dollars for the waste management agencies in our watershed — and only a fraction of the pesticides are disposed of properly.

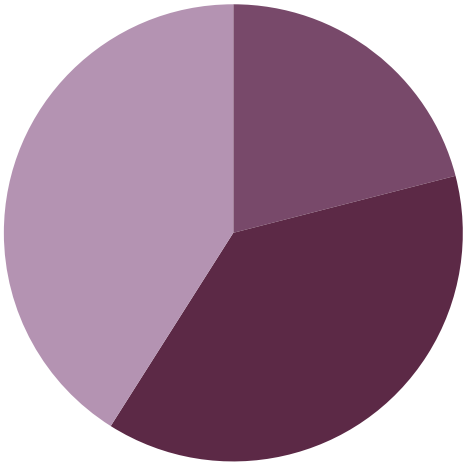
Russian River-Friendly landscaping minimizes the use of plastics and pesticides, and diverts plant debris from the landfill by preventing waste in the first place through careful plant selection, watering and fertilizing, reusing plant material through grasscycling, and by using mulch and compost.

Because generating plant debris is linked to a wide range of landscaping practices — such as watering and fertilizing — this integrated solution is essential.

"Our urban landscapes are really a major cause of environmental degradation and depletion."

— Bob Perry, Landscape Architect,
Professor Emeritus Cal Poly, Pomona

Plant Debris Disposed of by Sector in Sonoma County



SOURCE: SONOMA COUNTY WASTE MANAGEMENT AGENCY WASTE CHARACTERIZATION STUDY FINAL REPORT, NOVEMBER 2007 (PLANT DEBRIS IS DEFINED AS INCLUDING LEAVES & GRASS, PRUNINGS & TRIMMINGS, BRANCHES & STUMPS).

What is a Wasteshed?

A wasteshed is all the land in a region from which waste is collected and hauled into a common landfill.

What is a Watershed?

A watershed is all the land in a region from which water collects and drains into a common creek, river, lake or bay.

The Link Between Wastesheds and Watersheds...

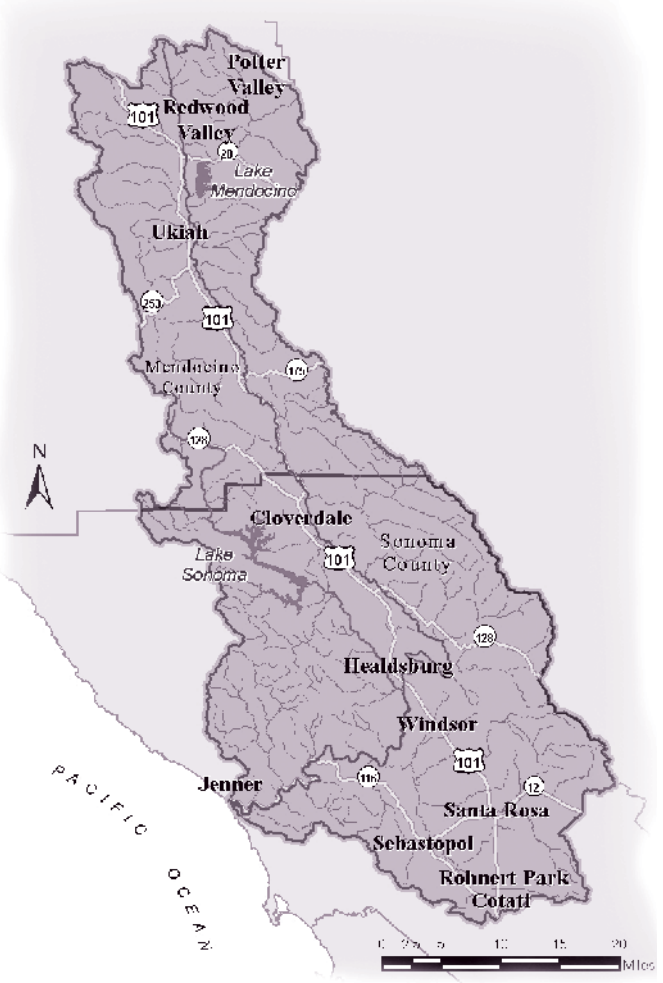
Returning organic matter to the soil, in the form of plant debris, is the link between protecting our watershed and conserving landfill space.

In healthy landscapes, water from rain or irrigation percolates through soil that is rich in organic matter and alive with organisms. Living soils absorb and retain much of the water while also filtering out pollutants before the water reaches the aquifer or watershed.

For the most part, conventional landscapes no longer provide this cleansing function because...

1. Rooftops, asphalt, cement, and other impervious surfaces prevent much of the water from ever reaching the soil.
2. In addition, urban soils that have been mined of organic matter, compacted, eroded, and treated with chemicals are often lifeless and no longer able to function naturally — they have lost their ability to absorb much water or to filter pollutants out of the water.
3. Water from irrigation and rainfall has the potential to wash pesticides, fertilizers, plant debris, pet waste, heavy metals, spilled motor oil and other contaminants from lawns, gardens, roads and parking lots into gutters and stormdrains.
4. And once in the stormdrain, the water is not treated!
5. From stormdrains, the runoff flows directly into creeks and rivers, which are important resources for supporting the diverse and complex array of natural ecosystems.
6. And, all creeks and waterways in our watershed flow to the Russian River and ultimately to the Pacific Ocean where contaminated water can harm fish and other wildlife and can cause illness in humans.

The Russian River Watershed



SOURCE: SOTOYOME RESOURCE CONSERVATION DISTRICT

RUSSIAN RIVER FRIENDLY LANDSCAPING

The Russian River Watershed drains nearly 1,500 square miles of forests, agricultural lands and urban areas within Sonoma and Mendocino Counties. The mainstem of the Russian River flows 110 miles from its headwaters near Redwood Valley and Potter Valley into the Pacific Ocean near the town of Jenner. It supplies drinking water to over 600,000 area residents and is home to approximately 30 species of fish, three of which are listed as threatened or endangered. The watershed encompasses the cities of Ukiah, Cloverdale, Healdsburg, Windsor, Santa Rosa, Rohnert Park, Sebastopol and Cotati.*

Whether your client's site is next to a creek or miles away, your landscaping activities impact the quality of water and life in the Russian River Watershed.

The landscape you design, construct or maintain can be the first line of defense.

*SONOMA COUNTY WATER AGENCY

The Link between Russian River-Friendly Landscaping and Global Warming

We are experiencing global warming and there is now "unprecedented certainty" that this is due to greenhouse gases that are emitted into the atmosphere when we burn fossil fuels.* Average temperatures are increasing, rain patterns are changing and extreme weather events, including heavy downpours and floods, heat waves and drought, are becoming more frequent.

If you professionally design, install and manage landscapes, the climate changes due to global warming will create new challenges to the way you do business, and the expertise your clients will need from you.

Conventional landscaping practices contribute to global warming by relying on coal, oil and natural gas for powering equipment, transporting landscape materials and waste over long distances, manufacturing pesticides and fertilizers, pumping and using water in the landscape. These practices are becoming increasingly subject to local, state and federal regulations, and are less attractive to your clients.

Additionally, the consequences of global warming will clearly impact the landscaping expertise needed to differentiate your business in the marketplace.

You may be required to deal with the problems associated with:

- Planting and hardiness zones that are changing
- Plants that are leafing out and blooming earlier
- Birds and butterflies that are breeding and migrating earlier
- Wildlife species that are shifting their ranges

Studies indicate, for example, that increasing temperatures could make aphids capable of producing more than one million offspring in 2 months — up from the 300,000 that they can currently produce. Drought-stressed plants are more attractive to aphids and susceptible to disease. Tough, invasive pest plants are expected to be able to exploit new conditions and expand their spread. Plant species native to the Russian River Watershed may find the conditions to which they have adapted changing dramatically. It may become more difficult to help your clients provide habitat and food for wildlife, as caterpillars emerge before the leaves of their host plants, or bees arrive too early or late to feed on the flowers that provide them with food.

Put on your Garden Gloves and Fight Global Warming

You can distinguish yourself in the marketplace by preparing to deal with landscape problems associated with global warming and by becoming part of the solution. The practices detailed in these *Russian River-Friendly Guidelines* are effective steps toward a solution to the problem of global warming. Direct and immediate ways to reduce the impact of the landscapes you design, install or maintain, include:

- Keeping yard waste out of landfills where it decomposes anaerobically, releasing methane
- Decreasing the burning of fossil fuels by:
  - Keeping plant debris on site by grasscycling, mulching and composting
  - Using hand-powered tools or equipment powered by biofuels
  - Carpooling and carefully planning routes
  - Irrigating efficiently
  - Reducing lawn size
  - Selecting low maintenance and drought-tolerant California native or Mediterranean plants
- Nurturing the soil to maintain its ability to store carbon by:
  - Efficiently using natural fertilizers as a source of nitrogen
  - Building the organic matter content of the soil
  - Minimizing site and soil disturbance
  - Protecting the soil from compaction
- Planting and protecting trees

How Russian River-Friendly Landscaping Reduces Greenhouse Gases

Less organic matter transported
= less CO_2

Less organic debris in the landfill
= less CH_4

Reduced mowing & trimming
= less CO_2

Fewer fertilizers & pesticides
= less N_2O & CO_2

Reduced water consumption
= less CO_2

Increased soil organic matter
= less CO_2

* INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE.

Returning organic matter to the soil…

…is again key to protecting our environment. Just as managing plant debris as if it is a resource and not a waste product can be the link between protecting our watersheds and conserving our resources, so too is this approach critical to reducing the emission of greenhouse gases that contribute to global warming. Consider the practices listed on the previous page that are related to the management of landscape trimmings and grass clippings. You can provide your clients with the most advanced, comprehensive approach to fighting global warming by using sound, effective soil-building strategies.

Soil Strategies for Reducing Greenhouse Gas Emissions

Carbon Dioxide (CO_2)

- Minimize soil erosion
  - Maintain cover and minimize disturbance
- Build soil organic matter
  - Add compost and maintain vegetation
- Minimize soil grading and transport

Methane (CH_4)

- Maintain aerobic conditions
  - Limit compaction
  - Maintain subsurface drainage
  - Build organic matter with compost and healthy vegetation

Nitrous Oxide (N_2O)

- Verify need for nitrogen fertilizers by testing soils
- Use nitrogen fertilizers efficiently
  - Apply during times of active uptake
  - Don't leave fertilizer at the soil surface
  - Apply nitrogen during cool weather
  - Do not apply nitrogen to saturated soil or if rain is expected

Soil stores

approximately twice as much carbon as that in the atmosphere. This pool of organic carbon can help offset the impact on global warming of carbon dioxide releases from other sources.

FROM: LAL, R, SOIL CARBON SEQUESTRATION IMPACTS ON GLOBAL CLIMATE CHANGE AND FOOD SECURITY, SCIENCE, 2004 IN SUSTAINABLE SITES INITIATIVE, PRELIMINARY REPORT ON THE STANDARDS & GUIDELINES, NOV. 2007.

Emissions Reductions Per Acre of Russian River Friendly Landscaping

Measure	Tons eCO_2*
Waste kept on site	2.5
Avoided transportation	1.1
Reduced shearing and mowing	.2
Reduced water needs	.2
Total	**4.0**

*CARBON DIOXIDE EMISSIONS

RUSSIAN RIVER FRIENDLY LANDSCAPING

You can be the first line of defense.

Whether a site is next to a creek or miles away, your landscaping activities impact the quality of the Russian River Watershed and the global climate.

The landscape you design, construct or maintain can conserve valuable resources, prevent waste and pollution, protect wildlife habitat, and reconnect your clients and the public to the beauty and value of the Russian River ecosystem.