GreenScapes
U.S. EPA Sustainable Landscapes

Activities List

What if you could **spend less** on labor, equipment, and supplies and still have a **great looking and healthy** landscape? You can. GreenScapes activities—**simple, cost-effective, and sustainable** solutions to increase resource **efficiency**—recommend products and practices that meet your needs but have better **environmental** profiles than business-as-usual methods. Take a look at the following list of GreenScapes activities and try to **integrate** some of them into your **site planning** and **management**.

SITE PLANNING

LESS TO LANDFILL

- ☐ **1.** Keep plant debris on site:
  - **A.** Specify areas at least 10 feet away from hard surfaces and storm drains to be dedicated as leaf and plant debris repositories for mulch.
  - **B.** Specify that some trees identified for removal should be chipped for use as mulch on site.
  - **C.** Specify a dedicated area for on-site composting.
- ☐ **2.** Specify a dedicated, easily accessible area for the collection and storage of materials for recycling, such as bottles, cans, paper, landscape trimmings, and food waste.
- ☐ **3.** Specify a minimum of 25% recycled aggregate (crushed concrete) for walkway, driveway, roadway base, and other uses.
- ☐ **4.** Specify high-performance concrete with fly ash and other recycled materials as substitutes for Portland cement to extend structure life.
- ☐ **5.** Specify rubberized asphalt made from recycled tires for parking lots and roadways.
- ☐ **6.** Specify recycled glass for golf course bunker sand, beach sand, or filter media.

GreenScapes
U.S. EPA Sustainable Landscapes

SITE PLANNING

NURTURE THE SOIL

- ○ **1.** Convert a brownfield site to a green space.
- ○ **2.** Minimize site disturbance:
  - **A.** On greenfield sites, limit site disturbance to conserve and protect topography, vegetation, and hydrology.
  - **B.** On previously developed sites, restore vegetation and hydrology.
- ○ **3.** Submit soil samples to a laboratory for analysis and recommendations regarding the use of soil organic matter and natural fertilizers.
- ○ **4.** Specify the use of natural soil amendments and fertilizers.
- ○ **5.** Specify the removal and temporary storage of topsoil before grading and the re-spreading of topsoil after grading; include a maximum topsoil pile height of 6 feet, as well as measures to protect the stored topsoil from erosion.
- ○ **6.** Specify compost berms, blankets, or socks for erosion and sediment control; learn about best management practices on the GreenScapes Resources Web page.
- ○ **7.** Protect soil from compaction:
  - **A.** Specify the installation and maintenance of barriers to prohibit parking or materials staging in areas identified for protection.
  - **B.** Avoid working with soil when wet.
  - **C.** Specify the aeration of compacted soils to a depth of at least 8-12 inches, before planting, for all landscaped areas that cannot be protected during construction.
- ○ **8.** Specify the application of 2-4 inches of mulch over soil after construction for erosion and sediment control.
- ○ **9.** Use integrated pest management (IPM) design and construction practices to prevent pest problems:
  - **A.** Specify sheet mulch for weed control.
  - **B.** Use organic-based natural pre-emergents, if any are needed.

GreenScapes
U.S. EPA Sustainable Landscapes

SITE PLANNING

CONSERVE WATER

- ☐ **1.** Design landscapes that do not require a supplemental water supply (termed "xeriscaping").
- ☐ **2.** Specify on-site rainwater collection and recycled water and/or graywater use where permitted (graywater is non-toxic wastewater generated from processes such as dishwashing):
  - **A.** Plumb irrigation systems and/or ornamental uses of water for recycled water where available from a municipal source.
  - **B.** Design an irrigation system to store and use rainwater and/or graywater to satisfy a portion of the site's irrigation needs.
- ☐ **3.** Design an underground drip irrigation system; compared to using above-ground sprinklers, watering plants at the roots reduces water consumption by 25-30%.
- ☐ **4.** Design and install high-efficiency irrigation systems:
  - **A.** Use EPA WaterSense certified equipment and irrigation professionals.
  - **B.** Specify weather-based/automatic/self-adjusting irrigation controllers that include a moisture and/or rain sensor shutoff.
  - **C.** Do not specify sprinkler and spray heads for areas less than 8 feet wide; avoid mist settings to increase accuracy.
  - **D.** Specify and install irrigation equipment with an operational distribution uniformity of at least 80% for at least 75% of non-turf irrigated areas; examples include drip irrigation equipment and bubblers.
  - **E.** Specify and install equipment with a precipitation rate of 1 inch or less per hour and an operational distribution uniformity of 70% or greater for all turf areas.
  - **F.** Design and install an irrigation system that will be operated at 70% or greater reference evapotranspiration. (Evapotranspiration is the process of transferring water vapor to the atmosphere through the evaporation of water and the transpiration of plants.)
- ☐ **5.** Specify a dedicated irrigation meter or submeter to track irrigation water use.

SITE PLANNING

IMPROVE WATER AND AIR QUALITY

- ○ **1.** Minimize impervious surfaces by installing permeable paving, gravel, or other porous surfaces for at least 25% and preferably at least 50% or more of the paved area; no impervious surfaces should directly connect to the storm drain.
- ○ **2.** Design a system to capture and filter storm water:
  - **A.** Direct, capture, and filter at least 85% and preferably 100% of stormwater into bioswales (vegetated drainage courses with sloped sides), infiltration planters, detention basins, stormwater wetlands, green roofs, or other options that reflect landscape stormwater best management practices.
  - **B.** For bioswales, specify flat bottoms of at least 18 inches across and/or rock cobble at points of concentrated flow; do not put turf in bioswales.

CREATE WILDLIFE HABITAT

- ○ **1.** Provide water and/or shelter for wildlife, such as birdhouses, bathhouses, boulders, logs, wood piles, large native shrubs, and trees.
- ○ **2.** Conserve or restore natural areas and wildlife corridors:
  - **A.** Specify landscape design to preserve at least 80% of existing mature healthy trees, with penalties for destruction of protected trees included in the construction contract.
  - **B.** Specify landscape design to increase open space on site and/or to connect the site to other open space or wildlife corridors.
  - **C.** Specify the creation or protection of a diverse plant buffer of low-maintenance vegetation along creeks, shorelines, or mono-cultured landscaped areas.

GreenScapes
U.S. EPA Sustainable Landscapes

PLANTING

LESS TO LANDFILL

- ○ **1.** Select low-maintenance/slow-growing plants and grasses to reduce landscape maintenance and waste.
- ○ **2.** Plant right for the site:
  - **A.** Choose and locate plants to grow to mature size within allotted space and avoid shearing.
  - **B.** Choose native, drought-tolerant, or climate-adaptive species for at least 75% of all non-turf plants, and preferably 100%; do not plant invasive species (for more information, see the USDA PLANTS database).
  - **C.** Ensure that 100% of the non-turf palette will require no irrigation once established.

NURTURE THE SOIL

- ○ **1.** Amend the soil with compost before planting:
  - **A.** Specify quality compost as the soil amendment, at rates indicated by a soil analysis, to bring the soil organic matter content to a minimum of 1 inch of quality compost or at least 3.5-5% or more by dry weight.
  - **B.** Specify the use of compost from processors that participate in the U.S. Composting Council Seal of Testing Assurance Program.

CONSERVE WATER

- ○ **1.** Minimize turf space.
- ○ **2.** Turf should not be installed in medians or areas less than 8 feet wide.
  - **A.** Turf should not be installed on slopes exceeding 10%.
  - **B.** Total turf area should be limited to a maximum of 15-25%, with sports or multiple use fields exempted.
- ○ **3.** Implement hydrozoning – Group plants by water requirement and sun exposure; identify hydrozones on the irrigation plan with separate irrigation valves for differing water needs, if irrigation is required.

GreenScapes
U.S. EPA Sustainable Landscapes

PLANTING

CONSERVE ENERGY

- ○ **1.** Provide shade to control building temperatures – Protect existing trees and/or specify new trees such that at least 50% of west-facing glazing and walls will be shaded at 4:00 p.m. in September by deciduous trees in their mature state.
- ○ **2.** Plant trees so that at least 50% of the paved site area is shaded and at least 1 tree species is a large-stature species.

CREATE WILDLIFE HABITAT

- ○ **1.** Specify native plants for at least 50% of non-turf plants.
- ○ **2.** Diversify plant species:
  - **A.** Landscapes less than 20,000 square feet should have at least 20-30 distinct species.
  - **B.** Landscapes with 20,000-43,560 square feet (1 acre) should have a minimum of 30-50 distinct species.
  - **C.** Landscapes more than 1 acre should include at least 40 distinct species, with 1 additional species per acre.
- ○ **3.** Implement an integrated pest management (IPM) program; attract insect predators, such as birds and bats.

MATERIALS AND ENERGY MANAGEMENT

LESS TO LANDFILL

- ☐ **1.** Use salvaged items wherever possible; donate usable plants and materials when you are done with them.
- ☐ **2.** Purchase non-plant landscape materials made from Forest Stewardship Council certified wood or with the following percentages of recycled material content (e.g., plastic or composite lumber):
  - **A.** Decking – 100% of non-structural materials
  - **B.** Fencing – 100% of non-structural materials
  - **C.** Outdoor furniture such as bike racks, benches, tables, and chairs – 50% minimum
  - **D.** Planters or retaining walls – 100%
  - **E.** Parking stops or lighting/sign posts – 100%
  - **F.** Play structures or surfaces – 100%
  - **G.** Patio blocks, edging or decorative glass mulch – 100%
  - **H.** Hoses and drip irrigation systems – 100%
- ☐ **3.** Choose recycled content plastic lumber rather than pressure-treated wood to extend the usable life of decks, benches, and outdoor structures.
- ☐ **4.** Purchase local compost and mulch recycled from organic materials such as plants or wood waste.
- ☐ **5.** Restructure waste disposal contracts to incentivize waste reduction, composting, and recycling; pay a weight-based rate or switch to less frequent pickups.
- ☐ **6.** Compost on site or send organic materials to a facility for composting.
- ☐ **7.** Provide recycling receptacles next to trash receptacles.
- ☐ **8.** Return wooden pallets and other shipping materials to the supplier whenever possible; take apart non-returnable wood pallets to reuse the wood as edging around plant beds or as mulch.
- ☐ **9.** Deconstruct, reuse, and recycle all possible materials, such as metal, wood, shingles, concrete, and pavement, when replacing an existing non-plant structure.
- ☐ **10.** Recycle used oil and tires from vehicles and equipment.
- ☐ **11.** Track recycling data and identify ways to improve your waste reduction program; become an EPA WasteWise Partner and receive free technical assistance and resources.

GreenScapes
U.S. EPA Sustainable Landscapes

MATERIALS AND ENERGY MANAGEMENT

CONSERVE ENERGY AND REDUCE EMISSIONS

- ○ **1.** Design lighting carefully:
  - **A.** Specify low-energy fixtures for all site lighting.
  - **B.** Specify solar photovoltaic lights for all path lighting and at least 50% of other site lighting.
  - **C.** Reduce light pollution; exterior luminaries should emit no light above horizontal or should be certified with the International Dark Sky Association Fixture Seal of Approval.
  - **D.** Side and other exterior building lighting should not cast direct beam illumination onto adjacent properties or rights of way.
- ○ **2.** Choose and maintain equipment for fuel conservation:
  - **A.** Specify solar power pumps for water features.
  - **B.** Use hand or electric equipment rather than gas-powered equipment.
  - **C.** Use fuel-efficient and alternative fueled vehicles and equipment (e.g., compressed natural gas, propane, or electric).
  - **D.** Use biobased lubricants in place of petroleum.
- ○ **3.** Schedule regular equipment maintenance to increase energy efficiency; clean equipment with compressed air whenever possible.
- ○ **4.** Reduce heat island effect with cool site techniques on at least 50% of the paved site area.
- ○ **5.** Reuse materials on site and purchase locally to reduce transportation costs and emissions; 100% of any stone and non-concrete hardscape materials should be produced within 500 miles of the project site.

SITE MAINTENANCE

LESS TO LANDFILL

- ☐ **1.** Keep plant debris on site:
  - **A.** Grasscycle – Leave grass clippings on the turf to decompose quickly and act as a natural fertilizer.
  - **B.** Compost plant debris on site.
  - **C.** Produce mulch – Leaves and/or plant debris less than 4 inches (including cut or chipped wood waste and tree clippings) should be re-incorporated into the mulch layer of landscaped areas away from storm drains.
- ☐ **2.** Separate plant debris:
  - **A.** If plant debris cannot be used on site, separate it from other refuse and take it to a facility where it will be used to produce compost or mulch.
  - **B.** Donate healthy plants to a local nonprofit or other organization when reconfiguring or removing trees and shrubs from the landscape.

NURTURE THE SOIL

- ☐ **1.** Protect the soil from compaction; do not work with the soil when it is wet.
- ☐ **2.** Feed soils naturally and avoid synthetic fertilizers:
  - **A.** Top dress turf with finely screened quality compost after aeration 1-4 times per year.
  - **B.** Use compost, compost tea, or other naturally occurring, non-synthetic fertilizers as plant and soil amendment for all landscape areas.
  - **C.** Mulch regularly to a minimum depth of 2-4 inches.

GreenScapes
U.S. EPA Sustainable Landscapes

SITE MAINTENANCE

CONSERVE WATER

- ☐ **1.** Improve water absorption and retention by adding compost to the soil and mulch over root zones.
- ☐ **2.** Manage and maintain the irrigation system so that every drop counts:
  - **A.** Read the dedicated meter and report water use on a scheduled basis.
  - **B.** When an irrigation system is installed, the contractor should provide a precipitation rate for each valve zone, area calculations for each irrigation zone, and the irrigation plans, including the location of irrigation supply shutoff and the Web address for watering index information.
  - **C.** Check irrigation equipment regularly; have a professional check the system every 2-3 years to optimize water efficiency and save money by avoiding leaks and damages.
  - **D.** Repair sprinkler system leaks and damages quickly.
  - **E.** Check soil moisture content before watering.
  - **F.** Water at dawn before the dew has dried and the temperature encourages evaporation.
- ☐ **3.** Water deeply and less frequently; deep watering grows stronger, larger roots that are better equipped to withstand drought.

SITE MAINTENANCE

IMPROVE WATER AND AIR QUALITY

- [ ] **1.** Practice integrated pest management (IPM) to reduce the use of chemicals.
- [ ] **2.** Keep grass 3 inches high; taller grass blocks the sunlight and grows deeper, healthier roots that can compete well against weeds and reduce the need to spray (applicable in all but the southernmost U.S. states).
- [ ] **3.** Overseed turf so weeds will not have any room to grow.
- [ ] **4.** Grasscycle – Leave grass clippings on the turf to decompose quickly and act as a natural fertilizer.
- [ ] **5.** Use mulch around trees and in flowering beds to help the soil retain water.
- [ ] **6.** Spot treat, if possible, when applying pesticides.
- [ ] **7.** Return unused or excess chemical product to the supplier, if possible; otherwise, contact the local solid waste agency and state pesticide disposal program for guidance.
- [ ] **8.** Purchase and use an organic, slow-release, water-insoluble fertilizer.
- [ ] **9.** Repair all equipment oil leaks immediately and away from the landscape site.
- [ ] **10.** Use biobased lubricants on landscape maintenance equipment.

GreenScapes
U.S. EPA Sustainable Landscapes

TOOLS FOR YOUR GREENSCAPES ACTIVITIES

GreenScapes has developed several topic-specific calculators to help you compare the costs of GreenScapes activities to their business-as-usual counterparts:

1. Reusing and Recycling Landscape Waste Cost Calculator.
2. Resource-Conserving Landscape Cost Calculator.
3. Erosion Control Cost Calculator.
4. Decking Cost Calculator.
5. Sub-Surface Drip Irrigation Cost Calculator.
6. Pallets Cost Calculator.

WasteWise is a free, voluntary EPA partnership program that provides technical assistance and resources to help organizations develop waste reduction strategies and track their progress. Join today or visit the Web site to learn more.

Look for the EPA WaterSense label to purchase quality, water-efficient irrigation equipment. Find a WaterSense certified irrigation professional near you by using the program's online directory.

The WAste Reduction Model (WARM) assists solid waste managers in determining the GHG impacts of their waste management practices. WARM addresses source reduction, reuse, composting, recycling, landfilling, and incineration across a list of common materials to compare the GHG and energy impacts of a company's baseline practices to alternative scenarios.

The Recycled Content (ReCon) Tool helps estimate the lifecycle GHG and energy benefits of switching from a virgin-manufactured product to a recycled content product, or of increasing the recycled content in a product.

Visit the GreenScapes Resources page.

Special thanks to the Bay Friendly Landscape Program for contributing information for this activities list.

Site Planning
Planting
Materials and Energy Management
Site Maintenance
Tools for your GreenScapes Activities

GreenScapes
www.epa.gov/GreenScapes

WasteWise
www.epa.gov/WasteWise

WaterSense
www.epa.gov/WaterSense

WAste Reduction Model
www.epa.gov/WARM

Recycled Content Tool
www.epa.gov/climatechange/wycd/waste/calculators/ReCon_home.html

U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460
www.epa.gov

EPA530-F-09-025
October 2009

GreenScapes
U.S. EPA Sustainable Landscapes