2017 Greenway Symposium
Great Rivers Greenway

Landscape Care

Ted Spaid, ASLA, Partner,
SWT Design
• Team of twenty two landscape architects, urban design, planners, horticulturalists
• Founded in parks and recreation
• Focus on sustainable design
• Maintenance Management
Novus International
• Owner
• Nutritional Products
• Livestock, Pets & People
• Sustainable Focus

Swt Design
• Landscape Architect
• Horticultural Mediator
• Contract Manager

Landesign, LLC
• Maintenance
• Landscaping
• Residential / Commercial
• Construction / Design-Build

Project Introduction
PROJECT INTRODUCTION
DEVELOPING A PLAN FOR OVERSEEING MAINTENANCE CONTRACTS

• Create plan for success
• Develop framework for accountability
• Ongoing contract management

Project Introduction
PLANNING FOR SUCCESS
ESTABLISH SITE GOALS

- Physical example of corporate commitment to sustainability
- Maintain enjoyable outdoor amenity
- Foster healthy ecosystems, natural habitats
- Human health and well-being
UNDERSTAND SITE CONDITIONS

• Soils
• Hydrology
• Native habitats
• Site uses
• Site context
• Connectivity
**Soils Map**

Note:
Colors represent pre-construction soil sample zones. Numbered markers are the approximate locations where samples were taken for each zone.

**Testing For Healthy Soil**

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<tr>
<th>Test</th>
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<td>Organic Matter</td>
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<td>Magnesium</td>
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*Apply 0.5 cu yd muck/100 sq ft.*

*(Add or compact, place and incorporate)*

*Apply 1 cu yd/1000 sq ft.*

*Apply 0.2 cu yd/1000 sq ft.*

*No adjustment necessary.*
MAINTENANCE GOALS

• Soil, Water, and Habitat Stewardship
• PHC – Plant Health Care
• IPM – Integrated Pest Management
• Short and long term aesthetic tolerances for establishment period and climax state
CREATE FRAMEWORK FOR ACCOUNTABILITY

• Client education
• Contractor partnership
• Thorough Specifications
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# Maintenance Task Matrix

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PLANT STEWARDSHIP

- Understanding existing plant material
- General grounds clean-up and weeding
- Pruning
- Fertilizing
- Mulching
- Plant Division and Staking
• Understanding common weed pests
• Understanding common insect pests
• Understanding common disorders: foliar, stem, root, and trunk

Insect Infestations Common to Region

Gypsy Moth

General Description and Host: The gypsy moth is the most significant tree-defoliating insect in the eastern U.S. and is slowly expanding its range to include Missouri. Gypsy moth caterpillars have very large appetites and are capable of feeding on 500 species of trees and shrubs. The caterpillars defoliate trees quickly and are best controlled when their populations are at low levels. Gypsy moth caterpillars do not build tents. The adult moths are active during daylight hours and the adult male may be observed as an active brown moth flying about in a zig-zag pattern. The large, off-white female moth doesn’t fly but may be observed crawling on the ground or clinging to the bark of trees.

Gypsy moth caterpillars feed on leaves of their preferred host plants, most species of oak. As they increase in size, they are capable of defoliating entire trees. Older caterpillars will feed on the foliage of trees that younger caterpillars avoid. Caterpillars can attain a size of 2 inches and are hairy with a beige head. Prominent blue dots followed by red dots are distinguishable along the back. Gypsy moths can be serious pests of oak trees and will readily feed on birch, willow, hawthorn, fruit trees, and many shrubs. The caterpillars are best controlled when their populations are at low levels.

Life Cycle: Egg masses are laid during July on the underside of branches, on tree trunks, firewood, or in other shady spots. They may also be deposited on recreational vehicles, which facilitates the spread of gypsy moth when they are moved to another site. The egg masses overwinter and caterpillars emerge from egg masses beginning the following April. Caterpillars climb up to the tops of the trees and begin to feed by chewing small pinholes in the tender, young leaves. As the caterpillars get older, they begin to feed at night. At dawn they crawl down the tree and rest in the leaf litter, returning to the treetop at dusk. Caterpillars defoliate trees for 6–8 weeks and pupate for 7–14 days in leaf litter in late June to mid-July. Adult moths emerge from pupation and are present from July into August. The female gypsy moth is off-white and does not fly. The smaller, male moth is brown and is active during daylight hours.

Integrated Pest Management Control: It is important to maintain plant health. Young healthy trees can withstand one to three defoliations with minimal damage. Older trees may not be able to withstand more than one defoliation.

Tree trunks can be wrapped with burlap bands or sticky bands in early June to trap the older gypsy moth caterpillar as it treks from the canopy to hiding places on the ground. Remove trapped caterpillars daily. Sticky bands have to be replaced periodically.

Bacillus thuringiensis kurstaki (8%) is a biological insecticide that kills caterpillars. Spray Btk on the leaves of the tree at the time the Spirea x

INTEGRATED PEST MANAGEMENT

• Control through planning
• Control through cultural practices
• Control through physical means
• Control through biological means
• Control through pesticides
INVASIVE PLANT MANAGEMENT

- Understanding local invasives

INVASIVE PLANTS COMMON TO REGION
Cirsium arvense - Canada Thistle

Plant Characteristics: A 2 to 5 foot tall forb with deep, wide spreading, horizontal roots. The grooved, slender stems branch only at the top, becoming covered with hair as the plant grows. The oblong, tapering, sessile leaves are deeply divided, with prickly margins. Leaves are green on both sides with a smooth or slightly downy lower surface. Numerous small, compact (three-quarter inch), rose-purple or white flowers appear on upper stems from June to September. Seeds are small (three-sixteenths of an inch long), light brown, smooth and slightly tapered, with a tuft of tan hair loosely attached to the tip.

Distribution: Naturalized from Europe, occurs throughout the northern U.S. east of the Rocky Mountains. It is scattered throughout the northern two-thirds of Missouri.

Habitat: Does best in disturbed areas (overgrazed pastures, old fields, waste places, fence rows, along roadsides). It sometimes occurs in wet areas where water levels fluctuate (along stream banks and ditches). It can invade sedge meadows and wet prairies from adjacent disturbed sites. This thistle does not do well in undisturbed prairies, good to excellent pastures, or in woodland. Plants are tall and lax, with few flowers, on sites that are shaded most of the day.

Life Cycle: This dioecious, weedy perennial occurs in patches, commonly in disturbed areas. Introduction to new areas occurs mostly by windblown seed or sometimes by run-off in ditches. It spreads rapidly by rhizomes or root segments. Lateral roots or more feet deep spread from a fibrous taproot. Aerial shoots are sent up at 2 to 6 inch intervals. Basal leaves are produced the first year, flowering stems the next. Pollination is mostly by honeybees, and wind pollination is limited. Most seeds germinate within one year. Some seeds immediately produce rosettes before winter and emerge to flower the next spring. Seeds remain viable in soil up to 20 years in some cases. Emergence occurs in early May, with bolting in mid-to-late June. As frequency of Canada thistle increases at a site, species diversity decreases, possibly due to allelopathic substances.


FRAMEWORK
ORGANIC MATERIALS MANAGEMENT

• Healthy and diseased material disposal

• Kitchen garden plant material disposal

• Reduction of bio-mass for fire prevention
SOIL STEWARDSHIP

• Reduce erosion
• Chemical alteration reduction
• Balanced soil health
• Soil testing
• Soil compaction and aeration
**Water Use and Irrigation**

- Typical water consumption
- Temporary irrigation
- Vegetable garden irrigation

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### Novus International Water Monitoring - 2011

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STORMWATER MANAGEMENT

• BMP maintenance

• Water feature monitoring and treatment
SNOW AND ICE MANAGEMENT

• Chemical use

• Stockpile delineation
Weekly Site Inspections

- Performed by contractor
- Weekly report of activities
- Submitted to client

Contract Management
MONTHLY SITE OVERVIEW

• Performed by landscape architect

• Report of site condition

• Submitted to client

CONTRACT MANAGEMENT
**Annual Re-evaluation and Adaptive Management**

- Performed by landscape architect and contractor
- Review report documents and site conditions
- Identify: successes, failures, problem areas
- Review: goals, budgets, schedules

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**CONTRACT MANAGEMENT**
CONCLUSION
SUCCESSFUL MAINTENANCE MANAGEMENT

• Plan for maintenance success
• Create framework for accountability
• Manage, monitor, and re-evaluate
Questions