

PUBLIC NOTICE

In accordance with the Statutes of the State of Illinois and the Ordinances of the City of Highland Park, the next meeting of the Natural Resources Commission of the City of Highland Park is scheduled to be held at the hour of 6:30 p.m. on Wednesday, April 9, 2014 at the City of Highland Park City Hall, 1707 St. Johns Avenue, Highland Park, Illinois, during which it is anticipated there will be a discussion of the following:

CITY OF HIGHLAND PARK
NATURAL RESOURCES COMMISSION
WEDNESDAY, APRIL 9, 2014
HIGHLAND PARK CITY HALL
1707 ST. JOHNS AVENUE
HIGHLAND PARK, ILLINOIS
6:30 P.M.

MEETING AGENDA

I. Call to Order

II. Roll Call

III. Approval of Minutes: March 12, 2014

IV. Business from the Public

V. New Business

- A. Consideration and Approval of the Creation of a Steep Slope Best Management Practices Brochure, Conducted in Partnership with the Park District of Highland Park and Funded Through the Coastal Zone Management Program Grant
- B. Discussion of Commission Involvement in Chicago River Day on May 11, 2014
- C. Discussion on Taste of Highland Park Table, August 22-24, 2014

VI. Old Business

- A. Status Report on the 2014 Environmental Movie Series Screenings at the Highland Park Library
- B. Status Report on the Sustainability Master Plan for CY2014

VII. Other Business

- A. Commissioner Comments
- B. Administrative Items

VIII. Adjournment

**MINUTES OF A REGULAR MEETING OF
THE NATURAL RESOURCES COMMISSION OF THE CITY OF HIGHLAND
PARK, ILLINOIS**

MEETING DATE: March 12, 2014

MEETING LOCATION: Pre-Session Room, Highland Park City Hall, 1707 St. Johns Avenue, Highland Park, Illinois

CALL TO ORDER

At 6:30 p.m., Chairwoman Coyle called the meeting to order and the Staff Liaison called the roll.

ROLL CALL

Members Present: Coyle, Hannick, Rheinstrom, Ross (6:40 p.m.), Wagenius, Stone, Stumpf and Lewittes

Members Absent: Matthews, Sultan and Facchini

The Staff Liaison declared that there was a quorum of the Commission present.

Staff Present: Staff Liaison Barbara Cates, Management Analyst Karen Berardi, Sustainability Consultant Grace Rink, Public Works Director Ramesh Kanapareddy, Senior Planner Lee Smith

Also Present: Citizen Advisor Mark Nolan Hill

MINUTES

A. Regular Meeting of the Natural Resources Commission—February 12, 2014

Commissioner Wagenius moved to approve the minutes of a regular meeting held on February 12, 2013 as presented. Commissioner Hannick seconded the motion.

On a voice vote, Chairwoman Coyle declared that the motion passed unanimously (4-0).

BUSINESS FROM THE PUBLIC

There was no new business from the public presented for consideration.

NEW BUSINESS

A. Discussion and Recommendation of Priorities in the Sustainability Master Plan for CY2014

Sustainability Consultant Grace Rink solicited input from the Commission on

sustainability proprieties for 2014. Rink discussed opportunities to reignite the Green Alliance.

Commissioner Ross joined the meeting at 6:40 p.m.

Commissioners encouraged Rink to quantify accomplishments and goals, possibly in the form of benchmark measurements. Commissioners were invited to submit other comments to Management Analyst Berardi via email.

B. Consideration of a Beach Structure Permit Application from the Park District of Highland Park for the Demolition of an Existing Sewage Treatment Plant and Construction of a Beach within the Lake Michigan Protection Zone at Millard Park, Located at 15 Ravine Drive

Staff Liaison Cates presented an overview of this agenda item and the Commission discussed the proposed Beach Permit application. Rob and Marcie Bearman of 1405 Waverly Road indicated that they lived nearby the site and were interested in learning more about the proposal.

Commissioner Rheinstrom moved to direct staff to draft Findings of Fact recommending City Council approval of the requested Beach Structure Permit. Commissioner Ross seconded the motion. On a voice vote, the motion passed unanimously (5-0).

C. Consideration and Approval of Findings of Fact Recommending City Council Approval of a Proposed Beach Structure Permit Application for Regulated Activities within the Lake Michigan Protection Zone at Millard Park, Located at 15 Ravine Drive

The Commission reviewed the staff-drafted Findings of Fact and noted that the word “obsolescent” should be replaced with “obsolete.” Commissioner Ross motioned to approve the Findings recommending City Council approval and forward them to the Council for final determination. Commissioner Rheinstrom seconded the motion. On a voice vote, the motion passed unanimously (5-0).

D. Consideration of a Request for a Steep Slope Variation at 12 Cliff Road in the Town of Fort Sheridan and Provision of a Recommendation to the City Council for Final Determination

Commissioner Hannick recused herself due to professional affiliations with the Town of Fort Sheridan and departed the meeting at 7:30 p.m.

Senior Planner Lee Smith presented an overview of this agenda item, noting that the City Council directed the matter to come to the Commission for review and input. The Commission discussed the proposal and Commissioner Wagenius motioned to recommend City Council approval of the requested Steep Slope variation at 12 Cliff Road. Commissioner Rheinstrom seconded the motion. On a voice vote, the motion passed unanimously (4-0).

OLD BUSINESS

A. Status Report on the Creation of a Steep Slope Best Management Practices Brochure, Conducted in Partnership with the Park District of Highland Park and Funded Through the Coastal Zone Management Program Grant

Staff Liaison Cates noted that there were several special meetings set to review the preliminary draft of the brochure copy and that the final copy would be presented to the Commission for review in April.

B. Status Report on the 2014 Environmental Movie Series Screenings at the Highland Park Library

The Commission determined that Chairwoman Coyle would introduce Donnie Dann at the upcoming screening of the *Lost Bird Project* film.

OTHER BUSINESS

Councilwoman Stone provided several updates related to parking garage lights, vehicle charging stations and illegal tree removal fines.

ADJOURNMENT

Chairwoman Coyle adjourned the meeting at 8:05 p.m.

Respectfully Submitted,

Barbara E. Cates, Secretary

MINUTES APPROVED BY THE NATURAL RESOURCES COMMISSION ON _____

- WITH NO CORRECTIONS _____
- WITH CORRECTIONS _____
(SEE MINUTES OF [_____] MEETING FOR CORRECTIONS)



Memorandum

To: Members of the Natural Resources Commission

From: Karen Berardi, Management Analyst

Date: April 4, 2014

Re: Agenda Items for the April 9th Meeting of the Natural Resources Commission

NEW BUSINESS:

A. Consideration and Approval of the Creation of a Steep Slope Best Management Practices Brochure, Conducted in Partnership with the Park District of Highland Park and Funded Through the Coastal Zone Management Program Grant

Attached are several documents that contain the text and images that will be used in the final brochure once designed. Park District Representative Rebecca Grill and City Forester Joe O'Neill will be present to facilitate the discussion and provide a recap of the final product.

B. Discussion of Commission Involvement in Chicago River Day on May 11, 2014

Vice-Chairman Matthews will provide information and lead a discussion of this agenda item.

C. Discussion on Taste of Highland Park Table, August 22-24, 2014

Included in the 2014 NRC Work Plan was a task to host a booth at the Taste of Highland Park. City staff has arranged a booth at the event that will be located near the Taste tents. The Taste of Highland Park is scheduled in conjunction with the Port Clinton Art Festival, which brings thousands of visitors to Highland Park for the weekend. The Taste hours are Friday from 11:00 a.m. to 10:00 p.m., Saturday from 10:00 a.m. to 10:00 p.m. and Sunday from 10:00 a.m. to 6:00 p.m.

A table, chairs and canopy will be available at the event, in addition to a drop cloth provided by the City. More information on the event itself can be found at <http://amdurproductions.com/taste-of-highland-park/>.

OLD BUSINESS:

A. Status Report on the 2014 Environmental Movie Series Screenings at the Highland Park Library

Last Call at the Oasis successfully screened on January 26th at 2:00 p.m., with Metropolitan Water Reclamation District Commissioner Debra Shore as the guest speaker. *The Lost Bird Project* screened on March 16th at 2:00 p.m., with Highland Park Resident and Bird Conservationist Donnie Dann as the guest speaker. Members who attended will be invited to share their recollections of the event.

A potential film screening to be considered in 2014 is *City Dark*, which highlights light pollution and the disappearing night sky. A trailer for the film can be viewed at the website www.thecitydark.com. The City has coordinated with the Park District to potentially host this film at the Heller Nature Center in the fall followed by star-gazing with telescopes and a guest speaker.

B. Discussion and Recommendation of Priorities in the Sustainability Master Plan for CY2014

Management Analyst Karen Berardi will provide an update on the sustainability work plan discussed at the March meeting and distributed to the commission.

ATTACHMENTS:

- Steep Slope Best Management Practices Brochure
 - Maintaining Ravine and Bluff Vegetation
 - Steep Slope Tree and Shrub Species
 - Steep Slope Herbaceous Removal
 - Openlands Canopy
 - Other Images

MAINTAINING RAVINE AND BLUFF VEGETATION

A Guide to Responsible Land Management for Property Owners and Landscape Professionals

INTRODUCTION

The ravine and bluff ecosystems near the lakeshore of Highland Park are unique and fragile landscapes which require management strategies considerate of their high ecological and aesthetic value.

Thoughtful stewardship of these landscapes is the responsibility of each property owner and land care professional who undertakes their maintenance or modification. Over the years, many north shore ravines and bluffs have received little or poor maintenance, such as misinformed landscape practices which have resulted in an influx of invasive species, a decrease in slope stability, a loss of native plant diversity, and a decline in wildlife habitat. By following the guidelines in this brochure, property owners can avoid common mistakes that may degrade slope stability while enhancing property aesthetics and preserving these important natural resources. Please share this information with those who care for your ravine or bluff property.

AN OVERVIEW OF THE MANAGEMENT PROCESS

Though each landscape is unique, all successful vegetative management projects start with a common process. If you are considering any removal or modification of vegetation on your ravine or bluff slope, follow the steps outlined below to ensure your project is properly planned, permitted, and executed:

1. Survey existing site resources
2. Develop a management plan
3. Determine if permits are required to complete work
4. Remove invasive, dead, dying, diseased, and hazardous plant species first
5. Consider removing low quality and aggressive species
6. Replant beneficial native species
7. Maintain your slope with continued monitoring and invasive species removal

YOUR MANAGEMENT TOOLKIT

The best management practices outlined below are the tools you need to get your project done right. These are proven techniques that you will need to successfully manage vegetation on your ravine or bluff slope.

Site Surveying and Planning are critical first steps in managing your ravine and bluff slopes.

Develop a management plan that identifies existing natural resources and outlines your proposed actions for maintenance and modification. The level of detail required will depend on the scope of your project but should include, at a minimum, a complete survey of existing trees, shrubs, herbaceous vegetation (flowering plants and grasses), and significant topographical and hydrological features within and adjacent to your project area. Clearly identify your management goals, and describe the proposed means and methods of accomplishing them. A well developed plan should answer the following questions:

- What plant species do you want to remove or modify?
- What species are important to protect?
- What species will you be planting to enhance diversity or to replace those removed?
- How will you or your contractor access the project area and dispose of any waste generated from the project?
- What is your proposed timeline for implementation?
- Will your actions require follow-up monitoring or maintenance?

If your project is limited to a small area or a few targeted management actions, you may be able to develop a management plan on your own. Larger or more complex projects may require consultation with an ecologist, landscape architect, or land management professional familiar with ravine and bluff ecosystems. Please contact the City Forester for plan requirements and resources available to assist you in developing a plan for your project.

Permits and Special Conditions will apply if your project involves tree removal on ravine or bluff slopes. Before undertaking any tree removal, contact the City Forester in the Department of Public Works to review your plans and ensure that you obtain the proper permits. In order to protect these fragile ecosystems, the City of Highland Park has implemented specific permitting and building regulations that affect allowable management practices. These regulations can be found in *Article VII, Section 150.701.1 Special Regulations for the LFOZ Lakefront Density and Character Overlay Zone*, and *Article XIX, Steep Slope Zone* of the City's zoning code, both available through the City's website. These regulations include general restrictions on work on ravine and bluff slopes which protect existing soil and plant resources.

- All work on steep slopes should avoid compacting, rutting, pitting, or disturbing soils and adjacent desirable vegetation. This may require work to occur while ground is frozen, and may restrict use of tracked or rubber tired equipment on slopes.
- All logs, branches, and organic debris generated from vegetative management actions should be removed from the slope and properly disposed of. No landscape debris may be piled or allowed to accumulate on ravine and bluff slopes at any time.

Tree Removal and Pruning may be permitted on ravine and bluff slopes under certain conditions as defined in City code, and is often an essential step toward increasing light levels on the ground, which can support healthy growth of native grasses and wildflowers that prevent soil erosion. Management plans should consider the following when proposing tree removal:

- Primary targets for removal should include dead, dying, diseased, hazardous, and invasive trees as defined in the Steep Slope Tree and Shrub Removal Guidelines.
- Canopy coverage should range between 40-70%, allowing for adequate sunlight levels to support flowering plants and grasses at the ground plane while maintaining a landscape dominated by mature trees. Trees on the protected tree species list may be considered for limited removal only if canopy coverage goals cannot be met otherwise.
- Removal goals should promote locally appropriate native trees in a variety of size classes. Trees from the key tree species list may not be removed.
- Trees should be cut flush with the soil surface with stumps and root systems left intact.

- Prune trees according to ANSI A300 standards to ensure long-term tree health and aesthetic quality –topping trees is not allowed.

Brush and Shrub Removal Healthy ravine and bluff woodlands should contain a substantial native understory of shrubs and young trees, while allowing for adequate sunlight levels to support flowering plants and grasses on the ground. A range of 10-15% coverage is considered desirable. Management plans should consider the following when proposing shrub removal:

- Removal of invasive shrubs, as defined in the Steep Slope Tree and Shrub Removal Guidelines, is generally encouraged on all sites.
- Removal of shrubs by cutting to ground level is required to avoid soil disturbance. A follow up plan to discourage regrowth is recommended. This may include the responsible use of herbicides to treat cut stumps and future treatment or cutting of resprouts. If herbicides are used, follow manufacturer’s recommendations for application rates and techniques to avoid damage to non-target species. Use selective herbicides and application methods, such as wicking, to avoid off-target drift.
- Removal of protected shrubs is generally discouraged, though may be recommended in cases where a high density of aggressive native species produces over-shading. Removal of key shrubs will generally not be allowed.

Herbaceous Plant Removal Healthy ravine and bluff slopes require deep-rooted herbaceous vegetation to prevent soil erosion and ensure slope stability. Management plans should promote a vigorous, diverse mix of native grasses, sedges, and wildflowers. Consider the following when proposing herbaceous plant removal:

- Removing invasive plants, as defined in the Steep Slope Herbaceous Species Removal Guidelines, is generally encouraged on all sites to reduce competition with native species. Removal methods should minimize impact on soil stability and adjacent desirable vegetation.
- Avoid disturbing soil when pulling herbaceous weeds – pull only shallow-rooted annual and biennial species, do not pull weeds over a large area during a single event, do not dig or grub roots.

- If herbicides are used, follow manufacturer’s recommendations for application rates and techniques to avoid damage to non-target species. Use selective herbicides and application methods, such as wicking, to avoid off-target drift.
- Continue monitoring herbaceous weeds and remove them as necessary. In most cases, invasive plants require several seasons of continued management to be eradicated from a site.

Planting and Seeding native trees, shrubs, and herbaceous species is allowed on ravine and bluff slopes to enhance species diversity and coverage. In the case of permitted work, planting may be required to replace plants removed as part of your management plan:

- Choose deep-rooted, native perennials that are shade tolerant and appropriate for the soil moisture conditions present on your site.
- Tree and shrub plantings should provide a range of species, mature heights, and aesthetic values such as fall color. When choosing individual trees and shrubs, remember that smaller specimens will often do better in the long run and cause fewer disturbances to the soil during planting.
- Minimize soil disturbance during planting operations – remove excess spoil from the slope, mulch exposed topsoil after planting.
- Consider temporary erosion control needs when installing native seed and use degradable straw blankets or mulches which will not smother existing native vegetation.
- Water new plantings by hand, and only as necessary to ensure survival. Overwatering may increase soil erosion. Sprinkler heads should not be directed at the ravine or bluff slopes.

ADDITIONAL RESOURCES

This brochure should be considered a preliminary guide to planning vegetative management and maintenance activities within the ravine and bluff ecosystems of Highland Park. Before beginning any project that involves land management, please familiarize yourself with the most recently updated zoning ordinance. Contact the City Forester through the Department of Public Works for permitting requirements and additional information, including supplemental handouts detailing common invasive species recommended for removal and native species recommended for planting.

For Additional Information on Restoration and Protection of the Ravine and Lakefront Environment:

Alliance for the Great Lakes: [Lake Michigan Ravines](#)

<http://www.greatlakes.org/RavineRestoration/Toolkit>

Chicago Wilderness: [Shedding Light on North Shore Ravines](#)

City of Highland Park

[Living in a Lakefront & Ravine Community](#)

[Select Recommendations for Protecting your Ravine-Bluff Property](#)

[Select Native Plants for Restoration](#)

Park District of Highland Park

www.pdhp.org/hpravines

City of Highland Park Steep Slope Tree and Shrub Removal Guidelines

Pruning and removal of trees and shrubs is often an essential first step toward properly managing vegetation on ravine and bluff slopes. By pruning and thinning to achieve canopy coverage between 40-70%, we allow for adequate sunlight levels to support herbaceous vegetation at the ground plane while maintaining a landscape dominated by mature trees. Increased light levels at the ground plane support robust growth of native grasses and wildflowers that prevent soil erosion, stabilize slopes, and provide wildlife habitat. Removal of trees and large shrubs requires a permit to be performed on ravine and bluff slopes. Prior to removal work, please familiarize yourself with the most recently updated zoning ordinance, and contact the City Forester at 847-432-0807 for permitting requirements and additional information.

The following tables list tree and shrub species which are common to ravine and bluff slopes. Please note that this list is not intended to be exclusive or comprehensive, but should be used as a guideline for developing a tree removal plan. Each species has been classified into one of three categories:

- **Invasive** – Species classified as “Invasive” may be completely removed. Removal is encouraged to decrease competition and promote native plant species.
- **Protected** – Species classified as “Protected” may be considered for removal under certain conditions. These include some species such as Maples and Sumac which may be aggressive or trees prone to diseases such as Emerald Ash Borer or Dutch Elm Disease. The City Forester may recommend selective thinning of specific specimens and/or size classes. Replacement with appropriate plant material may be required.
- **Key** – Species classified as “Key” should be preserved on all sites. While the City Forester may recommend removal of these species on a case by case basis, these species are generally not permitted for removal.

Tall Shade Trees				
Common Name	Latin Name	Invasive	Protected	Key
American Beech	<i>Fagus grandifolia</i>			✓
American Elm	<i>Ulmus americana</i>		✓	
Amur Maple	<i>Acer ginnala</i>	✓		
Basswood	<i>Tilia americana</i>		✓	
Black Cherry	<i>Prunus serotina</i>		✓	
Black Locust	<i>Robinia psuedoacacia</i>		✓	
Black Walnut	<i>Juglans nigra</i>			✓
Black Willow	<i>Salix nigra</i>		✓	
Box Elder	<i>Acer negundo</i>		✓	
Eastern Cottonwood	<i>Populus deltoides</i>		✓	
Eastern Redcedar	<i>Juniperus virginiana</i>		✓	
Green Ash	<i>Fraxinus pennsylvanica</i>		✓	
Hackberry	<i>Celtis occidentalis</i>			✓
Hickory Species	<i>Carya spp.</i>			✓
Norway Maple	<i>Acer platanoides</i>		✓	
Oak Species	<i>Quercus spp.</i>			✓
Quaking Aspen	<i>Populus tremuloides</i>		✓	
Siberian Elm	<i>Ulmus pumila</i>	✓		
Sugar Maple	<i>Acer saccharum</i>		✓	
Tree-of-Heaven	<i>Ailanthus altissima</i>	✓		
White Ash	<i>Fraxinus americana</i>		✓	
White Mulberry	<i>Morus alba</i>	✓		
White Pine	<i>Pinus strobus</i>			✓

Intermediate Trees				
Common Name	Latin Name	Invasive	Protected	Key
Blue Beech	<i>Carpinus caroliniana</i>			✓
Buckthorn species	<i>Rhamnus spp.</i>	✓		
Hawthorn species	<i>Crataegus spp.</i>		✓	
Hop Hornbeam	<i>Ostrya virginiana</i>			✓
Pagoda Dogwood	<i>Cornus alternifolia</i>			✓
Paper Birch	<i>Betula papyrifera</i>			✓
Redbud	<i>Cercis canadensis</i>			✓
Serviceberry	<i>Amelanchier arborea</i>			✓
Smooth Sumac	<i>Rhus glabra</i> Smooth sumac		✓	
Staghorn Sumac	<i>Rhus typhina</i> Staghorn		✓	
Witch Hazel	<i>Hamamelis virginiana</i>			✓

Shrubs and Vines				
Common Name	Latin Name	Invasive	Protected	Key
American Hazelnut	<i>Corylus americana</i>			✓
Asian Bittersweet	<i>Celastrus orbiculatus</i>	✓		
Blackhaw Viburnum	<i>Viburnum prunifolium</i>			✓
Boston Ivy		✓		
Buffalo Berry	<i>Shepherdia canadensis</i>			✓
Burning Bush	<i>Euonymus alatus</i>	✓		
Chokecherry	<i>Prunus virginiana</i>		✓	
Common Juniper	<i>Juniperus communis</i>			✓
Downy Arrowwood	<i>Viburnum rafinesquianum</i>			✓
Dwarf Honeysuckle	<i>Diervilla lonicera</i>			✓
Elderberry	<i>Sambucus canadensis</i>			✓
English Ivy		✓		
European Highbush Cranberry	<i>Viburnum opulus</i>	✓		
Gray Dogwood	<i>Cornus racemosa</i>		✓	
Honeysuckle Species	<i>Lonicera x bella</i>	✓		
Japanese Barberry	<i>Berberis thunbergii</i>	✓		
Maple-leaved Viburnum	<i>Viburnum acerifolium</i>			✓
Multiflora Rose	<i>Rosa multiflora</i>	✓		
Pachysandra		✓		
Peach-leaved Willow	<i>Salix amygdaloides</i>		✓	
Privet Species	<i>Ligustrum spp.</i>	✓		
Raspberry Species	<i>Rubus spp.</i>		✓	
Red Honeysuckle	<i>Lonicera dioica</i>			✓
Red-twig Dogwood	<i>Cornus stolonifera</i>			✓
Riverbank Grape	<i>Vitis riparia</i>	✓		
Round-leaved Dogwood	<i>Cornus rugosa</i>			✓
Sandbar Willow	<i>Salix interior</i>		✓	
Summer Grape	<i>Vitis aestivalis</i>			✓
Yellow Honeysuckle	<i>Lonicera prolifera</i>			✓

City of Highland Park Steep Slope Herbaceous Species Removal Guidelines

Removal of invasive herbaceous plants is generally encouraged on all sites to reduce competition with native species, though removal methods should include those least impactful to soil stability and adjacent desirable vegetation. Avoid soil disturbance when pulling herbaceous weeds – pull only shallow-rooted annual and biennial species, do not pull weeds over a large area during a single event, do not dig/grub roots. If herbicides are used, follow manufacturer’s recommendations for application rates and techniques to avoid damage to non-target species. Use selective herbicides and application methods such as wick application to avoid off-target drift. Perform follow-up removal and monitoring of herbaceous weeds as necessary. In most cases, invasive plants require several seasons of continued management to be eradicated from a site.

Please contact the City Forester at 847-432-0807 for additional information.

The following tables list herbaceous species which are common to ravine and bluff slopes. Please note that this list is not intended to be exclusive or comprehensive, but should be used as a guideline for developing an invasive species removal plan. Each species has been classified into one of three categories:

- Invasive – Species classified as “Invasive” may be completely removed. Removal is encouraged to decrease competition and promote native plant species.
- Protected – Species classified as “Protected” may be considered for removal under certain conditions. These species include some native plants which may be aggressive. Key – Species classified as “Key” should be preserved on all sites. While the City Forester may recommend removal of these species on a case by case basis, these species are generally not permitted for removal.

Grasses and Sedges				
Common Name	Latin Name	Invasive	Protected	Key
Bluestem Species	<i>Andropogon spp.</i>			✓
Bottlebrush Grass	<i>Hystrix patula</i>			✓
Brome Species	<i>Bromus spp.</i>		✓	
Cattail Species	<i>Typha spp.</i>		✓	
Common Reed	<i>Phragmites australis</i>	✓		
Fescue Species	<i>Festuca spp.</i>		✓	
Fowl Manna Grass	<i>Glyceria striata</i>			✓
Lyme Grass	<i>Leymus arenarius</i>	✓		
Poverty Oatgrass	<i>Danthonia spicata</i>			✓
Reed Canary Grass	<i>Phalaris arundinacea</i>	✓		
Sedge Species	<i>Carex spp.</i>			✓
Switchgrass	<i>Panicum virgatum</i>			✓
Turf Grasses	<i>Poa spp.</i>		✓	
Wild Rye Species	<i>Elymus spp.</i>			✓

Wild Flowers				
Common Name	Latin Name	Invasive	Protected	Key
Aster Species	<i>Aster spp.</i>			✓
Bellwort	<i>Uvularia grandiflora</i>			✓
Bishop's Goutweed	<i>Aegopodium podagraria</i>	✓		
Black-eyed Susans	<i>Rudbeckia spp.</i>			✓
Bloodroot	<i>Sanguinaria canadensis</i>			✓
Blue Phlox	<i>Phlox divaricata</i>			✓
Broad-Leaved Goldenrod	<i>Solidago flexicaulis</i>			✓
Canada Goldenrod	<i>Solidago canadensis</i>		✓	
Canada Thistle	<i>Cirsium arvense</i>	✓		
Columbine	<i>Aquilegia canadensis</i>			✓
Common Burdock	<i>Arctium minus</i>	✓		
Common Mugwort	<i>Artemisia vulgaris</i>	✓		
Crown Vetch	<i>Securigera varia</i>	✓		
Daylily Species	<i>Hemerocallis spp.</i>	✓		
Elm-Leaved Goldenrod	<i>Solidago ulmifolia</i>			✓
Feathery False Solomon's Seal	<i>Smilacina racemosa</i>			✓
Garden Bird's-Foot-Trefoil	<i>Lotus corniculatus</i>	✓		
Garlic mustard	<i>Alliaria petiolata</i>	✓		
Golden Alexander	<i>Zizia aurea</i>			✓
Japanese Black-Bindweed	<i>Fallopia japonica</i>	✓		
Japanese Hop	<i>Humulus japonicus</i>	✓		
Lead Plant	<i>Amorpha canescens</i>			✓
Marsh Marigold	<i>Caltha palustris</i>			✓
May Apple	<i>Podophyllum peltatum</i>			✓
Moneywort	<i>Lysimachia nummularia</i>	✓		
Purple Loosestrife	<i>Lythrum salicaria</i>	✓		
Seaside Goldenrod	<i>Solidago sempervirens</i>	✓		
Sharp-lobed Hepatica	<i>Hepatica acutiloba</i>			✓
Shooting Star	<i>Dodecatheon meadia</i>			✓
Skunk Cabbage	<i>Symplocarpus foetidus</i>			✓
Solomon's Seal	<i>Polygonatum spp.</i>			✓
Sunflowers	<i>Helianthus spp.</i>		✓	
Sweet Clover	<i>Melilotus spp.</i>	✓		
Tall Goldenrod	<i>Solidago altissima</i>		✓	
Teasel Species	<i>Dipsacus spp.</i>	✓		
Trillium Species	<i>Trillium spp.</i>			✓
Vinca	<i>Vinca minor</i>	✓		
Wild Bergamot	<i>Monarda fistulosa</i>			✓
Wild Geranium	<i>Geranium maculatum</i>			✓
Wild Parsnip	<i>Pastinaca sativa</i>	✓		
Wintercreeper	<i>Euonymus fortunei</i>	✓		

How Can Removing Trees Help a Forest?

When we think of the north shore ravines, we often think of shady, cool places. Our ravines are characterized by ecologists as a forest community with a canopy (highest level of vegetation) dominated by Red Oak and Sugar Maple trees.

However, a healthy ravine also contains a middle layer of small trees and shrubs and also a ground floor covered with wildflowers, grasses and grass-like plants called sedges. Each is part of a complex support system protecting soil, water, creatures and each other. Sedges are especially vital because their roots knit together to hold soil in place.

Like all things living, these components need the sun's energy to survive. Ecologists are only beginning to learn how much sunlight is needed for a healthy forest, but we can see the effects of too much shade in our ravines: disappearing wildlife and wildflowers, bare soil that is prone to erosion, and the inability of mature oaks to reproduce.

In nature, plants depend on disturbance to promote new growth. Observe how young seedlings sprout up after a large tree falls and you will understand how gaps in the canopy foster a diverse forest ecosystem. Making a disturbance by removal of invasive and non-native trees is a good first step to restoring the kind of lighting our ravines need to keep them growing.

<http://www.mortonarb.org/science-conservation/research-programs/dynamics-forested-ecosystems/canopy-thinning>

An indirect way to measure the sun's availability in a forest is to look up. If, in summer, the sky is blocked by leafy cover, it is likely that full sun (as measured out in the open) is cut by some percentage.

The magnitude of change from full sun to shade under tree canopy can be great. In the Midwest, a sunny mid-summer day can yield 10,000 foot candles (fc) of light in the open. Walk under a fully shaded canopy and available light can drop to 100 fc or less. It has been estimated that 10 percent of available light is required for sedges to reproduce in woodland settings.

Software that uses fish eye lens photography can be used to evaluate the percent of open canopy in a forest.



Photo 19

75 percent canopy



Photo 33

48 percent canopy

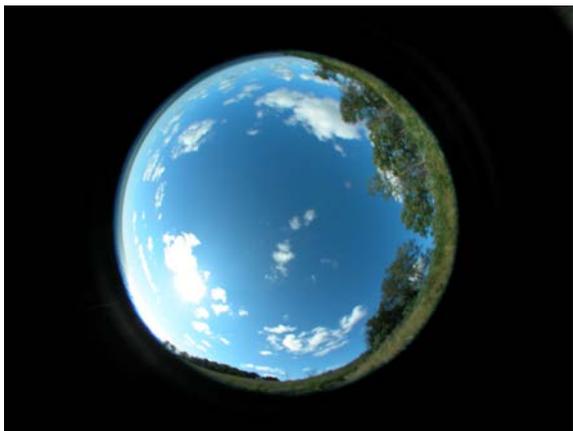
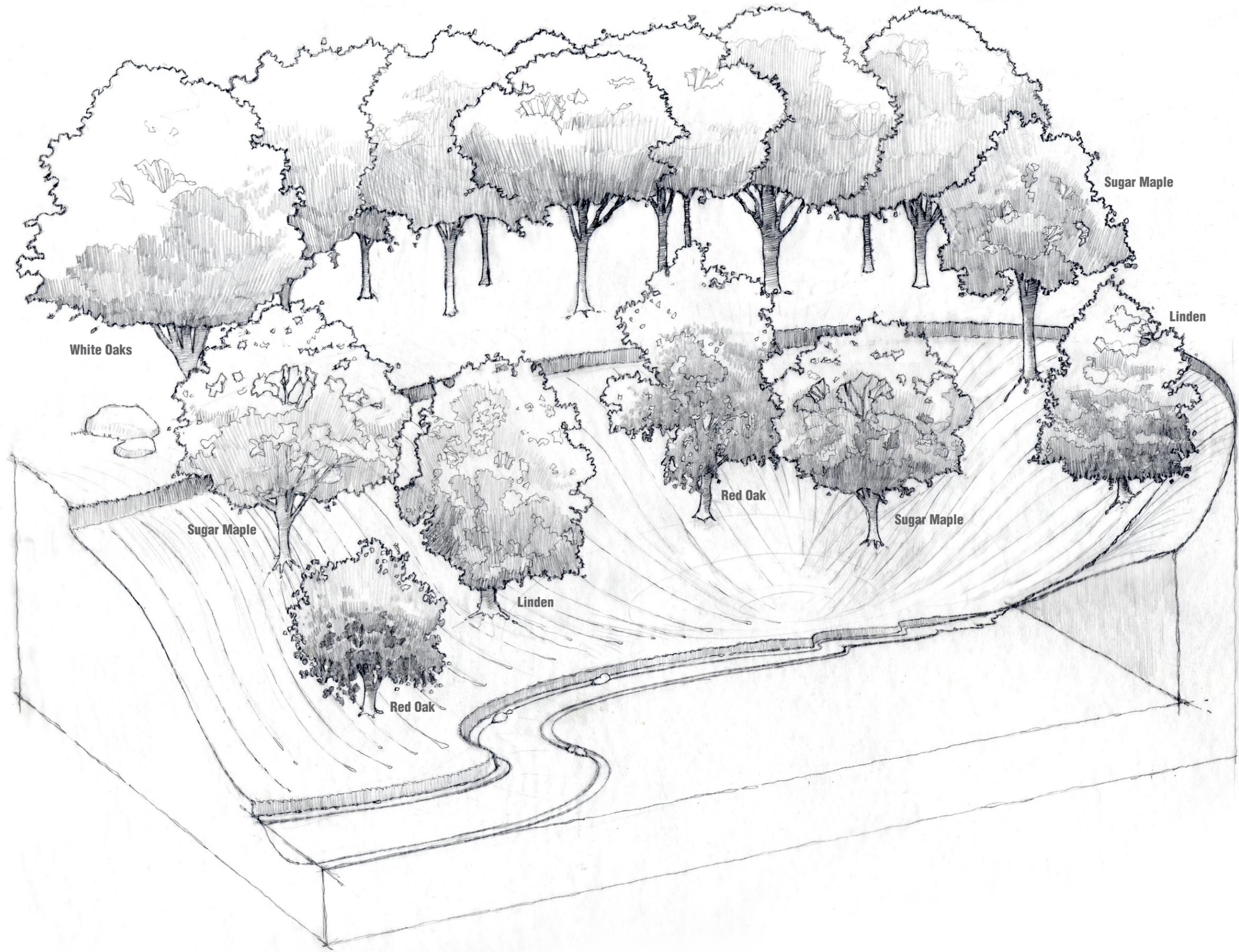


Photo 81

24 percent canopy





White Oaks

Sugar Maple

Linden

Sugar Maple

Red Oak

Sugar Maple

Linden

Red Oak



