City of Lake Geneva - Hillmoor Property
Preliminary Vegetation Survey

Prepared by the

Southeastern Wisconsin Regional Planning Commission

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City of Lake Geneva - Hillmoor Property Preliminary Vegetation Inventory

1.1 INTRODUCTION

This report responds to the January 2nd, 2024, email request initially received from Mayor Charlene Klein to conduct an environmental assessment of the Hillmoor Property in the City of Lake Geneva. Following clarification on scope and confirmation to proceed from Mayor Todd Krause on April 16, 2025, the Commission began the vegetation inventory in the growing season of 2025. Requested information included a botanical inventory of the Hillmoor Property, a rare plant species survey, and estimates of invasive species cover per assessment unit. The current request covers City-owned property in parts of U.S. Public Land Survey Sections 25 and 36 of Township 02 North, Range 17 East and Sections 30 and 31 of Township 02 North, Range 18 East, Walworth County, Wisconsin.

1.2 METHODS

Field work was completed on June 6th, June 24th, and August 27th, 2025. Field investigations were completed by Commission staff Zachary Kron (Senior Specialist-Biologist), Jessica Schuler (Specialist-Biologist), and Hanna Helker (Specialist-Biologist). Commission staff utilized the Wisconsin Department of Natural Resources (WDNR) Timed Meander (TM) Method Standard Operating Procedure[1] to conduct the botanical inventory for the subject property. This method allowed staff to conduct a botanical inventory, search for rare species, and estimate invasive species cover per assessment unit.

Sources Reviewed

Prior to conducting the field inspection, Commission staff reviewed the following data sources available and applicable to the project area

- WDNR Surface Water Data Viewer
- NRCS soil survey
- FEMA Floodplain Mapping
- Commission historical aerial photography

[1] *Trochlell, Patricia A. 2015. Timed-Meander Sampling Protocol for Wetland Floristic Quality Assessment. Wisconsin Department of Natural Resources.*

- Wisconsin Public Land Survey Records: Original Field Notes and Plat Maps[2]
- Historical Commission reports for the subject parcels (attached as Appendix A)
- LiDAR

1.3 RESULTS

Botanical Inventory

Results of the preliminary botanical inventory within the subject parcels can be found in Exhibit A. Figure 1 provides an overview map of the property, identifying the location of each plant community area inventoried on the property. Polygons labeled with "NA" were not assessed as they were mostly open maintained parkland, lawn, or stormwater ponds. Each of the 20 plant community areas within Exhibit A contains a list of plant species identified within the unit, the total number of plant species, the number of non-native species, the mean coefficient of conservatism, and a brief narrative including the community type or types within the assessment area, acreage, historical disturbances, and management recommendations.

Rare Species

No Federal- or State-designated Special Concern, Threatened, or Endangered species were observed during the field inspection.

Invasive Species Cover

To address the final element of the request, Commission staff developed a series of figures to illustrate floristic quality metrics and invasive species cover within each plant community area.

- Figure 2. Non-native Relative Cover
- Figure 3. Invasive Relative Cover
- Figure 4. Native Richness (number of native species per unit)
- Figure 5. Floristic Quality Index
- Figure 6. Mean Coefficient of Conservatism

These results are summarized in Table 1.1. A more detailed breakdown of cover values by species is available by request if needed.

[2] *Wisconsin Board of Commissioners of Public Lands, Wisconsin Public Land Survey Records: Original Field Notes and Plat Maps. https://digicoll.library.wisc.edu/SurveyNotes/*

1.4 DISSCUSSION

Botanical Inventory

See Exhibit A for a detailed discussion of each plant community area.

Other Considerations

The White River appears to have been straightened historically through the southern portion of the park. Future planning efforts could assess whether re-meandering the river in this section is feasible. Reestablishing meanders in this section could restore natural flow, enhance habitat for wildlife, improve floodplain storage, and improve water quality. In addition to re-meandering, establishing additional native buffer plantings will improve riparian function (streambank stability, water temperature), pollutant removal (sediment and nutrients), and wildlife habitat and habitat connectivity for a range of taxa. Many old oxbow scars are visible throughout the area adjacent to the river via LiDAR and historical aerial photography. Several historical photos, presumably preceded by rain or snow melt, provide evidence that these depressions are occasionally inundated or saturated at the surface. Many of the low-lying areas adjacent to the river were wetlands historically and may be suitable for wetland restoration in the future.

There are two excavated ponds south of PCA 4 bisected by a raised cart path. Adjacent to the ponds are areas of restorable wetland. They appear to have been mowed historically, and continue to be mowed to this day, at least occasionally. Presumably they are mowed when access is possible. The pond vegetation and surrounding wetland is currently dominated by non-native species, but it could be enhanced through careful planning and implementation.

Table 1.1
Plant Community Area Floristic Quality Assessment Summary

Plant Community Area	Acreage	Non-Native Relative Cover (%)	Invasive Relative Cover (%)	Native Species Richness	Floristic Quality Index	Mean Coefficient of Conservatism
1	33.4	60	28	35	11.2	1.3
2	0.9	58	38	24	9	1.4
3	18.0	36	28	69	25	2.5
4	9.0	48	39	34	13.5	1.8
5	6.1	53	38	41	17.5	2.1
6	4.3	39	20	31	18.9	2.8
7	0.4	28	16	45	20.2	2.5
8	0.2	38	31	21	10.4	1.8
9	6.9	28	24	34	20	3
10	29.2	65	23	35	10.2	1.1
11	0.9	50	49	33	18.5	2.8
12	27.5	51	47	20	10.6	1.9
13	4.7	30	30	40	26.8	3.9
14	3.4	72	37	16	7.5	1.4
15	16.2	52	40	43	22.2	3
16	6.7	61	61	11	12.3	2.9
17	4.4	71	70	17	11.8	2.4
18	13.9	21	20	40	18.9	2.5
19	0.9	36	14	14	6.9	1.4
20	1.8	32	30	29	12.7	2

Note: Non-Native relative cover includes cover of all non-native species.

Invasive Relative cover includes non-native species listed as prohibited or restricted in Wis Admin. Code NR 40 and reed canary grass (Phalaris arundinacea).

Source: Southeastern Wisconsin Regional Planning Commission

EXHIBIT A: PRELIMINARY VEGETATION SURVEY
City of Lake Geneva – Hillmoor Property

Date: June 6, 2025; June 24, 2025; August 27, 2025

Observer: Zach Kron, Senior Specialist-Biologist
Jessica Schuler, Specialist-Biologist
Hanna Helker, Specialist-Biologist
Southeastern Wisconsin Regional Planning Commission

Location: City of Lake Geneva in the U.S. Public Land Survey Sections 25 and 36 Township 02 North, Range 17 East and U.S. Public Land Survey Sections 30 and 31 of Township 02 North, Range 18 East, Walworth County, Wisconsin

Species List: Plant Community Area No. 1

Native Species
Acer negundo -- Box elder
Acer rubrum -- Red maple
Acer saccharum -- Sugar maple
Ageratina altissima -- White snakeroot
Ambrosia artemisiifolia -- Common ragweed
Apocynum cannabinum -- Hemp-dogbane
Asclepias syriaca -- Common milkweed
Calystegia sepium -- Hedge bindweed
Carya ovata -- Shagbark hickory, shellbark hickory
Conyza canadensis -- Canadian horseweed
Erigeron annuus -- Annual fleabane, eastern daisy fleabane
Fraxinus americana -- White ash
Fraxinus pensylvanica – Green ash
Geum canadense -- White avens
Gleditsia triacanthos -- Honey locust
Hypericum punctatum -- Spotted St. John's-wort
Juglans nigra -- Black walnut
Juniperus virginiana -- Eastern red-cedar
Monarda fistulosa -- Wild bergamot
Parthenocissus quinquefolia -- Virginia creeper
Pinus strobus -- Eastern white pine
Prunus serotina -- Wild black cherry
Quercus macrocarpa – Bur oak
Quercus velutina – Black oak
Solidago canadensis -- Canadian goldenrod
Solidago gigantea -- Giant goldenrod
Solidago juncea -- Early goldenrod
Symphyotrichum lateriflorum -- Side-flowering aster
Symphyotrichum novae-angliae -- New England aster
Symphyotrichum pilosum -- Frost aster
Ulmus americana -- American elm
Urtica dioica -- Stinging nettle
Verbena urticifolia -- White vervain
Vitis riparia -- Riverbank grape

NON-Native Species
Acer platanoides -- Norway maple
Agrostis gigantea -- Redtop
Agrostis stolonifera -- Creeping bent grass
Arctium minus -- Common burdock
Barbarea vulgaris -- Winter-cress
Bromus arvensis -- Japanese chess
Bromus inermus – Smooth brome
Bromus tectorum -- June grass
Carduus nutans -- Musk thistle
Centaurea stoebe -- Spotted knapweed
Cerastium fontanum -- Common mouse-ear chickweed
Cirsium arvense -- Canada thistle
Cirsium vulgare -- Bull thistle
Dactylis glomerata -- Orchard grass
Daucus carota -- Queen Anne's-lace
Elaeagnus umbellata -- Autumn olive
Elymus repens – Couchgrass
Festuca trachyphylla -- Hard fescue
Hypericum perforatum -- Common St. John's-wort
Leucanthemum vulgare -- Ox-eye daisy
Lolium pratense -- Meadow fescue
Lonicera maackii -- Amur honeysuckle
Lonicera X bella -- Hybrid honeysuckle
Lotus corniculatus -- Bird's-foot trefoil
Malus baccata-- Siberian crabapple
Medicago lupulina -- Black medick
Melilotus officinalis -- Yellow sweet-clover
Morus alba -- White mulberry
Pastinaca sativa -- Wild parsnip
Phleum pratense -- Timothy
Picea pungens – Blue spruce
Pinus nigra – Austrian pine
Plantago lanceolata -- English plantain
Poa pratensis -- Kentucky bluegrass
Pyrus communis – Ornamental Pear
Rumex crispus -- Curly dock
Rhamnus cathartica -- Common buckthorn
Rosa multiflora -- Multiflora rose
Tilia cordata – Little-leaf linden
Tragopogon dubius -- Fistulous goat's-beard
Trifolium hybridum -- Alsike clover
Ulmus pumila -- Siberian elm
Veronica serpyllifolia -- Thyme-leaved speedwell

Total number of plant species: 77
Number of alien, or non-native, plant species: 47 (61%)
Mean C: 1.3

This 33-acre plant community area consists of surrogate grassland and shrub thicket west of the main entry road north of STH 50. This area was formerly occupied by greens, fairways, rough, and adjacent shrub and tree plantings of the Hillmoor Country Club. Cool season planted lawn grasses likely dominated this area while the golf course was in operation. But much of this area is now transitioning to weedy early successional grassland and shrub thicket. Some of the

ornamental tree and shrub plantings persist to this day but are in decline. White and green ash are common, but only as seedlings and saplings. Virtually all the mature plantings have succumbed to the impacts of Emerald Ash Borer.

Wildlife observations included gold finch, red-winged blackbird, cedar waxwing, song sparrow, common yellowthroat, cat bird, meadow vole, monarch butterfly, and wild turkey.

Based on interpretations of the original surveyor notes for this section, the pre-European settlement plant community was likely composed of oak woodland along the western boundary transitioning to oak opening in the east. One extant black oak, near the northern end of the unit, measured at 47.5 inches diameter at breast height (DBH). This individual is likely to be over 250 years old, a reminder of that now lost plant community type. The individual remains in decent condition and is found near the intersection of existing walking and cart paths. City crews have begun brush control efforts near the southern boundary of this unit along STH 50. This management technique is appropriate here and could be coupled with follow-up foliar herbicide application to invasive and undesirable species. Long-term management planning for this unit should consider the following elements;

- maintenance and expansion of existing recreational trails
- Invasive and undesirable species control, it is recommended that an invasive species management plan be developed for the site, which could be a component of a larger site management plan
- Restoration of this area to a natural community type (such as prairie, oak opening, oak woodland, or a mix of all three)
- The feasibility of maintaining this newly established native plant community with regular, low intensity, dormant season prescribed fire
- Utilizing existing paths as burn unit breaks
- Development of a Prescribed Fire Plan for the site or for appropriate individual units
- If prescribed fire cannot be used to effectively maintain a fire dependent plant community, consider prescribing mechanical means that could maintain the target natural community type
- Set restoration goals for the restoration, such as acceptance criteria, to gauge the success of restoration practices and inform adaptive management needs

Species List: Plant Community Area No. 2 – Co-dominant species are **bolded**

Native Species
Acer rubrum -- Red maple
Ageratina altissima -- White snakeroot
Asclepias syriaca -- Common milkweed
Betula nigra -- River birch
Bidens frondosa – Common beggar-ticks
Carex cristatella -- Crested sedge
Carex vulpinoidea -- Fox sedge
Cornus amomum -- silky dogwood
Erigeron annuus -- Annual fleabane
Erigeron philadelphicus -- Common fleabane
Geum canadense – White avens
Hackelia virginiana – Stickseed
Impatiens capensis -- Orange jewelweed
Parthenocissus quinquefolia – Virginia creeper
Physalis virginiana -- Lance-leaved ground-cherry
Plantago rugelii – American plantain
Sambucus canadensis -- American elderberry
Scirpus atrovirens -- Dark-green bulrush

Solidago canadensis – Canada goldenrod
Solidago gigantea – Giant goldenrod
Symphyotrichum lateriflorum -- Side-flowering aster
Ulmus americana -- American elm
Verbena urticifolia -- White vervain
Vitis riparia -- Riverbank grape

NON-Native Species
Agrostis gigantea -- Redtop
Agrostis stolonifera -- Creeping bent grass
Alliaria petiolata—Garlic mustard
Betula populifolia -- Gray birch
Cirsium arvense -- Canada thistle
Daucus carota -- Queen Anne's-lace
Hypericum perforatum -- Common St. John's-wort
Lonicera maackii -- Amur honeysuckle, Maack's honeysuckle
Lythrum salicaria -- Purple loosestrife
Myosoton aquaticum – Giant Chickweed
Pastinaca sativa -- Wild parsnip
Persicaria hydropiper -- Marsh-pepper smartweed
Phalaris arundinacea -- Reed canary grass
Poa trivialis -- Rough bluegrass
Ranunculus acris -- Common buttercup
Rhamnus cathartica – Common buckthorn
Rumex crispus -- Curly dock
Salix alba 'tristis'-- Weeping willow
Solanum dulcamara -- Bittersweet nightshade
Taraxacum officinale – Dandelion

Total number of plant species: 44
Number of alien, or non-native, plant species: 20 (45%)
Mean C: 1.4

This 1-acre plant community area consists of poor-quality riparian wet meadow along a first order intermittent stream. Erosion, sedimentation, siltation, and undercutting were observed. The stream bank was steeply incised at the south end of the project area. Several cart and footpath bridges were present within the unit, providing easy public access to this aquatic feature.

The stream eventually reaches a relatively low depressional area with evident siltation and sedimentation near the northern end of this unit. The channel is not evident within the low-lying wetland complex. It is possible that the stream flows through a subsurface drainage feature until it reaches the western boundary of the site. It is recommended that options be explored to rehabilitate this wetland complex to restore stream and wetland hydrology (where practicable), enhance habitat for wildlife and recreation, and reduce erosion, siltation and sedimentation offsite.

One additional intermittent channel appears to extend west through PCA 1 to the main access road, but no obvious wetland signatures were detected in the field. On neighboring properties, both upstream and downstream, the historic channel of this stream and wetland complex was filled in part for development. No Federal- or State-designated Special Concern, Threatened, or Endangered species were observed during the field inspection.

Species List: Plant Community Area No. 3 – Co-dominant species are **bolded**

Native Species

Acer negundo -- Box elder
Acer saccharum -- Sugar maple
Actaea pachypoda -- White baneberry
Ageratina altissima -- White snakeroot
Agrimonia gryposepala -- Common agrimony
Allium tricoccum -- Wild leek
Anemone virginiana -- Tall anemone
Arisaema triphyllum -- Jack-in-the-pulpit
Asclepias verticillata -- Whorled milkweed
Asplenium platyneuron -- Ebony spleenwort
Athyrium filix-femina -- Lady fern
Botrypus virginianus – Rattlesnake fern
Carex blanda -- Common wood sedge
Carex cephalophora -- Oval-headed sedge
Carex granularis -- Limestone meadow sedge
Carex molesta -- Field oval sedge
Carex normalis -- Normal sedge
Carex pensylvanica -- Pennsylvania sedge
Carex rosea -- Rosy sedge
Carex vulpinoidea -- Fox sedge
Carya ovata -- Shagbark hickory
Celtis occidentalis -- Northern hackberry
Circaea canadensis -- Broad-leaf enchanter's-nightshade
Cornus foemina -- Gray dogwood
Danthonia spicata -- Poverty grass
Dichanthelium acuminatum -- Hairy panic grass
Dodecatheon meadia-- Eastern shooting-star
Dryopteris carthusiana -- Spinulose wood fern
Echinocystis lobata -- Wild-cucumber
Fraxinus americana -- White ash
Galium aparine -- Annual bedstraw
Galium triflorum -- Fragrant bedstraw
Geum canadense -- White avens
Hackelia virginiana – Stickseed
Juncus tenuis -- Path rush
Juniperus virginiana -- Eastern red-cedar
Lactuca biennis -- Woodland lettuce
Lobelia spicata -- Spiked lobelia
Maianthemum racemosum -- Solomon's-plume
Monarda fistulosa -- Wild bergamot
Oenothera biennis -- Common evening-primrose
Onoclea sensibilis -- Sensitive fern
Oxalis stricta -- Wood-sorrel
Parthenocissus quinquefolia -- Virginia creeper
Populus tremuloides -- Quaking aspen
Prunus serotina -- Black cherry
Prunella vulgaris -- Self-heal
Quercus alba -- White oak
Quercus macrocarpa -- Bur oak
Quercus rubra -- Red oak
Quercus velutina -- Black oak
Rhus glabra -- Smooth sumac
Ribes americanum -- American black currant
Ribes missouriense -- Missouri gooseberry
Sambucus canadensis -- American elderberry
Sanicula odorata -- Clustered black snakeroot

Smilax ecirrhata -- Upright carrion-flower
Solidago gigantea -- Giant goldenrod
Solidago speciosa – Showy goldenrod
Symphyotrichum lateriflorum -- Side-flowering aster
Symphyotrichum novae-angliae -- New England aster
Symphyotrichum pilosum -- Frost aster
Symphyotrichum urophyllum -- Arrow-leaved aster
Toxicodendron radicans -- Poison-ivy
Turritis glabra -- Tower rock-cress
Ulmus americana -- American elm
Verbena urticifolia -- White vervain
Vitis riparia -- Riverbank grape

NON-Native Species
Acer platanoides -- Norway maple
Alliaria petiolata -- Garlic mustard
Arctium minus -- Common burdock
Berberis thunbergii -- Japanese barberry
Carex spicata -- Spiked bracted sedge
Catalpa speciosa -- Northern catalpa
Celastrus orbiculatus -- Oriental bittersweet
Cerastium fontanum – Common mouse-eared chickweed
Daucus carota -- Queen Anne's-lace
Dianthus armeria -- Deptford pink
Hieracium caespitosum -- Field hawkweed
Leonurus cardiaca -- Motherwort
Leucanthemum vulgare -- Ox-eye daisy
Linaria vulgaris -- Butter-and-eggs
Lonicera maackii -- Amur honeysuckle
Lonicera X bella -- Hybrid honeysuckle
Melilotus officinalis -- Yellow sweet-clover
Morus alba -- White mulberry
Phleum pratense -- Timothy
Ranunculus acris -- Common buttercup
Rhamnus cathartica -- Common buckthorn
Robinia pseudoacacia -- Black locust
Rosa multiflora -- Multiflora rose
Rumex acetosella -- Common sheep sorrel
Taraxacum officinale -- Dandelion
Tilia cordata – Little-leaf linden
Torilis japonica -- Japanese hedge-parsley
Trifolium repens -- White clover
Verbascum thapsus -- Common mullein
Viburnum opulus -- High-bush cranberry
Vinca minor – Periwinkle

Total number of plant species: 100
Number of alien, or non-native, plant species: 31 (31%)
Mean C: 2.6

This plant community area consists of degraded oak woodland transitioning to southern dry-mesic forest. Oaks and shagbark hickory comprise the canopy in the highest quality areas. Individual trees over 34” DBH were measured including white oak and shagbark hickory. These trees are estimated to be over 250 years old and are visible in the oldest available historic aerial photos. Pre-European settlement vegetation for this area was a mix of oak woodland and oak opening with dry-mesic prairie on dry ridges. Indeed, there remain a few examples of the latter

persisting to present day, see PCA 7. Dry ridges and steep slopes recently encroached by shrubs retain prairie and oak opening elements including Pennsylvania sedge, pale spiked lobelia, and eastern shooting star. The area was likely grazed by livestock at some point in the past, and native species suffer from the impacts of overgrazing by deer today.

Historically, plant communities would have been maintained by herbivory, wildfire, and prescribed fire. Presumably the unit has not been burned in decades. Woody encroachment of the unit is visible on successive historic aerial photos from the 1930s up through the present day. Many fire intolerant native and non-native species have become well established within the unit. Invasive non-native species such as buckthorn and honeysuckle dominate the shrub layer throughout this unit. The restoration and invasive species management plans for this area should propose methods to control undesirable species. This could include, but not be limited to, methods such as cut stump treatments, basal bark applications, hack and frill, pulling, and forestry mowing with follow up foliar herbicide applications. The best approach will likely be a combination of methods that minimize impacts and disturbance in sensitive areas. For instance, forestry mowing may not be practical in all areas within this unit on account of the steep easily erodible slopes. Some cutting and treating by hand will be needed to achieve consistent control across the unit in these sensitive areas. Forestry mowing with follow-up foliar herbicide applications or basal bark or hack and frill pretreatment would be effective in relatively level areas accessible by machine.

Once shrub cover and density are reduced to acceptable levels, regular low intensity dormant season prescribed fire could be used to maintain this fire dependent system in perpetuity. The added benefit of utilizing regular dormant season fire as management tool is that it reduces the potential for damaging and potentially dangerous wildfires by consuming available fuel within a range of acceptable environmental conditions. Adaptive management strategies should address alternative management approaches if prescribed conditions are not achievable.

It should be noted that the use of fire will not replace the need for all other management. Chemical, cultural, and mechanical control techniques will be necessary to control invasive species and maintain and improve natural community composition and structure. Timber Stand Improvement (TSI) is a forestry practice that removes undesirable trees to free up resources for desirable species such as oak and hickory species. This methodology could be applied here to reduce competition from undesirable native species such as boxelder, black cherry, maple, basswood, hackberry, and quaking aspen. TSI is intended to provide oak and hickory with a competitive advantage to restore the oak woodland natural community association. It is not intended to completely remove or eliminate those undesirable native species from the unit. No Federal- or State-designated Special Concern, Threatened, or Endangered species were observed during the field inspection.

Species List: Plant Community Area No. 4 – Co-dominant species are **bolded**

Native Species
Acer saccharum -- Sugar maple
Ageratina altissima -- White snakeroot
Ambrosia artemisiifolia -- Common ragweed
Asclepias verticillata -- Whorled milkweed
Carex blanda -- Common wood sedge
Carex brevior -- Plains oval sedge
Carex cephalophora -- Oval-headed sedge
Celtis occidentalis -- Northern hackberry
Circaea canadensis -- Broad-leaf enchanter's-nightshade
Eupatorium altissimum -- Tall boneset
Geum canadense -- White avens
Gleditsia triacanthos -- Honey locust
Hackelia virginiana – Stickseed

Juglans nigra -- Black walnut
Juniperus virginiana -- Eastern red-cedar
Maianthemum racemosum -- Solomon's-plume
Oenothera biennis -- Common evening-primrose
Oxalis dillenii -- Southern yellow wood-sorrel
Parietaria pensylvanica -- Pennsylvanian pellitory
Parthenocissus quinquefolia -- Virginia creeper, woodbine
Pilea pumila -- Canadian clearweed
Plantago rugelii -- American plantain
Podophyllum peltatum -- May-apple
Populus deltoides -- Eastern cottonwood
Prunella vulgaris -- Self-heal
Quercus macrocarpa -- Bur oak
Quercus velutina -- Black oak
Ribes missouriense -- Missouri gooseberry
Rubus occidentalis -- Black raspberry
Silene latifolia -- Bladder campion
Smilax ecirrhata -- Upright carrion-flower
Solidago canadensis -- Canadian goldenrod
Ulmus americana -- American elm
Verbena hastata -- Blue vervain
Viola sororia -- Common blue violet
Vitis riparia -- Riverbank grape
Zanthoxylum americanum – Prickly ash

NON-Native Species
Acer platanoides -- Norway maple
Agrostis gigantea -- Redtop
Alliaria petiolata -- Garlic mustard
Bromus inermis -- Smooth brome
Cirsium arvense -- Canada thistle
Daucus carota -- Queen Anne's-lace
Hesperis matronalis -- Dame's rocket
Leonurus cardiaca -- Motherwort
Lonicera X bella -- Hybrid honeysuckle
Medicago lupulina -- Black medick
Melilotus officinalis -- Yellow sweet-clover
Morus alba -- White mulberry
Plantago lanceolata – English plantain
Poa compressa -- Canada bluegrass
Poa pratensis -- Kentucky bluegrass
Potentilla recta -- Sulphur cinquefoil
Rhamnus cathartica -- Common buckthorn
Robinia pseudoacacia -- Black locust
Saponaria officinalis -- Soapwort
Ulmus pumila -- Siberian elm

Total number of plant species: 55
Number of alien, or non-native, plant species: 21 (38%)
Mean C: 1.8

This plant community area consists of a poor-quality degraded dry-mesic forest. The unit was likely oak woodland or oak opening historically. Past disturbances include clearing for agriculture, grazing, grading for a gravel access road, erosion, and quarrying. Several of the more level areas within the unit appeared to have been cultivated historically, these areas now primarily

shrub thicket. Mature oak and hickory remain on the steep slopes of this unit, but invasive nonnative species dominate the shrub layer. The unit was quarried, at least in part, possibly to generate fill for the country club or produce material for the roadbed that appears in the 1970s aerials. Imbedded within this unit is an open sandy barren with several prairie species seen nowhere else on the site. More information on this unit can be found in PCA 19. Management strategies for this unit should consider the elements discussed in PCA 3. No Federal- or State-designated Special Concern, Threatened, or Endangered species were observed during the field inspection.

Species List: Plant Community Area No. 5 – Co-dominant species are **bolded**

Native Species

Acer negundo -- box elder
Ageratina altissima -- white snakeroot
Agrimonia gryposepala -- common agrimony
Anemone virginiana -- tall anemone
Asclepias syriaca -- common milkweed
Asplenium platyneuron -- ebony spleenwort
Botrypus virginianus -- rattlesnake fern
Carex cephalophora -- oval-headed sedge
Carex granularis -- limestone meadow sedge
Carex normalis -- greater straw sedge
Carex rosea -- curly-styled wood sedge
Carya ovata -- shagbark hickory
Celtis occidentalis -- northern hackberry
Cornus foemina -- gray dogwood
Dichanthelium acuminatum -- hairy panic grass
Erigeron annuus -- annual fleabane
Erigeron strigosus -- daisy fleabane
Fragaria vesca -- woodland strawberry
Fraxinus americana -- white ash
Galium triflorum -- fragrant bedstraw
Geum canadense -- white avens
Gleditsia triacanthos -- honey locust
Juniperus virginiana -- eastern red-cedar
Monarda fistulosa -- bee balm
Parthenocissus quinquefolia -- Virginia creeper
Plantago rugelii -- American plantain
Prunella vulgaris -- heal-all
Prunus serotina -- wild black cherry
Quercus velutina -- black oak
Solidago canadensis -- Canadian goldenrod
Solidago gigantea -- giant goldenrod
Solidago speciosa -- showy goldenrod
Symphyotrichum drummondii -- Drummond's aster
Symphyotrichum lateriflorum -- side-flowering aster
Toxicodendron radicans -- common eastern poison-ivy
Triosteum perfoliatum -- late horse-gentian
Turritis glabra -- tower mustard
Viburnum lentago -- nannyberry
Viola sororia -- door-yard violet
Vitis riparia -- river bank grape
Zanthoxylum americanum -- common prickly-ash

NON-Native Species

Agrostis gigantea -- redtop
Ajuga genevensis -- Geneva bugle
Arctium minus -- common burdock
Barbarea vulgaris -- garden yellow-rocket
Berteroa incana -- hoary-alyssum
Centaurea stoebe -- Spotted knapweed
Cerastium fontanum -- common mouse-ear chickweed
Cirsium arvense -- Canada thistle
Cirsium vulgare -- bull thistle
Festuca trachyphylla -- hard fescue
Frangula alnus -- glossy buckthorn
Hieracium caespitosum -- field hawkweed
Hypericum perforatum -- common St. John's-wort
Leucanthemum vulgare -- common daisy
Linaria vulgaris -- butter-and-eggs
Lonicera X bella -- Bell's honeysuckle
Melilotus officinalis -- yellow sweet-clover
Poa pratensis -- Kentucky bluegrass
Potentilla recta -- sulphur cinquefoil
Ranunculus acris -- common buttercup
Rhamnus cathartica -- common buckthorn
Silene latifolia -- bladder campion
Taraxacum officinale -- common dandelion
Thlaspi arvense -- field pennycress
Torilis japonica -- Japanese hedge-parsley
Valeriana officinalis -- garden valerian
Verbascum thapsus -- common mullein
Viburnum opulus -- European high-bush cranberry

Total number of plant species: 69
Number of alien, or non-native, plant species: 28 (41%)
Mean C: 2.1

This plant 6-acre community area consists of a shrub thicket and undifferentiated woodland. This PCA was cultivated through the 1970s at least in part but appears to be fallowed after that. The narrow gravel ridge in the northwest corner of the PCA does not appear to have been plowed but was likely grazed and quarried in part. Several native herbaceous species persist under the encroaching shrub canopy on this well drained ridge. The moisture regime varies from dry-mesic on this ridge to mesic in the lower elevations of this unit. The historic natural community type for this area was oak woodland. Very possible that the well-drained ridge supported dry-mesic prairie openings.

Appropriate target natural community types for restoration planning include prairie, oak woodland, and oak opening. Effective control of undesirable woody and herbaceous species will be essential to achieving this goal. Appropriate shrub control methods for this unit include cut stump treatments, basal bark application, hack and frill, pulling, and forestry mowing with follow up foliar herbicide applications. The best approach will likely be a combination of methods that minimize impacts and disturbance. Forestry mowing may not be practical on the steep slopes associated with the narrow dry-mesic ridge. Some cutting and treating by hand will be needed to achieve consistent control across the unit. Forestry mowing with follow-up foliar herbicide applications would be effective in relatively level areas accessible by machine. Cut stem treatment, basal bark application, or hack and frill treatments could be used in sensitive areas or areas inaccessible by heavy machinery.

Care should be taken to avoid damage to oak and hickory during management activities. Any damage to oaks, particularly the red oaks, should be avoided during the early spring through mid-summer to prevent the spread of oak wilt. The red oak group, which includes both red and black oaks, are particularly susceptible to new infections if damaged during the growing season.

A native seedbank is likely absent within the unit, and it will require the addition of a diverse native seed mix to reestablish a native plant community. This can be completed before or after shrub control efforts are implemented and largely depends on the method selected. The restoration and management plan should establish acceptance criteria and adaptive management strategies to address issues concerning recruitment and establishment. Once shrub cover and density are reduced to acceptable levels (less than 15%), and the herbaceous layer is well established (3-5 yrs after seeding) regular low intensity dormant season prescribed fire could be used to maintain this fire dependent system in perpetuity. The prescribed fire plan for the site should detail the objectives, burn unit descriptions, permits (if needed), prescribed conditions, a contingency plan, safety plan, and a go/no go checklist. Templates for these elements are available from the Wisconsin Prescribed Fire Council (https://prescribedfire.org/plan/)

Species List: Plant Community Area No. 6 – Co-dominant species are **bolded**

Native Species
Acer saccharum -- Sugar maple
Agrimonia gryposepala -- Common agrimony
Antennaria parlinii -- Parlin's pussy-toes
Asplenium platyneuron -- Ebony spleenwort
Carex brevior -- Plains oval sedge
Carex cephalophora -- Oval-headed sedge
Carex granularis -- Limestone meadow sedge
Carex pensylvanica -- Pennsylvania sedge
Carex rosea -- Rosy sedge
Circaea canadensis -- Broad-leaf enchanter's-nightshade
Dryopteris carthusiana -- Spinulose wood fern
Eutrochium maculatum -- Spotted Joe-Pye-weed
Fraxinus pennsylvanica -- Green ash
Fragaria vesca -- Woodland strawberry
Hylodesmum glutinosum -- Cluster-leaf tick-trefoil
Juniperus virginiana -- Eastern red-cedar
Liparis liliifolia – Purple twayblade orchid
Maianthemum racemosum -- Solomon's-plume
Monarda fistulosa -- Wild bergamot
Onoclea sensibilis -- Wensitive fern
Packera paupercula -- Northern ragwort
Parthenocissus quinquefolia -- Virginia creeper
Physocarpus opulifolius -- Common ninebark
Prunella vulgaris -- Self-heal
Ranunculus hispidus -- Bristly buttercup
Smilax ecirrhata -- Upright carrion-flower
Solidago speciosa -- Showy goldenrod
Symphyotrichum lateriflorum -- Side-flowering aster
Symphyotrichum novae-angliae -- New England aster
Viburnum lentago – Nannyberry
Vitis riparia -- Riverbank grape

NON-Native Species
Alnus glutinosa -- European alder
Asparagus officinalis – Wild asparagus

Convallaria majalis -- Lily-of-the-valley
Daucus carota -- Queen Anne's-lace
Dianthus armeria. – Wild sweet William
Hieracium caespitosum -- Field hawkweed
Leucanthemum vulgare -- Ox-eye daisy
Ranunculus acris -- Common buttercup
Rhamnus cathartica – common buckthorn
Rosa multiflora -- Multiflora rose
Valeriana officinalis -- Garden valerian
Verbascum thapsus – Common mullein
Viburnum opulus -- European cranberry-bush

Total number of plant species: 44
Number of alien, or non-native, plant species: 13 (31.8%)
Mean C: 2.9

This plant community area consists of a ruderal shrub thicket ranging from dry-mesic to mesic. Refer to PCA 5 for site history and management recommendations. However, the composition here is slightly different, with a higher cover of early successional native tree and shrub species. Wildlife observations included the common garter snake. A small but well-established population of the regionally uncommon Purple twayblade orchid was observed within this PCA. This early successional orchid thrives in rich shrub thickets and pine plantations, in addition to natural communities such as oak openings, oak woodlands, and various forest types. No Federal- or State-designated Special Concern, Threatened, or Endangered species were observed during the field inspection.

Plant Community Area No. 7 – Co-dominant species are **bolded**

Native Species
Ageratina altissima -- White snakeroot
Agrimonia gryposepala -- Common agrimony
Anemone cylindrica -- Candle anemone
Asplenium platyneuron -- Ebony spleenwort
Carex brevior -- Fescue sedge
Carex cephalophora -- Oval-headed sedge
Carex granularis -- Limestone meadow sedge
Carex rosea -- Rosy sedge
Carex siccata – Dry-spiked sedge
Carya ovata -- Shagbark hickory
Danthonia spicata – Poverty oat grass
Dichanthelium acuminatum var. fasciculatum -- Hairy panic grass
Erigeron strigosus -- Daisy fleabane
Eupatorium altissimum -- Tall boneset
Festuca saximontana – Rocky Mountain fescue
Fragaria virginiana -- Virginia strawberry
Geum canadense -- White avens
Juglans nigra -- Black walnut
Juncus tenuis -- Path rush
Juniperus virginiana -- Eastern red-cedar
Monarda fistulosa -- Wild bergamot
Panicum virgatum -- Switch grass
Parthenocissus quinquefolia -- Virginia creeper
Physalis longifolia -- Virginia ground-cherry
Plantago rugelii -- American plantain

Populus tremuloides -- Quaking aspen
Prunella vulgaris -- Self-heal
Prunus serotina -- Black cherry
Prunus virginiana -- Chokecherry
Quercus alba -- White oak
Quercus macrocarpa -- Bur oak
Quercus rubra -- Red oak
Quercus velutina -- Black oak
Ranunculus recurvatus -- Hooked buttercup
Rhus glabra -- Smooth sumac
Rubus occidentalis -- Black raspberry
Schizachyrium scoparium -- Little blue-stem
Sisyrinchium campestre – Prairie blue-eyed-grass
Solidago gigantea -- Giant goldenrod
Solidago speciosa -- Showy goldenrod
Symphyotrichum lateriflorum -- Side-flowering aster
Triosteum perfoliatum – Late horse-gentain
Ulmus americana -- American elm
Viola sororia -- Common blue violet

NON-Native Species
Ajuga genevensis -- Geneva bugle
Bromus tectorum -- Brome grass
Celastrus orbiculatus -- Oriental bittersweet
Cirsium vulgare -- Bull thistle
Daucus carota -- Queen Anne's-lace
Dianthus armeria—Deptford pink
Hieracium caespitosum -- Field hawkweed
Leucanthemum vulgare – Ox-eye daisy
Lonicera X bella -- Hybrid honeysuckle
Malus pumila -- Cultivated apple
Melilotus officinalis -- Yellow sweet-clover
Morus alba -- White mulberry
Poa compressa -- Canada bluegrass
Rhamnus cathartica -- Common buckthorn
Rosa multiflora -- Multiflora rose
Saponaria officinalis – Soapwort
Taraxacum officinale -- Dandelion
Valeriana officinalis -- Garden valerian

Total number of plant species: 63
Number of alien, or non-native, plant species: 18 (29%)
Mean C: 2.5

This plant community area consists of a small, degraded prairie opening and adjacent oak woodland and shrub thicket along a gravelly ridge trending southwest to the northeast from the clubhouse parking lot. An existing footpath bisects the area. Scattered prairie plants are found in a narrow margin on either side of the trail with quality improving toward the north end of the unit. A trail or road is evident in historic aerial photos dating back to the 1970s. Prairie species likely persisted here as periodic maintenance and tree and shrub clearing kept shrub encroachment to a minimum. Reducing nonnative and undesirable tree and shrub cover is a priority for this unit. Areas with established herbaceous cover do not require seeding. Adjacent areas are dominated by early successional native and invasive shrubs. These shrub tickets could be controlled to expand the prairie area within the unit. These shrub control areas are generally on steep slopes with bare soil. They could be seeded with a diverse native seed mix purchased from a native plant nursery, collected from a local remnant (with permission), or collected onsite.

Utilize regular, low intensity dormant season prescribed fire and undesirable tree and shrub control to maintain and improve community integrity and structure over time. No Federal- or State-designated Special Concern, Threatened, or Endangered species were observed during the field inspection.

Species List: Plant Community Area No. 8– Co-dominant species are **bolded**

Native Species
Acer negundo -- Box elder
Apocynum cannabinum -- Hemp-dogbane
Betula nigra -- River birch
Carex cephalophora -- Oval-headed sedge
Carex cristatella -- Crested sedge
Carex vulpinoidea -- Fox sedge
Carya ovata -- Shagbark hickory
Crataegus punctata -- Frosted hawthorn
Fraxinus pennsylvanica -- Green ash
Geum canadense -- White avens
Juncus dudleya -- Dudley's rush
Plantago rugelii -- American plantain
Populus deltoides -- Eastern cottonwood
Rumex britannica -- Great water dock
Salix amygdaloides -- Peach-leaved willow
Salix eriocephala -- Diamond willow
Salix interior -- Sandbar willow
Solidago gigantea -- Giant goldenrod
Symphyotrichum lanceolatum -- Panicled aster
Symphyotrichum lateriflorum -- Side-flowering aster
Verbena urticifolia -- White vervain
Vitis riparia -- Riverbank grape

NON-Native Species
Alnus glutinosa -- European alder
Carex leavenworthii -- Leavenworth's sedge
Crataegus phaenopyrum -- Washington hawthorn
Dactylis glomerata -- Orchard grass
Glechoma hederacea – Creeping Charlie
Lolium pratense -- Meadow fescue
Lonicera maackii -- Amur honeysuckle
Phalaris arundinacea -- Reed canary grass
Plantago lanceolata -- English plantain
Ranunculus acris -- Common buttercup
Rhamnus cathartica -- European buckthorn
Stellaria graminea -- Starwort

Total number of plant species: 34
Number of alien, or non-native, plant species: 11 (32.4%)
Weighted Mean C: 2.1

This approximately 0.5-acre plant community area consists of a poor-quality ruderal shrub thicket and wet meadow. Includes a small, sparsely vegetated constructed wetland basin near the property line. Several hoses, irrigation lines, and fittings were visible in this area. There is some potential here for wetland restoration. Future efforts could consider opportunities to restore or enhance wetland hydrology in this area. Palatable species were notably browsed, presumably by

deer. No Federal- or State-designated Special Concern, Threatened, or Endangered species were observed during the field inspection.

Plant Community Area No. 9 – Co-dominant species are **bolded**

Native Species
Ageratina altissima -- white snakeroot
Amelanchier laevis -- Allegheny serviceberry
Amphicarpaea bracteate -- Hog-peanut
Carex blanda -- Common wood sedge
Carex normalis -- Normal sedge
Carya ovata -- Shagbark hickory
Carex pensylvanica -- Pennsylvania sedge
Carex rosea -- Rosy sedge
Circaea canadensis -- Broad-leaf enchanter's-nightshade
Cornus foemina -- Gray dogwood
Dryopteris carthusiana -- Spinulose wood fern
Fraxinus americana -- White ash
Fraxinus pennsylvanica -- Green ash
Geum canadense -- White avens
Hackelia virginiana – Stickseed
Maianthemum racemosum -- Solomon's-plume
Maianthemum stellatum -- Starry false Solomon's seal
Oxalis stricta -- Wood-sorrel
Parietaria pensylvanica -- Pennsylvanian pellitory
Physocarpus opulifolius -- Common ninebark
Podophyllum peltatum -- May-apple
Primula meadia -- Eastern shooting-star
Prunus serotina -- Wild black cherry
Quercus alba -- White oak
Quercus velutina -- Black oak
Rubus idaeus -- Wild red raspberry
Solidago ulmifolia -- Elm-leaved goldenrod
Scrophularia marilandica – Late figwort
Symplocarpus foetidus -- Skunk-cabbage
Symphyotrichum lateriflorum -- Side-flowering aster
Symphyotrichum urophyllum -- Arrow-leaved aster
Toxicodendron radicans -- Poison -ivy
Ulmus americana -- American elm
Verbena urticifolia -- White vervain

NON-Native Species
Arctium minus – Burdock
Alliaria petiolata -- Garlic mustard
Berberis thunbergii -- Japanese barberry
Cirsium arvense -- Canada thistle
Cirsium vulgare -- bull thistle
Leonurus cardiaca -- Motherwort
Lonicera X bella -- Hybrid honeysuckle
Morus alba -- White mulberry
Nepeta cataria -- Catnip
Rhamnus cathartica – common buckthorn
Veronica officinalis -- Common speedwell

Total number of plant species: 45

Number of alien, or non-native, plant species: 11 (24%)
Mean C: 3.0

This 7-acre plant community area consists of degraded dry-mesic oak woodland. Community composition and structure are consistent with that of other unmanaged oak woodlands within the region. Historic disturbances to the plant community area include selective cutting, partial clearing, grading, and dumping. A 0.5-acre legacy dump remains within the unit. This area was not excluded from this PCA due to the small footprint, but it is dominated by weedy early successional natives and nonnative species. A few oaks remain along the fringes of the dump.

Oak woodland canopy structure is good at approximately 66% closure. The sub canopy and shrub layers were dense at approximately 85% closure. The ground layer is depauperate, mostly comprised of buckthorn seedlings with scattered oak woodland indicators. Invasive nonnative tree and shrub control is recommended; this includes barberry, honeysuckle, mulberry, and buckthorn. Due to the high density of desirable oak species and the presence of desirable native shrubs, forestry mowing is not recommended within the unit. Cut stump, hack and frill, and basal bark treatments would be effective for initial undesirable woody species control efforts. If using cut stump treatments, cut material could be piled and burned outside the unit, or burned in select areas within the unit when adequate snow cover is present to reduce the risk of wildfire. Care should be taken to site burn pile locations appropriately to avoid damage to desirable vegetation.

Black cherry has become well established within the unit at very high densities. This species could be reduced to give oak woodland species a competitive advantage by increasing available light to both shrub and ground layers. Ideally, this would occur along with non-native species control. Following shrub control, it is essential to monitor and control herbaceous invasive species as light and nutrient availability will increase. Following woody invasive species management, the unit could be maintained by a combination of low intensity dormant season prescribed fire, targeted invasive species management, and annual monitoring to track progress and identify adaptive management strategies for new and emerging issues. No Federal- or State-designated Special Concern, Threatened, or Endangered species were observed during the field inspection.

Species List: Plant Community Area No. 10 – Co-dominant species are **bolded**

Native Species

Achillea millefolium -- common yarrow
Ageratina altissima -- white snakeroot
Ambrosia artemisiifolia -- annual bur-sage
Asclepias syriaca -- common milkweed
Asclepias verticillata -- whorled milkweed
Carex molesta -- field oval sedge
Carex tenera -- marsh straw sedge
Carya ovata -- shagbark hickory
Erigeron annuus -- annual fleabane
Erigeron philadelphicus -- common fleabane
Euthamia graminifolia -- common flat-topped goldenrod
Fraxinus americana -- white ash
Fraxinus pennsylvanica -- green ash
Galium aparine -- annual bedstraw
Geum canadense -- white avens
Gleditsia triacanthos -- honey locust
Juglans nigra -- black walnut
Juncus dudleyi -- Dudley's rush
Juncus tenuis -- path rush

Juniperus virginiana -- eastern red-cedar
Monarda fistulosa -- bee balm
Onoclea sensibilis -- sensitive fern
Oxalis stricta -- common yellow oxalis
Parthenocissus quinquefolia -- Virginia creeper
Prunus serotina -- wild black cherry
Solidago canadensis -- Canadian goldenrod
Solidago gigantea -- giant goldenrod
Symphyotrichum lanceolatum -- panicled aster
Symphyotrichum lateriflorum -- side-flowering aster
Symphyotrichum pilosum -- frost aster
Triosteum perfoliatum -- feverwort
Ulmus americana -- American elm
Verbena urticifolia -- nettle-leaved vervain
Veronica serpyllifolia -- thyme-leaved speedwell
Vitis riparia -- frost grape

NON-Native Species

Alliaria petiolata -- garlic mustard
Arctium minus -- common burdock
Barbarea vulgaris -- garden yellow-rocket
Bromus arvensis -- fringed brome
Bromus inermis -- smooth brome
Bromus tectorum -- cheat grass
Carduus nutans -- musk thistle
Catalpa speciosa -- northern catalpa
Centaurea stoebe -- Spotted knapweed
Cerastium fontanum -- common mouse-ear chickweed
Cirsium arvense -- Canada thistle
Cirsium vulgare -- bull thistle
Crataegus phaenopyrum -- Washington hawthorn
Dactylis glomerata -- orchard grass
Daucus carota -- Queen Anne's-lace
Elaeagnus umbellata -- autumn olive
Festuca trachyphylla -- hard fescue
Frangula alnus -- European alder buckthorn
Glechoma hederacea -- creeping-Charlie
Hieracium caespitosum -- field hawkweed
Hypericum perforatum -- common St. John's-wort
Leucanthemum vulgare -- common daisy
Lolium pratense -- meadow fescue
Lonicera X bella -- Bell's honeysuckle
Malus toringo -- Japanese crab
Medicago sativa -- alfalfa
Morus alba -- Russian mulberry
Pastinaca sativa -- wild parsnip
Picea abies -- Norway spruce
Pinus nigra -- Austrian Pine
Plantago lanceolata -- English plantain
Plantago major -- broad-leaved plantain
Poa pratensis -- Kentucky bluegrass
Potentilla recta -- rough-fruited cinquefoil
Rhamnus cathartica -- common buckthorn
Robinia pseudoacacia -- black locust
Rosa multiflora -- multiflora rose

Rumex crispus -- curly dock
Securigera varia -- crown-vetch
Stellaria graminea -- common stitchwort
Taraxacum officinale -- common dandelion
Trifolium hybridum -- alsike clover
Trifolium repens -- white clover
Ulmus pumila -- Siberian elm
Valeriana officinalis -- garden-heliotrope
Verbascum thapsus -- common mullein
Veronica officinalis -- common gypsy-weed

Total number of plant species: 80
Number of alien, or non-native, plant species: 47 (59%)
Mean C: 1.1

This 29-acre plant community area consists of a very poor-quality surrogate grassland and shrub thicket dominated by weedy nonnative species. Refer to the community summary at the end of PCA 1 for site history, disturbances, and recommendations. No Federal- or State-designated Special Concern, Threatened, or Endangered species were observed during the field inspection.

Species List: Plant Community Area No. 11 – Co-dominant species are **bolded**

<u>Native Species</u>
Ageratina altissima – White snakeroot
Apocynum cannabinum – Hemp dogbane
Asclepias syriaca – Common milkweed
Calamagrostis canadensis – Blue-joint grass
Calystegia sepium – Bindweed
Carex radiata – Eastern star sedge
Carex stipata – Fox sedge
Carex stricta – Tussock sedge
Cornus amomum -- silky dogwood
Cuscuta gronovii – Dodder
Erigeron philadelphicus – Common fleabane
Equisetum arvense – common horsetail
Eutrochium maculatum – Spotted Joe-Pye-weed
Geum aleppicum – Yellow avens
Glyceria striata – Fowl manna grass
Impatiens capensis – Orange jewelweed
Iris virginica – Iris
Juncus dudleyi – Dudley's rush
Lactuca biennis -- Tall lettuce
Lycopus americanus – Water-horehound
Lycopus uniflorus – Bugleweed
Lathyrus palustris – Marsh pea
Lobelia siphilitica – Great blue lobelia
Onoclea sensibilis – Sensitive fern
Persicaria amphibia – Water smartweed
Persicaria punctata – Dotted smartweed
Pilea pumila – Clearweed
Pycnanthemum virginianum
Salix interior – Sandbar willow
Solidago gigantea – giant goldenrod
Stachys pilosa – Hedge nettle
Thelypteris palustris – Marsh fern

Ulmus americana – American elm

NON-Native Species

Alnus glutinosa -- European black alder
Barbarea vulgaris – Wintercress
Cirsium arvense – Canada thistle
Frangula alnus – Glossy buckthorn
Lonicera X bella -- Hybrid honeysuckle
Phalaris arundinacea – Reed canary grass
Poa pratensis – Kentucky bluegrass
Ranunculus acris – Common buttercup
Rhamnus cathartica – common buckthorn
Solanum dulcamara – Nightshade
Valeriana officinalis – Garden valerian

Total number of plant species: 44
Number of alien, or non-native, plant species: 11 (25%)
Mean C: 2.8

This approximately 0.3-acre wetland community area consists of a poor-quality southern sedge meadow invaded by reed canary grass. The area was dryer than expected with no standing water at the time of visit, but the ground water table was just below the surface (@ 6"). Selective foliar herbicide applications targeting reed canary grass will favor native grasses, sedges, and forbs. Combining mechanical and chemical control techniques will likely improve overall control and native plant recovery. Mowing reed canary before it sets seed, allowing plants to resprout, and applying foliar herbicide applications can improve control. Application of herbicide in a wetland will likely require an Aquatic Plant Management permit from the Wisconsin Department of Natural Resources. The restoration and management plan should clearly identify permitting responsibilities and timelines for preparatory work, notifications, applications, and reporting.

Combining this with overall efforts to control other nonnative species and conducting follow-up targeted foliar applications throughout the growing season will greatly improve community structure and function. Replanting treated areas may not be necessary as recruitment from the soil seed bank and dispersal from adjacent established rhizomatous natives will recolonize the treatment zones. If unassisted recovery is unacceptable, the area can be seeded or plugged with native sedge meadow species. It is recommended that plugs consist of difficult to grow sedge species that are dominant in remnant sedge meadow complexes. Appropriate species are Carex buxbaumii, C. lacustris, C. pellita, C. stricta, and C. trichocarpa. While challenging to establish from seed, these species establish and spread quickly from plugs or bare root plants. They also compete well with reed canary grass, especially when combined with active management. No Federal- or State-designated Special Concern, Threatened, or Endangered species were observed during the field inspection.

Species List: Plant Community Area No. 12 – Co-dominant species are **bolded**

Native Species
Acer negundo – Box elder
Bidens frondosa – Common beggar-ticks
Carex blanda – Wood sedge
Carex granularis – Limestone meadow sedge
Carex grisea – Gray sedge
Carya ovata – Shagbark hickory
Cornus amomum – Silky dogwood
Crataegus mollis – Downy hawthorn

Dryopteris carthusiana – Wood fern
Eutrochium maculatum – Spotted Joe-Pye-weed
Fraxinus americana – White ash
Fraxinus pennsylvanica – Green ash
Geum canadense – White avens
Hackelia virginiana – Stickseed
Pilea pumila – Clearweed
Populus deltoides – Cottonwood
Prunus serotina – Black cherry
Solidago gigantea – Giant goldenrod
Verbena urticifolia – White vervain
Urtica dioica – Stinging nettle

NON-Native Species
Alnus glutinosa – European black alder
Alliaria petiolata – Garlic mustard
Euonymus europaeus – European spindle tree
Glechoma hederacea – Creeping Charlie
Leonurus cardiaca – Motherwort
Lonicera X bella – Hybrid honeysuckle
Lysimachia nummularia – Creeping Jennie
Morus alba – White mulberry
Rhamnus cathartica – Common buckthorn
Rosa multiflora – Multiflora rose
Salix X fragilis – Crack willow
Typha X glauca – Hybrid cattail

Total number of plant species: 31
Number of alien, or non-native, plant species: 11 (35%)
Mean C: 1.9

This 28-acre wetland plant community area consists of poor-quality floodplain marsh, shrub-carr and lowland forest. Most of this unit is mapped floodplain and forested, shrub/scrub, or emergent wetland. This area was essentially treeless in the 1940 historic aerial photo with steadily increasing cover of trees and shrubs visible in subsequent photo years. Original surveyor notes for this area indicate that it was marsh in the 1840s with limited to no tree cover.

Historic disturbances within this complex include fill, excavation, siltation, sedimentation, erosion, and cultivation. The stormwater pond outlet on the eastern boundary of the unit is downcutting and scouring out a channel to the river. The stormwater pond outlet is now perched above this channel. Erosion will continue unless this issue is addressed. Continuing degradation may eventually impact the integrity of the stormwater pond berm. Erosion and scour are depositing silt and sediment downstream into an oxbow of the White River, possibly impacting water quality.

European alder and common buckthorn were dominant throughout the unit along with early successional short-lived natives. Hybrid cattail was dominant in deeper water marsh pockets. Restoration of this area should be planned as a multi-year phased approach due to the difficult access within wetland areas and dominance of woody invasive species. Both buckthorn and European black alder can be controlled with cut-stump, hack and frill, or basal bark applications. But certain methods may be less effective than others depending on the size class of the individual plant to be treated. Black alder seeds are known to float on flood waters, work should be phased to limit dispersal to recently controlled areas where practicable. Working upstream to downstream will reduce propagule pressure on downstream units. Once established woody plants have been controlled, multiple years of follow up treatments may be needed to control establishing plants from the seedbank or dispersers from adjacent unmanaged areas. Multiple

methods may be needed for effective long-term control. Mechanical means alone are generally not sufficient to control either species.

The quality of the soil seedbank in this area is unknown. This should be investigated as part of the restoration plan. It is likely that the area will need to be seeded, especially those areas that appear to be farmed historically. No Federal- or State-designated Special Concern, Threatened, or Endangered species were observed during the field inspection.

Plant Community Area No. 13 – Co-dominant species are **bolded**

Native Species
Alisma subcordatum – American water-plantain
Asclepias incarnata – Swamp milkweed
Bidens cernua – Nodding beggar-ticks
Boehmeria cylindrica – False nettle
Calamagrostis canadensis – Blue-joint grass
Calystegia sepium – Hedge bindweed
Campanula aparinoides – Marsh bellflower
Carex aquatilis – Water sedge
Carex lacustris -- Lake sedge
Carex stricta – Tussock sedge
Chara contraria – Opposite stonewort
Cicuta maculata – Water hemlock
Cornus amomum – Silky dogwood
Dryopteris cristata – Crested wood fern
Eleocharis erythropoda – Bald spike-rush
Equisetum arvense – Common horsetail
Equisetum fluviatile – Pipes
Erigeron philadelphicus – Common fleabane
Eutrochium maculatum – Spotted Joe-Pye-weed
Galium asprellum – Rough bedstraw
Glyceria striata – Fowl manna grass
Impatiens capensis – Orange jewelweed
Lathyrus palustris – Marsh pea
Leersia oryzoides – Rice cut-grass
Lemna minor – Common duckweed
Lycopus americanus – Water-horehound
Lycopus uniflorus – Northern bugleweed
Lysimachia thyrsiflora – Swamp loosestrife
Mentha canadensis – Field mint
Mimulus ringens – Monkey flower
Rumex britannica – Great water dock
Sagittaria latifolia – Broad-leaved arrowhead
Schoenoplectus tabernaemontani – Great bulrush
Sparganium eurycarpum – Broad-fruit bur-reed
Stuckenia pectinata – Comb pondweed
Symplocarpus foetidus – Skunk cabbage
Symphyotrichum lanceolatum – Lance-leaved aster
Teucrium canadense – American germander
Typha latifolia – Broad-leaved cattail
Utricularia vulgaris – Bladderwort
Veronica anagallis-aquatica – Water speedwell

NON-Native Species
Alnus glutinosa – European black alder

Iris pseudacorus – Yellow iris
Lythrum salicaria – Purple loosestrife
Myosoton aquaticum – Giant chickweed
Myosotis scorpioides – Forget-me-nots
Phalaris arundinacea – Reed canary grass
Potamogeton crispus – Curly leaf pondweed
Typha X glauca – Hybrid cattail

Total number of plant species: 48
Number of alien, or non-native, plant species: 8 (17%)
Mean C: 3.9

This 5-acre wetland plant community area consists of fair quality sedge meadow, emergent marsh, and submergent marsh adjacent to the White River. Reed canary grass and young European black alder were dominant; however, many native species were present. A few patches within this plant community area had very little invasive species cover, including one patch of Carex aquatilis present on the margins of the largest oxbow wetland. Areas retaining native dominance were generally the wettest areas. A treatment plan that includes timelines and control methods for the invasive species found here would be an excellent inclusion within a larger restoration plan. The need for additional native seed and plugs will largely depend on the severity of nontarget damage incurred while targeting invasive species. Seed mixes should be developed as part of the planning process. No Federal- or State-designated Special Concern, Threatened, or Endangered species were observed during the field inspection.

Plant Community Area No. 14 – Co-dominant species are **bolded**

<u>Native Species</u>
Acer negundo – Box elder
Achillea millefolium – Yarrow
Ageratina altissima – White snakeroot
Asclepias syriaca – Common milkweed
Betula nigra – River birch
Betula papyrifera – Paper birch
Carya ovata – Shagbark hickory
Erigeron annuus – Annual fleabane
Fraxinus americana **–** White ash
Fraxinus pensylvanica – Green ash
Hackelia virginiana – Stickseed
Pinus strobus – White pine
Plantago rugelii -- American plantain
Solidago canadensis – Canada goldenrod
Symphyotrichum drummondii – Drummond's aster
Verbena urticifolia – White vervain
Vitis riparia – Riverbank grape

<u>NON-Native Species</u>
Agrostis gigantea – Redtop
Dactylis glomerata – Orchard grass
Lolium arundinaceum – Reed fescue
Lonicera X bella -- Hybrid honeysuckle
Morus alba – White mulberry
Picea pungens – Blue spruce
Pinus nigra – European black pine
Plantago major – Common plantain
Populus alba – White poplar

Rhamnus cathartica – Common buckthorn
Taraxacum officinale – Dandelion
Tilia cordata – Little-leaf linden
Ulmus pumila – Siberian elm

Total number of plant species: 30
Number of alien, or non-native, plant species: 13 (44%)
Mean C: 1.5

This approximately 3-acre plant community consists of a discontinuous patches of poor-quality ruderal shrub thicket and planted ornamental trees within the former fairway buffers of the golf course. This unit is surrounded by PCA 10. Many horticultural tree plantings occur throughout this plant community including birch, white pine, little-leaf linden, black pine, and blue spruce. This unit undoubtedly provides some habitat to common wildlife species. As the area lies within the potential development zone with little natural area potential, no detail management recommendations are provided herein. If retained, non-native shrub control would be beneficial to the overall project area. The ground layer could be converted to prairie or woodland, and the trees eventually replaced with native oak woodland species as the ornamental plantings succumb to old age, pests, or disease. No Federal- or State-designated Special Concern, Threatened, or Endangered species were observed during the survey.

Species List: Plant Community Area No. 15 – Co-dominant species are **bolded**

Native Species
Ageratina altissima -- White snakeroot
Angelica atropurpurea – Great angelica
Arisaema triphyllum -- Jack-in-the-pulpit
Asclepias incarnata -- Swamp milkweed
Bidens frondosa -- Common beggar-ticks
Boehmeria cylindrica -- Small-spike false nettle
Carex blanda -- Common wood sedge
Carya ovata -- Shagbark hickory
Dryopteris carthusiana -- Spinulose wood fern
Equisetum arvense -- Common horsetail
Erigeron philadelphicus -- Common fleabane
Eupatorium perfoliatum -- Boneset
Eutrochium maculatum -- Joe-Pye-weed
Fallopia scandens -- Climbing false buckwheat
Fraxinus pennsylvanica -- Green ash
Galium triflorum -- Fragrant bedstraw
Geum aleppicum -- Yellow avens
Geum canadense -- White avens
Hackelia virginiana -- Stickseed
Impatiens capensis -- Orange jewelweed
Iris virginica -- Virginia iris
Juglans nigra -- Black walnut
Lobelia siphilitica -- Great blue lobelia
Ludwigia palustris -- Marsh purslane
Lycopus uniflorus -- Water-horehound
Mentha canadensis -- Wild mint
Oxalis stricta -- Common yellow oxalis
Parthenocissus quinquefolia -- Virginia creeper
Pilea pumila -- Canadian clearweed
Prunus virginiana -- Chokecherry
Rubus occidentalis -- Black raspberry

Salix interior -- Sandbar willow
Scirpus atrovirens -- Dark-green bulrush
Solidago gigantea -- Giant goldenrod
Solidago juncea -- Early goldenrod
Symphyotrichum lateriflorum -- Side-flowering aster
Thalictrum dioicum -- Early meadow-rue
Verbena urticifolia -- White vervain
Viola sororia -- Common blue violet
Vitis riparia -- Riverbank grape

NON-Native Species
Alnus glutinosa -- European black alder
Arctium minus -- Common burdock
Barbarea vulgaris -- Winter-cress
Berberis thunbergii -- Japanese barberry
Cirsium arvense -- Canada thistle
Frangula alnus -- Glossy buckthorn
Glechoma hederacea -- Creeping-Charlie
Phalaris arundinacea -- Reed canary grass
Rhamnus cathartica -- Common buckthorn
Rosa multiflora -- Multiflora rose
Solanum dulcamara -- Bittersweet nightshade
Taraxacum officinale -- Dandelion
Viburnum opulus -- High-bush cranberry

Total number of plant species: 56
Number of alien, or non-native, plant species: 13 (23%)
Mean C: 3.0

This 16-acre wetland plant community area consists of poor-quality ruderal wet to wet-mesic shrub thicket and floodplain forest. Original surveyor notes for the area indicate that this low lying wetland complex adjacent to the White River was historically open marsh. Open marsh was often a generalized community type in the historic surveyor notes. So, this “marsh” may have included components of several community types including emergent marsh, submergent marsh, sedge meadow, wet-mesic prairie, and shrub-carr. Difficult to say now.

Disturbances to the PCA include cultivation, mowing (haying), grazing, and potentially alteration of hydrology. The eastern half of this PCA appears to have been cultivated historically, with plow lines visible in several historic aerial photos. Farm or access roads are visible in the historic aerial photo record, crossing the river at a couple different locations. Alterations to hydrology were likely within the cultivated areas, given the low-lying aspect of these fields. Subsurface drainage tile could be present within the unit, but this is only speculation. Even if drain tile is present, it is unlikely that it is in disrepair as it has not been maintained or replaced in decades. An additional hydrology assessment would be needed to determine current impacts and potential solutions.

The invasive common buckthorn and European black alder dominate this PCA. Controlling these and the other invasive species mentioned in the non-native species section above will be of paramount importance to the restoration of this plant community area. As in previous units, a combination of methods can be used across the PCA to maximize control while minimizing expenses. Permits may be needed from the Wisconsin Department of Natural Resources if applying herbicides to surface waters. The restoration and management plan should detail the permits needed to conduct work proposed within the plan. Due to the extent of non-native species cover within this unit, it will likely be necessary to apply a native seed mix (or mixes) and plant native plugs to restore this plant community area. No Federal- or State-designated Special Concern, Threatened, or Endangered species were observed during the field inspection.

Species List: Plant Community Area No. 16 – Co-dominant species are **bolded**

Native Species
Cornus amomum -- Silky dogwood
Cornus sericea -- Red osier dogwood
Eutrochium maculatum -- Joe-Pye-weed
Heteranthera dubia -- Water star-grass
Impatiens capensis -- Orange jewelweed
Iris virginica – Iris
Mimulus ringens -- Monkey-flower
Pilea fontana -- Lesser clearweed
Sagittaria latifolia -- Broad-leaved arrowhead
Salix interior -- Sandbar willow
Salix spp. – Willow
Typha latifolia -- Broad-leaved cat-tail

NON-Native Species
Alnus glutinosa -- European black alder
Lysimachia nummularia -- Creeping-Jennie
Phalaris arundinacea -- Reed canary grass
Typha angustifolia -- Narrow-leaved cat-tail
Typha X glauca -- Hybrid cat-tail
Viburnum opulus -- European cranberry-bush

Total number of plant species: 17
Number of alien, or non-native, plant species: 7 (41.2%)
Mean C: 2.8

This 7-acre wetland plant community area consists of poor-quality emergent marsh within the White River floodplain (at least in part) primary environmental corridor. No Federal- or State-designated Special Concern, Threatened, or Endangered species were observed during the field inspection. Diversity could be enhanced by targeting dominant non-native species for control. Control techniques include chemical and mechanical methods to maximize treatment effectiveness. The application of herbicide and mechanical removal of vegetation within wetlands may require a permit from the Wisconsin Department of Natural Resources. Permits requirements should be identified in the restoration and management plan for the site.

Species List: Plant Community Area No. 17 – Co-dominant species are **bolded**

Native Species
Asclepias incarnata -- Swamp milkweed
Asclepias syriaca -- Common milkweed
Bidens tripartita -- straw-stem beggar-ticks
Bidens frondosa -- Common beggar-ticks
Boemaria cylindrica – False spike-nettle
Bolboschoenus fluviatilis -- River bulrush
Carex stricta – Tussock sedge
Cirsium arvense -- Canada thistle
Impatiens capensis -- Orange jewelweed
Leersia oryzoides -- Rice cut grass
Persicaria pensylvanica -- Pennsylvania smartweed
Persicaria punctata -- Dotted smartweed
Pilea pumila -- Canadian clearweed

Sagittaria latifolia -- Broad-leaved arrowhead
Scirpus atrovirens – Dark-green bulrush
Scutellaria lateriflora -- Blue skullcap
Sparganium eurycarpum -- Common bur-reed
Stuckenia pectinata -- Comb pondweed
Urtica dioica -- Stinging nettle
Verbena hastata -- Blue vervain

NON-Native Species
Alnus glutinosa -- European black alder
Lythrum salicaria -- Purple loosestrife
Myriophyllum spicatum -- Eurasian water-milfoil
Phalaris arundinacea -- Reed canary grass
Rhamnus cathartica -- Common buckthorn
Typha angustifolia -- Narrow-leaved cat-tail
Typha X glauca -- Hybrid cat-tail

Total number of plant species: 26
Number of alien, or non-native, plant species: 8 (30.8%)
Mean C: 2.4

This 5-acre plant community area consists of a poor-quality wet-meadow and marsh within the White River floodplain primary environmental corridor. This area was noted as open marsh within the original surveyors notes and maintains that structure to this day. However, composition of the system has shifted towards invasive species dominance. A few of the more extreme meanders of the river have been cut off, forming oxbow wetlands which add to the diversity of the site by providing deeper pool habitat for plants, fish, and wildlife.

Invasive non-native species control will be critical to restoring this plant community area. Chemical and mechanical control methods should maximize control while minimizing non-target damage to native plants. If unharmed, native species should be able to recolonize the site within areas of minimal invasion. In areas of widespread treatment, it may be necessary to replant the area with native seed mixes and plugs. Prescribed fire could be used to eliminate treated or untreated vegetation to both expose the existing seedbank and promote good seed soil contact of the seed mix applied to the unit. Emergent marsh, sedge meadow, and wet prairie species native to Wisconsin would be appropriate.

No Federal- or State-designated Special Concern, Threatened, or Endangered species were observed during the field inspection

Species List: Plant Community Area No. 18 – Co-dominant species are **bolded**

Native Species
Acer negundo -- Box elder
Acer saccharinum -- Silver maple
Acer saccharum -- Sugar maple
Ambrosia trifida -- Giant ragweed
Bidens frondosa -- Common beggar-ticks
Carex blanda -- Common wood sedge
Carex pensylvanica -- Pennsylvania sedge
Carya ovata -- Shagbark hickory
Cornus alternifolia -- Alternate-leaved dogwood
Cyperus odoratus -- Flat sedge
Dioscorea villosa -- Wild yam
Dryopteris carthusiana -- Spinulose wood fern
Erigeron philadelphicus -- Common fleabane

Eutrochium maculatum -- Joe-Pye-weed
Fallopia scandens -- Climbing false buckwheat
Fraxinus pennsylvanica -- Green ash
Galium triflorum -- Fragrant bedstraw
Geum canadense -- White avens
Hackelia virginiana -- Stickseed
Hydrophyllum virginianum -- Virginia water-leaf
Impatiens capensis -- Orange jewelweed
Juglans nigra -- Black walnut
Larix laricina – Tamarack
Lobelia siphilitica -- Great blue lobelia
Monotropa uniflora – Ghost pipe
Oxalis stricta -- Common yellow oxalis
Parthenocissus quinquefolia -- Virginia creeper
Persicaria pensylvanica -- Pennsylvania smartweed
Physalis longifolia -- Long-leaved ground-cherry
Pilea pumila -- Canadian clearweed
Quercus alba -- White oak
Quercus macrocarpa -- Bur oak
Rubus occidentalis -- Black raspberry
Salix interior -- Sandbar willow
Thalictrum dioicum -- Early meadow-rue
Tilia americana -- Basswood
Ulmus americana -- American elm
Verbena urticifolia -- White vervain
Vitis riparia -- Riverbank grape
Xanthium strumarium -- Rough cocklebur
Zizia aurea -- Golden alexanders

<u>NON-Native Species</u>
Berberis thunbergii -- Japanese barberry
Cerastium fontanum – Common mouse-eared chickweed
Cirsium arvense -- Canada thistle
Daucus carota -- Queen Anne's-lace
Echinochloa crus-galli -- Barnyard grass
Lonicera maackii -- Amur honeysuckle
Lonicera X bella -- Hybrid honeysuckle
Lysimachia nummularia -- Creeping-Jennie
Lythrum salicaria -- Purple loosestrife
Phalaris arundinacea -- Reed canary grass
Rhamnus cathartica -- Common buckthorn
Robinia pseudoacacia -- Black locust
Rosa multiflora -- Multiflora rose
Silene latifolia – Bladder campion

Total number of plant species: 55
Number of alien, or non-native, plant species: 14 (25%)
Mean C: 2.7

This plant community area consists of undifferentiated woodland and poor-quality dry-mesic forest. This plant community area is mostly found on the margins of the site adjacent to private lands. Quality ranges within these woods, but No Federal- or State-designated Special Concern, Threatened, or Endangered species were observed during the field inspection.

Species List: Plant Community Area No. 19 – Co-dominant species are **bolded**

Native Species
Ambrosia artemisiifolia -- common ragweed
Asclepias verticillata -- whorled milkweed
Carex blanda -- common wood sedge
Carex brevior -- plains oval sedge
Carex cephalophora -- oval-headed sedge
Dichanthelium oligosanthes -- few-flowered panic grass
Eupatorium altissimum -- upland boneset
Geum canadense -- white avens
Lithospermum incisum -- fringed puccoon
Oenothera biennis -- common evening-primrose
Oxalis stricta -- common yellow oxalis
Plantago rugelii -- American plantain
Prunella vulgaris -- heal-all
Sporobolus compositus -- meadow drop-seed

NON-Native Species
Bromus inermis -- smooth brome
Medicago lupulina -- black medick
Melilotus officinalis -- yellow sweet-clover
Poa compressa -- Canada bluegrass
Poa pratensis -- Kentucky bluegrass
Potentilla recta -- sulphur cinquefoil
Rhamnus cathartica -- common buckthorn
Robinia pseudoacacia -- black locust
Rosa multiflora -- multiflora rose
Saponaria officinalis -- bouncing-bet

Total number of plant species: 24
Number of alien, or non-native, plant species: 10 (42%)
Mean C: 1.4

Split from PCA 4, this 1-acre sandy old field is dominated by early successional natives. Most of the area retaining an open character was once a graded roadbed, and portions appear to be excavated in the historic aerials. Prairie species likely colonized the area from adjacent oak woodland after disturbance ended in the 1970's. While not technically a prairie this PCA harbors several prairie species not seen elsewhere on the site, providing a refugia and enhancing biodiversity. It is quite possible that other prairie and oak opening taxa utilize this area as a refugia, especially insects and birds. The area could be an important local turtle nesting location due to the relatively open sandy soil and proximity to the White River. No Federal- or State-designated Special Concern, Threatened, or Endangered species were observed during the field inspection.

Species List: Plant Community Area No. 20 – Co-dominant species are **bolded**

Native Species
Acer negundo -- box elder
Acer saccharinum -- silver maple
Ambrosia trifida -- giant ragweed
Bidens frondosa -- common beggar-ticks
Carex blanda -- common wood sedge
Cyperus odoratus -- flat sedge
Dioscorea villosa -- wild yam
Dryopteris carthusiana -- spinulose wood fern,

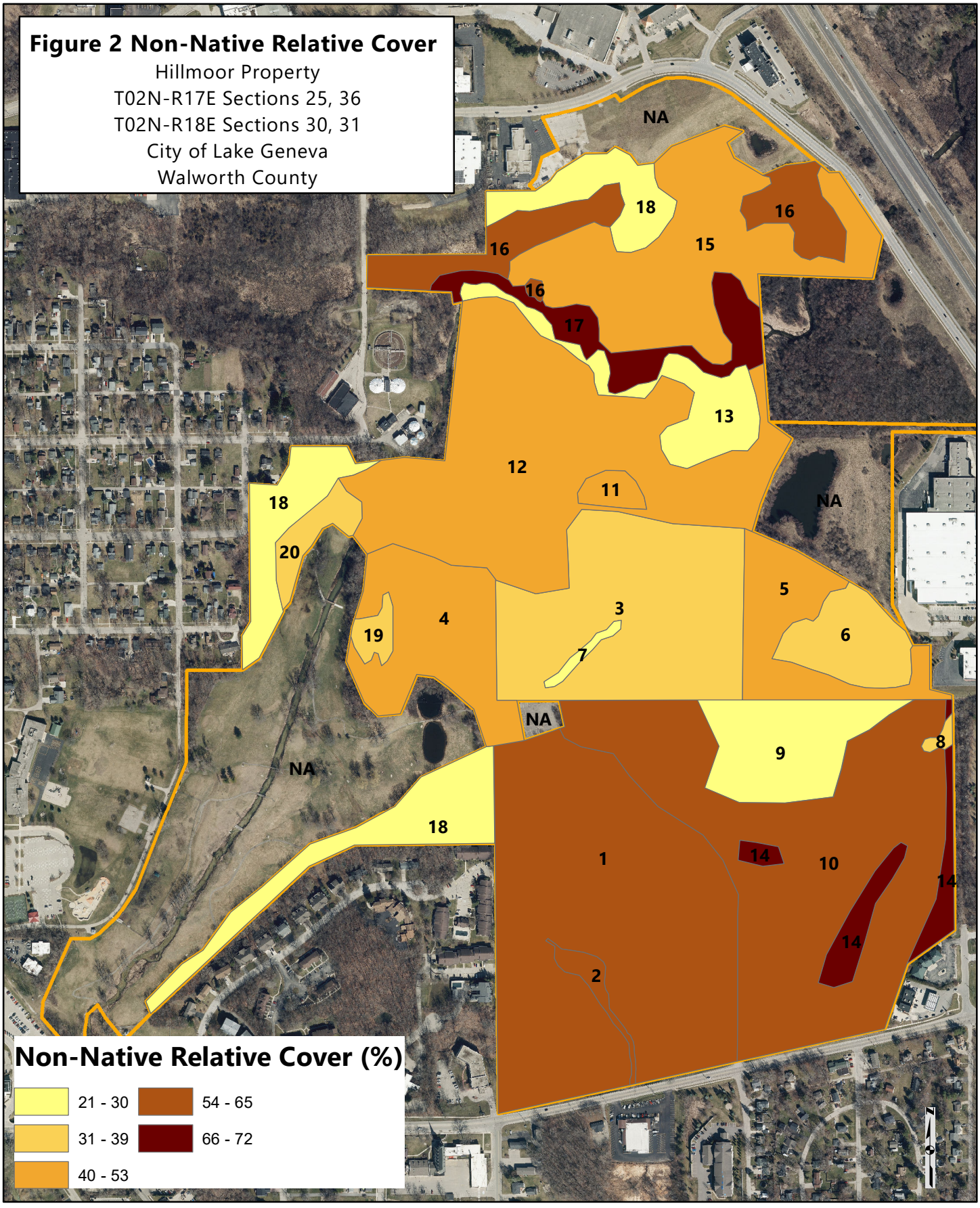
Erigeron philadelphicus -- common fleabane
Fallopia scandens -- climbing false buckwheat
Fraxinus pennsylvanica -- green ash
Galium triflorum -- fragrant bedstraw
Geum alepicum – yellow avens
Hackelia virginiana -- beggar's-lice
Hydrophyllum virginianum -- Virginia water-leaf
Impatiens capensis -- orange jewelweed
Juglans nigra -- black walnut
Lobelia siphilitica -- great blue lobelia
Oxalis stricta -- common yellow oxalis
Parthenocissus quinquefolia -- Virginia creeper
Persicaria pensylvanica -- Pennsylvania smartweed
Pilea pumila -- Canadian clearweed
Rubus occidentalis -- black-cap
Salix interior -- sandbar willow
Tilia americana -- Basswood
Ulmus americana -- American elm
Verbena urticifolia -- white vervain
Vitis riparia -- river bank grape
Xanthium strumarium -- common cocklebur

NON-Native Species
Berberis thunbergii -- Japanese barberry
Cirsium arvense -- Canada thistle,
Echinochloa crus-galli -- barnyard grass
Lonicera maackii -- Amur honeysuckle
Lonicera X bella -- Bell's honeysuckle
Lysimachia nummularia -- creeping-Charlie
Lythrum salicaria -- purple loosestrife
Phalaris arundinacea -- reed canary grass
Rhamnus cathartica -- common buckthorn
Rosa multiflora -- multiflora rose

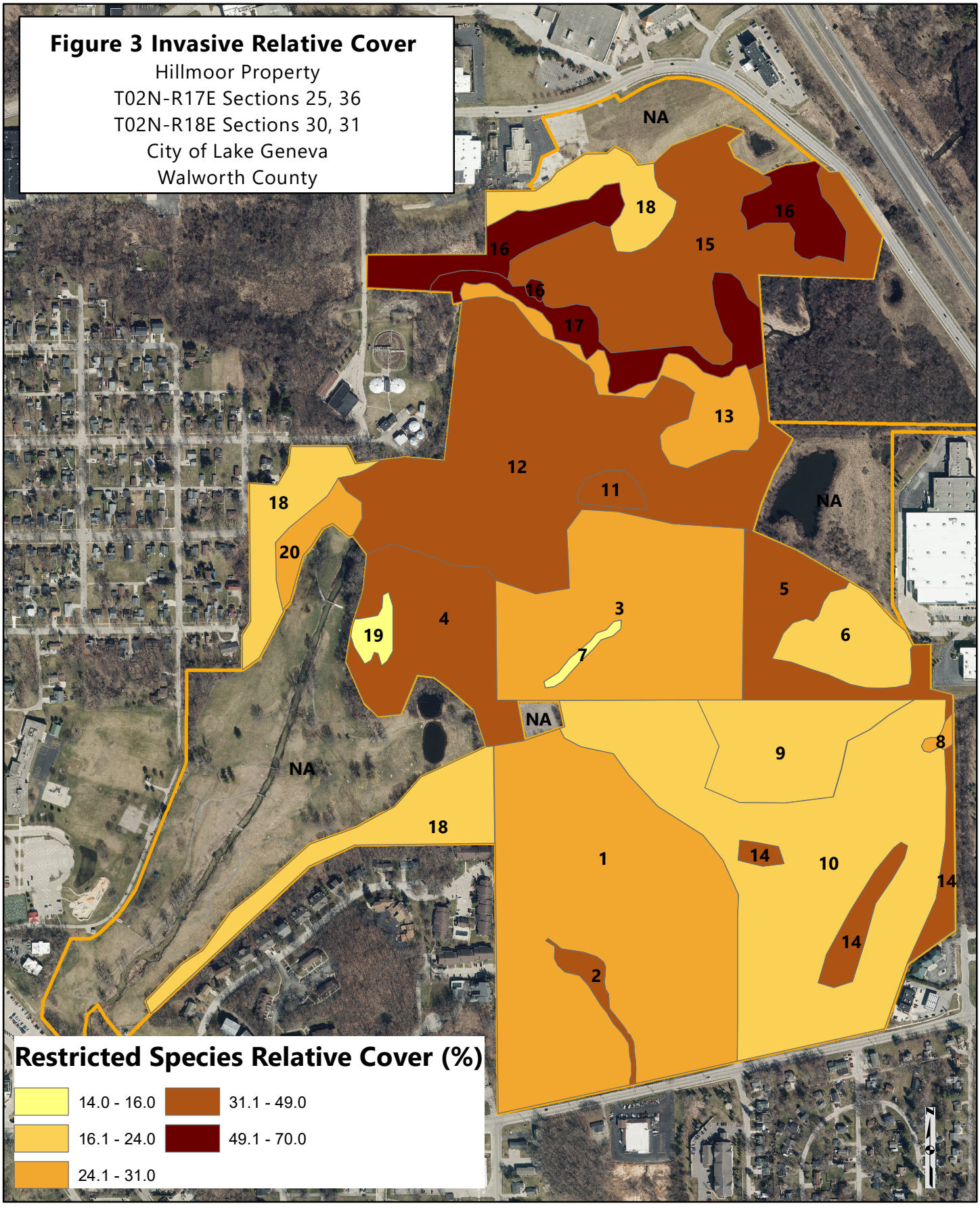
Total number of plant species: 39
Number of alien, or non-native, plant species: 10 (26%)
Mean C: 2.0

This 2-acre plant community consists of degraded floodplain forest, southern hardwood swamp, and excavated ponds. Disturbances to the PCA include historic clearing of vegetation, cultivations, fill, excavation and side casting of dredge spoil. Removal of invasive species and reestablishing native floodplain forest species will benefit this community type. There is opportunity to expand and reestablish this type within the adjacent mowed grass areas to the east within the White River Floodplain. This could include the removal or relocation of the existing paved path to higher ground within the floodplain. At least from historic aerial photographs, it appears that the path is inundated from time to time. No Federal- or State-designated Special Concern, Threatened, or Endangered species were observed during the field inspection.

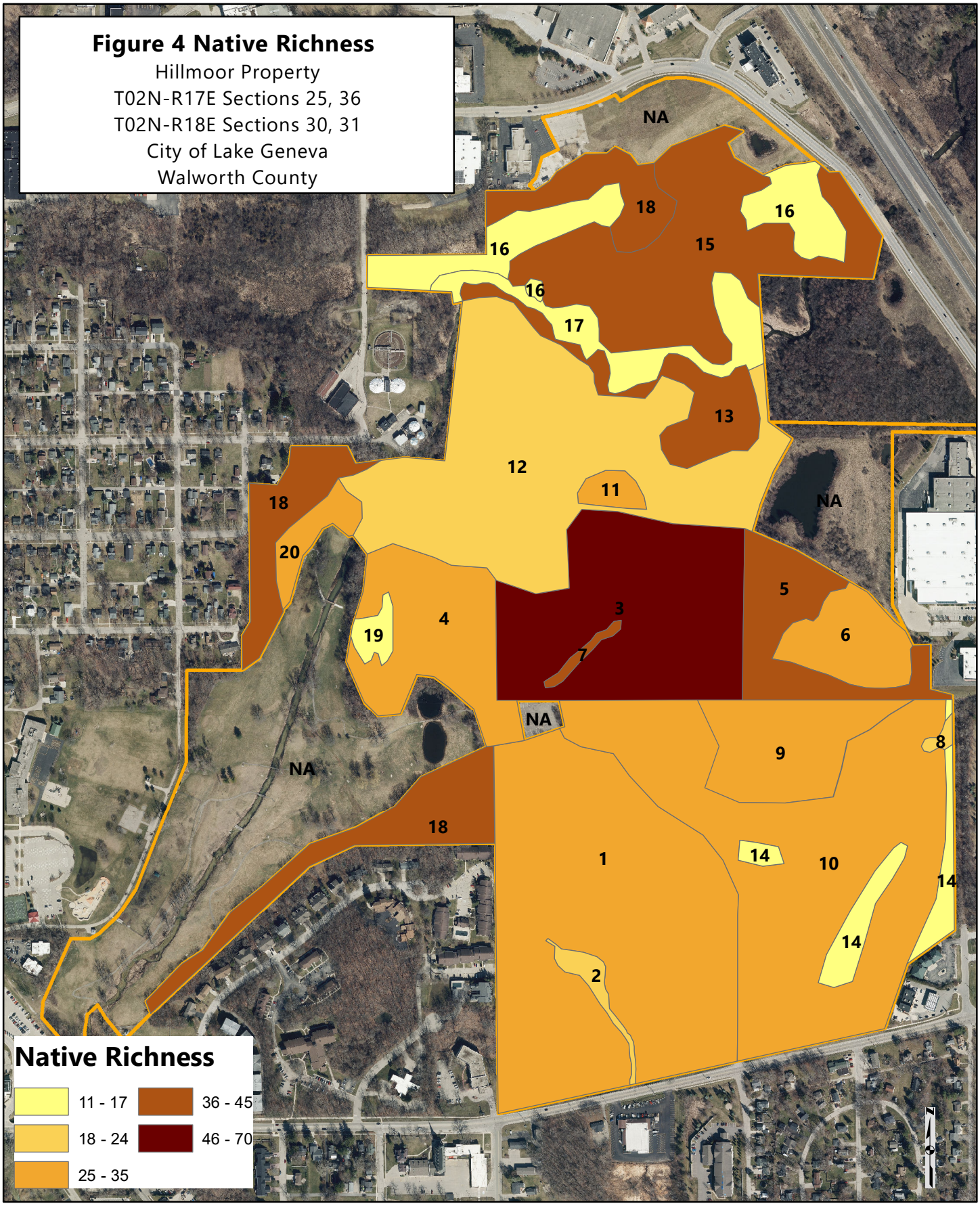

Figure 1 Plant Community Areas
Hillmoor Property
T02N-R17E Sections 25, 36
T02N-R18E Sections 30, 31
City of Lake Geneva
Walworth County
NA
18
16
15
16
16
17
13
12
11
NA
18
20
5
3
4
19
6
NA
9
8
NA
18
1
14
10
14
14
2
N
Plant Community Area
0 170 340 680 1,020 1,360
Feet
Source: Southeastern Wisconsin Regional Planning Commission
Orthophoto Date: 2024



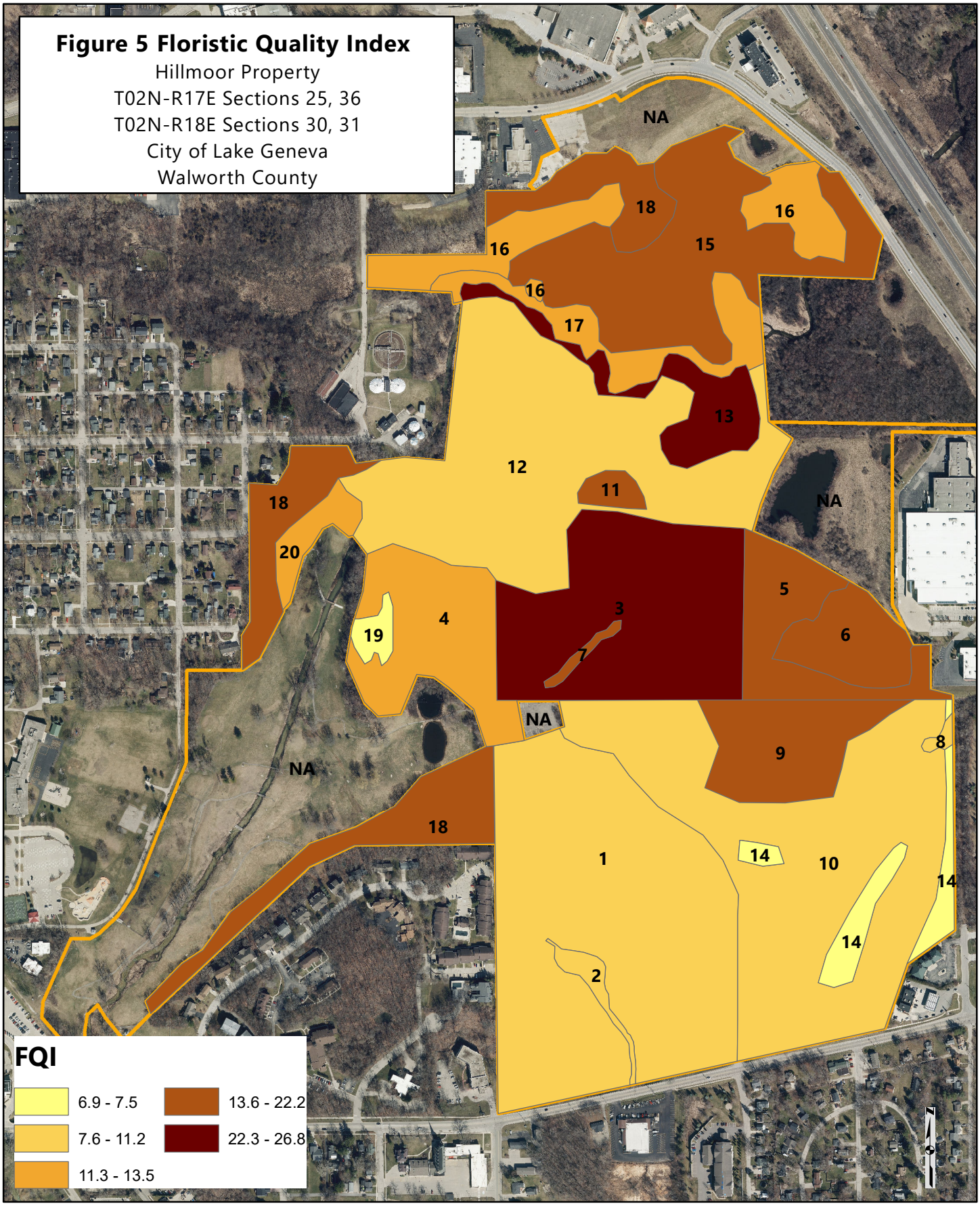
Source: Southeastern Wisconsin Regional Planning Commission
Orthophoto Date: 2024



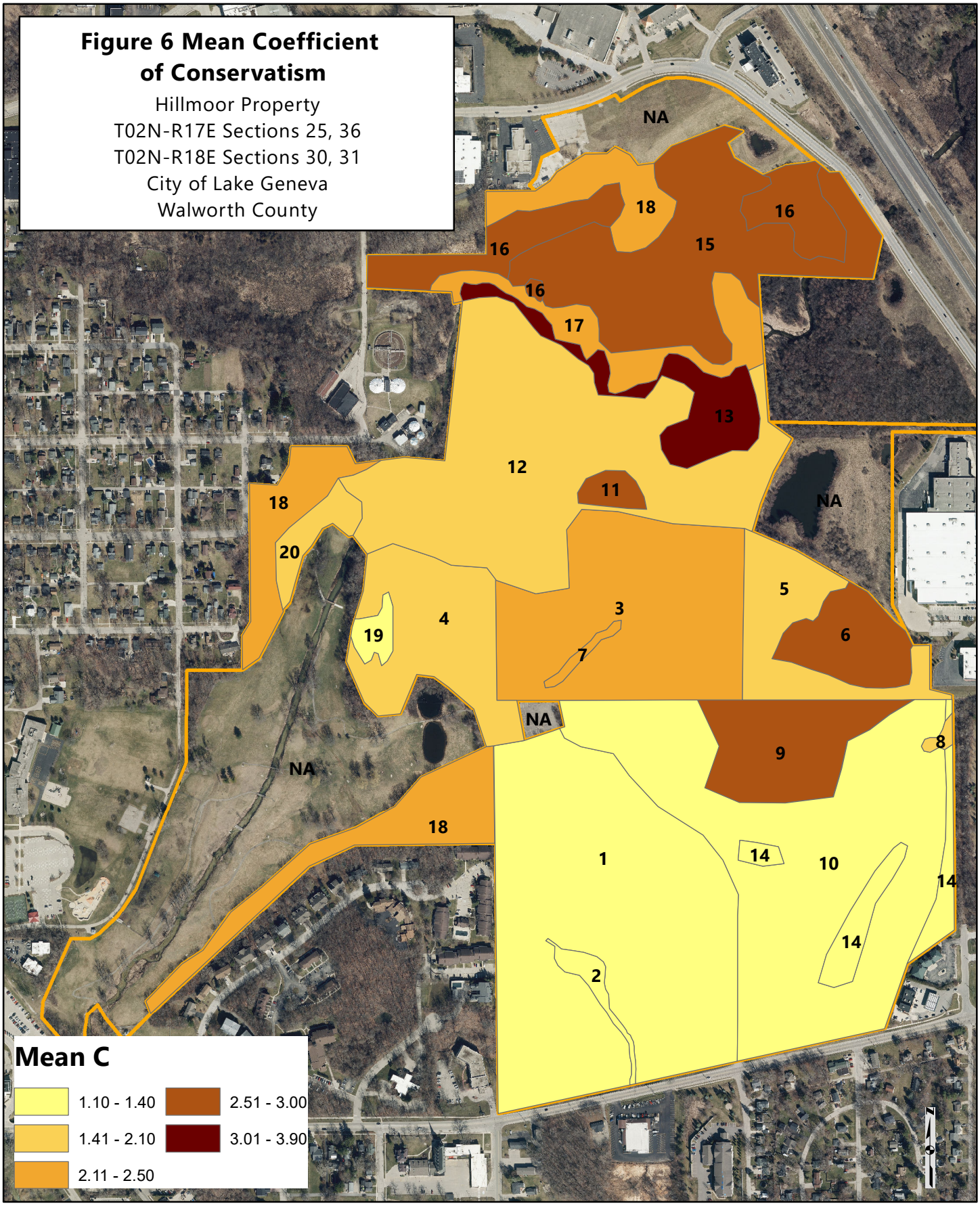
Source: Southeastern Wisconsin Regional Planning Commission
Orthophoto Date: 2024



Source: Southeastern Wisconsin Regional Planning Commission
Orthophoto Date: 2024



Source: Southeastern Wisconsin Regional Planning Commission
Orthophoto Date: 2024



Source: Southeastern Wisconsin Regional Planning Commission
Orthophoto Date: 2024

Historical Vegetation Inventories

Appendix A

DMR

COPY

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

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June 11, 1990

Mr. Barney Brugger
Building Inspector/
Zoning Administrator
City of Lake Geneva
P.O. Box 740
Lake Geneva, Wisconsin 53147

Re: SEWRPC No. CA 515-32

Dear Mr. Brugger:

This is to advise you that on May 17, 1990, Mr. Donald M. Reed, Commission Principal Biologist, conducted a field inspection of a proposed development parcel adjacent to the White River and located in the Southwest one-quarter of U.S. Public Land Survey Section 30, Township 2 North, Range 18 East, City of Lake Geneva, Walworth County, Wisconsin, for the purpose of identifying in the field the boundary of the primary environmental corridor on the subject parcel.

The primary environmental corridor boundary was identified and staked in the field. It is the Commission staff's understanding that the primary environmental corridor boundary will be surveyed and identified on a forthcoming plat of survey attendant to the development of the subject parcel. In addition, a list of plant species identified within the subject primary environmental corridor is attached hereto as Exhibit A.

Should you have any questions regarding this information, please do not hesitate to call.

Sincerely,

Kurt W. Bauer
Executive Director

KWB/ib
h17.dmr
Enclosure
cc: Mr. Paul A. Johnson
R.A. Smith & Associates

h27.rel/ib
6/7/90
300-300

EXHIBIT A

PRELIMINARY VEGETATION SURVEY
HILLMORE COUNTRY CLUB

Date: May 17, 1990

Observers: Donald M. Reed, Principal Biologist
Rachel E. Lang, Assistant Biologist
Southeastern Wisconsin Regional Planning Commission

Location: City of Lake Geneva in the Southwest one-quarter of U.S. Public Land Survey Section 30, Township 2 North, Range 18 East, Walworth County, Wisconsin.

Species List:

PINACEAE
Pinus resinosa[1,2]--Red pine

CUPRESSACEAE
Juniperus virginiana--Red cedar

GRAMINEAE
Bromus inermis[3]--Smooth brome grass
Poa pratensis--Kentucky bluegrass
Agropyron repens[3]--Quack grass
Agropogon scoparius[2]--Little bluestem grass

CYPERACEAE
Carex pensylvanica--Pennsylvania sedge
Carex sp. --Sedge

LILIACEAE
Smilacine stellata--Starry solomon's plume
Smilax ecirrhata--Low carrion flower

SALICACEAE
Populus tremuloides--Quaking aspen
Salix sp. --Willow

JUGLANDACEAE
Carya ovata--Shagbark hickory

FAGACEAE
Quercus alba--White oak
Quercus macrocarpa--Bur oak
Quercus borealis--Northern red oak

ULMACEAE
Ulmus americana--American elm
Ulmus rubra--Red elm

Ulmus pumila[2,3]--Siberian elm

BERBERIDACEAE
Podophyllum peltatum--Mayapple

CRUCIFERAE
Barbarea vulgaris[2,3]--Yellow rocket
Alliaria officinalis[2,3]--Garlic-mustard

ROSACEAE
Rubus occidentalis--Black raspberry
Rosa multiflora[2,3]--Multiflora rose
Prunus serotina--Black cherry
Crataegus spp.--Hawthorn

FABACEAE
Medicago sativa[2,3]--Alfalfa
Lespedeza capitata[2]--Prairie bush-clover
Robinia pseudoacacia[2,3]--Black locust

ANACARDIACEAE
Rhus radicans--Poison ivy
Rhus glabra--Smooth sumac

ACERACEAE
Acer saccharum--Sugar maple
Acer negundo--Boxelder

RHAMNACEAE
Rhamnus catharticus[3]--Common buckthorn

VITACEAE
Vitis riparia--River-bank grape
Parthenocissus quinquefolia--Virginia creeper

VIOLACEAE
Viola sp. --Violet

CORNACEAE
Cornus racemosa--Grey dogwood

OLEACEAE
Fraxinus americana--White ash

VERBENACEAE
Verbena stricta--Hoary vervain

LABIATAE
Glecoma hederacea[3]--Creeping Charlie
Leonurus cardiaca[2,3]--Motherwort

RUBIACEAE
Galium sp. --Cleavers

CAPRIFOLIACEAE
Viburnum lentago--Nannyberry
Lonicera X bella[3]--Hybrid honeysuckle

COMPOSITAE
Solidago altissima--Tall goldenrod
Aster sagittifolius--Arrowleaf aster
Aster pilosus--Frost aster
Arctium minus[2,3]--Common burdock
Taraxacum officinale[2,3]--Common dandelion
Tragopogon pratensis[2]--Common goat's beard

Total number of plant species: 51+
Number of alien, or non-native, plant species: 14 (27 percent)

This approximately 25-acre upland plant community area consists of southern mesic to dry-mesic hardwoods. Disturbances to the plant community area include selective tree cutting and past agricultural activities along the woodland edge. No federal- or state-designated rare, threatened, or endangered species were observed during the field inspection.

---

[1]Planted tree species.

[2]Growing along the upland edge.

[3]Alien, or non-native,plant species.

COPY

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

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November 21, 1989

Mr. Barney Brugger
Building Inspector/Zoning Administrator
City of Lake Geneva
P.O. Box 740
Lake Geneva, Wisconsin 53147

Re: SEWRPC No. CA 515-32

Dear Mr. Brugger:

This is to advise you that on November 14, 1989, Mr. Donald M. Reed, Commission Principal Biologist, conducted a field inspection of a proposed development parcel adjacent to the White River and located in the Southwest one-quarter of U.S. Public Land Survey Section 30, Township 2 North, Range 18 East, City of Lake Geneva, Walworth County, Wisconsin, for the purpose of identifying in the field the boundary of the wetland on the subject parcel.

The wetland boundary was identified and staked in the field. It is the Commission staff's understanding that the wetland boundary will be surveyed and identified on a forthcoming plat of survey attendant to the development of the subject parcel. In addition, a list of plant species identified within the subject wetland is attached hereto as Exhibit A.

Should you have any questions regarding this information, please do not hesitate to call.

Sincerely,

Kurt W. Bauer
Executive Director

KWB/ib
Enclosure

cc: Mr. Paul A. Johnson, R.A. Smith & Associates

h24.rel/ib
11-21-89
100-300'

EXHIBIT A

PREMLIMINARY VEGETATION SURVEY
WHITE RIVER WETLAND STAKING

Date: November 14, 1989

Observers: Donald M. Reed, Principal Biologist
Rachel E. Lang, Assistant Biologist
Southeastern Wisconsin Regional Planning Commission

Location: City of Lake Geneva in the Southwest one-quarter of U.S. Public Land Survey Section 30, Township 2 North, Range 18 East, Town of Lyons, Walworth County, Wisconsin.

Species List:

EQUISETACEAE
- Equisetum sp. --Horsetail

TYPHACEAE
- Typha latifolia--Broad-leaved cat-tail
- Typha angustifolia--Narrow-leaved cat-tail

ALISMATACEAE
- Alisma plantago-aquatica--Water plantain

GRAMINEAE
- Bromus inermis[1,2]--Smooth brome grass
- Poa pratensis--Kentucky bluegrass
- Dactylis glomerata[1,2]--Orchard grass
- Agropyron repens[1,2]--Quack grass
- Calamagrositis canadensis--Canada bluejoint grass
- Agrositis alba[1,2]--Redtop grass
- Spartina pectinata--Prairie cord grass
- Phalaris arundinacea[1]--Reed canary grass
- Setaria sp.[1,2]--Foxtail grass
- Andropogon gerardi--Big bluestem grass

CYPERACEAE
- Scirpus atrovirens--Green bulrush
- Carex stricta--Tussock sedge
- Carex sp.--Sedge

IRIDACEAE
- Iris versicolor--Blue flag iris

SALICACEAE
- Populus tremuloides[2]--Quaking aspen
- Populus deltoides--Cottonwood
- Salix babylonica[1]--Weeping willow

Salix nigra--Black willow
Salix interior--Sand-bar willow
Salix bebbiana--Beaked willow

BETULACEAE
Betula papyrifera[2,3]--Paper birch
Alnus rugosa--Tag alder

FAGACEAE
Quercus macrocarpa[2]--Bur oak

ULMACEAE
Ulmus americana--American elm
Ulmus rubra[2]--Red elm

URTICACEAE
Urtica dioica--Stinging nettle

POLYGONACEAE
Polygonum pensylvanicum--Pinkweed
Polygonum sp. --Smartweed

RANUNCULACEAE
Anemone cylindrica[2]--Thimbleweed

CRUCIFERAE
Nasturtium officinale[1]--Water-cress
Hesperis matronalis[1]--Dame's rocket

ROSACEAE
Geum canadense--White avens
Rubus occidentalis--Black raspberry
Agrimonia (parviflora?)--Swamp agrimony
Rosa multiflora[1,2]--Multiflora rose
Rosa (palustris?)--Swamp rose
Prunus serotina[2]--Black cherry

FABACEAE
Melilotus alba[1,2]--White sweet clover

GERANIACEAE
Geranium maculatum--Wild geranium

ANACARDIACEAE
Rhus glabra[2]--Smooth sumac

ACERACEAE
Acer negundo--Boxelder

BALSAMINACEAE
Impatiens biflora--Jewelweed

RHAMNACEAE
Rhamnus catharticus[1]--Common buckthorn
Rhamnus frangula[1,2]--European buckthorn

VITACEAE
Vitis riparia[2]--River-bank grape

LYTHRACEAE
Lythrum salicaria[1]--Purple loosestrife

UMBELLIFERAE
Daucus carota[1,2]--Queen Anne's lace
Angelica atropurpurea--Angelica

CORNACEAE
Cornus amomum--Silky dogwood
Cornus racemosa[2]--Grey dogwood

PRIMULACEAE
Lysimachia quadriflora--Prairie loosestrife

OLEACEAE
Fraxinus pennsylvanica--Green ash

GENTIANACEAE
Gentiana andrewsii--Bottle gentian

VERBENACEAE
Verbena hastata--Blue vervain

LABIATAE
Glecoma hederacea[1,2]--Creeping Charlie
Leonurus cardiaca[1,2]--Motherwort
Pycnanthemum virginianum--Mountain mint

SOLANACEAE
Solanum dulcamara[1]--Deadly nightshade

CAPRIFOLIACEAE
Viburnum opulus[1]--High-bush cramberry
Viburnum lentago--Nannyberry
Lonicera X bella[1]--Hybrid honeysuckle
Triosteum perfoliatum[2]--Feverwort

COMPOSITAE
Helianthus grosseserratus--Sawtooth sunflower
Rudbeckia hirta[2]--Black-eyed susan
Solidago gigantea--Giant goldenrod
Solidago altissima[2]--Tall goldenrod
Solidago riddellii--Riddell's goldenrod
Solidago graminifolia[2]--Grassleaf goldenrod
Aster novae-angliae--New england aster
Aster puniceus--Red-stemmed aster
Aster lucidulus--Swamp aster
Aster lateriflorus[2]--Calico aster
Aster simplex--Marsh aster
Eupatorium maculatum--Joe-pye weed
Eupatorium perfoliatum--Boneset
Eupatorium rugosum--White snakeroot

Arctium minus[1,2]--Common burdock
Cirsium muticum--Swamp thistle
Cirsium arvense[1,2]--Canada thistle

Total number of plant species: 83
Number of alien, or non-native, plant species: 21 (25 percent)

This approximately 60-acre plant community area is part of the White River wetland complex and consists of shallow marsh, sedge meadow, fresh (wet) meadow, shrub-carr and scattered southern wet to wet-mesic lowland hardwoods. Disturbances to the plant community include past wetland filling, off-road vehicle use, and sanitary sewer construction. No federal- or state-designated rare, threatened or endangered species were observed during the field inspection.

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[1] Alien, or non-native, plant species.

[2] Growing along the wetland edge.

[3] Planted tree species.