YELLOW DOG
Watershed Preserve

Yellow Dog Watershed Preserve, Inc.

Before You Build:
Protecting Your Watershed & Your Property

A guide for landowners

Before You Build:
Protecting Your Watershed & Your Property

A guide for landowners

This booklet was created by the
Yellow Dog Watershed Preserve, Inc. with funding by
Freshwater Future

YELLOW DOG
Watershed Preserve

FRESHWATER™
FUTURE

Text by Rochelle Dale and Brian Noell
Layout and graphics by Sarah Heuer

INTRODUCTION

So, you want to build along the Yellow Dog River? The beauty, remoteness, and wildness of this watershed make it easy to fall in love with; however, we all need to think to the future in order to protect this rare gift. As we adapt to an increasing number of visitors and residential development along the Yellow Dog River, we want to ensure that wildlife habitat and the health of the river itself remain intact. At the same time, we hope to give future visitors and future generations of residents the same experience of wilderness we have enjoyed. Protection really comes down to just two things: building setbacks and buffer zones.

This booklet offers recommendations for preserving wildlife and fish habitat, protecting privacy, and preventing land loss on your property. While this booklet has been designed to address the Yellow Dog River Watershed, its recommendations are useful for all waterways.

PROTECTING YOUR PROPERTY

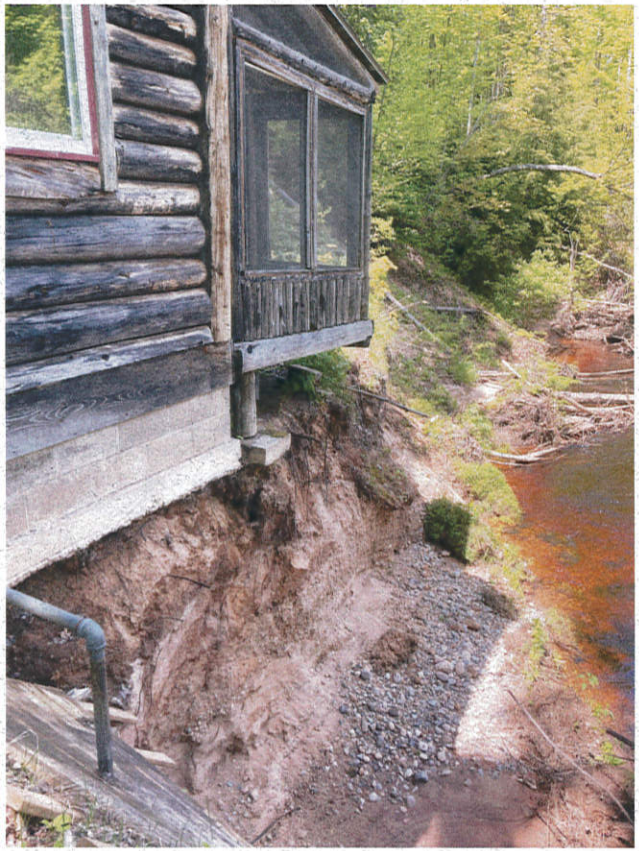
The Yellow Dog River flows through four different townships on its course from Bulldog Lake to Lake Superior, and each of these four townships has different zoning regulations, building setbacks, and buffer strip recommendations. In some cases, these setbacks may be sufficient, but in other cases, they are inadequate. The chart below details the differences as of January 2024.

Township	**Setback for primary structure**	**Setback for sauna or other outbuildings**	**Buffer strip recommendations**
Michigamme	50'	20'	Not addressed
*Champion	75'	30'	Not addressed
*Ishpeming	30'	TBD	Not addressed
Powell	100-foot environmental strip	100-foot environmental strip	100-foot environmental strip

As of January 2024, Champion and Ishpeming Townships are discussing and/or preparing to increase zoning setbacks.

The Yellow Dog is a swift-flowing river, especially in its upper reaches, and the sandy soil makes its banks particularly vulnerable to erosion. Rivers are not stable but are ever changing. Soil content and high-water events, especially spring snow melt, all contribute to these vacillations. Because the river changes almost every year, buildings that were once within zoning ordinance parameters, especially those near a bend, are now precariously close to the river's edge. Road building too close to the river or a cliff edge also increases erosion and the deposit of sediment into the water. Other contributors to land loss and sedimentation are 4-wheeler trails, removal of large trees near a steep embankment, removal of vegetation along the riverbank, or the replacement of natural buffers with lawns. Even though your township may issue a permit to build 30 feet from the high-water mark, this does not mean it is good idea.

The Yellow Dog Watershed Preserve recommends a 100 foot setback for all structures (including saunas), 100 feet for road building activities, and, at minimum, a 25 foot buffer zone or vegetative strip.



This cabin in Ishpeming Township was built within zoning parameters. Now it teeters on the edge of the cliff, threatening to destroy the landowner's investment and impair water quality for all inhabitants downstream.

PROTECTING HABITAT FOR TROUT AND WILDLIFE

The Yellow Dog River is renowned for its high-quality fishing due to its cold water and gravel bottom, both necessary for the maintenance of a healthy brook trout population. Erosion affects trout habitats by covering the gravel bottoms with sand, eliminating spawning grounds. Trout need gravel and rocky bottoms for reproduction. Sand and sediment reduce habitat, raise the water temperature, and decrease velocity, negatively impacting trout and the other aquatic organisms on which they depend.

Many still remember the landslide of 1996, in which 40 acres of ground in Champion Township collapsed into the river because of the failure of a culvert on a high bank. The amount of sediment deposited into the river negatively affected trout populations for years. Zoning regulations and sound landscaping choices by property owners preserve the health of the Yellow Dog Watershed and protect the integrity of waterfront land.

While the 40-acre landslide of 1996 was the worst in recent memory, this one in Powell Township is a close second. The Yellow Dog is dotted with others in various degrees of severity. Construction, road building, or other development near cliff edges and bends in the river make bank failure more likely, impacting trout habitat.

It is our responsibility to preserve our trout fishery for future generations of anglers.

PROTECTING PRIVACY

Because the Yellow Dog River is a popular destination for anglers, hikers, sightseers, photographers, birders, and more, you should expect to see people along the shores or in the river from time to time. Imagine a birdwatcher on the other side of the river scanning the canopy and peering into your living room, or an angler wandering through your patio in search of the perfect trout pool. Buffer strips and building farther away from the river can protect your privacy and the integrity of your property. At the same time, your private life, buildings, yard, dogs, and noise will not infringe upon individuals hoping for a wilderness experience while recreating in the river or on nearby public lands.

ABOUT THE YELLOW DOG RIVER

The Yellow Dog River is one of the gems of Michigan's Upper Peninsula. It flows for over 50 miles through a variety of terrain: high granite cliffs, cedar swamps, and rolling hardwood hills. The river begins in the McCormick Wilderness Area on the border of Baraga and Marquette Counties, emptying into Lake Independence in Big Bay before continuing to Lake Superior as the Iron River. The four-mile section from Bulldog Lake to the boundary of the McCormick Wilderness Area was designated as a federal Wild and Scenic River in 1991. The dramatic falls here descend continuously for 800 feet. Further downstream, there are additional falls: Wylie, Pinnacle, and a series in the Yellow Dog Community Forest with public access off County Road 510.

Angel Hair Falls, part of the cascade on the main branch of the Yellow Dog River in the McCormick Wilderness Area.

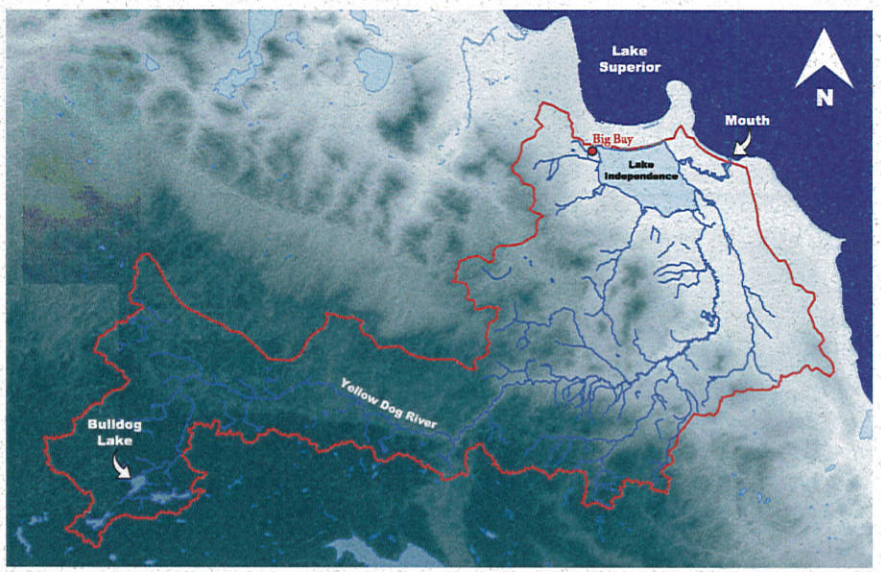
TERMS AND RECOMMENDATIONS

Watershed

A watershed is the area of land from which rainfall and/or snow melt drains into a marsh, stream, river, lake, or groundwater. Ridges of higher ground generally form the boundaries between watersheds. At these boundaries, rain falling on one side flows toward the low point of one watershed, while rain falling on the other side of the boundary flows toward the low point of a different watershed. Although every watershed is unique, the basic principle is the same. As water drains to the lowest point, it picks up particles of soil, road salt, fertilizers, pesticides, and other pollutants along the way.

Watershed Management

Watershed management addresses water-related issues within a watershed. This requires the participation of landowners as well as the collaboration of townships and environmental organizations because water crosses jurisdictional boundaries and is crucial to the health and wellbeing of us all. Watershed planning involves local agencies and citizens in a geographic area to protect a water resource.

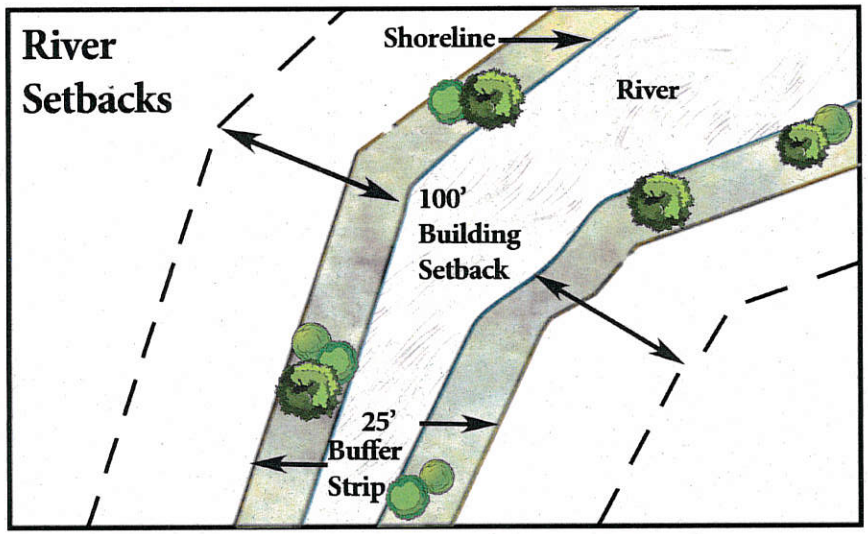


Map of the Yellow Dog Watershed in Marquette County, MI.

Runoff

Runoff is the result of large amounts of rainwater or snow melt that flow directly into the river or lake because it has no time to be absorbed into the ground before reaching a main body of water. Whatever pollution this water picks up along the way is also directly deposited into the river or lake.

Manicured lawns, artificial stone banks, and hard surfaces such as asphalt or concrete increase runoff and contribute to sedimentation, pollution, and erosion. However, vegetation allows more water to seep into the ground and be filtered before entering the river or lake. Buffer strips help to curb the effects of runoff.



River Setbacks

Setback regulations stipulate the distance that buildings (including saunas and sheds) can be constructed from the water's edge. Setbacks of 100 feet are considered ideal by the Michigan chapter of the American Planning Association in order to mitigate the effects of runoff and erosion, whether jurisdictions require them or not. Setbacks are measured from the elevation-based ordinary high-water mark, but the community decides where that line should fall in their particular case. The minimum riparian management zone width is 100 feet from high water mark, but this minimum increases as slope of the land above the water body increases. At a 40- 50% slope, the minimum riparian management zone becomes 175 feet.

Landowners should also apply setback guidelines in the construction of driveways or two-track roads on their property. According to EPA estimates, over 90% of the sediment entering forested streams comes from the forest road system. New roads should be located no closer than 100 feet from a lake or stream (except crossings), and no roads should be built within the buffer zone (see below).

Buffer Zones

A buffer zone is an area along a water body in which trees and native plants are left intact or reintroduced. It is a zone that is free from human activity such as lawn maintenance, logging, and road or building construction. Along Michigan's 16 designated Natural Rivers, three of which are also federal Wild and Scenic Rivers, the DNR requires a 25-foot buffer zone between any development and water's edge. In order to preserve the river's natural character, the shoreline should have a relatively consistent look. Property lines should not be clearly visible because of changes in the trees and plant life. Only dead, diseased, unsafe, or fallen trees can be removed in the buffer zone of Michigan's Natural Rivers, but moderate pruning is permitted. Only wood chips or wooden stairs are allowed for river access, and no sidewalks or other

improved surface paths or decks are permitted in the river setback area. We recommend landowners along the Yellow Dog adhere to these standards.

Maintenance of a natural vegetation strip or greenbelt of woody vegetation on both sides of the river serves several beneficial purposes. Root systems absorb nutrients, stabilize the soil and help prevent erosion. Natural vegetation provides wildlife and fisheries habitat and cools water temperatures. The vegetation strip also provides an effective, aesthetically pleasing visual screen, giving privacy to property owners and screening development from river users. Buffer zones, in short, are beneficial to those who own land along the river as well as the increasing number of recreational visitors.

CONCLUSION

The number of wild, clean rivers and creeks is dwindling on the American landscape. We are fortunate to live in a place where the rivers still run pure. Indeed, in a recent national study, the Yellow Dog and the neighboring Salmon Trout Rivers were among only 17% of US waterways free from contamination by PFAS, a class of toxic chemicals found in electronics, fabrics, food packaging, fire and water retardants, non-stick cookware, paints, stains, shampoo, and cosmetics. By adhering to setback recommendations and maintaining natural buffer zones along the riverbank, we become stewards of this legacy, enjoying good health ourselves and bequeathing clean water to generations yet unborn.

RESOURCES

Marquette Conservation District, Michigan Water Stewardship Program
https://miwaterstewardship.org/resource/marquette-conservation-district/

Michigan Natural Shoreline Partnership
https://www.shorelinepartnership.org/

MSU Extension, Marquette County
https://www.canr.msu.edu/marquette/county-extension-office

MSU Extension: Native Plants and Ecosystem Services
https://www.canr.msu.edu/nativeplants/

Lake to Lake Cooperative Invasive Species Management Area, Marquette
www.l2lcisma.org/

Michigan Department of Environmental Quality: Landscaping for Water Quality: Garden Designs for Homeowners
https://www.michigan.gov/-/media/Project/Websites/egle/Documents/Programs/WRD/NPS/General/landscape-water-quality.pdf?rev=f2b28651e82144529ea71552cdb616b5

Managing Shoreline Property to Protect Water Quality (MSU Extension article)
https://www.canr.msu.edu/michiganlakes/uploads/files/msue_managing%20shoreline%20property.pdf

APPENDIX: NATIVE PLANTS FOR BUFFER STRIPS

Adapted to our soil and climate, native plants are resistant to damage from freezing, require little maintenance, have extensive root systems to hold sandy soil, and enhance wildlife habitat. Property owners can increase biodiversity and decrease levels of pollutants and sediment flowing into the river by planting native species in buffer zones and further inland. The Michigan Natural Shoreline Partnership recommends the following for our region:

Upland Ferns and Grasses

Botanical Name	Common Name	Sun	Height	Bloom Time	Color	Adaptive Features
Andropogon gerardii	Big Bluestem	f/p	3'-8'	Jul-Aug	Green	Grass; erosion control use, beneficial to birds; can be opportunistic
Cystopteris bulbifera	Bulblet Fern	p/s	2'-3'			Needs consistent moisture but well- drained soils
Elymus canadensis	Canada Wild Rye	f/p	2-5'	Jun-Aug	Green	Grass; cool season, clump forming; dry sunny slopes
Hystrix patula	Bottlebrush Grass	s	3'	May-Jun	Green	For dry shade, savana, rocky upland woodlands
Koeleria macrantha	June Grass	f	1'-2'	May-Jun	Green	Clay soils,woodlands; tolerates seasonal flooding
Polystrichum acrostichoides	Christmas Fern	p/s	1-2'			Fern; grows in fountain-like clumps, erosion control
Schizachyrium scoparium	Little Bluestem	f	2-4'	Aug	Green	Grass; attractive reddish brown fall color
Sisyrinchium angustifolium	Blue-eyed Grass	f/p	1'	May-Aug	Blue	Short and very attractive
Sorghastrum nutans	Indian Grass	f/p	3-4'	Aug	Green	Grass; showy; clump forming
Sporobolus heterolepis	Prairie Dropseed	f/p	1'-3'	Aug-Sep	Green	Very ornamental

Upland Flowering Plants (Forbs)

Botanical Name	Common Name	Sun	Height	Bloom Time	Color	Adaptive Features
Agastache scrophulariifolia	Purple Giant Hyssop	p/s	3-7'	Jul-Oct	Purple	Attracts bees and butterflies
Allium cernuum	Nodding Wild Onion	f/p	1'-2'	Jul-Aug	Pink	Low-growing and versatile
Aquilegia canadensis	Wild Columbine	f/p/s	1.5'	Apr-Jul	Red/Yel	Attracts hummingbirds, woodland wildflower, short lived perennial
Aralia racemosa	Spikenard	f/p/s	3'-6'	Jun-Aug	White	Versatile and very attractive in seed
Asarum canadense	Wild Ginger	s	.5'	Apr-May	Dark Red	Ground cover, woodland
Asclepias tuberosa	Butterfly Weed	f/p	1-3'	Jun-Aug	Orange	Attracts butterflies; can be aggressive
Aster laevis	Smooth Aster	f/p	3'-5'	Aug-Oct	Blue	Nectar source for butterflies and seed source for birds
Aster macrophyllus	Big-leaf Aster	p/s	1'-3'	Jul-Aug	Violet	Larval host and nectar source for butterflies; good for dry shade; found over a large portion of the state.

Aster oolentangiensis	Prairie Heart-leaved Aster	f/p	2'-3'	Aug-Sept	Blue	Larval host and nectar source for butterflies
Campanula americana	Tall Bellflower	p/s	6'	Jun-Sept	Blue	Adapted to moist ground and open moist woods
Campanula rotundifolia	Harebell	f	1'-2'	Jun-Aug	Blue	Low-growing and well adapted to dry slopes; not competitive when combined with other plant - they are easily outcompeted without regular thinning of other plants.
Caulophyllum thalictroides	Blue Cohosh	p/s	1'-3'	Apr-May	Yellow	Woodland; berries turn dark blue; deer resistant
Coreopsis lanceolata	Sand Coreopsis	f	2'	Jun-Jul	Yellow	Grows great on sandy soils but also on well-drained loamy soils
Coreopsis tripteris	Tall Coreopsis	f	3-6'	Jul-Sept	Yellow	Tolerant to heat, humidity, and drought
Echinacea pallida	Pale Purple Coneflower	f	2-5'	May-Aug	Lavender	Attracts butterflies, hummingbirds, and small songbirds
Fragaria virginiana	Wild Strawberry	f/p	0.5'	Apr-Jun	White	Ground cover; beneficial to wildlife; edible fruit
Geranium maculatum	Wild Geranium	p/s	1.5-2.5'	Apr-Jun	Lavender	Woodland
Heliopsis helianthoides	False Sunflower	f/p	2-5'	Jun-Sept	Yellow	Easily grown; grows well in clay
Helianthus occidentalis	Western Sunflower	f/p	2'-3'	Jul-Sept	Yellow	Nectar and seed source
Heuchera americana	Alum Root	p/s	1'-3'	May-Jun	Green	Deer resistant
Liatris aspera	Rough Blazing Star	f	2-5'	Aug-Sept	Purple	Drought tolerant; attracts butterflies; blooms late
Monarda fistulosa	Wild Bergamont	f/p	2-4'	Jun-Sept	Purple	Aromatic; attractive to butterflies and hummingbirds
Penstemon digitalis	Foxglove Beard Tongue	f/p/s	3-4'	May-Jun	White	Beautiful flower, attractive to butterflies and hummingbirds
Penstemon hirsutus	Penstemon	f	1'-2'	May-Jul	Pink	Low-growing and well adapted to dry slopes; attractive to birds
Polygonatum biflorum	True Solomon's Seal	f/p/s	1'-4'	Apr-Jun	Grn/Wht	Deer resistant
Ratibida pinnata	Yellow Coneflower	f/p	3-5'	Jul-Sept	Yellow	Wildlife benefits, attracts butterflies; sandy and clay soils
Rudbeckia fulgida	Black-eyed Susan (Orange Coneflower)	f/p	2'-3'	Aug-Oct	Yellow/ Orange	Nectar source for butterflies; does well in well drained soils
Rudbeckia hirta	Black-eyed Susan	f/p	1-3'	Jun-Sept	Yellow	wildlife benefits; does well in sandy soils; biennial
Rudbeckia triloba	Three-lobed Coneflower	f/p	2'-4'	Aug-Oct	Yellow	Low wet woods, thickets, rocky slopes
Silphium terebinthinaceum	Prairie Dock	f	2'-10'	Jul-Sept	Yellow	Tall and wild - a true prairie species; nectar and seed source
Smilacina racemosa	False Solomon's Seal	p/s	1'-2'	May-Jun	White	Woodland
Smilacina stellata	Starry Solomon's Seal	f/p	1'-2'	May-Jul	White	Moist meadows in woodlands, woodland borders, sandy riverbanks, semi-wooded slopes
Solidago juncea	Early Goldenrod	f/p	2-4'	Jun-Sept	Yellow	Attracts butterflies, moths, game birds and song birds
Solidago rigida	Stiff Goldenrod	f	1'-5'	Jul-Oct	Yellow	Tall and wild - a true prairie species;

Solidago speciosa	Showy Goldenrod	f/p	1'-4'	Jul-Oct	Yellow	Tall and wild - a true prairie species; nectar source
Tradescantia ohiensis	Spiderwort	f/p	2-4'	Jun-Jul	Blue	Aggressive; wildlife cover
Verbena stricta	Hoary Vervain	f	2'-3'	Jul-Sept	Dark blue	Tall and wild - a true prairie species; nectar source

Upland Trees and Shrubs

Botanical Name	Common Name	Sun	Height	Bloom Time	Color	Adaptive Features
Acer saccharum	Sugar Maple	p/s	100'	Apr-May	Yellow	Tree; shade provider; used for maple syrup production
Amelanchier arborea	Serviceberry	f/p/s	15'	Apr-May	White	Shrub; attracts game birds and songbirds, edible berry
Betula papyrifera	Paper Birch	f/p	30'-60'	May-Jun	Brown	Larval host for butterflies
Ceanothus americanus	New Jersey Tea	f/p	3-4'	Jun-Jul	White	Shrub; taprooted; drought tolerant
Cercis canadensis	Redbud	f/p/s	16'	May	Pnk/Ppl	Shrub; flowers bloom early spring
Corylus americana	Hazelnut	f/p	3-13'	Mar-Apr	Brown	Shrub; beneficial to a variety of wildlife
Hamamelis virginiana	Common Witchhzel	p/s	10'-15'	Sept-Nov	Yellow	Beneficial to a variety of wildlife
Pinus strobus	White Pine	f/p	150'			Evergreen tree; tolerates many soil types; MI state tree
Prunus americana	Wild Plum	p/s	10'-25'	Apr-May	White	Fruit is edible; larval host for butterflies
Prunus serotina	Black Cherry	f/p	50'-85'	May-Jun	White	Fruit is edible; larval and nectar source for butterflies
Ptelea trifoliata	Hop Tree	f/p	6'-15'	Jun	Green	Larval host for butterflies
Quercus alba	White Oak	f/p	25'-100'	Apr-May	Yel/Grn	Excellent residential tree though does not withstand construction damage well; large crown; red fall color; food source for a variety of wildlife
Quercus macrocarpa	Bur Oak	f	60'-85'	May-Jun	Green	Larval host for butterflies; food source for wildlife
Quercus rubra	Red Oak	f	65'-90'	May-Jun	Green	Larval host for butterflies; food source for wildlife
Quercus velutina	Black Oak	f	60'-80'	May-Jun	Green	Larval host for butterflies; food source for wildlife
Sambucus canadensis	American Elder	f/p	5'-12'	Jun-Jul	White	Fruit is edible; great for birds
Sambucus racemosa	Red-berried Elder	f/p	5'-12'	May-Jun	White	Found all over the state; great for birds
Staphylea trifolia	American Bladdernut	p/s	10-15'	May	White	Shrub; easily grown;
Viburnum acerifolium	Maple-Leaf Viburnum	f/p/s	2-6'	June	White	Shrub; reddish-purple fall color; black fruit; beneficial to wildlife

Sun Key:
f - full sun, p - partial, s - shade

Above the Ordinary High-Water Mark (still moist-wet) Grasses, Sedges, Ferns

Botanical Name	Common Name	Sun	Height	Bloom Time	Color	Siltation Tolerance	Adaptive Features
Calamagrostis canaden	Canada Blue-joint Sisgrass	f/p	2'-4'	Jun	Brown	Med	Spreads opportunistically by rhizomes
Carex crinita	Fringed Sedge	f/p/s	2'-5'	May-Jun	Green	Med-high	Likes semi-shade; forms dense clumps
Carex stipata	Awl-fruited Sedge	f/p/s	1'-3'	Apr-May	Brown	High	Prefers calcareous soils; fibrous roots form clumps
Carex vulpinoidea	Fox Sedge	f/p	2'-3'	May-Jun	Brown	Med-high	Rhizomes form dense clumps
Cinna arundinacea	Sweet Woodreed	f/p/s	3-4'	Aug-Sept	Green		Roots are fibrous and rhizamatous; usually deer resistant
Elymus riparius	Riverbank Wild Rye	p/s	2'-4'	Jul-Aug	Green		Good for erosion control; deer resistant
Glyceria canadensis	Rattlesnake Grass	f/p	2'-5'	Jun	Green	High	Bunching, cool season grass with dense roots
Glyceria striata	Fowl Manna Grass	f/p/s	1'-5'	May-Jun	Green	High	Bunching, cool season grass with dense roots
Juncus torreyi	Torrey Rush	f	1'-2'	Jun-Sept	Brown	High	Spreads opportunistically by rhizomes
Onoclea sensibilus	Sensitive Fern	p/s	1-2'		Green	Low	Branching rhizomes
Osmunda regalis	Royal Fern	f/p/s	3-6'		Green	Low-med	Stout rhizomes, fibrous roots, spreads slowly
Panicum virgatum	Switchgrass	f/p	4'-6'	Aug-Oct	Green	Med-low	Bunching, cool season grass with dense roots; excellent soil stabilizer
Scirpus atrovirens	Green Bulrush	f	3'-5'	Jun-Aug	Brown	High	Strong fibrous roots form clumps in high water
Spartina pectinata	Prairie Cordgrass	f	3'-7'	Jul-Aug	Green	High	Spreads opportunistically by rhizomes

Above the Ordinary High-Water Mark: (still moist-wet) Flowering Plants (Forbs)

Botanical Name	Common Name	Sun	Height	Bloom Time	Color	Siltation Tolerance	Adaptive Features
Anemone canadensis	Canada Anemone	f/p	1'-2'	May-Sept	White	Med	Rhizomes spread readily with some stabilization of soils
Aster novae-angliae	New England Aster	f/p	3'-6'	Jul-Oct	Violet	High	Short rhizomes, readily reseeds on disturbed soils; butterflies
Aster umbellatus	Tall Flat Top White Aster	f/p	1'-4'	Jul-Oct	White	Med	Fibrous roots; butterflies
Chelone glabra	Turtlehead	f/p/s	2'-4'	Aug-Sep	Cream	Low	Deep fibrous roots
Coreopsis tripteris	Tall Tickseed	f/p	4-8'	Aug-Sep	Yellow	Low	
Euthamia graminifolia	Grass-leaved Goldenrod	f/p	1'-4'	Jul-Sept	Yellow	Low	Spreads opportunistically from rhizomes
Helenium autumnale	Sneezeweed	f/p	3'-5'	Jul-Nov	Yellow	Low	Fibrous, shallow root system; can be opportunistic
Helianthus giganteus	Tall Sunflower	f/p	5'-12'	Jul-Sept	Yellow	Med	Spreads from rhizomes
Liatris spicata	Dense Blazing Star	f	3-5'	Jul-Sept	Pink	Low	Nectar source
Physotegia virginiana	Obedient Plant	f/p	2'-5'	Aug-Oct	Pink	Low	Nectar source; spreads by small rhizomes to carpet area
Pycnanthemum virginianum	Virginia Mountainmint	f/p	1-3'	Jul-Sept	White	Low-med	Stoloniferous rhizomes, aromatic
Rudbeckia laciniata	Cut-Leaved Coneflower	f/p/s	3'-10'	Jul-Sept	Yellow		

Solidago ohiensis	Ohio Goldenrod	f/p	2-4'	Jul-Oct	Yellow		
Solidago patula	Roundleaf Goldenrod	f/p/s	3-6'	Aug-Oct	Yellow		Rhizomatous root growth. Drought tolerance is low.
Solidago riddellii	Riddell's Goldenrod	f	2-3'	Sept-Nov	Yellow	Med	
Spiraea alba	Meadowsweet	f/p	3'-6'	Jun-Aug	White	Low-Med	Dense, fibrous roots, can be opportunistic, suckering, shallow roots
Thalictrum dasycarpum	Purple Meadow Rue	f/p	3'-6'	May-Jul	Cream	Med-high	Fibrous, shallow root system; can be opportunistic
Verbena hastata	Blue Vervain	f/p	3'-6'	Jun-Sept	Violet	Med-high	Short spreading tough roots; any soils; opportunistic; short lived
Vernonia missurica	Missouri Ironweed	f	3'-5'	Jul-Sept	Purple	Med-high	Nectar source; thick root system
Veronicastrum virginicum	Culver's Root	f/p	2'-6'	Jun-Sept	White	Low	Nectar source; thick root system; likes alkaline soils
Zizia aurea	Golden Alexander's	f/p/s	1'-3'	Apr-Jun	Yellow	Med-high	Nectar source; thick root system

Above the Ordinary High-Water Mark: (still moist-wet) Trees and Shrubs

Botanical Name	Common Name	Sun	Height	Bloom Time	Color	Siltation Tolerance	Adaptive Features
Acer rubrum	Red Maple	f/p/s	75-100'	Mar-May	Grn/Red		Provides food for squirrels and some birds; typically deer resistant
Acer saccharinum	Silver Maple	f/p	75-100'	Mar-Apr	Red		Shallow, wide spread fibrous roots
Betula alleghaniensis	Yellow Birch	p/s	60-80'	Apr-May	Ppl/Yel		Good edge tree; food for birds and other wildlife
Celtis occidentalis	Hackberry	f/p	50-75'	Apr-May	Yel/Grn	Low-med	Deep spreading roots, medium to fast growing, long-lived
Gleditsia triacanthos	Honey Locust	f/p	30-75'	May-Jun	Yellow		Used extensively by wildlife; open canopy and small leaves will not shade out turf grass or other landscape plants; has thorns
Ilex verticillata	Michigan Holly	f/p/s	6-12'	May-Jun	White		Male & female plants, prefers acidic soil, shall fibrous roots
Physocarpus opulifolius	Ninebark	f/p	10'	May-Jun	White		Commonly used as live stakes
Platanus occidentalis	Sycamore	f/p/s	100'	Apr-Jun	Green		Fast growing tree; great for rehabilitation of sites with saturated soils
Populus balsamifera	Balsam Poplar	f	60-80'	Apr-May	Yellow-brown		Clonal, propogate by stem cuttings
Quercus bicolor	Swamp White Oak	f/p/s	70'	May	Grn/Yel	Med	Shallow, fibrous roots, prefers acidic soil
Quercus rubra	Red Oak	f/p/s	90'	May	Grn/Yel		Fast growing
Sambucus canadensis	American Elderberry	f/p/s	5-12'	Jun-Aug	White		Spreads by rhizomes
Thuja occidentalis	Northern White Cedar	f/p/s	50'	Apr-May	Brown		Favorite deer browse
Tilia americana	Basswood	f/p	60-100'	Jun-Jul	Yellow		Excellent for a large variety of wildlife; nectar excellent for honeybees
Viburnum dentatum	Arrow Wood	f/p/s	15'	May-Jun	White	Low	Suckering
Viburnum lentago	Nannyberry	p/s	20'	Apr-Jun	White	Low	Suckering, shallow, fibrous roots