



## ***ARTICLE 15 Riparian Setback Standards***

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### **15.01 Purpose**

- A.** The purpose of this Article is to maintain Township control over consideration of variance requests from landowners required to comply with the County Riparian Ordinance (Ordinance No. 2002-154, Countywide Riparian Ordinance, effective May 29, 2002). It is in the best interest of Copley Township to allow flexibility in the implementation of the Riparian Ordinance, and to reduce the need for variance requests for the specific provisions of this Chapter, and thereby promote environmental quality.
- B.** Since it is hereby determined that the system of streams within Copley Township contribute to the health, safety and general welfare of the residents of Copley Township, an additional purpose of these Riparian Setback Standards is to protect and preserve the water quality within streams of Copley Township and to protect residents of Copley Township from property loss and damage because of erosion and flooding. The method of implementing this Ordinance is by controlling uses and developments within a Riparian Setback that would impair the ability of the riparian area to:
1. Reduce flood impacts by absorbing peak flows, slowing the velocity of floodwaters and regulating base flow.
  2. Stabilize the banks of streams to reduce bank erosion and the downstream transport of sediments eroded from stream banks.
  3. Reduce pollutants in streams during periods of high flows by filtering, settling and transforming pollutants already present in streams.
  4. Reduce pollutants in streams during periods of high flows by filtering, settling and transforming pollutants in runoff before they enter streams.
  5. Provide areas for natural meandering and lateral movement of stream channels.
  6. Reduce the presence of aquatic nuisance species to maintain diverse and

connected riparian vegetation.

7. Provide high quality stream habitats with shade and food to a wide array of wildlife by maintaining diverse and connected riparian vegetation.
  8. Benefit Copley Township economically by minimizing encroachment on stream channels and reducing the need for costly engineering solutions such as dams and riprap, to protect structures and reduce property damage and threats to the safety of watershed residents, and by contributing to the scenic beauty and to the environment of Copley Township, the quality of life of the residents of Copley Township and corresponding property values.
  9. Protect the health, safety, and welfare of the citizens of Copley Township.
- C. This Article has been adopted to protect these services of riparian areas by providing reasonable controls governing structures and uses in Riparian Setbacks.

### **15.02 Compliance and Violations**

- A. No zoning approvals shall be issued by Copley Township without full compliance with the terms of these provisions.
- B. In addition to the Township's enforcement of the provisions of this Zoning Resolution, these requirements may be enforced through civil or criminal proceedings brought by the County of Summit Prosecutor on behalf of the County of Summit.

### **15.03 Definitions**

- A. **BEST MANAGEMENT PRACTICES (BMPs):** Conservation practices or protection measures which reduce impacts from a particular land use. Best Management Practices for construction are outlined in "Rainwater and Land Development, Ohio's Standard for Stormwater Management, Land Development, and Urban Stream Protection" prepared by the Ohio Department of Natural Resources.
- B. **DAMAGED OR DISEASED TREES:** Trees that have split trunk, broken tops, heart rot, insect or fungus problems that will lead to imminent death, undercut root systems that put the tree in imminent danger of falling, leans

as a result of root failure that puts the tree in imminent danger of falling, or any other condition that puts the tree in imminent danger of being uprooted or falling into or along a stream or onto a structure.

- C. **DEFINED CHANNEL:** A natural or man-made depression in the terrain which is maintained and altered by the water and sediment it carried.
- D. **FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA):** The agency with overall responsibility for administering the National Flood Insurance Program.
- E. **FINAL PLAT:** A final tracing of all or a phase of a subdivision in and its complete survey information.
- F. **IMPERVIOUS COVER:** Any surface that cannot effectively absorb or infiltrate water. This may include roads, streets, parking lots, rooftops, sidewalks and other areas not covered by vegetation.
- G. **NATURAL SUCCESSION:** A gradual and continuous replacement of one kind of plant and animal group by a more complex group. The plants and animals present in the initial group modify the environment through their life activities thereby making it unfavorable for themselves. They are gradually replaced by a different group of plants and animals better adapted to the new environment.
- H. **NOXIOUS WEED:** Any plant defined as a “noxious weed and rank vegetation” in Section 521.10 in the Codified Ordinances of the County of Summit, Ohio.
- I. **OHIO RAPID ASSESSMENT METHOD:** A multi-parameter qualitative index established by the Ohio Environmental Protection Agency to evaluate wetland quality and function.
- J. **100-YEAR FLOODPLAIN:** Any land susceptible to being inundated by water from a base flood, which is the flood that has a one percent or greater chance of being equaled or exceeded in any given year. For the purposes of these regulations, the 100-year flood plain shall be defined by FEMA and approved by the County of Summit Department of Building Standards.
- K. **ORDINARY HIGH WATER MARK:** The point of the bank or shore to which the presence and action of surface water is so continuous as to leave a

district marked by erosion, destruction or prevention of woody terrestrial vegetation, predominance of aquatic vegetation or other easily recognized characteristic. The ordinary high water mark defines the channel of a stream.

- L. **POLLUTION:** Any contamination or alteration of the physical, chemical, or biological properties of any waters that will render the waters harmful or detrimental to: public health, safety or welfare; domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses; livestock, wildlife, including birds, fish or other aquatic life.

“**POINT SOURCE**” pollution is traceable to a discrete point or pipe.

“**NON-POINT SOURCE**” pollution is generated by various land use activities rather than from an identifiable or discrete source, and is conveyed to waterways through natural processes, such as rainfall, storm runoff, or ground water seepage rather than direct discharge.

- M. **PRELIMINARY PLAN:** A drawing of a major subdivision for the purpose of study and which, if approved, permits proceeding with the preparation of the final plat.
- N. **RIPARIAN AREA:** A transitional area between flowing water and terrestrial ecosystems, which provided a continuous exchange of nutrients and woody debris between land and water. This area is at least periodically influenced by flooding. Riparian areas, if appropriately sized and managed, help to stabilize banks, limit erosion, reduce flood size flows and/or filter and settle out runoff pollutants, or perform other functions consistent with the purposes of these regulations.
- O. **RIPARIAN SETBACK:** The area set back from each bank of a stream to protect the riparian area and stream from impacts of development, and streamside residents from impacts of flooding and land loss through erosion. Riparian Setbacks are those lands within the County of Summit that fall within the area defined by the criteria set forth in these regulations.
- P. **SOIL AND WATER CONSERVATION DISTRICT (SWCD):** An entity organized under Chapter 1515 of the Ohio Revised Code referring to either the Soil and Water Conservation District Board or its designated employees, hereinafter referred to as the Summit SWCD.

- Q. SOIL DISTURBING ACTIVITY:** Clearing, grading, excavating, filling or other alteration of the earth's surface where natural or human made ground cover is destroyed and which may result in, or contribute to, erosion and sediment pollution.
- R. STREAM:** A surface watercourse with a well-defined bed and bank, either natural or artificial, which confines and conducts continuous or periodical flowing water (ORC 6105.01) in such a way that terrestrial vegetation cannot establish roots within the channel.
- S. STORMWATER POLLUTION PREVENTION PLAN (SWPPP):** The plan which describes all the elements of the stormwater strategy implemented during and after construction. The plan addresses erosion control and stormwater runoff quality.
- T. STORMWATER QUALITY TREATMENT:** The removal of pollutants from urban runoff and improvement of water quality, accomplished largely by deposition and utilizing the benefits of natural processes.
- U. SUMMIT COUNTY SOIL AND WATER CONSERVATION DISTRICT:** See Soil and Water Conservation District.
- V. VARIANCE:** A modification of the enforcement of the Riparian Setback Regulations which will not be contrary to the public interest and where, due to conditions peculiar to this property and not the result of the action of the applicant, a literal enforcement of the Regulations would result in undue hardship to the applicant.
- W. WATERCOURSE:** A natural or artificial waterway, such as a stream or river, with a defined bed and channel and a definite direction of course that is contained within, flows through, or borders the community.
- X. WATERSHED:** An area of land that drains into a particular watercourse, usually divided by topography.
- Y. WETLANDS:** Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs, and similar areas.

#### **15.04 Establishment of a Riparian Setback**

- A.** Riparian Setbacks are established as provided in this Article.
- B.** Streams addressed by these Regulations are those which meet the definition of “stream” in Section 15.03 Definitions of this Article and appear or are indicated on at least one of the following maps: USGS Topographical Map; Summit County Riparian Setback Map; Soils maps located in the Soil Survey for Summit County, Ohio, USDA, NRCS.
- C.** Widths of setbacks are measured as horizontal map distance outward from the ordinary high water mark on each side of a stream, and are established as follows:
  - 1.** A minimum of 300 feet on each side of all streams draining an area greater than 300 square miles.
  - 2.** A minimum of 100 feet on each side of all streams draining an area greater than 20 square miles and up to 300 square miles.
  - 3.** A minimum of 75 feet on each side of all streams draining an area greater than 0.5 square mile (320 acres) and up to 20 square miles.
  - 4.** A minimum of 50 feet on each side of all streams draining an area greater than 0.05 square mile (32 acres) and up to 0.5 square mile (320 acres).
  - 5.** A minimum of 30 feet on each side of all streams draining an area less than 0.05 square mile (32 acres).
- D.** The following are exempt from the terms and protection of this Article: grassy swales, roadside ditches, drainage ditches created at the time of a subdivision to convey stormwater to another system, tile drainage systems and stream culverts.
- E.** The following shall apply to the Riparian Setback:
  - 1.** Where the 100-year floodplain is wider than the Riparian Setback on either or both sides of the stream, the Riparian Setback shall be extended to the outer edge of the 100-year floodplain. The 100-year floodplain shall be defined by FEMA and approved by the County of Summit

Department of Building Standards.

2. Because the gradient of the riparian corridor significantly influences impacts on the stream, the following adjustment for steep slopes will be integrated into the Riparian Setback formulae for width determination:

<u>Average Percent Slope</u>	<u>Width of Setback</u>
15% through 20%	add 25 feet
Greater than 20% through 25%	add 50 feet
Greater than 25%	add 100 feet

Average percent slope of the streambank is to be calculated for the area within the Riparian Setback and is to be measured as a line perpendicular to the stream channel at the location where structures or uses are proposed in the plan. All of the following measurements are to be performed using County of Summit Geographical Information system data (2006, 2010 or latest data). Calculate slope as follows:

Change in elevation from the edge of stream channel to edge of riparian Setback divided by Horizontal map distance from the edge of stream channel to the edge of the Riparian Setback.

3. Where wetlands protected under federal or state law are identified within the Riparian Setback, the Riparian Setback shall consist of the full extent of the wetlands plus the following additional setback widths.
  - a. A 50-foot setback extending beyond the outer boundary of Category 3 wetlands.
  - b. A 30-foot setback extending beyond the outer boundary of Category 2 wetlands.
  - c. No additional setback will be required adjacent to Category 1 wetlands.
4. Wetlands shall be delineated by a qualified professional under guidelines established by the US Army Corps of Engineers and Ohio Environmental Protection Agency and the site delineation approved by the appropriate agencies. All wetland delineations shall also include the latest version of the Ohio Rapid Assessment Method for wetland evaluation approved at

the time of application of the regulations.

5. The applicant shall be responsible for delineating the Riparian Setback, including any expansions or modifications as required by B through D of this Section, and identifying this setback on all subdivisions, site plans, and/or zoning permit applications. This delineation shall be done at the time of application of the preliminary plans, or all plans that are required, or at the time of submission of any permit applications. This delineation shall be subject to review and approval by the Summit SWCD. As the result of this review, the Summit SWCD may require further studies from the applicant.
6. Prior to any soil disturbing activity, the Riparian Setback shall be clearly delineated with construction fencing or other suitable material by the applicant on site, and such delineation shall be maintained throughout soil-disturbing activities. The delineated area shall be maintained in an undisturbed state unless otherwise permitted by these regulations. All fencing shall be removed when a development project is completed.
7. No approvals or permits shall be issued by Copley Township prior to delineation of the Riparian Setback in conformance with these regulations.
8. Upon completion of an approved subdivision, the Riparian Setback shall be permanently recorded on the plat records for the County of Summit.

#### **15.05 Uses Permitted in the Riparian Setback**

- A. The following uses are permitted by right within the Riparian Setbacks without prior approval. Open space uses that are passive in character shall be permitted in the Riparian Setback including, but not limited to, those listed in 1 through 4 of this Section. No use permitted under these regulations shall be construed as allowing trespass on privately held lands. Alteration of this natural area is strictly limited. Except as otherwise provided in these regulations, the Riparian Setback shall be preserved in its natural state.
  1. **RECREATIONAL ACTIVITY:** Passive recreational uses, as permitted by federal, state and local laws, such as hiking, non-motorized bicycling, fishing, hunting, picnicking and similar uses and associated structures



including boardwalks, pathways constructed of pervious material, picnic tables, and wildlife viewing areas.

- 2. REMOVAL OF DAMAGED OR DISEASED TREES:** Damaged or diseased trees may be removed. Because of the potential for felled logs and branches to damage downstream properties and/or block ditches or otherwise exacerbate flooding, logs and branches resulting from the removal of damaged or diseased trees that are greater than 6 inches in diameter, shall be anchored to the shore or removed from the 100-year floodplain.
  - 3. REVEGETATION AND/OR REFORESTATION:** The revegetation and/or reforestation of the Riparian Setback shall be allowed without approval of the Summit SWCD. Species of shrubs and vines recommended for stabilizing flood prone areas along streams with the County of Summit are listed in the Appendix.
  - 4.** The County of Summit Engineer maintains the right of access to all streams within the County of Summit for the purposes outlines in the Ohio Revised Code, Sections 6131.01 to 6131.64, 6133.01 to 6122.15, 6135.01 to 6135.27 and 6137.05.1.
- B.** The following uses are permitted by right within the Riparian Setbacks with prior approval of the design.
- 1. STREAM BANK STABILIZATION/EROSION CONTROL MEASURES:** Best Management Practices (BMP's) for stream bank stabilization on erosion control may be allowed if such practices are within permitted uses by the local, state, and federal government regulations and are ecologically compatible and emphasize the use of natural materials and native plant species where practical and available. Such stream bank stabilization/erosion control practices shall only be undertaken upon approval of a Stormwater Pollution Prevention Plan (SWPPP or SW3P) by the Summit SWCD.
  - 2. CROSSING:** In reviewing plans for stream crossings, Copley Township may confer with the Summit SWCD, the Ohio Department of Natural Resources, Division of Natural Areas; the Ohio Environmental Protection Agency, Division of Surface Water; the County of Summit Engineer; the Department of Environmental Services of Summit County; the Summit

County Health Department; or other technical experts as necessary.

- a. Limited crossing of designated streams through the Riparian Setback by vehicles, storm sewers, sewer and/or water lines, and public utility lines will be per the approval of local, county, and state governing agencies and as a part of the regular subdivision review process.
  - b. Up to two driveway crossings per 1,000 feet of stream center per tax parcel will be allowed for individual landowners. If more than two crossings per 1,000 linear feet of stream center are required for these areas, the applicant must apply for a variance.
  - c. Roadway crossings for major and minor subdivisions, open space subdivisions, or any other non-single family residential use shall be designed and constructed per the County of Summit Engineer's design standards and as approved by the Summit County Planning Commission and Copley Township. If more than two crossings per 1,000 linear feet of stream center are required for these areas, the applicant must apply for a variance.
  - d. All roadway crossings shall be perpendicular to the stream flow and shall minimize disturbance to the Riparian Setback and shall mitigate any necessary disturbances.
3. Placement of stormwater retention or detention facilities may be considered within the Riparian Setback if:
    - a. Stormwater quality treatment that is consistent with current state standards is incorporated into the basin.
    - b. The stormwater quality treatment basin is located at least 50 feet from the ordinary high water mark of the stream.

### **15.06 Uses Prohibited in the Riparian Setback**

The following uses are specifically prohibited within the Riparian Setback:

- A. **CONSTRUCTION:** There shall be no structures of any kind, except as permitted in these regulations.

- B. DREDGING OR DUMPING:** There shall be no drilling for petroleum or mineral products, mining activity, filling or dredging of soil, spoils, or any material – natural or manmade – except as permitted under these regulations.
- C. ROADS OR DRIVEWAYS:** There shall be no roads or driveways, except as permitted under these regulations.
- D. MOTORIZED VEHICLES:** There shall be no use of motorized vehicles of any kind, except as permitted under these regulations.
- E. MODIFICATION OF NATURAL VEGETATION:** Modification of the natural vegetation shall be limited to conservation maintenance that the landowner deems necessary to control noxious weeds; for such plantings as are consistent with these regulations; for such disturbances as are approved under these regulations; and for the passive enjoyment, access and maintenance of landscaping or lawns existing at the time of passage of these regulations.

Nothing in this Section shall be construed as requiring a landowner to plant or undertake any other activities in the Riparian Setback provided the landowner allows for natural succession.

- F. PARKING LOTS:** There shall be no parking lots or other human made impervious cover, except as permitted under these regulations.
- G. NEW SURFACE AND/OR SUBSURFACE SEWAGE DISPOSAL OR TREATMENT AREA:** Riparian Setbacks shall not be used for the disposal or treatment of sewage except for:
  - 1. Undeveloped parcels that have received site evaluation approval and/or permit approval prior to April 12, 2003 when these regulations were first adopted into the Copley Township Zoning Resolution.
  - 2. Dwellings served by disposal/treatment systems existing at the time of passage of these regulations (April 12, 2003) when such systems are properly sited (approved site evaluation) and permitted or in accordance with the Summit County Health Department and/or the Ohio Environmental Protection Agency. Existing failing systems which are located within the Riparian Setback can be upgraded with approval of

the Summit County Health Department and/or the Ohio Environmental Protection Agency.

### **15.07 Non-Conforming Structures or Uses in the Riparian Setback**

- A. Structures and uses within the Riparian Setback, existing at the time of passage of these regulations (April 12, 2003), that are not permitted under these regulations may be continued but shall not be expanded except as set forth in this title.
- B. If damaged or destroyed, these structures or uses may be repaired or restored within two years from the date of damage/destruction or the adoption of these regulations, whichever is later, at the property owners own risk.
- C. A residential structure or use within the Riparian Setback existing at the time of passage of these regulations may be expanded subject to the provisions of 1 through 3 below;
  - 1. The expansion conforms to existing zoning regulations.
  - 2. The expansion must not impact the stream channel or the 100-year flood plain.
  - 3. The expansion must not exceed as area of 15% of the footprint of existing structure or use that lies within the Riparian Setback. Expansions exceeding 15% of the total footprint within the Riparian Setback must be obtained through a variance from the Board of Zoning Appeals.
- D. Non-residential structure or use expansions will be permitted only through obtaining a variance from the Board of Zoning Appeals.

### **15.08 Boundary Interpretation and Appeals Procedure**

- A. When an applicant disputes the boundary of the Riparian Setback or the ordinary high water mark of a stream, the applicant shall submit evidence to the Summit SWCD, with a copy to the Copley Township Zoning Inspector, that describes the boundary, presents the applicant's proposed boundary and presents all justification for the proposed boundary change.

- B. The Summit SWCD shall evaluate all materials submitted and shall make a written recommendation to the Copley Township Board of Zoning Appeals within a reasonable period of time not to exceed sixty days. A copy of this recommendation shall be submitted to the applicant. If during this evaluation the Summit SWCD required further information to complete this evaluation, the applicant may be required to provide additional information.
- C. The Township Board of Zoning Appeals shall decide such boundary disputes. The party contesting the location of the Riparian Setback or the ordinary high water mark of the streams as determined by these regulations shall have the burden of proof in case of any such appeal.

### **15.09 Variances Within Riparian Setback**

- A. Application for variances to the provisions of this Chapter shall be submitted to the Copley Township Board of Zoning Appeals.
- B. The Copley Township Board of Zoning Appeals shall consult with representatives from the Summit SWCD; the Ohio Department of Natural Resources, Division of Natural Areas; the Ohio Environmental Protection Agency, Division of Surface Water, the County of Summit Engineer; the Department of Environmental Services of Summit County; the Summit County Health Department; or other technical experts as necessary to consider variance requests.
- C. Expansions of residential structures or uses exceeding 15% of the footprint area and expansions of all non-residential structures or uses are subject to provisions 1. through 4. below:
  - 1. The expansion conforms to the existing zoning regulations.
  - 2. The expansion must not impact the stream channel or the 100-year floodplain.
  - 3. The expansion of a non-residential structure or use must not affect upstream or downstream hydrologic conditions which could cause damage from flooding or streambank erosion to landowners in those areas. A hydrologic study must be completed by non-residential applicants only as a process of the variance application.

4. The expansion of a non-residential structure or use will not exceed 25% of the footprint area. The 25% expansion limit is per se the portion of the structure or use that lies within the Riparian Setback.
- D.** Requests for variances for subdivisions will be considered for the following:
1. An additional stream crossing or crossings for a subdivision or open space development which is necessary for the health, welfare, and safety of the residents of the subdivision.
  2. A reduction of the setback width, not to exceed 10% of the prescribed Riparian Setback width.
- E.** No variances shall be granted for expansion of the following structures or uses:
1. Facilities which use, store, distribute, or sell petroleum-based products or any hazardous materials. Such facilities include, but are not limited to; asphalt plants, dry cleaners, gasoline service stations, and road maintenance facilities.
  2. Facilities which use, store, distribute, or sell products which may contribute higher than acceptable concentrations of dissolved or particulate matter to stormwater runoff around the facility. Such facilities include, but are not limited to: landfills or transfer stations, junk yards, recycling facilities, quarries and borrow pits, sand and gravel extraction operations, and road salt storage barns.
- F.** In reviewing whether to grant variances, the Copley Township Board of Zoning Appeals shall consider the following:
1. The extent to which the requested variance impairs the functions of the riparian area. This determination shall be based on sufficient technical and scientific evidence as provided by the applicant and the agencies listed in Section 15.09 A. through E. above.
  2. The soil type and natural vegetation of the parcel as well as the percentage of the parcel that is in the 100-year floodplain.
  3. The degree of hardship these regulations place on the applicant and the

availability of alternatives to the proposed activity.

4. Whether a front, side or rear yard setback zoning variance or similar variance should be considered to maintain the required Riparian Setback area.

#### **15.10 Inspection of Riparian Setback**

- A. The Riparian Setback shall be inspected by the Summit SWCD:
  1. When a preliminary subdivision plat or other land development plan is submitted to the County of Summit.
  2. When a building or zoning permit is requested.
  3. Prior to any soil disturbing activity to inspect the delineation of the Riparian Setback as required under these regulations.
- B. The Riparian Setback shall also be inspected annually or as time permits by the Summit SWCD or approved monitoring entity for compliance with any approvals under these regulations or at any time evidence is brought to the attention of the Summit SWCD that uses or structures are occurring that may reasonably be expected to violate the provisions of these regulations.

## APPENDIX: WOODY PLANTS SUITABLE FOR RIPARIAN AREAS

This list was assembled by Roger Getting, The Holden Arboretum for Chagrin River Watershed Partners.

<u>Flood Tolerance*</u>	<u>Shade Tolerance**</u>	<u>Common Name</u>
<b>High Flood Tolerance</b>		
Aronia arbutifolia	3	Red chokeberry
Aronia melanocarpa	3	Black chokeberry
Cephalanthus occidentalis	5	Common buttonbush
Clethra alnifolia	2	Summersweet clethra***
Cornus amomum	4	Silky dogwood
Cornus stolonifera (sericea)	5	Redosier dogwood
Hamamelis vernalis	3	Vernal witchhazel***
Ilex decidua	3	Possumhaw***
Ilex glabra	2	Inkberry***
Ilex verticillata	3	Common winterberry
Itea virginica	1	Virginia sweetspire***
Magnolia virginiana	2	Sweetbay magnolia***
Myrica pensylvanica	4	Northern bayberry
Physocarpus opulifolius	4	Common ninebark
Potentilla fruticosa	4	Bush cinquefoil
Sambucus canadensis	1	American elderberry
Salix x cotteti	5	“Bankers” willow***
Salix exigua	5	Sandbar willow
Salix purpurea	5	“Streamco” willow***
Viburnum cassinoides	2	Withrod viburnum
Parthenocissus quinquefolia	1	Virginia creeper (vine)
<b>Moderate Flood Tolerance*</b>		
Calycanthus floridus	1	Common sweetshrub
Hypericum kalmianum	5	Kalm St. Johnswort
Viburnum dentatum	2	Arrowwood viburnum
Xanthorhiza simplicissima	1	Yellowroot***



### **Intermediate Flood Tolerance\***

Aesculus parviflora	2	Bottlebush buckeye***
Aesculus pavia	2	Red buckeye***
Cornus racemosa	2	Gray dogwood
Lindera benzoin	1	Common spicebush
Rosa setigera	4	Prairie rose
Campsis radicans	3	Trumpetcreeper (vine)
Lonicera dioica	2	Limber honeysuckle (vine)
Corylus americana	2	American filbert
Diervilla lonicera	1	Dwarf bushhoneysuckle
Fothergilla gardeni	1	Dwarf fothergilla***
Fothergilla major	1	Large fothergilla***
Hydrangea arborescens	1	Smooth hydrangea
Hydrangea quercifolia	1	Oakleaf hydrangea***
Mahonia aquifolium	1	Oregongrape holly***
Rosa carolina	4	Carolina rose
Rubus odoratus	1	Fragrant thimbleberry
Vaccinium stamineum	2	Common deerberry

### **Low Flood Tolerance**

Arctostaphylos uva-ursi	4	Bearberry
Cornus rogersiana	1	Roundleaf dogwood
Corylus americana	2	American filbert
Diervilla lonicera	1	Dwarf bushhoneysuckle
Fothergilla gardeni	1	Dwarf fothergilla***
Fothergilla major	1	Large fothergilla***
Hydrangea arborescens	1	Smooth hydrangea
Hydrangea quercifolia	1	Oakleaf hydrangea***
Mahonia aquifolium	1	Oregongrape holly***
Rosa carolina	4	Carolina rose
Rubus odoratus	1	Fragrant thimbleberry
Symphoricarpos albus	1	Common snowberry
Vaccinium stamineum	2	Common deerberry

## No Flood Tolerance

Amorpha canescens	5	Leadplant***
Ceanothus americanus	3	New Jersey tea
Camptonia peregrina	2	Sweetfern
Dirca palustris	1	Leatherwood
Hypericum frondosum	5	Golden St. Johnswort
Juniperus communis	5	Common juniper
Juniperus horizontalis	5	Creeping juniper
Rhus aromatica	5	Fragrant sumac
Sambucus pubens	1	Scarlet elder
Symphoricarpos albus	1	Common snowberry

**\*High Flood Tolerance:** Generally lowland wet species surviving when flooded or exposed to high water table more than 40% of the growing season.

**\*Moderate Flood Tolerance:** Generally lowland wet species surviving when flooded or exposed to high water table more than 30% of the growing season but less than 40%.

**\*Intermediate Flood Tolerance:** Generally lowland wet-mesic species surviving occasional inundation or elevated water table between 20% and 30% of the growing season.

**\*Low Flood Tolerance:** Generally upland mesic and mesic-dry species rarely inundated or exposed to an elevated water table for periods of short duration, between 5% and 20% of the growing season.

**\*No Flood Tolerance:** Generally upland dry species exhibiting immediate and rapid decline frequently culminating in death if inundated or exposed to elevated water table for more than 5% of the growing season.

**\*\*Shade Tolerance:** Shade tolerance means able to grow in a state of health and vigor beneath dense shade. In this ranking, shrubs and vines are ranked on a scale of 1 to 5, with 1 being very shade tolerant, and 5 being very shade intolerant.

### NOTE:

1. The majority of plants listed are available on the local commercial market and do not displace native species.
2. The cultivates varieties (“cultivars”) of the species listed above may also be used.
3. Primary information taken from Hightshoe, Gary, 1987. Native Trees, Shrubs, and vines for Urban and Rural America. Van Nostrand. NY, NY.

For further assistance, contact Roger Gettig, Landscape Consulting Program, The Holden Arboretum, or Steve Roloson, ODNR Scenic Rivers Program.