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Article 50-3. Zoning Districts.

50-1.3 Definitions

(these are new definition to be added to Zoning)

Basal Area is the summation of the cross-sectional area at breast height, usually 4.5' above ground surface, of individual tree stems appropriately weighted to reflect a particular unit area.

Best Management Practices (BMP). Commercial or professional procedures that are accepted or prescribed as being correct or most effective.

Canopy, Tree. Upper layer formed by the crowns of mature trees.

Critical Root Zone (CRZ). The zone encompassing the majority of the tree's roots. To calculate measure the trunk of the tree at diameter breast height (DBH) and then measure outward from the trunk eighteen (18) inches for every inch of trunk diameter. The CRZ is this distance or ten (10) feet from the base of the trunk, whichever is greater. Refer to Figure 50.XX Measuring Critical Root Zone.

Develop is to construct a primary or accessory structure on a vacant parcel of land with no active use.

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Figure XX Measuring CRZ

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Diameter Breast Height (DBH). DBH is the diameter of a tree trunk measured at breast height, or 4.5 feet above ground level.

Disturbance. A disturbance is any placement of impervious surface or new structure; exposure or movement of soil, including removal or addition of soil or other natural or manufactured materials; or clearing, cutting, or removing of vegetation.

Ecosystem Assessment refers to a method for quickly gathering useful data on to the ecologically and biological components of a Woodland habitat over small spatial scales.

Endangered Species. Any species recognized by the State of Michigan and/or federal government as being in danger of extinction throughout all or significant portion of its range.

Forbs. Non=woody plants and wildflowers other than grasses.

Graminoids. Graminoids are grasses, sedges, and rushes.

Native Species. A species that normally lives and thrives in a particular place as a result of natural processes, not human disturbance or intervention. For the purposes of this Article, place is defined as Kalamazoo/Southwest Michigan.

Natural Communities. Natural Communities are groups of plants and animals and their physical environment that have experienced minimal human-caused disturbance or recovered from that disturbance.

Natural Features. Those features defined in the Natural Feature Protection Overlay (refer to 50-6.2, specifically Wetlands, Water Resources, Trees, Woodlands, Slopes, and Natural Heritage Areas .

Natural Vegetation. Plants that grow naturally without human aid that provide habitat for wildlife, deep-roots to stabilize banks and shorelines, and canopy for shade.

Ordinary High Water Mark. The line between the upland and bottom land of a Water Resource created by regular changes in water levels.

Parcel, Parent. A Parent Parcel is defined by the boundaries of a site before it is divided into lots for development.

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Redevelop is to remove existing structure or structures on a developed parcel and replace with a new structure. This provision shall apply to any structure whether a primary or accessory structure(s) that is required to obtain a building permit.

Riparian. Refers to the area that exists alongside a Water Resource.

Runoff. The portion of precipitation that does not soak into the ground or evaporate.

Slope. Slope is the area of the ground surface where there is a change in elevation over a horizontal distance.

Slope Impact Zone . Slope Impact Zone is the face of the slope from top to toe of slope.

Species of Concern. Plants and animals considered to be rare, threatened, or endangered by the State of Michigan and/or the federal government..

Steep Slope Analysis. Steep Slope Analysis is an analysis based upon a topographic survey which shows elevation contours at 2' intervals with slopes measured between adjacent contour lines.

Stormwater Best Management Practices (BMP). Tools used to prevent or reduce stormwater runoff and/or associated pollutants.

Stormwater Runoff. Runoff and any other surface water drainage that flows into natural or man-made drainage ways.

Top of Slope is the natural high point of elevation of a slope where the slope markedly decreases and the elevation of the ground surface becomes must less steep moving away from the slope.

Toe of Slope is the natural low point of a slope where the slope markedly decreases and the elevation of the ground surface becomes much less steep moving away from the slope.

Threatened Species are any species recognized by the State of Michigan and/or federal government which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Turf Grass. Any variety of commercial grasses grown and maintained to form turf.

Understory. The layer of vegetation that naturally grows beneath a Tree Canopy.

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Wildlife Habitat Corridor is a link of wildlife habitat, generally native vegetation, which joins two or more larger areas of similar wildlife habitat.

Vegetated Buffer is a permanent, maintained strip of vegetation designed to slow surface Stormwater Runoff velocities and filter out sediment and other pollutants from stormwater.

Zoning District, Base . Also referred to as underlying zoning. This is the Zoning District and regulations applied to a parcel through the 50.XX Zoning Map.

Zoning District, Overlay . An additional set of standards placed on a parcel or area in addition to the standards of the base Zoning District.

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Article 50-3. Zoning Districts.

50-3.2 Overlay Zone Districts. Refer to Figure XXX Zoning Overlay Map of the following overlay districts.

A. Natural Feature Protection (NFP) Overlay District. Natural Features Protection (NFP) Overlay District is an overlay district providing additional development standards for properties containing or adjacent to natural features.

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Article 6. Zoning Standards: Overlay District Standards

50-6.1 Overlay District Requirements.

A. Applicability. Overlay Districts are applied to parcels in addition to the base or underlying Zoning District as mapped in Figure XX Zoning Map.

B. Intent. Overlay Districts provide an additional set of requirements for the development and use of parcels with the overlay designation.

C. Conflict. If a conflict arises between the Overlay District regulations and those of the base Zoning District, the Overlay District regulations take precedent unless otherwise approved by the City Planner.

50-6.2 Natural Features Protection Overlay Standards

A. Intent. The NFP Overlay is intended to protect Natural Features in Kalamazoo, specifically Wetlands, Water Resources, Trees, Woodlands, Slopes, and Natural Heritage Areas. Refer to Figure XX NFP Overlay Map.

B. Applicability. The NFP Overlay standards apply as follows.

- (1) The Natural Features Standards are divided by defined Natural Feature. When a site is developed, redeveloped, or the Natural Feature is impacted due to any site alterations, the standards for all applicable Natural Features are applied.
- (2) The Site Development Standards shall be applied to all parcels in the NFP Overlay.
- (3) Overlay standards shall not eliminate the need to obtain a permit from the Michigan Department of Environmental Quality (MDEQ) or any other State, Federal, or regional permitting agency, if required.

C. Natural Feature Standards.

(1) Wetlands. A Wetland is any area two (2) acres or greater, regardless if the entire area is contained within a single parcel that is characterized by the presence of water at a frequency and duration sufficient to support wetland vegetation or aquatic life. It is commonly referred to as a bog, swamp, or marsh.

(a) Wetland Delineation. If an area appears to be supporting wetland vegetation, but it is not a delineated wetland on the National Wetlands Inventory (NWI) map, a wetland delineation study can be undertaken to determine if it is a Wetland and locate its boundaries. Alternatively for the purposes of the NFP Overlay, the area can be treated as a Wetland and the standards of this Overlay apply.

(b) Permitted Activities. No impervious or semi-impervious surfaces, such as pavement or structures, or Stormwater BMPs are permitted within a Wetland.

(c) Wetland Setbacks. Setback distance is measured with a line drawn from the outer most edge of Wetland

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vegetation. Refer to Figure 50.XX Measuring Wetland and Water Resource Setbacks.

- [1] The size of the Wetland setback is based on the size of the parent parcel.
 - [a] 25' setback on parcels greater than one (1) acre.
 - [b] 20' setback on parcels between a half (1/2) acre and up to one (1) acre
 - [c] 15' setback on parcels less than a half (1/2) acre
- [2] Prohibited Activities. The follow activities are prohibited in the setback.
 - [a] Development activities, including structures, impervious surfaces, parking, driveways, etc.
 - [b] Stormwater BMPs.
- [3] Permitted Activities. The follow activities are permitted in the setback.
 - [a] Water and sewer lines, utility lines, bridge abutments or approaches, or semi-pervious, non-motorized trailways, may be developed and maintained within a Wetland setback with approval from all applicable local, State, and/or Federal agencies.
 - [b] Wetland Restoration. Restoration activities, including replanting with approval from all applicable local, State, and/or Federal agencies and following the Michigan Low Impact Development Manual, Appendix C, Recommended Plant Lists for BMPs.
 - [c] Timely Planting. All disturbed areas must be stabilized and restored with plantings immediately following construction.

Figure XX Measuring Wetland and Water Resource Setbacks.

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(d) Mitigation. When applicable, mitigation will be required as described in the Wetland Mitigation Section under Part 303, Wetlands Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended and/or any Federal agency administering Section 404 of the federal Clean Water Act.

(2) Water Resources. A Water Resource is any natural or artificial lake, pond, or impoundment; a river, stream, or creek which may or may not be serving as a drain; or any other body of water that has defined banks, a bed, and visible evidence of a continued flow or continued occurrence of water.

(a) Altering a Water Resource. Alteration to a Water Resource is prohibited except as allowed by the State of Michigan under the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

[1] Where projects require a permit from the State, a copy of any State-issued permit must be submitted to the City.

(b) Water Resource Setbacks. Setback distance is measured with a line drawn from the Ordinary High Water Mark of all Water Resources at a distanced based on the size of the parent parcel. Refer to Figure 50.XX Measuring Wetland and Water Resource Setbacks.

[1] The size of the Water Resource setback is based on the size of the parent parcel.

[a] 25' setback on parcels greater than one (1) acre.

[b] 20' setback on parcels between a half 1/2 acre and up to one (1) acre.

[c] 15' setback on parcels less than a half (1/2) acre.

[2] Prohibited Activities. The follow activities are prohibited in the setback.

[a] Development activities, including structures, impervious surfaces, parking, driveways, etc.

[b] Stormwater BMPs.

(c) Permitted Activities. The following activities are permitted in the setback.

[1] Up to fifteen (15) percent of the setback area may be developed with semi-impervious materials.

[2] Water and sewer lines, utility lines, bridge abutments or approaches, or semi-pervious, non-motorized trailways, may be developed and maintained within a Wetland setback with approval from all applicable local, State, and/or Federal agencies..

[3] Disturbance to the bank or shoreline, as expressly allowed under State law, when a Restoration plan is prepared by an appropriately credentialed professional, such as a Michigan Certified Natural Shoreline Professional.

[4] Dredging or other operations and maintenance of flood or stormwater control facilities.

[5] Appropriate erosion control (refer to Chapter 30 of the Municipal Code) during and immediately after construction until natural vegetation is re-established.

[6] All disturbed areas must be stabilized and restored with plantings immediately following construction.

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(d) Required Planting and Activities. The setback area must contain Natural Vegetation, including a combination of Riparian trees, shrubs, Graminoids, and Forbs appropriate for banks or shorelines. The setback plantings must conform to one (1) of the following options.

Common Name	Scientific Name	Type
Silky Dogwood	<i>Cornus amomum</i>	Shrub
Red Osier, Red Twig Dogwood	<i>Cornus stolonifera, sericea</i>	Shrub
Common Elderberry	<i>Sambucus canadensis</i>	Shrub
Atlantic Ninebark	<i>Physocarpus opulifolius</i>	Shrub
Common Winterberry	<i>Ilex verticillata</i>	Shrub
Northern Spicebush	<i>Lindera benzoin</i>	Shrub
Highbush Blueberry	<i>Vaccinium corymbosum</i>	Shrub
Hairy Sedge	<i>Carex lacustris</i>	Graminoid
Tussock Sedge	<i>Carex stricta</i>	Graminoid
Bottlebrush Sedge	<i>Carex hystericina</i>	Graminoid
Bebb's Sedge	<i>Carex bebbii</i>	Graminoid
Common Fox Sedge	<i>Carex vulpinoidea</i>	Graminoid
Prairie Cordgrass	<i>Spartina pectinata</i>	Graminoid
Dark-Green Bulrush	<i>Scirpus atrovirens</i>	Graminoid
Cottongrass Bulrush	<i>Scirpus cyperinus</i>	Graminoid
Bluejoint Grass	<i>Calamagrostis canadensis</i>	Graminoid
Common Rush	<i>Juncus effusus</i>	Graminoid
Spotted Joe-Pye-Weed	<i>Eutrochium maculatum</i>	Forb
White Turtlehead	<i>Chelone glabra</i>	Forb
New England American Aster	<i>Symphyotrichum novae-angliae</i>	Forb
Purple-Stem American Aster	<i>Symphyotrichum puniceum</i>	Forb
Parasol White-Top	<i>Doellingeria umbellata</i>	Forb
Common Boneset	<i>Eupatorium perfoliatum</i>	Forb
Swamp Milkweed	<i>Asclepias incarnata</i>	Forb
Cutleaf Coneflower	<i>Rudbeckia laciniata</i>	Forb
Pin Oak	<i>Quercus palustris</i>	Tree
Swamp White Oak	<i>Quercus bicolor</i>	Tree
Black Tupelo	<i>Nyssa sylvatica</i>	Tree
Tamarack, American Larch	<i>Larix laricina</i>	Tree

TABLE XXX Recommended Plants for Vegetative Buffers

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[1] Where the bank or shoreline is already covered in Natural Vegetation.

[a] Existing vegetation must remain undisturbed during and after construction activities. No excavation, grading, filling, or vegetation removal is permitted.

[b] Supplemental planting or seeding is allowed when Native Species are used. Mowed turf grass or other ornamental landscaping does not qualify as Natural Vegetation.

[c] Removal of invasive species and/or dead or diseased woody species are allowed, if it is replaced according to the parameters in 50.-6.2X and the planting plan is prepared by a qualified professional.

[2] Where the bank or shoreline is not covered in Natural Vegetation, including areas of primarily bare soils, impervious or semi-impervious surfaces, or Turf Grass.

[a] A Vegetative Buffer must be planted and maintained along the bank or shoreline.

[b] Soil preparation for planting is allowed with proper soil erosion controls.

[c] A diverse mix of appropriate species native to Southwest Michigan including at least twelve (12) different species with at least two (2) species from each of the following three plant types: shrubs, Graminoids, and Forbs. Shrubs shall be placed at a spacing of at least one (1) shrub per twenty (20) feet of bank or shoreline. Graminoids and Forms shall be placed at a density no less than one (1) plant per two (2) square foot area.

[d] Trees can be planted if appropriate to the site. Species must be selected from the Michigan Low Impact Development Manual, Appendix C or the list in Table XX Replacement Tree List.

[e] Any combination of native seed mix, plant plugs, bare root trees or shrubs, and/or container plants, trees, or shrubs are permitted.

[3] Silt fencing must be placed at the setback in addition to the barrier fencing required during site development or construction, refer to 50-6.2.XX Protection During Construction..

[4] Appropriate erosion control mats must be installed and remain in place until new plants are established.

(e) Operation and Maintenance Agreement. The Vegetative Buffer must be included in any Stormwater Operation and Maintenance Agreement, if one is required for the site.

(3) Trees. A Tree for the purposes of the NFP Overlay is any tree larger than twenty-four (24) inches in diameter at breast height (DBH), or Tree listed on the Special Status Tree List in Figure 50.XX

(a) Applicability. These standard apply as follows.

[1] The standards apply to individual trees that are not part of a Woodland, as defined in 50.X.X.

[2] These standards take priority if a conflict exists with the Tree Ordinance.

(b) Tree Protection. Trees, as defined in the NFP Overlay, shall not be removed except in the following circumstances.

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Common Name	Scientific Name	DBH (inches)*
Ash	Fraxinus spp. (not cultivars)	18"
Basswood, Linden	Tilia americana	18"
Beech	Fagus spp.	18"
Box Elder	Acer negundo	18"
Buckeye (Horsechestnut)	Aesculus spp.	18"
Cherry, Black	Prunus serotina	18"
Elm, American	Ulmus americana	18"
Elm, Slippery	Ulmus rubra	18"
Elm, Winged	Ulmus alata	18"
Fir	Abies spp.	18"
Fir, Douglas	Pseudotsuga menziesii	18"
Kentucky Coffee Tree	Gymnocladus dioicus	18"
Maple, Red	Acer rubrum	18"
Maple, Silver	Acer saccharinum	18"
Maple, Sugar	Acer saccharum	18"
Pine, Red	Pinus resinosa	18"
Pine, White	Pinus strobus	18"
Spruce	Picea spp.	18"
Sycamore, American	Plantanus occidentalis	18"
Tuliptree	Liriodendron tuliperifera	18"
Walnut, Black	Juglans nigra	18"
Honey Locust	Gleditsia triacanthos	16"
Oak, Black	Quercus velutina	16"
Oak, Bur	Quercus macrocarpa	16"
Oak, Northern Red	Quercus rubra	16"
Oak, White	Quercus alba	16"
Arbor-vitae, Eastern White Cedar	Thuja occidentalis	12"
Birch	Betula spp.	12"
Birch, River	Betula nigra	12"
Cherry, Flowering	Prunus spp.	12"
Crabapple	Malus spp.	12"
Dawn Redwood	Metasequoia glyptostroboides	12"
Eastern Hemlock	Tsuga Canadensis	12"
Ginkgo	Ginkgo biloba	12"
Hickory, Bitternut	Carya cordiformis	12"

Figure XX Special Status Tree List

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Common Name	Scientific Name	DBH (inches)*
Hickory, Pignut	<i>Carya glabra</i>	12"
Hickory, Shagbark	<i>Carya ovata</i>	12"
Hickory, Shellbark	<i>Carya laciniosa</i>	12"
Oak, Chinkapin	<i>Quercus muehlenbergii</i>	12"
Oak, Northern Pin	<i>Quercus ellipsoidalis</i>	12"
Oak, Swamp White	<i>Quercus alba</i>	12"
Pear	<i>Pyrus</i> spp.	12"
Persimmon	<i>Diospyros virginiana</i>	12"
Popular	<i>Populus</i>	12"
Sassafras	<i>Sassafras albidum</i>	12"
Sweet gum	<i>Liquidambar styraciflua</i>	12"
Willow, black	<i>Salix nigra</i>	12"
Yellow Wood	<i>Cladrastis lutea</i>	12"
American Chestnut	<i>Castanea dentata</i>	8"
Black tupelo, black gum	<i>Nyssa sylvatica</i>	8"
Butternut	<i>Juglans cinerea</i>	8"
Cedar, Eastern Red	<i>Juniperus virginiana</i>	8"
Hackberry	<i>Celtis occidentalis</i>	8"
Hawthorn	<i>Crataegus crus-galli</i> and other spp.	8"
Larch/Tamarack	<i>Larix laricina</i>	8"
Maple, Mountain/Striped	<i>Acer spicatum/pensylvanicum</i>	8"
American Hophornbeam	<i>Ostrya virginiana</i>	4"
American Hornbeam, Blue Beech	<i>Carpinus caroliniana</i>	4"
Dogwood, Flowering	<i>Cornus florida</i> (native only)	4"
Dwarf Hackberry	<i>Celtis tenuifolia</i>	4"
Eastern Redbud	<i>Cercis Canadensis</i>	4"
Pawpaw	<i>Asimina triloba</i>	4"
Serviceberry	<i>Amelanchier</i> spp.	4"

*Tree species with DBH greater than or equal to the values in this column of the table require replacement if removed for construction/development.

Gray Highlight = Tree species must be replaced with a different species from the Replacement Tree List.

Figure XX Special Status Tree List (continued)

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[1] Tree is located such that when applying all the NFP Overlay Standards, the reasonable use of the property as zoned is substantially impacted.

[2] An Arborist or other ISA certified professional has determined the tree to be diseased or dying.

(c) Construction Protection. Trees shall be protected during site development and construction following the standards of 50-6.2.D(6) Protection During Construction.

(d) Replacement. Any Tree removed from the site must be replaced at a ratio of one (1) inch of DBH of removed tree to one (1) inch of DBH of replacement tree width.

[1] Replacement trees shall be selected from the Replacement Tree List in Table XX. Site context should be taken into consideration when selecting a replacement tree.

[2] Replacement trees must have a minimum width of two (2) inches at DBH, unless otherwise stated in Table XX Replacement Tree List.

[3] A replacement ratio of two (2) inches of DBH of removed Tree to one (1) inch of DBH of replacement tree width is applicable in the following circumstances.

[a] Replacement trees are four (4) inches at DBH or greater.

[b] Replacement tree has a special value in terms of long-term survival rate, habitat quality, and climate change adaptation, as noted by the ratios in Table XX Replacement Tree List.

[4] Location. Replacement trees shall be located as follows.

[a] Replacement trees shall be located on the site from which they are removed.

[b] The NFP Review Board can approve alternative locations if on-site replacement is not possible provided that the alternative is within the City of Kalamazoo.

[c] Replacement trees cannot be located within a parking lot.

Figure XX Woodland Delineation

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Common Name	Scientific Name	"Replacement Ratio"	Condition Code
Basswood, Linden	<i>Tilia americana</i>	1:1	
American Chestnut	<i>Castanea dentata</i>	2:1, (hybrid)	Cr, F, Cul
American Hophornbeam	<i>Ostrya virginiana</i>	1:1	P, Cr
American hornbeam, blue beech	<i>Carpinus caroliniana</i>	2:1	Cr, P
Arbor-vitae, Eastern white cedar	<i>Thuja occidentalis</i>	1:1	Cv
Birch	<i>Betula</i> spp.	1:1	Cv
Birch, River	<i>Betula nigra</i>	1:1	P, Ri
Black tupelo, black gum	<i>Nyssa sylvatica</i>	2:1	Cr, Ri
Buckeye (Horsechestnut)	<i>Aesculus</i> spp.	2:1	Cr
Butternut	<i>Juglans cinerea</i>	1:1	F, Cv
Cedar, Eastern Red	<i>Juniperus virginiana</i>	2:1	Cr, P
Cherry, Black	<i>Prunus serotina</i>	1:1	
Cherry, Flowering	<i>Prunus</i> spp.	1:1	
Crabapple	<i>Malus</i> spp.	1:1	P
Dawn Redwood	<i>Metasequoia glyptostroboides</i>	1:1	
Dogwood, Flowering	<i>Cornus florida</i> (native only)	2:1	Cr
Dwarf Hackberry	<i>Celtis tenuifolia</i>	1:1	
Eastern Hemlock	<i>Tsuga Canadensis</i>	1:1	Cv
Eastern Redbud	<i>Cercis Canadensis</i>	2:1	Cr, P
Elm, American	<i>Ulmus americana</i>	2:1	Cul
Elm, Slippery	<i>Ulmus rubra</i>	1:1	
Elm, Winged	<i>Ulmus alata</i>	1:1	
Hackberry	<i>Celtis occidentalis</i>	2:1	Cr
Hawthorn	<i>Crataegus crus-galli</i> and other spp.	2:1	Cr, P
Hickory, bittersweet	<i>Carya cordiformis</i>	1:1	Cr, F, Ri
Hickory, pignut	<i>Carya glabra</i>	2:1	Cr, F
Hickory, shagbark	<i>Carya ovata</i>	2:1	Cr, F
Hickory, shellbark	<i>Carya laciniata</i>	1:1	F, Ri
Honey Locust	<i>Gleditsia triacanthos</i>	2:1	Cr
Kentucky Coffee Tree	<i>Gymnocladus dioica</i>	2:1	Cr
Larch/Tamarack	<i>Larix laricina</i>	1:1	Ri
Maple, Red	<i>Acer rubrum</i>	1:1	Cv
Maple, Silver	<i>Acer saccharinum</i>	1:1	Cr, Ri
Maple, Sugar	<i>Acer saccharum</i>	1:1	Cv, Cul
Oak, black	<i>Quercus velutina</i>	2:1	Cr

Figure XX Replacement Tree List

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Common Name	Scientific Name	"Replacement Ratio"	Condition Code
Oak, Bur	<i>Quercus macrocarpa</i>	1:1	Cr, Cul
Oak, chinkapin	<i>Quercus muehlbergii</i>	2:1	Cr
Oak, northern pin	<i>Quercus ellipsoidalis</i>	2:1	Cr, Ri
Oak, Northern Red	<i>Quercus rubra</i>	1:1	Cr
Oak, swamp white	<i>Quercus alba</i>	2:1	Cr, Ri
Oak, White	<i>Quercus alba</i>	2:1	Cr, Cul
Pawpaw	<i>Asimina triloba</i>	2:1	Cr, F
Persimmon	<i>Diospyros virginiana</i>	2:1	Cr, F
Pine, Red	<i>Pinus resinosa</i>	1:1	
Pine, White	<i>Pinus strobus</i>	1:1	
Populus	<i>Populus</i> (except <i>deltoides</i> , <i>alba</i>)	1:1	Cv
Sassafras	<i>Sassafras albidum</i>	1:1	
Serviceberry	<i>Amelanchier</i> spp.	1:1	P, F
Spruce	<i>Picea</i> spp.	1:1	
Sycamore, American	<i>Plantanus occidentalis</i>	2:1	Cr
Tuliptree	<i>Liriodendron tuliperifera</i>	1:1	Cr
Walnut, Black	<i>Juglans nigra</i>	2:1	F
Willow, black	<i>Salix nigra</i>	1:1	Ri

Condition Codes:

RESTRICTED = Species not to be used as replacement tree

Cr = Climate Resilient

Cul = Culturally significant

Cv = Climate vulnerable

F = Food source

P = Suitable for parking lots and roadways

Ri = Suitable for riparian/wet plantings

U = Suitable for urban areas

Figure XX Replacement Tree List (continued)

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(4) Woodlands. A Woodland is an area predominantly covered with trees and an Understory of shrubs and Forbs.

(a) Woodland Criteria.

[1] Minimum Size. Minimum size of 21,780 square feet or 1/2 an acre

[2] Trees. Supports at least forty (40) trees per acre of at least two (2) inches at DBH and of species that reach at least fifty (50) feet height at maturity.

[3] Natural Area. No more than twenty-five (25) percent of the area is mowed.

[4] Understory. Shrubs attaining a height of at least five (5) feet and/or Forbs

(b) Delineating a Woodland. Refer to Figure XX Delineating a Woodland.

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Figure XX Measuring Slope

Figure XX Slope Setbacks

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[1] Gaps. Areas without trees or that have sparse trees are common within a Woodland and should be included in area and density measurements except when larger than 8,000 square feet.

[2] Woodland Assessment Tools. A Woodland can be delineated using a Basal Area, ecosystem assessment, tree survey, and/or other assessments completed by an appropriately credentialed professional, such as ISA-certification.

(c) Woodland Standards.

[1] Woodlands shall be maintained and protected as follows.

[a] Where Woodlands cover 75-100% of a parent parcel, at least twenty-five (25) percent of the Woodland must be preserved.

[b] Where Woodlands cover 25-50% of a parent parcel, at least fifty (50) percent of the Woodland must be preserved

[c] Where Woodlands cover less than twenty-five (25) percent of a parent parcel, 90% of the Woodland must be preserved.

[2] Criteria for Woodland Preservation. In determining which areas of a Woodland are to be preserved, the following criteria shall be used to determine priority areas.

[a] Woodlands contiguous to Woodlands or forested areas on adjacent parcels.

[b] Woodlands on or adjacent to another Natural Feature(s), floodplains, or a publicly accessible open space.

[c] Woodlands with the highest Basal Area score or another ecosystem assessment score.

[d] Woodlands with older growth, higher DBH trees, or Trees noted in 50.XX Replacement Trees List.

(d) Construction Protection. Trees shall be protected during site development and construction following the standards of 50-6.2.D(6) Protection During Construction.

(5) Slopes. The Slopes regulated by the NFP Overlay are those over a given size that either contribute to another Natural Feature or extend beyond the property in question.

(a) Slopes Criteria. Slopes that are twenty (20) percent or greater and meet one of the following conditions. are regulated by the NFP Overlay.

[1] Slope Impact Zone contains a Woodland. refer to 50-6.2XX.

[2] Slope Impact Zone contains Natural Heritage Area, refer to 50-6.2XX

[3] Slope Impact Zone is within 500 feet of a Wetland or Water Resource (refer to 50-6.2XX and 50-6.2XX) including when the Top or Toe the Slope is off the property boundary.

[4] Slope Impact Zone extends onto adjacent properties, such that disturbance of the slope could impact structures on, Natural Features on, or the reasonable use of adjacent properties.

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(b) Slope Assessment. A Steep Slope Analysis is used to identify any parts of a parcel with twenty (20) percent slope or greater. The measurements to determine the extent of the slope shall include the following steps.

- [1] Draw straight lines perpendicular to each ten (10) foot contour line.
- [2] Calculate the average slope angle (percent of rise over run) along the ten (10) foot contour line by taking the average of the individual slope measurements at each two (2) foot contour line. Refer to Figure XX Measuring Slope.
- [3] Indicate area(s) on a map where the average slope angles between any ten (10) foot contour lines is twenty (20) percent or greater.
- [4] When an area is found to have a slope equal to or greater than twenty (20) percent and it meets any of the additional criteria, the entire slope area is regulated according to this Overlay.

(c) Slope Standards. Slopes shall be maintained and protected as follows. Refer to Figure XX Slope Setbacks.

[1] Setbacks. A setback is required from the Top of Slope and the Toe of Slope equal to half (1/2) of the overall height of the slope, regardless of whether or not the entire slope is contained within the parcel in question, or ten (10) feet, whichever is greater.

[2] Permitted Activities in Setbacks. Setback areas from the Top or Toe of Slope are to remain undisturbed with the following exceptions.

- [a] Fences are permitted when they meet all other applicable zoning standards.
- [b] Existing impervious surfaces and structures may be maintained; structures may expand up to twenty-five (25) percent of the structure's footprint at the time this Overlay was approved.
- [c] Restoration and management of other Natural Features are permitted provided that they meet the requirements of this Overlay.

[3] Permitted Activities in the Slope Impact Zone. The Slope Impact Zone shall remain an undisturbed area except

- [a] Restoration and management of other Natural Features, provided that they meet the requirements of this Overlay.
- [b] Existing impervious surfaces and structures may be maintained; structures may expand up to twenty-five (25) percent of the structure's footprint at the time this Overlay was approved.

[4] Stormwater & Utilities. Stormwater and utilities shall be regulated as follows.

- [a] Surface water shall not be directed toward any Slope regulated by this Overlay.
- [b] Stormwater BMPs are not permitted within the Slope Impact Zone or the setbacks from the Toe and Top of Slope.
- [c] No new underground utilities may be placed within the Slope Impact Zone or the setbacks from the Toe and Top of Slope.

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Figure XX Placement of Construction Fencing.

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[5] Construction Protection. The Slope Impact Zone and setback areas shall be protected during site development and construction following the standards of 50-6.2.XX Protection During Construction.

(6) Natural Heritage Areas. National Heritage Areas are Natural Communities and the habitats of Species of Concern.

(a) Determination of Natural Heritage Areas. Use the Michigan Natural Features Inventory's (MNFI) Natural Heritage Database to determine if a Species of Concern has been located in an area equal to a two (2) mile radius around the project site.

(b) On-Site Survey. When a Species of Concern is shown on the MNFI, an on-site survey must be conducted by a consultant with a Michigan Endangered Species Permit (list compiled and available from the Michigan Department of Natural Resources) or a professional approved by the City Planner.

(c) Confirmation of Natural Heritage Area. If an on-site survey confirms that the property is a Natural Heritage Area, the property owner shall follow all state and federal regulations pertaining to that Endangered Species, Threatened Species, and Species of Concern.

[1] Endangered Species and Threatened Species habitat shall be protected and/or mitigated in accordance with the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.

D. Site Development Standards. The following standards apply to all properties within the Natural Features Protection Overlay.

(1) Building Setbacks. When a conflict exists between meeting the NFP Standard in 50-6.2 and the required placement of structures, the setbacks or built-to zones or lines may be adjusted to eliminate or reduce the conflict through the approval of the Natural Features Site Plan by the NFP Review Board.

(2) Use. In addition to the uses permitted in the underlying district, the following apply.

(a) A.XXX Wellhead Protection Overlay 10-year use restrictions.

(b) Outdoor storage of loose materials is prohibited within 500' of a water resource or wetland.

(c) A.XXX Wellhead Protection Overlay 1-year use restrictions apply within 500' of a water resource or wetland.

(3) Lot Coverage. Areas designated to meet the pervious surface requirement of a the base zoning district shall meet the following requirements.

(a) Undisturbed Areas. Areas designated to meet parcel's overall pervious lot coverage requirements must remain undisturbed, natural areas with the following exceptions.

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[1] Restoration or maintenance of the pervious area through a plan created by a certified professional.

[2] Stormwater BMPs from the Michigan Low Impact Development (LID) Manual BMP Matrix Table in the Runoff Volumes and Infiltration category can be included in a parcel's overall pervious coverage requirement at a ratio of two (2) square feet of BMP equals one (1) square foot of pervious coverage or at a rate of fifty (50) percent..

(b) Contiguous. Pervious areas shall be located in one (1) contiguous area or clustered into areas that each equal at least twenty (20) percent of the total pervious area in order to protect features and habitat areas.

(c) Location. Areas of required pervious surfaces shall be located adjacent to defined Natural Features.

(d) Construction. Pervious areas shall be protected during construction and site development through barrier fencing as described in 50-6.2.D(6).

(e) Semi-Pervious Allowance. A semi-pervious allowance of up to fifteen (15) percent may be utilized to meet the minimum pervious lot coverage requirement.

(4) Landscape and Screening.

(a) Relief. Relief in a parcel's required building perimeter, parking lot, loading zone, perimeter screening, and interior landscaping requirements (refer to A.XX) may be granted through by the NFP Review Board.

[1] Relief granted must be the minimum relief needed to permit reasonable use of the site.

[2] Relief by the NFP Review Board cannot be authorized for landscaping serving as a buffer between residential and non-residential uses and between a vehicular parking lot and a street.

(a) Plant Selection. Native species must be used for all site landscaping. Refer to list 50.x Replacement Tree Table and Michigan Low Impact Development (LID) Manual Appendix C Recommended Plant List for BMPs.

(b) Existing Vegetation. When a parcel's existing vegetation is being preserved and utilized to meet landscaping requirements in A.XX the following applies.

[1] Existing nonnative plants must be maintained and contained within the planting areas.

[2] Existing invasive, nonnative plants must be remove. Refer to Meeting the Challenge of Invasive Plants by MNFI or similar list for the State of Michigan.

(5) Stormwater Management Criteria. Refer to the City of Kalamazoo Performance Standards for Groundwater Protection within Wellhead Protection Capture Zones in A.XX for additional information and definitions.

(a) Determining Project Size Classifications. Stormwater management in the NFP Overlay must follow standards for both channel protection and water quality treatment which are determined by the size of the parent parcel.

[1] Small Site is defined as a half (½) acre (21,780 square feet) or less.

[2] Medium Site is defined as greater than half (½) acre up to 1 acre.

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[3] Large Site is defined as greater or equal to an 1 acre.

(b) Channel Protection Performance Standard. All medium and large sites are required to maintain the post-development project site runoff volume and peak flow rate at or below pre-development levels for all storms up to the ten (10) year, twenty-four (24) hour event.

(c) Water Quality Treatment Runoff Volume Standard. All site sizes must treat the first one (1) inch of runoff generated from the entire site using one of the following options.

[1] Multiple Methods. Two or more BMPs are utilized with at least twenty-five (25) percent of the required runoff volume treated by practices from the Low Impact Development Manual for Michigan, Table 7.1 BMP Matrix Table from "Runoff Volume/Infiltration" and "Runoff Volume/Non-infiltration" categories.

[2] Underground Methods. All required runoff is treated via underground detention or infiltration BMPs.

[3] Non-Infiltration Methods. Sites requiring non-infiltration BMPs, such as those with contamination or within A.XX Wellhead Protection Overlay, use BMPs from Low Impact Development Manual for Michigan, Table 7.1 BMP Matrix Table, "Runoff Quality/Non-infiltration" category.

(d) Exceptions. Development or redevelopment of a single family home or duplex are exempt from the channel protection and water quality treatment standards.

(e) Maintenance Agreement. A Stormwater Management Practices Operations and Maintenance Agreement is required by and between the City of Kalamazoo and the owner of the property that has incorporated stormwater management practices including such methods as manufactured treatment devices, subsurface infiltration bed, bioretention, vegetated swales, dry wells, vegetative roofs, porous pavement, See Performance Standards for Groundwater Protection within Wellhead Protection Capture Zones and Stormwater Management, Reference Ordinances No. 1825 and No. 1826 for additional information on Maintenance Agreements.

(6) Protection During Construction. A barrier fence is required to protect Natural Features and no-to-be disturbed areas during the duration of any site work or construction,

(a) Fence Construction.

[1] Barrier fencing must be built using posts six (6) feet in height spaced no more than eight (8) feet apart on center and buried at least two (2) feet below grade.

[2] Fence must have two (2) cross beams placed approximately at two (2) and six (6) feet above grade.

[3] Plastic mesh barrier fence shall be affixed to the front of the posts.

(b) Fence Placement. Refer to Figure 50.XX Placement of Construction Fencing.

[1] Protection of setbacks and not-to-be disturbed areas by locating barrier fencing no closer than the required setback.

[2] Trees to be preserved, either individual or within a setback or not-to-be disturbed areas shall have the fence

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located outside of the CRZ.

(c) Prohibited Activities. The following activities are prohibited within the barrier fence.

[1] Spreading of soil spoils.

[2] Heavy equipment and vehicle traffic.

[3] Storage of construction materials and debris.

[4] Trench work for utilities is prohibited within any CRZ.

[5] Site grading changes that increase or decrease the moisture conditions within a CRZ on a temporary or permanent basis.

E. NFP Review Bodies and Processes.

(1) Project Review. Review of projects in the Natural Features Protection Overlay will occur as follows.

(a) Projects where Site Plan is not required. Administrative Review by City Planner or designee when site development or construction permit is requested.

(b) Projects where Site Plan is required. The NFP Review Board reviews the NFP Site Plan in conjunction with the Site Plan Review process. NFP Review Board approval is required for a project to achieve Site Plan approval.

(c) Projects where Site Plan is required and any of the following conditions are met must be reviewed by both the NFP Review Board, who makes a recommendation on the project, and the Planning Commission who approves or disapproves the NFP Site Plan.

[1] Project is seeking zoning review from the Planning Commission and/or Zoning Board of Appeals.

[2] Project is located on a parcel with the following conditions.

[a] Contains or is located within 500' of a Water Resource or Wetland

[b] Adjacent to land publicly used for open space or recreation.

[c] Contains multiple Natural Features.

(2) NFP Review Board. A board will be formed to review projects in the Natural Features Protection Overlay.

(a) Intent.

[1] The NFP Review Board will review projects in the NFP Overlay to ensure the standards of the NFP Overlay in 50-6.2 are met.

[2] The NFP Board will assist City staff with regular review of NFP Overlay standards and map, outreach, and community-wide education.

(b) Purpose.

[1] The NFP Review Board will provide a recommendation on a project in the NFP Overlay to City staff and Review Boards.

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[2] The NFP Review Board can grant relief and exceptions as is expressly outlined in 50-6.2.

(c) NFP Review Board Members.

[1] Board will be comprised of seven (7) members.

[2] Members will be those in the greater Kalamazoo community with education or experience in fields related to the Natural Features protected in 50-6.2.

[a] At a minimum, the Board must have one (1) member representing water/wetlands, plants/trees, slopes, and site development or building construction.

[3] Board members will be appointed by the Mayor and approved by the City Commission.

[4] A City staff will be appointed by the City Planner to be the Board's liaison.

[5] The NFP Review Board will establish its own by-laws and meeting procedures.

(3) NFP Site Plans & Documentation for Project Review

STAFF IS DEVELOPING PLAN CRITERIA including elements such as tree surveys, woodland assessments, slope analysis, rare species surveys, etc.

(4) Relief from NFP Overlay Standards.

(a) Criteria. Relief from the NFP Overlay Standards in 50.6-2 may be granted when all the following conditions are met.

[1] The parcel cannot be reasonably utilized for its zoned use without the requested relief.

[2] The extent of relief is the minimum needed to permit reasonable utilization of the site.

[3] It is demonstrated that the relief can be granted without substantial detriment to the public good and will not substantially impair the intent and the purpose of the NFP Overlay.

[4] The requested relief is balanced by the use of conservation and/or green development tools and actions, such as utilizing Storm Water BMPs from the Michigan Low Impact Development Manual that promote infiltration, restoration or expansion of a Natural Feature on the site, or use desired plantings as detailed in 50.X Replacement Tree Table.

(b) Process. The following process shall be followed when relief is sought from 50.6-2 NFP Overlay.

[1] NFP Review Board reviews the request and makes a recommendation on the requested relief to the Zoning Board of Appeals (ZBA).

[2] Application for relief from the Zoning Board of Appeals must include the NFP Review Bodies recommendation.

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F. Bonding of Projects.

(1) Intent. To ensure the protection of Natural Features, a bond will be required prior to seeking construction permits for a lot or structure from the City of Kalamazoo.

(2) Applicability. A bond is required for all NFP Overlay projects that require Site Plan Approval.

(3) Bond Amount. A bond of an amount satisfactory to the City's Engineer will be held by the City to restore and/or stabilize a site that has been disturbed, not properly managed during site work or construction, or has been abandoned for more than six (6) months.

(4) Release of Bond. The bond shall be released in two steps: when a Certificate of Occupancy is granted, the bond may be reduced by XX (XX) percent with the remaining percentage returned upon request five (5) years after the granting of the certificate of occupancy.

G. Penalty. A violation of the provisions in 50.6-2 is a municipal civil infraction punishable as follows.

(1) A fine of up to \$1000.

(2) Imposition of court-imposed costs.

(3) Issuance of an order by the court to replace, mitigate, or restore a Natural Feature damaged or destroyed by a violation.

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