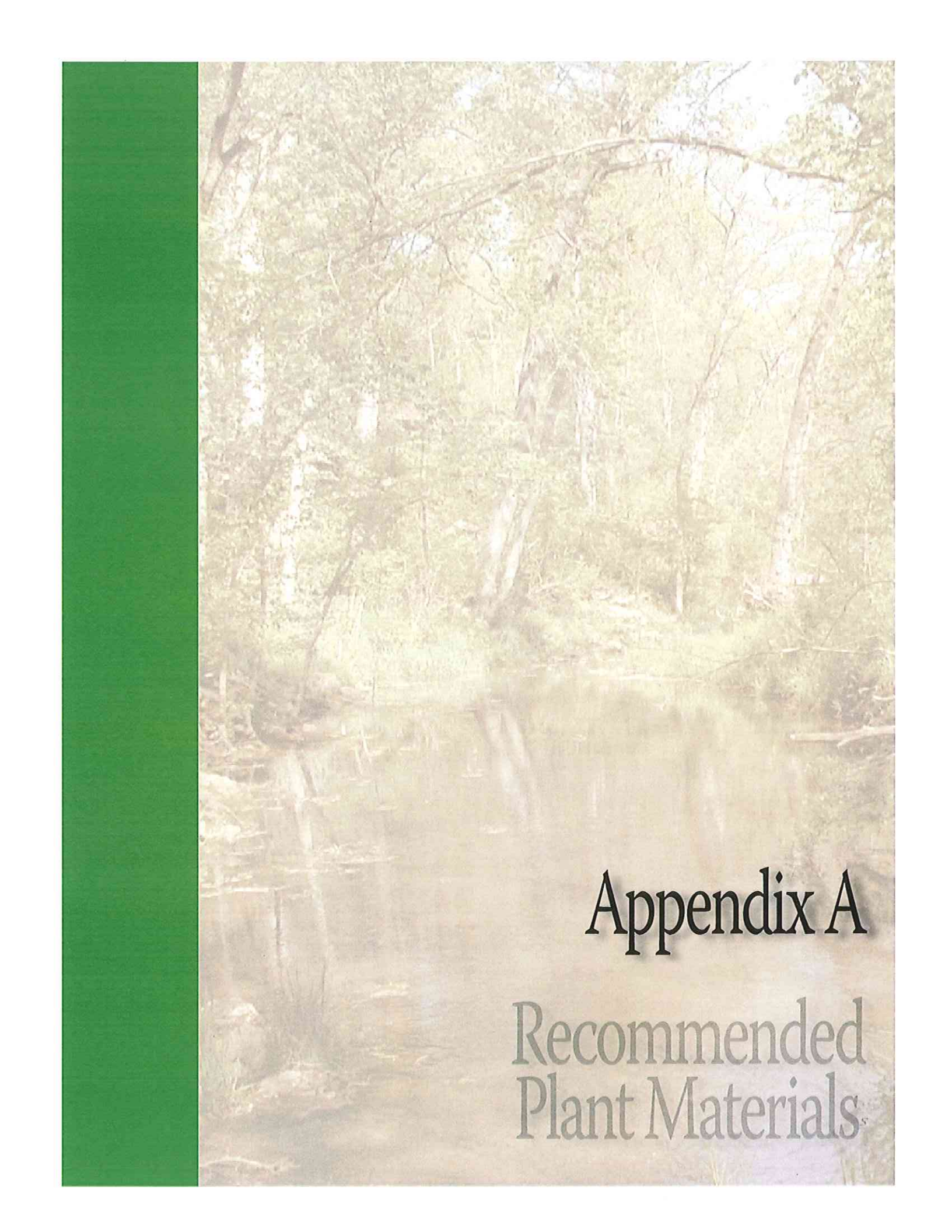


The image features a serene forest scene with a stream. The water is calm, reflecting the surrounding trees and foliage. The trees have light-colored bark and dense green leaves. A solid green vertical bar runs along the left edge of the image. The text 'Appendix A' is positioned in the lower right area of the image.

Appendix A

Recommended Plant Materials

STREAM BUFFER PLANT RECOMMENDATIONS - Sorted by Plant Material Type										PLANTING LOCATIONS				
PLANT MATERIAL TYPE										Planting Zones		Zones		
										A	B	C	D	E
BOTANICAL NAME		COMMON NAME		Height (feet)	Spread (feet)	Light Req'ts	Bloom Time	Flower	Fruit	Fall Color	Additional Characteristics			
SHADE TREES														
Acer saccharum	Sugar Maple	40 to 60	30 to 60	full sun to part shade	April	Inconspicuous	samara	yellow, orange, red	slow growth; long-lived					
Cladonia kentuckia	Yellowwood	30 to 50	40 to 55	full sun	May	Inconspicuous	small pod	yellow, gold, orange	prune in summer; medium growth; somewhat brittle					
Fraxinus americana	White Ash	50 to 70	35 to 50	full sun	April / May	Inconspicuous	samara	bright yellow	slow growth; choose male specimen to avoid fruit					
Ginkgo biloba	Ginkgo	50 to 80	30 to 40	full sun	April	Inconspicuous	fruit (on female)	golden yellow	slow growth; choose male specimen to avoid fruit					
Gleditsia triacanthos var. inermis	Thornless Common Honey Locust	40 to 70	40 to 70	full sun	May	Inconspicuous	large pod	yellow	choose fruitless variety if desired					
Gymnocladia dioica	Kentucky Coffeetree	60 to 80	40 to 55	full sun	May / June	Inconspicuous	large pod	yellow	female flowers fragrant					
Liquidambar styraciflua	Sweet Gum	60 to 80	40 to 60	full sun	April / May	Inconspicuous	spiny ball	gold, red, pink, purple	fast growth; long-lived; choose male variety to avoid fruit					
Liriodendron tulipifera	Tulip Tree	60 to 90	30 to 50	full sun	May / June	showy, yellow-green	small cone	yellow	fast growth; long-lived; somewhat brittle					
Nyssa sylvatica	Sourgum, Black Gum	30 to 50	20 to 30	full sun to part shade	May / June	Inconspicuous	small berry-like	red, orange, purple, yellow	slow growth; difficult to transplant larger specimens					
Platanus x acerifolia	London Planetree	75 to 100	60 to 75	full sun to light shade	April	Inconspicuous	fuzzy ball	dull tan	showy bark; somewhat brittle					
Quercus occidentalis	Sycamore	75 to 100	75 to 100	full sun	April	Inconspicuous	fuzzy ball	dull tan	showy bark; somewhat brittle					
Quercus alba	White Oak	50 to 80	50 to 80	full sun	May	Inconspicuous	acorn	dark red to wine purple	slow growth; long-lived					
Quercus macrocarpa	Burr Oak	60 to 80	60 to 80	full sun	April	Inconspicuous	acorn	yellow or brown	slow growth; long-lived					
Quercus palustris	Pin Oak	50 to 70	40 to 60	full sun	April	Inconspicuous	acorn	red or brown	fast growth; relatively short-lived for an oak					
Quercus phellos	Willow Oak	40 to 75	25 to 50	full sun	April	Inconspicuous	acorn	pale yellow	fast growth; long-lived					
Quercus rubra	Northern Red Oak	50 to 75	50 to 75	full sun	May	Inconspicuous	acorn	dark red, golden orange	fast growth; long-lived					
Salix alba 'Tristis'	Noble Weeping Willow	50 to 75	50 to 75	full sun to part shade	April / May	Inconspicuous	acorn	pale yellow	plant in wet soils; weak wood					
Taxodium distichum	Bald Cypress	50 to 70	20 to 45	full sun	March / April	Inconspicuous	small cone	gold to reddish brown	long-lived; water tolerant; deciduous					
SMALL TREES														
Aesculus pavia*	Red Buckeye	12 to 15	12 to 15	full sun to part shade	April / May	showy red	1" shiny capsule	brown	attracts hummingbirds					
Adiantum trifolia*	Paw Paw	15 to 30	15 to 30	full sun to part shade	April / May	Inconspicuous, purple	3" to 5" edible fruit	yellow	fragrant flowers; tropical appearance					
Betula nigra	River Birch	40 to 70	40 to 60	full sun to part shade	April / May	Inconspicuous	small nutlet	yellow	showy bark; litter potential; avoid spring pruning; fast growth; short-lived					
Carpinus caroliniana	American Hornbeam, Muscadewood	20 to 35	20 to 35	part to full shade	April / May	Inconspicuous	winged nutlet	yellow, orange, red	slow growth; ornamental bark					
Cercis canadensis	Eastern Redbud	20 to 30	25 to 35	full sun to part shade	April	showy pink, magenta	small pod	yellow	short-lived; avoid planting in wet soils					
Chionanthus virginicus	Fringetree	12 to 20	12 to 20	full sun to part shade	May / June	showy white	small black berry	yellow						
Cornus florida	Flowering Dogwood	15 to 30	15 to 30	full sun to part shade	April / May	showy white	red berry	scarlet red	can be disease-prone; berries poisonous to humans; mulch in summer					
Cornus 'Rutger' Stellar Pink	Stellar Dogwood	15 to 30	15 to 30	full sun to part shade	April / May	showy pink	red berry	purplish-red	can be disease-prone; berries poisonous to humans; mulch in summer					
Euonymus atropurpureus*	Wahoo	12 to 20	15 to 25	full sun to part shade	June	Inconspicuous	showy red berry	yellow	fast growth; short-lived					
Magnolia virginiana	Sweetbay Magnolia	10 to 35	10 to 35	full sun to part shade	May / June	showy white	small cone	green	fragrant flowers					
Malus sp.	Crabapple	12 to 15	12 to 15	full sun	May	showy, color varies	showy crabapple	yellow	typically fragrant flowers; choose disease resistant variety					
Prunus americana	Wild Plum	15 to 25	15 to 25	full sun to part shade	March	showy white	1" red plum	yellow to red	somewhat unpleasant fragrance; edible fruit					
SHRUBS														
Aronia melanocarpa	Black Chokeberry	3 to 6	3 to 6	full sun to part shade	May	showy white	blueberry-like	purplish-red						
Cephalanthus occidentalis	Butterbush	5 to 12	4 to 8	full sun to part shade	June	showy white	small ball	brown	cut back in early spring to keep small					
Cornus sericea 'Kelsey'	Kelsey Redtwig Dogwood	2 to 3	2 to 5	full sun	May / June	white	Inconspicuous	purplish-red	ornamental red twigs					
Cotoneaster apiculatus	Cranberry Cotoneaster	2 to 3	3 to 6	full sun	May / June	pink	red berry	red, purple						
Forsythia 'Coutasol' Gold Tide	Gold Tide Forsythia	1 to 2	1 to 4	full sun to part shade	March / April	yellow	Inconspicuous	purplish-red	this is a low-growing variety					
Forsythia 'Vividissima' 'Bronxensis'	Bronx Greensam Forsythia	1 to 2	1 to 4	full sun to part shade	March / April	yellow	Inconspicuous	purplish-red	this is a low-growing variety					
Hydrangea arborescens 'Annabelle'	Annabelle Oakleaf Hydrangea	3 to 5	4 to 6	part shade	June to September	showy white	Inconspicuous	purplish-red	prune back in spring to encourage flowers					
Hypericum frondosum 'Sunburst'	Sunburst Hypericum	3 to 4	3 to 4	full sun to part shade	June / July	showy yellow	small capsule	brown	much roots in winter; ornamental bark					
Ilex glabra 'Shamrock'	Shamrock Inkberry	3 to 4	3 to 4	full sun to part shade	May / June	yellow-white	small berry	evergreen	prune to shape in early spring					
Ilex virginiana	Virginia Sweetbark	3 to 5	3 to 5	full sun to part shade	June / July	showy white	Inconspicuous	red						
Physocarpus opulifolius	Ninebark	5 to 8	4 to 6	full sun to part shade	May / June	white-pink	red capsule	yellow	cut back in winter to keep small					
Rhus aromatica 'Gro-Low'	Gro-Low Fragrant Sumac	1 to 2	6 to 8	full sun to part shade	April / May	Inconspicuous	red berry	orange, red						
Salix humilis*	Prairie Willow	3 to 9	3 to 9	full sun to part shade	March to May	fuzzy white	Inconspicuous	yellow						
Viburnum opulus 'Nanum'	Dwarf European Cranberrybush	1 to 2	2 to 3	full sun to part shade	no flower	no flower	no fruit	green to red	this is a low-growing, flowerless variety					

*Specialty stream corridor plant species with limited availability. Refer to www.grownative.org for native plant specialty nurseries.

STREAM BUFFER PLANT RECOMMENDATIONS - Sorted by Plant Material Type

*Specialty stream corridor plant species with limited availability. Refer to www.grownative.org for native plant specialty nurseries.

PLANT MATERIAL TYPE

BOTANICAL NAME		COMMON NAME		Height (feet)	Spread (feet)	Light Req'ts	Bloom Time	Flower	Fruit	Fall Color	Additional Characteristics			
GROUNDCOVER AND PERENNIALS														
Bronze Alupa	Alupa repans	0.5 to 0.75	0.5 to 1	full sun to part shade	May / June	blue		inconspicuous		semi-evergreen	can be aggressive; will grow in shade			
Astilba	astilbe sp.	1 to 4	1 to 3	part to full shade	July / August	showy, color varies		seed head		semi-evergreen	mulch in summer to retain soil moisture; does best in shade			
River Oats, Northern Sea Oats	Chamaenblum latifolium	2 to 5	1 to 2.5	full sun to part shade	August / September	green		showy seed head		copper to brown	ornamental winter form			
Daylily	hemercallia sp.	1 to 2.5	1 to 2.5	full sun to part shade	May to July	showy, color varies		seed head		green to brown	divide periodically to avoid crowding			
Coralbell	Heuchera micrantha	1 to 2.5	1 to 2	full sun to part shade	June / July	showy, color varies		seed head		semi-evergreen	mulch in winter to reduce freezing			
Hosta	Hosta sp.	1 to 1.5	0.75 to 2.5	part to full shade	June / July	showy, color varies		seed head		green to brown	plant in shady areas only			
Iris	iris sp.	1 to 3	1 to 3	full sun to part shade	May	showy, color varies		seed head		green to brown	avoid overhead watering; divide every 3 to 4 years			
Creeping Liriope	Liriope muscari	1 to 2	1 to 2	full sun to part shade	August / September	showy, purple		blackish berry		semi-evergreen	mow in spring to remove old foliage			
Creeping Liriope	Liriope spicata	0.75 to 1.5	1 to 2	full sun to part shade	August / September	showy, purple to white		blackish berry		semi-evergreen	mow in spring to remove old foliage; can be aggressive			
Cardinal Flower	Lobelia cardinalis	2 to 4	1 to 2	full sun to part shade	July to September	showy red		seed head		green to brown	attracts hummingbirds; divide in spring as needed			
Japanese Spurge	Pachysandra terminalis	0.5 to 1	1 to 1.5	part to full shade	April	white		inconspicuous		semi-evergreen	plant in shady areas only			
Ponies	Paeonia sp.	1 to 5	1 to 5	full sun to part shade	May	showy, color varies		seed head		green to brown	cut foliage to the ground in fall after frost; harmless ants will appear			
Hameln®	Pennisetum alopecuroides	1.5 to 2.5	1.5 to 2.5	full sun to part shade	August to October	pink, white		seed head		orange, bronze, beige	ornamental grass flowers and seed heads			
Phlox paniculata	Phlox paniculata	1.5 to 4	1 to 2	full sun to part shade	July to September	showy, color varies		seed head		green to brown	best in full sun; avoid overhead watering; some pest or disease problems			
Phlox subulata	Phlox subulata	0.25 to 0.5	1 to 2	full sun	March to May	showy, color varies		seed head		green to brown	best in full sun; rabbit like to eat this plant			
Golden Glow	Rudbeckia laciniata*	5 to 7	2 to 3	full sun to part shade	July to September	showy yellow		seed head		green to brown	divide periodically to control growth; can be aggressive			
Prairie Dropseed	Sporobolus heterolepis	2 to 3	2 to 3	full sun	August to October	pink, brown		seed head		gold, orange, bronze	ornamental grass flowers and seed heads			
Periwinkle	Vinca minor	0.25 to 0.5	0.5 to 1.5	full sun to part shade	May / June	purple		seed head		semi-evergreen	can be aggressive; will grow in shade			

Recommended Plants

STREAM BUFFER PLANT RECOMMENDATIONS - Sorted by Planting Zone Location

*Speciesity stream corridor plant species with limited availability. Refer to www.grownative.org for native plant specialty nurseries.

PLANT MATERIAL TYPE

BOTANICAL NAME	COMMON NAME	Height (feet)	Spread (feet)	Light Req'd	Bloom Time	Flower	Fruit	Foli Color	Additional Characteristics
ZONE A - Streambank Zone									
SHRUBS									
<i>Physocarpus opulifolius</i>	Ninebark	5 to 8	4 to 6	full sun to part shade	May / June	white-pink	red capsule	yellow	cut back in winter to keep small
GROUNDCOVER AND PERENNIALS									
<i>Chamaenerion latifolium</i>	River Oats, Northern Sea Oats	2 to 5	1 to 2.5	full sun to part shade	August / September	green	showy seed head	copper to brown	ornamental winter form
<i>Lobelia cardinalis</i>	Cardinal Flower	2 to 4	1 to 2	full sun to part shade	July to September	showy red	seed head	green to brown	attracts hummingbirds; divide in spring as needed
<i>Phlox paniculata</i>	Perennial Phlox	1.5 to 4	1 to 2	full sun to part shade	July to September	showy, color varies	seed head	green to brown	best in full sun; avoid overhead watering; some past or disease problems
<i>Rudbeckia laciniata*</i>	Golden Glow	5 to 7	2 to 3	full sun to part shade	July to September	showy yellow	seed head	green to brown	divide periodically to control growth; can be aggressive
ZONE B - Flood Bench Zone									
SHRUBS									
<i>Aronia melanocarpa</i>	Black Chokeberry	3 to 6	3 to 6	full sun to part shade	May	showy white	blueberry-like	purplish-red	
<i>Copelanthus occidentalis</i>	Buttonbush	5 to 12	4 to 8	full sun to part shade	June	showy white	small ball	brown	cut back in early spring to keep small
<i>Cornus sericea 'Keiskei'</i>	Kelsey Redtwig Dogwood	2 to 3	2 to 5	full sun	May / June	white	inconspicuous	purplish-red	ornamental red twigs
<i>Itea virginiana</i>	Virginia Sweetgum	3 to 5	3 to 5	full sun to part shade	June / July	showy white	inconspicuous	red	
<i>Physocarpus opulifolius</i>	Ninebark	5 to 8	4 to 6	full sun to part shade	May / June	white-pink	red capsule	yellow	cut back in winter to keep small
<i>Salix humilis*</i>	Prairie Willow	3 to 9	3 to 9	full sun to part shade	March to May	fuzzy white	inconspicuous	yellow	
GROUNDCOVER AND PERENNIALS									
<i>Chamaenerion latifolium</i>	River Oats, Northern Sea Oats	2 to 5	1 to 2.5	full sun to part shade	August / September	green	showy seed head	copper to brown	ornamental winter form
<i>Lobelia cardinalis</i>	Cardinal Flower	2 to 4	1 to 2	full sun to part shade	July to September	showy red	seed head	green to brown	attracts hummingbirds; divide in spring as needed
<i>Phlox paniculata</i>	Perennial Phlox	1.5 to 4	1 to 2	full sun to part shade	July to September	showy, color varies	seed head	green to brown	best in full sun; avoid overhead watering; some past or disease problems
<i>Rudbeckia laciniata*</i>	Golden Glow	5 to 7	2 to 3	full sun to part shade	July to September	showy yellow	seed head	green to brown	divide periodically to control growth; can be aggressive
ZONE C - Streamside Zone									
SHRUBS									
<i>Asclepias pavia*</i>	Red Buckeye	12 to 15	12 to 15	full sun to part shade	April / May	showy red	1" shiny capsule	brown	attracts hummingbirds
<i>Asimina triloba*</i>	Paw Paw	15 to 30	15 to 30	full sun to part shade	April / May	inconspicuous, purple	3" to 5" edible fruit	fragrant flowers; tropical appearance	
<i>Betula nigra</i>	River Birch	40 to 70	40 to 60	full sun to part shade	April / May	inconspicuous	small nutlet	yellow	showy bark; litter potential; avoid spring pruning; fast growth; short-lived
<i>Carpinus caroliniana</i>	American Hornbeam, Muscadeweed	20 to 35	20 to 35	part to full shade	April / May	inconspicuous	winged nutlet	yellow, orange, red	slow growth; ornamental bark
<i>Cercis canadensis</i>	Eastern Redbud	20 to 30	23 to 35	full sun to part shade	April	showy pink, magenta	small pod	yellow	short-lived; avoid planting in wet soils
<i>Clethra virginicus</i>	Fringetree	12 to 20	12 to 20	full sun to part shade	May / June	showy white	small black berry	yellow	
<i>Cornus florida</i>	Flowering Dogwood	15 to 30	15 to 30	full sun to part shade	April / May	showy white	red berry	scarlet red	can be disease-prone; berries poisonous to humans; mulch in summer
<i>Cornus 'Rutger'</i>	Stellar Pink	15 to 30	15 to 30	full sun to part shade	April / May	showy pink	red berry	purplish-red	can be disease-prone; berries poisonous to humans; mulch in summer
<i>Euonymus atropurpureus*</i>	Wahoo	12 to 20	15 to 25	full sun to part shade	June	inconspicuous	showy red berry	yellow	fast growth; short-lived
<i>Magnolia virginiana</i>	Sweetbay Magnolia	10 to 35	10 to 35	full sun to part shade	May / June	showy white	small cone	green	fragrant flowers
<i>Malus sp.</i>	Crabapple	12 to 15	12 to 15	full sun	May	showy, color varies	showy crabapple	yellow	typically fragrant flowers; choose disease resistant variety
<i>Prunus americana</i>	Wild Plum	15 to 25	15 to 25	full sun to part shade	March	showy white	1" red plum	yellow to red	somewhat unpleasant fragrance; edible fruit
GROUNDCOVER AND PERENNIALS									
<i>Alisma reptans</i>	Bronze Alisma	0.5 to 0.75	0.5 to 1	full sun to part shade	May / June	blue	inconspicuous	semi-evergreen	can be aggressive; will grow in shade
<i>Astilbe sp.</i>	Astilbe	1 to 4	1 to 3	part to full shade	July / August	showy, color varies	seed head	semi-evergreen	mulch in summer to retain soil moisture; does best in shade
<i>Hemerocallis sp.</i>	Daylily	1 to 2.5	1 to 2.5	full sun to part shade	May to July	showy, color varies	seed head	green to brown	divide periodically to avoid crowding
<i>Heuchera micrantha</i>	Corbell	1 to 2.5	1 to 2	full sun to part shade	June / July	showy, color varies	seed head	semi-evergreen	mulch in winter to reduce freezing
<i>Hosta sp.</i>	Hosta	1 to 1.5	0.75 to 2.5	part to full shade	June / July	showy, color varies	seed head	green to brown	plant in shady areas only
<i>Iris sp.</i>	Iris	1 to 3	1 to 3	full sun to part shade	May	showy, color varies	seed head	green to brown	
<i>Liriope muscari</i>	Liriope	1 to 2	1 to 2	full sun to part shade	August / September	showy, purple	blackish berry	semi-evergreen	avoid overhead watering; divide every 3 to 4 years
<i>Liriope spicata</i>	Creeping Liriope	0.75 to 1.5	1 to 2	full sun to part shade	August / September	showy, purple to white	blackish berry	semi-evergreen	mow in spring to remove old foliage
<i>Pachysandra terminalis</i>	Japanese Spurge	0.5 to 1	1 to 1.5	part to full shade	April	white	inconspicuous	semi-evergreen	mow in spring to remove old foliage; can be aggressive
<i>Peonies sp.</i>	Peonies	1 to 5	1 to 5	full sun to part shade	May	showy, color varies	seed head	green to brown	cut foliage to the ground in fall after frost; harmless ants will appear
<i>Pennisetum alopecuroides 'Haneli'</i>	Dwarf Fountain Grass	1.5 to 2.5	1.5 to 2.5	full sun to part shade	August to October	pink, white	seed head	orange, bronze, beige	ornamental grass flowers and seed heads
<i>Phlox subulata</i>	Creeping Phlox	0.25 to 0.5	1 to 2	full sun to part shade	March to May	showy, color varies	seed head	green to brown	best in full sun; rabbits like to eat this plant
<i>Sporobolus heterolepis</i>	Prairie Dropseed	2 to 3	2 to 3	full sun	August to October	pink, brown	seed head	gold, orange, bronze	ornamental grass flowers and seed heads
<i>Vinca minor</i>	Periwinkle	0.25 to 0.5	0.5 to 1.5	full sun to part shade	May / June	purple	seed head	semi-evergreen	can be aggressive; will grow in shade

Recommended Plants

STREAM BUFFER PLANT RECOMMENDATIONS - Sorted by Planting Zone Location

*Specialty stream corridor plant species with limited availability. Refer to www.grownative.org for native plant specialty nurseries.

PLANT MATERIAL TYPE

BOTANICAL NAME		COMMON NAME	Height (feet)	Spread (feet)	Light Req't	Bloom Time	Flower	Fruit	Fall Color	Additional Characteristics
ZONE D - Middle Zone										
SHADE TREES										
<i>Acer saccharum</i>		Sugar Maple	40 to 80	30 to 60	full sun to part shade	April	Inconspicuous	samara	yellow, orange, red	slow growth; long-lived
<i>Liquidambar styraciflua</i>		Yellowwood	30 to 50	40 to 55	full sun	May	Inconspicuous	small pod	yellow, gold, orange	prune in summer; medium growth; somewhat brittle
<i>Fraxinus americana</i>		White Ash	50 to 70	35 to 50	full sun	April / May	Inconspicuous	samara	brilliant yellow	slow growth; choose male specimen to avoid fruit
<i>Ginkgo biloba</i>		Ginkgo	50 to 80	30 to 40	full sun	April	Inconspicuous	fruit (on female)	golden yellow	choose fruitless variety if desired
<i>Gleditsia triacanthos var. inermis</i>		Thornless Common Honey Locust	40 to 70	40 to 70	full sun	May	Inconspicuous	large pod	yellow	female flowers fragrant
<i>Gymnocladus dioica</i>		Kentucky Coffeetree	60 to 80	40 to 55	full sun	May / June	Inconspicuous	large pod	yellow	fast growth; long-lived; choose male variety to avoid fruit
<i>Liquidambar styraciflua</i>		Sweet Gum	60 to 80	40 to 60	full sun	April / May	Inconspicuous	spiny ball	gold, red, pink, purple	fast growth; long-lived; choose male variety to avoid fruit
<i>Liriodendron tulipifera</i>		'Tulip Tree	60 to 90	30 to 50	full sun	May / June	showy, yellow-green	small cone	yellow	fast growth; long-lived; somewhat brittle
<i>Platanus x acerifolia</i>		London Planetree	75 to 100	60 to 75	full sun to light shade	April	Inconspicuous	fuzzy ball	dull tan	showy bark; somewhat brittle
<i>Platanus occidentalis</i>		Sycamore	75 to 100	75 to 100	full sun	April	Inconspicuous	fuzzy ball	dull tan	showy bark; somewhat brittle
<i>Quercus alba</i>		White Oak	50 to 80	50 to 80	full sun	May	Inconspicuous	acorn	dark red to wine purple	slow growth; long-lived
<i>Quercus macrocarpa</i>		Burr Oak	60 to 80	60 to 80	full sun	April	Inconspicuous	acorn	yellow or brown	slow growth; long-lived
<i>Quercus palustris</i>		Pin Oak	50 to 70	40 to 60	full sun	April	Inconspicuous	acorn	red or brown	fast growth; relatively short-lived for an oak
<i>Quercus phellos</i>		Willow Oak	40 to 75	25 to 50	full sun	April	Inconspicuous	acorn	pale yellow	fast growth; long-lived
<i>Quercus rubra</i>		Northern Red Oak	50 to 75	50 to 75	full sun	May	Inconspicuous	acorn	dark red, golden orange	fast growth; long-lived
<i>Salix alba 'Tristis'</i>		Noble Weeping Willow	50 to 75	50 to 75	full sun to part shade	April / May	Inconspicuous	inconspicuous	pale yellow	plant in wet soils; weak wood
<i>Taxodium distichum</i>		Bald Cypress	50 to 70	20 to 45	full sun	March / April	Inconspicuous	small cone	gold to reddish brown	long-lived
SMALL TREES										
<i>Betula nigra</i>		River Birch	40 to 70	40 to 60	full sun to part shade	April / May	Inconspicuous	small nutlet	yellow	showy bark; litter potential; avoid spring pruning; fast growth; short-lived
<i>Cercis canadensis</i>		Eastern Redbud	20 to 30	25 to 35	full sun to part shade	April	showy pink, magenta	small pod	yellow	short-lived; avoid planting in wet soils
SHRUBS										
<i>Aronia melanocarpa</i>		Black Chokeberry	3 to 6	3 to 6	full sun to part shade	May	showy white	blueberry-like	purplish-red	ornamental red twigs
<i>Cornus sericea 'Kelsey'</i>		Kelsey Redtwig Dogwood	2 to 3	2 to 5	full sun	May / June	white	inconspicuous	purplish-red	ornamental red twigs
<i>Cotoneaster spiculatus</i>		Cranberry Cotoneaster	2 to 3	3 to 6	full sun	May / June	pink	red berry	red, purple	this is a low-growing variety
<i>Forsythia 'Courtasol' Gold Tide</i>		Gold Tide Forsythia	1 to 2	1 to 4	full sun to part shade	March / April	yellow	inconspicuous	purplish-red	this is a low-growing variety
<i>Forsythia viridissima 'Bronxensis'</i>		Bronx Greenstem Forsythia	1 to 2	1 to 4	full sun to part shade	March / April	yellow	inconspicuous	purplish-red	this is a low-growing variety
<i>Hydrangea arborescens 'Annabelle'</i>		Annabelle Oakleaf Hydrangea	3 to 5	4 to 6	part shade	June to September	showy white	inconspicuous	brown	prune back in spring to encourage flowers
<i>Hypericum frondosum 'Sunburst'</i>		Sunburst Hypericum	3 to 4	3 to 4	full sun to part shade	June / July	showy yellow	small capsule	evergreen	mulch roots in winter; ornamental bark
<i>Ilex glabra 'Shamrock'</i>		Shamrock Highberry	3 to 4	3 to 4	full sun to part shade	May / June	yellow-white	small berry	brown	prune to shape in early spring
<i>Itea virginiana</i>		Virginia Sweetgale	3 to 5	3 to 5	full sun to part shade	June / July	showy white	inconspicuous	red	prune to shape in early spring
<i>Physocarpus opulifolius</i>		Ninebark	5 to 8	4 to 6	full sun to part shade	May / June	white-pink	red capsule	yellow	cut back in winter to keep small
<i>Rhus aromatica 'Gro-Low'</i>		Gro-Low Fragrant Sumac	1 to 2	6 to 8	full sun to part shade	April / May	inconspicuous	red berry	orange, red	cut back in winter to keep small
<i>Salix humilis</i>		Prairie Willow	3 to 9	3 to 9	full sun to part shade	March to May	fuzzy white	inconspicuous	yellow	cut back in winter to keep small
<i>Viburnum opulus 'Nanum'</i>		Dwarf European Cranberrybush	1 to 2	2 to 3	full sun to part shade	no flower	no flower	no fruit	green to red	this is a low-growing, flowerless, fruitless variety
GROUND COVER AND PERENNIALS										
<i>Pennisetum opalus 'Nanum'</i>		Dwarf Fountain Grass	1.5 to 2.5	1.5 to 2.5	full sun to part shade	August to October	pink, white	seed head	orange, bronze, beige	ornamental grass flowers and seed heads
<i>Koenigia leucocarpa 'Hamine'</i>		Prairie Dropseed	2 to 3	2 to 3	full sun	August to October	pink, brown	seed head	gold, orange, bronze	ornamental grass flowers and seed heads
<i>Sporobolus heterophyllus</i>		Pinkwhite	0.25 to 0.5	0.5 to 1.5	full sun to part shade	May / June	purple	seed head	semi-evergreen	can be aggressive; will grow in shade

Recommended Plants

STREAM BUFFER PLANT RECOMMENDATIONS - Sorted by Planting Zone Location

*Spodially stream corridor plant species with limited availability. Refer to www.grownative.org for native plant specialty nurseries.

PLANT MATERIAL TYPE		COMMON NAME							BOTANICAL NAME	
PLANT MATERIAL TYPE		Height (feet)	Spread (feet)	Light Req'd	Bloom Time	Flower	Fruit	Fruit Color	Additional Characteristics	
ZONE E - Outer Zone										
SHADE TREES										
Acer saccharum	Sugar Maple	40 to 80	30 to 60	full sun to part shade	April	Inconspicuous	samara	yellow, orange, red	slow growth; long-lived	
Cedrus kentuckia	Yellowwood	30 to 50	40 to 55	full sun	May	Inconspicuous	small pod	yellow, gold, orange	prune in summer; medium growth; somewhat brittle	
Fraxinus americana	White Ash	50 to 70	35 to 50	full sun	April / May	Inconspicuous	samara	bright yellow	slow growth; choose male specimen to avoid fruit	some what brittle
Ginkgo biloba	Ginkgo	50 to 80	30 to 40	full sun	April	Inconspicuous	fruit (on female)	golden yellow	slow growth; choose male specimen to avoid fruit	
Gleditsia triacanthos var. inermis	Thornless Common Honey Locust	40 to 70	40 to 70	full sun	May	Inconspicuous	large pod	yellow	choose fruitless variety if desired	
Gymnocladus dioica	Kentucky Coffeetree	60 to 80	40 to 65	full sun	May / June	Inconspicuous	large pod	yellow	female flowers fragrant	
Liquidambar styraciflua	Sweet Gum	60 to 80	40 to 60	full sun	April / May	Inconspicuous	spiny ball	gold, red, pink, purple	fast growth; long-lived; choose male variety to avoid fruit	
Nyssa sylvatica	Sour gum, Black Gum	30 to 50	20 to 30	full sun to part shade	May / June	Inconspicuous	small berry-like	red, orange, purple, yellow	slow growth; difficult to transplant larger specimens	
Platanus x acerifolia	London Planetree	75 to 100	60 to 75	full sun to light shade	April	Inconspicuous	fuzzy ball	dull tan	showy bark; somewhat brittle	
Platanus occidentalis	Sycamore	75 to 100	75 to 100	full sun	April	Inconspicuous	fuzzy ball	dull tan	showy bark; somewhat brittle	
Quercus alba	White Oak	50 to 80	50 to 80	full sun	May	Inconspicuous	acorn	dark red to wine purple	slow growth; long-lived	
Quercus macrocarpa	Burr Oak	60 to 80	60 to 80	full sun	April	Inconspicuous	acorn	yellow or brown	slow growth; long-lived	
Quercus palustris	Pin Oak	50 to 70	40 to 60	full sun	April	Inconspicuous	acorn	red or brown	fast growth; relatively short-lived for an oak	
Quercus phellos	Willow Oak	40 to 75	25 to 30	full sun	April	Inconspicuous	acorn	pale yellow	fast growth; long-lived	
Quercus rubra	Northern Red Oak	50 to 75	50 to 75	full sun	May	Inconspicuous	acorn	dark red, golden orange	fast growth; long-lived	
Taxodium distichum	Bald Cypress	50 to 70	20 to 45	full sun	March / April	Inconspicuous	small cone	gold to reddish brown	long-lived	
SMALL TREES										
Betula nigra	River Birch	40 to 70	40 to 60	full sun to part shade	April / May	Inconspicuous	small nutlet	yellow	showy bark; litter potential; avoid spring pruning; fast growth; short-lived	
Cercis canadensis	Eastern Redbud	20 to 30	25 to 35	full sun to part shade	April	showy pink, magenta	small pod	yellow	short-lived; avoid planting in wet soils	
GROUND COVER AND PERENNIALS										
Alnus incana	Bronze Alnus	0.5 to 0.75	0.5 to 1	full sun to part shade	May / June	blue	Inconspicuous	semi-evergreen	can be aggressive; will grow in shade	
Astilbe sp.	Astilbe	1 to 4	1 to 3	part to full shade	July / August	showy, color varies	seed head	semi-evergreen	mulch in summer to retain soil moisture; does best in shade	
Hemerocallis sp.	Daylily	1 to 2.5	1 to 2.5	full sun to part shade	May to July	showy, color varies	seed head	green to brown	divide periodically to avoid crowding	
Heuchera micrantha	Coralbell	1 to 2.5	1 to 2	full sun to part shade	June / July	showy, color varies	seed head	semi-evergreen	mulch in winter to reduce freezing	
Hosta sp.	Hosta	1 to 1.5	0.75 to 2.5	part to full shade	June / July	showy, color varies	seed head	green to brown	plant in shady areas only	
Iris sp.	Iris	1 to 3	1 to 3	full sun to part shade	May	showy, color varies	seed head	green to brown	avoid overhead watering; divide every 3 to 4 years	
Liriodie muscari	Liriodie	1 to 2	1 to 2	full sun to part shade	August / September	showy, purple	blackish berry	semi-evergreen	mulch in spring to remove old foliage	
Liriodie spicata	Cresping Liriodie	0.75 to 1.5	1 to 2	full sun to part shade	August / September	showy, purple to white	blackish berry	semi-evergreen	mulch in spring to remove old foliage; can be aggressive	
Loebelia cardinalis	Cardinal Flower	2 to 4	1 to 2	full sun to part shade	July to September	showy, red	seed head	green to brown	attracts hummingbirds; divide in spring as needed	
Pachysandra terminalis	Japanese Spurge	0.5 to 1	1 to 1.5	part to full shade	April	white	Inconspicuous	semi-evergreen	plant in shady areas only	
Paeonia sp.	Paeonies	1 to 5	1 to 5	full sun to part shade	May	showy, color varies	seed head	green to brown	cut foliage to the ground in fall after frost; harmless ants will appear	
Penstemon slopeculoides 'Hamel'	Dwarf Fountain Grass	1.5 to 2.5	1.5 to 2.5	full sun to part shade	August to October	pink, white	seed head	orange, bronze, beige	ornamental grass flowers and seed heads	
Phlox subulata	Cresping Phlox	0.25 to 0.5	1 to 2	full sun	March to May	showy, color varies	seed head	green to brown	best in full sun; rabbits like to eat this plant	
Sporobolus heterolepis	Prairie Dropseed	2 to 3	2 to 3	full sun	August to October	pink, brown	seed head	gold, orange, bronze	ornamental grass flowers and seed heads	
Vinca minor	Periwinkle	0.25 to 0.5	0.5 to 1.5	full sun to part shade	May / June	purple	seed head	semi-evergreen	can be aggressive; will grow in shade	

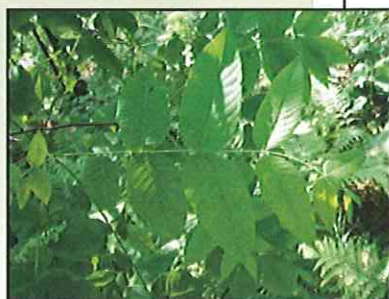
Acer saccharum
Sugar Maple



Cladrastis kentuckea
Yellowwood



Fraxinus americana
White Ash

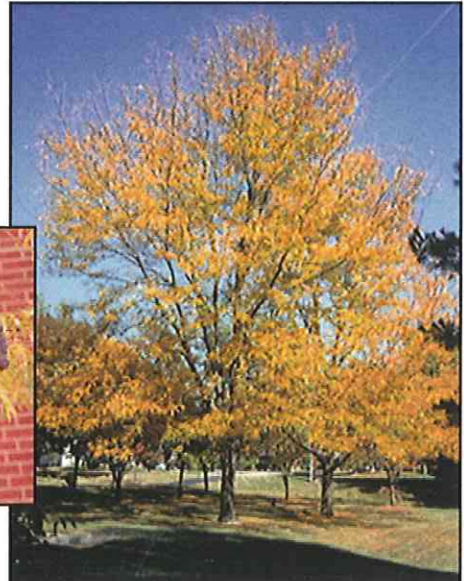


Recommended Plants

Ginkgo biloba
Ginkgo



Gleditsia triacanthos
var. inermis
Thornless Common
Honey Locust



Gymnocladus dioica
Kentucky Coffeetree



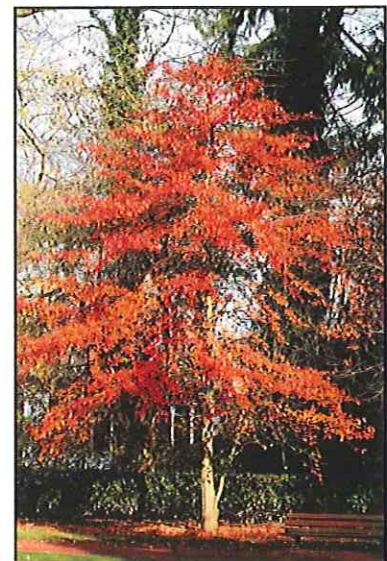
Liquidambar styraciflua
Sweet Gum



Liriodendron tulipifera
Tuliptree, Tulip Poplar



Nyssa sylvatica
Sourgum, Blackgum



Recommended Plants

Platanus x acerifolia
London Planetree



Platanus occidentalis
Sycamore



Quercus alba
White Oak



Shade Trees

Quercus macrocarpa
Burr Oak



Quercus palustris
Pin Oak



Quercus phellos
Willow Oak



Recommended Plants

Quercus rubra
Red Oak



Salix alba 'Tristis'
Niobe Weeping Willow



Taxodium distichum
Bald Cypress



Shade Trees

Aesculus pavia
Red Buckeye



Asimina triloba
Paw Paw

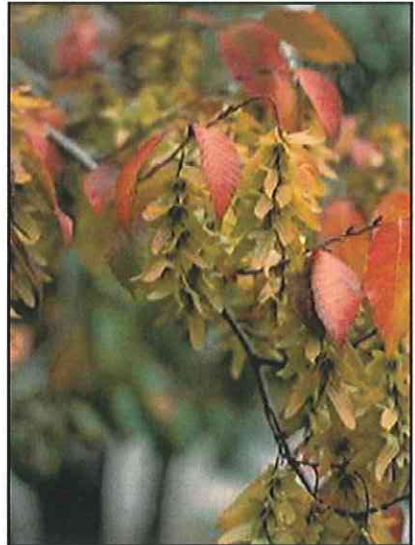


Betula nigra
River Birch



Recommended Plants

Carpinus caroliniana
American Hornbeam



Cercis canadensis
Eastern Redbud



Chionanthus virginicus
Fringetree



Cornus florida
Flowering Dogwood



Cornus 'Rutgan' Stellar Pink
Stellar Dogwood

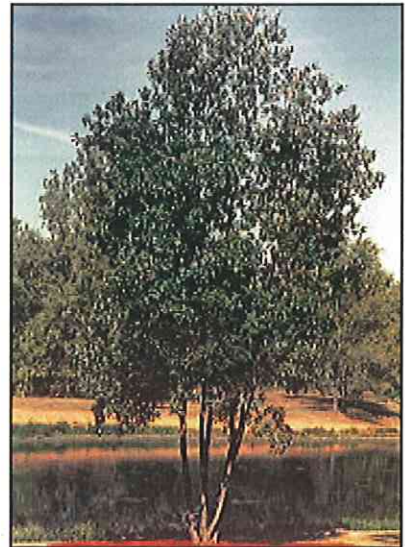


Euonymus atropurpureus
Wahoo



Recommended Plants

Magnolia virginiana
Sweetbay Magnolia



Malus sp.
Crabapple



Prunus americana
Wild Plum



Aronia melanocarpa
Black Chokeberry



Cephalanthus occidentalis
Buttonbush



Cornus sericea 'Kelsey'
Kelsey Redtwig Dogwood



Recommended Plants

Cotoneaster apiculatus
Cranberry Cotoneaster



Forsythia 'Courtasol' Gold Tide
Gold Tide Forsythia



Forsythia viridissima
'Bronxensis'
Bronx Greenstem
Forsythia



Hydrangea arborescens
'Annabelle'
Annabelle Oakleaf
Hydrangea



Hypericum frondosum
'Sunburst'
Sunburst Hypericum



Ilex glabra 'Shamrock'
Shamrock Inkberry



Recommended Plants

Itea virginiana
Virginia Sweetspire



Physocarpus opulifolius
Ninebark



Rhus aromatica 'Gro-Low'
Gro-Low Fragrant Sumac



Salix humilis
Prairie Willow



Viburnum opulus 'Nanum'
Dwarf European
Cranberrybush Viburnum



Recommended Plants

Ajuga reptans
Bronze Ajuga



Astilbe sp.
Astilbe



Chasmanthium latifolium
River Oats



Hemerocallis sp.
Daylily



Heuchera micrantha
Coralbell



Hosta sp.
Hosta



Recommended Plants

Iris sp.
Iris



Liriope muscari
Liriope



Liriope spicata
Creeping Liriope



Lobelia cardinalis
Cardinal Flower



Pachysandra terminalis
Japanese Spurge



Paeonia sp.
Peonies



Recommended Plants

Pennisetum alopecuroides
'Hameln'
Dwarf Fountain Grass



Phlox paniculata
Perennial Phlox



Phlox subulata
Creeping Phlox



Rudbeckia laciniata
Golden Glow

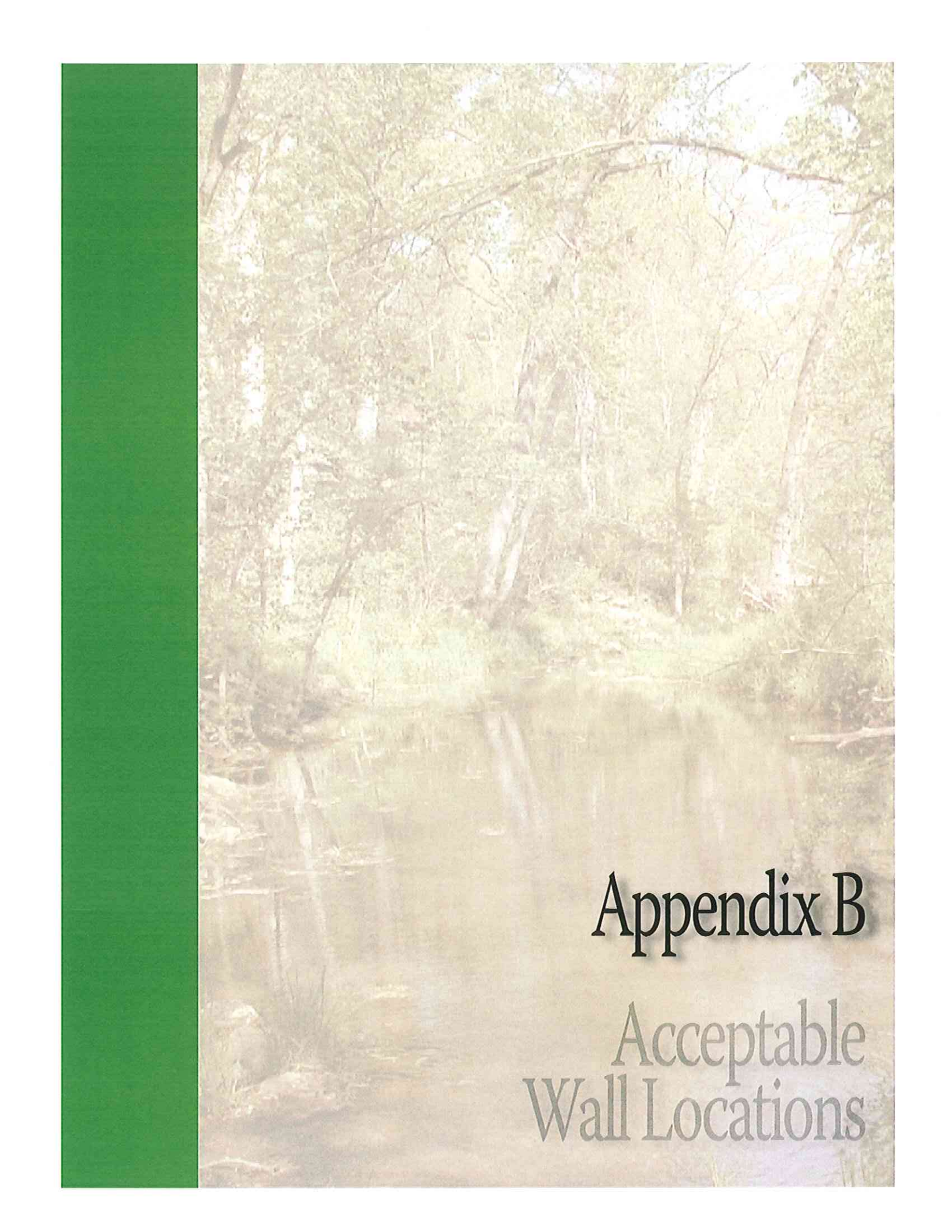


Sporobolus heterolepis
Prairie Dropseed



Vinca minor
Periwinkle



A photograph of a forest stream with trees reflected in the water, overlaid with a green vertical bar on the left.

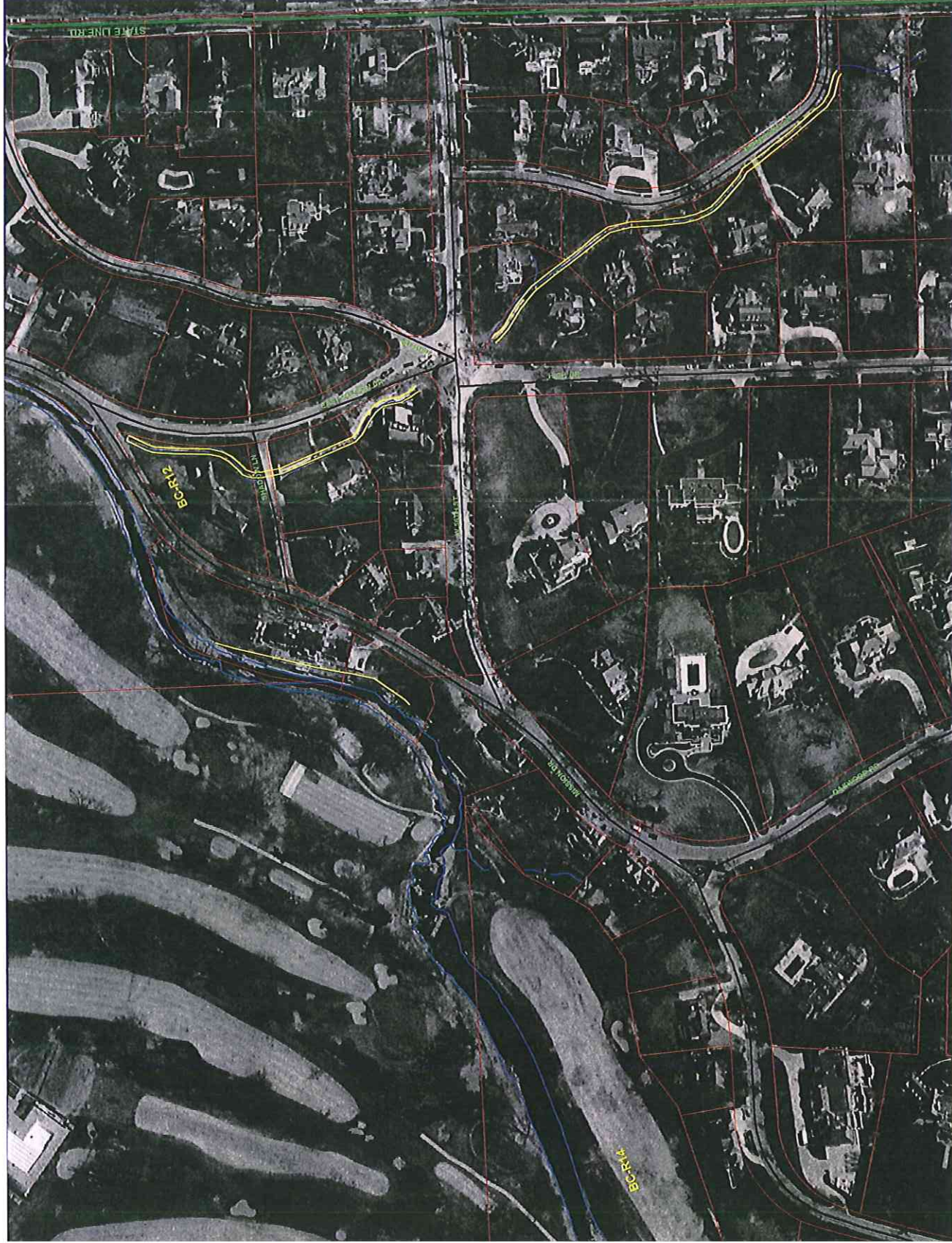
Appendix B

Acceptable Wall Locations

THE CITY OF MISSION HILLS

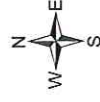
MISSION HILLS STORMWATER MASTERPLAN

WALL REPLACEMENT FOR OPTIMAL RESTORATION AREA 1



Legend

- Walls Optimal Restoration
- Property Lines
- Streams
- Main Roads
- Secondary roads



Source:
Johnson County Stormwater Management Council
Johnson County GIS
Black & Veatch Corporation



BLACK & VEATCH
Building a world of difference.



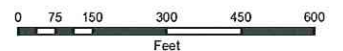
THE CITY OF MISSION HILLS

MISSION HILLS STORMWATER MASTERPLAN

WALL REPLACEMENT FOR OPTIMAL RESTORATION AREA 2

Legend

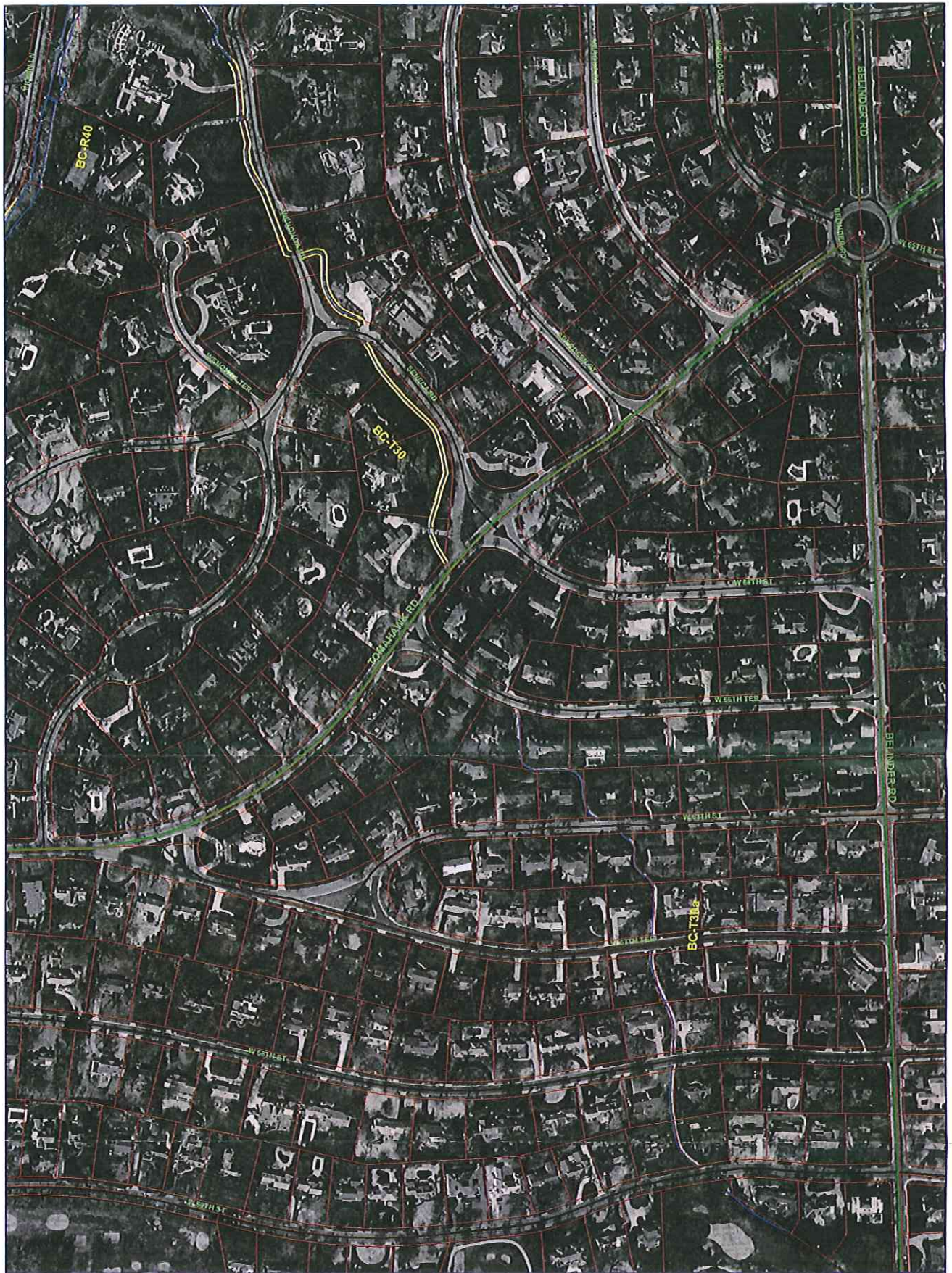
- Walls Optimal Restoration
- Property Lines
- Streams
- Main Roads
- Secondary roads



Source:
Johnson County Stormwater Management Council
Johnson County AIMS
Black & Veatch Corporation



BLACK & VEATCH
Building a world of difference.



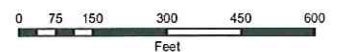
**THE CITY OF
MISSION HILLS**

**MISSION HILLS
STORMWATER MASTERPLAN**

**WALL REPLACEMENT FOR
OPTIMAL RESTORATION
AREA 4**

Legend

- Walls Optimal Restoration
- Property Lines
- Streams
- Main Roads
- Secondary roads



Source:
Johnson County Stormwater Management Council
Johnson County A&M
Black & Veatch Corporation



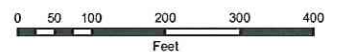
**THE CITY OF
MISSION HILLS**

**MISSION HILLS
STORMWATER MASTERPLAN**

**WALL REPLACEMENT FOR
OPTIMAL RESTORATION
AREA 5A**

Legend

- Walls Optimal Restoration
- Property Lines
- Streams
- Main Roads
- Secondary roads



Source:
Johnson County Stormwater Management Council
Johnson County AIMS
Black & Veatch Corporation

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**THE CITY OF
MISSION HILLS**

**MISSION HILLS
STORMWATER MASTERPLAN**

**WALL REPLACEMENT FOR
OPTIMAL RESTORATION
AREA 5B**

Legend

- Walls Optimal Restoration
- Property Lines
- Streams
- Main Roads
- Secondary roads



0 75 150 300 450 600
Feet

Source:
Johnson County Stormwater Management Council
Johnson County AIMS
Black & Veatch Corporation



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