Appendix J-3
Ecological Communities and Vegetation

Ecological Communities and Vegetation

This appendix describes the ecological communities of the I-81 Viaduct Project. The ecological communities are described by project study area. The ecological communities are described within the context of "Ecological Communities of New York State (Edinger et al. 2014)." Per Executive Order 13122 (amended on December 5, 2016) and NYSDOT's TEM Chapter 4.8 invasive plant species are discussed within each study area.

Photographs of representative ecological communities within each of the four study areas are presented in **Figures 1** and **2** through **23**. A list of plant species observed in the Project Area (including all four study areas) is documented at the end of this appendix in **Table 5.**

A. I-81 VIADUCT STUDY AREA

As shown in **Table 1** below, the majority of the ecological communities present in the I-81 Viaduct Study Area are terrestrial cultural communities with a total of approximately 414.5 acres of coverage. Specifically, terrestrial cultural communities in this study area consist of "paved road/path[1]," "mowed lawn[2]," "mowed lawn with trees,[3]" "mowed roadside/pathway,[4]" "flower herb garden,[5]" "railroad,[6]" "urban vacant lot,[7]" and "junkyard.[8]

[1] Paved road/path: This community is paved (e.g., asphalt, concrete, etc.) and there may be may be sparse vegetation rooted in cracks in the paved surface.

[2] Mowed lawn: residential, recreational, or commercial land or unpaved airport runways in which the groundcover is dominated by clipped grasses and there is less than 30% cover of trees. Ornamental and/or native shrubs may be present, usually with less than 50% cover. The groundcover is maintained by mowing and broadleaf herbicide application.

[3] Mowed lawn with trees: residential, recreational, or commercial land in which the groundcover is dominated by clipped grasses and forbs, and it is shaded by at least 30% cover of trees. Ornamental and/or native shrubs may be present, usually with less than 50% cover. The groundcover is maintained by mowing and broadleaf herbicide application.

[4] Mowed roadside/pathway: a narrow strip of mowed vegetation along the side of a road, or a mowed pathway through taller vegetation (e.g., meadows, old fields, woodlands, forests), or along utility right-of-way corridors (e.g., power lines, telephone lines, gas pipelines). The vegetation in these mowed strips and paths may be dominated by grasses, sedges, and rushes; or it may be dominated by forbs, vines, and low shrubs that can tolerate infrequent mowing.

[5] Flower/herb garden: residential, commercial, or horticultural land cultivated for the production of ornamental herbs and shrubs.

[6] Railroad: a permanent road having a line of steel rails fixed to wood ties and laid on gravel roadbed that provides a track for cars or equipment drawn by locomotives or propelled by self-contained motors. There may be sparse vegetation rooted in the gravel substrate.

[7] Urban vacant lot: an open site in developed, urban areas that has been cleared either for construction or following the demolition of a building. Characteristic trees are often naturalized non-native species such as Norway maple (*Acer platanoides*), white mulberry (*Morus alba*), and tree-of- heaven (*Ailanthus altissima*).

Ecological communities in the study area also include emergent and forested wetlands and freshwater creeks (e.g., Ley Creek and Onondaga Creek). See **Appendix J-2** for additional information.

Within the I-81 Viaduct Study Area, plant species associated with the paved road/path, mowed roadside pathway, urban vacant lot, and junkyard ecological communities are all of similar composition in that they are generally non-native and invasive herbaceous species, including grasses that are able to persist in disturbed conditions. Common species observed in these communities include common reed (*Phragmites australis*), fescue grass (*Festuca rubra*), birds-foot trefoil (*Lotus corniculatus*), yellow mustard (*Guillenia flavescens*), mugwort (*Artemisia vulgaris*), chicory (*Cichorium intybus)*, hawkweed (*Hieracium* sp.), Queen Anne's lace (*Daucus carota*), knapweeds (*Centaurea* sp.), Amaranth (*Amaranthus* sp.), millet (*Panicum miliaceum*), dandelion (*Taraxacum officinale*), barnyard grass (*Echinochloa crus-galli*), orchard grass (*Dactylis* sp.), clovers (*Trifolium* sp.), and sweet clovers (*Melilotus* sp.). These plants were observed growing in cracks of paved and gravel areas and along the edges of roadsides and mowed areas.

Urban vacant lot communities throughout the I-81 Viaduct Study Area typically have a higher percent cover of vegetation, including trees and shrubs, in comparison to the paved and mowed communities described above. Trees within the urban vacant lot communities consist of invasive and pioneer species including Norway maple (*Acer platanoides*), black locust (*Robinia pseudoacacia*), eastern cottonwood (*Populus deltoides*), black walnut (*Juglans nigra*), tree-of-heaven (*Ailanthus altissima*), and white mulberry (*Morus alba*). Within the I-81 Viaduct Study Area, where present, these trees are generally present in low numbers and are scattered throughout this community. Non-native common buckthorn (*Rhamnus cathartica*), saplings of the abovementioned trees, and staghorn sumac (*Rhus typhina*) are also scattered throughout the shrub layer. The dominant species in this community are generally herbs which exist in a higher coverage/density than in other communities previously described. In addition, stands of common reed, Canada goldenrod (*Solidago canadensis*), Canada thistle (*Cirsium arvense*), and teasel (*Dipsacus sylvestris*) are present along with some coverage of vines, including Virginia creeper (*Parthenocissus quinquefolia*) and grape (*Vitis* sp.). There are portions of this community that also consist of gravel and rubble (i.e., construction and demolition debris and household garbage).

Table 1
Summary of Terrestrial Ecological Communities within the I-81 Viaduct Study Area

Ecological Community	Approximate Acreage
Terrestrial Cultural	414.5
Successional Southern Hardwoods	10.5
Total Estimated Acreage	**425.0**

Notes: Ecological Community names and descriptions are derived from "Ecological Communities of New York State" (Edinger et al. 2014).
Sources: Ecological community observations were made during field investigations by AKRF in 2016.

[8] Junkyard: a site that has been cleared for disposal or storage of primarily inorganic refuse, including discarded automobiles, large appliances, etc.

A forest community, best described as "successional southern hardwood community[9]" (Edinger et al. [2014]), is also present within the I-81 Viaduct Study Area. The successional southern hardwood community covers an estimated 10.5 acres of the I-81 Viaduct Study Area. This community is characterized by disturbance, and it is mainly located along the fence lines of highway right-of-ways between residential neighborhoods and the highway and within narrow medians along highway ramps. Tree assemblages vary within segments of this community, ranging from monotypic stands of nearly one non-native or native pioneer species to a mixture of the following tree species: Norway maple, tree-of-heaven, black walnut, honey locust (*Gleditsia triacanthos*), white mulberry, hackberry (*Celtis occidentalis*), eastern cottonwood, and box elder (*Acer negundo*). Species occurring in lower densities consist of red maple (*Acer rubrum*), silver maple (*Acer saccharinum*), black cherry (*Prunus serotina*), and eastern white pine (*Pinus strobus*). Common buckthorn, staghorn sumac, and saplings of the abovementioned species are dominant in the sub-canopy and shrub layer. Within the I-81 Viaduct Study Area, the herbaceous layer of this community is often sparse, particularly where there is a dense canopy and shrub layer. Species present in the herbaceous layer include Virginia creeper, avens (*Geum* sp.), poison ivy (*Toxicodendron radicans*), and garlic mustard (*Alliaria petiolata*). Virginia creeper and grape are also present in all strata.

Flower herb garden communities are limited to landscaping and gardens of residential and commercial buildings. Species are typically horticultural varieties. Examples include yew (*Taxus* sp.), Rose-of-Sharon (*Hibiscus syriacus*), morning glory (*Ipomoea* sp.), day lily (*Hemerocallis fulva*), Japanese barberry (*Berberis thunbergii*), lilac (*Syringa vulgaris*), and privet (*Ligustrum vulgare*).

In addition to the ecological communities described above, the ecological communities in the downtown area consist of sidewalks and walkways with planted street trees in tree pits. Street trees common to these areas include honey locust, lindens (*Tilia* spp.), maples (*Acer* spp.), ashes (*Fraxinus* sp.), gingko (*Ginkgo biloba*), Norway maple 'Crimson King' (*Acer plantanoides* 'Crimson King'), oaks (*Quercus* spp.), and Callery pear (*Pyrus calleryana*). Trees ranging from newly planted (i.e., ~3 inches DBH) to mature trees (~12+ inches DBH) are present throughout this study area.

The dominant tree species in the mowed lawn and mowed lawn with trees communities is honey locust, although pines (*Pinus* spp.) and naturalized species (e.g., Norway maple, ash, and maples) are also present.

[9] Successional southern hardwood community: a hardwood or mixed forest that occurs on sites that have been cleared or otherwise disturbed. Characteristic trees and shrubs include any of the following: American elms (*Ulmus americana*), slippery elm (*Ulmus rubra*), white ashes (*Fraxinus americana*), red maples (*Acer rubrum*), box elders (*Acer negundo*), silver maple (*Acer saccharinum*), sassafrass (*Sassafras albidum*), gray birch (*Betula populifolia*), hawthorns (*Crataegus* spp.), eastern red cedar (*Juniperus virginiana*), and choke-cherries (*Prunus virginiana*). Certain introduced species are commonly found in successional forests, including black locust (*Robinia pseudo-acacia*), tree-of-heaven (*Ailanthus altissima*), and buckthorn (*Rhamnus cathartica*).

INVASIVE SPECIES SUMMARY

As described above, within the I-81 Viaduct Study Area invasive species are interspersed with native and naturalized species. However, the majority of species present in the ecological communities of the I-81 Viaduct Study Area are non-native and invasive or native pioneer species of low ecological value. Furthermore, the majority of these communities are maintained (e.g., mowing) or altered to such a degree that the physical conformation and biological composition is of little ecological value. Areas that contain concentrations of invasive populations that are less maintained include common reed dominated wetlands and the banks of Onondaga Creek which contain stands of Japanese knotweed (*Fallopia japonica*). For these reasons, the ecological communities present in the I-81 Viaduct Study Area are characterized by disturbance and are considered to be of low ecological value.

Common reed is not on the priority invasive species list for The Finger Lakes Partnership for Regional Invasive Species Management (PRISM). However, Japanese knotweed is both a priority invasive species of concern for both the PRISM's terrestrial and agricultural working groups.[10] .

.

B. I-481 SOUTH STUDY AREA

As shown in **Table 2**, the ecological communities of the I-481 South Study Area consist of some of the terrestrial cultural communities (estimated at 91.6 acres) described above, specifically paved road/path, mowed roadside/pathway, and railroad. These terrestrial ecological communities consist of the same plant species and assemblages, as described above under the I-81 Viaduct Study Area. This study area also contains successional

[10] http://fingerlakesinvasives.org/priority-invasives/

communities, including successional southern hardwoods, successional old field[11], and successional shrubland[12].

Similar to the I-81 Viaduct Study Area, the successional southern hardwoods community is present in unmaintained portions of the highway right-of-ways occurring between ramps, side roads, and within the interchange areas. In these locations, the species composition and assemblages are similar to those ecological communities described for the I-81 Viaduct Study Area. As shown in **Table 2**, the successional southern hardwoods community occupies an estimated 40.1 acres of the South Study Area.

Table 2

Summary of Terrestrial Ecological Communities within the I-481 South Study Area

Ecological Community	Approximate Acreage
Terrestrial Cultural	91.6
Successional Southern Hardwoods	40.1
Successional Old Field	6.2
Successional Shrubland	13.9
Total Estimated Acreage	**151.8**

Note: Ecological Community names and descriptions are derived from "Ecological Communities of New York State" (Edinger et al. 2014).
Source: Ecological community observations were made during field investigations by AKRF in 2016.

In the southern portion of this study area, the terrain becomes more variable, with steep rocky slopes within and outside (at the edge) of the I-81 right-of-way. The successional southern hardwoods community is present within the 100-ft study area on both sides of I-

[11] Successional old field: a meadow dominated by forbs and grasses that occurs on sites that have been cleared and plowed (for farming or development), and then abandoned. Fields that are mowed at an interval (e.g., less than once per year) that favors the reproduction of characteristic successional old field species are included here. Characteristic herbs include goldenrods (*Solidago altissima*, *S. nemoralis*, *S. rugosa*, *S. juncea*, *S. canadensis*, and *Euthamia graminifolia*), bluegrasses (*Poa pratensis*, *P. compressa*), Timothy-grass (*Phleum pratense*), quackgrass (Elymus repens), smooth brome (*Bromus inermis*), sweet vernal grass (*Anthoxanthum odoratum*), orchard grass (Dactylis glomerata), common chickweed (*Cerastium arvense*), common evening primrose (*Oenothera biennis*), old-field cinquefoil (*Potentilla simplex*), calico aster (*Sympyotrichum lateriflorum* var. *lateriflorum*), New England aster (Sympyotrichum novae-angliae), wild strawberry (*Fragaria virginiana*), Queen-Anne's-lace (*Daucus carota*), ragweed (*Ambrosia artemisiifolia*), hawkweeds (*Hieracium* spp.), dandelion (*Taraxacum officinale),* and ox-tongue (*Picris hieracioides*). Shrubs may be present, but collectively they have less than 50% cover in the community. Characteristic shrubs include gray dogwood (*Cornus racemosa*), silky dogwood (*C. amomum*), arrowwood (*Viburnum dentatum* var. *lucidum*), raspberries (*Rubus* spp.), sumac (*Rhus typhina*, *R. glabra*), and eastern red cedar (*Juniperus virginiana*).

[12] Successional shrubland: a shrubland that occurs on sites that have been cleared (for farming, logging, development, etc.) or otherwise disturbed. This community has at least 50% cover of shrubs. Characteristic shrubs include gray dogwood, eastern red cedar, raspberries (*Rubus* spp.), serviceberries (*Amelanchier* spp.), choke-cherry (*Prunus virginiana*), wild plum (*Prunus americana*), sumac, nanny-berry (Viburnum lentago), and arrowwood (Viburnum dentatum var. lucidum). Non-native invasive shrubs include hawthornes (Crataegus spp.), multiflora rose (Rosa multiflora), Russian and autumn olive (Elaeagnus angustifolia, E. umbellata), buckthorns (*Rhamnus cathartica*, *Frangula alnus*), and shubby honeysuckles (*Lonicera tatarica*, L. morrowii, *L. maackii*).

81 and within the median. Within this community, there are also roadcut cliff/slope[13] features occurring on both sides of the highway and within the median. This cliff/slope ranges between approximately 5 and 25 feet in height. In many locations, the dominant tree species in this community are black locust and Norway maple in the canopy with common buckthorn in the shrub layer. While the roadcut cliff/slopes are barren in many locations, small trees (less than 6" DBH) and saplings of honey locust, staghorn sumac, and common buckthorn are present at the bases and along the rock ledges.

Along the steep rocky slopes, mainly located outside of the right-of-way, species of the successional southern hardwoods community described above are present. However, this community type also appears to be mixed with remnant native forest consisting of pockets of sugar maple, American basswood, black oak, white ash, pignut hickory, and hophornbeam (*Ostrya virgiana*). These species occur on the rocky slopes and at the top of the roadcut cliff/slope mixed with black locust and Norway maple. The understory in these areas is dominated by common buckthorn in the shrub and subcanopy. While some regeneration of the native forest species is present in the herbaceous and shrub strata, common buckthorn, black locust, and Norway maple are dominant in the understory strata and, in some cases, are the only species regenerating in the lower strata of this ecological community. In summary, within the 100-ft study area, the successional southern hardwoods community is an edge community dominated by non-native species.

Portions of the I-481 South Study Area also consist of a successional old field ecological community. The successional old field community, estimated at 6.2 acres, primarily occurs in the median to the north of East Seneca Turnpike (with a small section also located in the median South of East Seneca Turnpike) and the I-81 and I-481 interchange areas. Dominant species of this community include everlasting pea (*Lathyrus latifolius*), Canada goldenrod, Canada thistle, knapweeds, mugwort, and fescue. Other commonly occurring species observed within this community include common reed, white teasel (*Dipsacus laciniatus*), purple teasel, millet, Queen Anne's lace, poison ivy, (*Leucanthemum vulgare*), black-eyed Susan (*Rudbeckia hirta*), chicory, butter and eggs (*Linaria vulgaris*), birds-foot trefoil (*Lotus corniculatus*), daisy fleabane (*Erigeron annuus*), and vetch (*Vicia* sp.). Butterfly weed (*Asclepias tuberosa*), a state-listed "exploitably vulnerable" species, is also present throughout this community. Dominant species in the shrub layer include common buckthorn and staghorn sumac, with gray dogwood (*Cornus racemosa*), multi-flora rose (*Rosa multiflora*) and bush honey suckle (*Tartaria* sp.) also frequently occurring. Portions of this community appear to be maintained by mowing, but not on an annual basis.

In other portions of the I-481 South Study Area, the successional old field community described above has transitioned into a successional shrubland. This community, estimated at approximately 13.9 acres, is present along steep slopes and in interchange areas. The same species described for the successional old field community are present, but with

[13] Roadcut cliff/slope: a sparsely vegetated cliff or steep slope, along a road, that was created by blasting or digging during road construction.

greater coverage of shrubs. The dominant shrub of this community is common buckthorn with gray dogwood also commonly occurring.

INVASIVE SPECIES SUMMARY-

As described above, within the I-481 South Study Area invasive species are interspersed with native and naturalized species. However, the majority of species present in the ecological communities of the I-481 South Study Area are non-native and invasive or native pioneer species of low ecological value. Furthermore, the majority of these communities are maintained (e.g., mowing) or altered to such a degree that the physical conformation and biological composition is of little ecological value. Within the I-481 South Study Area invasive species are interspersed with native and naturalized species. Areas that contain concentrations of invasive populations include the common reed and Japanese knotweed dominated terrestrial habitats. Common buckthorn also commonly occurs throughout unmaintained terrestrial habitats, but does not form a monoculture in these areas. For these reasons, the ecological communities present in the I-81 Viaduct Study Area are characterized by disturbance and are considered to be of low ecological value.

Common reed and common buckthorn are not on the priority invasive species list for the Finger Lakes PRISM. However, Japanese knotweed is both a priority invasive of concern for both the PRISM's terrestrial and agricultural working groups.

C. I-481 EAST STUDY AREA

As shown in **Table 3**, the majority of the terrestrial ecological community within the right-of-way is characterized as a terrestrial cultural community (estimated at 59.2 acres), specifically mowed roadside/pathway. Unmowed highway infrastructure drainage ditches are also common within the right-of-way, particularly in the northern section of the I-481 East Study Area. Railroad is also present within the southern portion of this study area. The species composition of the terrestrial cultural community of this study area is similar to the terrestrial cultural community found in the I-81 Viaduct Study Area and the I-481 South Study Area. In locations where mowing may not be accessible (e.g., steep slopes and drainage ditches) stands of common reed with purple loosestrife (*Lythrum salicaria*) and reed canary grass (*Phalaris arundinacea*) persist.

Table 3

Summary of Terrestrial Ecological Communities within the I-481 East Study Area

Ecological Community	Approximate Acreage
Terrestrial Cultural	59.2
Successional Old Field	0.8
Floodplain Forest	7.4
Total Estimated Acreage	67.4

Notes: Ecological Community names and descriptions are derived from "Ecological Communities of New York State" (Edinger et al. 2014). The estimated acreages documented above exclude wetlands and surface waters, which are documented in another subsection. However, some wetlands, may also be categorized as one of the ecological communities listed herein, particularly floodplain forest, which can occur in both terrestrial and wetlands ecological communities.

Source: Ecological community observations were made during field investigations by AKRF in 2016.

In addition to the terrestrial ecological communities described above, this study area, particularly the northern segment, also contains a forested edge community located outside of the right-of-way, but within the 100-ft study area. This forest, occupying an estimated 7.4 acres, is best characterized as "floodplain forest[14]." Dominant species in the canopy include green ash (*Fraxinus pennsylvanica*), eastern cottonwood, red maple, and box elder. Less common species include black locust and silver maple. In several locations the shrub layer is dense, with dominant species consisting of common buckthorn and bush honeysuckle with multi-flora rose also commonly occurring. The herbaceous layer varies in species composition and assemblages, ranging from a monoculture of dense poison ivy to a mixture of small saplings, shrubs, and forbs. Herbaceous species present in this layer include jumpseed (*Polygonum virginianum*), avens, goldenrods (*Solidago* spp.), New York aster, small aster, sensitive fern, Dame's rocket (*Hesperis matronalis*), poison ivy, and Virginia creeper. Shrubs of common buckthorn and honeysuckle are also present in the herbaceous layer. This community is common along stream banks and in the vicinity of wetlands within this study area.

A small segment (occupying an estimated 0.8 acres) of the I-481 East Study Area contains successional old field habitat. The same species composition and assemblages as described above under the I-481 South Study Area are present in this community within the I-481 East Study Area.

INVASIVE SPECIES SUMMARY

As described above, within the I-481 East Study Area invasive species are interspersed with native and naturalized species. However, the majority of species present in the ecological communities of the I-481 East Study Area are non-native and invasive or native pioneer species of low ecological value. Furthermore, the majority of these communities are maintained (e.g., mowing) or altered to such a degree that the physical conformation and biological composition is of little ecological value. Within the I-481 East Study Area invasive species are interspersed with native and naturalized species. Areas that contain concentrations of invasive populations include areas with common reed dominated wetlands. Common buckthorn also commonly occurs throughout unmaintained terrestrial habitats, but does not form a monoculture in these areas. For these reasons, the ecological communities present in the I-81 Viaduct Study Area are characterized by disturbance and are considered to be of low ecological value.

[14] Floodplain forest: typically a hardwood forest that occurs on mineral soils on low terraces of river floodplains and river deltas. Characteristic trees include silver maple (*Acer saccharinum*), ashes (*Fraxinus pennsylvanica*, *F. nigra*, *F. americana*), cottonwood (*Populus deltoides*), red maple (*Acer rubrum*), box elder (*Acer negundo*), elms (*Ulmus americana*, *U. rubra*), hickories (*Carya cordiformis*, *C. ovata*, *C. laciniosa*), butternut and black walnut (*Juglans cinerea*, *J. nigra*), sycamore (*Platanus occidentalis*), oaks (*Quercus bicolor*, *Q. palustris*), and river birch (*Betula nigra*). Characteristic shrubs include spicebush (*Lindera benzoin*), American hornbeam (*Carpinus caroliniana*), bladdernut (*Staphylea trifoliata*), speckled alder (*Alnus incana* ssp. *rugosa*), shrubby dogwoods (*Cornus sericea*, *C. racemosa*, *C. amomum*), viburnums (*Viburnum nudum* var. *cassinoides*, V. *prunifolium*, V. *dentatum*, *V. lentago*), and sapling canopy trees. Invasive non-native shrubs that may be locally abundant include shrub honeysuckles (*Lonicera tatarica*, *L. morrowii*), and multiflora rose.

Common reed and common buckthorn are not on the priority invasive species list for the Finger Lakes PRISM.

D. I-481 NORTH STUDY AREA

The terrestrial ecological communities of the I-481 North Study Area are similar to those described above under the I-481 East Study Area. As shown in **Table 4**, terrestrial cultural communities are dominant at an estimated size of 102.7 acres. The right-of-way primarily consists of the mowed roadside/pathway ecological community described above. Areas that are mowed less frequently have a number of herbaceous herbs and grasses that are similar to those found in the successional old field community described above for the I-481 South Study Area. In areas where mower access is limited, common reed patches persist, particularly along drainage ditches and steep slopes. Beyond the right-of-way, terrestrial cultural communities include residential properties and businesses.

Table 4

Summary of Terrestrial Ecological Communities within the I-481 North Study Area

Ecological Community	Estimated Acreage
Terrestrial Cultural	102.7
Successional Southern Hardwoods	2.4
Successional Old Field	1.5
Successional Shrubland	6.6
Floodplain Forest	7.5
Total Estimated Acreage	**120.7**

Notes: Ecological Community names and descriptions are derived from "Ecological Communities of New York State" (Edinger et al. 2014). The estimated acreages documented above exclude wetlands and surface waters, which are documented in another subsection. However, some wetlands, may also be categorized as one of the ecological communities listed herein, particularly floodplain forest, which can occur in both terrestrial and wetlands ecological communities.

Sources: Ecological community observations were made during field investigations by AKRF in 2016.

Within the right-of-way, particularly along steep slopes located behind noise barrier walls along I-481, successional shrubland is present (estimated at 6.6 acres). The species composition of this community type is similar to that found in the successional shrubland communities of the I-481 South Study Area, in that common buckthorn is dominant and with gray dogwood also commonly occurring.

Within the 100-ft study area beyond the right-of-way (private property), southern successional forest, floodplain forest, and successional old field ecological communities are also present. The species composition in these communities is similar to those described in the previous study areas.

INVASIVE SPECIES SUMMARY

As described above, within the I-481 North Study Area invasive species are interspersed with native and naturalized species. However, the majority of species present in the ecological communities of the I-481 North Study Area are non-native and invasive or native pioneer species of low ecological value. Furthermore, the majority of these communities are

maintained (e.g., mowing) or altered to such a degree that the physical conformation and biological composition is of little ecological value. Floodplain forest, successional southern hardwoods forest, successional old field, and successional shrubland communities within this study area represents edge habitat and in some cases is characterized by invasive species (e.g., common buckthorn and bush honeysuckle). While these communities may provide limited habitat, better representations of these communities are present within the region and state.

Areas that contain concentrations of invasive populations include areas with common reed dominated wetlands. Common buckthorn also commonly occurs throughout unmaintained terrestrial habitats, but does not form a monoculture in these areas. For these reasons, the ecological communities present in the I-81 Viaduct Study Area are characterized by disturbance and are considered to be of low ecological value.

Common reed and common buckthorn are not on the priority invasive species list for the Finger Lakes PRISM.

Table 5
Plant Species of the I-81 Viaduct Project

Scientific Name	Common Name
Ferns	
Dennstaedtia punctilobula	Hay-scented fern
Onoclea sensibilis	Sensitive fern
Osmundastrum cinnamomeum	Cinnamon fern
Grasses, Sedges, and Rushes	
Anthoxanthum odoratum	Sweet vernal grass
Bromus tectorum	Cheatgrass
Carex crinita	Fringed sedge
Carex pensylvanica	Pennsylvania sedge
Carex vulpinoidea	Fox sedge
Dactylis sp.	Orchard grass
Eleocharis palustris	Common Spikerush
Elymus elymoides	Squirreltail
Elymus repens	Quackgrass
Elymus elymoides	Squirreltail
Festuca rubra	Red fescue
Juncus effusus	Soft rush
Lolium sp.	Rye grass
Panicum dichotomiflorum	Fall panicum
Panicum virgatum	Switchgrass
Phalaris arundinacea	Reed canary grass
Phleum pratense	Timothy-grass
Phragmites australis	Common reed
Poa pratensis	Kentucky bluegrass
Scirpus cyperinus	Woolgrass
Schoenoplectus pungens	Common three square
Scirpus americanus	Three square sedge
Scirpus microcarpus	Large-fruited bulrush
Typha angustifolia	Narrowleaf cattail
Typha latifolia	Common cattail

Table 5 (cont'd)
Plant Species of the I-81 Viaduct Project

Scientific Name	Common Name
Forbs	
Achillea millefolium	Yarrow
Ageratina altissima	White Snakeroot
Alisma subcordatum	Small Water Plantain
Alliaria petiolata	Garlic mustard
Amaranthus sp.	Pigweed
Anagallis arvensis	Pimpernel
Apocynum cannabinum	Indian hemp
Arctium minus	Common burdock
Artemisia biennis	Biennial wormwood
Artemisia vulgaris	Common mugwort
Asclepias syriaca	Common milkweed
Asclepias tuberosa	Butterfly milkweed
Asparagus officinalis	Asparagus
Aster novae-angliae	New England aster
Aster novi-belgii	New York aster
Bellis perennis	Common daisy
Bidens frondosa	Common Beggar-ticks
Brassica rapa	Field mustard
Calystegia sepium	Hedge bindweed
Carum carvi	Caraway
Centaurea jacea	Brown knapweed
Centaurea maculosa	Spotted knapweed
Centaurium umbellatum	Centaury
Chenopodium album	Lamb's quarters
Cichorium intybus	Chicory
Circaea lutetiana	Enchanter's-nightshade
Cirsium arvense	Canada thistle
Cirsium vulgare	Bull thistle
Dianthus armeria	Deptford pink
Dipsacus sylvestris	Teasel
Dipsacus laciniatus	Cutleaf teasel
Echium vulgare	Viper's bugloss
Erigeron annuus	Annual fleabane
Erigeron canadensis	Horseweed
Eupatorium perfoliatum	Boneset
Eutrochium maculatum	Spotted Joe-pye weed
Euphorbia cyparissias	Cypress spurge
Euthamia sp.	Slender Goldenrod
Fallopia japonica	Japanese knotweed
Galinsoga ciliata	Galinsoga
Galium aparine	Cleavers
Galium asprellum	Rough bedstraw
Galium sp.	Bedstraw
Geum laciniatum	Rough avens
Glechoma hederacea	Ground ivy
Hemerocallis fulva	Day lily
Heracleum maximum	Cow parsnip
Hesperis matronalis	Dames rocket
Hieracium sp.	Hawkweed
Hypericum perforatum	St John's wort
Hypochaeris radicata	Cat's ear
Impatiens capensis	Jewelweed
Ipomoea sp.	Morning glory
Iris sp.	Iris sp.
Lactuca serriola	Prickly lettuce
Lamium amplexicaule	Henbit
Lathyrus latifolius	Everlasting pea
Lemna minor	Duckweed
Lepidium campestre	Field peppergrass
Leucanthemum vulgare	Oxeye daisy
Linaria vulgaris	Butter-and-eggs
Lotus corniculatus	Birds-foot trefoil

Table 5 (cont'd)
Plant Species of the I-81 Viaduct Project

Scientific Name	Common Name
Forbs (cont'd)	
Ludwigia alternifolia	Seedbox
Lychnis alba	White campion
Lythrum salicaria	Purple loosestrife
Matricaria discoidea	Wild chamomile
Medicago lupulina	Black medic
Melilotus alba	Sweet white clover
Melilotus officinalis	Yellow sweet clover
Myosotis scorpioides	Forget-me-not
Nasturtium officinale	Watercress
Nepeta cataria	Catnip
Oenothera biennis	Common evening primrose
Penstemon digitalis	Foxglove beardtongue
Persicaria maculosa	Lady's thumb
Phytolacca americana	Pokeweed
Plantago lanceolata	English plantain
Plantago major	European plantain
Portulaca oleracea	Purslane
Potentilla recta	Rough-fruited cinquefoil
Potentilla simplex	Common cinquefoil
Ranunculus sp.	Buttercup
Rubus sp.	Raspberry
Rudbeckia hirta	Black-eyed Susan
Rumex crispus	Curly dock
Sagittaria latifolia	Common arrowhead
Securigera varia	Crown vetch
Silene vulgaris	Bladder campion
Solanum dulcamara	Bittersweet nightshade
Solanum nigrum	Black nightshade
Solidago canadensis	Canada goldenrod
Solidago rugosa	Rough-stemmed goldenrod
Solidago sempervirens	Seaside goldenrod
Euthamia tenuifolia	Narrow leaf goldenrod
Sonchus arvensis	Field sow thistle
Sparganium sp.	Bur-reed
Symphyotrichum racemosum	Smooth white old-field aster
Symphytum officinale	Common comfrey
Taraxacum officinale	Common dandelion
Teucrium canadense	American germander
Thlaspi arvense	Field pennycress
Tovara virginiana	Jumpseed
Trifolium hybridum	Alsike clover
Trifolium pratense	Red clover
Trillium sp.	Trillium
Verbascum thapsus	Common mullein
Verbena stricta	Hoary vervain
Vernonia noveboracensis	New York ironweed
Viola sp.	Violet sp.
Xanthium chinense	Common cocklebur
Shrubs	
Cephalanthus occidentalis	Buttonbush
Cornus amomum	Silky dogwood
Cornus racemose	Gray dogwood
Cornus sericea	Red oiser dogwood
Elaeagnus umbellata	Autumn olive
Hamamelis virginiana	Witchhazel
Hibiscus syriacus	Rose-of-Sharon
Juniperus horizontalis	Creeping Juniper
Ligustrum vulgare	Privet
Lonicera tatarica	Tartarian honeysuckle
Physocarpus opulifolius	Ninebark
Rhamnus cathartica	Common buckthorn
Rosa multiflora	Multiflora rose

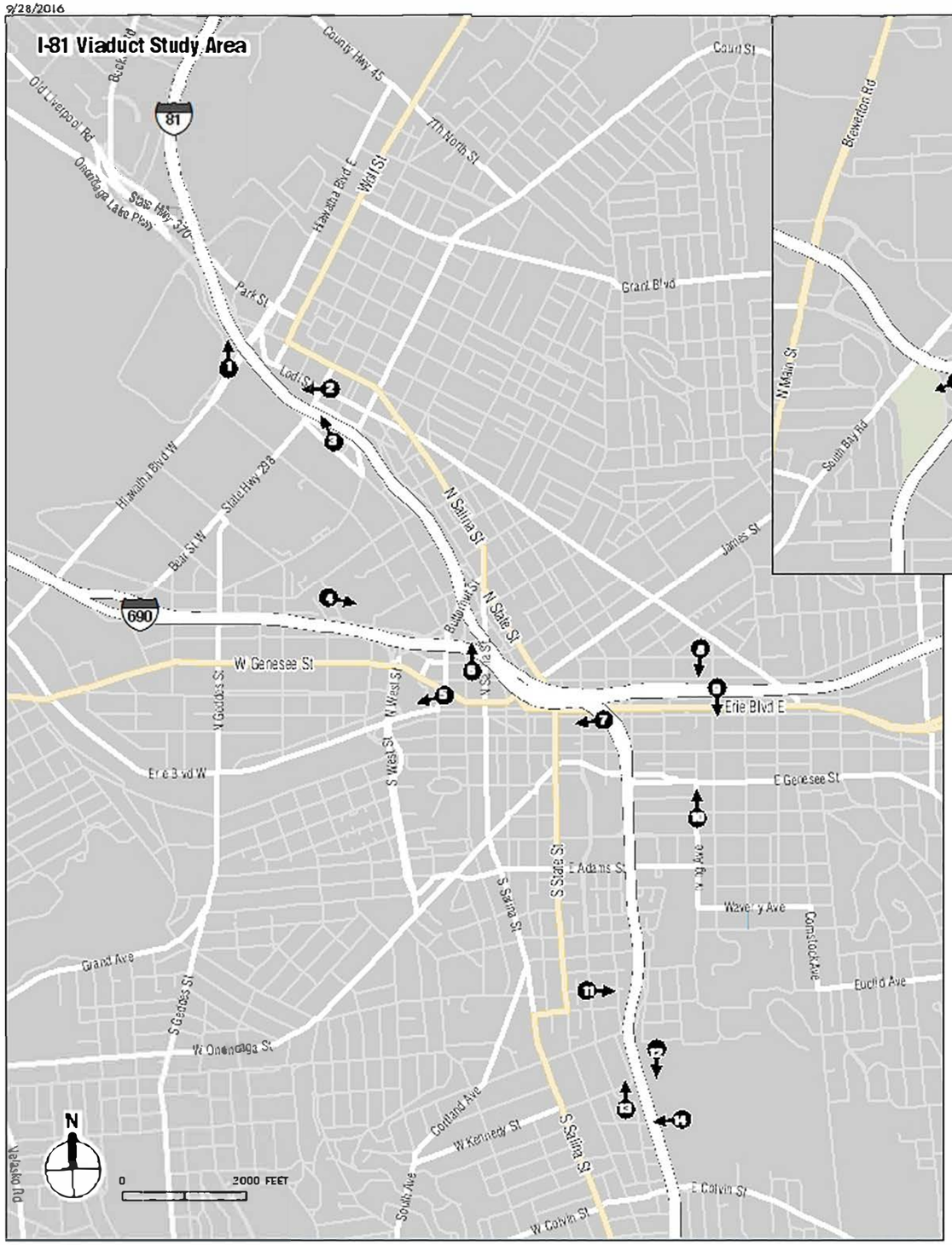
Table 5 (cont'd)
Plant Species of the I-81 Viaduct Project

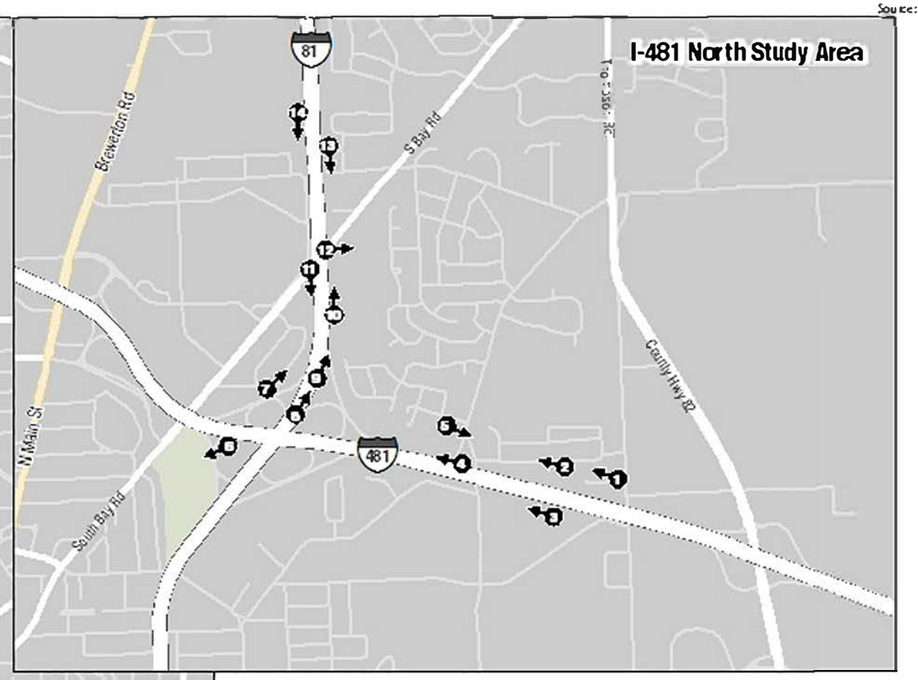
Scientific Name	Common Name
Shrubs (cont'd)	
Rubus canadensis	Smooth blackberry
Samucus canedensis	Elderberry
Viburnum recognitum	Arrowwood
Trees	
Acer ginnala	Amur maple
Acer negundo	Boxelder
Acer platanoides	Norway maple
Acer saccharinum	Silver maple
Acer saccharum	Sugar maple
Acer platanoides 'Crimson King'	Norway maple 'Crimson King'
Ailanthus altissima	Tree of heaven
Betula nigra	River birch
Betula sp.	Birch
Carya cordiformis	Bitternut hickory
Carya glabra	Pignut hickory
Carya sp.	Hickory
Catalpa sp.	Catalpa
Catalpa speciosa	Northern catalpa
Celtis occidentalis	Hackberry
Crataegus phaenopyrum	Washington hawthorn
Fraxinus americana	White ash
Fraxinus pennsylvanica	Green ash
Ginkgo biloba	Ginkgo
Gleditsia triacanthos	Honey locust
Juglans nigra	Black walnut
Malus sp.	Crabapple
Picea abies	Norway spruce
Picea pungens	Blue spruce
Pinus sylvestris	Scots pine
Platanus × acerifolia	London planetree
Populus sp.	Poplar
Populus deltoides	Eastern cottonwood
Prunus serotina	Black cherry
Prunus sp.	Plum
Pyrus calleryana	Callery pear
Quercus velutina	Black oak
Rhus typhina	Staghorn sumac
Robinia pseudoacacia	Black locust
Salix babylonica	Weeping willow
Salix sp.	Willow
Tilia americana	American basswood
Tilia sp.	Linden
Tilia tomentosa	Silver linden
Ulmus rubra	Slippery elm
Woody Vines	
Parthenocissus quinquefolia	Virginia creeper
Parthenocissus tricuspidata	Boston ivy
Toxicodendron radicans	Poison ivy
Vitis sp.	Grape

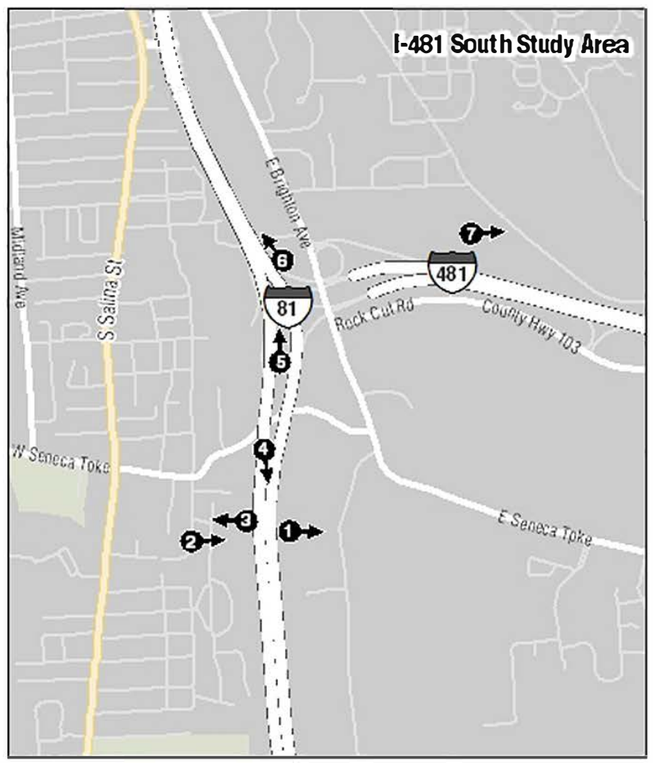
Notes: The Project Area includes four study areas: I-81 Viaduct Study Area, I-481 South Study Area, I-481 East Study Area, and I-481 North Study Area.
Sources: Ecological communities field inspections 2016.

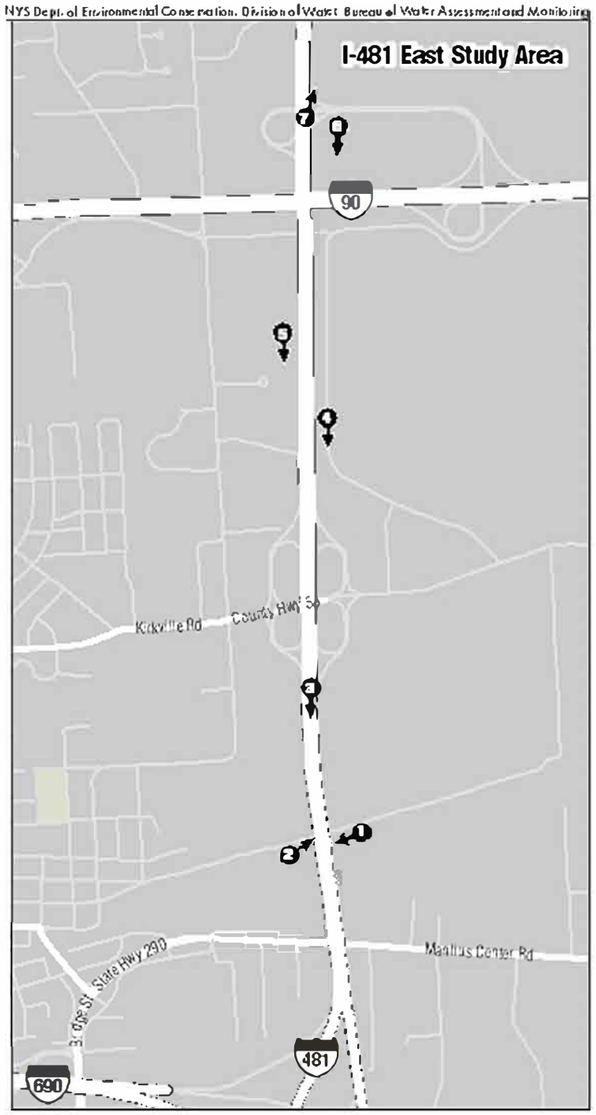
9/28/2016

Source: NYS Dept. of Environmental Conservation, Division of Water, Bureau of Water Assessment and Monitoring









Photograph Reference Number and View Direction

Data source: FEMA Q3 Flood Data, ONONDAGA COUNTY, NEW YORK, 1986

I-81 Viaduct Project

Photograph Log Reference Key
Figure 1

Mowed Lawn with Trees; July 8, 2016; facing north. **1**

Urban vacant lot; July 8, 2016; facing north. **2**

Photographic Documentation
I-81 Viaduct Study Area

I-81 Viaduct Project

Figure 2

Mowed Lawn with Trees; July 8, 2016; facing north. **3**

Successional Southern Hardwoods and Paved Road/Path; July 28, 2016; facing north. **4**

Photographic Documentation
I-81 Viaduct Study Area

Street Trees; July 8, 2016; facing west. **5**

Paved Road/Path/Street Trees; July 8, 2016; facing north. **6**

Photographic Documentation
I-81 Viaduct Study Area

Paved Road/Path/Mowed Lawn with Trees; July 8, 2016; facing west. **7**

Successional Southern Hardwoods; August 1, 2016; facing south. **8**

Photographic Documentation
I-81 Viaduct Study Area
Figure 5

Successional Old Field; August 1, 2016; facing south. **9**

Paved Road/Path; July 8, 2016; facing north. **10**

Photographic Documentation
I-81 Viaduct Study Area

Successional Southern Hardwoods and Mowed Lawn; August 1, 2016; facing east. **11**

Railroad; August1, 2016; facing south. **12**

Photographic Documentation
I-81 Viaduct Study Area
Figure 7

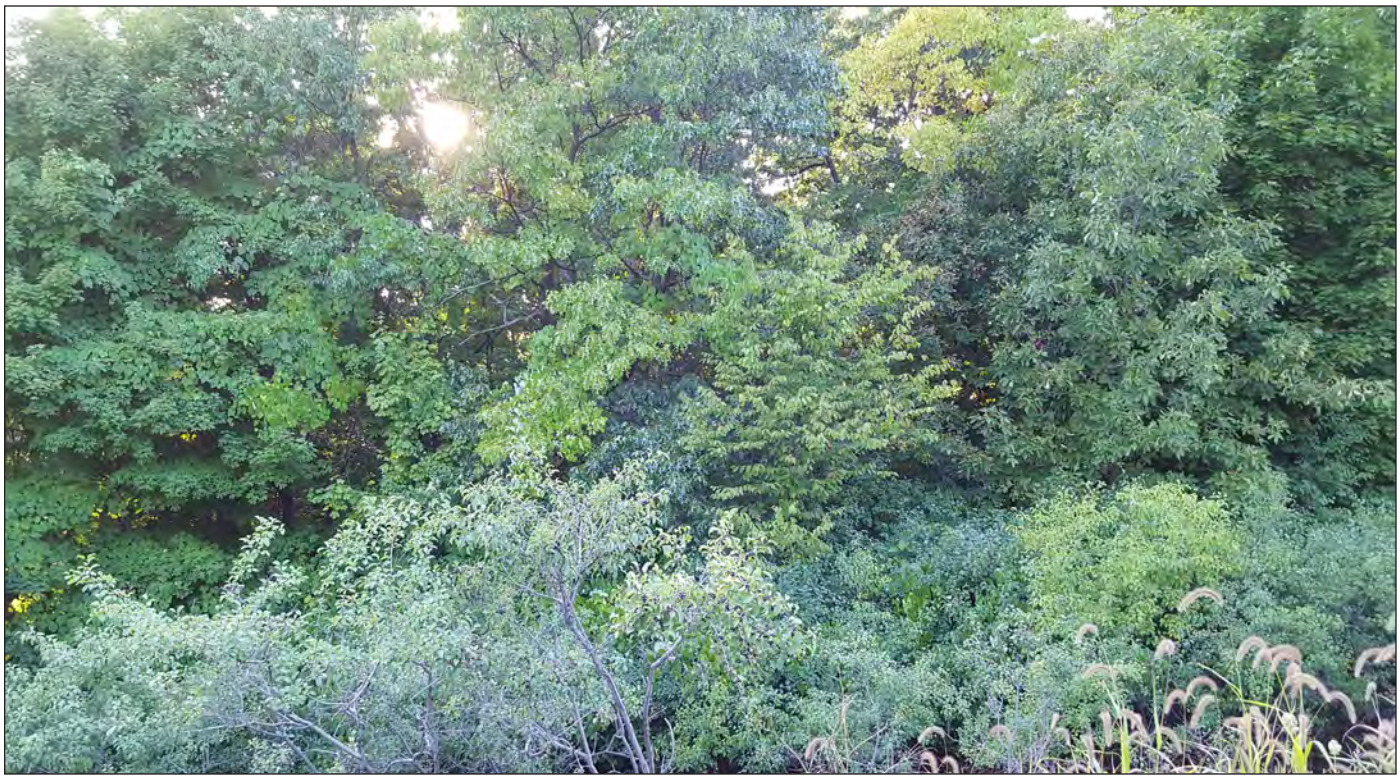
Successional Southern Hardwoods; August 1, 2016; facing north. **13**

Successional Old Field; August 1, 2016; facing west. **14**

Southern Successional Hardwoods/Road Cut Cliff/Slope; September 16, 2016; facing east. **1**

Southern Successional Hardwoods/Road Cut Cliff/Slope; September 16, 2016; facing east. **2**

Photographic Documentation
I-481 South Study Area
Figure 9



Southern Successional Hardwoods; September 16, 2016; facing west. **3**

Southern Successional Hardwoods; July 28, 2016; facing south. **4**

Photographic Documentation
I-481 South Study Area
Figure 10

Successional Old Field; July 21, 2016; facing north. **5**

Mowed Lawn; July 21, 2016; facing north. **6**

Photographic Documentation
I-481 South Study Area
Figure 11

Railroad; July 21, 2016; facing east. **7**

Photographic Documentation
I-481 South Study Area
Figure 12

Mowed Lawn; July 20, 2016; facing west. **1**

Railroad; July 20, 2016; facing northeast. **2**

Photographic Documentation
I-481 East Study Area
Figure 13

Paved Road/Path; July 20, 2016; facing south. **3**

Mowed Lawn and Drainage Ditch; July 20, 2016; facing south. **4**

Photographic Documentation
I-481 East Study Area

Successional Old Field; July 20, 2016; facing south. **5**

Floodplain Forest; July 20, 2016; facing south. **6**

Photographic Documentation
I-481 East Study Area
Figure 15

Roadside Drainage Ditch; July 20, 2016; facing north. **7**

Recently Cleared Land; September 16, 2016; facing east. **1**

Paved Road/Path and Mowed Lawn; August 1, 2016; facing west. **2**

Photographic Documentation
I-481 North Study Area
Figure 17

Successional Old Field; July 19, 2016; facing west. **3**

Mowed Lawn; September 16, 2016; facing west. **4**

Photographic Documentation
I-481 North Study Area
Figure 18

Recently Cleared Land; September 16, 2016; facing east. **5**

Successional Old Field; September 16, 2016; facing southwest. **6**

Photographic Documentation
I-481 North Study Area
Figure 19

Roadside Drainage Ditch; July 8, 2016; facing north. **7**

Mowed Lawn and Drainage Ditch; July 8, 2016; facing north. **8**

Mowed Lawn and Drainage Ditch; July 8, 2016; facing north. **9**

Mowed Lawn and Drainage Ditch; July 8, 2016; facing north. **10**

Photographic Documentation
I-481 North Study Area
Figure 21

Mowed Roadside/Pathway; July 8, 2016; facing south. **11**

Mowed Lawn with Trees; September 16, 2016; facing east. **12**

Photographic Documentation
I-481 North Study Area
Figure 22

Drainage Ditch; July 9, 2016; facing south. **13**

Mowed Lawn; July 8, 2016; facing south. **14**

Photographic Documentation
I-481 North Study Area
Figure 23