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A Threatened and Endangered Species Survey of the Proposed Right-of-Way and Station Sites for the Northeast Corridor Light Rail Project
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The City of Charlotte/Charlotte Area Transit System (CATS) retained the services of EnReview Consulting and Habitat Assessment and Restoration Program, Inc. to perform environmental studies for the Northeast Corridor Light Rail project. A field survey of the approximately 78,400 ft., or 14.8 miles of proposed right-of-way (ROW) and 16 proposed stations/parking facility sites was performed using aerial design imagery provided through EnReview Consulting, acting as an agent for the City of Charlotte/CATS. The survey area extends from Ninth Street in Charlotte to just northeast of the junction of North Tryon Street and I-485.

All portions of the proposed ROW were directly examined where vegetation was evident, except for a small area inside the railroad yard just northeast of Sixteenth Street. This site was examined through the fence. Other areas not examined directly lacked vegetation, being paved parking/storage/existing buildings. Field work was conducted during the last week of September and the first week of October, 2007. Where vegetation was evident, the alignment was walked by two investigators. Notes were made on the vegetative communities and species which occur within the proposed ROW or station site. To provide the basis for the plant communities and species of concern, the data base for the North Carolina Natural Heritage Program was downloaded on September 24 for the East Charlotte, Derita and Harrisburg USGS quads. Communities and species of concern from these lists provided the basis for the survey. The printouts are attached to the end of this report. In the writeup, the species are listed alphabetically by common name, cross referenced to Table 1 which lists the scientific name. This alphabetical format separates the species artificially so that closely related species in the same family or genus are not listed together. The report is segregated into units that reflect definable and/or natural breaks in the ROW by physical or vegetative habitat. Trees are listed with a diameter breast height (dbh) estimate in inches, followed by shrubs, then herbs and finally vines. Not all tree specimens of the same species are listed, just the largest for that species. The largest dbh for that site is listed first. Nomenclature follows Weakley, A.S. 2007, working draft. Flora of the Carolinas, Virginia and Georgia. University of North Carolina Herbarium, NC Botanical Garden, Chapel Hill, NC. Available from: http://herbarium.unc.edu/flora.htm

EXECUTIVE SUMMARY

No plant species listed as Endangered or Threatened by the US Fish and Wildlife Service (USFWS) were found during the field work. No plant communities of concern were

noted. One species, Carolina birdfoot-trefoil (*Lotus helleri*), was found at three sites along the ROW survey. This species is listed as significantly rare by the North Carolina Natural Heritage Program and as a Species of Concern by the US Fish and Wildlife Service. Neither of these listings provides legal protection for the species. This species is not rare in the southern Piedmont and its presence will have no effect on the project. Data on these three locations will be provided to the North Carolina Natural Heritage Program to permit the updating of their data base.

With the drought at the time of the survey, the water in Little Sugar, Toby, and Mallard Creeks was very low. No evidence of mollusk shells was seen at the creek crossings. One species of mollusk, Carolina Creekshell (*Villosa vaughaniana*), is listed currently for the Derita and Harrisburg USGS Quads, having the status as Endangered in North Carolina and as a Federal Species of Concern by the US Fish and Wildlife Service. An inquiry to the North Carolina Natural Heritage Program regarding specific records for Little Sugar, Toby and Mallard Creeks gave the following information. There are no records for this species in Little Sugar Creek (East Charlotte quad), which coincides with their published data. There are no records for this species in the Toby Creek drainage, Harrisburg USGS quad. But, there are no records that Toby Creek has been sampled. There are no records for this species in Mallard Creek, Harrisburg USGS quad, on the UNC Charlotte campus (area of impact), but there are records for this species upstream in the Mallard Creek drainage for the Derita USGS quad. Records for *Villosa vaughaniana* from the Harrisburg USGS quad are from Back Creek, not Mallard Creek. With the current interest in mollusks, a survey of the crossings for these creeks may be needed.

DESCRIPTION OF THE SURVEY RESULTS, FROM SOUTH TO NORTH

9th Street to 12th Sreet, including the 9th Street. Station

The area identified for the station has been fenced, and was likely used for a construction staging area for the terminus of the existing light rail line at 9th Street. The northwest side of the ROW is mostly herbaceous growth, while the southeast side includes herbaceous and woody species. On the northwest side, the dominant cover is Kudzu, with a mixture of shrubs and herbs. Trees include: Willow oak 16 in. dbh, American elm 12 in. dbh, Pecan 8 in. dbh, Sycamore 8 in. dbh, Red mulberry 6 in. dbh, Magnolia 6 in. dbh, Black cherry 4 in. dbh, Sugarberry 4 in. dbh, Tag alder 4 in. dbh, Winged elm 4 in. dbh, and Tree of heaven 3 in. dbh. Shrubs include Wax leaf ligustrum, Wax myrtle, Groundsel tree and Blackberry. Herbs include: Knotweed, Goldenrod, Johnson grass, White sweet clover, Pigweed, Giant ragweed, Evening primrose, Eclipta, Brazilian vervain, Thoroughwort, Everlasting pea, Common camphorweed, and Bushy broomstraw. Vines include Kudzu, Porcelain-berry, Trumpet creeper and Virgin's-bower.

12th Street. to Railroad Tracks

This area has larger trees and not as many invasive species. Trees include: Willow oak 36 in. dbh, Sugarberry 12 in. dbh, Pecan 12 in. dbh, American elm 12 in. dbh, Box elder

10 in. dbh, and Black willow 6 in. dbh. Shrubs include Red mulberry, Wax leaf ligustrum, Blackberry, and Groundsel tree. Herbs include: Bushy broomstraw, Brazilian vervain, Foxtail grass, Bermuda grass, Johnson grass, Horseweed, Sericea lespedeza, Bitterweed, Goldenrod, Thoroughwort, and Dog-fennel. Vines include: Porcelain-berry.

Railroad Tracks to 16th Street.

This area is also vegetated with weedy species, with woody species along both sides of the ROW. Trees include: Willow oak 10 in. dbh, Tree of heaven 10 in. dbh, Black cherry 10 in. dbh, Pecan 8 in. dbh, Red mulberry 8 in. dbh, Princess tree 8 in. dbh, Paper mulberry 6 in. dbh, Box elder 6 in. dbh, Loblolly pine 6 in. dbh, Mimosa 4 in. dbh, and Silver maple 3 in. dbh. Shrubs include Groundsel tree, Wax leaf ligustrum, and Blackberry. Herbs include Sericea lespedeza, Beggar ticks, Thoroughwort, Pokeweed, Bitterweed, Dog-fennel, Goldenrod, Bushy broom-straw, Rabbit tobacco, Common camphorweed, and Wooly mullein. Vines include: Trumpet creeper, Porcelain-berry, Japanese honeysuckle, Muscadine grape, and Coralbeads.

There is a piped steam crossing in this area.

16th Street to the Railroad Yard, 16th Street. Station to 18th Street. at Brevard Street.

This relatively short section in the railroad yard is highly disturbed with small woody species and Lespedeza. It was observed through the fence. Woody species include Shortleaf pine, Red cedar, Princess tree, over Groundsel tree and Sericea lespedeza.

The proposed park-n-ride station is located in the existing railroad yard on a paved lot.

From the proposed station site, the ROW exits the railroad yard at 18th Street parallel to Brevard Street.

18th Street at Brevard Street to Little Sugar Creek, Including the 27th Street Station.

Initially the ROW runs in the area between Brevard Street and the railroad yard fence. This mowed area has a row of Bradford pear trees. Nearing the site for the station, the ROW moves northwest into the bank and in to the unmanaged area, except for a strip of about 15 feet mowed outside the fence. The trees include: Willow oak 14 in. dbh, American elm 12 in. dbh, Black cherry 10 in. dbh, Red mulberry 10 in. dbh, Princess tree 8 in. dbh, Red cedar 8 in. dbh, and Pecan 6 in. dbh. The shrubby vegetation is well developed and includes: Sassafras, Paper mulberry, Chickasaw plum, Winged sumac, Privet, Spring silverberry, Multiflora rose, Smooth sumac, and Blackberry. Herbs include: Sericea lespedeza, Pokeweed, Common camphorweed, Evening primrose, and Indian hemp. Vines include: Greenbrier, Japanese honeysuckle, Porcelain-berry, Trumpet creeper, Passion-flower, Poison ivy, and Milkweed vine.

The vegetation at the station site is very similar, but includes specifically: Willow oak 16-18 in. dbh, Princess tree 14 in. dbh, Tree of heaven 12 in. dbh, Box elder 12 in. dbh,

American elm 10 in. dbh, Red mulberry 10 in. dbh and Sugarberry 4 in. dbh. Shrubs include Mimosa seedlings, Groundsel tree, Wax leaf ligustrum, Multiflora rose, and Blackberry. Vines include: Frost grape, Porcelain-berry, Trumpet creeper, Greenbrier, Japanese honeysuckle, Passion-flower, and Coralbeads.

Past the station site to the Little Sugar Creek bank, occurs Mimosa 8 in. dbh, Green ash 6 in. dbh, and China-berry 5 in. dbh. Blackberry is present. Herbaceous species include Jerusalem artichoke, Common camphorweed, and Bitterweed. Vines include Japanese honeysuckle, Porcelain-berry and Bur cucumber.

Little Sugar Creek to Power Substation

Emerging from the creek, there are old beaver signs (gnawed/felled trees) and the ROW turns slightly northwest through a disturbed area that is not managed. From the Little Sugar Creek bank, the trees include: Box elder 8 in. dbh, Sweetgum 8 in. dbh, Red cedar 4 in. dbh, Sugarberry 4 in. dbh, and Black locust 3 in. dbh. Shrubs include Wax leaf ligustrum, Giant cane and Blackberry. The herbaceous cover is highly developed due to the occasional mowing. Near Little Sugar Creek occur Southern crownbeard, Eastern coneflower, Pokeweed, Giant ragweed, Pigweed, Dayflower, Red morning-glory, Sericea lespedeza, Brasilian vervain, Common camphorweed, and Thoroughwort.

This area is highly disturbed and the open area is dominated by Sericea lespedeza and Blackberry.

Power Substation to Matheson Avenue

The ROW begins to turn north to pass under the Matheson Ave. bridge. With the turn, more woody vegetation occurs. The trees include: American elm 24 in. dbh, Pecan 14 in. dbh, Princess tree 10 in. dbh, Mimosa 6 in. dbh, Tree of heaven 6 in. dbh, Sassafras 6 in. dbh, Dogwood 6 in. dbh, Red mulberry 5 in. dbh, and Paper mulberry 4 in. dbh. Shrubs include Groundsel tree, Wax leaf ligustrum, Blackberry, and Elderberry. There is also a clump of Burford holly planted in front of the substation. Herbs include: Common camphorweed, Sericea lespedeza, Bushy broomstraw, Bitterweed, Thoroughwort, and Partridge-pea. Vines include Porcelain-berry, Trumpet creeper, Japanese honeysuckle, and Coralbeads.

Matheson Avenue to 36th Street

As the ROW crosses under the bridge, it passes through an abandoned industrial complex, with scattered vegetation. Sapling trees include: Sugarberry, Princess tree, Silver maple, Mimosa, Tree of heaven, Black cherry, and a larger specimen of Cottonwood 14 in. dbh. Shrubs include Groundsel tree, Sassafras, Winged sumac, and Blackberry. Herbs include: Bitterweed, Common camphorweed, Small Ragweed, Sericea lespedeza, Evening primrose, Pigweed, Indian hemp, and Johnson grass. Vines include: Trumpet creeper, Coralbeads and Virginia creeper.

Exiting the developed, but abandoned area, the ROW passes through a tree line toward 36th Street. The tree line consists of Green ash 24 in. dbh., Sugarberry 18 in. dbh, Black walnut 15 in. dbh, American elm 12 in. dbh, Red mulberry 10 in. dbh. and an unusual cultivated tree, Chinese parasol tree 8 in. dbh. Shrubs include Privet, Wax leaf ligustrum, Bush honeysuckle, and Blackberry. The primary herbaceous species is Japanese stiltgrass. Vines include: Greenbrier, Passion-flower, and Japanese honeysuckle.

36th Street to Craighead Road, including the 36th Street Station

The 36th Street Station is sited behind the abandoned Johnston Mill building (a registered historic landmark) in a group of trees within the ROW crossing the street. The tree line continues until the ROW parallels North Davidson Street.

The trees include Yellow poplar 28 in. dbh, Sweetgum 18 in. dbh, Cottonwood 18 in. dbh, Black cherry 16 in. dbh, Green ash 14 in. dbh, American elm 12 in. dbh, Black walnut 12 in. dbh, Red mulberry 10 in. dbh, Pecan 10 in. dbh, Box elder 6 in. dbh, Red cedar 4 in. dbh, with saplings of Sassafras and Tree of heaven. Shrubs include: Grounsel tree, Wax leaf ligustrum, Winged sumac, Blackberry, and Bush honeysuckle. Herbs include Common camphorweed, Goldenrod, and Sicklepod. Vines include: English ivy, Greenbrier, Wisteria, Trumpet creeper, Japanese honeysuckle and Coralbeads.

The topography changes just past the Johnston Mill building. A large, deep ditch parallels North Davidson Street, with the ROW to the north of the ditch. The banks above the ditch are steep. The area is mostly open, with only a few trees: Silver maple and Black willow. Wax myrtle is scattered throughout and Cattails occur in the bottom of the ditch. Grasses cover the open area.

Craighead Road to Sugar Creek Road

From Craighead Road to Sugar Creek Road, the ROW passes along a tree line paralleling the south side of the railroad. The woodland shows a higher diversity of species than the previous woodland borders. Trees include: American elm 14 in. dbh, White oak 14 in. dbh, Red maple 12 in. dbh, Yellow poplar 12 in. dbh, Sweetgum 12 in. dbh, Cottonwood 10 in. dbh, Red mulberry 10 in. dbh, Persimmon 10 in. dbh, Mockernut hickory 10 in. dbh, Sweet Pignut hickory 10 in. dbh, China-berry 10 in. dbh, Willow oak 8 in. dbh, Southern red oak 8 in. dbh, Mimosa 8 in. dbh, Black cherry 6 in. dbh, Red cedar 4 in. dbh, and Black gum 4 in. dbh. Shrubs include: Grounsel tree, Wax leaf ligustrum, Spring silverberry, Sassafras, Elderberry, Multiflora rose, and Blackberry. Sicklepod is the primary herb along the edge of the tracks. Vines include: Muscadine grape, Passion-flower, Poison ivy, Coralbeads, Trumpet creeper, Virginia creeper, and Greenbrier.

Sugar Creek Road to Eastway Drive, including the Sugar Creek Station

The ROW crosses Sugar Creek Road, veering slightly to the north to pass along abandoned siding track right-of-way. The site of the Sugar Creek Station is a woody border, behind an existing storage building, dominated by: Sweetgum 14 in. dbh, Pecan

14 in. dbh, Black locust 10 in. dbh, Cottonwood 4 in. dbh, with smaller specimens of Red cedar, Red maple, Red mulberry, Persimmon and Sassafras. Shrubs include: Winged sumac, Groundsel tree and Blackberry. Herbaceous species include: Dog-fennel, Thoroughwort, Partridge pea, Goldenrod, Sericea lespedeza, Bushy broom-straw, with Cattails in the ditch. Vines include: Japanese honeysuckle and Virginia creeper. The park-n-ride for this site will occupy an industrial complex between Raleigh Street and the proposed station along the existing abandoned siding. There is no vegetation on site.

Past the station site, the ROW continues along the abandoned railroad siding. Vegetation has begun to over-grow this unmanaged area. Trees include: American elm 10 in. dbh, Black cherry 10 in. dbh, Pecan 10 in. dbh, Virginia pine 10 in. dbh, Willow oak 8 in. dbh, with Mimosa and Princess tree saplings. Shrubs include: Spring silverberry, Black willow, Sassafras, Silky dogwood, Blackberry, and Multiflora rose. Herbs include: Sericea lespedeza, Goldenrod, Dog-fennel, Partridge pea, Bushy broomstraw, and a population of 58 specimens of Carolina birdfoot-trefoil. This species is rated by the NC Natural Heritage Program as Significantly Rare in the State, although it is relatively common in the southern Piedmont. The US Fish and Wildlife Service lists this as a Federal Species of Concern. Neither of these listings has a legal status, so its presence will not affect the project. This finding is the first for the Derita USGS quad for the Heritage Program, so it will be added to this quad when the data are updated (listed as *Lotus helleri*).

The abandoned siding terminates at an old loading ramp, just southwest of a residential development. The trees cover the siding, creating a dense shade, so there is no shrub or herb layer. The dominant trees are: Cottonwood 24 in. dbh, Green ash 14 in. dbh, Pecan 14 in. dbh, Black locust 8 in. dbh, and a dense growth of sapling Mimosa.

The ROW continues through an urban, disturbed woodland south of the residential development that extends to Eastway Drive. A small wetland is located in a residential lawn. Wetland species include: Camphorweed, Fireweed, Climbing hempweed, and Woolgrass Bulrush. Trees located within the proposed ROW include: Willow oak 26 in. dbh, Red maple 26 in. dbh, Shortleaf pine 14 in. dbh, Sweetgum 12 in. dbh, Yellow poplar 12 in. dbh, and Peach. Shrubs include: Trifoliate orange, Privet, Black haw, Magnolia, Multiflora rose, Autumn silverberry, and Blackberry. Herbaceous species include lawn grasses. Vines include: Trumpet creeper, Wisteria, English ivy, Japanese honeysuckle, and Kudzu.

Eastway Drive. to Old Concord Road., including the Eastway Station

The ROW from Eastway Drive passes along the north side of the railroad embankment, covered by Kudzu. It then passes behind Northpark Mall, in a tree line including: Southern red oak 20 in. dbh, Pecan 18 in. dbh, Sassafras 18 in. dbh, Sweet pignut hickory 16 in. dbh, Shortleaf pine 14 in. dbh, Post oak 14 in. dbh, Sweetgum 12 in. dbh, Virginia pine 12 in. dbh, American elm 10 in. dbh, Green ash 10 in. dbh, Willow oak 10 in. dbh, Persimmon 8 in. dbh, Black gum 8 in. dbh. Shrubs include: Wax leaf ligustrum, Spring silverberry, Dogwood, Elderberry, and Silky dogwood. Herbs are absent. Vines include:

Kudzu, Poison ivy, Trumpet creeper, Greenbrier, and Muscadine grape. Just past the second building is a small Kudzu field, which also has Frost grape, English ivy and Virginia creeper.

As the ROW continues, the Kudzu field ends and the vegetation is the same as the trees listed in the above paragraph. Just past a storage facility, the ROW turns north through a Kudzu field. The entire area up to Old Concord Road will be impacted, which includes the Kudzu field, the forest and buildings extending to the northwest to the road.

The Eastway Station is sited near the junction of the Kudzu and the forest. At this same junction, just northwest of the station is a wetland, which was very evident during this drought because of the vegetation. The wetland probably extends into the Kudzu field. When a wetland delineation is performed, it should be done in the winter when the Kudzu has died back. The wetland species include: Red chokeberry, Silky dogwood, Elderberry, Arrowhead, Climbing hempweed, Knotweed, Virginia bugleweed, False nettle, and Clearweed. These species, taken together, are clear indicators of a wetland, although no soil investigations were made.

The northwest side of the forest increases in dryness up toward North Tryon St. The topography of the site forms a bowl at the top along North Tryon St. and Old Concord Road that slopes and drains toward the wetland. There is evidence of seepage from the slope.

The wetter parts of the slope include: Sycamore 12 in. dbh (this species extends to the top of the slope), Green ash 10 in. dbh, Southern sugar maple 8 in. dbh, Box elder 6 in. dbh, over Silky dogwood, Elderberry, Tag alder, and Privet. Continuing upslope, in drier (but not dry) areas, occur: Yellow poplar 26 in. dbh, Pecan 26 in. dbh, White oak 24 in. dbh, American elm 24 in. dbh, Willow oak 16 in. dbh, Red maple 16 in. dbh, Sugarberry 14 in. dbh, Sweetgum 14 in. dbh, Black cherry 10 in. dbh, and Silver maple 6 in dbh. The driest part of the woods is in the NW corner, where Southern red oak 32 in. dbh, Yellow poplar 26 in. dbh, Sweetgum 24 in. dbh, White pine 10 in. dbh (planted), Red mulberry 8 in. dbh occur over Privet, and Spring silverberry with scattered woody vines of Japanese honeysuckle, English ivy, Wisteria, Trumpet creeper and Greenbrier.

The park-n-ride for the Eastway station encompasses the Kudzu field around the station, the forested slope and several businesses on the southeast side of the intersection of North Tryon Street and Old Concord Road. Additionally, the field described in the next section below is also included in the survey area.

Old Concord Road to North Tryon Street

Just prior to and crossing Old Concord Road, the ROW passes through disturbed urban forest. Trees include American elm 30 in. dbh, Sweetgum 14 in. dbh, Black cherry 14 in. dbh, and Red mulberry 4 in. dbh. In addition, there are sapling specimens of: China-berry, Pecan, Box elder, Yellow poplar, Southern sugar maple, and cultivated Cherry

laurel. Shrubs include Privet, Elderberry, Spring silverberry, Groundsel tree, and Blackberry. Herbs include: Goldenrod, Pokeweed, Brasilian vervain, and Johnson grass. Vines include: Japanese honeysuckle, Trumpet creeper, Virgin's bower, Frost grape, Greenbrier, Virginia creeper, English ivy, and Poison ivy.

The ROW then crosses a field, having low herbaceous diversity. Woody species include Winged sumac and Blackberry. Herbaceous species include: Goldenrod, Sericea lespedeza, Queen Anne's Lace, Frost aster and Johnson grass.

Sugar Creek Design Option with Sugar Creek Station in the Asian Market Building

The Sugar Creek Design Option shows the ROW turning northwest at Sugar Creek Road, passing through a building (with impacts to developed and paved areas), crossing Raleigh Street, and passing through a disturbed field into the Asian Market mall area. The disturbed field has one pocket of Black Locust trees up to 12 in. dbh. Groundsel tree is the only other woody species. The remaining species are herbaceous and include: Goldenrod, Sericea lespedeza, Hyssopleaf eupatorium, Indian hemp, Partridge pea, Bitterweed, Small Ragweed, Johnson grass, Foxtail, and Three awn grass. The ROW passes through the buildings to the median on North Tryon Street. The station is sited in the market building footprint. The park-n-ride area encompasses the remainder of the paved parking lot of the commercial area over to East Sugar Creek Road and North Tryon Street.

North Tryon Street- Old Concord Road Eastway Station at junction of North Tryon Street and Old Concord Road

The roadsides were examined in this sector. There are no patches of woody growth that have not been removed or impacted since the aerial photograph was taken. The station is sited in the median of North Tryon Street at the junction with Old Concord Road. The park-n-ride area will be the same as for the Eastway Station, described above.

North Tryon Street. from Old Concord Road. to Heathway Drive

The roadsides were examined in this sector. There is one power line ROW and patch of woods just south of Heathway Drive. The dominant vegetation is Loblolly pine 12 in. dbh, and Sweetgum 10 in. dbh. Also present are: Red maple 4 in. dbh, Winged elm 4 in. dbh, and American elm 4 in dbh. The open areas have Groundsel tree, Winged sumac and Blackberry as shrubs. Herbs include: Goldenrod, Pokeweed, Queen Anne's lace, Rabbit tobacco, Milkweed, Indian hemp, Purpletop grass, and Ebony spleenwort fern. Vines include: Japanese honeysuckle, Porcelain-berry, Virginia creeper and Greenbrier.

There is a small wetland at the south end of the site, due to the trapping of storm water from a drain pipe under North Tryon Street, which has Soft rush, Sedge, and Spike-rush.

Heathway Drive to Gloryland Avenue, Tom Hunter Station

The Tom Hunter station is located in the North Tryon Street median, just south of Gloryland Avenue. Several businesses will be removed. An open field occurs in the northwest corner of Gloryland Avenue and McGill Street, with no vegetation. Behind the Autobell Car Wash, a small patch of woods (the overgrown McGill Street ROW) is present. Trees include: Yellow poplar 16 in. dbh, White oak 16 in. dbh, Sweet pignut hickory 10 in. dbh, and Loblolly pine 6 in. dbh. Shrubs include: Winged sumac, Wax myrtle and Privet. Vines include: Japanese honeysuckle and Virginia creeper. The park-n-ride area will affect three businesses along the east side of North Tryon Street at Gloryland Avenue.

Gloryland Avenue to Reagan Drive/Sandy Avenue

Two forest margins are located within the proposed ROW, south and north of Reagan Drive, west of North Tryon Street.

Area 1: South of Reagan Drive to Orchard Trace Lane. This area is highly disturbed, with a power line ROW paralleling North Tryon Street. The trees include: Sweetgum 10 in. dbh, Yellow poplar 10 in. dbh, Loblolly pine 6 in. dbh, Virginia pine 6 in. dbh, Red cedar 4 in. dbh, White ash 4 in. dbh, Callery pear 4 in. dbh, Mimosa 4 in. dbh, Dogwood 3 in. dbh, Pecan 3 in. dbh, Winged elm 3 in. dbh, and Black cherry 3 in. dbh. Shrubs include: Spring silverberry, Groundsel tree, Redbud, Blackberry, and Pyracantha. Herbs include: Goldenrod, Sericea lespedeza, Milkweed, Indian hemp, Butterfly-weed, and Gamma grass. Vines include: Poison ivy, Trumpet creeper, Japanese honeysuckle, and Greenbrier.

Area 2: North of Reagan Drive to North US 29 Bypass. This is the best remnant hardwood forest in the entire project. Due to the protection from the highways and probable ownership by DOT, the site has not been developed. The general aspect of the forest is open and mature. Dominant trees in this dry oak/hickory forest include: Southern red oak 36 in. dbh, Yellow poplar 30 in. dbh, White oak 20 in. dbh, Red oak 12 in. dbh, Mockernut hickory 14 in. dbh, and Shortleaf pine 10 in. dbh. The shrub layer is well developed due to the tall shade of the mature trees. Shrubs include: Red maple, Dogwood, Black gum, Red mulberry, Redbud, Red cedar, Sassafras, Strawberry bush, and Possum haw. Herbs include: Wild ginger, Solomon's seal, Small-headed sunflower, and Gamma grass. Vines include: Greenbrier, Muscadine grape, Virginia creeper, Wild yam, and Milkweed vine.

Isolated Vegetated Groups Within the Interchanges

There are 9 isolated groups of vegetation in the medians north of the Reagan Drive crossing of North Tryon Street to the exit of NC 49 off North Tryon. Each of these was examined. However, rather than write a description and location of each, the vegetation of all 9 is given, as an expression of the total flora. Some of the trees are larger than would be expected in these small clumps of vegetation, but they likely are remnants of the mature forest described above and have existed since the highway work was

completed. Trees include: Yellow poplar 26 in. dbh, White oak 24 in. dbh, Sweet pignut hickory 22 in. dbh, Southern red oak 18 in. dbh, Sweetgum 14 in. dbh, Persimmon 12 in. dbh, Shortleaf pine 12 in. dbh, Black cherry 12 in. dbh, American elm 12 in. dbh, Tree of heaven 8 in. dbh, Red mulberry 8 in. dbh, and Willow oak 6 in. dbh. Shrubs include: Grounsel tree, Winged sumac, Privet, Redbud, Dogwood, Sassafras, Blackberry, Red maple, Mimosa, Spring silverberry, and Cherry laurel. Herbs include: Goldenrod, Dog-fennel, Hyssopleaf eupatorium, Thoroughwort, and Small ragweed. Vines include: Japanese honeysuckle, Virginia creeper, Muscadine grape, Trumpet creeper, Poison ivy, and Passion-flower.

Forest Edge North of Sandy Avenue along North Tryon Street to Abandoned Service Station

This woodland is fairly diverse for its size. Trees include: Virginia pine 20 in. dbh, Red maple 19 in. dbh, Red oak 19 in. dbh, Willow oak 16 in. dbh, Sweetgum 15 in. dbh, White oak 14 in. dbh, Pignut hickory 14 in. dbh, Black cherry 12 in. dbh, Yellow poplar 12 in. dbh, Loblolly pine 10 in. dbh, Sycamore 10 in. dbh, Dogwood 10 in. dbh, Shortleaf pine 9 in. dbh, Pignut hickory 9 in. dbh, Callery pear 8 in. dbh, Red cedar 7 in. dbh, Honey locust 7 in. dbh, Persimmon 4 in. dbh, and Black gum 4 in. dbh. Shrubs include: Privet, Spiraea, Blackberry, Possum haw, and Wax leaf ligustrum. Herbs include: Goldenrod, Sericea lespedeza, Milkweed, Hyssopleaf eupatorium, Plume grass, and Gamma grass. Vines include: Japanese honeysuckle, Greenbrier, Giant periwinkle, Trumpet creeper, Wisteria, and Virginia creeper.

Linear Forest between North Tryon Street and I-85 Service Road

This forest is a mixture of successional species. Trees include: Red maple 28 in. dbh, Sweetgum 20 in. dbh, Yellow poplar 15 in. dbh, American elm 8 in. dbh, Virginia pine 7 in. dbh, Sassafras 6 in. dbh, Black locust 6 in. dbh, Shortleaf pine 6 in. dbh, and Mimosa 4 in. dbh. Shrubs include: Elderberry, Blackberry, Redbud, and Groundsel tree. Herbs include: Goldenrod, and Thoroughwort. Vines include Climbing hempweed, Passion-flower, Trumpet creeper, Frost grape, Japanese honeysuckle and Muscadine grape.

North Tryon Street at Stetson Ave and Rocky River Station

The station is in the median on North Tryon Street. The primary area for park-n-ride includes several businesses northwest and northeast of the intersection of the two streets, plus a portion of forest southwest of the Waffle House, the only vegetated area. The forest trees include: White oak 16 in. dbh (one large specimen is 42 in. dbh), Sweetgum 14 in. dbh, Black cherry 12 in. dbh, Southern red oak 10 in. dbh, Loblolly pine 10 in. dbh, Black walnut 10 in. dbh, Callery pear 10 in. dbh, Red cedar 4 in. dbh, and Sassafras 4 in. dbh. Shrubs include: Groundsel tree, Winged sumac, Redbud, Elderberry, and Blackberry. Herbs include: Pokeweed, Southern crownbeard, Small ragweed, Goldenrod, Johnson grass, and Ebony spleenwort fern. Vines include: Japanese honeysuckle and Poison ivy.

University City Boulevard and West Rocky River Road.

A narrow strip of disturbed vegetation occurs at the wedge between the curve on West Rocky River Road and North Tryon Street. Black locust 8 in. dbh dominates, with smaller specimens of Mimosa, Persimmon, Sweetgum and Red cedar. Grounsel tree and Blackberry are the primary shrubs. Herbs include: Goldenrod, Sericea lespedeza, Southern crownbeard, and Gamma grass. Vines are overgrowing the site and include: Virgin's-bower, Frost grape, Japanese honeysuckle, Trumpet creeper and Peppervine.

Vegetation North and South of the Power Substation

The vegetation on the south side of the substation is dominated by: Pecan 48 in. dbh, Yellow poplar 23 in. dbh, and Loblolly pine 15 in. dbh. Shrubs include: Winged sumac, Dogwood, Silky dogwood, Groundsel tree, and Blackberry. Herbs include: Southern crownbeard, Pokeweed and Goldenrod. The primary vine is Japanese honeysuckle.

The vegetation on the north side of the substation has only a few trees including: Loblolly pine 25 in. dbh, Shortleaf pine 13 in. dbh, and Willow oak 12 in. dbh. Shrubs include: Groundsel tree, Blackberry, Red cedar, and Blackberry. Herbs include: Goldenrod, Dog-fennel, and Pokeweed. Vines include: Porcelain-berry, and Trumpet creeper.

North Tryon Street- Entrance to Shopping Center (East side) and City Boulevard Station

The station is sited in the median of North Tryon St., opposite Discount Tire. In addition to Discount Tire, Tire Kingdom and the woodland between the two businesses are located in the area identified for a proposed park-n-ride facility. A deep gully lies just north of Discount Tire, draining toward the road into the shopping center, providing a diversity of habitats in this area. The trees include: One Willow oak beside North Tryon Street 50 in. dbh, along with Southern red oak 38 in. dbh, Sugarberry 30 in. dbh, Green ash 24 in. dbh, Loblolly pine 17 in. dbh, Red cedar 16 in. dbh, Black walnut 13 in. dbh, Red maple 11 in. dbh, Mimosa 10 in. dbh, Black willow 9 in. dbh, Sweetgum 5 in. dbh, Winged elm 4 in. dbh, and Callery pear 3 in. dbh. Shrubs include: Privet, Wax leaf ligustrum, and Blackberry. Herbs are uncommon, but include: Goldenrod and Pokeweed. Vines include: Wisteria, Japanese honeysuckle, Porcelain-berry, Kudzu, Poison ivy and English ivy.

North Tryon Street (West side) across from the Substation and Discount Tire

The vegetation along North Tryon across from the Substation is a narrow strip along a roadside bank. Across from Discount Tire the vegetation surrounds two disturbed, abandoned residential areas. Trees include a planting of Loblolly pines 19 in. dbh, a planting of Pecan trees 15 in. dbh, Black cherry 5 in. dbh, Sweetgum 5 in. dbh, Sugarberry 4 in. dbh, Callery pear 3 in. dbh, and Red cedar 3 in. dbh. Shrubs include: Groundsel tree, Winged elm, and Blackberry. Herbs include Indian hemp, Goldenrod,

Pokeweed, Frost aster, Hyssopleaf eupatorium, Daylily, and Johnson grass. Vines include: Greenbrier and Frost grape.

North Tryon Street to East Harris Boulevard, including the divided Harris/North Tryon Stations

There are no impacts to existing vegetation for the remainder of the ROW to East Harris Boulevard. The stations are separate for the outbound and inbound traffic and are located in the North Tryon Street median.

Carolinas Medical Center to Entrance UNCC Technical Campus, University City Station

The divided station, separate for outbound and inbound traffic, is on the North Tryon Street median on either side of the junction of J.W. Clay Boulevard and North Tryon Street.

The southeast edge of the ROW and vegetation parallel an existing power line ROW. However, just recently a cable was laid along the power line ROW also. With the disturbance of the soil, existing vegetation was removed and what will grow in the spring of 2008 is unknown. Trees along the east edge include: Post oak 30 in. dbh, White ash 18 in. dbh, Red cedar 15 in. dbh, Pignut hickory 12 in. dbh, Virginia pine 8 in. dbh, Sugarberry 6 in. dbh, Willow oak 6 in. dbh, and Winged elm 5 in. dbh. Shrubs are: Groundsel tree and Blackberry. Herbs include: Pokeweed, Goldenrod, Small ragweed, Dock, Bitterweed, Sericea lespedeza, Queen Anne's lace, Indian hemp, and Grass leaved goldenaster. Vines include: Japanese honeysuckle, Trumpet creeper, and Porcelain-berry.

Entrance of UNCC Technical Campus to Veterinary Hospital

The ROW and vegetation parallel an existing power line ROW. However, just recently a cable as laid along the power line ROW also. With the disturbance of the soil, existing vegetation was removed and what will grow in the spring of 2008 is unknown. Abandoned pavement also runs along this portion of the powerline ROW, likely the prior North Tryon Street. Trees along the east edge include: Southern sugar maple, 12 in. dbh, Willow oak 10 in. dbh, Shortleaf pine 10 in. dbh, Red cedar 8 in. dbh, Winged elm 8 in. dbh, American elm 6 in. dbh, Sugarberry 4 in. dbh, Persimmon 4 in. dbh, and White ash 4 in. dbh. Shrubs include: Privet, Blackberry, and Spring silverberry. Herbs include: Sericea lespedeza, Goldenrod, Dog-fennel, Foxtail grass, Love grass, and Nettleleaf noseburn. Vines include Poison ivy, Trumpet creeper, and Greenbrier.

Veterinary Hospital to Mallard Creek

The ROW follows the recent trenching for cable installation, so most of the vegetation near North Tryon Street has been impacted. What will grow in the spring of 2008 is unknown. Only the edge of the bottomland woods will be impacted. Trees include: Sycamore 26 in. dbh, Box elder 16 in. dbh, American elm 4 in. dbh, and Sugarberry 4 in.

dbh. The only shrub is Spring silverberry. Herbs include: Goldenrod, Bearsfoot, Horseweed, Knotweed, Pokeweed, Pigweed, Southern crownbeard, Johnson grass, Foxtail grass, and Japanese stiltgrass. Vines include Kudzu and Japanese honeysuckle.

Mallard Creek to Mallard Creek Church Road

This large area includes the light rail ROW returning from UNCC after crossing Mallard Creek with the park-n-ride area south of the junction of North Tryon Street and Mallard Creek Church Road. There are several open areas overgrown with Kudzu, and Kudzu has climbed into the tops of the trees along North Tryon Street. However the interior of the site, due to the shade, has little Kudzu. The northwest portion of the site, along Mallard Creek and the greenway trail is a bottomland forest dominated by Box elder, Sugarberry and American elm, all up to 10 in. dbh. The ground cover is almost 100% Virginia wild rye. Species occurring along Mallard Creek and the greenway trail include: Pawpaw, Privet, Goldenrod, Common camphorweed, Indian hemp, Cocklebur, Giant and Small ragweed, Southern crownbeard, Japanese stiltgrass, Foxtail grass and Johnson grass. Toward Mallard Creek Church Road, the topography rises from the floodplain and an upland forest is present. Trees include: Yellow poplar 24 in. dbh, Sycamore 16 in. dbh, White oak 15 in. dbh, Sugarberry 14 in. dbh, Honey locust 14 in. dbh, Mockernut hickory 14 in. dbh, Sweetgum 12 in. dbh, Black cherry 12 in. dbh, Pignut hickory 12 in. dbh, Red oak 12 in. dbh, Red cedar 12 in. dbh, Southern sugar maple 10 in. dbh, Sweet pignut hickory 10 in. dbh, Black walnut 10 in. dbh, American elm 8 in. dbh, and Tree of heaven 4 in. dbh. Shrubs include: Spring silverberry, Redbud, Hawthorn, Painted Buckeye, Winged sumac, and Callery pear. Herbaceous cover is not generally well developed in the forest. Vines present along the edge of the woods and in the woods include: Kudzu, Muscadine grape, Japanese honeysuckle, and Passion-flower. A small, potential wetland occurs at the northeast corner of the proposed impact area, at Mallard Creek Church Road. Indicator species include: Swamp rose, Woolgrass bulrush, Soft rush, Sedges, Frost aster, Tearthumb knotweed, Bushy broomstraw, and Wood reed grass.

UNCC Option Loop and UNCC Station

The UNCC loop exits to the southeast at North Tryon Street and Grove Lake Drive. Almost all of this loop passes through secondary growth hardwood, or mixed hardwood/pine forest. It crosses Toby and Mallard Creeks.

The upland forest from North Tryon Street to the Toby Creek floodplain consists of medium aged trees, undergoing succession from previous agricultural use. The trees consist of: White ash 25 in. dbh, Shortleaf pine 16 in. dbh, Southern sugar maple 14 in. dbh, Sugarberry 14 in. dbh, Red maple 12 in. dbh, Red cedar 12 in. dbh, American elm 12 in. dbh, Scarlet oak 12 in. dbh, Red oak 10 in. dbh, Black walnut 10 in. dbh, Virginia pine 8 in. dbh, Sweetgum 8 in. dbh, and Southern red oak 6 in. dbh. Shrubs include: Southern sugar maple, Wax leaf ligustrum, Spring silverberry, Dogwood, and Red mulberry. The herbaceous cover is non-existent. Vines include: Trumpet creeper, Japanese honeysuckle, Muscadine grape, Greenbrier and Poison ivy.

As the ROW reaches the floodplain of the creek, the vegetation changes. Trees include: Cottonwood 30 in. dbh, Sugarberry 24 in. dbh, Sycamore 18 in. dbh, Sweetgum 14 in. dbh, Yellow poplar 12 in. dbh, American elm 10 in. dbh, and Black cherry 8 in. dbh. Shrubs include: Pawpaw and Box elder. Herbs include: Avens, Southern crownbeard, False nettle, Jumpseed, Japanese stiltgrass, Wood reed grass, and Virginia wild rye grass.

Crossing Toby Creek and the sewer line parallel to the creek, the floodplain forest is not as wide and is more disturbed, consisting of: Yellow poplar 40 in. dbh, Green ash 14 in. dbh, Southern red oak 14 in. dbh, Shortleaf pine 12 in. dbh, Sycamore 10 in. dbh, Red mulberry 10 in. dbh, Box elder 10 in. dbh, Red cedar 10 in. dbh, Ironwood 8 in. dbh, Black willow 6 in. dbh, Beech 6 in. dbh, and Dogwood 6 in. dbh. The shrubs consist of Spring silverberry, Redbud, Silky dogwood and Privet. Herbs consist of False nettle, Clearweed, Leafy Elephant's-foot, Skullcap, Agrimony, Lovage, Virginia wild rye grass, Japanese stiltgrass, Wood reed grass, Christmas fern and Grape fern. Near Cameron Blvd. a small wetland has developed as a result of storm water drainage. Species include: Soft rush, Camphorweed, Sedges, Monkey-flower, and Knotweed. Turning northeast the ROW passes through a disturbed bottomland forest consisting of: Yellow poplar 33 in. dbh, Red mulberry 19 in. dbh, Shortleaf pine 18 in. dbh, Willow oak 18 in. dbh, Sweetgum 16 in. dbh, Sycamore 10 in. dbh, Honey locust 10 in. dbh, Dogwood 6 in. dbh, Ironwood 4 in. dbh, and Southern sugar maple 4 in. dbh. Shrubs include: Spring silverberry and Black haw. Herbs include: Brasilian vervain, Dog-fennel and Sericea lespedeza. Japanese honeysuckle is present as a vine.

The proposed University Station is sited in the forest beside Cameron Blvd. The trees are: Sweetgum 30 in. dbh, Yellow poplar 28 in. dbh, Shortleaf pine 12 in. dbh, American elm 10 in. dbh, Southern sugar maple 6 in. dbh, Red mulberry 6 in. dbh, Red cedar 4 in. dbh, Red maple 4 in. dbh, Beech 3 in. dbh, with sapling Green ash. Shrubs include: Pawpaw, Privet, Redbud, Dogwood, Spring silverberry and Wax myrtle. Herbs include: Sericea lespedeza, Basket grass, Japanese stiltgrass and Christmas fern. Poison ivy is present as a vine.

The ROW then passes through Parking Lot #25 and turns north into a hardwood forest, following the side of the slope down to the floodplain of Mallard Creek. The upland trees include: Sweet pignut hickory 24 in. dbh, Pignut hickory 18 in. dbh, White oak 18 in. dbh, Red oak 18 in. dbh, Shortleaf pine 15 in. dbh, Beech 10 in. dbh, Shagbark hickory 10 in. dbh, Southern sugar maple 10 in. dbh, Sweetgum 8 in. dbh, Red cedar 8 in. dbh, and Ironwood 4 in. dbh. Shrubs include: Spring silverberry, and Strawberry bush. Bottlebrush grass is the primary herb. Muscadine grape is the main vine.

The floodplain is primarily dominated by Green ash 26 in. dbh, but with American elm 40 in. dbh, Sugarberry 24 in. dbh, Sycamore 18 in. dbh, Black walnut 18 in. dbh, Red maple 12 in. dbh, and Black willow 8 in. dbh. The shrubs include: Privet, Pawpaw, Red mulberry and Bladdernut. The herbaceous cover is highly diversified, including: Cardinal flower, Knotweed, False nettle, Hedge hyssop, Jumpseed, Virginia bugleweed, Bearsfoot, Japanese stiltgrass, Sedges, River oats grass, Virginia wild rye grass, Wood

reed grass, and Eastern mannagrass. Vines include Japanese honeysuckle, Cross-vine and Trumpet creeper.

After crossing Mallard Creek, the ROW immediately crosses the greenway path and continues northwest through the woods designated as the park-n-ride lot to serve the Mallard Creek Church Road Station. The trees in the ROW include: White oak 24 in. dbh, Red oak 18 in. dbh, Sycamore 16 in. dbh, Pignut hickory 15 in. dbh, Scarlet oak 12 in. dbh, Southern sugar maple 12 in. dbh, Red cedar 12 in. dbh, Shagbark hickory 10 in. dbh, and Black cherry 8 in. dbh. Shrubs include Spring silverberry. Kudzu is the dominant vine out to North Tryon Street where the ROW turns north, paralleling the southeast side of the street, where it crosses Mallard Creek Church Road, and passes through a service station lot.

Mallard Creek Church Station

The Mallard Creek Church Station is sited in the middle of North Tryon Street, just southwest of Mallard Creek Church Road. The park-n-ride area is described in more detail in the last paragraph of the above section.

UNCC Loop from Mallard Creek Church Road to Terminus at Morningstar Place Drive

After crossing Mallard Creek Church Road, the UNCC Loop passes through the parking lot of the service station and continues along the southeast side of North Tryon Street to the terminus just past the junction of Morningstar Place Drive with North Tryon Street.

The proposed ROW along this southeast side of North Tryon Street is a disturbed, urban open area and scattered trees, but no forest. There is a power line ROW and a cable ROW along this same corridor. Trees noted along the ROW include: Willow oak 38 in. dbh, Sycamore 25 in. dbh, Cottonwood 20 in. dbh, Green ash 16 in. dbh, Black walnut 16 in. dbh, Sugarberry 12 in. dbh, Yellow poplar 8 in. dbh, Box elder 8 in. dbh, Sweetgum 6 in. dbh, Black willow 6 in. dbh. and Southern sugar maple 4 in. dbh, and Winged elm 4 in. dbh. Shrubs include Groundsel tree, Winged sumac, Blackberry, Multiflora rose, and Silky dogwood. The herbaceous list is diverse due to the sunny conditions and include: Goldenrod, Dog-fennel, Hyssopleaf eupatorium, Horseweed, Indian hemp, Rabbit tobacco, Pokeweed, Tearthumb knotweed, Small ragweed, Bearsfoot, Teasel, Johnson grass, Gamma grass, Basket grass, Foxtail grass, Sedges, and Cattail. Vines include: Japanese honeysuckle, Kudzu, Coralbeads, Trumpet creeper, Climbing hempweed, and Poison ivy.

Two groups of trees occur at Morningstar Place Drive. One small clump on the southwest side of the intersection is associated with a drainage ditch from North Tryon Street. The trees include: Cottonwood 8 in. dbh, Black willow 4 in. dbh, Red maple 3 in. dbh, and Sugarberry 3 in. dbh. The shrubs include: Groundsel tree, Winged sumac, Silky dogwood, Elderberry, and Blackberry. Herbs include: Japanese stiltgrass, Goldenrod, Dog-fennel, and Poke weed. Vines include Climbing hempweed and Japanese honeysuckle.

The larger group of vegetation to the northeast has a wetland along the southwest portion, but most of the vegetation is upland. The upland trees include: Winged elm 18 in. dbh, Loblolly pine 14 in. dbh, Sweetgum 10 in. dbh, Red cedar 10 in. dbh, Box elder 6 in. dbh, Black cherry 6 in. dbh, Black willow 6 in. dbh, and Persimmon 5 in. dbh. Shrubs include: Winged sumac, Autumn silverberry, and Blackberry. Herbs include: Japanese stiltgrass, Virginia wild rye grass and Ebony spleenwort fern. Vines include: Poison ivy, and Japanese honeysuckle.

Both of the above described groups of vegetation are located within the proposed ROW, from North Tryon Street to Morningstar Place Drive.

North Tryon Street Option, Mallard Creek Church Road Station at Mallard Creek Church Road/ Merger with UNCC Loop to I-485.

The North Tryon Street option from the junction with Grove Lake Drive., where the UNCC Loop departs, continues to Mallard Creek Church Road in the middle of the road. Mallard Creek Church Station is in the middle of North Tryon Street. The ROW crosses the road and continues northeast until it veers to the southeast side of North Tryon Street and merges with UNCC Loop Option at Morningstar Place Drive. The ROW then continues northeast along the North Tryon Street ROW to I-485. Just before I-485 is a small group of trees on the southwest side of the interchange. Planted trees include Loblolly pine 8 in. dbh, Yellow poplar 8 in. dbh, Mountain-ash 7 in. dbh, with invasive Sweetgum 6 in. dbh and Callery pear. Shrubs include: Groundsel tree, Red cedar, Winged elm, Winged sumac, Red mulberry and planted Red osier dogwood. Herbs include: Brasilian vervain, Golden aster, Sericea lespedeza, and Carolina birdfoot-trefoil.

I-485 to Terminus, including I-485/North Tryon Street Station

Crossing I-485 there is a plantation of Yellow poplar 8 in. dbh, Loblolly pine 8 in. dbh, and variegated Privet along the southeast side of North Tryon Street.

The ROW continues across the entrance to the theaters, crosses Pavilion Boulevard and passes through a newly built CVS drugstore/parking lot on the northeast corner of the intersection. The I-485/North Tryon Street Station is proposed for the site of the drugstore, now a paved and developed parcel. The ROW continues northeast along North Tryon Street through disturbed woodlands along the road. Trees include: Shortleaf pine 14 in. dbh, Southern red oak 14 in. dbh, Sweetgum 12 in. dbh, Willow oak 10 in. dbh, Red cedar 10 in. dbh, Blackjack oak 10 in. dbh, Winged elm 8 in. dbh, and Southern sugar maple 3 in. dbh. Shrubs include: Grounsel tree and Spring silverberry. Herbs include: Goldenrod, Sericea lespedeza, Butterfly-weed, Squarrose blazing-star, Small ragweed, Southern crownbeard, Beggar tick, Hyssopleaf eupatorium, Bushy broomstraw, Carolina birdfoot-trefoil, Basket grass, Indian grass, Japanese stiltgrass, and Three awn grass. Vines include: Trumpet creeper, Japanese honeysuckle, Passion-flower, and Poison ivy. Nearing the terminus, the area becomes covered with Kudzu at the creek.

Summary

One species of concern, listed on the Charlotte East, Derita and Harrisburg USGS quads, from the North Carolina Natural Heritage Program was found. Carolina birdfoot-trefoil (*Lotus helleri*), was found in three areas. One is just east of Sugar Creek Rd. on the abandoned siding tracks, consisting of 58 plants. Two other sites, consisting of one plant each were along the proposed ROW adjacent to and southwest of I-485 and northeast of Pavilion Drive (and drug store). This species is listed by the NC Heritage Program as Significantly Rare for the State and as a Federal Species of Concern for the US Fish and Wildlife Service, but has no legal protection. This species is fairly common in the southern Piedmont of North Carolina. The NC Natural Heritage Program was furnished data on the locations of these populations by CATS.

Four creek crossings are involved in the proposed ROW variations:

1. Little Sugar Creek at N. Brevard St.
2. Toby Creek on the UNCC Loop.
3. Mallard Creek on the UNCC Loop.
4. An unnamed tributary to Mallard Creek at the junction of Heritage Pointe Road with North Tryon Street (Northeast of Mallard Creek Church Road).

The only species of mollusk listed on the three USGS quads with a current report is the Carolina Creekshell, *Villosa vaughaniana*. It has been designated by the State as Endangered and by the USFWS as a Federal Species of Concern. At the time of the field survey the water in the creeks was very low. No shells were evident during the survey. An inquiry to the North Carolina Natural Heritage Program regarding specific record sites for this species from Little Sugar, Toby and Mallard Creeks yielded the following information. There are no records for this species from Little Sugar Creek, an urban stream (East Charlotte USGS quad), which coincides with the Heritage Program's published data. There are no records for this species in the Toby Creek drainage, Harrisburg USGS quad. There are no records for this species in Mallard Creek, Harrisburg USGS quad, on the UNC Charlotte campus (area of potential impact). There are current records for this species from Mallard Creek upstream in the Derita USGS quad. Records for *Villosa vaughaniana* from the Harrisburg USGS quad are from Back Creek. With the current interest in populations of mollusks a survey for mollusks in the areas of impact may be necessary.

None of the plant communities listed as of concern for the three USGS Quads was present in the project area.

There are no recommendations regarding the project for plant communities or plant species of concern.

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Table 1 – Common and Scientific Names

TREES

American elm	*Ulmus americana*
Beech	*Fagus grandifolia*
Black cherry	*Prunus serotina*
Blackjack oak	*Quercus marilandica*
Black gum	*Nyssa sylvatica*
Black locust	*Robinia pseudo-acacia*
Black walnut	*Juglans nigra*
Black willow	*Salix nigra*
Box elder	*Acer negundo*
Callery pear	*Pyrus calleryana*
China-berry	*Melia azedarach*
Chinese parasol tree	*Firmiana simplex*
Cottonwood	Populus deltoides
Dogwood	*Cornus florida*
Green ash	*Fraxinus pennsylvanica*
Honey locust	*Gleditsia triacanthos*
Ironwood	*Carpinus caroliniana*
Loblolly pine	*Pinus taeda*
Magnolia	*Magnolia grandiflora*
Mimosa	*Albizia julibrissin*
Mockernut hickory	*Carya alba*
Mountain ash	*Sorbus americana*
Paper mulberry	*Broussonetia papyrifera*
Peach	*Prunus persica*
Pecan	*Carya illinoensis*
Persimmon	*Diospyros virginiana*
Pignut hickory	*Carya glabra*
Post oak	*Quercus stellata*
Princess tree	*Paulownia tomentosa*
Red cedar	*Juniperus virginiana*
Red maple	*Acer rubrum*
Red mulberry	*Morus rubra*
Red oak	*Quercus rubra*
Sassafras	*Sassafras albidum*
Scarlet oak	*Quercus coccinea*
Shagbark hickory	*Carya ovata*
Shortleaf pine	*Pinus echinata*
Silver maple	*Acer saccharinum*
Southern red oak	*Quercus falcata*
Southern sugar maple	*Acer barbatum*
Sugarberry	*Celtis laevigata*
Sweetgum	*Liquidambar styraciflua*
Sweet pignut hickory	*Carya ovalis*

Sycamore	*Platanus occidentalis*
Tag alder	*Alnus serrulata*
Tree of heaven	*Ailanthus altissima*
Virginia pine	*Pinus virginiana*
White ash	*Fraxinus americana*
White oak	*Quercus alba*
Willow oak	*Quercus phellos*
Winged elm	*Ulmus alata*
Yellow poplar	*Liriodendron tulipifera*

SHRUBS
(Sapling trees may function as shrubs and may be listed above if so)

Autumn silverberry	*Elaeagnus pungens*
Blackberry	*Rubus* spp.
Black haw	*Vibrunum prunifolium*
Bladdernut	*Staphylea trifolia*
Burford holly	*Ilex* spp.
Bush honeysuckle	*Lonicera maackii*
Cherry laurel	*Prunus caroliniana*
Chickasaw plum	*Prunus angustifolia*
Elderberry	*Sambucus canadensis*
Giant cane	*Arundinaria gigantea*
Groundsel tree	*Baccharis halimifolia*
Hawthorne	*Crataegus* spp.
Multiflora rose	*Rosa multiflora*
Painted buckeye	*Aesculus sylvatica*
Pawpaw	*Asimina triloba*
Possum haw	*Ilex decidua*
Privet	*Ligustrum sinense*
Pyracantha	*Pyracantha koidzumii*
Redbud	*Cercis canadensis*
Red chokeberry	*Aronia arbutifolia*
Red osier dogwood	*Cornus sericea*
Silky dogwood	*Cornus amomum*
Smooth sumac	*Rhus glabra*
Spiraea	*Spiraea japonica*
Spring silverberry	*Elaeagnus umbellata*
Strawberry bush	*Euonymous americanus*
Swamp rose	*Rosa palustris*
Trifoliate orange	*Poncirus trifoliata*
Wax leaf ligustrum	*Ligustrum japonicum*
Wax myrtle	*Morella cerifera*
Winged sumac	*Rhus copallina*

HERBS

Agrimony	*Agrimonia pubescens*
Arrowhead	*Sagittaria latifolia*
Avens	*Geum canadense*
Basket grass	*Arthraxon hispidus*
Bearsfoot	*Smallanthus uvedalius*
Beggar ticks	*Bidens bipinnata*
Bermuda grass	*Cynodon dactylon*
Bitterweed	*Helenium amarum*
Bottlebrush grass	*Elymus hystrix*
Brasilian vervain	*Verbena brasiliensis*
Bushy broomstraw	*Andropogon glomeratus*
Butterfly-weed	*Asclepias tuberosa*
Camphorweed	*Pluchea camphorata*
Cardinal flower	*Lobelia cardinalis*
Carolina birdfoot-trefoil	*Lotus helleri*
Cattails	*Typha latifolia*
Christmas fern	*Polystichum acrostichoides*
Clearweed	*Pilea pumila*
Common camphorweed	*Heterotheca latifolia* var. *latifolia*
Dayflower	*Commelina communis*
Daylily	*Hemerocallis fulva*
Dock	*Rumex obtusifolius*
Dog-fennel	*Eupatorium capillifolium*
Ebony spleenwort fern	*Asplenium platyneuron*
Fireweed	*Erechtites hieracifolia*
Eastern coneflower	*Rudbeckia laciniata*
Eastern mannagrass	*Glyceria septentrionalis*
Eclipta	*Eclipta prostrata*
Evening primrose	*Oenothera biennis*
Everlasting pea	*Lathyrus latifolius*
False nettle	*Boehmeria cylindrica*
Foxtail grass	*Setaria* spp.
Frost aster	*Symphyotrichum pilosum*
Gamma grass	*Tripsacum dactyloides*
Giant ragweed	Ambrosia trifida
Goldenrod	*Solidago* spp.
Grape fern	*Botrychium virginianum*
Grass leaved aster	*Pityopsis graminifolia*
Hedge hyssop	*Gratiola virginiana*
Horseweed	*Conyza canadensis*
Hyssopleaf eupatorium	*Eupatorium hyssopifolium*
Indian hemp	*Apocynum cannabinum*
Japanese stiltgrass	*Microstegium vimineum*

Jerusalem artichoke	*Helianthus tuberosus*
Johnson grass	*Sorghum halepense*
Jumpseed	*Persicaria virginiana*
Knotweed	*Polygonum* spp.
Leafy Elephant's-foot	*Elephantopus carolinianus*
Lovage	*Ligusticum candense*
Love grass	*Eragrostis curvula*
Milkweed	*Asclepias* spp.
Monkey-flower	*Mimulus ringens*
Nettleleaf noseburn	*Tragia urticifolia*
Partridge-pea	*Chamaecrista fasciculata*
Pigweed	*Chenopodum album*
Pokeweed	*Phytolacca americana*
Plume grass	*Erianthus contortus*
Purpletop grass	*Tridens flavus*
Queen Anne's lace	*Daucus carota*
Rabbit tobacco	*Gnaphalium obtusifolium*
Red morning-glory	*Ipomoea coccinea*
River oats grass	*Chasmanthium latifolium*
Sedges	*Carex* spp.
Sicklepod	*Senna obtusifolia*
Skullcap	*Scutellaria integrifolia*
Small ragweed	*Ambrosia artemissifolia*
Soft rush	*Juncus effusus*
Solomon's seal	*Polygonatum biflorum*
Sericea lespedeza	*Lespedeza cuneata*
Small-headed sunflower	*Helianthus microcephalus*
Southern crownbeard	*Verbesina occidentalis*
Squarrose blazing star	*Liatris squarrosa*
Tearthumb knotweed	*Polygonum sagittatum*
Teasel	*Dipsacus fullonum*
Thoroughwort	*Eupatorium serotinum*
Three awn grass	*Aristida oligantha*
Virginia bugleweed	*Lycopus virginicus*
Virginia wild rye grass	*Elymus virginicus*
White sweet clover	*Melilotus alba*
Wild ginger	*Hexastylis arifolia*
Wood reed grass	*Cinna arundinacea*
Wooly mullein	*Verbascum thapsus*
Woolgrass bulrush	*Scirpus cyperinus*

VINES

Bur cucumber	*Sicyos angulatus*
Climbing hempweed	*Mikania scandens*
Coralbeads	*Cocculus carolina*
Cross-vine	*Bignonia capreolata*
English ivy	*Hedera helix*
Frost grape	*Vitis vulpina*
Greenbrier	*Smilax* spp.
Japanese honeysuckle	*Lonicera japonica*
Kudzu	*Pueraria montana* var. *lobata*
Milkweed Vine	*Matalea* spp.
Muscadine grape	*Vitis rotundifolia*
Passion-flower	*Passiflora incarnata*
Peppervine	*Ampelopsis arborea*
Poison ivy	*Toxicodendron radicans*
Porcelian-berry	*Ampelopsis brevipedunculata*
Trumpet creeper	*Campsis radicans*
Virginia creeper	*Parthenocissus quinquefolia*
Virgin's-bower	*Clematis virginiana*
Wisteria	*Wisteria floribunda*