

**PROPOSED RALEIGH UNION STATION – PHASE I
AND ASSOCIATED TRACK IMPROVEMENTS**

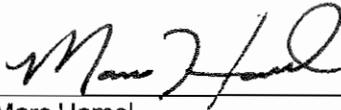
TIP NO. P-5500

Administrative Action: Environmental Assessment & Draft Section 4(f) Evaluation

Submitted Pursuant to the National Environmental Policy Act, 42 U.S.C. 4332 (2)(c)

**United States Department of Transportation
Federal Highway Administration & Federal Railroad Administration
North Carolina Department of Transportation
Rail Division**

3/3/2014
Date



Marc Hamel
Rail Project Development Manager
Rail Division, Planning and Development Branch

03/12/2014
Date



David Valenstein
Chief, Environment and Systems Planning Division
Federal Railroad Administration

The following person may be contacted for additional information concerning this document:

Mr. Marc Hamel
Rail Project Development Manager
North Carolina Department of Transportation
1553 Mail Service Center
Raleigh, NC 27699-1553
(919) 707-4705

Comments on this environmental document must be received by Mr. Marc Hamel, NCDOT Rail Project Development Manager by _____. See contact information above.

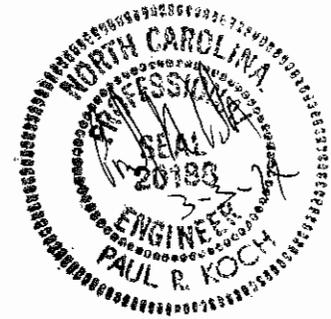
PROPOSED RALEIGH UNION STATION – PHASE I AND ASSOCIATED TRACK IMPROVEMENTS

TIP NO. P-5500

Administrative Action: Environmental Assessment

March 2014

Documentation Prepared by:
Stantec Consulting Services Inc.

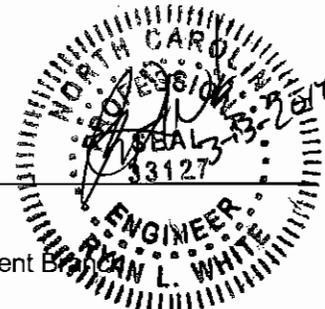


3/3/14
Date

Handwritten signature of Paul R. Koch.

Paul R. Koch, PE, AICP
Project Manager
Stantec Consulting Services Inc.

Documentation Prepared for:
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION, RAIL DIVISION



3/3/2014
Date

Handwritten signature of Ryan White.

Ryan White, PE
Rail Project Development Engineer
Rail Division, Planning and Development B

PROPOSED RALEIGH UNION STATION – PHASE I AND ASSOCIATED TRACK IMPROVEMENTS

TIP NO. P-5500

PROJECT COMMITMENTS

In addition to the Section 404 Permit Conditions, Nationwide Permit Conditions, Regional Conditions, Section 401 Water Certification Conditions, and measures detailed in NCDOT's *Best Management Practices for the Protection of Surface Waters*, the following special commitments have been agreed to by the NCDOT.

The NCDOT Geotechnical Unit will:

- During the right-of-way acquisition phase, conduct detailed geo-environmental evaluation to identify impacts and risk associated with hazardous materials sites in the project study area. For sites directly impacted by the Project, NCDOT will submit a work plan to the NC Department of Natural Resources addressing how hazardous materials will be handled and disposed of.

The NCDOT Rail Division will:

- Per Section 106 of the Historic Preservation Act, NCDOT will develop a Memorandum of Agreement with the Federal Railroad Administration (FRA) and the North Carolina State Historic Preservation Office (NCSHPO) describing the mitigation for the Adverse Effects on the Depot Historic District and the Proposed Boundary Amendment for the Depot Historic District. Upon receiving concurrence from the FRA and SHPO, the MOA will be submitted to the Advisory Council on Historic Preservation.

EXECUTIVE SUMMARY

S.1 DESCRIPTION OF THE PROPOSED ACTION

The North Carolina Department of Transportation (NCDOT) and the City of Raleigh are sponsoring the construction of a new passenger train station in Downtown Raleigh, which will be called Raleigh Union Station, to serve as a multimodal transportation center for NCDOT's state-sponsored Piedmont and Carolinian intercity passenger rail service, Amtrak's Silver Star long distance service, the planned Southeast High Speed Rail (SEHSR) corridor service, a planned Triangle Transit Authority (TTA) commuter service, a proposed TTA light-rail network, and regional and local bus service. This document analyzes the environmental impacts of Raleigh Union Station - Phase 1 (the Project) which includes the following elements: the station building, vehicle and pedestrian access to the station from South West Street, parking at the station, track improvements in the immediate vicinity of the station, a passenger platform, and additional rail siding capacity. Later phases of improvements at the station will be addressed by separate environmental documentation. These later phases include a proposed commuter platform adjacent to the passenger platform, a proposed third platform at the north end of the site and a passenger concourse connecting the station to this third platform. Commuter rail service to the proposed station is not currently funded, thus the commuter platform is not addressed by this document. The third platform is not currently funded, is intended to serve future SEHSR corridor service, and is not addressed by this document, Phase 1 provides independent utility as it will introduce a fully functional train station and immediately replace the operation of the existing Amtrak station. The associated track work and siding expansion included in Phase 1 ensure that operational components support the independent utility of the first phase.

Exhibit 1.1.1 shows the Project vicinity. The proposed station and adjacent track improvements would be located in the southern part of Downtown Raleigh within the "Boylan Wye" track configuration (Exhibit 1.6.1).¹

NCDOT proposes the station building as an adaptive re-use of an existing vacant structure known as the Dillon Supply Company "Viaduct Building," which is located at 510 West Martin Street in Downtown Raleigh. The new station building will include nearly 6,700 square feet of Amtrak passenger service and ticketing operations, a 7,500 square foot passenger waiting area, and over 14,000 square feet of commercial and retail lease space. The use of the Viaduct

¹ The Boylan Wye is the convergence of three rail lines in a triangular configuration

Building as the new station would require re-alignment of several sections of the Boylan Wye rail infrastructure and modifications to the adjacent roadway access at West Martin Street and South West Street. Within the Boylan Wye and adjacent to the Viaduct Building, the proposed Project includes the construction of a parking lot, passenger drop off area, one new intercity passenger rail platform with two dedicated passenger tracks, and an underground concourse connecting the Viaduct Building with the platform(s) for both passengers and baggage.²

In order to accommodate train traffic in the vicinity of the site, the Project includes construction of additional siding capacity. Potential siding sites that were evaluated in this document include the following three locations immediately adjacent to the proposed station:

- **West Prison Siding**: an approximately 800-foot extension of the existing Prison Siding located west of Ashe Avenue, approximately 0.90 miles west of the proposed station;
- **East Prison Siding**: an approximately 1,300-foot extension of the existing Prison Siding located at the proposed station and extending to about 300 feet east of Cabarrus Street;
- **Prison Yard Expansion**: two approximately 1,000-foot siding tracks would be added to the existing Prison Yard area just west of the Boylan Wye;

and the following two offsite locations south of the proposed station:

- **East Raleigh Siding**: a new siding extending approximately 6,600-feet in length, located approximately 2.5 miles south of proposed station, extending under the existing Tryon Road overpass. It would be constructed parallel to the NCRH H-line (Milepost H 84.17 to H85.37).
- **Greenfield Siding**: a new siding extending approximately 7,000-feet in length, located approximately 7.4 miles south of the proposed station at the Greenfield Parkway near the Town of Garner. It would be constructed parallel to the NCRH H-line from east of the I-40 overpass to Auburn road (Milepost H 88 to H90).

The siding locations were evaluated as a solution to replace rail car storage capacity at Cabarrus Yard, an existing freight car storage facility that will be displaced by the Project. The

² North Carolina Department of Transportation Rail Division. 2012. Raleigh Train Station: Feasibility Study for the Adaptive Reuse of the Dillon Viaduct Building, Draft June 2012

intent of the additional siding capacity is also to improve the efficiency of passenger and freight rail operations through the Boylan Wye and in the City of Raleigh. The Project is identified as NCDOT Transportation Improvement Program (TIP) Project P-5500.

S.2 OTHER GOVERNMENTAL ACTIONS REQUIRED

Pursuant to the Clean Water Act (CWA), Section 404 and 401 permits authorize activities from the perspective of the US Army Corps of Engineers (USACE).³ Construction of the Build Alternative would impact “Waters of the United States” as the term is defined in the USACE regulations.⁴ The NCDOT anticipates that impacts to Section 404 jurisdictional areas will likely be authorized under nationwide permitting. Nationwide Permits (NWP) that may apply include a NWP No. 3 for maintenance of currently serviceable structures, NWP No. 14 for linear transportation projects, NWP No. 18 for minor discharges, and NWP No. 33 for temporary construction activities such as stream dewatering, work bridges, or temporary causeways that are often used during bridge construction.⁵ The USACE has the authority to determine what permits will be required to authorize construction of the Project.

In addition to the Section 404 permit, other required authorizations include the corresponding Section 401 Water Quality Certification from the North Carolina Division of Water Quality (NCDWQ). Required 401 certifications may include General Certification (GC) 3883 for maintenance, GC 3886 for linear transportation projects, GC 3890 for minor discharges, and GC 3893 for temporary construction access and dewatering.⁶ Other federal, state, or local permits, approvals, or authorizations may also be required.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, FRA and NCDOT will prepare and submit a Notice of Adverse Effect to the Advisory Council on Historic Preservation (ACHP) due to the adverse effect that the Project will have on the Depot Historic District and the Proposed Boundary Amendment to the Depot Historic District. The Notice of Adverse Effect will notify the ACHP of the adverse effect and describe the Memorandum of Agreement (MOA) that will be prepared and include, at a minimum, the following participants: NCDOT, the FRA, and the NC Historic Preservation Office. The MOA, which will describe minimization and mitigation

³ 16 U.S.C. § 1344

⁴ 33 CFR Part 328

⁵ See 33 CFR Part 330

⁶ Clean Water Act, Section 401

for the impacts to the historic resources, will be included in the subsequent Finding of No Significant Impact (FONSI).

Pursuant to Section 4(f) of the USDOT Act, a Draft Section 4(f) Evaluation is included as part of this Environmental Assessment due to the “use” of property within the Depot Historic District and the Proposed Boundary Amendment to the Depot Historic District. The Draft Section 4(f) Evaluation, which is used to determine that all prudent and feasible alternatives were evaluated and that all possible planning to minimize harm has been undertaken, will be sent to the US Department of Interior for review and comment. A Final Section 4(f) Evaluation will be included in the subsequent FONSI.

S.3 ALTERNATIVES CONSIDERED

No-Build Alternative – The No Build Alternative was considered, but is not the preferred alternative because it does not meet the primary purpose and need for the Project as described in chapter 1 of this Environmental Assessment.

Preliminary Alternatives - Since 1989 the City of Raleigh and the NCDOT have evaluated the possibility of developing a multimodal station in Downtown Raleigh and have documented this evaluation in feasibility studies of potential station sites which are described in section 2 of this EA.

These studies have focused on the immediate vicinity of the Boylan Wye because the convergence of multiple rail lines satisfies the project purpose and need. Specifically the location provides a station that can accommodate current and projected usage. This is the only location in Downtown Raleigh where three freight railroads converge, including: the North Carolina Railroad Company (NCRR), Norfolk Southern Railway (NS), and CSX Transportation (CSXT). At the Boylan Wye, the east-west H-line (currently utilized by NS, CSX, and Amtrak), the north-south lines (with different segments operated by NS and CSX), and the future SEHSR corridor can all be accessed from a single location. Sites outside of this portion of Downtown Raleigh were not considered, as they do not have the capability to directly serve all of these downtown rail corridors in a single location and therefore do not fully meet the purpose and need of the project.

Subsequent feasibility studies evaluated six sites in the immediate vicinity of the Boylan Wye. These sites were compared based on various criteria including: connections among modes, increase transit ridership, minimize travel time, cost effectiveness, traffic and transit operations, railroad operations, site accessibility, accommodation of space, impact on adjoining neighborhoods, and downtown development. The evaluation ranked Site 5 (center of the Boylan Wye) highest among the alternative locations, which is the site of the build alternative considered in this EA.

Build Alternative: Raleigh Station and Associated Sidings – The feasibility requirements for the Raleigh Station site are very specific. The site needs to be located where it makes operational sense from the perspective of accessing existing railroad tracks and also where it can provide adequate available land and optimizes efficiency for railroad operations. Due to these factors, one Build Alternative for the Raleigh Station was evaluated. The Station Build Alternative involves adaptive re-use of the structure known as the Viaduct Building within the Boylan Wye. This location provides the unique elements associated with integrating multiple transportation modes at a single location. In addition to providing the available building and land, it is also very close to the existing Amtrak station, which is located on the south side of the tracks, just east of the proposed site.

In addition to the station site, associated rail sidings are needed to accommodate the operation of freight rail in the vicinity of the station's passenger operations. Three siding options immediately adjacent to the station were evaluated: West Prison Siding, East Prison Siding, and the Prison Yard Expansion. Two off-site siding locations which are south of the proposed station were evaluated: East Raleigh Siding, and Greenfield Siding. From these five adjacent and off-site options, the East Raleigh Siding is recommended as a component of the Build Alternative.

The offsite East Raleigh rail siding combined with the two separate passenger tracks at the Station will allow freight and passenger trains to operate in the Boylan Wye area simultaneously with improved efficiency without negatively impacting each other's operations. The NCDOT Rail Division conducted extensive coordination with the freight Railroads (NCRR, NS, and CSXT) regarding the potential siding options and their operational benefits. NCDOT eliminated from consideration the three siding options immediately adjacent to the proposed station due to their limited capacity. Their elimination also removed concerns with encroachment on the North

Carolina State College Historic District and the Governor Morehead School District. NCDOT also eliminated the offsite Greenfield Siding because they determined that it would conflict with the operations of a proposed NCRR double-track project in the same area.

S.4 SUMMARY OF IMPACTS

Summary descriptions of the anticipated impacts for the Build Alternative are provided in the following section. Table S.1 quantifies the impacts associated with the Build Alternative.

Land Use – The Project is consistent with local land use and local and regional transportation plans. The Project is an integral component of the City’s plans for multi-modal transit accessibility and associated mixed use development. NCDOT has determined that the Project and its purpose are consistent with the urban Project study area.

Farmlands – Due to its urbanized character, the Project study area does not require the submittal of a Farmland Conversion Impact Rating Form, under the Farmland Protection Policy Act (FPPA). Any farmland impacts associated with the proposed Project would be in compliance with the FPPA and do not require further consideration for protection. There are no farmlands within the anticipated limits of the Project study area.

Community Facilities – No schools, parks, recreation areas, churches or emergency services facilities will be impacted by the Project.

Relocations – There are no residential relocations anticipated for this Project. Two business relocations are anticipated due to the footprint of the proposed track work along the west leg of the Boylan Wye.

Indirect and Cumulative Effects (ICEs) – Given the Project’s limited footprint (inside the Boylan Wye for the station, within existing right-of-way for the sidings), its location within an urbanized area, and the presence of growth management regulations, the proposed Project would not notably contribute negative cumulative effects within the Project study area and vicinity. One potential effect is an increased parking demand which may be offset by the City’s current parking study for the immediately adjacent warehouse district.

The Project does, however, contribute to an overall improved multi-modal transportation system in Raleigh, which would result in beneficial effects such as improved air quality and quality of life for City residents. A foreseeable and related project is the City's planned extension of West Street southward across the NCRR railroad corridor to connect with Cabarrus Street. This project is immediately adjacent to the station and will improve downtown connectivity and access to the station, but is not expected to alter local planned growth patterns.

Environmental Justice – There are minority and low income populations within the study area; however, the Project will not physically divide any communities or require any residential relocations. Therefore, the Project would not create direct disproportionate effects to minority or low-income populations. Moreover, the location for the proposed station is surrounded by large concentrations of low-income, transit-dependent populations that could benefit from the Project.

Air Quality – The Project is located within the Raleigh-Durham-Chapel Hill area that was re-designated as a maintenance area for carbon monoxide (CO) on September 18, 1995 and re-designated as a maintenance area for ozone (O3) under the National Ambient Air Quality Standards (NAAQS) eight-hour standard on December 26, 2007. The NCDOT does not anticipate that the Project will create any adverse effects on the air quality of this maintenance area. No substantial impacts to air quality are associated with the Project.

Noise – Noise was evaluated for potential build scenarios based on both the running of freight trains and on train horn noise. The results of the assessment indicate that noise levels associated with running trains would increase by 1 - 3 dBA in four locations and this increase does not meet the criteria for an impact.

Train horn noise impact zones were calculated for the Project. Within the downtown project study area, 23 commercial receptors, 55 residential receptors and one church are located in the Locomotive Warning Horn Impact Zone and 24 commercial receptors are located in the Severe Impact Zone. Horn noise from the existing station will be relocated to the new Station and, as a result, the Project will not provide a reduction in horn noise in the downtown project study area.

The Project includes the grade separation of the East Leg of the Boylan Wye over West Martin Street, resulting in the elimination of one at-grade crossing which will reduce the horn noise due to that crossing. However, as trains approach and depart the new station they are required to

blow their horns, which negates any reduction in horn noise due to the West Martin Street grade separation. The Project will close a private at-grade crossing in the East Raleigh siding, which will provide a horn noise reduction and have a slightly smaller noise impact zone than the existing condition.

Within the Greenfield siding project study area, seven residential receptors (including the William Watts House which is recommended as eligible for the National Register of Historic Places) are located within the Severe Impact Zone and three residential and two commercial receptors are located within the Impact Zone. The results of the assessment for future operations indicate that noise levels will increase by one to three dBA in five locations. This increase meets the criteria for a Minor Impact. It should be noted that these impact zones are a result of the additional twelve intercity and SEHSR passenger trains that will serve Raleigh in the future and not a result of the construction of the Project. Therefore, NCDOT does not recommend mitigation measures as the Project will not significantly change existing travel patterns for trains in the Boylan Wye area. Current train travel patterns are very similar to train travel patterns in the design year.

Vibration – Using FTA procedures, changes in vibration levels were predicted at particular land uses at various distances from the track. The procedure uses the number of predicted passenger and freight trains to determine a distance from the track within which vibration levels may be above an impact threshold. For Category 2 receptors (residences and buildings where people normally sleep) there were 6 receptors located within the impact distance. For Category 3 receptors (institutional uses such as offices, businesses, schools and churches) NCDOT determined that 36 receptors would be within the impact distance. All of the receptors are located within the study area immediately surrounding the station area.

In addition to ground-borne vibration criteria for humans in residential, institutional and special buildings and vibration-sensitive equipment, there are ground-borne vibration criteria for potential damage to structures. The limits of vibration that buildings can withstand are substantially higher than those for humans and sensitive equipment. It is extremely rare for vibration from train operations to cause any sort of building damage, including minor cosmetic damage. The NCDOT does not anticipate that any buildings within the Project vicinity would experience vibration levels capable of producing damage.

Water Quality – The construction of the station would marginally increase the total amount of impervious surface within the Project study area, which would in turn create an increase in stormwater runoff. The increase in stormwater runoff would be limited, however, by the fact that the Project study area is located in an urbanized downtown area with a fairly high amount of existing imperviousness.

Biotic Communities – The study area for the Project has only one community type; maintained/disturbed land. The construction of this Project would impact maintained /disturbed land, primarily involving the clearing of vegetation and earthwork (i.e., the placement of fill material, grading, etc.).

Waters of the United States – The Build Alternative is not anticipated to impact wetlands, but will impact 350 linear feet of jurisdictional streams. Two impacted streams also include vegetated buffers and are subject to the Neuse River Riparian Buffer Rules.

Rare and Protected Species – There are three federally protected species listed for Wake County: Michaux's sumac, dwarf wedgemussel, and red-cockaded woodpecker. Natural resources surveys and research conducted in May and June of 2012 conclude that the Project would have **No Effect** on any of these three species.

Floodplains – There are no flood hazard areas within the Project study area. Therefore, no floodplain impacts are anticipated.

Archaeological and Historic Architectural Resources – There is a remnant Southern Railroad Round House in the station vicinity (Site 31WA1446). The Project footprint will not impact this resource. The State Historic Preservation Office (SHPO) reviewed Project mapping and determined that the site would not be affected by the Project. The SHPO also did not recommend any archaeological investigation of the site associated with this Project. Therefore, there are no effects to archaeological resources associated with this Project.

Architectural historians surveyed the entire Area of Potential Effect (APE) for this Project in March and April of 2012. Following review of the draft survey report by the SHPO, five districts and six individual properties were identified as either currently listed on the National Register of Historic

Places or as eligible for the National Register. FRA and NCDOT determined that the Project would have no effect on nine of the eleven resources, and the SHPO concurred with that determination.

NCDOT and FRA have determined, and the SHPO has concurred that the Project will have an adverse effect to the remaining two resources; the Depot Historic District and its proposed boundary amendment. The Depot Historic District occupies an area west of the center city that served as Raleigh's rail transportation and warehouse zone from the mid-nineteenth century to the 1950s and was listed in the National Register under Criterion A for industry, transportation, and commerce. The historic architecture surveys conducted for this project proposed an expanded Depot Historic District boundary that includes ten resources recommended as eligible. The following paragraphs describe the effects to the Depot Historic District and its proposed boundary amendment.

Depot Historic District: NCRB owns, but NS leases, the H-Line tracks over which passenger trains operate when directly adjacent to and servicing the station (trains entering the station from Capitol Yard also use the west leg of the Boylan Wye, and trains leaving the station for Capitol Yard use the east leg, both of which are owned by CSX). Thus, NS operating rules and policies govern train movements on the H-Line. On December 15, 2011, NS issued a policy statement governing Passenger Station Requirements, including how NS infrastructure is to be used by passenger train operations. The policy requires a 26-foot track center separation between station tracks and freight tracks when passenger service is sharing NS-operated right of way.

This will result in the realignment of the NCRB H-line adjacent to the existing Amtrak Station. This realignment and the requirement to construct a full railroad roadbed section will impact the existing Amtrak Station, platform and canopy. The impacts require the removal of the platform canopy and the demolition of the existing Amtrak Station. The existing Amtrak Station is a contributing element to the Depot Historic District. This impact resulted in an Adverse Effect to the Depot Historic District. Also within the Depot Historic District, the lowering of West Street to provide access to the Raleigh Union Station will result in access changes and impacts to the loading docks of two contributing elements along West Street. However, it was determined by the SHPO that this was not an Adverse Effect on the Depot Historic District.

Proposed Boundary Amendment to the Depot Historic District: The proposed northern-most access to the Raleigh Union Station will require the lowering of West Martin Street. The lowering of West

Martin Street will realign the roadway to pass under the CSXT-owned west-leg of the Boylan Wye. This will require the demolition of the Capital Feed and Grocery Building, which is a contributing element to the Proposed Boundary Amendment to the Depot Historic District

The Project will also result in a Section 4(f) Use of the existing Amtrak Station, the Capital Feed and Grocery Building, and loading docks along West Street. A Draft Section 4(f) Evaluation is included as Section 5 of this EA and will be finalized and included in the subsequent FONSI.

Hazardous Material Sites/Underground Storage Tanks – An NCDOT Geotechnical Engineering Unit screening evaluation identified eight hazardous materials sites that could be affected by the Project and could result in increased costs and future liability. Searches for potential hazardous sites included, but were not limited to, active and abandoned underground storage tanks (UST) sites, hazardous waste sites, regulated landfills, and unregulated dumpsites.

Of the eight sites identified, six are in the station area and two were identified in the East Raleigh siding area. The NCDOT Geotechnical Unit anticipates that all of the identified sites present low geo-environmental impacts to the Project. If the Geotechnical Unit determines that soil disturbing activities will impact the potential hazardous material sites, NCDOT will submit a workplan to NC Department of Natural Resources addressing the handling and disposal of hazardous materials.

Mineral Resources – There are no mineral production operations within the Project study area; therefore, the Project will not impact mining or mineral resources.

Utilities – The Project may require the relocation of existing underground and overhead utilities with the possibility of short-term interruptions to service during construction; however overall impacts to public utilities are anticipated to be low.

Transportation – The Project is intended to directly improve passenger and freight rail operations in the City of Raleigh. In addition, the station is the first phase of a planned multimodal facility that will ultimately provide substantially increased opportunities for local and regional bus, light, commuter, regional, and high speed passenger rail. Station features such as the Public Plaza will

include a separate pedestrian connection to Downtown Raleigh via West Street and West Martin Streets. The effects of the Project on the transportation system are all anticipated to be positive.

Possible Barriers to the Elderly or Handicapped – The purpose of the station is to increase opportunities for passenger rail service, which can reduce automobile dependence for the elderly and handicapped population. The proposed Build Alternative will not divide or isolate neighborhoods or create any physical barriers for pedestrian travel. The Project includes a proposed grade-separated Public Plaza and passenger concourse to facilitate station access as well as level boarding for full passenger train length. All pedestrian-oriented elements of the station will be designed in accordance with the Americans with Disabilities Act of 1990, as amended (ADA) guidelines.⁷ The new high-level platforms will provide level boarding for the full-length of the trains servicing the station. NCDOT anticipates that the Project will reduce barriers to the elderly and handicapped and expand available transportation options

Public Health and Safety – The proposed improvements have relatively minimal direct impact to locations where human activity is present. The NCDOT does not anticipate that the Project will cause substantial adverse effects to air quality or noise. It would not generate substantial hazardous waste and operations would not pose a public health concern. The Project will not substantially alter roadway travel patterns and will not introduce barriers to future bicycle or pedestrian facilities, or to mobility of the elderly or handicapped. The Project will increase opportunities for pedestrian mobility and transit usage. Based on these factors, the Project is not anticipated to have an adverse effect on public health.

Preliminary Cost Estimate – The total estimated cost for the Project is approximately \$73 million. This cost includes approximately \$40 million for construction of the station, \$28 million for trackwork, grade separations and associated roadway improvements, and \$5 million for additional right-of-way acquisition. See page 2-8 for a breakdown of project funding sources.

⁷ Americans with Disabilities Act of 1990

**TABLE S-1
SUMMARY OF IMPACTS FOR THE RECOMMENDED ALTERNATIVE**

Section of EA	Summary of Impacts	Proposed Mitigation
3.1 Land Use	No Impact. The Build Alternative will not have a significant impact on land use or zoning as it will be consistent with existing land use plans and local planning documents.	Not Applicable.
3.2 Farmlands	No Impact. The areas adjacent to the Project area are developed and urban in nature. No land exhibiting the criteria of farmland is present within or adjacent to the Project area.	Not Applicable.
3.3 Section 4(f) Resources	Uses. There are no city, state, or national parks within the Project study area. The Project will not impact any publicly owned recreation area or wildlife refuge. The Project would have an Adverse Effect on the Depot Historic District Proposed and its Boundary Amendment, an eligible historic district subject to Section 4(f) requirements. The project requires removal of the current Amtrak station – a contributing element to the Depot District, and removal of the Capital Feed and Grocery Building - a contributing resource to the Proposed National Register Boundary Amendment for the Depot District.	A Draft Section 4(f) Evaluation is included in this EA, documenting the evaluation of alternatives to the Section 4(f) use. The Final Section 4(f) evaluation will also be included in the FONSI.
3.3 Section 6(f) Resources	No Impact. There are no Section 6(f) resources in the project study area.	Not Applicable.
3.4 Right-of-way and Relocation Impacts	Minor Impact. The Build Alternative will require the relocation of two businesses (affecting 15-25 employees) and no residential relocations. The project will also require right-of-way from approximately 10 parcels adjacent to the station or siding improvements. The closure of the private at-grade crossing on the East Raleigh Siding will result in the acquisition of the parcel isolated by the closure, but no business or residential relocation.	NCDOT will conduct the relocation program in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646) and the North Carolina Relocation Assistance Act (GS 133-5 through 133-18).

**TABLE S-1
SUMMARY OF IMPACTS FOR THE RECOMMENDED ALTERNATIVE**

Section of EA	Summary of Impacts	Proposed Mitigation
<p>3.5 Indirect and Cumulative Effects</p>	<p>Minor Impact. The Project will not introduce any new access, thus the Project is not expected to result in changes to the existing land use patterns within the Project vicinity. Given the Project's location within an urbanized area, and the presence of growth management regulations, the Project will not notably contribute negative cumulative effects within the Project study area and vicinity. The station may create increased demand for parking in the downtown area.</p> <p>The proposed, but currently unfunded, West Street Extension is a reasonably foreseeable project in the immediate area that will also provide mobility benefits in the downtown but is not anticipated to alter growth patterns or create negative cumulative effects. This Project does, however, cumulatively contribute to an improved multi-modal transportation system in Raleigh, which will result in beneficial effects such as additional transportation options, improved air quality, and improved quality of life for City residents.</p>	<p>To evaluate parking demand, the City is conducting a parking study for the downtown warehouse district in the immediate vicinity of the station.</p>
<p>3.6 Environmental Justice</p>	<p>No Impact. No disproportionately high or adverse effects to the identified low-income or minority populations are anticipated. The Build Alternative will not result in the disruption or segmentation of existing communities.</p>	<p>Not Applicable.</p>
<p>3.7 Air Quality</p>	<p>No Impact. This project was compared to a larger-scale rail project for which an Applicability Analysis, as part of the General Conformity process, was conducted. The results of this analysis showed the larger project was below threshold levels and regionally insignificant. By comparison, it is expected that the Raleigh Union Station-Phase I air quality effects will also be below threshold and regionally insignificant.</p>	<p>Not applicable.</p>

**TABLE S-1
SUMMARY OF IMPACTS FOR THE RECOMMENDED ALTERNATIVE**

Section of EA	Summary of Impacts	Proposed Mitigation
<p>3.8 Noise and Vibration</p>	<p>No Impact-Locomotive/Train Noise. The future train operations will result in an increase of 1-3 dBA. This increase range does not meet the criteria for an impact.</p> <p>Minor Impact-Locomotive Warning Noise. Within the Station study area, 23 commercial, 55 residential, and one church receptor are located within the Impact Zone for locomotive warning horn noise and 24 commercial receptors are within the Severe Impact Zone. Within the Greenfield siding Project study area, three residential and two commercial receptors are located within the Impact Zone and seven residential receptors are located within the Severe Zone.</p> <p>Minor Impact-Vibration. NCDOT anticipates that 6 residential receptors and 36 commercial/ institutional receptors will be within vibration impact distances from the track. It should be noted that all of these receptors are located at these distances from the existing track in the no-build condition. Thus, there will be vibration impacts whether the Project is constructed or not.</p>	<p>None is recommended as the Project will not significantly change existing travel patterns for trains in the Boylan Wye area. Current train travel patterns are very similar to train travel patterns in the design year. Also, impacts result from projected additional 12 intercity and SEHSR passenger trains that will serve Raleigh regardless of the construction of the Raleigh Union Station.</p>
<p>3.9 Water Quality</p>	<p>Minor Impact. The Build Alternative will change the total amount of impervious surface in the Project study area, but the increase in stormwater runoff will be limited as the project is in an urbanized area with a high amount of existing imperviousness. Temporary impacts associated with construction stormwater and sedimentation may occur as part of construction activities.</p>	<p>NCDOT will undertake BMPs in accordance with NCDENR DWQ's <i>Design Standards in Sensitive Watersheds and Stormwater Best Management Practices</i>.</p>

**TABLE S-1
SUMMARY OF IMPACTS FOR THE RECOMMENDED ALTERNATIVE**

Section of EA	Summary of Impacts	Proposed Mitigation
3.9 Water Bodies and Waterways	Minor Impact. NCDOT estimates that the Project will impact 350 linear feet of stream due to four culvert extensions required by the East Raleigh Siding. Two of the impacted streams include existing vegetated buffers and are subject to the Neuse River Riparian Buffer Rules.	Proposed Mitigation (Waters of the U.S.) - Mitigation may be provided by the North Carolina Department of Environment and Natural Resources Ecosystem Enhancement Program (EEP). In accordance with the "Memorandum of Agreement Among the North Carolina Department of Transportation, and the U.S. Army Corps of Engineers, Wilmington District" (MOA), July 22, 2003, and amended June 2004 and March 2007, final determinations on compensatory mitigation are made by the USACE and NCDWQ as part of the permitting process. NCDOT is responsible for and commits to undertake any necessary mitigation.
3.9 Wetlands	No Impact. The Project does not impact any of the wetlands in the study area. Therefore, the Project will not have permanent, temporary, secondary, or cumulative wetland impacts.	Not Applicable.
3.9 Threatened and Endangered Species	No Impact. Field surveys found no evidence of federal or state-listed threatened and endangered species within the Project area.	Not Applicable.
3.10 Hydraulic Impacts	No Impact. Sizing of hydraulic structures will ensure adequacy for existing and proposed development and to that upstream water levels are not increased during flood events.	Not Applicable.
3.11 Floodplains	No Impact. The project is not within the 100 year floodplain and will not permanently impact any 100-year floodplains.	Not Applicable.

**TABLE S-1
SUMMARY OF IMPACTS FOR THE RECOMMENDED ALTERNATIVE**

Section of EA	Summary of Impacts	Proposed Mitigation
3.12 Archaeological and Historic Architectural Properties	Adverse Effect. The Project will have an Adverse Effect on the Depot Historic District Proposed and its Proposed Boundary Amendment, an eligible historic district subject to Section 4(f) requirements. The project requires removal of the current Amtrak station – a contributing element to the Depot District, and removal of the Capital Feed and Grocery Building - a contributing resource to the Proposed National Register Boundary Amendment for the Depot District.	In accordance with Section 106 of the NHPA, a Memorandum of Agreement (MOA) among NCDOT, the FRA, the State Historic Preservation Office (SHPO), and the City of Raleigh documenting the evaluation of mitigation for this effect is being developed and will be included in the subsequent Finding of No Significant Impact (FONSI) for this project. FRA will notify the Advisory Council on Historic Preservation of the Adverse Effects.
3.13 Hazardous Materials	Minor Impact. The NCDOT Geotechnical Unit identified six UST sites within the immediate station area and two within the East Raleigh siding area. Two sites in the station area may be impacted and the Geotechnical Unit noted that all of the sites are anticipated to present low geo-environmental impacts to the Project	NCDOT will undertake a more detailed study of the sites identified in the inventory prior to acquisition of right-of-way or construction. For sites directly impacted by the Project, NCDOT will submit a work plan to the NC Department of Natural Resources addressing how hazardous materials will be handled and disposed of.
3.14 Mineral Resources	No Impact. The Project does not pose any impacts to mining or mineral resources.	Not Applicable.
3.15 Use of Energy Resources	No Impact. Construction of the Build Alternative will initially result in a substantial increase of energy. After construction, the Project will result in improved efficiencies for passenger and freight rail operations and provide the opportunity to reduce energy usage by reducing single-passenger vehicle users on the highway.	Not Applicable.
3.16 Visual Impacts	Minor Impact. Given the presence of the existing rail corridor, visual effects of the Build Alternative will primarily be an improvement associated with the up-fit and revitalization of the viaduct building and its immediate surroundings.	Not Applicable.
3.17 Utilities	Minor Impact. The Project may require the relocation of existing underground and overhead utilities with the possibility of short-term interruptions to service during construction; however overall impacts to public utilities are anticipated to be low.	Utilities location and coordination will be conducted during final design and right-of-way acquisition phases.

**TABLE S-1
SUMMARY OF IMPACTS FOR THE RECOMMENDED ALTERNATIVE**

Section of EA	Summary of Impacts	Proposed Mitigation
3.18 Transportation	Positive Impact. The Build Alternative will have a positive impact as the proposed station and associated track construction will directly improve passenger and freight rail operations. Having two passenger platforms will enable the station to accommodate future increases in passenger frequencies. Station features such as the Public Plaza will facilitate safe opportunities for pedestrian transportation in the downtown area.	Not Applicable.
3.19 Possible Barriers to Elderly and Handicapped	No Impact. The station is intended to increase opportunities for passenger rail service, which can reduce automobile dependence for the elderly and handicapped population. The station includes a proposed grade-separated Public Plaza and passenger concourse will be designed in accordance with the Americans with Disabilities Act of 1990, as amended (ADA) guidelines.	Not Applicable.
3.20 Public Health	No Impact. NCDOT does not anticipate any impacts to public health as a result of the Build Alternative. Air Quality evaluation shows the Project to be below air quality thresholds, and the Project is not expected to have major impacts to hazardous materials, wetlands, area streams or waterways.	Not Applicable.
3.20 Public Safety	Minor Impact. The proposed improvements have relatively minimal direct impact to locations where human activity is present. The Project will increase opportunities for pedestrian mobility and transit usage.	NCDOT will incorporate safety and security elements (i.e. security fencing, lighting, and emergency exit stairways) into the proposed station facility.
3.21 Construction Impacts	Minor Impact. Temporary impacts could occur to air quality, water quality, transportation, and wildlife.	NCDOT will utilize Best Management Practices and standard NCDOT procedures during construction.

TABLE OF CONTENTS

SECTION	PAGE
EXECUTIVE SUMMARY	S-1
1.0 PURPOSE AND NEED FOR PROJECT	1-1
1.1 INTRODUCTION	1-1
1.2 PROPOSED ACTION.....	1-2
1.3 SUMMARY OF PROJECT NEED	1-3
1.4 SUMMARY OF PROJECT PURPOSE.....	1-6
1.5 PROJECT SETTING	1-6
1.6 SYSTEM LINKAGE.....	1-8
1.6.1 Existing Rail System	1-8
1.6.2 Existing Road System.....	1-8
1.6.3 Existing Public Transportation System.....	1-9
1.7 SOCIAL AND ECONOMIC CONDITIONS	1-10
1.7.1 Existing Development	1-10
1.7.2 Future Development	1-10
1.8 TRANSPORTATION PLANS.....	1-11
1.8.1 High Speed Rail.....	1-11
1.8.2 Piedmont Improvement Program.....	1-11
1.8.3 NCDOT Projects.....	1-11
1.8.4 Long Range Transportation Plan	1-12
1.8.5 Local Transit	1-12
1.8.6 City of Raleigh Plans.....	1-13
1.8.7 North Carolina Railroad Corridor.....	1-14
1.9 SAFETY	1-14
1.10 SUMMARY	1-15
2.0 ALTERNATIVES	2-1
2.1 NO-BUILD ALTERNATIVE.....	2-1

TABLE OF CONTENTS (cont.)

SECTION	PAGE
2.2 PRELIMINARY BUILD ALTERNATIVES	2-1
2.3 BUILD ALTERNATIVE.....	2-4
2.3.1 Station	2-5
2.3.2 Siding Improvements	2-6
2.4 RECOMMENDED ALTERNATIVE	2-7
2.5 COST ESTIMATES.....	2-8
3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES.....	3-1
3.1 LAND USE.....	3-1
3.1.1 Existing Land Use.....	3-1
3.1.2 Development Trends	3-1
3.1.3 Consistency with Land Use and Transportation Plans.....	3-2
3.2 FARMLANDS	3-3
3.3 SOCIAL ENVIRONMENT	3-3
3.3.1 Population Characteristics	3-3
3.3.2 Employment and Economic Characteristics.....	3-5
3.3.3 Neighborhood and Community Cohesion	3-7
3.3.4 Multimodal Travel Patterns and Accessibility	3-7
3.3.5 Schools.....	3-8
3.3.6 Churches and Cemeteries	3-9
3.3.7 Emergency Services.....	3-9
3.3.8 Businesses	3-9
3.3.9 Section 4(f) and Section 6(f) Properties	3-10
3.4 RIGHT-OF-WAY AND RELOCATION IMPACTS	3-12
3.5 INDIRECT AND CUMULATIVE EFFECTS	3-13
3.6 ENVIRONMENTAL JUSTICE.....	3-15
3.7 AIR QUALITY	3-17

TABLE OF CONTENTS (cont.)

SECTION	PAGE
3.8	NOISE AND VIBRATION ANALYSES 3-23
3.8.1	Locomotive/Train Horn Analysis..... 3-32
3.8.2	Locomotive Warning Horn Noise Analysis 3-33
3.8.3	Vibration Analysis..... 3-39
3.8.4	Construction Noise..... 3-43
3.8.5	Noise and Vibration Analysis Summary 3-43
3.9	NATURAL RESOURCES 3-46
3.9.1	Soils 3-46
3.9.2	Water Resources 3-47
3.9.3	Biotic Resources 3-48
3.9.3.1	Terrestrial Communities 3-48
3.9.3.2	Terrestrial Wildlife..... 3-50
3.9.3.3	Aquatic Communities 3-50
3.9.3.4	Invasive Species 3-51
3.9.4	Jurisdictional Issues 3-51
3.9.4.1	Clean Water Act Waters of the United States..... 3-51
3.9.4.2	Clean Water Act Permits..... 3-53
3.9.4.3	Construction Moratoria 3-54
3.9.4.4	N.C. River Basin Buffer Rules 3-54
3.9.4.5	River and Harbors Act Section 10 Navigable Waters 3-54
3.9.4.6	Wetland and Stream Mitigation 3-54
3.9.4.7	Endangered Species Act Protected Species..... 3-55
3.9.5	Bald Eagle and Golden Eagle Protection Act 3-57
3.9.6	Endangered Species Act Candidate Species..... 3-57
3.10	HYDRAULIC IMPACTS 3-57
3.11	FLOODPLAINS..... 3-57
3.12	ARCHAEOLOGICAL AND HISTORIC ARCHITECTURAL PROPERTIES..... 3-58
3.13	HAZARDOUS MATERIAL SITES AND UNDERGROUND STORAGE TANKS 3-68
3.14	MINERAL RESOURCES 3-69
3.15	ENERGY 3-69
3.16	VISUAL IMPACTS 3-70
3.17	UTILITIES 3-70
3.18	IMPACTS ON TRANSPORTATION..... 3-71

TABLE OF CONTENTS (cont.)

SECTION	PAGE
3.19	POSSIBLE BARRIERS TO THE ELDERLY OR HANDICAPPED 3-71
3.20	PUBLIC HEALTH AND SAFETY 3-71
3.21	CONSTRUCTION IMPACTS..... 3-72
3.21.1	Air Quality 3-72
3.21.2	Noise and Vibration 3-72
3.21.3	Water Quality 3-73
3.21.4	Maintenance of Traffic 3-74
3.21.5	Construction Materials and Waste 3-74
3.21.3	Energy 3-74
3.22	SUMMARY OF IMPACTS 3-75
4.0	COMMENTS AND COORDINATION 4-1
4.1	START OF STUDY LETTER 4-1
4.2	CITIZENS INFORMATIONAL WORKSHOP 4-2
4.3	PROJECT WEBSITE 4-2
4.4	DESIGN WORKSHOPS 4-3
4.5	PUBLIC HEARING..... 4-3
5.0	DRAFT SECTION 4(f) EVALUATION 5-1
5.1	PURPOSE OF SECTION 4(f) EVALUATION 5-1
5.2	APPLICABILITY OF SECTION 106 AND SECTION 4(f) TO THE PROJECT ... 5-3
5.2.1	Section 106 Applicability 5-3
5.2.2	Section 4(F) Applicability 5-4
5.3	DESCRIPTION OF SECTION 4(f) RESOURCES 5-5
5.4	DESCRIPTION OF ALTERNATIVES CONSIDERED 5-9
5.4.1	No-Build Alternative 5-11
5.4.2	Recommended Alternative 5-12
5.4.3	Option N-1 5-13
5.4.4	Option N-2 5-14
5.4.5	Option W-1 5-15
5.4.6	Option S-1 5-15
5.4.7	Option S-2 5-16
5.4.8	Option E-1 5-17

TABLE OF CONTENTS (cont.)

SECTION	PAGE
5.5 DESCRIPTION OF IMPACTS TO 4(f) RESOURCES	5-18
5.5.1 Depot Historic District	5-18
5.5.2 Depot Historic District-Proposed National Register Boundary Amendment.....	5-19
5.5.3 Summary and Mitigation	5-22
5.6 CONCLUSION	5-23
5.7 PUBLIC AND AGENCY COORDINATION	5-23

APPENDICES

- A. COORDINATION
 - A.1 Scoping Letter
 - A.2 Agency Comments
 - A.3 State Historic Preservation Office Concurrence
 - A.4 Public Involvement Materials
 - A.5 NS Station Requirements
- B. NATURAL RESOURCES TECHNICAL REPORT EXHIBITS
- C. RIGHT-OF-WAY ESTIMATE
- D. SOUTHERN RAILWAY TURNTABLE EFFECTS DETERMINATION

FIGURES	PAGE
Figure 3.8.1 Typical A-Weighted Sound Levels.....	3-27
Figure 3.8.2 Typical Ldn's	3-27
Figure 3.8.3 FTA Noise Impact Criteria	3-31
Figure 3.8.4 Increase in Cumulative Noise Levels Allowed by Criteria	3-31
Figure 3.8.5 Typical Levels of Ground-Borne Vibration	3-40
Figure 3.8.6 Generalized Ground Surface Vibration Curves.....	3-42
Figure 5.1.1 Viaduct Building	5-1
Figure 5.1.2 Capital Feed and Grocery Company Building.....	5-1
Figure 5.5.1 Existing Amtrak Station	5-19
Figure 5.5.2 Capital Feed and Grocery Company Building. Looking West Along West Martin Street	5-21
Figure 5.5.3 Swift Meat Company Warehouse, Looking West Along West Martin Street ..	5-21
Figure 5.5.4 Viaduct Building. Looking West Along West Martin Street.....	5-22

TABLE OF CONTENTS (cont.)

EXHIBITS	PAGE
Exhibit 1.1.1	Project Vicinity Map.....1-17
Exhibit 1.6.1	Rail Lines in Raleigh Station Vicinity1-19
Exhibit 1.6.2	Existing Transportation Facilities in the Vicinity of the Study Area.....1-21
Exhibit 1.7.1	Total Build-Out Scenario for Union Station.....1-23
Exhibit 1.8.1	Proposed Southeast High Speed Rail (SEHSR) Corridor1-23
Exhibit 1.8.2	Proposed Light Rail Stations in the Enhanced Transit Plan1-25
Exhibit 2.2.1	Preliminary Station Alternatives Map.....2-11
Exhibit 2.3.1	Site Concept Layout Map2-13
Exhibit 2.3.2	Station Schematic2-15
Exhibit 2.3.3	East Raleigh Rail Siding.....2-17
Exhibit 2.3.4	Greenfield Rail Siding2-19
Exhibit 2.4.1	Build Alternative Map2-21
Exhibit 3.1.1a	Existing Land Use Map Raleigh Station3-83
Exhibit 3.1.1b	Existing Land Use Map East Raleigh Siding3-85
Exhibit 3.1.1c	Existing Land Use Map Greenfield Siding3-87
Exhibit 3.1.2a	Zoning Map Raleigh Station3-89
Exhibit 3.1.2b	Zoning Map East Raleigh Siding3-91
Exhibit 3.1.2c	Zoning Map Greenfield Siding.....3-93
Exhibit 3.3a	Community Resources Map Raleigh Station3-95
Exhibit 3.3b	Community Resources Map East Raleigh Siding3-97
Exhibit 3.3c	Community Resources Map Greenfield Siding3-99
Exhibit 3.4.1	Raleigh Union Station SEHSR Impact Areas.....3-101
Exhibit 3.8.1	Railroad Lines and At-Grade Crossings Downtown.....3-103
Exhibit 3.8.2	Railroad Lines and At-Grade Crossings Greenfield Siding3-105
Exhibit 3.8.3	Noise Level Measurement Locations Downtown3-107
Exhibit 3.8.4	Noise Level Measurement Locations Greenfield Siding3-109
Exhibit 3.8.5	Locomotive Warning Horn Impact Zones Downtown3-111
Exhibit 3.8.6	Locomotive Warning Horn Impact Areas Greenfield Siding3-113
Exhibit 3.11.1	Floodplain Map East Raleigh Siding.....3-115
Exhibit 3.12.1a	Historic Properties Raleigh Station.....3-117
Exhibit 3.12.1b	Historic Properties East Raleigh Siding.....3-119
Exhibit 3.12.1c	Historic Properties Greenfield Siding.....3-121
Exhibit 3.13.1a	Potential Hazardous Materials Sites Map Raleigh Station.....3-123
Exhibit 3.13.1b	Potential Hazardous Materials Sites Map East Raleigh Siding3-125
Exhibit 3.17.1a	Public Utilities Map Raleigh Station3-127
Exhibit 3.17.1b	Public Utilities Map East Raleigh Siding3-129
Exhibit 3.17.1c	Public Utilities Map Greenfield Siding.....3-131
Exhibit 5.1	Depot Historic District Site Plan Within Area of Proposed Expansion5-25
Exhibit 5.2a-f	Section 4(f) Avoidance Options.....5-27

TABLE OF CONTENTS (cont.)

TABLES	PAGE
Table S.1	Summary of Impacts for the Recommended Alternative..... S-13
Table 1.3.1	Amtrak Boardings and Alightings in the Southeast 20111-4
Table 1.3.2	Projected Increases in Amtrak Ridership.....1-4
Table 2.6.1	Build Alternative Cost Estimates2-8
Table 3.3.1	Population Trends.....3-4
Table 3.3.2	Racial Characteristics3-4
Table 3.3.3	Age Characteristics.....3-5
Table 3.3.4	Occupational Data3-6
Table 3.3.5	Economic and Demographic Data.....3-7
Table 3.4.1	Relocations Associated with the Build Alternative3-12
Table 3.7.1	De Minimis Emission Levels.....3-20
Table 3.7.2	Summary of Construction Phase Emissions for Haydock to Junker Rail Project3-22
Table 3.7.3	Ratio of Construction Phase Emissions from Haydock to Junker Compared to the Raleigh Union Station – Phase I Project3-22
Table 3.8.1	Existing At-Grade Road Crossings.....3-24
Table 3.8.2	Existing Conditions for Rail Lines.....3-25
Table 3.8.3	Proposed Conditions for Rail Lines3-26
Table 3.8.4	Land Use Categories and Metrics for Transit Noise Impact Criteria3-28
Table 3.8.5	FTA Noise Impact Criteria3-29
Table 3.8.6	Locomotive/Train Noise Impact Table3-33
Table 3.8.7	Locomotive Warning Horn Assumptions Used3-36
Table 3.8.8	Horn Impact Distances at At-Grade Crossings.....3-38
Table 3.8.9	Horn Impact Distances at Raleigh Union Station Platform.....3-38
Table 3.8.10	Ground-Borne Vibration (Gbv) And Ground-Borne Noise (Gbn) Impact Criteria for General Assessment.....3-41
Table 3.8.11	Construction Vibration Damage Criteria3-43
Table 3.9.1	Soil Series in the Study Area.....3-47
Table 3.9.2	Jurisdictional Streams in the Study Area.....3-48
Table 3.9.3	Physical Characteristics of Streams in the Study Area3-48
Table 3.9.4	Coverage and Impacts to Terrestrial Communities in the Study Area.....3-49
Table 3.9.5	Jurisdictional Characteristics and Impacts for Streams in the Study Area3-52
Table 3.9.6	Jurisdictional Characteristics and Impacts for Wetlands in the Study Area...3-53
Table 3.9.7	Federally Protected Species Listed for Wake County.....3-55
Table 3.12.1	Effects to Historic Places3-61
Table 3.22.1	Summary of Impacts for the Preliminary Build Alternatives3-76
Table 3.22.2	Summary of Impacts for the Recommended Alternative.....3-77

1.0 PURPOSE AND NEED FOR PROJECT

1.1 INTRODUCTION

The North Carolina Department of Transportation (NCDOT) and the City of Raleigh are sponsoring the construction of a new passenger train station in Downtown Raleigh, which will be called Raleigh Union Station, to serve as a multimodal transportation center for NCDOT's state-sponsored Piedmont and Carolinian intercity passenger rail service, Amtrak's Silver Star long distance service, the planned Southeast High Speed Rail (SEHSR) corridor service, a planned Triangle Transit Authority (TTA) commuter service, a proposed TTA light-rail network, and regional and local bus service. This document analyzes the environmental impacts of Raleigh Union Station - Phase 1 (the Project) which includes the following elements: the station building, vehicle and pedestrian access to the station from South West Street, parking at the station, track improvements in the immediate vicinity of the station, a passenger platform, and additional rail siding capacity. Later phases of improvements at the station will be addressed by separate environmental documentation. These later phases include a proposed commuter platform adjacent to the passenger platform, a proposed third platform at the north end of the site and a passenger concourse connecting the station to this third platform. Commuter rail service to the proposed Raleigh Union Station is not currently funded, thus the commuter platform is not addressed by this document. The third platform is not currently funded, is intended to serve future SEHSR corridor service, and is not addressed by this document, Phase 1 provides independent utility as it will introduce a fully functional train station and immediately replace the operation of the existing Amtrak station. The associated track work and siding expansion included in Phase 1 ensure that operational components support the independent utility of the first phase. Exhibit 1.1.1 shows the Project vicinity. The proposed Station and adjacent track improvements would be located in the southern part of Downtown Raleigh within the "Boylan Wye" track configuration (Exhibit 1.6.1).⁸ The Project is identified as NCDOT Transportation Improvement Program (TIP) Project P-5500.

This document was prepared in accordance with the National Environmental Policy Act of 1969, as amended (NEPA)⁹. It includes the disclosure of relevant environmental information regarding the Project and is intended for use by both decision-makers and the public. The contents of this statement conform with the Council on Environmental Quality (CEQ) guidelines

⁸ See Note 1.

⁹ 42 U.S.C. § 4321, et seq.

regarding the implementation of NEPA, as well as the Federal Railroad Administration's (FRA) *Procedures for Considering Environmental Impacts*¹⁰ and the Federal Highway Administration's (FHWA) technical advisory, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*.¹¹

The FRA is the lead Federal agency for the environmental review for the Project under the NEPA and NCDOT is the lead State agency. FRA and NCDOT are responsible for preparing the Environmental Assessment (EA).

1.2 PROPOSED ACTION

The proposed action will provide a new train station for Downtown Raleigh. The major components of the station include the station building, boarding platforms, a surface parking lot and other site improvements, dedicated station tracks for passenger trains only, and additional siding capacity.

The City of Raleigh has evaluated various options for a downtown station site, documented in various studies dating back to 1989. Section 2.2 describes that these studies culminated in the identification of a preferred site based on many factors including site feasibility, existing track access, street access, etc. The identified site for the station building is proposed as an adaptive re-use of an existing vacant structure known as the Dillon Supply Company "Viaduct Building", which is located at 510 West Martin Street in Downtown Raleigh. The new station building will include nearly 6,700 square feet of Amtrak passenger service and ticketing operations, a 7,500 square foot passenger waiting area, and over 14,000 square feet of commercial and retail lease space. The use of the Viaduct Building as the new station will require re-alignment of several sections of the Boylan Wye rail infrastructure and modifications to the adjacent roadway access at West Martin Street and South West Street. Within the Boylan Wye and adjacent to the Viaduct Building, the Project includes the construction of a parking lot, including approximately 34 spaces, a passenger drop off area, one new intercity passenger rail platform with two dedicated passenger tracks, and a concourse connecting the station building to the intercity passenger platform.

¹⁰ 64 Federal Register 28545, May 26, 1999

¹¹ <http://environment.fhwa.dot.gov/projdev/impta6640.asp>

The Project also includes the evaluation of new sidings to serve freight traffic that is currently served via the Cabarrus Yard, which is a pair of storage tracks within the Boylan Wye. Potential siding sites that were evaluated in this document include the following three locations immediately adjacent to the proposed Station:

- **West Prison Siding**: an approximately 800-foot extension of the existing Prison Siding located west of Ashe Avenue, approximately 0.90 miles west of the proposed Station;
- **East Prison Siding**: an approximately 1,300-foot extension of the existing Prison Siding located at the proposed Station and extending to about 300 feet east of Cabarrus Street;
- **Prison Yard Expansion**: two approximately 1,000-foot siding tracks would be added to the existing Prison Yard area just west of the Boylan Wye;

and the following two offsite locations south of the proposed Station:

- **East Raleigh Siding**: a new siding extending approximately 6,600-feet in length, located approximately 2.5 miles south of proposed Station, extending under the existing Tryon Road overpass. It would be constructed parallel to the NCRH H-line (Milepost H 84.17 to H85.37).
- **Greenfield Siding**: a new siding extending approximately 7,000-feet in length, located approximately 7.4 miles south of the proposed Station at the Greenfield Parkway near the Town of Garner. It would be constructed parallel to the NCRH H-line from east of the I-40 overpass to Auburn road (Milepost H 88 to H90).

1.3 SUMMARY OF PROJECT NEED

The Southern Railway Company built the current Amtrak station, just a few hundred feet east of the Project site, in 1950, which it served until it relocated its service to the Raleigh Seaboard station, north of Downtown Raleigh, in 1964. Passenger train service returned to the former Southern Railway Station after Amtrak moved from the old Raleigh Seaboard station in 1982. The station currently accommodates eight passenger trains daily, consisting of the New York to Charlotte *Carolinian*, Raleigh to Charlotte *Piedmont* and New York to Miami *Silver Star*. Raleigh has the second highest Amtrak ridership in the Southeastern United States (Table 1.3.1) and the current station is inadequate for the existing and projected usage.

Current consumer demand exerts pressure on the existing Raleigh Amtrak passenger train station, which is outdated, overcrowded, and difficult to access. This existing facility is insufficient to encourage, much less accommodate, future travel demand that will accompany the anticipated ridership growth. The inclusion of the second passenger track will also enable the new station to accommodate future increases in passenger train frequency which will also facilitate increased passenger demand.

**TABLE 1.3.1
AMTRAK BOARDINGS AND
ALIGHTINGS IN THE
SOUTHEAST 2011**

Location	Ridership	Trains
Richmond	320,239	20
Raleigh	192,434	8
Charlotte	181,566	8
Orlando	179,142	4
Alexandria	161,687	20
Atlanta	114,938	2
Miami	94,556	4
Charleston	81,180	4
Jacksonville	74,733	4
Savannah	69,379	6

The following table provides conservative projections for increases in intercity Amtrak ridership under two conditions: 1) “No Build” (should there be no change in the current station and track facilities), and 2) “Build” (should the new station be constructed). Ridership projections are calculated based on historical data with an 18% increase in ridership projected for the first year following the opening of the new Raleigh Union Station. Smaller ridership increases are calculated for subsequent years (5.31% through 2027, and 2.89% thereafter through 2044). Based on these conservative projections, NCDOT and the City of Raleigh expect that by 2044, over 130,000 additional intercity rail passengers per year will use Raleigh Union Station.

**TABLE 1.3.2
PROJECTED INCREASES IN AMTRAK RIDERSHIP**

2011		2044			
		No Build		Build	
Daily Trains	Annual Ridership	Daily Trains	Annual Ridership	Daily Trains	Annual Ridership
8	192,434	12	600,399	12	730,503

NCDOT, Raleigh Train Station Feasibility Study

The current Amtrak station is deficient in three significant ways. First, with a waiting area of only 1,800 square feet, there is insufficient waiting space to accommodate present-day Raleigh ridership, with travelers often forced to wait outdoors. Second, the ground-level platform at the

station is inadequate and unsafe for existing demand, with no space for expansion. For example, the Amtrak Silver Star, which runs between Florida and New York, has to unload passengers in two phases as the length of the train exceeds the length of the passenger boarding platform area. This two-phase passenger loading requires the train to partially board passengers, then pull forwards and stop again, causing additional delay and blocking the Cabarrus Street at-grade crossing. Third, the existing configuration consisting of one platform on the main track would not be able to accommodate the planned increase in daily intercity passenger trains and the introduction of the SEHSR corridor trains that would serve the station in the future. The existing configuration limits the ability to schedule closer arrival/departure times because having the one platform track on the only through track on the North Carolina Railroad (NCRR) H-Line in Raleigh lowers the amount of dwell time available at the station for trains beginning or terminating in Raleigh due to conflicts with freights needing to pass through.

Due to these conditions, the Amtrak station in Downtown Raleigh is functionally obsolete. An expanded station will facilitate and encourage additional ridership and revenue, and support the development of an economic corridor that reaches from Maine to Virginia, to Raleigh and Charlotte in North Carolina, and to Alabama and Florida. Improved amenities and a modernized facility will encourage an increase in discretionary rail travel for business and recreational travelers between cities along the rail corridor.

Current freight rail operations in the Boylan Wye involve both CSX Transportation (CSXT) and Norfolk Southern Railway (NS). CSXT operations are primarily along the CSXT S-line along the west leg of the Boylan Wye. However, CSXT also uses the south and east legs of the Boylan Wye to change directions for ingress/egress to its Raleigh Yard on the S-line, located approximately 1 mile north of the Boylan Wye. NS operations primarily use the west and south legs of the Wye as well as two siding tracks located parallel to the south leg of the Wye, known as Cabarrus Yard. These two siding tracks are used to store freight cars for local industries, allowing the south leg to remain available for through train movements.

The proposed track improvements will enhance freight and passenger train operations by creating tracks that will allow through movements of freight trains to bypass the station when a passenger train is serving or laying over at the station. Currently, when a passenger train is stopped at Raleigh Station, it blocks all other train movements. All trains must hold outside the station to the east or west, waiting for the passenger train to clear the station before proceeding. Improvements to the tracks will also increase the maximum allowable speed and overall

efficiency of operations, saving time in transport of both passengers and freight and contributing to increased profitability.¹²

1.4 SUMMARY OF PROJECT PURPOSE

The purpose of the Project is to provide a station with capacity and facilities consistent with current and projected usage. The purpose of the proposed siding options is to improve operations of passenger and freight rail in the vicinity of the station.

The *Raleigh Train Station: Feasibility Study for the Adaptive Reuse of the Dillon Viaduct Building*¹³ lists five goals for the station:

1. Initiate Raleigh's intermodal transportation center
2. Increase passenger capacity and demand
3. Improve freight operations and velocity
4. Address safety considerations
5. Enhance commerce

1.5 PROJECT SETTING

The Project study area is located along segments of the existing NCR and CSXT right-of-way in Wake County as shown in Exhibit 1.1.1. Because the Project includes a station and associated siding alternatives, the study area is divided into three portions, those being a station study area which includes three siding options immediately adjacent to the station and two siding areas that are not in the immediate vicinity of the station. Each portion of the study area is described below:

- **Station Area** – The proposed train station would be an adaptive reuse of an existing structure, referred to as the “Viaduct Building” located in the center of the Boylan Wye (Exhibit 1.6.1 shows the Boylan Wye which is the convergence of three rail lines in a triangular configuration). The study area for the station is the immediate property containing and adjacent to the Viaduct Building. The study area also includes track segments of NCR/NS and CSXT lines and extends west to include the East and West Prison Siding extensions and the Prison Yard expansion.
- **East Raleigh Siding Area** – The East Raleigh siding option would be constructed parallel to the NCR H-line (stations H84.17 to H85.37) from just north of Tryon Road to Mechanical Boulevard. This option would construct a siding approximately 6,600-foot

¹² TIGER Grant Application IV: www.raleighnc.gov/business/content/PlanUrbanDesign/Articles/Union_Station.html

¹³ See Note 2.

long. It would also require construction of a crash wall where Tryon Road bridges over the railroad.

- **Greenfield Siding Area** – The Greenfield siding option would be constructed parallel to the NCRR H-line (stations H88.6 to H90.1) from just east of I-40 to a point slightly east of the US 70 Business interchange with Greenfield Parkway. This option would construct a siding approximately 7,000-foot long.

According to the City of Raleigh’s Transportation Investment Generating Economic Recovery (TIGER) grant application for Raleigh Union Station Phase I:

“The immediate vicinity of the station area constitutes the south end of Downtown Raleigh. Over the past ten years, Downtown Raleigh has experienced a transformation from a quiet government center to the civic hub of the Raleigh-Durham-Chapel Hill Research Triangle area. The urban core of Raleigh offers a popular destination for culture and dining, surrounded by strong residential neighborhoods. Downtown Raleigh has increasingly become a premier target in the Triangle for corporate investment. Since the adoption of the City’s 2030 Comprehensive Plan¹⁴ in 2009, there has been \$2.5 billion of investment in downtown, of which \$1 billion went towards public projects, such as award winning streetscape projects like Fayetteville Street and City Plaza, new affordable housing developments, the Raleigh Convention Center, and the Wake County Courthouse. The remaining \$1.5 billion came from private development of large-scale office towers like the RBC Headquarters, residential condos and apartments, adaptive reuse projects, retail shop fronts, and new cultural anchors.”¹⁵

“US Census data for Raleigh indicate that for the period of July 2008 to June 2009, in the midst of the deepest economic recession in generations, the Raleigh-Cary Metropolitan Statistical Area (MSA) increased in population by 3.2 percent. This growth rate places the Raleigh MSA third among 366 census-defined areas and first among metropolitan areas of at least 500,000 people. At a regional level, the eight counties surrounding Raleigh are collectively referred to as the Research Triangle, whose name is derived from the Research Triangle Park that is located between Raleigh, Durham, and Chapel Hill. Since 1980, the population in these eight counties has grown by more

¹⁴ City of Raleigh 2009. 2030 Comprehensive Plan. City of Raleigh, North Carolina. Effective November 1, 2009. Accessible at: <http://www.raleighnc.gov/cp>

¹⁵ See Note 12.

than a million, from 758,401 to 1,769,977 (2010 US Census), and is expected to grow by another 69% by the year 2030. The Combined Statistical Area for Raleigh-Durham-Cary is forecasted to reach just over 2.6 million by 2035, an average annual increase of 4.5 percent and total increase of 53 percent in just over twenty years.”¹⁶

“Within walking distance of the planned Raleigh Union Station, Downtown Raleigh functions as the metropolitan center of the eight-county Triangle region. Continued development in the city’s core highlights Downtown Raleigh as the region’s largest employment center. Examples include the Royal Bank of Canada (now PNC Financial), which in 2008 established its US headquarters in Downtown Raleigh in a 33-story, 730,000-square-foot building containing corporate offices, residential units, and retail space. Also in 2008, the Raleigh Convention Center added 500,000 square feet of exhibition and meeting space in the center of the city, contributing to Raleigh’s economic attractiveness and competitiveness.”¹⁷

1.6 SYSTEM LINKAGE

This section discusses the major elements of the transportation system traversing and surrounding the station area.

1.6.1 Existing Rail System

Amtrak intercity passenger rail service currently provides eight daily trips through Raleigh. Additional trips are currently planned by NCDOT and Amtrak to accommodate increasing service demands. The *Piedmont* runs from Raleigh to Charlotte (2 round trips or 4 trains per day); the *Carolinian* runs from Charlotte to New York (1 round trip or 2 trains per day); and the *Silver Star* runs from New York to Miami (1 round trip or 2 trains per day). Other trains passing through the Boylan Wye on a daily basis include freight trains operated by NS and CSXT. Exhibit 1.6.1 shows the rail lines passing through the Boylan Wye.

1.6.2 Existing Road System

The immediate vicinity of the proposed Station is well-served by the existing roadway system as it is located in the southern part of downtown. This area is traversed by a number of streets at the edge of the grid system including Boylan Avenue, Morgan Street, Hargett Street, Cabarrus

¹⁶ See Note 12.

¹⁷ See Note 12.

Street, and South West Street. Major thoroughfares in the near vicinity include Hillsborough Street and Western Boulevard which both run parallel to the rail corridor on the north and south sides, respectively.

The siding locations also have existing major roadways in close proximity. The East Raleigh siding location crosses under the Tryon Road overpass and runs parallel to Garner Road. The Greenfield siding is adjacent to I-40, US 70, and Greenfield Parkway.

1.6.3 Existing Public Transportation System

The Project study area is currently served by Capital Area Transit (CAT) bus stops on Hillsborough, Morgan, Harrington and Hargett Streets and by the free Raleigh Downtown Circulator (R-line) that includes stops along Harrington and Davie Streets. The existing Amtrak station is also located within the study area and has a strong taxi presence, which will be relocated into the new station once construction is complete. Additionally, the existing Greyhound/Trailways Station on Jones Street, which also has a taxi presence, is located within a ¼ mile walking distance of the proposed Station. The Moore Square Station Transit Mall, which is within ½ mile of the study area (see Exhibit 1.6.2), serves as the pulse point for almost all the CAT local and express buses. Most of the bus routes run every 30 minutes during peak hour and hourly during off-peak hours. Moore Square Station also serves TTA regional buses, which provide a limited number of local stops in Downtown Raleigh (i.e. Hillsborough/Glenwood intersection, Hillsborough Street at NCSU, etc.), but are geared toward service to park-and-rides and other regional destinations like Research Triangle Park, Chapel Hill, Durham and Raleigh-Durham International Airport. Americans with Disabilities Act (ADA) services for eligible residents within the study area are provided by Accessible Raleigh Transit (ART) and some eligible clients ride the Wake Coordinated Transportation Service vans.

The City of Raleigh participates in various multimodal planning efforts that are related to or focused on the proposed Station. The City led a three-year effort, completed in 2010, that included significant outreach and coordination with stakeholders including Amtrak, CAT, CSXT, Greyhound, NS, NCRR, NCDOT Rail Division, and TTA. In addition to evaluating a conceptual station location and identifying the spatial needs associated with a regional multimodal transit center, the effort provides a strategy for future development surrounding the station. A primary

goal of the station is to house the platforms for the multiple transit modes in a single facility and to provide easy passenger access between the platforms and the surrounding community.¹⁸

1.7 SOCIAL AND ECONOMIC CONDITIONS

The following sections describe existing and projected social and economic elements of the Project setting.

1.7.1 Existing Development

Today, the historic industrial uses have moved away and most of the old warehouses that are occupied now contain either a variety of low intensity businesses (i.e. furniture stores, woodworking shops) or have been converted to entertainment venues. The most significant warehouse structures are located in the Depot District, which is listed in the National Register of Historic Places and retains a unique build character in Raleigh. There is vibrant residential neighborhood to the west (Boylan Heights). The former residential area on the north is now characterized by low-density businesses. The Project study area is experiencing the expansion of redevelopment from the immediate proximity to the Glenwood South and Historic Depot entertainment districts, and the recently opened Contemporary Art Museum.

1.7.2 Future Development

The station improvements described in this document are the first phase (“Raleigh Union Station Phase 1”) of an ultimate vision for a multi-modal, mixed-use development hub for south Downtown Raleigh, referred to as “Raleigh Union Station”. Development around the proposed Station is ultimately expected to include Transit Oriented Development (TOD), as well as, Transit Adjacent Development – both are mixed-use building typologies that typically feature:

- Public-Private Partnership
- Alternative Financing
- Lower Parking Requirements

The new Raleigh Unified Development Ordinance controls multimodal station area planning under a specific ordinance that guides TOD within the ¼ to ½ mile radius around the station location. The land use review includes the regulatory environment (zoning, development ordinance, and overlays) and the open space and public realm requirements.¹⁹

¹⁸ City of Raleigh: [http://www.raleighnc.gov/business/content/PlanUrbanDesign/Articles/MultimodalPlanning Coordination.html](http://www.raleighnc.gov/business/content/PlanUrbanDesign/Articles/MultimodalPlanning%20Coordination.html)

¹⁹ City of Raleigh: www.raleighnc.gov/urbandesign, TOD presentation, March 17, 2010

The vision for the station area includes loft-office and flex-space (including a variety of commercial types as well as residential uses in live/work arrangements) in low/mid/high-rise developments. Exhibit 1.7.1 shows conceptual build-out land uses associated with the station area.

1.8 TRANSPORTATION PLANS

This section describes planned and programmed improvements to the transportation system in the general vicinity of the proposed action. This includes projects not addressed by this EA, but planned by NCDOT and others.

1.8.1 High Speed Rail

The SEHSR corridor will connect Charlotte with the Northeast Corridor at Washington, D.C. via Raleigh (Exhibit 1.8.1). The proposed Raleigh Union Station is along the Preferred Alternative of the SEHSR corridor determined by the FRA and FHWA in the Record of Decision for the SEHSR Tier 1 Environmental Impact Statement (EIS) completed in 2002. The SEHSR corridor is planned to include eight daily (four round trip) high-speed trains between Charlotte and the Northeast via Raleigh.²⁰ The SEHSR improvements from downtown Raleigh to Richmond, Virginia are currently being evaluated as Tier II EIS/Record of Decision and are currently unfunded. Similarly, the north concourse and SEHSR platform envisioned in the ultimate Raleigh Union Station concept are not included in the Phase 1 project and will be evaluated under future separate document.

1.8.2 Piedmont Improvement Program

The Piedmont Improvement Program (PIP) is a series of capacity improvement, track realignment, station improvement, and safety projects that will facilitate increased passenger rail service along the Raleigh to Charlotte Piedmont Corridor. Upon completion of the PIP projects, the Piedmont Corridor will be able to support the operation of 10 daily (five round-trip) passenger trips between Raleigh and Charlotte. The individual projects which make up the PIP were evaluated as Tier II SEHSR projects. These projects are currently funded and are in various stages of planning, right of way acquisition, or construction.

1.8.3 NCDOT Projects

The NCDOT 2012-2018 TIP includes schedules (planning, design, right-of-way acquisition, and construction) for projects in Wake County. There are no projects listed in the general vicinity of

²⁰ Federal Railroad Administration (FRA). Record of Decision for the Tier I SEHSR Environmental Impact Statement (EIS). <http://www.fra.dot.gov/rpd/freight/1611.shtml>

the Project study area that are anticipated to have any substantial effects on the planning for the Raleigh Union Station – Phase I.

1.8.4 Long Range Transportation Plan

The Capital Area Metropolitan Planning Organization (CAMPO) 2030 Long Range Transportation Plan (LRTP) includes a summary of socio-economic forecasts, travel forecasts, maps and tables showing roadway, transit, and incidental bicycle improvement projects recommended for completion by 2010, 2020, and 2030, and additional detailed information about the socio-economic data and revenue forecasts.²¹ Since the adoption of the CAMPO 2030 Long Range Transportation Plan, many more area specific plans have been developed that encompass this larger Long Range Plan vision. The CAMPO plan does not include any proposed improvements in the immediate vicinity of the Project study area.

1.8.5 Local Transit

The recently completed Wake County Transit Plan (November 2011) provides a cost analysis of the short term transportation vision and a more aggressive enhanced option that will lead the County into a twenty year (i.e. 2030) development commitment.²² The core plan recommends expanding local and commuter bus service and establishing a rush-hour commuter rail service from Garner to Durham, as well as providing amenities such as park-and-ride lots, sidewalks, signage and bus shelters, benches and other structures.

While some cross town routes are recommended, the majority of the service will still be oriented to two downtown terminals – Raleigh Union Station and an improved Moore Square Station. An enhanced transit plan will seek to construct a Light Rail Transit system (e.g. track, stations and parking) from downtown Cary through Downtown Raleigh, up to Millbrook Road. Exhibit 1.8.2 shows the proposed light rail route and stations included in the Wake County Transit Plan.

The proposed TTA Wake County Light Rail Transit (LRT) Corridor begins in west Cary near the Cary Parkway and follows the existing North Carolina Railroad (NCR) corridor to Downtown Raleigh where it turns northward, continuing on the CSX corridor to near Triangle Town Center. An Alternatives Analysis has been completed and filed with the Federal Transit Administration

²¹ CAMPO. The Capital Area Metropolitan Planning Organization (CAMPO) 2030 Long Range Transportation Plan (LRTP)

²² Wake County, 2011. Wake County Transit Plan, DRAFT December 2011. <http://www.wakegov.com/transportation/transitplan.htm>

(FTA), but additional evaluation (scoping) will not begin without a Locally Preferred Alternative decision from the MPOs.²³

1.8.6 City of Raleigh Plans

Raleigh Union Station – Section 1.7.2 discusses the independent utility of the Project. Future phases of the Raleigh Union Station complex include a High Speed Rail platform, additional site improvements to the surface parking, commuter rail platforms along the CSXT S-Line and the NCRH H-Line, and pedestrian access to the commuter rail platforms. Plans for development in subsequent phases include a bus hub for local, regional and commercial buses, expanded parking facilities, accommodations for taxis, rental car accommodations, connections to light rail, and expanded bike facilities. The area can also accommodate private development in a series of mixed-use buildings for residential and office purposes.

West Street Extension – In anticipation of future development associated with the Raleigh Union Station, and to eliminate at-grade railroad crossings, the City of Raleigh proposes to extend South West Street from its current terminus at West Martin Street across the NCRH H-Line to Cabarrus Street. This proposed extension includes a grade-separated crossing with the railroad. The City has evaluated this concept in a *South West Street Extension Alternatives Study*.²⁴ The City of Raleigh is currently preparing an Environmental Assessment (State TIP No. U-5521) to evaluate alternatives and document the evaluation of this proposed extension. The City has not yet identified any construction funding for the West Street Extension.

Bicycle and Pedestrian Plans – The City of Raleigh completed a Bicycle Plan in 2009 that provides details of at least 30 priority bicycle roadway improvements. Many of the priority projects are tangential to the Project study area and are comprised of a proposed combination of methods for incorporating bike and pedestrian facilities. The various proposals for bike lanes include paint-striping, road diets, new construction, sharrows (shared lanes), and shoulder improvements.²⁵ The Raleigh Comprehensive Pedestrian Plan is under way with adoption projected for some time in 2012.

²³ TTA. Website: <http://www.ourtransitfuture.org>

²⁴ City of Raleigh: http://dtraleigh.com/images/transit/Union_Station-West_Street_Extension_Alternatives.pdf

²⁵ City of Raleigh: <http://www.raleighnc.gov/business/content/PWksTranServices/Articles/BicycleProgram.html>

1.8.7 North Carolina Railroad (NCRR) Corridor

The majority of the railroad track in the study area for this Project is within the NCRR corridor. The NCRR corridor is 200 feet wide, 317 miles long and extends from the Morehead City Port to Charlotte. Specific to this Project, the corridor is roughly centered on the existing east-west railroad tracks through the Project study area, with the exception of the NS and CSXT tracks that constitute the east and west legs of the Boylan Wye. The 1849 Charter for the NCRR specified the 200-foot corridor, providing the right to NCRR to use the land within the corridor for railroad uses.²⁶

The NCRR *Raleigh East 2nd Main Track Feasibility Study* was completed in March 2013.²⁷ The study examined the feasibility of constructing a second main track along the NCRR from MP H.81.2 (control point “Hunt” at the southeast corner of the Boylan Wye) to MP H-84.85. The report found that the construction of a second mainline track from Downtown Raleigh to MP H-84.85 was feasible but provided no timeline for the construction of the track.

1.9 SAFETY

Several elements of the Project will contribute to improving general safety. Examples of the Project’s safety features include:

- Vehicle access to the station will be via new grade-separations of the east leg of the Boylan Wye from South West Street. A passenger access for pedestrians and vehicles extends from South West Street at West Martin Street adjacent to the public plaza and second vehicle access is proposed from South West Street at the south end of the station site.
- Passenger access to the platform will be via an enclosed concourse that loops around the parking area and gradually goes below ground to provide grade-separated access to the center island platform.
- This Project will add electro-mechanical traffic controls and dispatching to a presently uncontrolled, or “dark”, section of track along the east leg of the Boylan Wye. (Operating in “dark” territory can be more hazardous than in signalized territory.)
- As a result of the proposed track improvements, specifically the additional storage and sidings, the Project will segregate passenger and freight train operations.

²⁶ NCRR: Understanding the Corridor Management and Protection Program, 2005. www.ncrr.com/NCRR-Corridor-Brochure.pdf

²⁷ NCRR: Raleigh East 2nd Main Track Feasibility Study, 2013

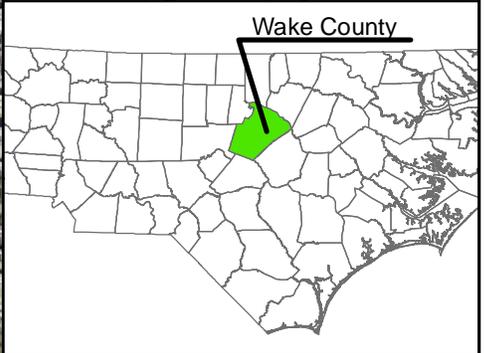
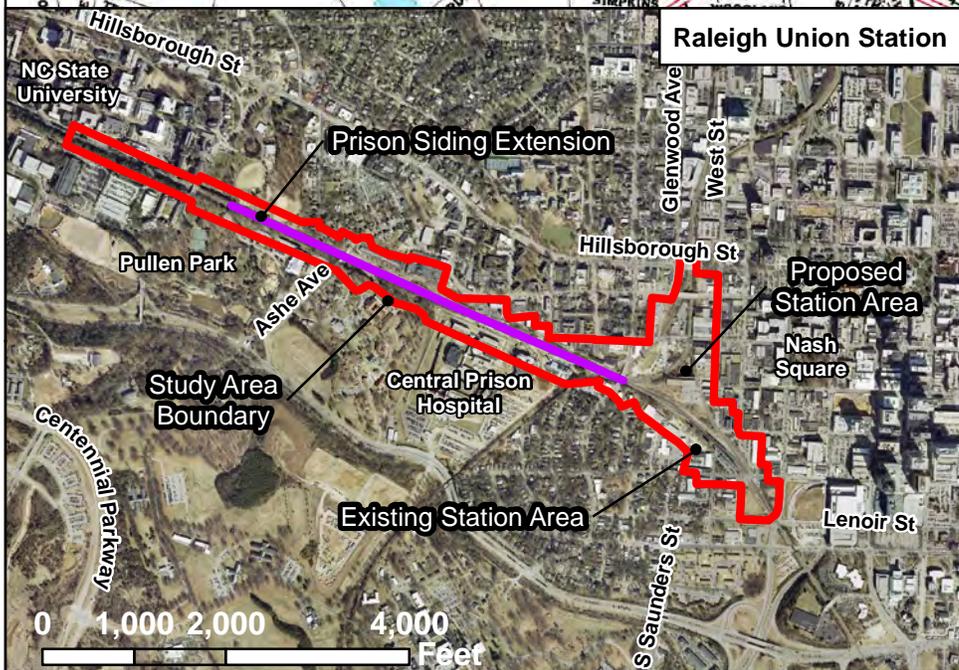
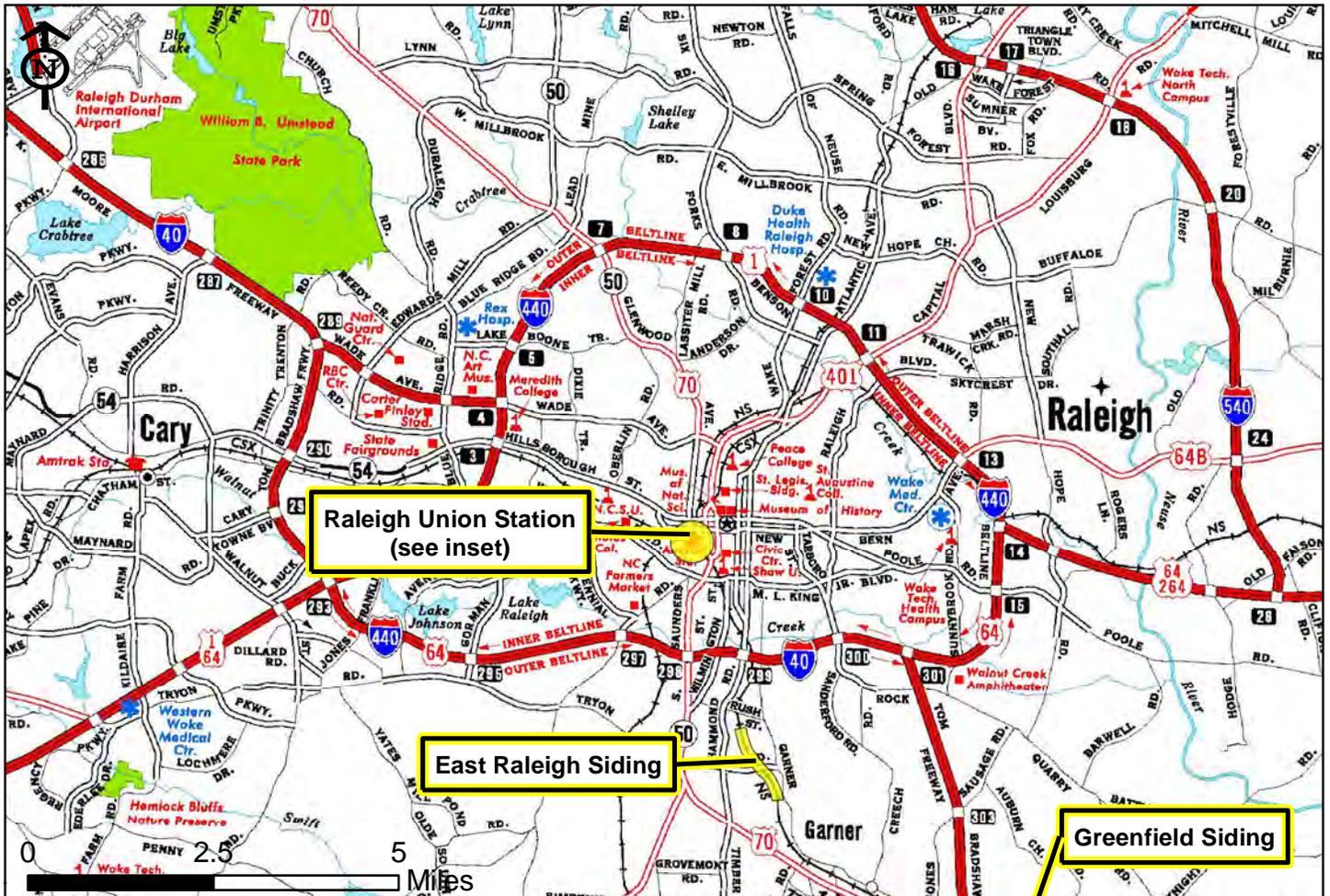
- Increased passenger rail capacity and utilization will provide opportunities to reduce the growth in the number of passenger vehicles on congested roadways.

1.10 SUMMARY

The proposed improvements include constructing a new Raleigh Union Station with associated track improvements in Downtown Raleigh. The Project includes a new siding to replace Cabarrus Yard, an existing freight car storage facility that will be displaced by the construction of the new passenger platforms. The sidings will also improve rail operations, specifically the interaction of passenger and freight rail in the station vicinity. The Project is identified as NCDOT TIP Project P-5500.

The need for this Project is based on current and projected ridership needs, safety, and inadequacy of the current Amtrak station to handle waiting passengers, parking, and efficient train loading. Current consumer demand exacerbates pressures on the existing Amtrak passenger train station, which is outdated, overcrowded, and difficult to access. The existing facility will not accommodate future travel demand associated with anticipated population growth. Freight movement is also inefficient within the study area as its service is consistently interrupted due to passenger trains blocking the mainline tracks when serving the current station.

The future station and its associated siding improvements will provide increased capacity and facilities consistent with current and projected usage. The Project will also improve freight operations and efficiency, address safety considerations, and enhance commerce. These improvements constitute the first step of a multi-phase development that will ultimately provide a multi-modal, mixed-use development hub for Downtown Raleigh and support the City of Raleigh's vision for the area.



- Prison Siding Extension
- Project study area

**Exhibit 1.1.1
Project Vicinity Map**

Proposed Raleigh Station - Phase I
TIP No. P-5500
Wake County, North Carolina



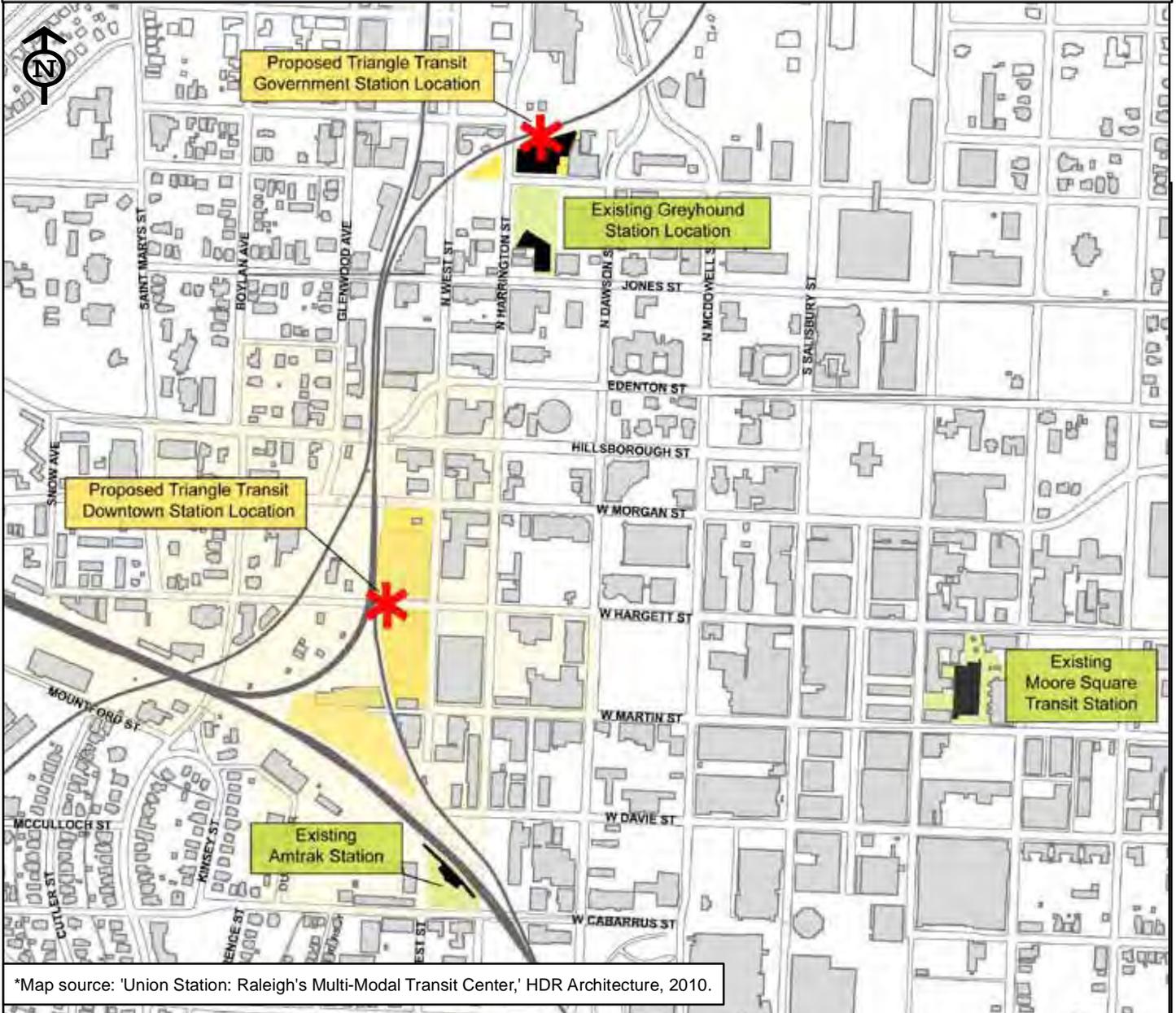
*Map source: 'Union Station: Raleigh's Multi-Modal Transit Center,' HDR Architecture, 2010.



-  Parcel boundaries
-  Norfolk Southern Line
-  CSX Line
-  NCR/CSX Line
-  Streets

**Exhibit 1.6.1
Rail Lines in Raleigh
Station Vicinity**

Proposed Raleigh Union Station - Phase I
TIP No. P-5500
Wake County, North Carolina



*Map source: 'Union Station: Raleigh's Multi-Modal Transit Center,' HDR Architecture, 2010.



- Proposed facilities
- Existing transportation facilities
- Existing building footprint

**Exhibit 1.6.2
Existing Transportation Facilities
in Vicinity of the Study Area**

Proposed Raleigh Union Station - Phase I
TIP No. P-5500
Wake County, North Carolina

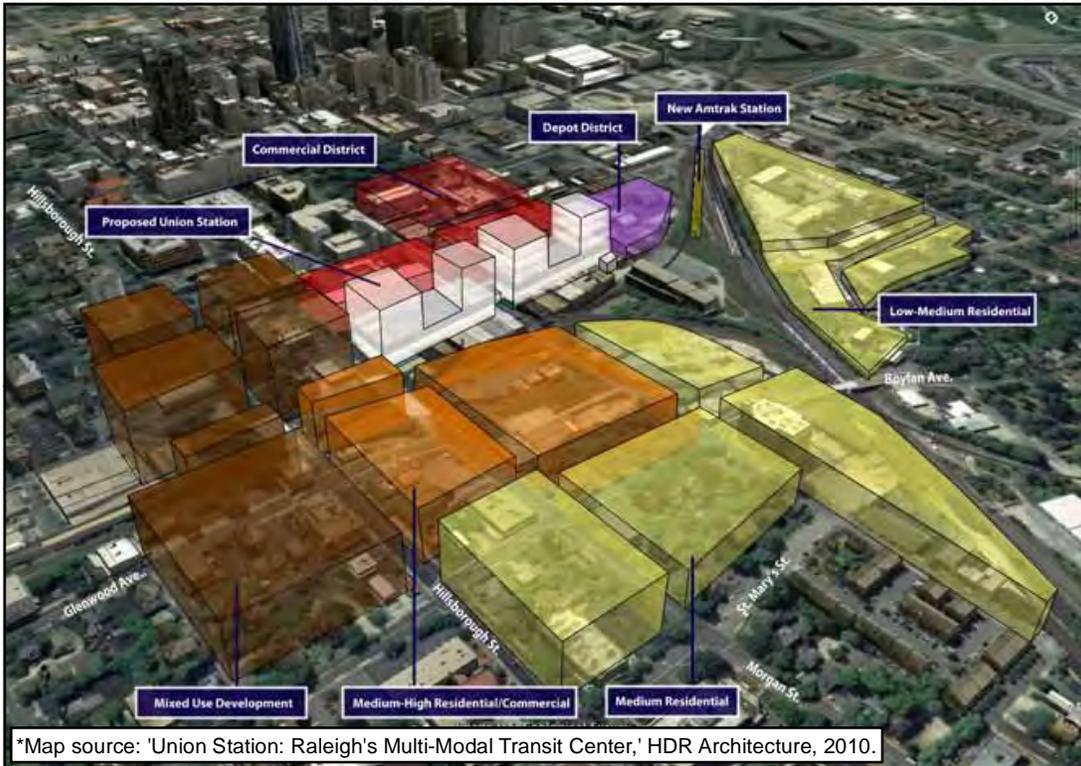
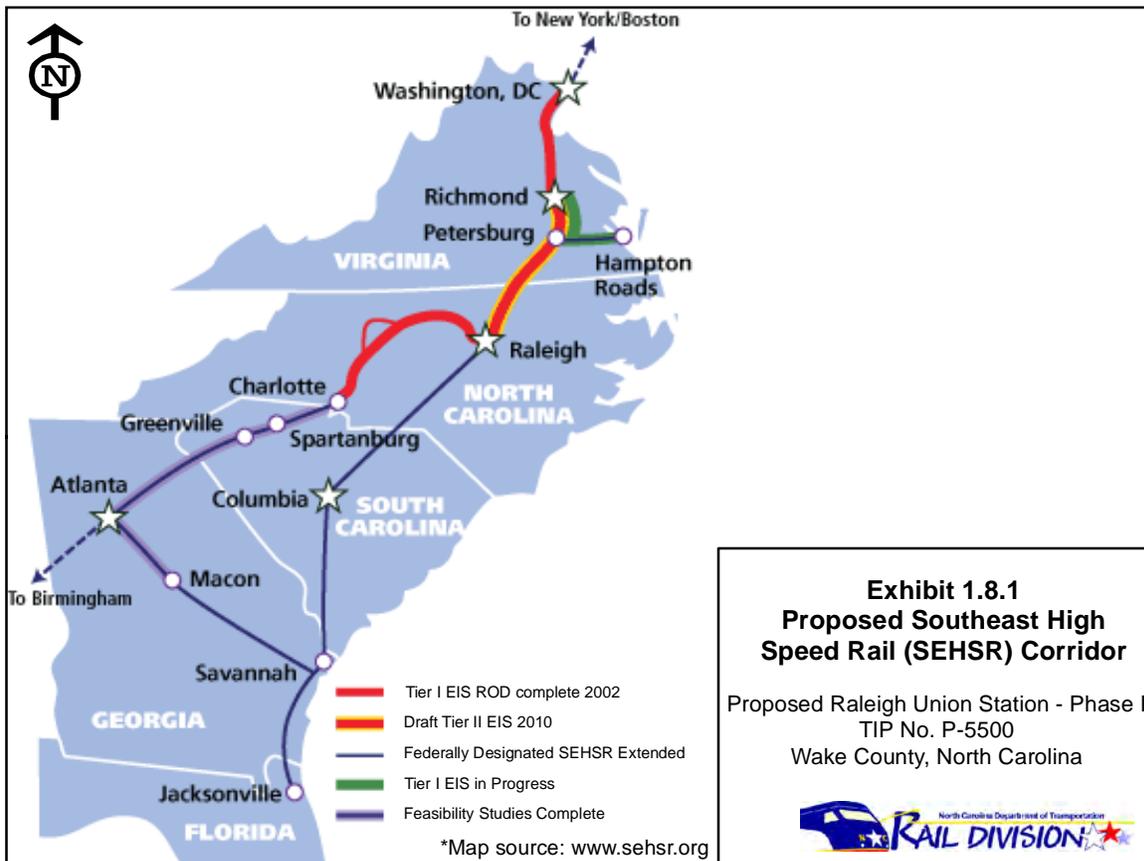


Exhibit 1.7.1 Total Build-Out Scenario for Union Station

Proposed Raleigh Union Station - Phase I
 TIP No. P-5500
 Wake County, North Carolina



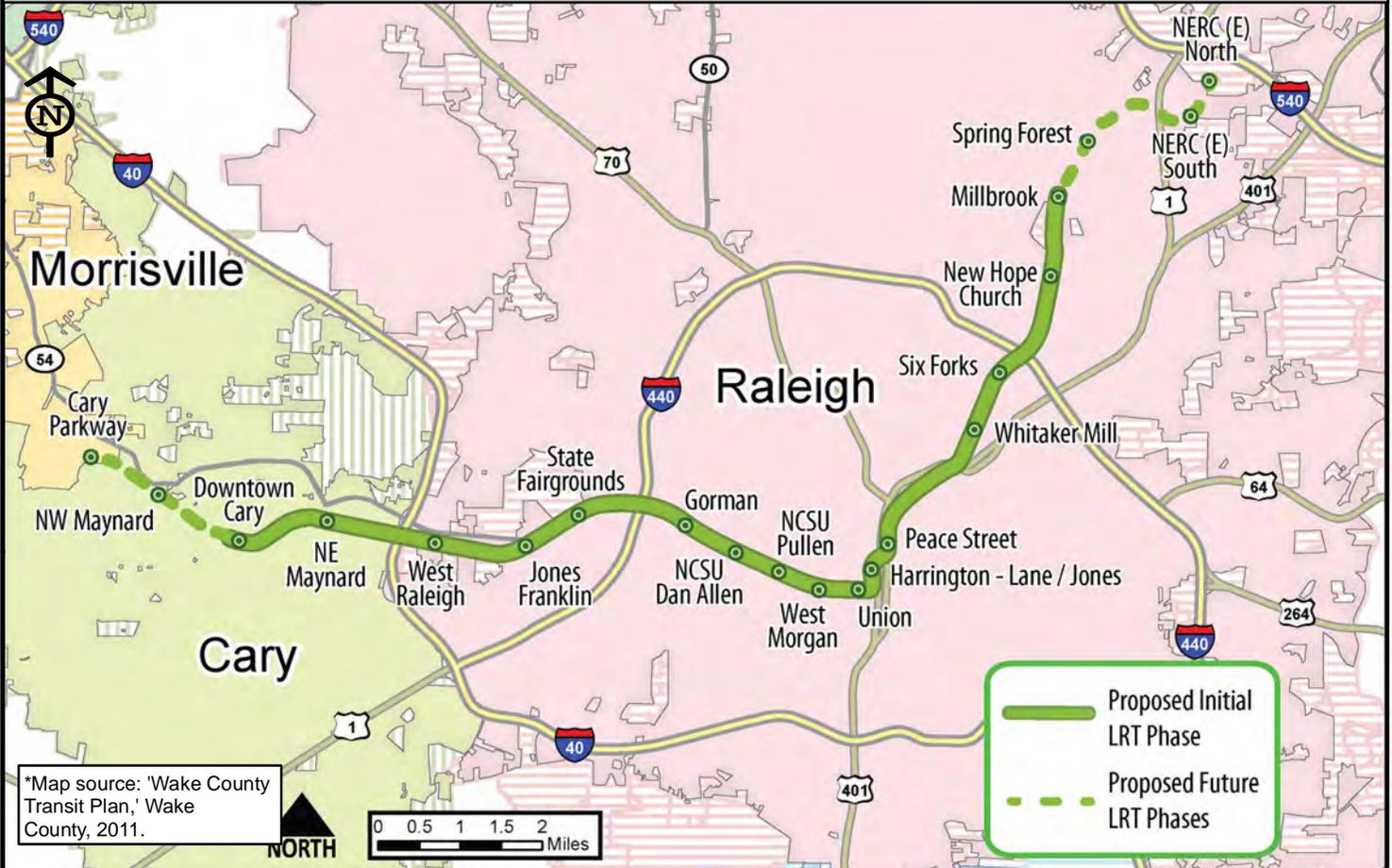


Exhibit 1.8.2 Proposed Light Rail Stations in the Enhanced Transit Plan

Proposed Raleigh Union Station - Phase I
TIP No. P-5500
Wake County, North Carolina

2.0 ALTERNATIVES

As part of the NEPA process, lead agencies (NCDOT in the case of this project) are required to evaluate alternatives for any proposed federally-funded actions. Alternatives always include the No-Build option. The following sections describe the evaluation of No-Build and Build alternatives for the Project.

2.1 NO-BUILD ALTERNATIVE

NCDOT evaluated the No Build Alternative, but eliminated it from further consideration because the No Build Alternative does not meet the primary purpose and need for the Project.

The current Amtrak station is deficient in three significant ways. First, with waiting areas of only 1,800 square feet, there is insufficient waiting space to accommodate present-day Raleigh ridership, with travelers often forced to wait outdoors. Second, the ground-level platform at the station is inadequate and unsafe for existing demand, with no space for expansion. For example, the Amtrak Silver Star, which runs between Florida and New York, has to unload passengers in two phases as the length of the train exceeds the length of the passenger boarding platform area. This two-phase passenger loading requires the train to partially board passengers, then pull forwards and stop again, causing additional delay and blocking Cabarrus Street at-grade crossing. Third, the existing configuration consisting of one platform on the main track would not be able to accommodate the planned increase in daily passenger trains (intercity passenger commuter, and SEHSR) that would serve the station in the future.. The existing configuration limits the ability to schedule closer arrival/departure times, having the one platform track on the only through track on the North Carolina Railroad Company (NCR) H-Line in Raleigh lowers the amount of dwell time available at the station for trains beginning or terminating in Raleigh due to conflicts with freights needing to pass through.

2.2 PRELIMINARY BUILD ALTERNATIVES

The concept of a multi-modal station in Downtown Raleigh has been addressed in various studies since 1989 where the *Interim Report of the Governor's Rail Passenger Task Force* (NCDOT, 1989)²⁸ recommended the preservation of rail corridors and the implementation of a long-term plan to support rail passenger service in the State. Since 1989, the City of Raleigh

²⁸ City of Raleigh: <http://www.raleighnc.gov/services/content/PlanUrbanDesign/Articles/MultimodalPlanningCoordination.html>

and the NCDOT have evaluated the possibility of developing a multimodal station in downtown Raleigh and have prepared feasibility studies of potential station sites.

These studies have focused on the immediate vicinity of the Boylan Wye because the convergence of multiple rail lines satisfies the project purpose and need. Specifically the location provides a station that can accommodate current and projected usage. This is the only location in downtown Raleigh where three freight Railroads converge, including NS, NCRR and CSXT. At the Boylan Wye. The east-west H-line (currently utilized by NS, CSXT, and Amtrak), the north-south lines (with different segments operated by NS and CSXT), and the future SEHSR corridor can all be accessed from a single location. Sites outside of this portion of Downtown Raleigh were not considered, as they do not have the capability to directly serve all of these downtown rail corridors in a single location and therefore do not fully meet the purpose and need of the project. To fully meet the purpose and need of serving current and future usage, the station should directly access the existing freight and passenger corridors as well as the future SEHSR corridor. The station site feasibility studies for locations in the vicinity of the Boylan Wye are summarized in the remainder of this section.

The *Downtown Raleigh Multimodal Transportation Center Feasibility Study*²⁹ evaluated five sites in Downtown Raleigh. The five sites (Exhibit 2.2.1) were:

- 1) “South Leg of the Railroad Triangle” in the block bounded by South West Street, West Davie Street, South Dawson Street, and West Cabarrus Street.
- 2) “East Side of the Railroad Triangle” in the block bounded by the railroad, West Hargett Street, West Davie Street, and South Harrington Street.
- 3) “North Leg of the Railroad Triangle” in the block bounded by the railroad, West Hargett Street, West Morgan Street, and South West Street.
- 4) “Far North Leg of the Railroad Triangle” in the block bounded by the railroad, West Jones Street, Hillsborough Street, and North West Street.
- 5) “Center of the Railroad Triangle” located in the center of the Boylan Wye and bordered by the railroad on all sides.

These sites were ranked based on the following criteria: connections among modes, increase transit ridership, minimize travel time, cost effectiveness, traffic and transit operations, railroad operations, and downtown development. The evaluation ranked Site 5 (Center of the Railroad

²⁹ See Note 18.

Triangle) highest among the alternative locations, which is the site of the build alternative considered in this EA.

Exhibit 2.2.1 shows that Sites 1 and 4 are located outside the east and north points of the Boylan Wye, respectively. Because they do not provide direct access to all rail corridors, Sites 1 and 4 ranked lower than Site 5 in the feasibility study using comparisons of modal connection, transit operations, and cost effectiveness. Sites 2 and 3 are located outside the wye on its east side and also ranked lower than Site 5 in these categories. The lower ranked access of Sites 1 through 4 indicates that these sites do not fully satisfy the purpose and need when compared with Site 5 because they do not provide direct access to all rail lines considered for current and future usage.

A follow-up study was conducted in 2002 to evaluate the recommended alternative from the 1996 study against one other option. The *Downtown Raleigh Intermodal Facility Phase II Conceptual Study*³⁰ evaluated the Wye Alternative (referred to as the “Center of the Railroad Triangle” in the 1996 report) and the Morgan Street Alternative. The Morgan Street Alternative was located just west of the west leg of the Wye bounded on the west by Boylan Street and the north by Morgan Street and is shown on Exhibit 2.2.1 as Site 6.

- 6) “Morgan Street Alternative” located just west of the west leg of the Boylan Wye and bordered by Boylan Street and Morgan Street.

These alternatives were evaluated against different criteria than the 1996 study due to the progressed stage of the planning process. The 2002 study used the following criteria: accessibility of site, accommodation of space / function, support development (redevelopment/ joint development), impact on adjoining neighborhoods, and contribution to passenger flow between primary modes. The Wye Alternative outscored the Morgan Street Alternative in four of the five criteria and had an equal result in the fifth category (impact on adjoining neighborhoods).

Based on the feasibility analyses described in the studies above and the combination of current analysis factors (need, operational feasibility, available land and facilities), one build alternative location was evaluated for the station. The Viaduct Building within the Boylan Wye was

³⁰ See Note 18.

evaluated as the build alternative due to the unique needs associated with integrating multiple transportation modes at a single location, coupled with the available building and land and proximity to the existing Amtrak station. NCDOT conducted detailed evaluation of only the Viaduct Building, as there are no other buildings in the downtown area that offer a comparable combination of size, location, availability, and proximity to the railroad tracks. The Viaduct Building location for the Raleigh station was evaluated for the following reasons:

- The Boylan Wye provides a convergence of multiple railways at a single location.
- The Viaduct Building is currently vacant and is owned by the TTA, which is a collaborating party in this Project.
- The existing Amtrak station is within a block of the proposed location.
- The Viaduct building is within the densely developed southern portion of Downtown Raleigh and is therefore conducive to pedestrian and bicycle access to downtown destinations.
- This location is also consistent with a number of long-range plans that integrate the station, including:
 - 2010: City of Raleigh, Union Station: Multi-Modal Transit Center³¹
 - 2010: Federal Rail Administration, Record of Decision for the Tier I SEHSR EIS³²
 - 2011: Wake County, Transit Plan³³
 - 2012: Triangle Transit Authority, Wake County Light Rail Corridor Alternatives Analysis³⁴
 - 2012: NCDOT, Feasibility Study for the Adaptive Reuse of the Dillon Viaduct Building³⁵

Alternative components related to track improvements, sidings, and platform configurations associated with the station were evaluated. Each of the components of the station is described in Section 2.3.

2.3 BUILD ALTERNATIVE

This section provides a detailed description of the Build Alternative. As discussed in Section 2.2, only one Build Alternative was considered for the Raleigh Union Station – Phase I.

³¹ See Note 18.

³² See Note 20.

³³ See Note 18.

³⁴ See Note 22.

³⁵ See Note 2.

However, several rail siding options were evaluated as part of this study. Due to the physical distance between Project elements, references to impacts are based on three study areas as shown in Exhibit 1.1.1. The Raleigh Union Station area includes the Prison siding extensions and Prison Yard expansion. The Greenfield siding and East Raleigh siding have discrete study areas. The exhibits in Section 3 (e.g. Exhibits 3.1.1a-c, etc.) show the individual study area components in detail.

2.3.1 Station

Exhibits 2.3.1 and 2.3.2 show the proposed conceptual components of Raleigh Union Station – Phase I. The components were described in the City of Raleigh’s TIGER Grant application for the station and are subject to change as the architectural plans and detailed designs are developed. The components are described below:

1. **Viaduct Building:** The new station building will include nearly 6,700 square feet of Amtrak passenger service and ticketing operations, a 7,500 square foot passenger waiting area, and over 14,000 square feet of commercial and retail lease space. Exhibit 2.3.2 provides a conceptual plan for the main floor of the station, including the Grand Waiting Hall on the main level, as well as connections to the pedestrian concourses leading to the platforms, ticketing, offices and other services. The mezzanine and roof deck plans show opportunities for commercial lease space.
2. **Public Plaza:** The Public Plaza will provide a venue for informal gathering and public events and also serve as a threshold to the Raleigh Union Station. Upon subsequent build-out of the entire complex in later phases of this endeavor, the plaza will allow for public art and additional vending opportunities.
3. **Surface Parking Lot:** A parking lot will provide passengers and staff with parking and easy access to the station. The parking lot will include approximately 34 parking spaces.
4. **Entrance Drives:** Two grade-separated entrances will be constructed under the east leg of the Boylan Wye to allow vehicles and pedestrians safe access to the surface parking lot and front entrance. The northern entrance from West Martin Street will provide access to passengers arriving by vehicle or as pedestrians. The southern entrance from South West Street will provide access for delivery vehicles and buses.

The NCDOT investigated several options for the West Martin Street entrance due to its potential effects on historic architectural resources. Section 5.4 describes the evaluation of these entrance options.

5. **Station Tracks:** Two new station tracks will allow multiple passenger trains to serve the station while allowing freight trains to pass on the adjacent NCRR H-Line track.
6. **Intercity Passenger Platform:** A new high-level platform with a minimum length of 800' will accommodate longer trains and will eliminate the need to for trains to reposition during boarding/alighting.
7. **Pedestrian Concourse A:** This partially underground concourse will connect the Grand Waiting Hall to the boarding platform. The controlled access concourse will allow the station to meet increasing security requirements for rail travel and will provide safe access to platforms for both passengers and baggage handlers.

2.3.2 Siding Improvements

Exhibit 1.1.1 shows the location of the rail siding options evaluated in association with the Build Alternative. The various rail siding alternatives are being considered as a means to replace the rail car storage capacity at Cabarrus Yard that will be eliminated due to the construction of the station tracks and passenger platforms. The Prison Yard expansion and Prison Siding extension options are located in close proximity to the Boylan Wye and are included in the same central study area as the station. The East Raleigh siding and Greenfield siding are alternative siding locations that were also evaluated and are located east of downtown Raleigh along the NCRR H-Line. Any of these siding alternatives will allow freight trains to provide service to customers in the Raleigh area without entering the station area where passenger operations would be taking place. They will also replace freight car storage lost due to project-related changes in the Boylan Wye. The siding options are described below:

- ***Raleigh Station with West Prison Siding (Exhibit 2.3.1)*** – The West Prison Siding is an approximately 1,000-foot extension of the existing prison Siding located west of Ashe Avenue, approximately 0.90 miles west of the proposed Station. This option was not recommended because of its limited storage capacity relative to the other options.
- ***Raleigh Station with East Prison Siding (Exhibit 2.3.1)*** – The East Prison Siding is an approximately 1,300-foot extension of the existing prison Siding located at the proposed

Station and extending to about 300 feet east of Cabarrus Street. This option was not recommended because of its limited storage capacity relative to the other options.

- ***Raleigh Station with Prison Yard Expansion (Exhibit 2.3.1)*** – The Prison Yard Expansion would add two siding tracks (for a total of approximately 1,600-foot) to the existing Prison Yard area just west of the Boylan Wye. This option was not recommended because of its limited storage capacity relative to the other options.
- ***Raleigh Station with East Raleigh Siding (Exhibit 2.3.3)*** – The East Raleigh siding extends approximately 6,600-feet in length and is located 2.5 miles south of the proposed Station, extending under the existing Tryon Road overpass. It would be constructed parallel to the NCRH H-line (Milepost H 84.17 to H85.37). This siding will allow freight trains to service customers southeast of downtown without impacting the congested tracks in and around the Boylan Wye. This siding alternative will include the closing of a private crossing.
- ***Raleigh Station with Greenfield Siding (Exhibit 2.3.4)*** – The Greenfield siding is a proposed 7,000-foot siding located 7.4 miles south of the proposed Station at Greenfield Parkway near the Town of Garner. This siding will allow freight trains to service customers east of downtown without impacting the congested tracks in and around Boylan Wye. This option was not recommended because it was found to conflict with the operations of a proposed NCRH double-track project in the same area.

2.4 RECOMMENDED ALTERNATIVE (BUILD ALTERNATIVE AND EAST RALEIGH SIDING)

The recommended alternative is the Raleigh Union Station – Phase I Build Alternative, previously described, with the offsite East Raleigh siding component. The offsite East Raleigh rail siding is considered to be a necessary component allowing freight trains to service customers east of Downtown Raleigh. The offsite East Raleigh rail siding combined with the two separate passenger tracks at the Station will allow freight and passenger trains to operate in the Boylan Wye area simultaneously with improved efficiency without negatively impacting each other's operations. The NCDOT Rail Division conducted extensive coordination with the freight railroads (NCRH, NS, and CSXT) regarding the potential siding options and their operational benefits. As previously described, the two Prison Sidings alternatives and Prison Yard

Expansion were not selected due to their limited capacity. Their elimination also removed concerns related to encroachment on the North Carolina State College Historic District and the Governor Morehead School District. The Greenfield siding was found to conflict with a proposed NCRR double-track project.

Exhibit 2.4.1 shows the Build Alternative. A summary of its components is listed below:

- Conversion of the Viaduct Building to the Raleigh Union Station - Phase I station Building.
- Public Plaza
- Surface Parking Lot
- Grade Separated Entrance Drives at West Martin and South West Streets
- Two Station Tracks
- Intercity Passenger platform
- Commuter platform (future, separate project)
- Pedestrian Concourse A
- Realignment of the west leg of the Boylan Wye (CSXT S-Line)
- 6,600-foot long East Raleigh Siding

2.5 COST ESTIMATES

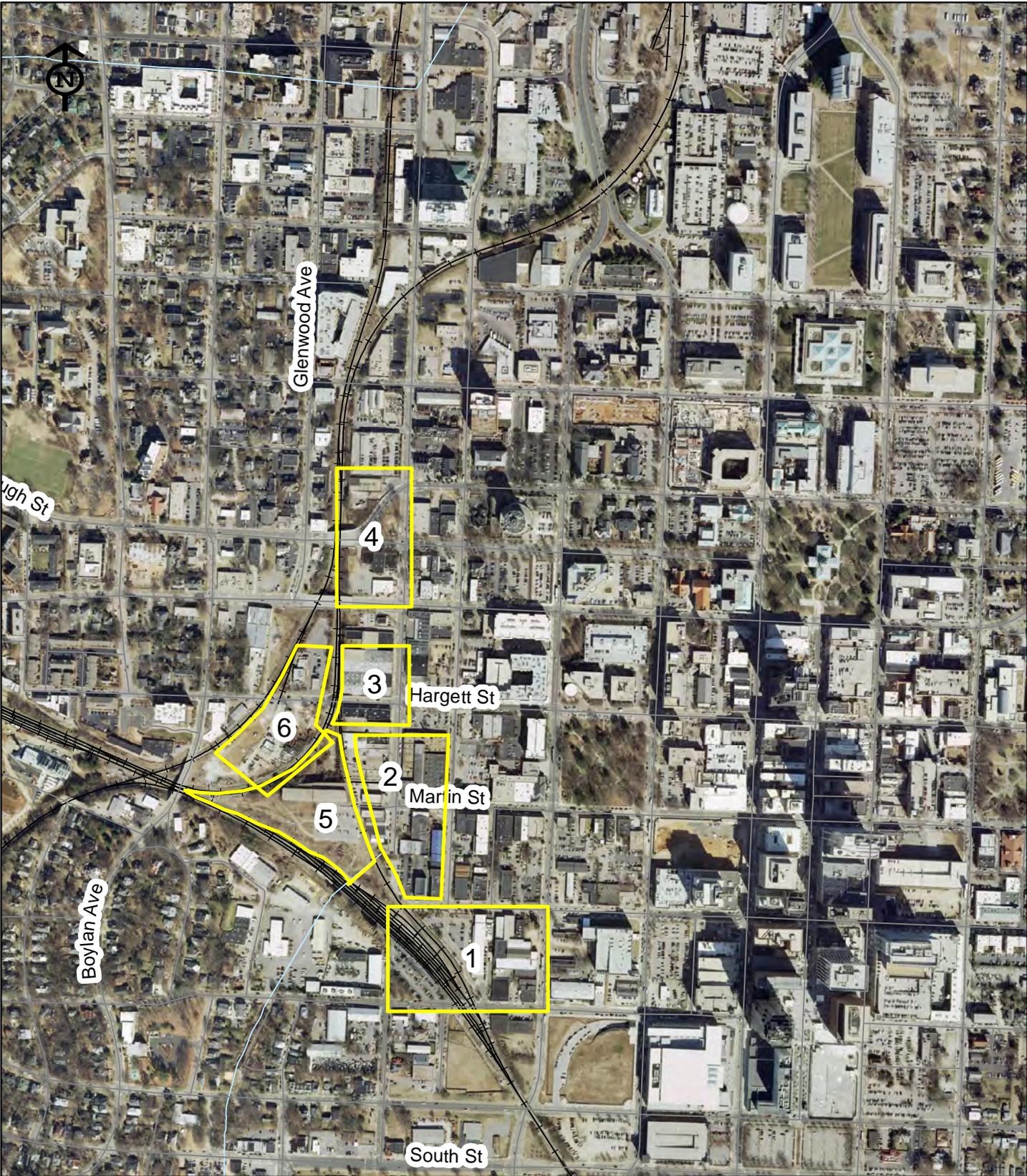
Table 2.6.1 shows the preliminary cost estimate for the Build Alternative. As the level of design is refined, the cost estimate will also be updated. There is a funding shortfall of \$6.75M; NCDOT and the City of Raleigh are seeking additional funding sources.

Project Element	Cost
Station	\$40,000,000
Track Improvements	\$28,000,000
Right of Way	\$5,000,000
Raleigh Union Station Subtotal	\$73,000,000

According to the City of Raleigh's website for the Project, current funding is derived from a number of sources, as listed below:³⁶

- 2012 Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant: \$26,500,000
- 2013 Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant: \$10,000,000
- Federal Railroad Administration American Recovery and Reinvestment (ARRA) Piedmont Improvement Program redirected funds: \$15,000,000
- North Carolina Department of Transportation TIGER 2012 Matching funds: \$9,000,000
- City of Raleigh Matching and Allocated Funds: \$5,750,000

³⁶ <http://www.raleighnc.gov/business/content/PlanUrbanDesign/Articles/UnionStation.html>



490 245 0 490 Feet



Legend

-  Roads
-  Streams
-  Waterbodies
-  Railroads
-  Preliminary Station Alternatives

**Exhibit 2.2.1
Preliminary Station Alternatives Map
Raleigh Station**

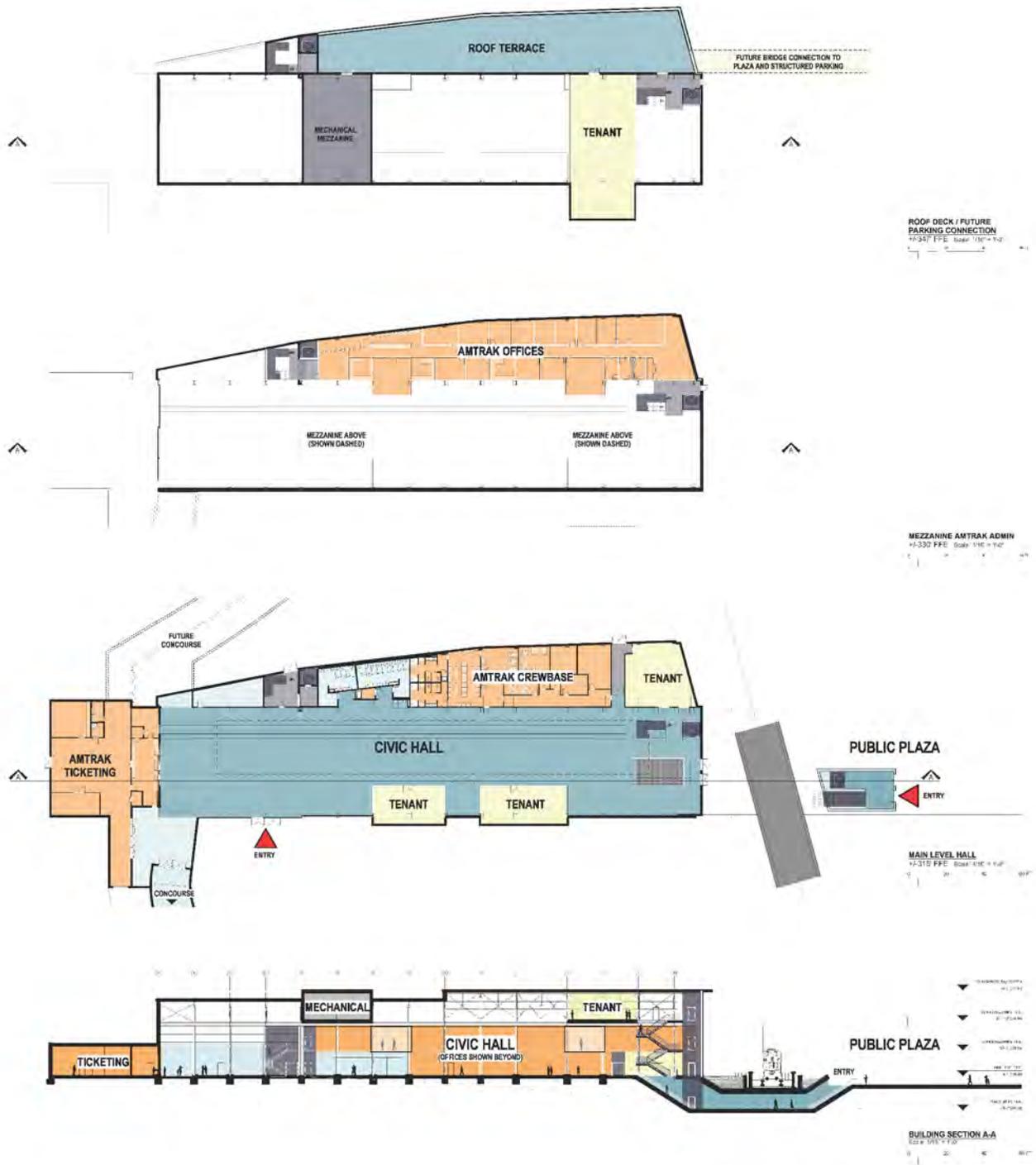
Proposed Raleigh Union Station - Phase I
TIP No. P-5500
Wake County, North Carolina



- Prison Siding Extension
- Project study area

**Exhibit 2.3.1
Site Concept Layout Map**

Proposed Raleigh Union Station - Phase I
TIP No. P-5550
Wake County, North Carolina

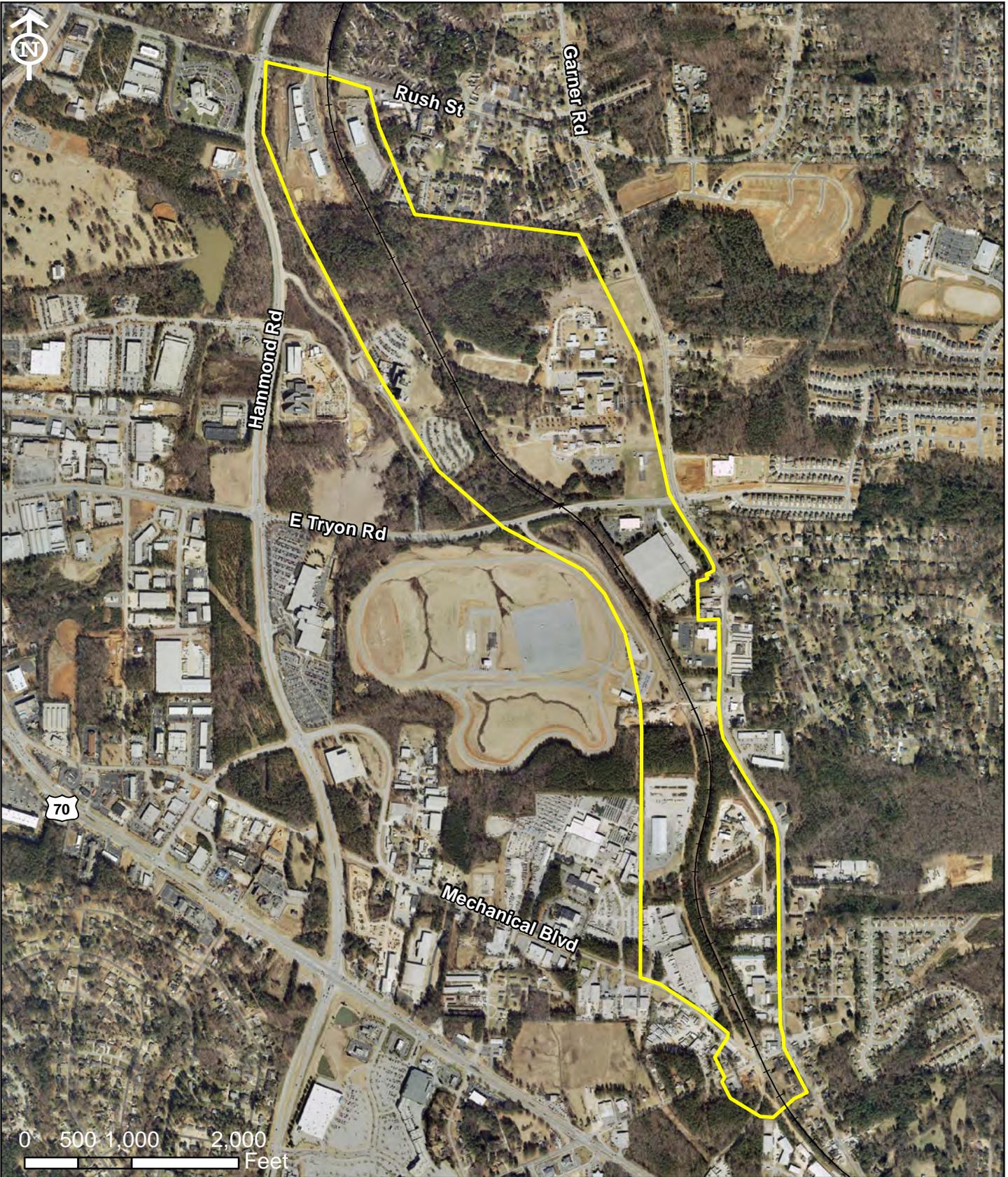


*Map source: 'Raleigh Union Station Conceptual Floor Plans - DRAFT,' NCDOT, 2013.



**Exhibit 2.3.2
Station Schematic**

Proposed Raleigh Union Station - Phase I
TIP No. P-5500
Wake County, North Carolina



70

0 500 1,000 2,000 Feet



- Study area boundary
- Railroads

**Exhibit 2.3.3
East Raleigh Rail Siding**

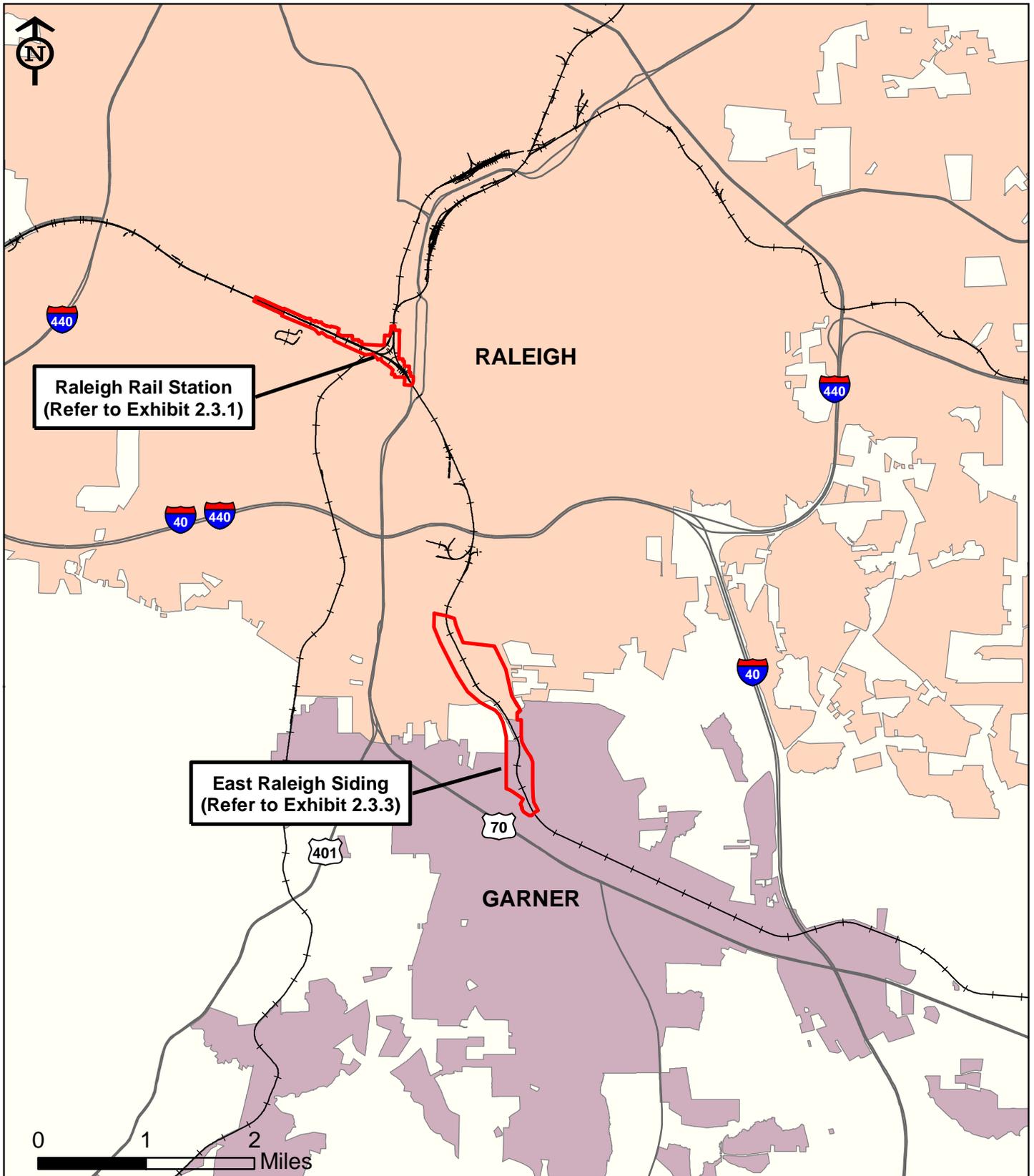
Proposed Raleigh Union Station - Phase I
TIP No. P-5500
Wake County, North Carolina



- Study area boundary
- +— Railroads

**Exhibit 2.3.4
Greenfield Rail Siding**

Proposed Raleigh Union Station - Phase I
TIP No. P-5500
Wake County, North Carolina



- Study areas
- Roads
- Railroads
- Garner
- Raleigh

**Exhibit 2.4.1
Build Alternative Map**

Proposed Raleigh Union Station - Phase I
TIP No. P-5500
Wake County, North Carolina

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section presents a discussion on the existing conditions and the probable effects, both positive and negative, for the Build Alternative. Due to the physical distance between project elements, references to impacts are based on three study areas as shown in Exhibit 1.1.1. The Raleigh Union Station area includes the East and West Prison siding extensions and Prison Yard expansion. The offsite Greenfield and East Raleigh siding have discrete study areas. Exhibit 1.1.1 shows the vicinity of these study areas. The exhibits in Section 3 (e.g. Exhibits 3.1.1a-c, etc.) show the individual study area components in detail.

3.1 LAND USE

The following sections describe the existing land uses in the project study area, anticipated land use trends, consistency of the proposed action with local plans and policies, and the potential effects of the Project.

3.1.1 Existing Land Use

The land use adjacent to the station area of the proposed Raleigh Union Station – Phase I is primarily urban in nature, with commercial, government, institutional and residential land uses. There is also limited industrial use, in addition to the Central Prison along its southern border. Land use adjacent to the East Raleigh Siding study area is primarily government/institutional with some commercial and residential land use. Land use adjacent to the Greenfield siding study area is a mix of residential, forest, and some industrial and commercial land. Additionally, there is a quarry located near the northern border of the corridor, off of East Garner Road near Interstate 40. Exhibits 3.1.1a-c illustrate the existing land uses within and adjacent to the project study areas (station and sidings).

3.1.2 Development Trends

Future land use within the project study areas is anticipated to be generally consistent with existing land uses as described above. Future land use mapping for the City of Raleigh identifies land uses within the project study areas to include office, commercial and residential uses, in addition to public facilities and a business district. Additionally, the Boylan Wye lies within the Central Business District on the 2030 Future Land Use Map. This district is intended to enhance Downtown Raleigh as a mixed- use urban center with office, retail, housing, government, institutional, and entertainment uses. Existing land use and future land use maps are also consistent with zoning.

The Raleigh Union Station project study area is comprised of various zonings, including industrial, business, office, and medium and high density residential use.

Future land use in the study areas for the East Raleigh and Greenfield sidings are also anticipated to be consistent with existing land use. The East Raleigh siding area is zoned within the City of Raleigh and the Town of Garner for public/institutional, neighborhood, and industrial use. The Greenfield siding area is zoned within the Town of Garner for low-density residential, industrial, commercial, and mixed uses. Exhibits 3.1.2a-c illustrate zoning within and adjacent to the study areas.

3.1.3 Consistency with Land Use and Transportation Plans

Development in the project study area is shaped by multiple planning documents, including the City of Raleigh 2030 Comprehensive Plan (Raleigh, 2009).³⁷ The plan seeks to enact policies that

“reduce vehicle miles traveled and improve air quality. Raleigh’s land use and transportation coordination policies focus on shortening trips and encouraging more pedestrian, bicycle, and transit-friendly communities within and adjacent to mixed-use centers and corridors or accessible to them via sidewalks, trails, or transit.”

As mentioned in Section 1.8.1, the proposed station is centrally located on the Southeast High Speed Rail (SEHSR) corridor. The proposed station location is an integral component of many years of collaborative planning at all levels of government and community.³⁸ Additionally, the Wake County Transit Plan promotes expanding local and commuter bus service and rush-hour rail service.³⁹ This Wake County Transit Plan was developed by several partners, including Wake County municipalities, the Capital Area Metropolitan Planning Organization, City of Raleigh Capital Area Transit (CAT), Triangle Transit Authority (TTA), and others. The Wake County Transit Plan includes an enhanced transit plan, showing options that would require additional funding above the base plan, to construct a light rail transit system⁴⁰. As stated in Section 1.8.6, subsequent phases of the Project include plans for a bus hub, connections to light rail, and increased pedestrian accessibility.

³⁷ See Note 14.

³⁸ See Note 18.

³⁹ See Note 22.

⁴⁰ See Note 22.

3.2 FARMLANDS

In accordance with the federal Farmland Protection Policy Act (FPPA)⁴¹ and state Executive Order 96⁴², the impact of the proposed action on prime, unique, and statewide important farmlands has been assessed. As defined by the United States Council on Environmental Quality, prime farmland is land having the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. These soils are those having the soil quality, growing season and moisture supply needed to economically produce sustained high yields of crops when properly managed. Prime farmland includes cropland, pastureland, rangeland and forestland; but not land converted to urban, industrial, transportation or water uses. Unique farmlands are those whose value is derived from their particular advantages for growing specialty crops. Statewide and locally important farmlands are defined by the appropriate state or local agency.⁴³

The station area is shown with a tint overprint, representing urbanized land, on the Raleigh West Quadrangle 7.5' USGS TopoQuad, and therefore does not require the submittal of a Farmland Conversion Impact Rating Form. For the Greenfield siding and East Raleigh siding areas, construction will take place within the existing right-of-way, so there will be no impacts to farmlands. Any farmland impacts associated with the Project will be in compliance with the FPPA and do not require further consideration for protection.

3.3 SOCIAL ENVIRONMENT

3.3.1 Population Characteristics

As shown in Table 3.3.1, Raleigh and Wake County have experienced high levels of growth over the last twenty years. From 1990 to 2010, Raleigh's population grew by 94.2% and Wake County's population grew by 111%, which are both higher than the statewide growth rate of 43.9% over the same period. Population projections for Wake County and the state indicate that this trend of above average growth will continue through 2030.

⁴¹ 7 CFR 658

⁴² State of North Carolina, Executive Order 96, Conservation of Prime Agricultural and Forest Lands

⁴³ 7 CFR 657.5

**TABLE 3.3.1
POPULATION TRENDS**

	POPULATION				
	1990	2000	2010	2020	2030
Raleigh	207,951	276,093	403,892		
Wake County	426,311	627,846	900,993	1,099,385	1,292,106
North Carolina	6,628,637	8,049,313	9,535,483	10,616,077	11,631,895
		GROWTH 1990-2000	GROWTH 2000-2010	GROWTH 2010-2020	GROWTH 2020-2030
Raleigh		32.8%	46.3%		
Wake County		47.3%	43.5%	22.0%	17.5%
North Carolina		21.4%	18.5%	11.3%	9.6%

SOURCE: North Carolina State Data Center, 2012 & US Bureau of the Census (USBOC), 2010.

As shown in Table 3.3.2, the majority of the population is white, followed by African-American and Hispanic populations. Raleigh’s total population is approximately 29% African-American, which is 8% higher than the population for Wake County, and 7% higher than North Carolina’s African-American population. Other minority populations include Asian Pacific Islanders (8.6%), Native American (<1%), and Hispanic (11.4%).

**TABLE 3.3.2
RACIAL CHARACTERISTICS**

RACIAL GROUP	RALEIGH	WAKE COUNTY	NORTH CAROLINA
White	57.5%	66.3%	68.5%
African-American	29.3%	20.7%	21.5%
Native American/ Alaskan Native	0.5%	0.5%	1.3%
Asian/Pacific Islander	8.6%	5.4%	4.6%
Other	5.7%	4.5%	4.3%
Multi-racial	2.6%	2.5%	2.2%
Hispanic (of any race)	11.4%	9.8%	8.4%

SOURCE: US Bureau of the Census (USBOC), 2010.

Table 3.3.3 contains age demographic data for Raleigh, Wake County, and North Carolina. The largest age group in Raleigh is the 25-34 range, which represents 18.4% of the total population. The populations of both the County and the State are slightly older with the largest age group in Raleigh, comprising the 35-44 range (16.2%) and 45-54 range (14.3%), respectively. The percentage of groups aged 19 and under is similar for Raleigh, Wake County, and North Carolina. The median statewide age is roughly three years higher than the median age for

Wake County and 6 years higher than the median age for Raleigh, which is consistent with the stratified data in Table 3.3.3.

**TABLE 3.3.3
AGE CHARACTERISTICS**

AGE GROUP	RALEIGH	WAKE COUNTY	NORTH CAROLINA
	Percent of Population		
Under 5 years	7.2%	7.3%	6.6%
5-9 Years	6.5%	7.6%	6.7%
10-14 Years	5.9%	7.1%	6.6%
15-19 Years	7.2%	6.9%	6.9%
20-24 Years	10.1%	6.9%	6.9%
25-34 Years	18.4%	15.2%	13.1%
35-44 Years	15.2%	16.2%	13.9%
45-54 Years	12.4%	14.6%	14.3%
55-59 Years	4.9%	5.4%	6.3%
60-64 Years	3.9%	4.4%	5.6%
65-74 Years	2.6%	5.0%	7.3%
75-84 Years	2.6%	2.6%	4.0%
85+ Years	1.2%	1.0%	1.5%
TOTAL	100%	100%	100%
MEDIAN AGE	31.9	34.4	37.4

SOURCE: US Bureau of the Census (USBOC), 2010.

3.3.2 Employment and Economic Characteristics

The top employers in Wake County include Duke Energy (formerly Progress Energy), the City of Raleigh, Wake County, the North Carolina Department of Corrections, the NCDOT, North Carolina State University, REX Healthcare, and SAS Institute, Inc. As shown in Table 3.3.4 the major occupation sectors in North Carolina include manufacturing, wholesale trade, retail trade, health care and social assistance, and arts, entertainment, recreation and tourism. Major employment sectors in Raleigh and Wake County also include retail trade, health care and social assistance; and art; entertainment, recreation and tourism; professional, scientific and technical services; and administrative and support and waste management.

**TABLE 3.3.4
OCCUPATIONAL DATA**

OCCUPATION	No. of Employees		
	RALEIGH	WAKE COUNTY	NORTH CAROLINA
Mining, Quarrying, Oil and Gas Extraction	0	0	3,075
Construction	0	0	242,488
Manufacturing	6,235	17,932	506,013
Wholesale Trade	8,369	15,635	351,592
Retail Trade	28,116	49,828	466,577
Transportation, Warehousing and Utilities	0	0	137,422
Information	6,190	18,555	76,413
Finance, Insurance and Real Estate	4,794	7,297	245,985
Professional, Scientific and Technical Services	**	35,381	184,998
Management of Companies and Enterprises	0	0	72,758
Administrative and Support and Waste Management	25,911	41,060	255,057
Educational Services	902	††	14,619
Health Care and Social Assistance	33,284	46,079	523,397
Arts, Entertainment, Recreation, Tourism	25,995	44,337	398,541
Other Services (except public administration)	7,677	12,238	85,304

SOURCE: US Bureau of the Census (USBOC), 2007 Economic Census

** 10,000 to 24,999 employees

†† 1,000 to 2,499 employees

As shown in Table 3.3.5, the current unemployment rate for Raleigh and Wake County is slightly lower than the state average of 9.4%. The individual per capita income in Raleigh and Wake County is higher than the statewide per capita income. The percent of citizens with a high school education in the Raleigh area is higher than the state average. Additionally, the percent of citizens with a college education is significantly higher; almost double that of the state average.

**TABLE 3.3.5
ECONOMIC AND DEMOGRAPHIC DATA**

	PERCENT OF WORKFORCE		
	RALEIGH	WAKE COUNTY	NORTH CAROLINA
Current Unemployment Rate	6.9%	7.5%	9.4%
Per Capita Income (\$)	\$28,053	\$30,748	\$23,432
%All Persons Living in Poverty	18.4%	12.0%	17.5%
% Adults with High School Education	91.8%	92.6%	84.8%
% Adults with College Education	46.3%	46.7%	26.5%

SOURCES: NC Profile, 2012. US Bureau of the Census (USBOC), 2010.

3.3.3 Neighborhood and Community Cohesion

As discussed in Section 2.3.1 and shown in Exhibit 2.3.1, the Build Alternative assessed the creation of grade-separated crossings for: a) the combined Public Plaza and the West Martin Street extension; and b) the South West Street entrance both under the east leg of the Boylan Wye. The Public Plaza/West Martin Street grade-separated crossing will allow for safe access to the facility for pedestrians and cyclists, while the South West Street entrance will allow a safe access, primarily for vehicles, to the surface parking lot. The two station tracks will be located in a converted freight yard and will not disrupt neighborhood cohesion.

Travelers may temporarily experience negative effects as they adjust to new travel patterns; however, NCDOT does not anticipate long-term, adverse effects to neighborhoods or community cohesion from the Project.

Furthermore, as direct impacts will only occur within the existing right-of-way for the Greenfield Siding and East Raleigh Siding, neither of these alternatives will create negative neighborhood or community cohesion effects.

3.3.4 Multimodal Travel Patterns and Accessibility

Ultimately, the Raleigh Union Station will serve as Downtown Raleigh’s multimodal hub. Phase I, addressed in this document, moves the Project towards realizing its full multi-modal capability. In addition to the current Amtrak intercity rail services operating out of the existing Raleigh Amtrak Station, the Raleigh Union Station will also be served by the future SEHSR corridor.

Also in the future, local and express CAT buses and Greyhound inter-city buses may use the station and the Station will be the Raleigh hub for TTA regional buses and two future TTA initiatives: the Durham-Wake Commuter Rail Corridor and TTA Wake Corridor light rail system.¹⁸

Para transit services such as Accessible Raleigh Transportation (ART) and Wake Community Transportation Services will occasionally make connections at the station for those unable to use conventional transit. As stated in Section 3.3.3, the Public Plaza grade-separated crossings will allow for safe access to the facility for pedestrians and cyclists. The City of Raleigh is studying an extension of South West Street (currently unfunded) which is designed to provide complementary vehicular, bicycle and pedestrian connections. The proposed South West Street Extension will allow for a planned connection from downtown to Raleigh's Walnut Creek Greenway.³

3.3.5 Schools

As shown in Exhibit 3.3a-c, the following schools are within the vicinity of Raleigh Union Station:

- North Carolina State University
- Project Enlightenment
- St. Mary's School
- Exploris Middle School
- Cathedral Catholic school
- Wiley Elementary School
- Washington Elementary School

However, there are no schools within the project study area (station or siding areas). No construction impacts to area schools are associated with the Project. Safety across the rail corridor will be improved by the Project at full build-out. Also, construction of Greenfield siding and East Raleigh siding will all be contained within existing right-of-way. Although construction of the Project will have minor, temporary effects on travel times due to possible delays caused by project construction, no negative effects to area schools will be associated with the Project.

3.3.6 Churches and Cemeteries

No churches or cemeteries are within the project study area, including within the rail corridor of the East Raleigh and Greenfield sidings. No impacts to churches or cemeteries are associated with this project.

3.3.7 Emergency Services

The Downtown District of the Raleigh Police Department provides services for the majority of the study area. The District Office is located just outside of the project study area on West Cabarrus Street, near the intersection with South Dawson Street. The western portion of the study area (along the Prison siding location) is serviced by the Southwest District. In addition, the Wake County Sheriff's Office is located east of the project study area at 330 South Salisbury Street. A City of Raleigh Fire Station is also in the project vicinity at 220 South Dawson between West Hargett and West Martin Street. In addition, the Wake County Emergency Medical Services Station Headquarters is located east of the project study area at 331 South McDowell Street. Police and fire stations, as well as other emergency services locations are shown in Exhibit 3.3.

Construction of the Project could have minor, temporary effects on emergency response times due to possible delays caused by project construction. Maintenance of traffic during construction is discussed in Section 3.21.4.

There are no emergency service facilities within the project study areas for the East Raleigh and Greenfield sidings. The Garner Police Department is located at 900 7th Avenue in Garner, and the Garner Fire Department is located at 503 West Main Street. Both facilities are approximately one mile south of the East Raleigh siding site, and more than 3 miles west of the Greenfield siding site, respectively. Garner Medical Transport at 1400 East Timber Drive in Garner is approximately one mile southwest of the East Raleigh siding site. Construction of either of these alternatives could have minor, temporary effects on emergency response times due to possible delays caused by Project construction. Because the station and siding options will not create any substantive changes to the local road system or travel patterns, the Project will result in no permanent impacts to emergency services.

3.3.8 Businesses

There are two business relocations associated with the Project. These relocations are located along the west leg of the Boylan Wye and result from the footprint of the track improvements in that area.

Construction along the east leg of the Boylan Wye will not impact any existing buildings. There is also an at-grade crossing, used by a commercial property, which NCDOT is proposing for closure associated with the East Raleigh siding. This at-grade crossing provides access to equipment storage, but its closure will not require a business relocation. Construction of the Project will create temporary construction impacts within the project study area, but these effects will be minor as access to area businesses will be maintained throughout construction.

Proposed grade changes along South West Street, associated with the West Martin Street station entrance may also affect operations of existing businesses along South West Street that have driveways or loading docks adjacent to the existing roadway. Based on the current level of design and the associated right-of-way estimate, NCDOT does not anticipate these impacts will cause additional relocations and it may be possible to maintain the existing loading dock operations. As the design progresses and right-of-way limits are determined, the NCDOT Right-of-Way Unit will address any further effects.

3.3.9 Section 4(f) and Section 6(f) Properties

Section 4(f) Properties – Section 4(f) of the US Department of Transportation (USDOT) Act of 1966 states that the Secretary of Transportation will not approve the use of land from a significant publicly owned park, recreation area, or wildlife and waterfowl refuge, or any significant historic site, unless a determination is made that there is no feasible and prudent alternative to the use of such land; and that the proposed action includes all possible planning to minimize

There are no city, state, or national parks within the project study area. The proposed Project will not impact any publicly owned recreation area or wildlife refuge.

The proposed Project will result in a Section 4(f) Use of the Depot Historic District and the Proposed National Register Boundary Amendment for the Depot District (see Section 3.12).

The Project will require the removal of the Capital Feed and Grocery Building, which is a contributing resource to the Proposed National Register Boundary Amendment for the Depot Historic District. The northern-most access to the Raleigh Union Station will be via a grade-separated crossing in which West Martin Street will pass under the CSXT-operated east leg of the Boylan Wye. Though West Martin Street already provides access to the Viaduct Building, the at-grade crossing of the street and railroad has to be eliminated to ensure both public safety

and efficient operations for trains and vehicular traffic. The grade separation would require a sixteen-foot-deep excavation at the West Martin Street/CSXT crossing. Retaining walls would be needed to protect the structural integrity of the two historic resources with the new descending grade of West Martin Street. Both buildings have slab foundations, load-bearing masonry walls, and shallow footings, and the retaining walls would be needed to support the existing grade of the buildings. However, current right-of-way requirements along West Martin Street will not accommodate the retaining walls. There is only thirty-two feet between the two historic buildings, and the City of Raleigh requires a thirty-five-foot right-of-way to allow for traffic lanes and sidewalks. Therefore, one of the buildings has to be removed to allow for this right-of-way. The proposed design shifts West Martin Street to the north slightly to accommodate the retaining wall next to the Swift building. Capital Feed and Grocery was chosen for demolition because its location directly in front of the Viaduct Building made it a logical site for the new Public Plaza, which would contain the entrance to a pedestrian and cyclist access to the new station.

The proposed Project will also require the removal of the existing Raleigh Amtrak Station, which is a contributing resource to the Depot Historic District. The Amtrak Station lies to the south of the proposed Station along the existing NCRR H-line. The proposed Project will construct one intercity passenger platform in between the two intercity platform tracks. The proposed station will also need to accommodate (but not construct) a future commuter platform and single track. The constraints associated with constructing the Project inside the Boylan Wye, track design speed requirements, and platform length requirements dictate the location of all of the proposed and future station tracks. NS Passenger Station Requirements dated December 15, 2011, require 26-foot track centers between station and the freight tracks (see Appendix A.5). The track center spacing requirement and the requirement for a standard typical section will result in the removal of the existing Amtrak Station.

Section 6(f) Properties – These properties are open space and recreation areas purchased with federal funds that are governed by the Land and Water Conservation Fund (LWCF) Act of 1965. This Act requires evaluation of avoidance alternatives if any 6f properties are impacted. There are no properties within the project study area that were purchased with LWCF funds. Therefore, there are no Section 6(f) impacts associated with this project.

3.4 RIGHT-OF-WAY AND RELOCATION IMPACTS

Residential and businesses relocations associated with the Build Alternative are shown in Table 3.4.1. Relocations were estimated based on functional design plans. All of the impacts are associated with the Station Area and none are anticipated due to the sidings. It should be noted that these relocations are also within the footprint, and counted as impacts, for the SEHSR project.⁴⁴ Exhibit 3.4.1 shows the anticipated right-of-way for the project and the area addressed by the hearing maps included with the SEHSR EIS.^{44,45} The closure of the private at-grade crossing on the East Raleigh Siding will result in the acquisition of the parcel isolated by the closure, but no business or residential relocation.

**TABLE 3.4.1
RELOCATIONS ASSOCIATED WITH THE BUILD ALTERNATIVE**

	Ral, Sta. & W. Prison Siding	Ral, Sta. & E. Prison Siding	Ral, Sta. & Prison Yard	Ral, Sta. & Greenfield Siding	Ral, Sta. & E. Raleigh Siding
Residential Relocations	0	0	0	0	0
Business Relocations	2	2	2	2	2

Relocation Assistance – It is the policy of the NCDOT to ensure that comparable replacement housing for residents and suitable locations for displaced businesses will be available prior to construction of projects. The NCDOT has three programs available to minimize the inconvenience of relocation: Relocation Assistance, Relocation Moving Payments, and Relocation Replacement Housing Payments or Rent Supplement.

The relocation program established for the proposed action will be conducted in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970⁴⁶ and the North Carolina Relocation Assistance Act.⁴⁷ The program is designed to provide assistance to displaced persons in relocating to a replacement site in which to live or do

⁴⁴ http://www.sehsr.org/deis/nc_hearing_maps_files/sehsr_nc2_psh_58.pdf

⁴⁵ See Note 44.

⁴⁶ Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646)

⁴⁷ North Carolina Relocation Assistance Act (GS 133-5 through 133-18)

business. At least one relocation officer is assigned to each highway project for this purpose. More information on right-of-way acquisition and relocation is available in the following two NCDOT brochures: *Relocation Assistance*⁴⁸ and *Answers to the Questions Most Often Asked About Right-of-way Acquisitions*.⁴⁹

3.5 INDIRECT AND CUMULATIVE IMPACTS

The National Environmental Policy Act (NEPA) defines indirect effects as “impacts on the environment which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.”⁵⁰ Induced development or altered growth patterns are typically the most common forms of indirect impacts. The rate and type of development, however, is usually influenced by the availability of access and infrastructure, the market for development, and public policy. Cumulative impacts are defined as those “...which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions.”⁵¹

Preparation of this indirect and cumulative effect (ICE) summary utilized the final pre-screening guidance contained in *Guidance for Assessing Indirect and Cumulative Impacts of Transportation Projects in North Carolina*, and *Cumulative Impacts and the 401 Water Quality Certification and Isolated Wetland Permit Programs, Version 2.1*.⁵²

The Project was analyzed using the NCDOT/NCDENR pre-screening process to evaluate the potential for indirect effects associated with induced growth or land use changes resulting from the Project. The pre-screening results determined that indirect effects were not likely to be created by the Project, primarily due to the nature of the Project (rail versus roadway), which does not create a change in accessibility or decrease in travel times for vehicular traffic. Another limiting factor for induced growth is the project’s location in a highly urbanized area with a limited amount of undeveloped land. In addition, as discussed in Section 3.1.1, existing land uses are generally consistent with future land uses adopted for the project study area.

⁴⁸ NCDOT: www.ncdot.gov/download/construction/roadbuilt/relocation_booklet_07.pdf

⁴⁹ NCDOT: www.ncdot.gov/download/construction/roadbuilt/rightofway_acquisition_brochure.pdf

⁵⁰ 40 CFR 1508.8

⁵¹ 40 CFR 1508.7

⁵² <https://connect.ncdot.gov/resources/environmental/pages/environmental-compliance-guides.aspx>

Given the Project's limited scope, its location within an urbanized area, and the presence of growth management regulations, the Project will not notably contribute negative cumulative effects within the project study area and vicinity. This Project does, however, cumulatively contribute to an improved multi-modal transportation system in Raleigh, which will create beneficial effects such as additional transportation options, improved air quality, and improved quality of life for City residents. The Project is also being designed to accommodate commuter rail which may result in positive future regional indirect and cumulative effects; for example reducing personal vehicle travel in the region.

The conclusions in this discussion are consistent with conclusions contained in the Tier I EIS for the SEHSR Program from Richmond, VA to Charlotte, NC, as summarized at the end of this section.⁵³

Summary of Indirect and Cumulative Effects within the Project Study Area – Phase I of the Project involves the reconstruction of the Boylan Wye rail infrastructure, a new train station with new loading platforms and underground concourses, and an off-site railroad siding. The proposed Project will not introduce any new access, thus the Project is not expected to result in changes to the existing land use patterns within the project vicinity. This conclusion is based on evaluation of the project's design concept and scope, including purpose and need, type, and facility function, in combination with evaluation of the project study area's demographic, land use, and growth management tools. As discussed in Section 3.1.2, the project study area is primarily urbanized, with development occurring independent of the proposed Project.

The proposed, but currently unfunded, West Street Extension is a reasonably foreseeable project in the immediate area that will also provide mobility benefits in the downtown, but is not anticipated to alter growth patterns or create negative cumulative effects. The West Street Extension does, however, cumulatively contribute to an improved multi-modal transportation system in Raleigh, which will result in beneficial effects such as additional transportation options, improved air quality, and improved quality of life for City residents.

Summary of Regional Indirect and Cumulative Effects – As discussed in Section 1.8, the Project is one of a number of improvements along the Piedmont Corridor that will result in operational efficiencies for freight and passenger rail service between the two largest economic

⁵³ See Note 20.

centers in North Carolina: Charlotte and Raleigh. The additional capacity provided by the proposed improvements will enable NCDOT and Amtrak to add additional frequencies to the Piedmont, Carolinian and Silver Star services and allow the implementation of SEHSR passenger services prior to 2030. The increased passenger train frequencies will provide travelers with more convenient travel options. The increase in arrival and departure frequencies and competitive travel times between cities along the corridor should result in more travelers choosing to use passenger rail service between Raleigh and Charlotte instead of driving. This will have a positive impact on air quality for all counties along the Piedmont Corridor. Most of these counties are currently in a Non-Attainment status for the National Ambient Air Quality Standard (NAAQS) criteria pollutants.

The cumulative impact of the foreseeable future actions is considered positive from a regional standpoint. They will improve the safety and efficiency of the transportation system. Indirect impacts are those expenditures or investments not directly resulting from the Project, but derived primarily from the increased mobility provided by the Project. Induced socioeconomic impacts are additional economic activity within the region resulting from the proposed action. Overall, impacts will be positive when assessed from a regional perspective.

3.6 ENVIRONMENTAL JUSTICE

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice to Minority and Low-Income Populations* and the United States Department of Transportation (USDOT) Order 5610.2, *Final Order to Address Environmental Justice in Minority Populations and Low-Income Populations* (Order) have been set forth to (1) avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations; (2) ensure the full and fair participation by all potentially affected communities in the transportation decision-making process and; (3) prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations. In compliance with this EO and Order, NCDOT conducted the following analysis to ensure that no minority or low-income populations were disproportionately affected by the proposed Project.

To determine the presence of minority populations within the project study area, 2010 US Bureau of the Census (USBOC) demographic databases were reviewed. The USBOC database illustrates minority population variation within individual census tracts, which allowed for a more

precise analysis of the project study area. Descriptions in the following paragraphs conform to the terminology of the USBOC data classes.

Minority Populations – There are two minority communities within the station study area. The first is located in the block immediately east of Ashe Avenue, where 56% (75 out of 134) of residents in this area identifies as African American (USBOC, 2010). The second area is located on the blocks immediately east and west of South West Street, and south of the rail corridor, where 55% (39 out of 70) of residents identifies as African American. Additionally, Census Tract 511.02 reports over 66% of persons within this block identifies as African American. This Census block is inclusive of the Central Prison and portions of NC State University Campus. All other residential areas within the project study area have minority populations within range of Wake County and Raleigh’s total minority population average of 33.7% and 42.5%, respectively.⁵⁴

Within the East Raleigh siding study area, a high percentage of minority residents reside along the eastern half of the corridor, east of the rail line, and also within the small area just south of Yeargan Road. In these areas, the majority of the residents identify as either African American or ‘other’ (44.1% and 20.3%, respectively). Within the northwest corner of the Greenfield siding study area, between the rail corridor and Garner Road adjacent to I-40, 54.5% of the population identifies as African American, and 36.4% identify as American Indian or Native American. Within the East Raleigh siding area, south of Garner Road, 68% of the population identifies as African American, and 8.7% identify as ‘other’. All other areas within the East Raleigh siding and Greenfield siding study areas have minority populations within range of Wake County’s total minority population average of 33.7%.⁵⁵

Low-income Populations – Census data indicate that on average, within the station study area, 16.3% of the population have per capita incomes below the poverty level, excluding Census Tract 511.02. Census Tract 511.02 reports 50.9% of the population being below the poverty level; however, this tract is inclusive of the Central Prison and portions of the NC State University Campus. Within the East Raleigh siding study area, 18.9% of the population is below the poverty level. Additionally, 10.3% of the population is below the poverty level within the Greenfield siding study area. The poverty level for the City of Raleigh and Wake County is 9.7% and 14.6%,

⁵⁴ United States Bureau of the Census (USBOC). 2010. American FactFinder. Accessed August 2012. <http://factfinder2.census.gov>

⁵⁵ See Note 54.

respectively.⁵⁶ (USBOC 2010, ACS 5-yr). This data is based on a 1-in-6 weighted sample, which precludes the examination of more detailed information; however, based on this information and field surveys, NCDOT does not anticipate disproportionately high impacts to low-income populations as a result of the Project.

Summary of Impacts to Minority and Low-Income Populations – The anticipated effects to the downtown neighborhoods in the vicinity of the Project are beneficial, and as previously described, there are no residential relocations associated with the Project. Therefore the Project will not cause disproportionate impacts to minority and low-income populations. The ultimate Raleigh Union Station complex (this document addresses the first phase) will enhance economic development in neighboring low-income areas of the city. Additionally, the location for the station site is surrounded by large concentrations of transit-dependent populations. The site is adjacent to a number of neighborhoods with concentrations of low-income populations, and many prospective riders in the area rely on transit as their primary mode of transportation. Typical demographic groups include persons who do not own a vehicle, youth, seniors, and persons below the poverty level. The proximity of the station to these populations will improve accessibility for the economically disadvantaged populations, non-drivers, senior citizens, and persons with disabilities.

3.7 AIR QUALITY

The Project is located in Wake County, which is within the Raleigh-Durham-Chapel Hill non-attainment area for ozone (O₃) and the Raleigh-Durham nonattainment area for carbon monoxide (CO) as defined by the EPA. Under the 1990 Clean Air Act Amendments (CAAA), EPA designated this area as moderate nonattainment area for CO. However, due to improved monitoring data, this area was re-designated as maintenance for CO on September 18, 1995. This area was designated nonattainment for O₃ under the eight-hour ozone standard effective June 15, 2004. However, due to improved monitoring data, this area was re-designated as maintenance for O₃ under the eight-hour standard on December 26, 2007. Section 176(c) of the CAAA requires that transportation plans, programs, and projects conform to the intent of the state air quality implementation plan (SIP).

The current SIP does not contain any transportation control measures for Wake County. The Capital Area Metropolitan Planning Organization 2035 Long Range Transportation Plan (LRTP)

⁵⁶ See Note 54.

and the 2012-2018 Transportation Improvement Program (TIP) conform to the intent of the SIP. The USDOT made a conformity determination on the LRTP on December 16, 2011 and the TIP on December 16, 2011. The current conformity determination is consistent with the final conformity rule found in 40 CFR Parts 51 and 93. There are no significant changes in the Project's design concept or scope, as used in the conformity analyses.

Mobile Source Air Toxics (MSATs) Analysis – Assessment of air quality impacts in the NEPA process has been evolving in recent years to include addressing mobile source air toxics (MSATs). Transportation agencies are increasingly expected by the public and other agencies to address MSAT impacts in their environmental documents as the science emerges. MSATs analysis is a continuing area of research where, while much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health impacts from MSATs are limited. These limitations impede the ability to evaluate how mobile source health risks should factor into project-level decision-making under NEPA. Also, the U.S. Environmental Protection Agency (EPA) has not established regulatory concentration targets for the six relevant MSAT pollutants appropriate for use in the project development process. The FHWA has several research projects underway to more clearly define potential risks from MSAT emissions associated with transportation projects. While this research is ongoing, FHWA requires each NEPA document to qualitatively address MSATs and their relationship to the specific highway project through a tiered approach. NCDOT acknowledges that FRA is the lead Federal Agency for this EA, but FRA has not yet developed MSAT guidance, so this EA will use FHWA's guidance. The FHWA will continue to monitor the developing research in this emerging field.

The purposes of this Project ultimately are: (1) to provide connections to regional and local rail; commercial, regional and local buses; (2) to provide easy access for pedestrians, cyclists and taxis; and (3) to improve safety and capacity along the rail corridor by constructing a new station and making improvements to the efficiency of passenger and rail train movements. This Project has been determined by the North Carolina Department of Air Quality to generate minimal air quality impacts for CAAA criteria pollutants and has not been linked with any special MSAT concerns. As such, this Project will not result in changes in traffic volumes, vehicle mix, basic project location, or any other factor that will cause an increase in MSAT impacts of the project from that of the no-build alternative.

Moreover, EPA regulations for vehicle engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades. Based on regulations now in effect, an analysis of national trends with EPA's MOBILE6.2 model forecasts a combined reduction of 72 percent in the total annual emission rate for the priority MSAT from 1999 to 2050 while vehicle-miles of travel are projected to increase by 145 percent.⁵⁷ This will both reduce the background level of MSAT as well as the possibility of even minor MSAT emissions from this Project.

Summary – NCDOT does not anticipate that the Project will create any adverse effects on the air quality of this maintenance area. No substantial impacts to air quality are associated with the Project. A discussion of temporary air quality effects associated with construction of the Project is contained in Section 3.21.1.

General Conformity – The General Conformity requirements included in the Code of Federal Regulations, 40 CFR 51 Subpart W and 40 CFR 93 Subpart B, apply to all “Federal actions” except Federal Highway and transit actions to which the transportation conformity requirements apply. Projects funded by FHWA/Federal Transit Administration (FTA) must follow 40 CFR 51 Subpart T. The proposed action is partially funded by the US Department of Transportations’ “Transportation Investment Generating Economic Recovery” (TIGER) discretionary grant administered by the FRA, thus it falls under the General Conformity Rules.

The EPA first issued the General Conformity Regulations in 1993. Since that time, several federal agencies have shared suggestions with EPA regarding ways to improve the General Conformity Regulations. Based on these suggestions and input from states and the public, EPA revised the General Conformity Regulations in an April 5, 2010 Federal Register notice.

In an area with a SIP, conformity can be demonstrated in one of four ways:

- By showing that the emission increases caused by an action are included in the SIP,
- By demonstrating that the State agrees to include the emission increases in the SIP,
- Through offsetting the action’s emissions in the same or nearby area,
- Through mitigation to reduce the emission increase, or
- Through an air quality modeling demonstration in some circumstances.⁵⁸

⁵⁷ EPA: <http://www.epa.gov/otaq/toxics-regs.htm>

⁵⁸ EPA: <http://www.epa.gov/air/lead/kitmodel.html>

EPA created de minimis emission levels to limit the need to conduct conformity determinations for actions with minimal emission increases. When the total direct and indirect emissions from the project/actions are below the de minimis levels, the project/action will not be subject to a conformity determination.

**TABLE 3.7.1
DE MINIMIS EMISSION LEVELS⁵⁹**

Pollutant	Area Type	Tons/Year
Ozone (VOC or NO _x)	Serious nonattainment	50
	Severe nonattainment	25
	Extreme nonattainment	10
	Other areas outside an ozone transport region	100
Ozone (NO _x)	Marginal and moderate nonattainment inside an ozone transport region	100
	Maintenance	100
Ozone (VOC)	Marginal and moderate nonattainment inside an ozone transport region	50
	Maintenance within an ozone transport region	50
	Maintenance outside an ozone transport region	100
Carbon monoxide, SO ₂ and NO ₂	All nonattainment & maintenance	100
PM-10	Serious nonattainment	70
	Moderate nonattainment and maintenance	100
Lead (Pb)	All nonattainment & maintenance	25

NCDOT prepared a Record of Non-applicability (RONA) for this project which was approved by the North Carolina Division of Air Quality (NCDAQ). The method of emissions calculation was based on a direct comparison to another rail project in the State of North Carolina with a larger scope of construction than Raleigh Union Station – Phase I. The reference project used was the *North Carolina Department of Transportation – Rail Division Proposed Construction of Additional Track Along the North Carolina Railroad (NCR) Norfolk Southern Railroad (NS) from Haydock (South of Concord) to Junker (NE of Charlotte) Cabarrus and Mecklenburg Counties, TIP No. P-5208* (referred to as Haydock to Junker).⁶⁰ The method of emissions calculation for that project was based on the EPA Office of Transportation and Air Quality methodology which bases predicted emissions on estimates of the scale and duration of construction activities and equipment.

⁵⁹ EPA: www.epa.gov/air/genconform/deminimis.html

⁶⁰ In 2012, NCDOT prepared an EA for the Haydock to Junker double-track project. In June 2012, FRA and FHWA jointly issued a FONSI.

Assumptions - The activities, schedule, and task durations for the Haydock to Junker project were based on a conceptual phasing plan with a construction duration of approximately 30 months. The activities, schedule, and task durations for the rail construction portion of the Raleigh Union Station – Phase I project were based on a conservative construction plan that estimates a 24-month duration.

Construction activities for Haydock to Junker include:

- 65,000 feet section of second main track
- Four Grade-separated crossing improvements
- At-grade crossing and intersection improvements
- New paved service road
- Six crossing closures
- Curve realignments in four separate locations to increase design speeds
- A new rail bridge
- Upgrade of existing rail bridge

In comparison to the Haydock to Junker project, construction activities for Raleigh Union Station project include the following chronological phase of construction:

- Construct Recommended (East Raleigh) Siding
- Close Martin Street at-grade crossing
- Construct East Leg Bridge over Martin Street Extension and lower grade of Martin Street
- Construct East Leg on final alignment
- Convert Viaduct Building to station building
- Construct Concourse A and 800 feet of Platform with 600 feet of Canopy
- Construct two station tracks
- Construct site work and parking area
- Build Public Plaza
- Open new station
- Close existing station

The Haydock to Junker project included 65,000 feet of new mainline track and contained four areas of curve realignment and six bridge construction projects. In comparison, the Raleigh Union Station – Phase I project includes approximately 14,000 feet of new siding and one

roadway bridge construction project. Under a conservative estimate, this project will require 30 percent of the total construction effort required under the Haydock to Junker project.

**TABLE 3.7.2
SUMMARY OF CONSTRUCTION PHASE EMISSIONS FOR
HAYDOCK TO JUNKER RAIL PROJECT**

Pollutant	VOC (tpy)			CO (tpy)			NOx (tpy)		
	6	12	12	6	12	12	6	12	12
Months	6	12	12	6	12	12	6	12	12
Total Emissions	7.7	7.8	3.3	64.6	67.1	26.9	66.3	63.1	25.4

tpy = tons per year

**TABLE 3.7.3
RATIO OF CONSTRUCTION PHASE EMISSIONS FROM HAYDOCK TO JUNKER
COMPARED TO THE RALEIGH UNION STATION – PHASE I PROJECT**

Project	Pollutant	VOC (tons)	CO (tons)	NOx (tons)
Haydock to Junker	Construction Total Months	30	30	30
Haydock to Junker	Total Project Emissions	18.8	158.6	154.8
Haydock to Junker	Average Emissions Tons per month	0.6	5.3	5.2
Raleigh Union Station – Phase I	Project Construction Ratio (30%) Average Emissions Tons per month	0.18	1.59	1.56
Raleigh Union Station – Phase I	Construction Total Months	24	24	24
Raleigh Union Station – Phase I	Total Project Emissions	4.32	38.16	37.44
Raleigh Union Station – Phase I	Average Tons per Calendar Year	2.16	19.08	18.72

An action is regionally significant if the total direct and indirect emissions of an individual pollutant amount to 10% or more of a nonattainment or maintenance area's emissions of that pollutant. Any project that is below established emission threshold limits (less than 100 tons per year) will also be less than the 10% significance level. Tables 3.7.2 and 3.7.3 show that the Haydock to Junker project is well below threshold levels and by comparison, the smaller Raleigh Union Station – Phase I project is also well below threshold levels. Therefore no further analysis for Raleigh Union Station – Phase I is required.

3.8 NOISE AND VIBRATION ANALYSES

NCDOT prepared an analysis to review and assess potential noise impacts associated with the Project. Changes in train operations may alter sound levels adjacent to the existing rail corridor. Vibration impacts to the project area were evaluated by studying the effects the Locomotive/Train traffic will have on surrounding residences and businesses.

The FRA uses FTA guidelines and procedures to predict potential noise impacts from rail projects.⁶¹ These guidelines specify noise impact criteria and define procedures to predict noise exposure for transit projects, including rail projects. “Noise” and FTA definitions are further defined and discussed in the following Noise Concepts and Noise Screening Assessment Criteria sections.

Sound generated by train operations depends on various factors including the type and number of locomotives and rail cars, the speed of the train, the type of rail and track structure, the condition of rail and train wheels, the frequency and timing of operations such as switching activities, and the mounting and sound level of the warning horn. This noise analysis is based on the following assumptions which have a direct effect on the noise exposure resulting from the rail operations:

- The right-of-way width is generally 200 feet wide throughout the project corridor
- The downtown project area is very densely developed and urban. The trains travelling in the downtown project area are currently moving at 10 mph. At the Greenfield and East Raleigh Siding locations the area is rural/suburban and the trains are travelling 50-60 mph. Future train speeds in the downtown area will vary from 10 to 45 mph with the proposed improvements. Future train speeds at the Greenfield and East Raleigh Siding locations will remain at 50-60 mph.
- The track structure is the standard NS/NCRR/CSX mainline typical section – continuous welded rails on wooden ties with 12 inches of ballast and 12 inches of sub-ballast.
- Data about existing train conditions were used as outlined in Table 3.8.2.
- Data about future train conditions were used as outlined in Table 3.8.3.

This noise analysis includes an assessment of impacts based on freight and passenger locomotive/car noise changes with the Project along the rail line and locomotive warning horn

⁶¹ http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf

impact areas with the proposed changes. Table 3.8.1 lists the eight at-grade crossings in the project study area that will remain open upon the completion of this Project. Exhibits 3.8.1 and 3.8.2 show the locations of the at-grade rail crossings that will remain open.

**TABLE 3.8.1
EXISTING AT-GRADE ROAD CROSSINGS***

Crossing Number	Railroad Milepost	Road Name	Railroad	Location	Existing RR Equipment
1	NS-232.7	W. Jones Street	NS	Downtown	Gates and Lights
2	S-156.83	W. Jones Street	CSX	Downtown	Gates and Lights
3	NS-232.9	W. Hargett Street	NS	Downtown	Gates and Lights
4	S-157.2	W. Hargett Street	CSX West Leg	Downtown	Gates and Lights
5	N/A	W. Hargett Street	CSX East Leg	Downtown	Gates and Lights
6	H-81.17	W. Cabarrus Street	NCRS South Leg	Downtown	Gates and Lights
7	N/A	W. Cabarrus Street	NCRS/NS East Leg	Downtown	Gates and Lights
8	H-90.3	Auburn Knightdale Road	NCRS/NS	Greenfield Siding	Gates and Lights

*The crossing of West Martin Street (currently a drive without gates and lights) will become a grade separation with the proposed project as shown in Exhibit 3.8.1.

The noise assessment procedure is a screening tool designed to identify locations where a project may cause noise impacts. If no noise-sensitive land uses are present within a defined area of project noise influence then no further noise assessment is necessary. Likewise, if project noise sources are initially defined below impact thresholds then no further noise assessment is necessary. This approach allows the focusing of further noise analysis on locations where adverse impacts are likely. The screening procedure takes account of the noise impact criteria, the type of project, and noise-sensitive land uses. For screening purposes, all noise-sensitive land uses are considered to be in a single category.

**TABLE 3.8.2
EXISTING CONDITIONS FOR RAIL LINES AT AT-GRADE CROSSINGS**

Existing Conditions	Crossing #1 Norfolk Southern (NS) (*Blue)	Crossing #2 CSX (*Red)	Crossing #3 Norfolk Southern (NS) (*Blue)	Crossing #4 CSX – West Leg (*Red)	Crossing #5 CSX – East Leg (*Red)	Crossing # 6 North Carolina Railroad (NCR) (*Green)	Crossing #7 NCR/NS – Downtown Raleigh (*Orange)	Crossing #8 NCR/NS to Goldsboro (*Orange)
Existing Train Speed	10	10	10	10	10	10	10	50/60
Average number of diesel locomotives per freight train	2	2	2	2	2	2	2	2
Average number of cars per freight train	50	50	50	50	50	50	50	50
Average number of diesel locomotives per passenger train	--	1	--	1	1	1	1	1
Average number of cars per passenger train	--	5	--	5	5	7	5	8
Average number of freight trains per day (days per week) during normal daytime hours of 7 AM to 10 pm	2 (5)	4 (6)	2 (5)	2 (6)	2 (6)	4 (7)	2 (5)	4 (6)
Average number of passenger trains per day (days per week) during normal daytime hours of 7 AM to 10 pm	-- (--)	4 (7)	-- (--)	4 (7)	2 (7)	2 (7)	8 (7)	4 (7)
Average number of freight trains per night (nights per week) during normal nighttime hours of 10 pm to 7 AM	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Average number of passenger trains per night (nights per week) during normal nighttime hours of 10 pm to 7 AM	0 (0)	1 (7)	0 (0)	1 (7)	0 (0)	1 (7)	0 (0)	0 (0)

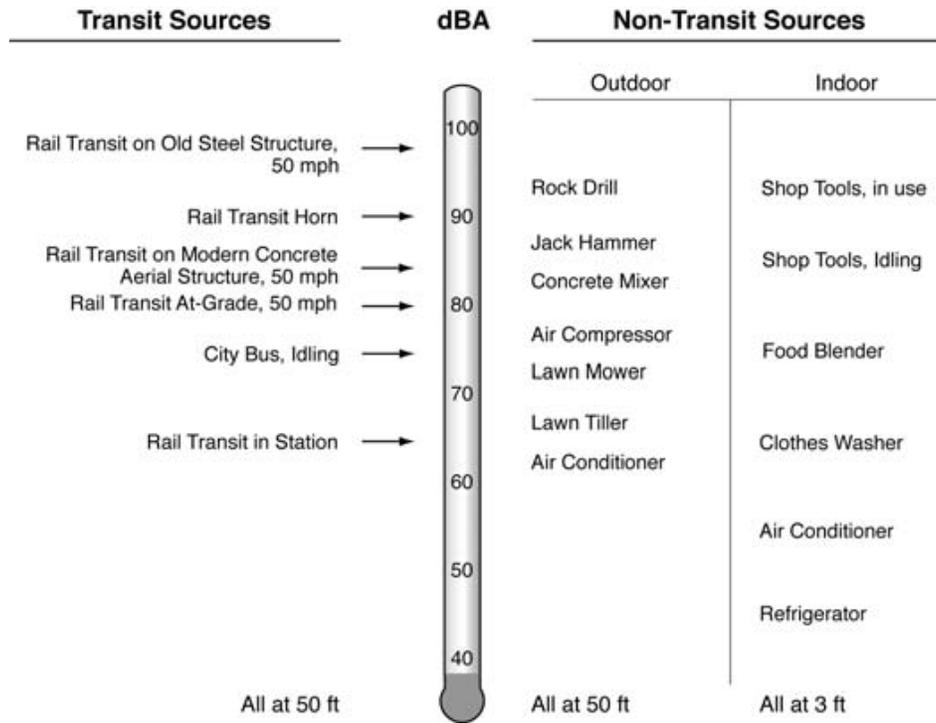
Note: Existing crossing at West Martin Street is not included in table as it will become a grade separation with the proposed project.
See Exhibit 3.8.1 for crossing locations. *Indicates color shown in Exhibit 3.8.1.

**TABLE 3.8.3
PROPOSED CONDITIONS FOR RAIL LINES AT AT-GRADE CROSSINGS**

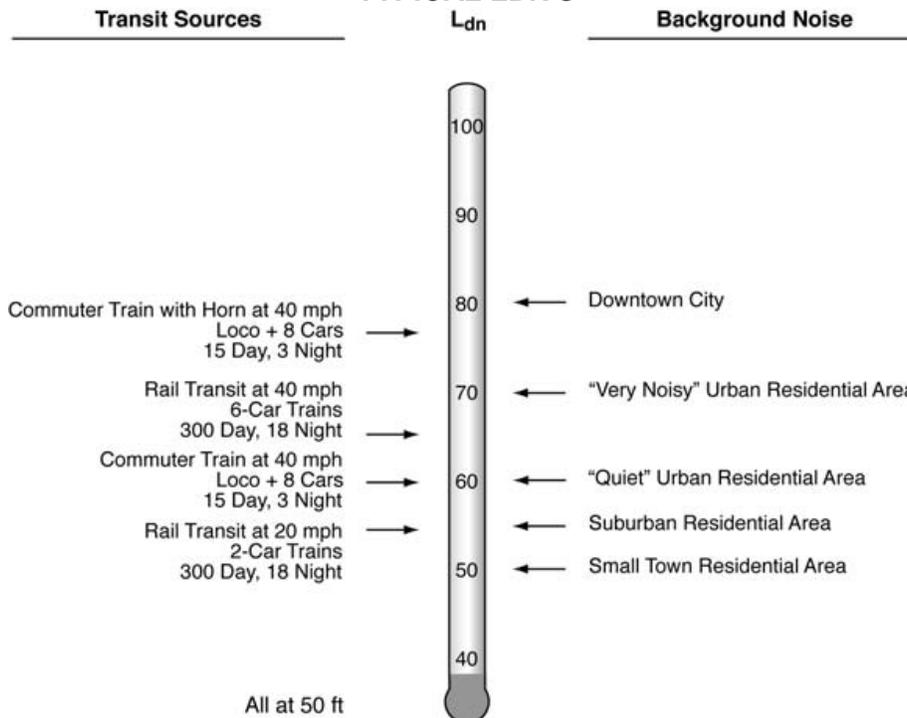
Proposed Conditions	Crossing #1 Norfolk Southern (NS) (*Blue)	Crossing #2 CSX (*Red)	Crossing #3 Norfolk Southern (NS) (*Blue)	Crossing #4 CSX – West Leg (*Red)	Crossing #5 CSX – East Leg (*Red)	Crossing #6 North Carolina Railroad (NCRR) (*Green)	Crossing #7 NCRR/NS – Downtown Raleigh (*Orange)	Crossing #8 NCRR/NS to Goldsboro (*Orange)
Future Train Speed	10	25	10	25	25	45	25	50/60
Average number of diesel locomotives per freight train	2	2	2	2	2	2	2	2
Average number of cars per freight train	60	50	60	50	50	70	50	70
Average number of diesel locomotives per passenger train	--	1	--	1	1	1	1	1
Average number of cars per passenger train	--	5	--	5	5	7	5	8
Average number of freight trains per day (days per week) during normal daytime hours of 7 AM to 10 pm	2 (5)	4 (6)	2 (5)	2 (6)	2 (6)	4 (7)	2 (5)	4 (6)
Average number of passenger trains per day (days per week) during normal daytime hours of 7 AM to 10 pm	-- (--)	8 (7)	-- (--)	8 (7)	2 (7)	2 (7)	12 (7)	4 (7)
Average number of freight trains per night (nights per week) during normal nighttime hours of 10 pm to 7 AM	1 (7)	1 (7)	1 (7)	1 (7)	1 (7)	1 (7)	1 (7)	1 (7)
Average number of passenger trains per night (nights per week) during normal nighttime hours of 10 pm to 7 AM	0 (0)	1 (7)	0 (0)	1 (7)	0 (0)	1 (7)	0 (0)	0 (0)

Note: Shading indicates change from existing conditions.
See Exhibit 3.8.1 for crossing locations. *Indicates color shown in Exhibit 3.8.1

**FIGURE 3.8.1
TYPICAL A-WEIGHTED SOUND LEVELS**



**FIGURE 3.8.2:
TYPICAL LDN'S**



**TABLE 3.8.4
LAND USE CATEGORIES AND METRICS FOR TRANSIT NOISE IMPACT CRITERIA**

Land Use Category	Noise Metric (dBA)	Description of Land Use Category
1	Outdoor Leq(h)*	Tracts of land where quiet is an essential element in their intended purpose. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheatres and concert pavilions, as well as National Historic Landmarks with significant outdoor use. Also included are recording studios and concert halls.
2	Outdoor Ldn	Residences and buildings where people normally sleep. This category includes homes, hospitals and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.
3	Outdoor Leq(h)*	Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, and churches where it is important to avoid interference with such activities as speech, meditation and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums. Certain historical sites, parks and recreational facilities are also included.

* Leq for the noisiest hour of transit-related activity during hours of noise sensitivity.

Noise Assessment Criteria - The FTA noise impact criteria as accepted by FRA were used to determine freight rail noise impacts. These criteria are presented in Table 3.8.5 and Exhibits 3.8.3 and 3.8.4 and are documented in the FTA Report Transit Noise and Vibration Impact Assessment.⁶² The FTA noise impact criteria were developed specifically for transit noise sources operating on fixed guideways or at fixed facilities and are applicable to fixed guideway freight rail lines. These criteria are based on a curve relating the percentage of people highly annoyed to the noise exposure in their residential environment. The residential criteria are based on the day-night average sound levels (Ldn), which includes a nighttime noise penalty that accounts for people's increased noise annoyance during the night. The non-residential criteria are based on the daytime, peak-hour equivalent sound level (Leq) for the noisiest hour of transit related activity during which human use occurs at the sensitive location. The daytime Leq is used for determining noise impacts at locations where nighttime noise sensitivity is not a factor.

⁶² Transit Noise and Vibration Impact Assessment FTA-VA-90-1003-06, May 2006

The impact criteria are based on the relationship between existing noise exposure and project noise exposure. The criteria are divided into three categories (no impact, impact, and severe impact) based on the predicted project noise exposure level. Impact determinations are made by comparing the predicted project noise exposure with the existing sound level determined for each particular noise sensitive location. The relationship between impact assessment and the three impact categories is as follows:

- **No Impact:** If the project noise exposure is less than the No Impact criteria, no rail impacts are predicted. For existing noise exposures between 50 and 65 Ldn, the No Impact criteria allows a noise exposure increase of 2-5 dBA.
- **Moderate Impact:** If the project noise exposure is within the Moderate Impact criteria, moderate noise impacts are predicted. The Moderate Impact criteria do not meet the noise mitigation criteria, but reflect the fact that the rail service is predicted to increase noise exposures at sensitive land uses adjacent to the track. For existing noise exposures between 50 and 65 Ldn, the Moderate Impact criteria allows a noise exposure increase of 4-10 dBA.
- **Severe Impact:** If the project noise exposure is within the Severe Impact criteria, severe noise impacts are predicted. The Severe Impact criteria meet the noise mitigation criteria and reflect the fact that the rail service is predicted to substantially increase noise exposures at sensitive land uses adjacent to the track. For existing noise exposures between 50 and 65 Ldn, the Severe Impact criteria applies to increased noise exposures in excess of 10 dBA.

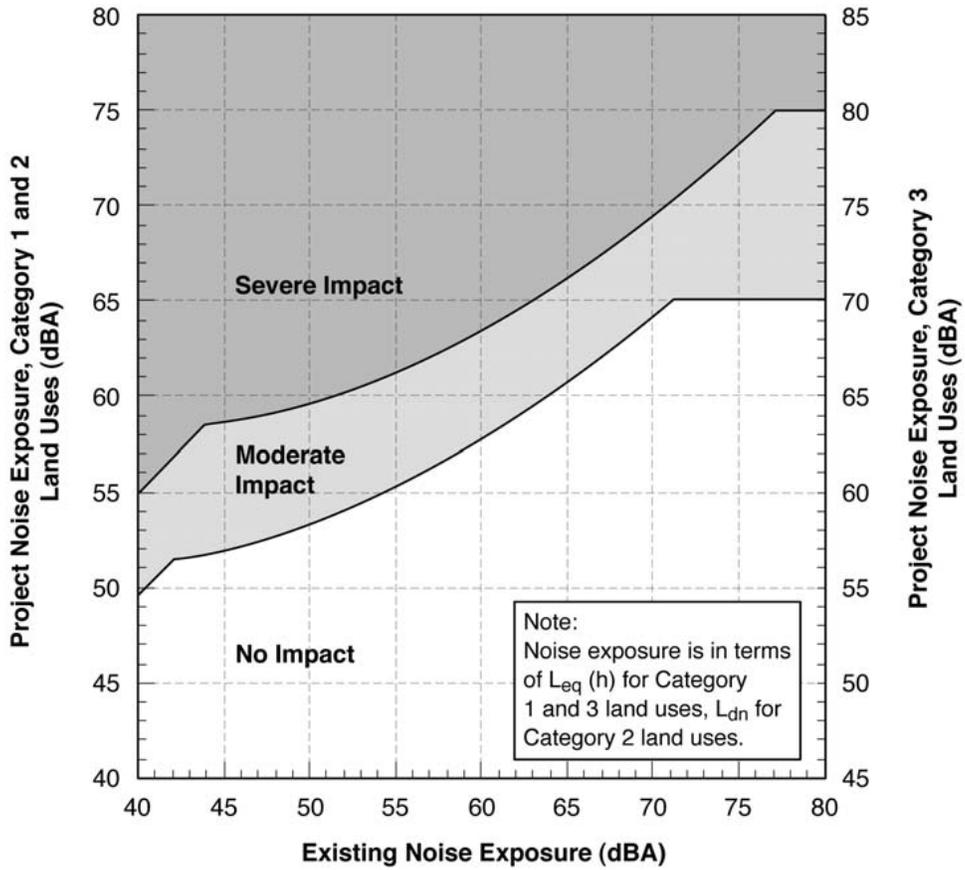
**TABLE 3.8.5
FTA NOISE IMPACT CRITERIA**

Existing Noise Exposure Leq(h) or Ldn (dBA)	Category 1 or 2 Sites			Category 3 Sites		
	No Impact	Moderate Impact	Severe Impact	No Impact	Moderate Impact	Severe Impact
<43	<Ambient + 10	Ambient	>Ambient	<Ambient	Ambient	>Ambient
43	<52	52-58	>58	<57	57-63	>63
44	<52	52-58	>58	<57	57-63	>63
45	<52	52-58	>58	<57	57-63	>63
46	<53	53-59	>59	<58	58-64	>64
47	<53	53-59	>59	<58	58-64	>64
48	<53	53-59	>59	<58	58-64	>64

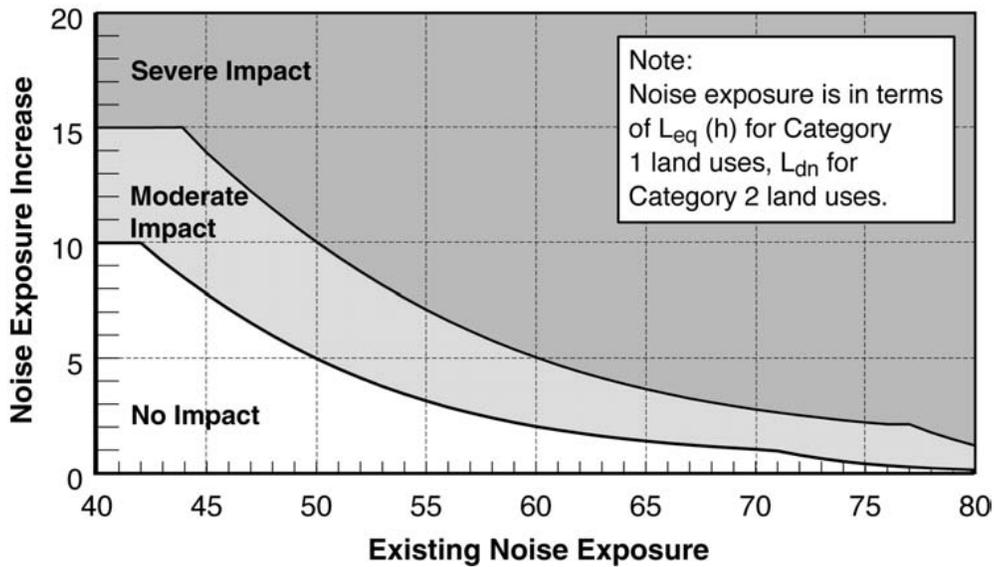
Existing Noise Exposure Leq(h) or Ldn (dBA)	Category 1 or 2 Sites			Category 3 Sites		
	No Impact	Moderate Impact	Severe Impact	No Impact	Moderate Impact	Severe Impact
49	<54	54-59	>59	<59	59-64	>64
50	<54	54-59	>59	<59	59-64	>64
51	<54	54-60	>60	<59	59-65	>65
52	<55	55-60	>60	<60	60-65	>65
53	<55	55-60	>60	<60	60-65	>65
54	<55	55-61	>61	<60	60-66	>66
55	<56	56-61	>61	<61	61-66	>66
56	<56	56-62	>62	<61	61-67	>67
57	<57	57-62	>62	<62	62-67	>67
58	<57	57-62	>62	<62	62-67	>67
59	<58	58-63	>63	<63	63-68	>68
60	<58	58-63	>63	<63	63-68	>68
61	<59	59-64	>64	<64	64-69	>69
62	<59	59-64	>64	<64	64-69	>69
63	<60	60-65	>65	<65	65-70	>70
64	<61	61-65	>65	<66	66-70	>70
65	<61	61-66	>66	<66	66-71	>71
66	<62	62-67	>67	<67	67-72	>72
67	<63	63-67	>67	<68	68-72	>72
68	<63	63-68	>68	<68	68-73	>73
69	<64	64-69	>69	<69	69-74	>74
70	<65	65-69	>69	<70	70-74	>74
71	<66	66-70	>70	<71	71-75	>75
72	<66	66-71	>71	<71	71-76	>76
73	<66	66-71	>71	<71	71-76	>76
74	<66	66-72	>72	<71	71-77	>77
75	<66	66-73	>73	<71	71-78	>78
76	<66	66-74	>74	<71	71-79	>79
77	<66	66-74	>74	<71	71-79	>79
>77	<66	66-75	>75	<71	71-80	>80

* Ldn is used for land use where nighttime sensitivity is a factor; Leq during the hour of maximum transit noise exposure is used for land use involving only daytime activities.

**FIGURE 3.8.3
FTA NOISE IMPACT CRITERIA**



**FIGURE 3.8.4:
INCREASE IN CUMULATIVE NOISE LEVELS ALLOWED BY CRITERIA
(LAND USE CAT. 1 & 2)**



3.8.1 Locomotive/Train Noise Analysis

Noise associated with the running of freight trains is predominantly from the locomotive exhaust, cooling fans, diesel engines, and the interaction of the steel wheels rolling on steel rails. In order to screen for potential impacts from existing and future locomotive and car operations, the FTA Noise Impact Assessment Spreadsheet was used to establish threshold boundaries.⁶³ To screen for presence of potential impacts, input variables used the future conditions under the existing noise environment determined by field measurements completed by Stantec Consulting Services, Inc. on August 3, 2012. One location in the downtown study area (see Exhibit 3.8.3) was measured for a 24 hour period and seven other locations were measured in 20 minute increments. At the Greenfield Siding location (see Exhibit 3.8.4) a 24 hour measurement was taken as well as three other locations measured in 20 minute increments. The 24 hour measurement from the Greenfield study area was also used to represent the East Raleigh Siding since the train volumes are identical (this approach provides a conservative assessment, as it yielded the lowest ambient level). The measurement locations are shown in Exhibits 3.8.3 and 3.8.4.

The results of the assessment for future operations indicate that noise levels will increase by 1 – 3 dBA in five locations. This increase does not meet the criteria for an impact. The fact that NCDOT does not anticipate that the Project will have an impact on sound levels is because only one additional night train is predicted and the total number of trains predicted is not enough to substantially impact noise levels. As stated before a 3 dB increase is a doubling of acoustic energy. Studies have shown that 3 dB is the threshold for people to perceive a change in sound level. The average person will not be able to distinguish a 3 dB difference in sound level in a laboratory condition. Therefore, the areas shown to have a 1-3 dBA noise level increase will barely be able to perceive a change from existing sound levels. The results are shown in Table 3.8.6 below.

⁶³ http://www.fta.dot.gov/12347_2233.html

**TABLE 3.8.6
LOCOMOTIVE/TRAIN NOISE IMPACT TABLE**

Measurement	Location	Distance to Nearest Railroad	Existing Measurement	Increase with Project	Impact?
Downtown					
DT – 24 Hour	Boylan Avenue near Bridge	72' (NCRR/NS)	70 dBA	0 dBA	No
DT – M1	Bloomsbury Estates Condos	128' (NCRR/NS)	66 dBA	0 dBA	No
DT – M2	Saint Mary's Townhomes West Hargett Street	230' (NCRR/NS)	59 dBA	0 dBA	No
DT – M3	Corner of West Hargett Street and Snow Avenue	118' (NCRR/NS)	55 dBA	3 dBA	No
DT – M4	Saint Mary's Townhomes Snow Avenue	293' (NCRR/NS)	53 dBA	0 dBA	No
DT – M5	Boylan Ave. and Dupont Circle	321' (NCRR/NS)	63 dBA	0 dBA	No
DT – M6a	Future Union Station Site	179' (NCRR/NS)	53 dBA	2 dBA	No
DT – M6b	Future Union Station Site	104' (CSX)	53 dBA	1 dBA	No
DT – M7	Cox Ave. and Park Avenue	127' (NCRR/NS)	62 dBA	0 dBA	No
Greenfield Siding					
GS – 24 Hour	Gin Street	255' (NCRR/NS)	50 dBA	2 dBA	No
GS – M1	Gin Street	460' (NCRR/NS)	57 dBA	0 dBA	No
GS – M2	E. Garner Road and Antelope Lane	140' (NCRR/NS)	60 dBA	1 dBA	No
GS – M3	Antelope Lane	523' (NCRR/NS)	54 dBA	0 dBA	No

Note: Shading indicates increase in sound level with project.

3.8.2 Locomotive Warning Horn Noise Analysis

As noted above, train noise comes from the sound of the horns, wheel-rail interaction, diesel engines and vehicle cooling fans. The train horn noise is the loudest of these factors. Train horns are installed on locomotives to warn motorists or pedestrians of an approaching train. The Federal Railroad Administration (FRA) Final Rule -- Use of Locomotive Horns at Highway-Rail Grade Crossings, 2006, require trains to sound their horns as they approach every railroad crossing (although FRA has the authority to make reasonable exceptions)⁶⁴. Often automobiles operate with the windows rolled up and air conditioning systems on and radio in use. FRA requires that each locomotive be equipped with a horn that produces a minimum sound level of 96 dB(A) and a maximum sound level of 110 dB(A) at 100 feet forward of the locomotive in its

⁶⁴ <http://www.fra.dot.gov/eLib/Details/L02809>

direction of travel in order to be heard within the vehicles. Other requirements include but are not limited to the following:

- Horns must be sounded at least 15 seconds but no more than 20 seconds before locomotive enters crossing (for trains travelling more than 60 mph no more than one-fourth of a mile before entering the crossing) and,
- The horn sequence must consist of two “long” blasts, one “short” blast, and one “long” blast before the train reaches the crossing.

Operating rules for NS and CSX Transportation also site that the locomotive horn shall be sounded when:

- Approaching passenger stations, drawbridges and tunnels;
- Approaching and passing standing trains;
- As an alarm for employees, roadway workers, other persons or animals on or near the track, and,
- When running against the current of traffic and they are approaching stations, curves or other points of view that may be obscured and when approaching passenger or freight trains to be passed.⁶⁵

Unfortunately, when the locomotive horn is loud enough to be heard within an approaching vehicle it can disturb those living or working near the railroad crossing, particularly if there are a numerous trains per day sounding the horns. FRA’s Horn Noise Model was used to determine the noise impacts that will occur as a result of the train horns in the future conditions.⁶⁶

The noise from the horns is computed in terms of Ldn and is compared with prior ambient noise. Ldn, or Day-Night Sound Level, is the descriptor most commonly used in environmental noise assessments and describes the cumulative noise exposure from all events over a 24 hour period, with events occurring between 10 pm and 7 am being increased by 10 dB to account for greater nighttime sensitivity to noise. According to the US Environmental Protection Agency, the typical ambient level in a suburban residential area is Ldn = 55 dBA. The FRA model assesses the impact of the change in the noise environment and categorizes the impacts as No

⁶⁵ CSX Transportation Operating Rules and Signal Aspects and Indications, January 1, 2010 and NS Operating Rules, January 1, 2012

⁶⁶ <http://www.fra.dot.gov/Page/P0599#six>

Impact, Impact or Severe Impact. The following assumptions and the information in Table 3.8.7 were used in the horn noise analysis:

- The crossing of West Martin Street (currently a drive without gates and lights) will become a grade separation with the proposed project as shown in Exhibit 3.8.1.
- Horns are present under existing and future conditions.
- Horn Lmax (dBa) at 100 feet is 104.
- Horns on locomotives are mounted in the middle.
- The non-train noise environment is urban for all downtown crossings (crossings 1-7) and rural for the crossing at Auburn-Knightdale Road (crossing 8) at the Greenfield Siding location.
- The type of shielding near at grade crossings by building rows is considered dense urban for all downtown crossings (crossings 1-7) and rural for the crossing at Auburn-Knightdale Road (crossing 8) at the Greenfield Siding location.
- The length of the impact area is $\frac{1}{4}$ mile along the track.
- The platform of the Raleigh Union Station was treated as a crossing to determine Impact Zones from the horn noise as trains approach and depart from the station.
- Horn noise from the existing station will be eliminated when the new station is built, however, to be conservative the horn noise events at the existing station were not considered.

**TABLE 3.8.7
LOCOMOTIVE WARNING HORN ASSUMPTIONS USED**

Assumptions Used for Locomotive Warning Horn Assessment	Crossing #1 Jones Street	Crossing #2 Jones Street	Crossing #3 Hargett Street	Crossing #4 Hargett Street	Crossing #5 Hargett Street	Crossing #6 Cabarrus Street	Crossing #7 Cabarrus Street	Crossing #8 Auburn Knightdale Road
Existing Average Train Speed (mph)	10	10	10	10	10	10	10	55
Future Average Train Speed (mph)	10	25	10	25	25	45	25	55
Existing Number of Trains (Freight trains + Passenger trains)	2	9	2	7	4	7	10	8
Future Number of Trains (Freight trains+ Passenger trains)	3	14	3	12	5	8	15	9
Existing Number of day trains between the normal daytime hours of 7 am to 10 pm	2	8	2	6	4	6	10	8
Future Number of day trains between the normal daytime hours of 7 am to 10 pm	2	12	2	10	4	6	14	8
Existing Number of night trains between the normal nighttime hours of 10 pm to 7 am	--	1	--	1	--	1	--	--
Future Number of night trains between the normal nighttime hours of 10 pm to 7 am	1	2	1	2	1	2	1	1
Existing Average Number of Cars (Freight cars+ Passenger cars/Total # of trains)	50	25	50	18	28	32	14	29
Future Average Number of Cars (Freight Cars+ Passenger cars/Total # of trains)	60	21	60	16	32	46	14	46
Existing Number of Locomotives (Freight locomotives+ Passenger locomotives/Total # of trains)	2	1	2	1	1	2	1	2
Future Number of Locomotives (Freight locomotives+ Passenger locomotives/Total # of trains)	2	1	2	1	2	2	1	2
Increase in Number of Freight Trains	1	1	1	1	1	1	1	1
Increase in Number of Passenger Trains	--	4	--	4	--	--	4	--

Note: The crossing of West Martin Street (currently a drive without gates and lights) will become a grade separation with the proposed project as shown in Exhibit 3.8.1. All numbers rounded to nearest whole number.

Locomotive Warning Horn Assessment Results - Table 3.8.8 shows the at grade train noise impact zones resulting from proposed future train traffic for the project study area. As shown in Exhibit 3.8.5, within the Station project study area, 23 commercial receptors, 55 residential receptors and one church are located in the Locomotive Warning Horn Impact Zone and 24 commercial receptors are located in the Severe Impact Zone. Horn noise from the existing station will be relocated to the new Station and will not provide a reduction in horn noise in the Station project study area.

The Project includes the grade separation of the East Leg of the Boylan Wye over West Martin Street, resulting in the elimination of one at-grade crossing which will reduce the horn noise due to that crossing. However, as trains approach and depart the new station they are required to blow their horns which negate any reduction in horn noise due to the West Martin Street grade separation. The Project will close a private at-grade crossing in the East Raleigh siding, which will provide a horn noise reduction and result in a slightly smaller noise impact zone than the existing condition.

As shown in Exhibit 3.8.6, within the Greenfield siding project study area, seven residential receptors (including the William Watts House which is recommended as eligible for the National Register of Historic Places) are located within the Severe Impact Zone and three residential and two commercial receptors are located within the Impact Zone. It should be noted that these impact zones are a result of the additional twelve intercity and SEHSR passenger trains that will serve Raleigh in the future and not a result of the construction of the Project. These additional train frequencies will occur regardless of whether the Project is build. Therefore, NCDOT does not recommend mitigation measures as the Project will not significantly change existing travel patterns for trains in the Boylan Wye area. Current train travel patterns are very similar to train travel patterns in the design year.

**TABLE 3.8.8
HORN IMPACT DISTANCES AT AT-GRADE CROSSINGS**

Proposed Conditions	Crossing #1 West Jones Street	Crossing #2 West Jones Street	Crossing #3 West Hargett Street	Crossing #4 West Hargett Street	Crossing #5 West Hargett Street	Crossing #6 West Cabarrus Street	Crossing #7 West Cabarrus Street	Crossing #8 Auburn Knightdale Road
Impact Distance at Crossing	268'	258'	268'	262'	259'	248'	279'	707'
Severe Impact Distance at Crossing	146'	81'	146'	92'	172'	79'	126'	243'
Impact Distance at 660' from crossing (1/2 Zone length)	208'	192'	208'	195'	198'	205'	208'	602'
Severe Impact Distance at 660' from crossing (1/2 Zone length)	110'	59'	110'	63'	99'	68'	89'	206'

Note: The crossing of West Martin Street (currently a drive without gates and lights) will become a grade separation with the proposed project as shown in Exhibit 3.8.1.

**TABLE 3.8.9
HORN IMPACT DISTANCES AT RALEIGH UNION STATION PLATFORM**

Proposed Conditions	Raleigh Union Station Platform
Impact Distance at Crossing	279'
Severe Impact Distance at Crossing	126'
Impact Distance at 660' from crossing (1/2 Zone length)	208'
Severe Impact Distance at 660' from crossing (1/2 Zone length)	89'

Note: Raleigh Union Station was treated as a crossing for analysis purposes.

3.8.3. Vibration Analysis

The FTA has published the most recent guidance model for the assessment of noise and vibration impacts in transportation projects, *Transit Noise and Vibration Impact Assessment*.⁶⁷ The FTA impact assessment procedure does not require the measurement of baseline vibration levels to determine if vibrations from line operations will result in an impact to the adjoining communities. Potential vibration impacts from the operation movements are determined based on vibration threshold levels which must be exceeded. The FTA's experience with community response to ground-borne vibrations indicate that when there are only a few train events per day, it will take higher vibration levels to evoke the same community response that will be expected from more frequent events. This is taken into account in the FTA criteria by distinguishing between projects with frequent, occasional and infrequent events. Frequent events are described as more than 70 vibration events per day; occasional events are defined as between 30 and 70 vibration events per day; and infrequent events are described as fewer than 30 vibration events per day. The vibration criteria levels shown in Table 3.8.10 are defined in terms of human annoyance for different land use categories such as high sensitivity (Category 1), residential (Category 2) and institutional (Category 3). In general, the vibration threshold of human perceptibility is roughly 65 VdB.

Ground-borne vibration is almost never annoying to people who are outdoors. Although the motion of the ground may be perceived, without the effects associated with the shaking of the building, the motion does not produce the same human reaction. In addition, the rumble noise that usually accompanies the building vibration is perceptible only inside buildings.

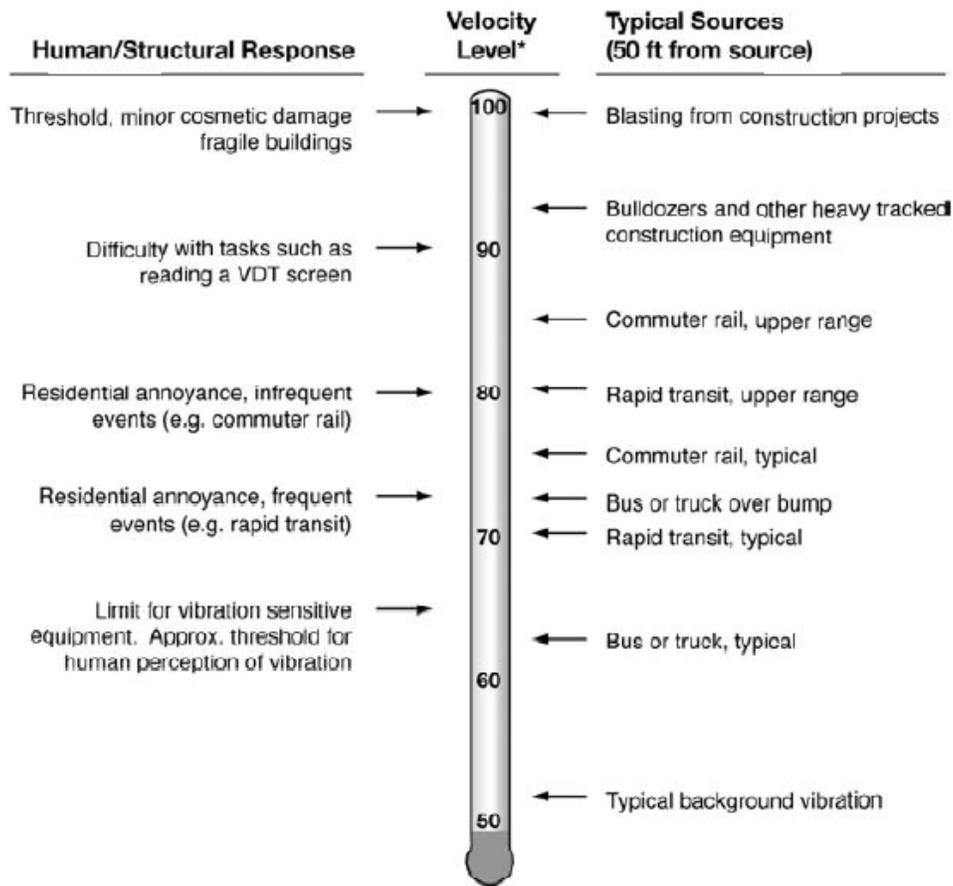
The motion due to ground-borne vibration is described in vibration velocity levels, measured in decibels referenced to 1 micro-inch per second. To avoid confusion with the decibel used to describe sound levels, the abbreviation VdB is used. Figure 3.8.5 illustrates common vibration sources and the human and structural response to ground-borne vibration.

The predicted vibration levels are based on changes in vibration levels at particular land uses at various distances from the track. The analysis takes into account freight and passenger service train vibrations, whether they occur in succession (i.e. a single track, where one train follows another), or if the trains are operating on separate tracks (i.e. where the trains may be operating

⁶⁷ Transit Noise and Vibration Impact Assessment FTA-VA-90-1003-06, May 2006

simultaneously along the line on dual tracks). In both scenarios, the same number of freight and passenger trains will pass a given point, albeit at different times, but within the same rail corridor and at similar distances from nearby uses. While there may be some added cumulative vibration at a particular moment when one train passes another, this is not expected to occur very often and for a very short duration and is not expected to add measurably to the predicted vibration levels.

**FIGURE 3.8.5
TYPICAL LEVELS OF GROUND-BORNE VIBRATION**



* RMS Vibration Velocity Level in VdB relative to 10⁻⁶ inches/second

**TABLE 3.8.10
GROUND-BORNE VIBRATION (GBV) AND GROUND-BORNE NOISE (GBN) IMPACT
CRITERIA FOR GENERAL ASSESSMENT**

Land Use Category	GBV Impact Levels (VdB re 1 micro-inch / sec)			GBN Impact Levels (dB re 20 micro Pascals)		
	Frequent Events ¹	Occasional Events ²	Infrequent Events ³	Frequent Events ¹	Occasional Events ²	Infrequent Events ³
Category 1 <i>Buildings where vibration will interfere with interior operations</i>	65 VdB ⁴	65 VdB ⁴	65 VdB ⁴	N/A ⁴	N/A ⁴	N/A ⁴
Category 2 <i>Residences and buildings where people normally sleep</i>	72 VdB	75 VdB	80 VdB	35 dBA	38 dBA	43 dBA
Category 3 <i>Institutional land uses with primarily daytime use</i>	75 VdB	78 VdB	83 VdB	40 dBA	43 dBA	48 dBA

NOTES:

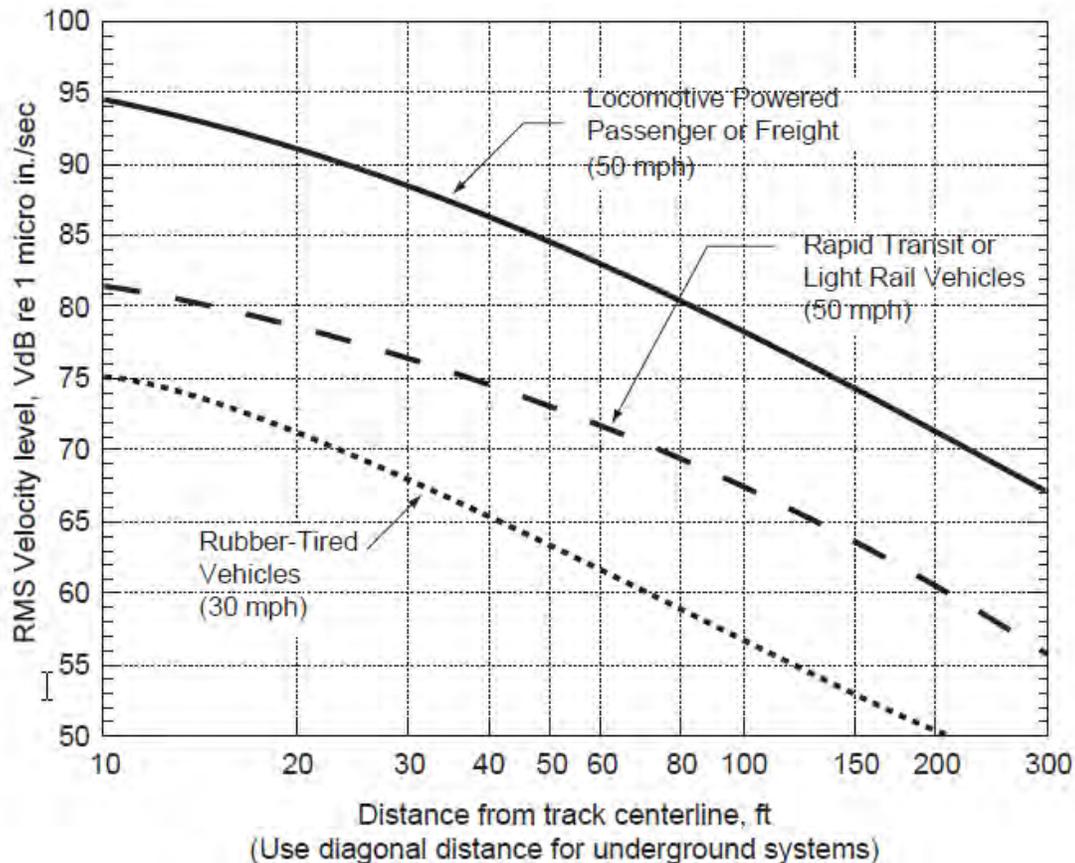
1. "Frequent Events" is defined as more than 70 vibration events of the same source per day. Most rapid transit projects fall into this category.
2. "Occasional Events" is defined as between 30 and 70 vibrations of the same source per day. Most commuter trunk lines have this many operations.
3. "Infrequent Events" is defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines.
4. This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors. Vibration-sensitive equipment is generally not sensitive to ground-borne noise.

The major existing source of vibration for the Project is from existing trains and traffic on local roads. As described previously, existing vibration measurements were not used to determine the potential impact of the Project. As this Project will have less than 30 vibration events per day in the design year, this assessment uses the criteria for infrequent events. The project related vibration was estimated using the generalized ground surface vibration curves from the FTA Guidance Manual (Figure 3.8.6). The curve was then adjusted to account for project specific factors. It was assumed that the entire corridor will use continuous welded rail, with an average train speed of 20 mph downtown and 50 mph at the Greenfield and East Raleigh Siding locations.

Since there will be less than 30 train events per day, the FTA impact threshold applicable to residences is 72 decibels (VdB) downtown (due to lowered speeds) and 80 decibels (VdB) in the Greenfield siding location. For institutional and commercial land use the threshold is 75 decibels (VdB) downtown and 83 VdB in the Greenfield and East Raleigh Siding locations. Based upon these assumptions, the impact distance for residences will be 190 feet from the center of the tracks downtown and 82 feet from the center of the tracks in the Greenfield siding location. The impact distance for institutional and commercial buildings will be 140 feet from the

centerline of the tracks downtown and 63 feet from the center of the tracks in the Greenfield siding location.

**FIGURE 3.8.6
GENERALIZED GROUND SURFACE VIBRATION CURVES⁴⁵**



In addition to ground-borne vibration criteria for humans in residential, institutional and special buildings and vibration-sensitive equipment, there are ground-borne vibration criteria for potential damage to structures. The limits of vibration that buildings can withstand are substantially higher than those for humans and sensitive equipment. It is extremely rare for vibration from train operations to cause any sort of building damage, including minor cosmetic damage. Table 3.8.11 presents criteria for assessing the potential for vibration damage to structures based on the type of building construction. It is not anticipated that any buildings within the project vicinity will experience vibration levels capable of producing damage.

**TABLE 3.8.11
CONSTRUCTION VIBRATION DAMAGE CRITERIA**

Building Category	Ground-borne Vibration Level (VdB) and Peak-Particle Velocity Equivalent (in/sec)
Reinforced-concrete, steel or timber	102 VdB (0.5 in/sec)
Engineered concrete and Masonry	98 VdB (0.3 in/sec)
Non-engineered timber and masonry buildings	94 VdB (0.2 in/sec)
Buildings extremely sensitive to vibration damage	90 VdB (0.12 in/sec)

Assessment Results - Using aerial photography and Geographic Information System, impacts were calculated for the design year. For Category 2 receptors (residences and buildings where people normally sleep) there were six impacts. For Category 3 receptors (institutional uses such as offices, businesses, schools and churches) it was determined that 36 receptors will be impacted. All of the receptors are located within the downtown study area (limits shown in Exhibit 3.8.3). There were no impacts in the Greenfield or East Raleigh Siding locations.

3.8.4 Construction Noise

General construction noise impacts, such as temporary speech interference for passersby and those individuals living and working near the Project, can be expected particularly from earth moving equipment during grading operations. However, considering construction noise is relatively short in duration, these impacts are not expected to be substantial. The transmission loss provided by nearby structures and vegetation should be sufficient to moderate the effects of intrusive construction noise.

The NCDOT specifications limit noise levels to 80 dBA Leq in sensitive areas adjacent to construction. The NCDOT may require abatement where limits are exceeded. The NCDOT limits work that produces objectionable noise during normal sleeping hours.

3.8.5. Noise and Vibration Analysis Summary

As shown in Exhibit 3.8.5, within the downtown project study area, 23 commercial receptors, 55 residential receptors and one church are located in the Locomotive Warning Horn Impact Zone and 24 commercial receptors are located in the Severe Impact Zone. As shown in Exhibit 3.8.6., within the Greenfield siding project study area, seven residential receptors (including the William Watts House which is recommended as Eligible for the National Register of Historic Places) are located within the Severe Impact Zone and three residential and two commercial

receptors are located within the Impact Zone. A private crossing located at the Raleigh Siding location will be closed which will cause a reduction in horn noise at that location.

Assessment of Reasonable Mitigation Measures – The benefits of the mitigation measures are measured against the costs of the measures to determine the reasonableness of mitigation. Mitigation does not apply to most commercial or industrial uses because, in general, the activities within these buildings are compatible with higher noise levels. They do apply to business uses which depend on quiet as an important part of operations, such as sound and motion picture recording studios. The commercial receptors in the project area are mainly warehouses that have been built along the railroad for quite some time.

Although NCDOT is not recommending mitigation measures for this Project, there are two types of noise mitigation measures that could be considered for rail noise abatement: building soundproofing or wayside horns. Sound attenuating barriers such as earth berms or sound walls were eliminated from consideration because the grid street system precludes the ability to build a wall of enough length to provide a reduction in sound levels.

Building sound proofing can provide noise reductions of up to 5 to 20 dBA depending on how sound proof the original building is and the quality of the existing windows. Under FTA guidelines, interior soundproofing must provide noise reductions on interior noise levels to below 70 dBA (Lmax) interior noise level during each noise event. FRA horn regulations require locomotive warning horn Lmax levels to be 92 to 110 dBA at 100 feet from the track.

A stationary wayside horn is a warning device (like a train horn) which is located at the grade crossing, as opposed to moving along with the train as its warning horn does. Because FRA's train horn rule requires locomotive engineers to begin to sound train horns at least 15 seconds, and no more than 20 seconds, in advance of all public crossings, wayside horns would eliminate most or all train horn impacts from the Project occurring at locations removed from the grade crossing.⁶⁸

Conclusions – As detailed in Section 3.8.1, based on the Locomotive/Train noise assessment, using the FTA Noise Impact Assessment Spreadsheet to determine impacts, for future

⁶⁸ 49 CFR Part 222.

operations, the Project will increase noises levels related to locomotive and train noise by 1 – 3 dBA. This does not meet the criterial for an impact.

As detailed in Section 3.8.2, for impacts as a result of Locomotive Warning Horns, the FRA noise computation method to assess the noise impact of train horns in the vicinity of roadway-rail grade crossings was used. This method uses a special train horn noise model to predict noise levels to the side of the railway. The model incorporates the FRA noise impact criteria which are based on noise exposure increases.

NCDOT estimated the existing noise exposure at every grade crossing (using noise measurements taken on site) in order to compare future noise exposure from the sounding of the locomotive horn. The train noise levels depend on the number of trains traversing the area day and night. Based on the Locomotive Warning Horn noise model, within the Station project study area, 23 commercial receptors, 55 residential receptors and one church are located in the Locomotive Warning Horn Impact Zone and 24 commercial receptors are located in the Severe Impact Zone. Within the Greenfield siding project study area, seven residential receptors (including the William Watts House which is recommended as Eligible for the National Register of Historic Places) are located within the Severe Impact Zone and three residential and two commercial receptors are located within the Impact Zone.

The Project will not significantly change existing travel patterns for trains in the Boylan Wye area as the current train travel patterns are very similar to train travel patterns in the design year. Also, locomotive warning noise impacts result from the projected additional 12 intercity and SEHSR passenger trains that will serve Raleigh regardless of the construction of the Raleigh Union Station. Therefore, NCDOT does not recommend mitigation measures for these impacts. In addition, as discussed above, mitigation is not applicable to most commercial or industrial uses because, in general, the activities within these buildings are compatible with higher noise levels. The residential receptors within the Impact Zones will be impacted regardless of the Project due to their close proximity to the existing railroad. Mitigation options were determined not to be reasonable and feasible; therefore, horn noise mitigation is not recommended.

Vibration impacts were calculated for the design year using aerial photography and GIS. For Category 2 receptors (residences and buildings where people normally sleep) there were 6 impacts. For Category 3 receptors (institutional uses such as offices, businesses, schools and churches) it was determined that 36 receptors will be impacted. All of the receptors are located

within the downtown study area, as outlined in Exhibit 3.8.3. It should be noted that all of these receptors are located at these distances from the existing track in the no-build condition. Future train volumes, which are expected regardless of the project, will create these vibration impacts. The Project will not directly cause any of these impacts and NCDOT does not recommend mitigation. There were no impacts in the Greenfield Siding location.

3.9 NATURAL RESOURCES

The following paragraphs summarize sections from the *Natural Resources Technical Report* prepared for the proposed Project.⁶⁹ A natural resources study was conducted for the project study area from May through June 2012. Streams and wetlands within the project study area are shown in Appendix D.

The project study area lies within the Northern Outer Piedmont ecoregion of the Piedmont physiographic region of North Carolina. Topography within the project study area is generally comprised of low, rounded hills and ridges, and low- to moderate-gradient streams with mostly cobble, gravel, and sandy substrates. Topography within the project study area is generally level, with several small stream crossings. Elevations within the project study area range from 268 to 388 feet above sea level.

3.9.1 Soils

The Wake County Soil Survey identifies 12 soil series within the project study area. Table 3.9.1 details the soils found in the project study area.

⁶⁹ NCDOT, Natural Resources Technical Report, Raleigh Train Station, August 2012

**TABLE 3.9.1
SOIL SERIES IN THE STUDY AREA**

Soil Series	Mapping Unit	Drainage Class	*Hydric Status
Appling sandy loam	Ap	Well Drained	Non-hydric
Cecil sandy loam	Ce	Well Drained	Non-hydric
Cecil clay loam	Cl	Well Drained	Non-hydric
Colfax sandy loam	Cn	Somewhat Poorly Drained	*Hydric
Durham loamy sand	Du	Well Drained	Non-hydric
Enon fine sandy loam	En	Well Drained	*Hydric
Mantachie sandy loam	Me	Somewhat Poorly Drained	Non-hydric
Pacolet sandy loam	Pa	Well Drained	Non-hydric
Pacolet-Gullied land complex	Pg	Well Drained	Non-hydric
Udorthents, loamy	Ud	Well Drained	Non-hydric
Wedowee sandy loam	Wm	Well Drained	Non-hydric
Worsham sandy loam	Wy	Poorly Drained	Hydric

SOURCE: NRTR, NCDOT, August 2012

NOTE: *Hydric = Soils which are primarily nonhydric, but may contain hydric inclusions.

3.9.2 Water Resources

Water resources in the project study area are part of the Neuse River basin (U.S. Geological Survey [USGS] Hydrologic Unit [HU] 03020201). Twelve stream features were identified within the project study area, and ten (Table 3.9.2) were determined to be subject to federal and/or state jurisdiction (Streams 6 and 9 were determined to be ephemeral and not subject to state or federal jurisdiction). The locations of these water resources are shown in Appendix D. A list of the streams and their use classification are presented in Table 3.9.2. Physical characteristics of these streams are presented in Table 3.9.3.

All streams in the project study area have been assigned a Best Usage Class of C; NSW by the NCDWQ. No designated anadromous fish waters or Primary Nursery Areas are present in the project study area. No designated High Quality Waters (HQW), Outstanding Resource Waters (ORW), or water supply watersheds (WS-I or WS-II) are located within 1.0 mile downstream of the project study area.

The North Carolina 2010 Final 303(d) list of impaired waters identifies Rocky Branch as impaired due to a fish consumption advisory. No further impairments of streams located in the project study area are listed in the North Carolina 2012 Draft 303(d) list.

No benthic or fish sampling stations are located within 1.0 mile of the project study area.

**TABLE 3.9.2
JURISDICTIONAL STREAMS IN THE PROJECT STUDY AREA**

Stream Name	Map ID	Figure Nos.	NCDWQ Stream Index Number	NCDWQ Best Usage
UT to Wildcat Branch	Stream S1	4C	27-34-7	C; NSW
UT to Wildcat Branch	Stream S2	4C	27-34-7	C; NSW
UT to Wildcat Branch	Stream S3	4D	27-34-7	C; NSW
UT to Wildcat Branch	Stream S4	4D	27-34-7	C; NSW
UT to Wildcat Branch	Stream S5	4D	27-34-7	C; NSW
UT to Wildcat Branch	Stream S7	4D	27-34-7	C; NSW
UT to Little Arm Branch	Stream S8	4E	27-34-11-2	C; NSW
UT to Rocky Branch	Stream	4A	27-34-6	C; NSW
UT to Rocky Branch	Stream	4A	27-34-6	C; NSW
UT to Rocky Branch	Stream	4B	27-34-6	C; NSW

SOURCE: NRTR, NCDOT, August 2012

**TABLE 3.9.3
PHYSICAL CHARACTERISTICS OF STREAMS IN THE PROJECT STUDY AREA**

Map ID	Bank Height (feet)	Bankfull width (feet)	Water Depth (inches)	Channel Substrate	Velocity	*Clarity
Stream S1	2-3	6-8	4-12	sand	Slow	C
Stream S2	5-6	3-5	2-6	sand, gravel	Slow	C
Stream S3	0.5-1	2-4	0-4	sand	Slow	C
Stream S4	2-12	0.5-4	2-12	sand, gravel, cobble	Slow	ST
Stream S5	2	1-3	2-12	sand, gravel	Slow	C
Stream S7	1	4	2-6	sand, gravel, cobble	Slow	ST
Stream S8	3-8	5-8	2-6	sand, gravel, cobble	Slow	C
Stream S10	3	6	2-8	sand, gravel	Slow	C
Stream S11	0.5-1	2-3	0-3	sand	Slow	C
Stream S12	1-2	4-6	2-12	sand, gravel, rip-rap	Slow	ST

SOURCE: NRTR, NCDOT, August 2012

NOTE: *Clarity: C=Clear, ST=Slightly Turbid, T=Turbid

3.9.3 Biotic Resources

3.9.3.1 Terrestrial Communities

One terrestrial community was identified within the project study area: maintained/disturbed land. A brief description of the community is presented below.

Maintained / Disturbed Land

Maintained/disturbed land occurs within the entire project study area and includes thin patches of disturbed mesic forest, margins of rail lines and roadways, and industrial land. Canopy trees include loblolly pine, sycamore, water oak, silver maple, black walnut, red mulberry, and tulip tree. Sapling and shrub species present include canopy species as well as American elm, sweet-gum, black cherry, post oak, box elder, southern magnolia, red maple, eastern red cedar, Chinese privet, black willow, multiflora rose, crepe myrtle, blackjack oak, mockernut hickory, mimosa, winged sumac, Russian olive, and groundseltree. Vines present in this community include poison ivy, Japanese honeysuckle, trumpet creeper, kudzu, Virginia creeper, blackberries, saw greenbrier, English ivy, common greenbrier and muscadine grape. Herbs within this community include common mullein, bracken fern, bristlegrass, oxeye daisy, broom-sedges, lespedeza, goldenrods, Queen Anne’s lace, buttercup, red clover, ebony spleenwort, elderberry, Japanese stilt grass, pokeberry, dog fennel, Japanese knotweed, Johnson grass, wild onion, switchgrass, crab grasses, and cassias. In areas near wetlands, species adapted to wet conditions such as tulip tree, red maple, American elm, cucumber magnolia, and green ash tend to dominate the canopy and sapling layers, and spicebush, Christmas fern, and lizard’s tail dominate the shrub and herb layers.

The maintained/disturbed community in the study area is expected to be impacted by project activities. Probable impacts to this community were calculated based on the preliminary design. Table 3.9.4 shows the coverage, and anticipated project-related impacts, for this community.

**TABLE 3.9.4
COVERAGE AND IMPACTS OF TERRESTRIAL COMMUNITIES WITHIN THE STUDY AREA**

Community	Total Coverage (acres)	Area Impacted by Alternative (acres)				
		Ral, Sta. & W. Prison Siding	Ral, Sta. & E. Prison Siding	Ral, Sta. & Prison Yard	Ral, Sta. & Greenfield Siding	Ral, Sta. & East Raleigh Siding
Maintained / disturbed land	115.6	13.1	13.5	13.9	21.3	21.2

3.9.3.2 Terrestrial Wildlife

Project study area terrestrial communities are comprised primarily of disturbed habitats that may support a limited diversity of wildlife species due to the urban nature of the project study area (an asterisk indicates if a species or sign of a species was actually observed). Mammals that commonly exploit habitats found within the project study area include gray squirrel, eastern cottontail, raccoon, red fox*, white-tailed deer*, and Virginia opossum. Birds that commonly use forest and forest edge habitats include American crow*, gray catbird*, cedar waxwing*, pine warbler*, prairie warbler*, yellow-throated warbler*, blue jay*, Carolina chickadee, tufted titmouse*, Carolina wren*, northern mockingbird*, sharp-shinned hawk, common yellow-throat, indigo bunting*, eastern towhee*, northern cardinal*, red-bellied woodpecker, and white-eyed vireo. Birds observed within forested wetland areas included red-eyed vireo*, wood thrush*, tufted titmouse*, and northern cardinal*.

Birds that may use the open habitat or water bodies within the project study area include house finch*, chimney swift*, barn swallow*, American kestrel, American robin, European starling*, mourning dove, great crested flycatcher, eastern bluebird, field sparrow, eastern meadowlark, red-tailed hawk, and turkey vulture. Reptile and amphibian species that may use terrestrial communities located in the project study area include bullfrog, marbled salamander, American toad, gray treefrog, painted turtle, eastern box turtle, eastern fence lizard, five-lined skink, black racer, rat snake, northern water snake, eastern ribbon snake, eastern garter snake, and copperhead.

3.9.3.3 Aquatic Communities

Aquatic communities in the project study area are supported by intermittent and perennial warm-water streams and may include gizzard shad, redbreast sunfish, golden shiner, rosyside dace, eastern silvery minnow, bluehead chub, creek chub, redbreast sunfish, crayfishes, and various benthic macroinvertebrates.

Summary of Impacts to Biotic Resources – The build alternatives will alter land currently classified as maintained/disturbed, but will not alter any natural forest communities or aquatic communities. Changes to maintained/disturbed land will primarily involve earthwork (i.e., the placement of fill material, grading, etc.) associated with the construction of the grade separation and roadway improvements.

The construction of the proposed Project will change the total amount of impervious surface in the project study area, but the increase in stormwater runoff will be limited as the Project is in an urbanized area with a high amount of existing imperviousness.

3.9.3.4 Invasive Species

Eleven species from the NCDOT Invasive Exotic Plants of North Carolina were found to occur within the project study area. Six level 1 (Threat) invasive species were identified: Chinese privet, Japanese knotweed, microstegium, Japanese stilt grass, multiflora rose, and kudzu. Four level 2 (Moderate Threat) invasive species were identified: English ivy, mimosa, Johnson grass, and Japanese honeysuckle. One watch list invasive species was identified: Russian olive. The Rail Division will follow NCDOT's Best Management Practices (BMP) for the management of invasive plant species.

3.9.4 Jurisdictional Issues

3.9.4.1 Clean Water Act Waters of the U.S.

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters.⁷⁰ The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was significantly reorganized and expanded in 1972. "Clean Water Act" became the Act's common name with amendments in 1972. The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained.

Ten jurisdictional streams were identified in the project study area (Appendix D: Figures 4A-E). The physical characteristics and water quality designations of each jurisdictional stream are detailed in Section 3.9.2. Table 3.9.5 summarizes jurisdictional characteristics of each stream within the project study area, as well as anticipated impacts associated with the Preliminary Build Alternatives. All jurisdictional streams in the project study area have been designated as warm water streams for the purposes of stream mitigation.

⁷⁰ CLEAN Water Act 33 U.S.C. §1251 et seq. (1972)

**TABLE 3.9.5
JURISDICTIONAL CHARACTERISTICS AND IMPACTS FOR STREAMS IN THE STUDY AREA**

Map ID	Length (linear feet)	¹ Classification	Compensatory Mitigation Required by USACE	² NCDWQ Scores	³ USACE Scores	Subject to Riparian Buffer /acreage
Stream S1	99	Perennial	Yes (1:1 ratio)	34 (above culvert) 33.5 (below culvert)	36 (above culvert) 50 (below culvert)	Yes/0.30
Stream S2	129	Perennial	Yes (1:1 ratio)	30	32	No
Stream S3	154	Intermittent	No	20.25	41	No
Stream S4	271 144	Intermittent Perennial	No Yes (1:1 ratio)	19 (above culvert) 40 (below culvert)	47 (above culvert) 44 (below culvert)	Yes/0.57 Yes/0.28
Stream S5	109	Intermittent	No	24	25	No
Stream S6	NA	Ephemeral	No	15	NA	No
Stream S7	89	Perennial	No	31.5	44	No
Stream S8	152	Perennial	Yes (2:1 ratio)	36	42	Yes/0.35
Stream S9	NA	Ephemeral	No	16	NA	No
Stream S10	42	Perennial	Yes (2:1 ratio)	36.5	44	Yes/0.10
Stream S11	96	Perennial	Yes (1:1 ratio)	30.75	58	No
Stream S12	56	Perennial	Yes (1:1 ratio)	31.5	41	Yes/0.13

Length Impacted by Alternative (linear feet)						
Map ID	Ral, Sta. & W. Prison Siding	Ral, Sta. & E. Prison Siding	Ral, Sta. & Prison Yard	Ral, Sta. & Greenfield Siding	Ral, Sta. & E. Raleigh Siding	Subject to Buffer Rules?
Stream S1	0	0	0	0	0	
Stream S2	0	0	0	0	80	
Stream S3	0	0	0	0	110	
Stream S4	0	0	0	0	80	Yes
Stream S5	0	0	0	0	0	
Stream S6	0	0	0	0	0	
Stream S7	0	0	0	0	0	
Stream S8	0	0	0	0	80	Yes
Stream S9	0	0	0	0	0	
Stream S10	0	0	0	0	0	
Stream S11	0	0	0	0	0	
Stream S12	0	0	0	0	0	

¹Classification: "Ephemeral" streams are not subject to federal or state jurisdiction.

²NCDWQ Score: North Carolina Division of Water Quality Stream Identification Form, v4.11

³USACE Score: U.S. Army Corps of Engineers Stream Assessment Worksheet, v06/03

Six jurisdictional wetlands were identified within the project study area vicinity (Appendix D: Figures 4A, 4C, and 4F). The wetland survey found that both wetlands W5 and W6 are located just outside of the project study area. Wetland classification, quality rating data, and anticipated impacts are presented in Table 3.9.6. All wetlands are located within USGS HU 03020201.

**TABLE 3.9.6
JURISDICTIONAL CHARACTERISTICS AND IMPACTS
FOR WETLANDS IN THE STUDY AREA**

MAP ID	Fig. #	¹ Natural Comm.	³ NC WAM Type	³ NCWAM Rating	⁴ Cowardin Class.	Hydrologic Class.	⁵ NCDEM Rating	Area (acres)
W1	4C	MDL	BHF	Low: L, L, H	PFO1Y	Riverine	44	0.01
W2	4C	MDL	RSF	Low: M, L, L	PFO1A	Riverine	51	>0.01
W3	4F	MDL	BW	Medium: M, L, L	PSS1A	Non-Riverine	15	0.09
W4	4F	MDL	BW	Medium: M, M, L	PFO1A	Non-Riverine	16	0.23

Area Impacted by Alternative (acres)					
Map ID (Fig. #)	Ral, Sta. & W. Prison Siding	Ral, Sta. & E. Prison Siding	Ral, Sta. & Prison Yard	Ral, Sta. & Greenfield Siding	Ral, Sta. & E. Raleigh Siding
W1 (4C)	0	0	0	0	0
W2 (4C)	0	0	0	0	0
W3 (4F)	0	0	0	0	0
W4 (4F)	0	0	0	0	0

¹Natural Community: MDL=Maintained/disturbed land

²NC WAM Wetland Type: BHF=Bottomland Hardwood Forest, RSF=Riverine Swamp Forest, BW=Basin Wetland, and HF=Headwater Forest

³NC WAM Rating: H=High, M=Medium, L=Low. The NC WAM rating is presented as the overall wetland rating followed by ratings for the Hydrology, Water Quality, and Habitat sub-functions (e.g. H: H, M, H).

⁴Cowardin Classification: P=Palustrine; FO=Forested; 1=Broad-leaved deciduous; SS=Shrub Scrub, 1=Broad-leaved Deciduous; Y=Saturated/Semipermanent/Seasonal, A=Temporarily flooded, E=Seasonally Flooded/Saturated.

⁵NCDEM Rating: North Carolina Department of Environmental Management Wetland Rating Worksheet (fourth version)

3.9.4.2 Clean Water Act Permits

NCDOT is committed to obtaining all required permits. NCDOT anticipates that the U.S. Army Corps of Engineers (USACE) will issue the required permits to authorize impacts to Section 404 jurisdictional areas. Nationwide Permits (NWP) that may apply include a NWP No. 3 for maintenance of currently serviceable structures, NWP No. 14 for linear transportation projects,

NWP No. 18 for minor discharges, and NWP No. 33 for temporary construction activities such as stream dewatering, work bridges, or temporary causeways that are often used during bridge construction. The USACE holds final discretion as to what permits will be required to authorize project construction.

In addition to the Section 404 permit, other required authorizations include the corresponding Section 401 Water Quality Certification from the NCDWQ. Required 401 certifications may include GC 3883 for maintenance, GC 3886 for linear transportation projects, GC 3890 for minor discharges, and GC 3893 for temporary construction access and dewatering.

3.9.4.3 Construction Moratoria

Construction moratoria for stream crossings specify times of year when construction activities are restricted or prohibited due to fish spawning or migration. No streams within the project study area are listed as waters which require construction moratoria.

3.9.4.4 North Carolina River Basin Buffer Rules

Five streams within the project study area (Streams 1, 2, 4, 8, 10, and 12 [Appendix D - Figures 4A, 4B, 4C, 4D, and 4E]) are subject to the Neuse River Riparian Buffer Rules (15A NCAC 02B .0233), which include the protection and maintenance of a 50-foot vegetated buffer adjacent to all intermittent and perennial surface waters depicted on USGS or Soil Survey mapping. Streams subject to the Neuse River Riparian Buffer Rules are listed in Table 3.9.5.

3.9.4.5 Rivers and Harbors Act Section 10 Navigable Waters

No waters in the project study area have been designated by the USACE as a Navigable Water under Section 10 of the Rivers and Harbors Act.

3.9.4.6 Wetland and Stream Mitigation Avoidance and Minimization of Impacts

NCDOT will attempt to avoid and minimize impacts to streams and wetland areas to the greatest extent practicable during project planning. No jurisdictional areas are located in the vicinity of the proposed train station location, and proposed improvements along the rail are expected to be situated along the existing rail location, so impacts are expected to be minimal and generally restricted to temporary impacts associated with maintenance and construction.

Compensatory Mitigation of Impacts

NCDOT will investigate potential on-site mitigation opportunities, if necessary, once a final determination of impacts has been calculated. If on-site mitigation is not feasible, mitigation will be provided by the North Carolina Department of Environment and Natural Resources (NCDENR) Ecosystem Enhancement Program (EEP). In accordance with the “Memorandum of Agreement among the North Carolina Department of Transportation and the U.S. Army Corps of Engineers, Wilmington District” (MOA), July 22, 2003, the EEP will be requested to provide off-site mitigation to satisfy the federal Clean Water Act compensatory mitigation requirements for this Project.

During the field verification, the USACE made determinations concerning which project study area streams will require mitigation for impacts as well as the requested ratios for streams requiring mitigation. This information is provided in Table 3.9.5. The NCDWQ will require mitigation at a 1:1 ratio for all impacts to intermittent or perennial streams. NCDOT anticipates that the USACE may require mitigation at a 1:1 ratio for wetlands with an NC WAM rating of Low and mitigation at a 2:1 ratio for wetlands with an NC WAM rating of Medium or High.

3.9.4.7 Endangered Species Act Protected Species

As of June 14, 2012, the U.S. Fish and Wildlife Service (USFWS) lists three federally protected species for Wake County (Table 3.9.7). A brief description of each species’ habitat requirements follows, along with the Biological Conclusion rendered based upon survey results within the project study area. Habitat requirements for each species are based on the current best available information as per referenced literature and USFWS correspondence.

**TABLE 3.9.7
FEDERALLY PROTECTED SPECIES LISTED FOR WAKE COUNTY**

Scientific Name	Common Name	Federal Status	Habitat Present	Biological Conclusion
<i>Rhus michauxii</i>	Michaux’s sumac	E	Yes	No Effect
<i>Alasmidonta heterodon</i>	Dwarf wedgemussel	E	No	No Effect
<i>Picoides borealis</i>	Red-cockaded woodpecker	E	No	No Effect

* Federal Status: E=Endangered

Michaux’s sumac

Habitat Description: Michaux’s sumac, endemic to the inner Coastal Plain and lower Piedmont, grows in sandy or rocky, open, upland woods on acidic or circumneutral, well-drained sands or sandy loam soils with low cation exchange capacities. The species is also found on

sandy or submesic loamy swales and depressions in the fall line Sandhills region as well as in openings along the rims of Carolina bays; maintained railroad, roadside, and utility right-of-ways; areas where forest canopies have been opened up by blow-downs and/or storm damage; small wildlife food plots; abandoned building sites; under sparse to moderately dense pine or pine/hardwood canopies; and in and along edges of other artificially maintained clearings undergoing natural succession. In the central Piedmont, it occurs on clayey soils derived from mafic rocks. The plant is shade intolerant; therefore, it grows best where disturbance (e.g., mowing, clearing, grazing, and periodic fire) maintains an open habitat.

Biological Conclusion: No Effect. Suitable habitat for Michaux's sumac occurs throughout the project study area along the margins of the rail line, along woodland edges, and within utility corridors. On May 15 and 16, 2012, NCDOT surveyed all areas of habitat suitable for Michaux's sumac and found no individuals. In addition, on June 14, NCDOT reviewed NCNHP records and found no known Michaux's sumac occurrences within 1.0 mile of the project study area.

Dwarf wedgemussel

Habitat Description: In North Carolina, the dwarf wedgemussel is known from the Neuse and Tar River drainages. The mussel inhabits creek and river areas with a slow to moderate current and sand, gravel, or firm silt bottoms. Water in these areas must be well oxygenated. Stream banks in these areas are generally stable with extensive root systems holding soils in place.

Biological Conclusion: No Effect. Suitable habitat for dwarf wedgemussel does not occur within project study area streams. A review of NCNHP records on June 14, 2012 found no known dwarf wedgemussel occurrences within 1.0 mile of the project study area.

Red-cockaded woodpecker

Habitat Description: The red-cockaded woodpecker (RCW) typically occupies open, mature stands of southern pines, particularly long-leaf pine, for foraging and nesting/roosting habitat. The RCW excavates cavities for nesting and roosting in living pine trees, aged 60 years or older, and which are contiguous with pine stands at least 30 years of age to provide foraging habitat. The foraging range of the RCW is normally no more than 0.5 mile.

Biological Conclusion: No Effect. Suitable habitat for RCW does not occur within the project study area. A review of NCNHP records on June 14, 2012 indicates no known RCW occurrences within 1.0 mile of the project study area.

3.9.5 Bald Eagle and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), enacted in 1940, and amended several times since then, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb."

Habitat for bald eagle primarily consists of mature forest in proximity to large bodies of open water for foraging. Large, dominant trees are utilized for nesting sites, typically within 1.0 mile of open water. Suitable habitat for bald eagle does not exist within the project study area. The nearest large body of open water is Lake Wheeler, located approximately 4.2 miles from the project study area.

3.9.6 Endangered Species Act Candidate Species

No USFWS Candidate species are listed for Wake County as of June 12, 2012.

3.10 HYDRAULIC IMPACTS

Two streams identified in Section 3.9 (C,NSW classified streams, identified as Streams 11 and 12) are both currently crossed by the existing track. At the preliminary design phase, NCDOT assumed that each of the existing culverts will be extended or replaced at their existing location. Sizing will be verified during hydraulic design to ensure adequacy for existing and proposed development conditions and to ensure that upstream water levels are not increased during flood events. No hydraulic impacts, in the form of upstream flooding, are anticipated.

3.11 FLOODPLAINS

Regulatory floodplains were identified in accordance with Executive Order 11988: Floodplain Management. The National Flood Insurance Program (NFIP) determined the regulatory floodways, floodplains, and other flood hazard areas for Wake County. The Federal Emergency Management Agency (FEMA) regulates activities associated within these designated areas.

Exhibit 3.11.1 details the flood hazard areas in the vicinity of the project study area. There are no flood hazard areas within the Raleigh Union Station, East Raleigh siding, or Greenfield siding

study areas. As shown in Exhibit 3.11.1, a small portion of the flood hazard area associated with Wildcat Branch falls just within the northwest corner of the East Raleigh siding project study area. However, this flood hazard area is separated from the rail corridor by a roadway (Hammond Business Place). Construction of the Build Alternative will occur to the east of the road and will not affect this flood hazard area.

3.12 ARCHAEOLOGICAL AND HISTORIC ARCHITECTURAL PROPERTIES

Section 106 of the National Historic Preservation Act (Section 106)⁷¹ requires federal agencies to consider the effects of their undertakings on historic properties and to allow the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on the proposed action. Historic properties protected under Section 106 include prehistoric [archeological] or historic districts, sites, buildings, structures, or objects included in or eligible for inclusion in the National Register of Historic Places (National Register).

ACHP's National Register criteria for evaluating properties are based on the quality of significance in American history, architecture, archeology, engineering, and culture that is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

- Criterion A: that are associated with events that have made a significant contribution to the broad patterns of our history; or
- Criterion B: that are associated with the lives of persons significant in our past; or
- Criterion C: that embody distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- Criterion D: that have yielded, or may be likely to yield, information important in prehistory or history.

Because the Project includes federal funding sources, NCDOT and FRA initiated the Section 106 process. NCDOT identified and evaluated both archaeological and historic architectural resources. Per Section 106, each resource was then evaluated to determine whether or not it would be affected by the Project. For resources where the North Carolina Station Historic

⁷¹ 36 CFR Part 800

Preservation Office (SHPO) is in agreement that there is not an adverse effect, the Project can proceed with any agreed-upon conditions. In cases of an adverse effect determination, NCDOT and FRA will consult with SHPO to evaluate avoidance, minimization, and mitigation of the adverse effects. This consultation usually results in the development of a Memorandum of Agreement (MOA), which will summarize measures that the agencies will implement to avoid, minimize or mitigate the adverse effects. The following sections describe the resources and their associated effects determinations.

Archaeology – Based off of coordination with the SHPO and North Carolina State Office of Archaeology, it was determined that the remnant of Southern Railway turntable in the station vicinity (Site 31WA1446) was the only identified and potential archaeological site in the three project study areas. After review of the preliminary plans, it was determined that the Project would have no effect on this site (the effects determination for this site is included in Appendix E). Therefore, there are no effects to archaeological resources associated with this Project.

Historic Architectural - Architectural historians surveyed the entire Area of Potential Effect (APE) for this Project in March and April of 2012. The APE is defined as the geographic area or areas within which a project may cause changes to the character or use of historic properties, if any such properties exist. The APE for this Project was determined during the initial field surveys and generally includes those properties adjacent to the railroad corridor in the three study area sections (Station, East Raleigh Siding, Greenfield Siding). The APE is also shaped by modern development, woodland, and sharp changes in topography that serve as effective physical and visual buffers to the proposed project. This architectural resources investigation consisted of background research into the historical and architectural development of the study area and field surveys of the APE.

The March and April 2012 reconnaissance-level survey of the APE resulted in the identification of a total of ninety (90) individual resources and potential historic districts that were built prior to 1963. These findings were presented to the SHPO in July of 2012. Nine individual properties and eight historic districts required intensive-level evaluation to determine National Register eligibility. Following in-depth investigations of these resources, NCDOT recommended five individual properties and five historic districts as eligible for the National Register. NCDOT also recommended boundary amendments for the Depot Historic District and the North Carolina State College Historic District.

It should be noted that the Viaduct building, which NCDOT is proposing be re-used for the station building, is currently not listed as a contributing resource to the Depot National Register Historic District because it is less than 50 years old. Therefore, there are no historic preservation requirements associated with the reuse of the Viaduct building.

On April 30, 2013 representatives of the FRA, NCDOT, and SHPO met to discuss the effects to all Section 106 resources. During the meeting NCDOT noted that some recent design changes had substantially reduced the project's footprint in several locations. The NCDOT suggested that the actual APE would be reduced in these locations and the Project would therefore no longer have a potential effect on four of the evaluated resources.

The design of the station tracks and intercity platform progressed through the summer and fall of 2013. The NS Passenger Station Requirements letter dated December 15, 2011 detailed NS policy with regard to the distance between station tracks and freight tracks when passenger service is sharing NS-operated right of way. As NS explained in the letter, NS requires 26-foot track centers between the station and freight tracks (see Appendix A.5). This requirement and the requirement for a standard typical section along the H-Line resulted in new impacts to the current Amtrak Station, which were not evident at the time of the April 30, 2013 Effects Meeting. A second Effects Meeting was held on December 16, 2013 to discuss impacts associated with the updated design, specifically the unavoidable demolition of the existing Amtrak Station. The concurrence form was updated at the December meeting to document the adverse effect to the Depot District due to the Amtrak Station removal. The results of this discussion are documented in the Concurrence Form for Assessment of Effects. This form was signed by the SHPO on December 19, 2013 and is included in Appendix A.

Exhibit 3.12.1 shows the original APE and each of the eligible properties and districts. Table 3.12.1 lists each of the properties or districts that are recommended as eligible for the National Register in compliance with Section 106. The anticipated effect to each place, as recommended by NCDOT and FRA and confirmed by the SHPO, is also listed in Table 3.12.1. Asterisks (*) denote locations that were determined, during the effects meeting, to be outside the actual APE due to design changes. The anticipated effects are based on the station construction (building, platform, parking, and trackwork) and the three siding options: East Raleigh, Greenfield, and Prison Siding and Yard Extension.

**TABLE 3.12.1
EFFECTS TO HISTORIC PLACES**

Place	National Register Status	Effect
Depot Historic District (WA0724)	National Register 2002	Adverse Effect
Depot Historic District Proposed Boundary Amendment (WA0724)	Recommended as Eligible	Adverse Effect
Boylan Heights Historic District (WA0195, WA3996)	National Register 1985; Local Historic District 2001	No Effect
Raleigh Hosiery Company Building (WA2590)	Determination of Eligibility 1990, 2005; Study List 1991	No Effect
North Carolina School Book Depository (WA2860)	Determination of Eligibility 2005	No Effect
White Dairy Products Building (WA3018)	Recommended as Eligible	No Effect (No longer in APE)*
Governor Morehead School Historic District (WA3719)	Study List 1985	No Effect (No longer in APE)*
North Carolina State College Historic District and Proposed Boundary Amendment (WA4426)	Determination of Eligibility 2004	No Effect (No longer in APE)*
Governor Morehead School, Colored Department, Historic District (WA2461)	Study List 1983	No Effect
Auburn Christian Church (WA0313)	Recommended as Eligible	No Effect
William Watts House (WA0308)	Recommended as Eligible	No Effect (No longer in APE)*

* The project limits in the vicinity of this resource were reduced after the completion of the Historic Architectural Resources Report. This resource is now located outside of the APE and is not affected by the Project.

Depot Historic District and Proposed Boundary Amendment (WA0724) - The Depot Historic District occupies an area west of the center city that served as Raleigh's rail transportation and warehouse zone from the mid-nineteenth century to the 1950s. With its locally significant collection of industrial, commercial, and railroad-related architecture dating from the 1880s to 1952, the Depot Historic District was listed in the National Register under Criterion C for architecture and under Criterion A for industry, transportation, and commerce. The district also encompasses Nash Square which was designed in 1940 by the Works Progress Administration (WPA), one of the federal New

Deal programs. Because of the WPA design of Nash Square, the Depot Historic District also has local significance under Criterion C for community planning.

As a result of the survey, architectural historians recommended an expanded Depot Historic District boundary (Boundary Amendment) to encompass ten resources recommended as eligible: Dillon Supply Company, Farm Machinery Warehouse, Peden Steel Works, Commercial Building, Noland Company Building, the Dillon Supply Company Warehouse, Capital Feed and Grocery Company Building, Swift Meat Company Warehouse No. 1, Swift Meat Company Warehouse No. 2, and the Caveness Produce Company Warehouse, and the Dillon Supply Company Warehouse No. 2.

These resources all contribute under the nominated criteria—Criterion A for industry, transportation, and commerce and under Criterion C for architecture.

Determination of Effect – The NS Passenger Station Requirements letter dictates how NS infrastructure is used by passenger train operations. The policy requires a 26-foot track center separation between station tracks and freight tracks when passenger service is sharing NS-operated right of way. This will result in the realignment of the NCRR H-line adjacent to the existing Amtrak Station. This realignment and the requirement to construct a full railroad roadbed section will impact the existing Amtrak Station, platform and canopy. The impacts require the removal of the platform canopy and the demolition of the existing Amtrak Station. The existing Amtrak Station is not individually eligible for the National Register, but is a contributing element to the Depot Historic District. Also, within the Depot Historic District, the lowering of West Street to provide access to the Raleigh Union Station will result in access changes and impacts to the loading docks of two contributing elements to the Depot Historic District. However, the SHPO determined that this aspect of the Project would have No Adverse Effect on the Depot Historic District. NCDOT and FRA determined, and SHPO concurred, that the demolition of the Amtrak Station would have an **Adverse Effect** on the current Depot Historic District.

To provide access for the proposed station via West Martin Street, the Project requires removal of the Capital Feed and Grocery Building, which is a contributing resource to the Proposed National Register Boundary Amendment for the Depot District. Therefore, NCDOT and FRA determined, and SHPO concurred, that the Project would

have an **Adverse Effect** on the proposed amended Depot District. Section 5 describes the options that were evaluated in an attempt to avoid this impact and the reasons that the option impacting the Capital Feed and Grocery Building is recommended.

Boylan Heights Historic District (WA0195, WA3996) - The Boylan Heights Historic District was nominated to the National Register in 1985 under Criterion A for both community planning and education, under Criterion B for its associations with prominent Raleigh developers and civic leaders, Frank Ellington and J. Stanhope Wynne, and under Criterion C for architecture.

The Boylan Heights National Register Historic District contains 280 resources within all or parts of the twenty-two blocks found within its limits. Only two of the 280 properties, are located within the APE for this Project. A Commercial Building at 301 Kinsey Street contributes to the historic district while a Warehouse postdates the period of significance and is a noncontributing resource.

The Boylan Heights Historic District was listed in the National Register in 1985, and for purposes of compliance with Section 106, the historic district remains **eligible** for the National Register under Criterion A for community planning and education, under Criterion B for its associations with prominent Raleigh developers and civic leaders, Frank Ellington and J. Stanhope Wynne, and under Criterion C for architecture.

Determination of Effect – None of the proposed or optional elements of the Project will impact this district. Therefore, NCDOT and FRA determined, and the SHPO concurred, that the Project would have **No Effect** on the Boylan Heights Historic District.

Raleigh Hosiery Company Building (WA2590) – The Raleigh Hosiery Company was established along the Southern Railway in Raleigh in 1903. The knitting mill opened during the rise of rail-oriented manufacturing and commercial warehousing in Raleigh during the late nineteenth and early twentieth centuries.

The Raleigh Hosiery Company Building was determined eligible in 2005 as part of the environmental studies for the NCDOT project, *Southeast High Speed Rail (SEHSR) Corridor from Petersburg, Virginia (Collier Yard), to Raleigh, North Carolina (Boylan Wye) (TIP No. P-3819)*. For purposes of compliance with Section 106, the property remains **eligible** for the National Register under Criterion A for both industry and commerce.

Determination of Effect – None of the proposed or optional elements of the Project will impact this property. Therefore, NCDOT and FRA determined, and the SHPO concurred, that the Project would have **No Effect** on the Raleigh Hosiery Mill.

North Carolina School Book Depository (WA2860) – Renovated in 1998, the circa 1923 North Carolina School Book Depository is a one-story, brick warehouse with a simple, utilitarian exterior.

The North Carolina School Book Depository was determined eligible in 2005 as part of the environmental studies undertaken for the NCDOT project, *Southeast High Speed Rail (SEHSR) Corridor from Petersburg, Virginia (Collier Yard), to Raleigh, North Carolina (Boylan Wye) (TIP No. P-3819)*. For purposes of compliance with Section 106, the North Carolina School Book Depository remains **eligible** for the National Register under Criterion A for commerce.

Determination of Effect – None of the proposed or optional elements of the Project will impact this property. Therefore, NCDOT and FRA determined, and the SHPO concurred, that the Project would have **No Effect** on the North Carolina School Book Depository.

White Dairy Products Building (WA3018) – Although the 1929 White Dairy Products Building now serves as a nightclub, the building's stylish exterior remains remarkably well preserved. Erected for an ice cream manufacturer, the building features a cream-colored brick façade with a round-arched, central entrance, framed by decorative brickwork and a keystone, and flanked by wood-sash display windows with five-light transoms.

For purposes of compliance with Section 106, the White Dairy Products Building is recommended **eligible** for the National Register under Criterion A for industry and commerce and under Criterion C for architecture.

Determination of Effect – The project limits have been changed since the completion of the Historic Architectural Resources Survey Report and this building is no longer within the APE.

Governor Morehead School Historic District (WA3719) - Established at this location in 1923, the Governor Morehead School Historic District is situated on an approximately forty-acre tree-shaded tract west of downtown Raleigh. The property is bounded by Ashe Avenue (west), Central Prison (east), the former Southern Railway corridor (north), and Western Boulevard (south). The grounds of Dorothea Dix Hospital are located south of Western Boulevard. Originally encompassing seventy-five acres, the Governor Morehead School campus was increased to eighty-five acres during the late 1920s, but roughly half of this historic acreage was surrendered over the years with the modern expansion of Central Prison and the acquisition by the Hospital of the school's small dairy farm. The existing forty-acre parcel contains the main campus with its well-preserved collection of Colonial Revival buildings associated with the formation and development of the school. The APE for this project cuts through the northern edge of the campus, and only one building, the 1920s library, is located within the APE.

For purposes of compliance with Section 106, the Governor Morehead School Historic District is recommended **eligible** for the National Register under Criterion A for education and social welfare and under Criterion C for architecture.

Determination of Effect – The project limits have been changed since the completion of the Historic Architectural Resources Survey Report and this district is no longer within the APE.

North Carolina State College Historic District and Proposed Boundary Amendment (WA4426) - The North Carolina State College Historic District was determined eligible for the National Register in 2004 as part of the environmental studies for the NCDOT project entitled, *Hillsborough Street Improvement Project No. 1, Wake County* (TIP U-4447). The

DOE historic district contains the original campus for North Carolina State College (now known as North Campus), which developed on the south side of Hillsborough Street, north of the railroad tracks, at the intersection with Pullen Road.

The district also contains the northern section of Pullen Park. The park is bisected by the railroad into two roughly equal sections between Hillsborough Street (north) and Western Boulevard (south).

The North Carolina State College Historic District was determined eligible for the National Register in 2004 as part of the environmental studies for the NCDOT project entitled, *Hillsborough Street Improvement Project No. 1, Wake County* (TIP U-4447). The district has not changed significantly since its determination of eligibility, and for purposes of compliance with Section 106, the historic district remains **eligible** under Criterion A for education and under Criterion C for architecture. At the time of the 2004 investigation, the district also satisfied Criteria Consideration G because the Modernist buildings in the district had the exceptional significance needed by properties less than fifty years of age. These buildings were erected on the North Campus between 1955 and 1961. The period of significance extends from 1889 to 1961.

As a result of the Phase II survey for this Project, the principal investigators recommend that the boundary of the North Carolina State College Historic District be expanded to encompass the 1939 WPA tunnel which extends under the rail corridor to link North Campus and Central Campus.

Determination of Effect – The project limits have been changed since the completion of the Historic Architectural Resources Survey Report and this district is no longer within the APE.

Governor Morehead School, Colored Department, Historic District (WA2461) - The Governor Morehead School, Colored Department, Historic District sits on a 128-acre tract that spans the former Southern Railway corridor in Garner.

For purposes of compliance with Section 106, the Governor Morehead School, Colored Department, Historic District, is recommended **eligible** for the National Register eligibility

under Criterion A for African American heritage, education, and social welfare, and under Criterion C for architecture. The period of significance extends from circa 1930 when the East Garner Road campus of the school was established and 1964 when the last building, the Primary Classroom Building, was added to the campus.

Determination of Effect – None of the proposed or optional elements of the Project will impact this district. Therefore, NCDOT and FRA determined, and the SHPO concurred, that the Project would have **No Effect** on the Governor Morehead School, Colored Department District.

Auburn Christian Church (WA0313) - Erected circa 1888, Auburn Christian Church sits on a 1.74-acre tract and faces south toward East Garner Road. The church is sited at the southeast corner of the parcel with a simple, gravel parking lot on the west side and a small cemetery to the north and northwest.

For purposes of compliance with Section 106, Auburn Christian Church is recommended **eligible** for the National Register under Criterion C for architecture and under Criterion Consideration A: Religious Properties.

Determination of Effect – The only element of the Project in the vicinity of this resource is the Greenfield siding. Construction of the siding could remove some of the vegetative buffer along Garner Road. However, all of the construction will be contained within the existing right-of-way. Therefore, NCDOT and FRA determined, and the SHPO concurred, that the Project would have **No Effect** on the Auburn Christian Church.

William Watts House (WA0308) - Located along the railroad corridor near the center of Auburn, the William Watts House faces north towards East Garner Road. Built in the late nineteenth century, the house occupies a 3.38-acre site that is now partially overgrown. No outbuildings survive on the tract.

For purposes of compliance with Section 106, the William Watts House is recommended **eligible** for the National Register under Criterion C for architecture.

Determination of Effect – The project limits have been changed since the completion of the Historic Architectural Resources Survey Report and this property is no longer within the APE.

As previously described, NCDOT and FRA determined, and SHPO concurred, that the Project would result in adverse effects for two of the evaluated resources; the Depot Historic District and the Depot Historic District Proposed Boundary Amendment. In accordance with Section 106, NCDOT and FRA will consult with SHPO and the City of Raleigh, along with potentially other parties, including the ACHP, in the development of an MOA which will describe agreed-upon measures to avoid, minimize, or mitigate the adverse effects. This MOA will be included in the FONSI issued for the Project

3.13 HAZARDOUS MATERIAL SITES AND UNDERGROUND STORAGE TANKS

The NCDOT Geotechnical Engineering Unit conducted a screening evaluation of the project study area to identify potential hazardous materials sites. Identified sites are those that could be affected by the Project and could result in increased costs and future liability.⁷² Searches for potential hazardous sites may include, but are not limited to; active and abandoned underground storage tanks (UST) sites, hazardous waste sites, regulated landfills, and unregulated dumpsites.

A summary of the Geotechnical Report findings is listed below. Eight sites were identified. Six of these sites are in the station study area and two sites were identified in the East Raleigh siding study area. No sites were identified in the Greenfield siding study area. Exhibits 3.13.1a and 3.13.1b show the locations corresponding with the following sites:

Station Study Area

- 1) Possible UST Site: Village Motor Werks, 234 South Boylan Avenue
- 2) Possible UST Site: Rebus Works Gallery & pH Seven Framing, 301-2 Kinsey Street
- 3) UST Site: Antfarm Studios, 303 Kinsey Street
- 4) UST Site: Ready Mixed Concrete Co., 613 West Hargett Street
- 5) Above-ground tanks removed/ presence of unknown barrels: Goodwin Sand & Gravel, Inc. 609 West Hargett Street

⁷² NCDOT, Geotechnical Report for Planning, May 23, 2012

- 6) Former presence of solvents on site: Former Dillon Supply Co. Warehouse, 602 West Martin Street

East Raleigh Study Area

- 7) UST Site: Pasquale's Auto Repair, 1343 West Garner Road
- 8) UST Site: Johnny's Precast and Explosives, Inc., 100 Yeargan Road

NCDOT anticipates that Sites #4 and #6 will likely be impacted by the Project as they are located within the Boylan Wye and the probable construction footprint. The NCDOT Geotechnical Unit expects that all of the above-listed sites, including the probable impacted Sites #4 and #6, would present low geo-environmental impacts to the Project. Any potential issues will be identified and addressed during the right-of-way acquisition phase. For sites directly impacted by the Project, NCDOT will remove all hazardous materials in accordance with the NC Division of Waste Management Policies.

3.14 MINERAL RESOURCES

There are no mineral production operations within the project study area of the Raleigh Union Station or East Raleigh siding. There is a quarry located along the northern border of the Greenfield siding corridor, on East Garner Road near I-40. However, given that impacts will be localized to construction within the rail corridor, NCDOT does not anticipate any impacts to the quarry from the proposed Project

3.15 ENERGY

Construction of the Build Alternative will initially result in a dramatic increase of energy use during the construction phase of the Project. However, once the station and associated track modifications are completed, the build condition will result in improved efficiencies for passenger and freight rail operations. The proposed action will improve capacity along the rail corridor and subsequently facilitate passenger use along the larger SEHSR corridor while still maintaining the more energy efficient freight transport of goods in lieu of truck transport. The increased capacity for passenger rail associated with the station improvements provides the opportunity to reduce energy usage by reducing single-passenger vehicle users on the highway. Therefore, the Project is expected to ultimately reduce energy use in comparison to the no-build condition.

3.16 VISUAL IMPACTS

Given the presence of the existing rail corridor, no visual impacts are anticipated from the Project. Visual effects of the Build Alternative will primarily be an improvement associated with the up-fit and revitalization of the viaduct building and its immediate surroundings.

3.17 UTILITIES

Due to the urban setting of the Raleigh Union Station study area, a number of utilities are present within the area. Sewer lines cross the rail corridor near Jensen Drive, Pullen Road, Cox Avenue, Wakefield Avenue, West Morgan Street, Snow Avenue, West Hargett Street, and West Cabarrus Street. Water lines cross the rail corridor near Cox Avenue, Ashe Avenue, Boylan Avenue, and West Martin Street. Overhead power lines as well as underground telephone, cable, and fiber optics lines are also present within the station study area.

Sewer lines are present within the East Raleigh siding study area, along Rush Street and West Garner Road, and following along tributaries to Wildcat Branch. Water lines in the study area primarily parallel Hammond Road and West Garner Road. There are two water line crossings of the rail corridor at present; the first occurs where a water line parallels Tryon Road, the second where a water line parallels Yeorgan Road.

Sewer lines are present within the Greenfield siding study area. However the lines run primarily along the North Greenfield Parkway, and do not intersect the rail corridor. Water lines in the Greenfield siding study area parallel East Garner Road and North Greenfield Parkway. Two water line crossings of the rail corridor are present; the first is in the western portion of the study area, near the end of North Greenfield Parkway, the second occurs in the eastern portion of the study area, near Antelope Lane. Utility line locations are included in Exhibits 3.17.1a-c.

The proposed Project may require the relocation of existing underground and overhead utilities with the possibility of short-term interruptions to service during construction. These possible impacts will be determined during final design, at which time utility location and coordination will occur. Any interruptions will be minimized by temporary connections, and will occur during times of day where disruption will have the least impact. Overall impacts to public utilities are anticipated to be low.

3.18 IMPACTS ON TRANSPORTATION

As described in sections 1.8 and 3.1, the proposed improvements are consistent with long-range transportation plans at both the local, regional, and national levels. The proposed station and associated track construction are intended to directly improve passenger and freight rail. In addition, the station is the first phase of a planned multimodal facility that will ultimately provide substantially increased opportunities for local and regional bus, light rail, commuter, regional, and high speed passenger rail. Station features such as the Public Plaza will facilitate safe opportunities for pedestrian transportation in the downtown area by physically separating pedestrians from vehicles. If constructed, the City of Raleigh's proposed extension of South West Street will ultimately improve connections for the local roadway system as well. The effects of the proposed Project on the transportation system are all anticipated to be positive.

3.19 POSSIBLE BARRIERS TO THE ELDERLY OR HANDICAPPED

The purpose of the Project is to provide a station with capacity and facilities consistent with current and projected usage, which can reduce automobile dependence for the elderly and handicapped population. The proposed Build Alternative will not divide or isolate neighborhoods or create any physical barriers for pedestrian travel. In fact, the Project includes a proposed grade-separated Public Plaza and passenger concourse that facilitates access to the station across South West Street. All pedestrian-oriented elements of the station will be designed in accordance with the Americans with Disabilities Act of 1990, as amended (ADA) guidelines and the proposed platform provides level boarding for the full length of the train. Therefore, the Project is not anticipated to introduce any barriers to the elderly or handicapped.

3.20 PUBLIC HEALTH AND SAFETY

The proposed improvements have relatively minimal direct impact to locations where human activity is present. The Project is not anticipated to cause substantial adverse effects to air quality or noise. It will not generate substantial hazardous waste and operations will not pose a public health concern. NCDOT will incorporate safety and security elements (i.e. security fencing, lighting, and emergency exit stairways) into the proposed station facility.

As previously described, the Project will not substantially alter roadway travel patterns and will not introduce barriers to future bicycle or pedestrian facilities, or to mobility of the elderly or handicapped. The Project will increase opportunities for pedestrian mobility and transit usage. In the situations where passengers close rail over roadway travel, a small increase in safety is

expected as rail travel is safer than roadway travel. Based on these factors, the proposed Project is not anticipated to have an adverse effect on public health.

3.21 CONSTRUCTION IMPACTS

The construction activities associated with building a new railroad track will create environmental impacts. These impacts, generally short-term in nature, can be controlled, minimized, or mitigated through conformance with Best Management Practices (BMPs) and standard NCDOT procedures.

3.21.1 Air Quality

Construction activities could have a short-term impact on air quality, primarily during site preparation. Particulate matter (dust) is the pollutant of primary concern during the construction period. Dust will be generated during earth moving activities, handling of cement, asphalt, or aggregate, and equipment travel over unpaved haul roads. Wind erosion of exposed areas and material stockpiles will also generate particulate matter.

The amount of dust generated will vary, depending on the construction activity and local weather conditions. Where excess dust is anticipated to be a problem, effective dust control measures will be implemented in accordance with standard NCDOT procedures. Dust control will be the responsibility of the contractor and may include the following:

- Minimizing exposed earth surface
- Temporary and permanent seeding and mulching
- Watering work and haul areas during dry periods
- Covering, shielding, or stabilizing material stockpiles
- Using covered haul trucks

Emissions from construction equipment are regulated by federal standards. Any burning of cleared materials will be conducted in accordance with applicable state and local laws, regulations, and ordinances.

3.21.2 Noise and Vibration

Construction of the Build Alternative will result in temporary increases in noise levels within the vicinity of the Project. Noise will be generated primarily from heavy equipment used to transport

materials and to construct the railroad spur. Sensitive receptors located close to the construction activities may temporarily experience increased noise levels.

Regulating the hours of construction and equipping machinery with noise reduction devices can control construction noise. Certain construction activities could also be limited during the evening, weekends, and holidays. Storage and staging areas will be located as far from noise sensitive areas as practicable.

The NCDOT specifications limit noise levels to 80 dBA Leq in sensitive areas adjacent to project construction. The NCDOT may require abatement where limits are exceeded. The NCDOT limits work that produces objectionable noise during normal sleeping hours.

Construction of the Project could result in short-term increases in vibration levels at the properties in the immediate vicinity of construction activities. Common vibration-producing equipment includes jackhammers, pavement breakers, hoe rams, auger drills, bulldozers and backhoes. Typical vibration source levels for construction equipment range from 58 -104 VdB. Pavement breaking and soil compaction will likely produce the highest levels of construction-related vibration. Generally, annoyance effects may be expected during construction near sensitive sites within approximately 200 feet of the construction activity. Actual distances at which the effects will occur will depend on the type of construction equipment used and the soil characteristics of the area.

3.21.3 Water Quality

Erosion and sedimentation caused by construction activities will affect drainage patterns and water quality. In accordance with the North Carolina Sedimentation Pollution Control Act,⁷³ an erosion control plan will be developed and implemented prior to construction. The plan will incorporate measures to control non-point source impacts as recommended in the NCDOT's *Best Management Practices for Protection of Surface Waters*.⁷⁴ These Best Management Practices include, but are not limited to the use of berms, dikes, silt barriers, catch basins, seeding and mulching, and conforming with proper clean-up practices.

⁷³ N.C. Gen. Stat. §§ 113A-50 through 113A-71

⁷⁴ NCDOT's *Best Management Practices for Protection of Surface Waters* (NCDOT, 1997b)

3.21.4 Maintenance Of Traffic

During construction of the proposed Project, all local and through traffic will be adequately and safely accommodated. All construction operations will be scheduled to keep traffic delay minimized, and NCDOT will require that the contractor should conform to the standards of the *Manual of Uniform Traffic Control Devices for Streets and Highways*.

NCDOT will require that the construction contractor comply with all federal, state, and local laws governing safety, health, and sanitation. Procedures will apply all safeguards, safety devices, protective equipment, and any other action reasonably necessary to protect the life and health of employees on the job, the safety of the public, and the property in connection with the performance of the work. The following items will be utilized, where necessary, to maintain public safety and the flow of traffic:

- Constructing and maintaining temporary detours, temporary structures, temporary approaches, crossings, and intersections with streets and roads, as well as using aggregates for the maintenance of traffic and water for use as a dust palliative.
- Furnishing flaggers, pilot trucks, and drivers.
- Furnishing, erecting, and maintaining warning devices such as signs, auxiliary barriers, channelizing devices, hazard warning lights, barricades, flares, and reflective markers. If a street must be closed to traffic, traffic control devices will be illuminated during hours of darkness.

3.21.5 Construction Materials And Waste

All construction waste material generated during clearing, grubbing, and other construction phases will be removed from the project site and burned or disposed of by the contractor in accordance with state and local regulations. Litter and other general trash will be collected and disposed of at local landfill locations. NCDOT will require contractors to conduct historic, archaeological, wetland and threatened and endangered species surveys prior to approval and use of construction waste disposal and/or borrow sites identified for the proposed grade separation.

3.21.6 Energy

Construction of the Build Alternative will initially result in a substantial increase of energy. After construction, the Project will result in improved efficiencies for passenger and freight rail

operations and provide the opportunity to reduce energy usage by reducing single-passenger vehicle users on the highway.

3.22 SUMMARY OF IMPACTS

Table 3.22.1 lists the engineering factors and anticipated environmental impacts associated with the Preliminary Build Alternatives. Table 3.22.2 summarizes the anticipated impacts of the recommended alternative. These factors and impacts are based on the functional station layout and railroad design.

**TABLE 3.22.1
SUMMARY OF IMPACTS FOR THE PRELIMINARY BUILD ALTERNATIVES**

	Recommended				
	Ral, Sta. & W. Prison Siding	Ral, Sta. & E. Prison Siding	Ral, Sta. & Prison Yard	Ral, Sta. & E. Raleigh Siding	Ral, Sta. & Greenfield Siding
SOCIOECONOMIC FACTORS					
Residential Relocations	0	0	0	0	0
Business Relocations	2	2	2	2	2
Churches impacted	0	0	0	0	0
Cemeteries Impacted	0	0	0	0	0
Schools Impacted	0	0	0	0	0
Parks Impacted	0	0	0	0	0
Residential Receptors Impacted by Train Noise	0	0	0	0	0
Residential Receptors Impacted by Horn Noise ¹	55	55	55	55	65
Commercial Receptors Impacted by Train Noise	0	0	0	0	0
Commercial Receptors Impacted by Horn Noise ¹	47	47	47	47	56
Church Receptors Impacted by Train Noise	0	0	0	0	0
Church Receptors Impacted by Horn Noise ¹	1	1	1	1	1
Residential / Business Receptors Impacted by Vibration	6 / 36	6 / 36	6 / 36	6 / 36	6 / 36
CULTURAL RESOURCE FACTORS					
Archaeological Sites	0	0	0	0	0
Historic Properties Affected	2	2	2	2	2
JURISDICTIONAL ISSUES					
Protected Species Impacted	0	0	0	0	0
Stream Crossings	0	0	0	0	4
Wetland/Aquatic Systems – acres ²	0	0	0	0	0
Jurisdictional Streams – linear feet ²	0	0	0	350	0
UPLAND COMMUNITIES – acres ²					
Maintained/Disturbed	13.1	13.5	13.9	21.2	21.3
PHYSICAL FACTORS					
100-year Floodplain – acres	0	0	0	0	0
Prime and Unique Farmland – acres	0	0	0	0	0
Hazardous Materials Sites (UST, LUST)	2	2	2	2	2
Number of Exceedances of CO NAAQS	0	0	0	0	0

NOTES:

- 1 Impacts result from projected train volumes and would occur regardless of the construction of the Raleigh Union Station.
- 2 Impact quantities based on functional design construction limits plus 25 feet.

**TABLE 3.22.2
SUMMARY OF IMPACTS FOR RECOMMENDED ALTERNATIVE**

Section of EA	Summary of Impacts	Proposed Mitigation
3.1 Land Use	Minor Impact. The Build Alternative will not have a significant impact on land use or zoning as it will be consistent with existing land use plans and local planning documents.	Not Applicable.
3.2 Farmlands	No Impact. The areas adjacent to the project study area are developed and urban in nature. No land exhibiting the criteria of farmland is present within or adjacent to the project study area.	Not Applicable.
3.3 Section 4(f) Resources	Uses. There are no city, state, or national parks within the project study area. The Project will not impact any publicly owned recreation area or wildlife refuge. The Project would have an Adverse Effect on the Depot Historic District Proposed and its Boundary Amendment, an eligible historic district subject to Section 4(f) requirements. The Project requires removal of the current Amtrak station – a contributing element to the Depot District, and removal of the Capital Feed and Grocery Building - a contributing resource to the Proposed National Register Boundary Amendment for the Depot District.	A Draft Section 4(f) Evaluation is included in this EA, documenting the evaluation of alternatives to the Section 4(f) use. The Final Section 4(f) evaluation will also be included in the FONSI.
3.3 Section 6(f) Resources	No Impact. There are no Section 6(f) resources in the project study area.	Not Applicable.
3.4 Right-of-way & Relocation Impacts	Minor Impact. The Build Alternative will require the relocation of two businesses (affecting 15-25 employees) and no residential relocations. The Project will also require right-of-way from approximately 10 parcels adjacent to the station or siding improvements. The closure of the private at-grade crossing on the East Raleigh Siding will result in the acquisition of the parcel isolated by the closure, but no business or residential relocation.	NCDOT will conduct the relocation program in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646) and the North Carolina Relocation Assistance Act (GS 133-5 through 133-18).

**TABLE 3.22.2
SUMMARY OF IMPACTS FOR RECOMMENDED ALTERNATIVE**

Section of EA	Summary of Impacts	Proposed Mitigation
3.5 Indirect & Cumulative Effects	<p>Minor Impact. The Project will not introduce any new access, thus the Project is not expected to result in changes to the existing land use patterns within the project vicinity. Given the Project's location within an urbanized area, and the presence of growth management regulations, the Project will not notably contribute negative cumulative effects within the project study area and vicinity. The station may create increased demand for parking in the downtown area.</p> <p>The proposed, but currently unfunded, West Street Extension is a reasonably foreseeable project in the immediate area that will also provide mobility benefits in the downtown but is not anticipated to alter growth patterns or create negative cumulative effects. This Project does, however, cumulatively contribute to an improved multi-modal transportation system in Raleigh, which will result in beneficial effects such as additional transportation options, improved air quality, and improved quality of life for City residents.</p>	To evaluate parking demand, the City is conducting a parking study for the downtown warehouse district in the immediate vicinity of the station.
3.6 Environmental Justice	No Impact. No disproportionately high or adverse effects to the identified low-income or minority populations are anticipated. The Build Alternative will not result in the disruption or segmentation of existing communities.	Not Applicable.
3.7 Air Quality	No Impact. This Project was compared to a larger-scale rail project for which an Applicability Analysis, as part of the General Conformity process, was conducted. The results of this analysis showed the larger project was below threshold levels and regionally insignificant. By comparison, it is expected that the Raleigh Union Station-Phase I air quality effects will also be below threshold and regionally insignificant.	Not applicable.

**TABLE 3.22.2
SUMMARY OF IMPACTS FOR RECOMMENDED ALTERNATIVE**

Section of EA	Summary of Impacts	Proposed Mitigation
3.8 Noise & Vibration	<p>No Impact-Locomotive/Train Noise. The future train operations will result in an increase of 1-3 dBA. This increase range does not meet the criteria for an impact.</p> <p>Minor Impact-Locomotive Warning Noise. Within the Station study area, 23 commercial, 55 residential, and one church receptor are located within the Impact Zone for locomotive warning horn noise and 24 commercial receptors are within the Severe Impact Zone. Within the Greenfield siding project study area, three residential and two commercial receptors are located within the Impact Zone and seven residential receptors are located within the Severe Zone.</p> <p>Minor Impact-Vibration. NCDOT anticipates that 6 residential receptors and 36 commercial/ institutional receptors will be within vibration impact distances from the track. It should be noted that all of these receptors are located at these distances from the existing track in the no-build condition. Thus, there will be vibration impacts whether the Project is constructed or not.</p>	<p>None is recommended as the Project will not significantly change existing travel patterns for trains in the Boylan Wye area. Current train travel patterns are very similar to train travel patterns in the design year. Also, impacts result from projected additional 12 intercity and SEHSR passenger trains that will serve Raleigh regardless of the construction of the Raleigh Union Station.</p>
3.9 Water Quality	<p>Minor Impact. The Build Alternative will change the total amount of impervious surface in the project study area, but the increase in stormwater runoff will be limited as the Project is in an urbanized area with a high amount of existing imperviousness. Temporary impacts associated with construction stormwater and sedimentation may occur as part of construction activities.</p>	<p>NCDOT will undertake BMPs in accordance with NCDENR DWQ's <i>Design Standards in Sensitive Watersheds and Stormwater Best Management Practices</i>.</p>

**TABLE 3.22.2
SUMMARY OF IMPACTS FOR RECOMMENDED ALTERNATIVE**

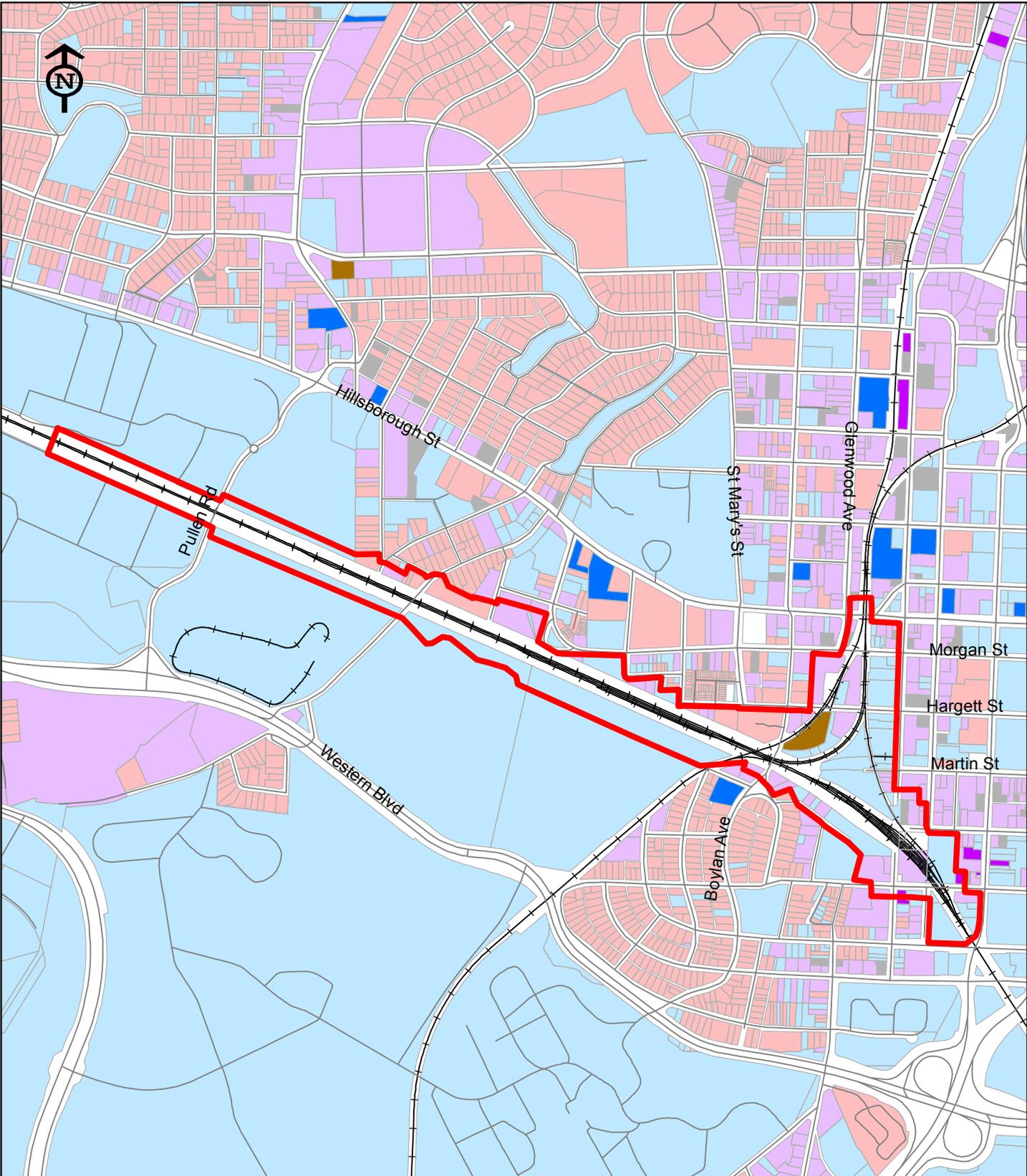
Section of EA	Summary of Impacts	Proposed Mitigation
3.9 Water Bodies & Waterways	Minor Impact. NCDOT estimates that the Project will impact 350 linear feet of stream due to four culvert extensions required by the East Raleigh siding. Two of the impacted streams include existing vegetated buffers and are subject to the Neuse River Riparian Buffer Rules.	Proposed Mitigation (Waters of the U.S.) - Mitigation may be provided by the North Carolina Department of Environment and Natural Resources Ecosystem Enhancement Program (EEP). In accordance with the "Memorandum of Agreement Among the North Carolina Department of Transportation, and the U.S. Army Corps of Engineers, Wilmington District" (MOA), July 22, 2003, and amended June 2004 and March 2007, final determinations on compensatory mitigation are made by the USACE and NCDWQ as part of the permitting process. NCDOT is responsible for and commits to undertake any necessary mitigation.
3.9 Wetlands	No Impact. There are no wetlands impacted by the Project. Therefore, the Project will not have permanent, temporary, secondary, or cumulative wetland impacts.	Not Applicable.
3.9 Threatened & Endangered Species	No Impact. Field surveys found no evidence of federal or state-listed threatened and endangered species within the project study area.	Not Applicable.
3.10 Hydraulic Impacts	No Impact. Sizing of hydraulic structures will ensure adequacy for existing and proposed development and to that upstream water levels are not increased during flood events.	Not Applicable.
3.11 Floodplains	No Impact. The Build Alternative will not permanently impact any 100-year floodplains.	Not Applicable.
3.12 Archaeological & Historic Architectural Properties	Adverse Effect. The Project will have an Adverse Effect on the Depot Historic District Proposed and its Proposed Boundary Amendment, an eligible historic district subject to Section 4(f) requirements. The Project requires removal of the current Amtrak station – a contributing element to the Depot District, and removal of the Capital Feed and Grocery Building - a contributing resource to the Proposed National Register Boundary Amendment for the Depot District.	In accordance with Section 106 of the NHPA, a Memorandum of Agreement (MOA) between NCDOT, the FRA, the State Historic Preservation Office (SHPO), and the City of Raleigh documenting the evaluation of mitigation for this effect is being developed and will be included in the subsequent Finding of No Significant Impact (FONSI) for this project.

**TABLE 3.22.2
SUMMARY OF IMPACTS FOR RECOMMENDED ALTERNATIVE**

Section of EA	Summary of Impacts	Proposed Mitigation
3.13 Hazardous Materials	Minor Impact. The NCDOT Geotechnical Unit identified six UST sites within the immediate station area and two within the East Raleigh siding area. Two sites in the station area may be impacted and the Geotechnical Unit noted that all of the sites are anticipated to present low geo-environmental impacts to the Project	NCDOT will undertake a more detailed study of the sites identified in the inventory prior to acquisition of right-of-way or construction. For sites directly impacted by the Project, NCDOT will submit a work plan to the NC Department of Natural Resources addressing how hazardous materials will be handled and disposed of.
3.14 Mineral Resources	No Impact. The Project does not pose any impacts to mining or mineral resources.	Not Applicable.
3.15 Use of Energy Resources	No Impact. Construction of the Build Alternative will initially result in a substantial increase of energy. After construction, the Project will result in improved efficiencies for passenger and freight rail operations and provide the opportunity to reduce energy usage by reducing single-passenger vehicle users on the highway.	Not Applicable.
3.16 Visual Impacts	Minor Impact. Given the presence of the existing rail corridor, visual effects of the Build Alternative will primarily be an improvement associated with the up-fit and revitalization of the viaduct building and its immediate surroundings.	Not Applicable.
3.17 Utilities	Minor Impact. The Project may require the relocation of existing underground and overhead utilities with the possibility of short-term interruptions to service during construction; however overall impacts to public utilities are anticipated to be low.	Utilities location and coordination will be conducted during final design and right-of-way acquisition phases.
3.18 Transportation	Positive Impact. The Build Alternative will have a positive impact as the proposed station and associated track construction will directly improve passenger and freight rail operations. Having two passenger platforms will enable the station to accommodate future increases in passenger frequencies. Station features such as the Public Plaza will facilitate safe opportunities for pedestrian transportation in the downtown area.	Not Applicable.

**TABLE 3.22.2
SUMMARY OF IMPACTS FOR RECOMMENDED ALTERNATIVE**

Section of EA	Summary of Impacts	Proposed Mitigation
3.19 Possible Barriers to Elderly and Handicapped	No Impact. The station is intended to increase opportunities for passenger rail service, which can reduce automobile dependence for the elderly and handicapped population. The station includes a proposed grade-separated Public Plaza and passenger concourse will be designed in accordance with the Americans with Disabilities Act of 1990, as amended (ADA) guidelines.	Not Applicable.
3.20 Public Health	No Impact. NCDOT does not anticipate any impacts to public health as a result of the Build Alternative. Air Quality evaluation shows the Project to be below air quality thresholds, and the Project is not expected to have major impacts to hazardous materials, wetlands, area streams or waterways.	Not Applicable.
3.20 Public Safety	Minor Impact. The proposed improvements have relatively minimal direct impact to locations where human activity is present. The Project will increase opportunities for pedestrian mobility and transit usage.	NCDOT will incorporate safety and security elements (i.e. security fencing, lighting, and emergency exit stairways) into the proposed station facility.
3.21 Construction Impacts	Minor Impact. Temporary impacts could occur to air quality, water quality, transportation, and wildlife.	NCDOT will utilize Best Management Practices and standard NCDOT procedures during construction.



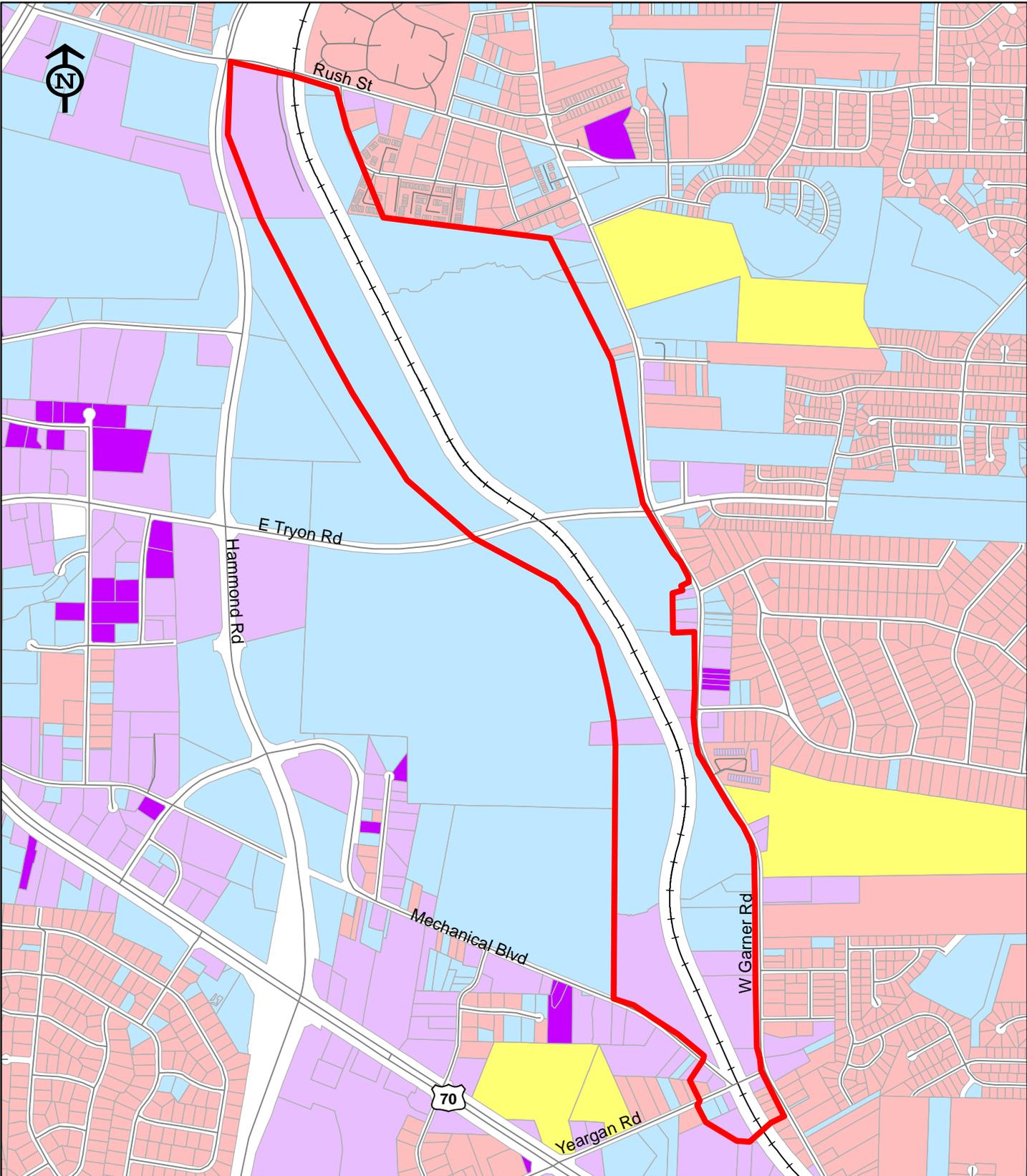
600 300 0 600 Feet



- Study area
- Roads
- Railroads
- Residential
- Agricultural
- Commercial
- Institutional/Government
- Historic Site
- Industrial
- Leased
- Parking Lot

Exhibit 3.1.1a
Existing Land Use Map
Raleigh Station

Proposed Raleigh Union Station - Phase I
TIP No. P-5500
Wake County, North Carolina



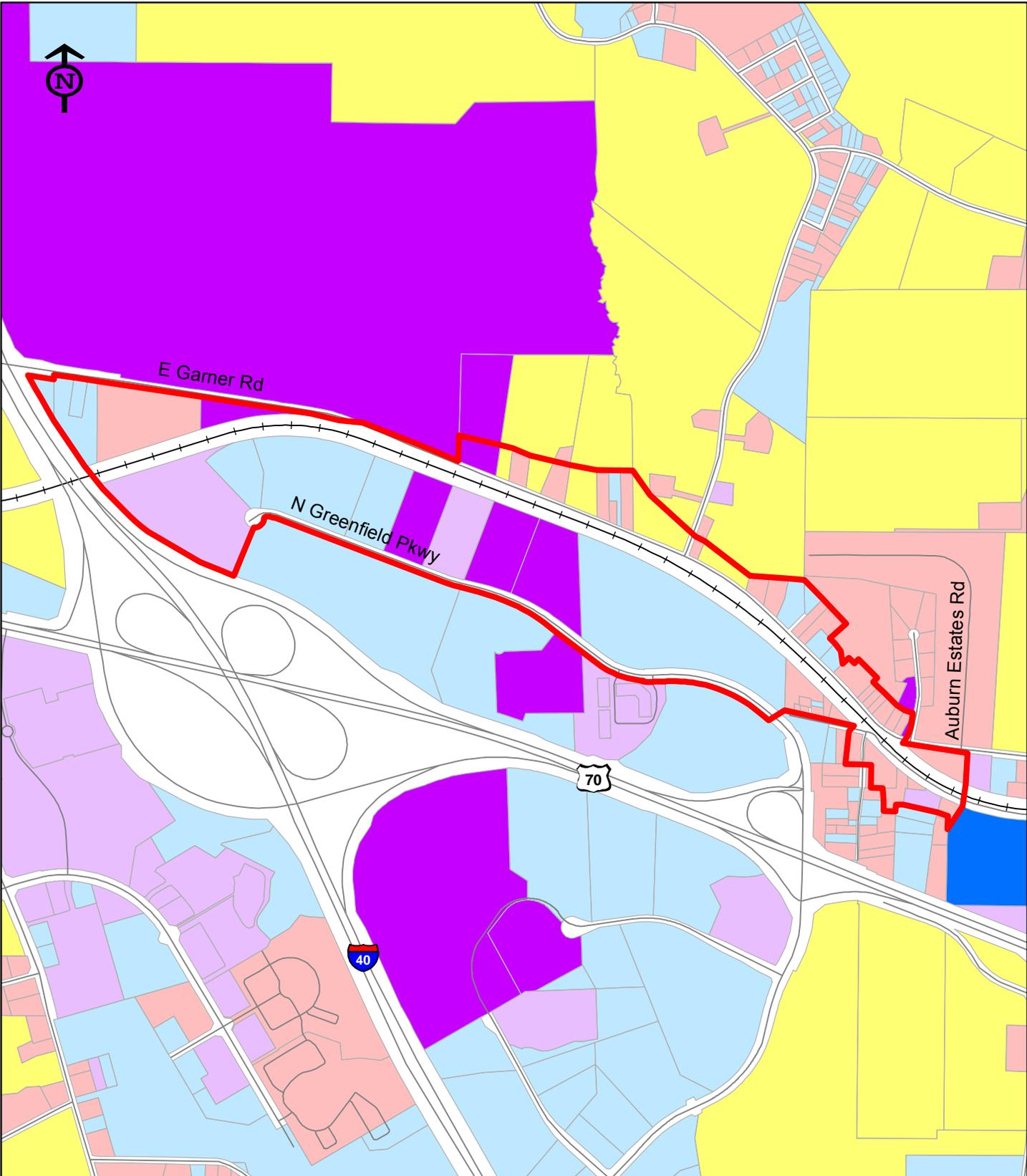
600 300 0 600 Feet



- Study area
- Roads
- Railroads
- Residential
- Agricultural
- Commercial
- Institutional/Government
- Historic Site
- Industrial
- Leased

Exhibit 3.1.1b
Existing Land Use Map
East Raleigh Siding

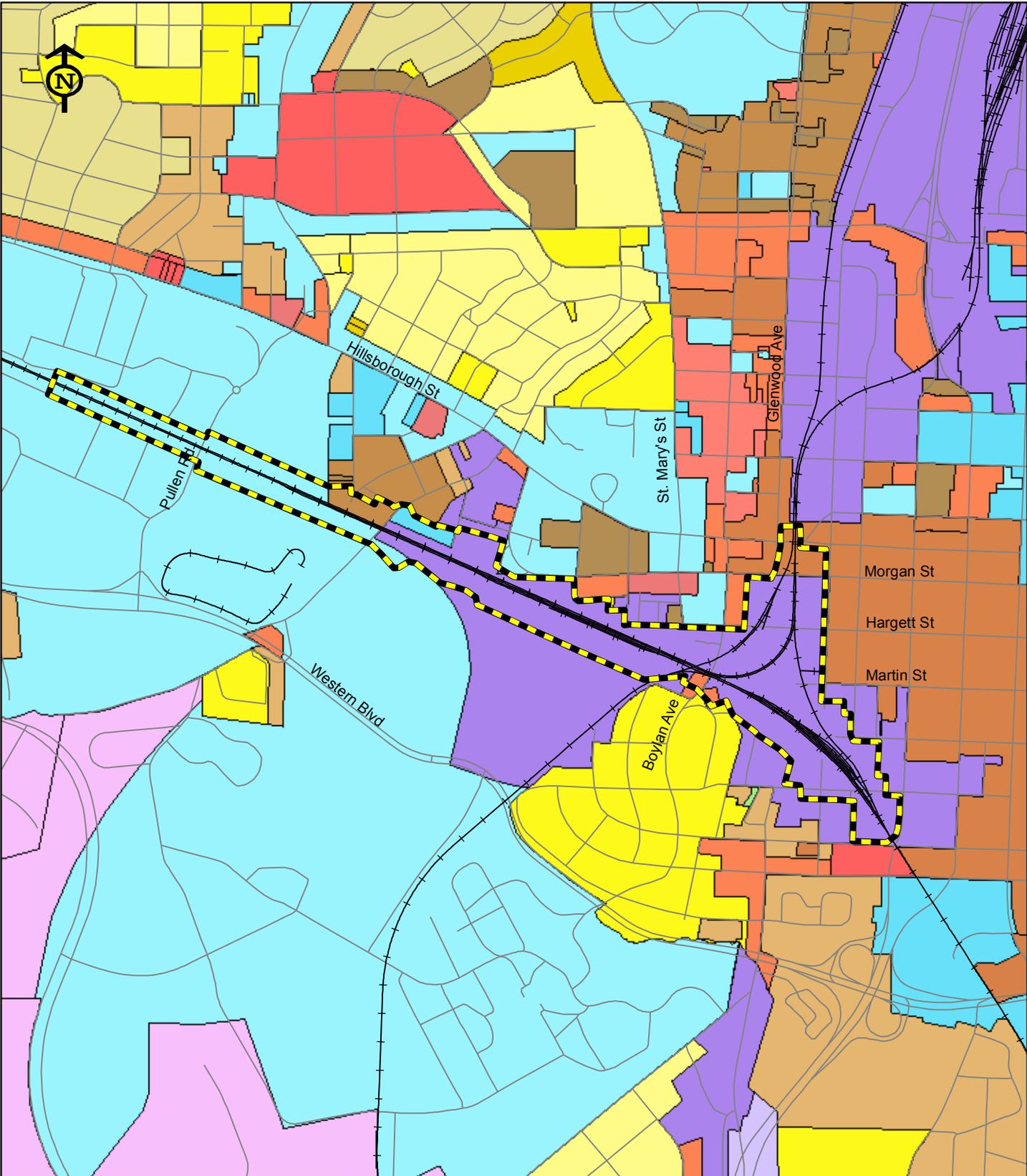
Proposed Raleigh Union Station - Phase I
TIP No. P-5500
Wake County, North Carolina



- ▭ Study area
- ▭ Residential
- ▭ Agricultural
- ▭ Commercial
- ▭ Institutional/Government
- ▭ Historic Site
- ▭ Industrial
- ▭ Leased
- Roads
- Railroads

Exhibit 3.1.1c
Existing Land Use Map
Greenfield Siding

Proposed Raleigh Union Station - Phase I
TIP No. P-5500
Wake County, North Carolina



Legend

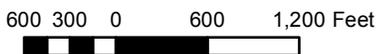
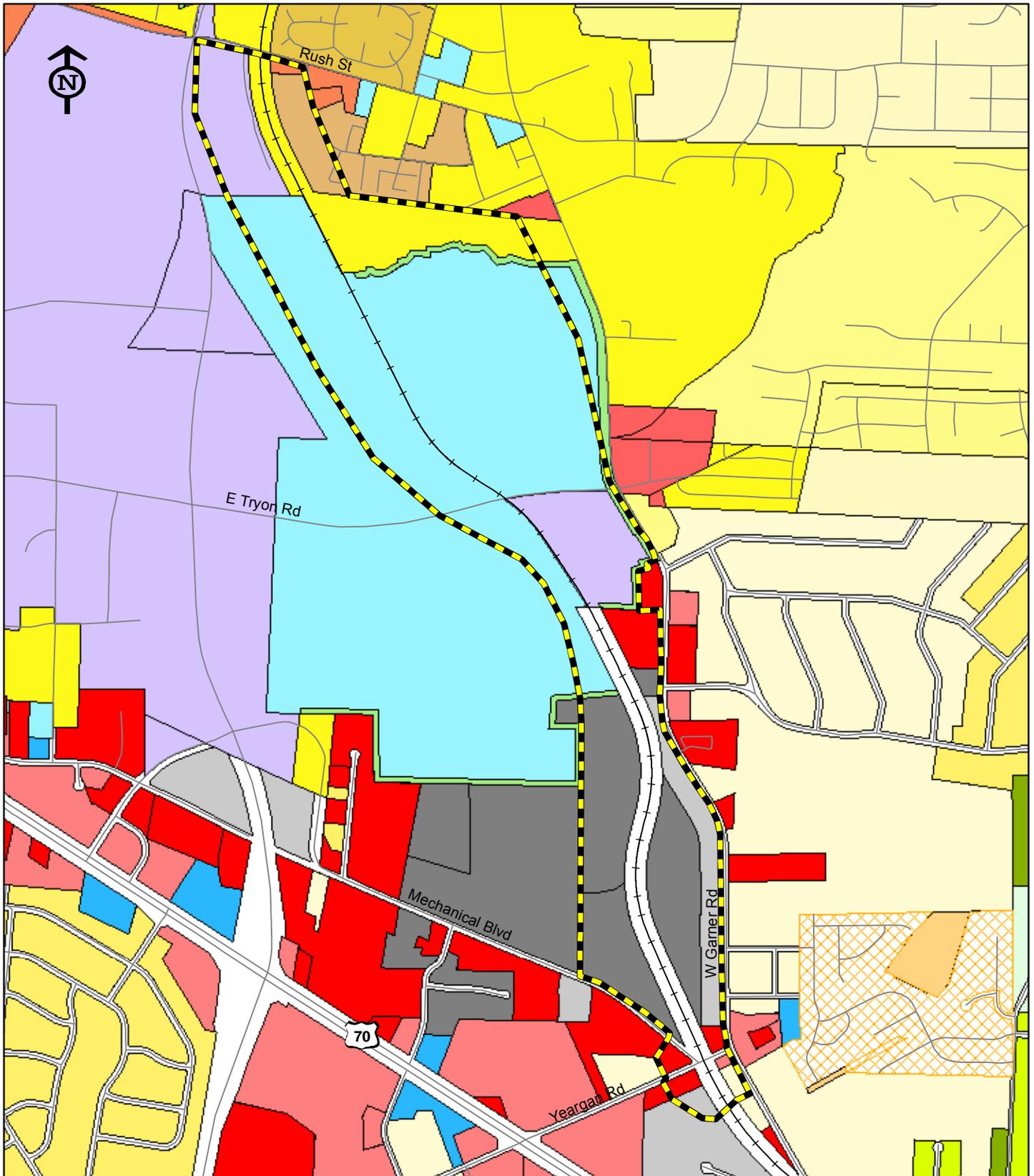
- Study area
- Railroads
- Roads

Raleigh Zoning

- Office & Industrial - 1
- Office & Industrial - 2
- Special Residential - 30
- Industrial 2
- Neighborhood Business

**Exhibit 3.1.2a
Zoning Map
Raleigh Station**

Proposed Raleigh Union Station - Phase I
TIP No. P-5500
Wake County, North Carolina



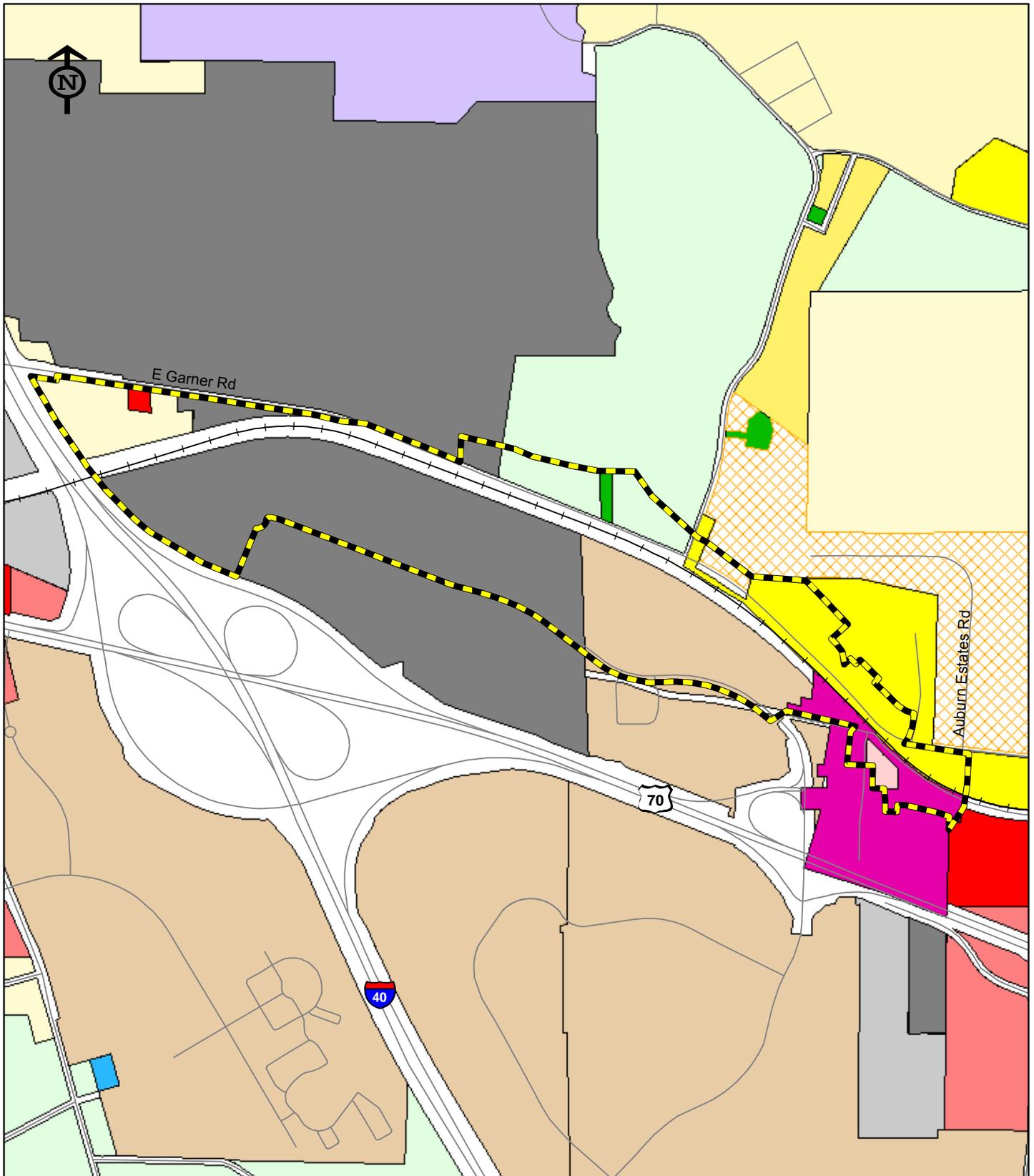
Legend

- Study area
- Railroads
- Roads
- Garner Zoning**
- Industrial 1
- Industrial 2
- Service Business

- Community Retail
- Residential, Single Family
- Raleigh Zoning**
- Office & Industrial - 1
- Industrial - 1
- Residential - 10
- Residential - 20
- Neighborhood Business
- Conservation Management

**Exhibit 3.1.2b
Zoning Map
East Raleigh Siding**

Proposed Raleigh Union Station - Phase I
TIP No. P-5500
Wake County, North Carolina



Legend

- Study area
- Railroads
- Roads

Garner Zoning

- Industrial 2
- Service Business
- Neighborhood Commercial
- Mixed Use
- Residential, Single Family (40,000 sf)
- Residential, Single Family (20,000 sf)
- Multi-residential
- Manufactured Homes & Parks

**Exhibit 3.1.2c
Zoning Map
Greenfield Siding**

Proposed Raleigh Union Station - Phase I
TIP No. P-5500
Wake County, North Carolina



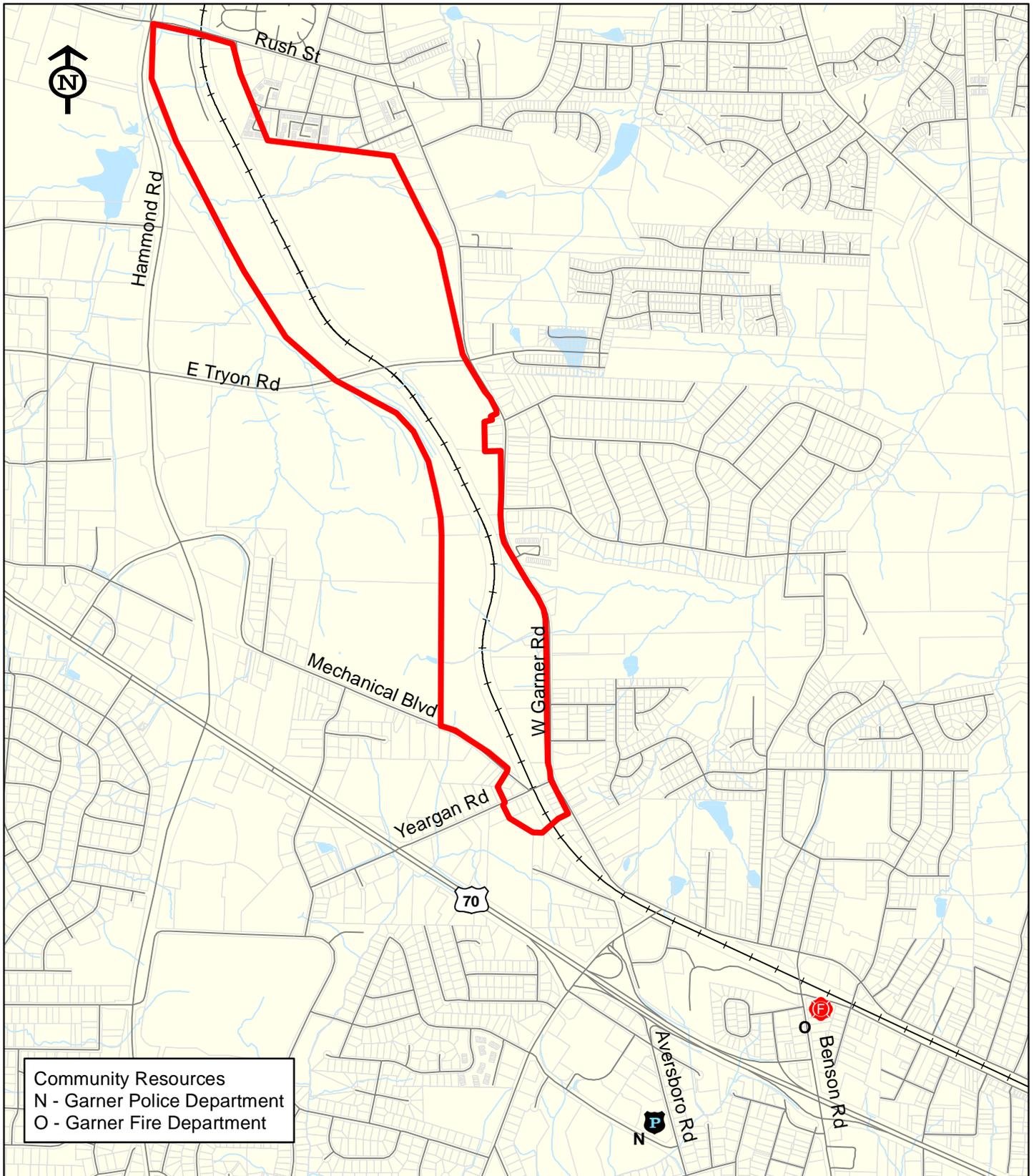
- Community Resources**
- A - NC State University
 - B - Project Enlightenment
 - C - St. Mary's School
 - D - Exploris Middle School
 - E - Cathedral Catholic School
 - F - Wiley Elementary School
 - G - Washington Elementary School
 - H - Wake County EMS Headquarters
 - I - Wake County Fire Marshall
 - J - Wake County Sheriff
 - K - Raleigh Police
 - L - Raleigh Fire Station
 - M - Glenwood Towers EMS Station



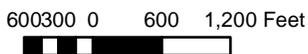
Legend

- EMS
- Hospital
- Fire Station
- Police Station
- School
- Study area boundary
- Parcels
- Waterbodies
- Streams
- Railroads
- Roads

Exhibit 3.3a
Community Resources Map
Raleigh Station
 Proposed Raleigh Union Station - Phase I
 TIP No. P-5500
 Wake County, North Carolina



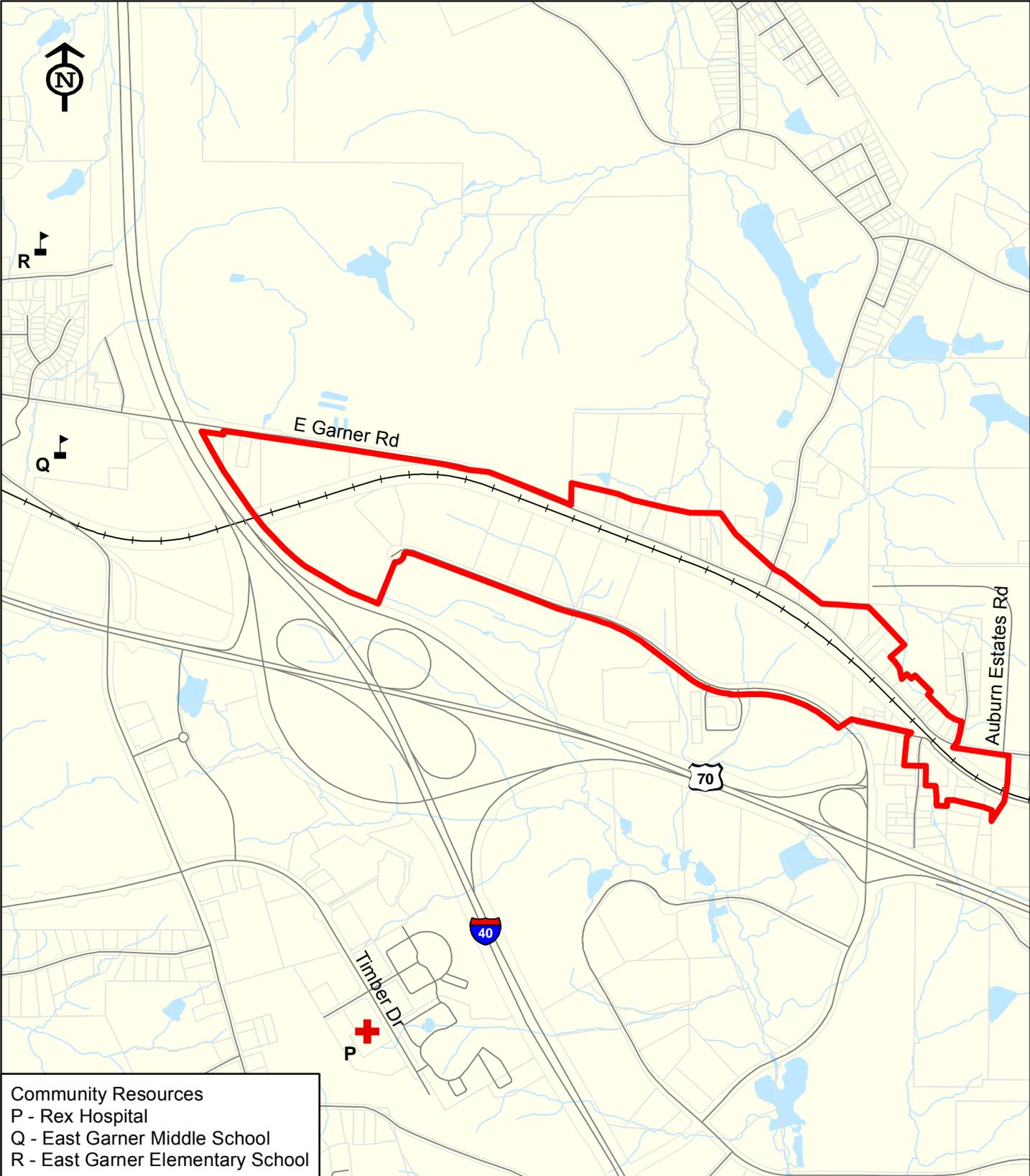
Community Resources
 N - Garner Police Department
 O - Garner Fire Department



Legend

- EMS
- Hospital
- Fire Station
- Police Station
- School
- Study area boundary
- Parcels
- Waterbodies
- Streams
- Railroads
- Roads

Exhibit 3.3b
 Community Resources Map
 East Raleigh Siding
 Proposed Raleigh Union Station - Phase I
 TIP No. P-5500
 Wake County, North Carolina



Community Resources
 P - Rex Hospital
 Q - East Garner Middle School
 R - East Garner Elementary School



600 300 0 600 1,200 Feet

- Legend**
- EMS
 - Hospital
 - Fire Station
 - Police Station
 - School
 - Study area boundary
 - Parcels
 - Waterbodies
 - Streams
 - Railroads
 - Roads

Exhibit 3.3c
 Community Resources Map
 Greenfield Siding

Proposed Raleigh Union Station - Phase I
 TIP No. P-5500
 Wake County, North Carolina



425 212.5 0 425 Feet

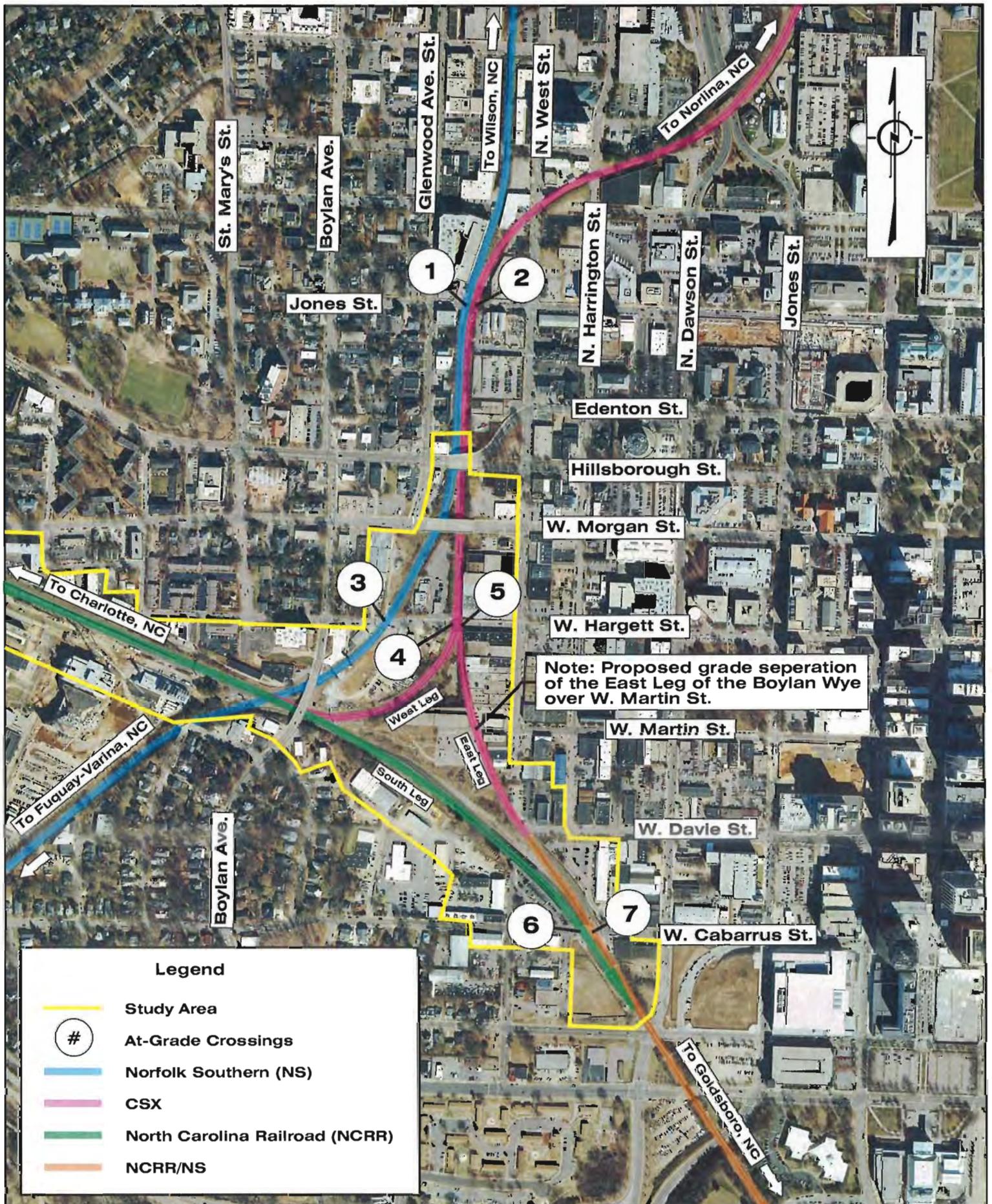


Legend

- SEHSR Slope Stakes
- Raleigh Station Slope Stakes
- Property Boundaries
- Roads
- Streams
- Waterbodies
- Railroads

Exhibit 3.4.1
Raleigh Union Station and SEHSR Impact Areas
Raleigh Station

Proposed Raleigh Union Station - Phase I
TIP No. P-5500
Wake County, North Carolina



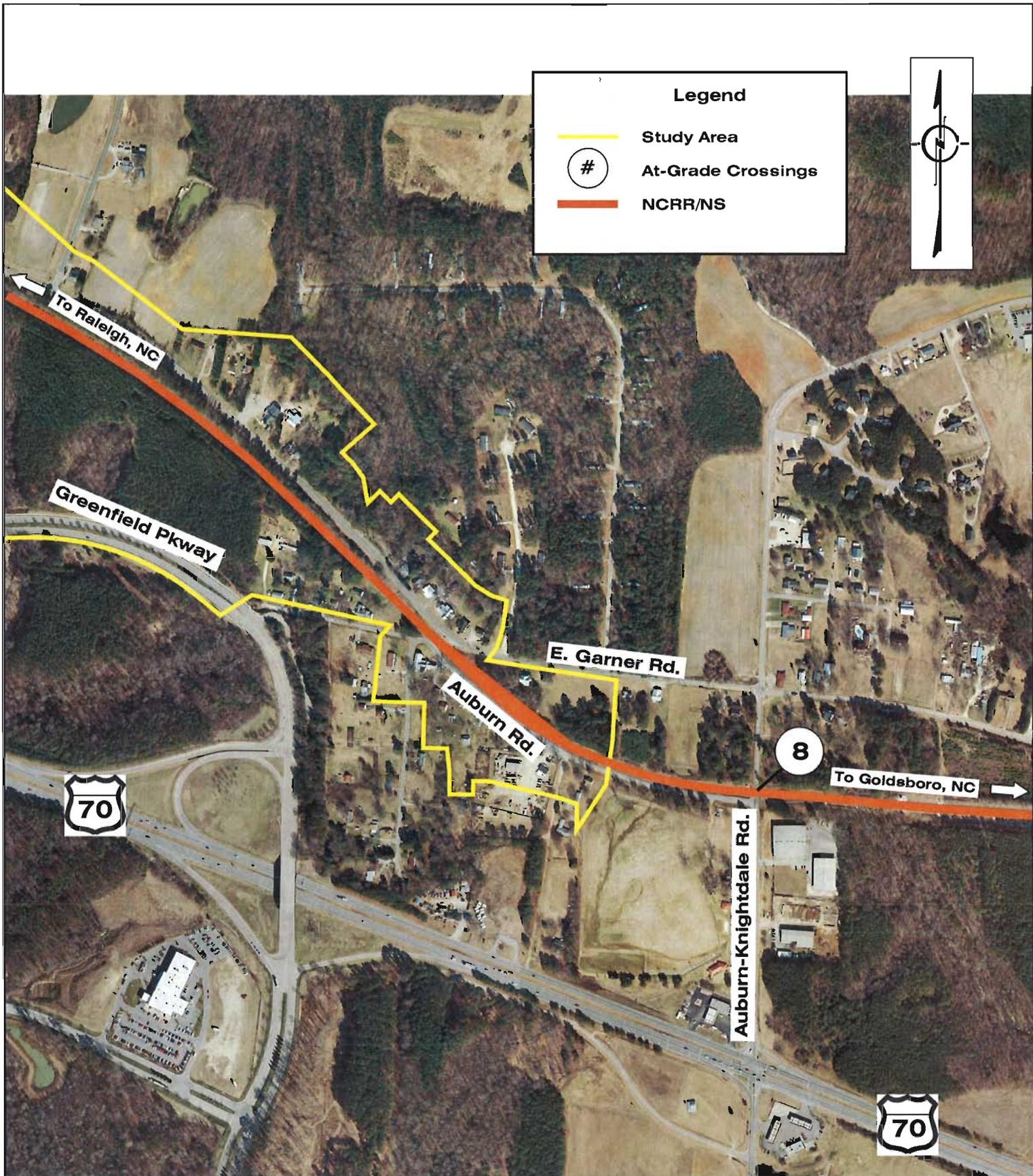
Legend

- Study Area
- At-Grade Crossings
- Norfolk Southern (NS)
- CSX
- North Carolina Railroad (NCR)
- NCR/NS

**Raleigh Union Station
Phase I**
TIP No. P-3803
Wake County, North Carolina

**Railroad Lines and
At-Grade Crossings
Downtown**
Scale: 1" = 600'
Exhibit 3.8.1





Legend

- Study Area
- # At-Grade Crossings
- NCRR/NS

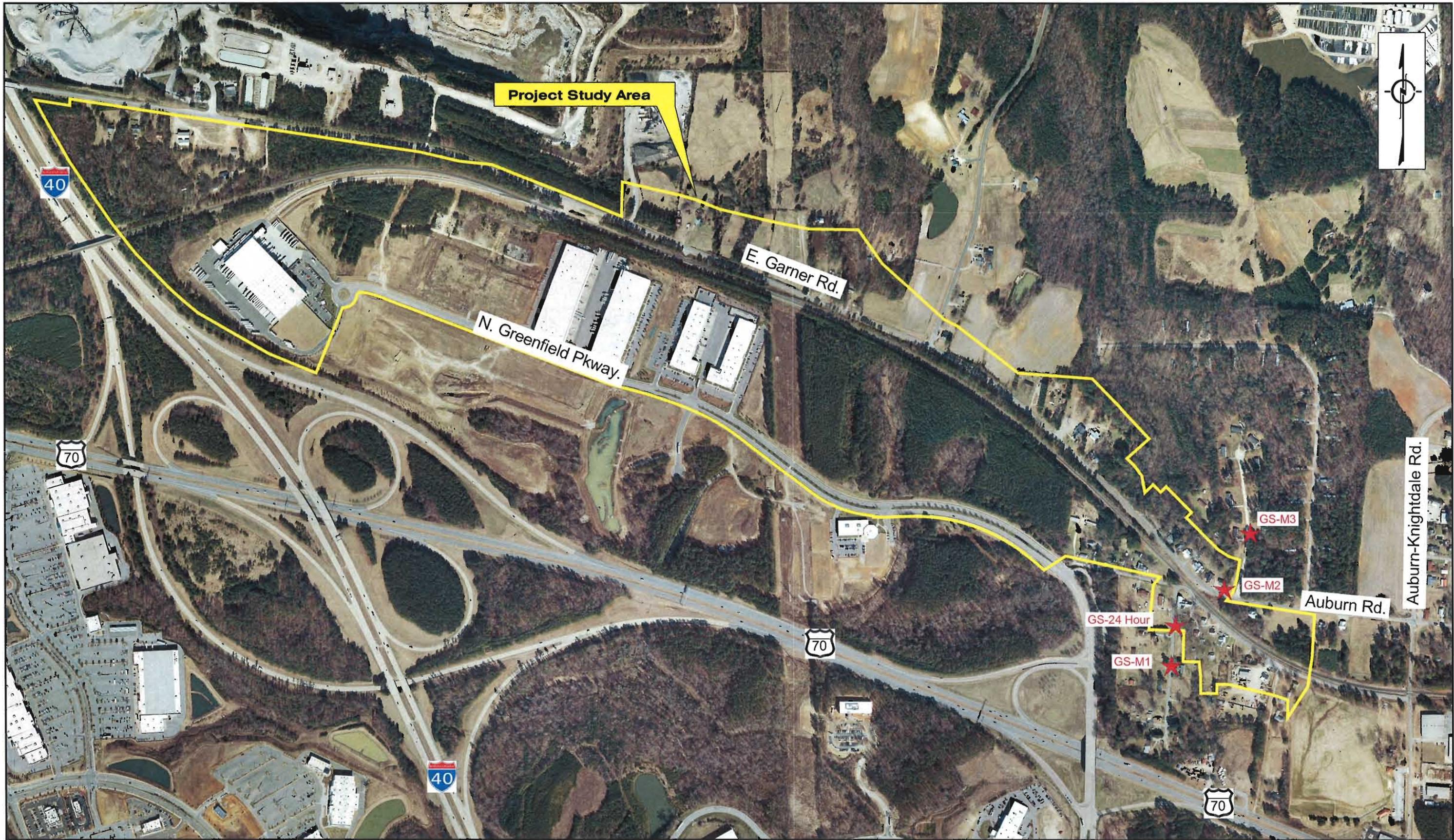




Raleigh Union Station - Phase I
 TIP No. P-5500
 Raleigh, North Carolina



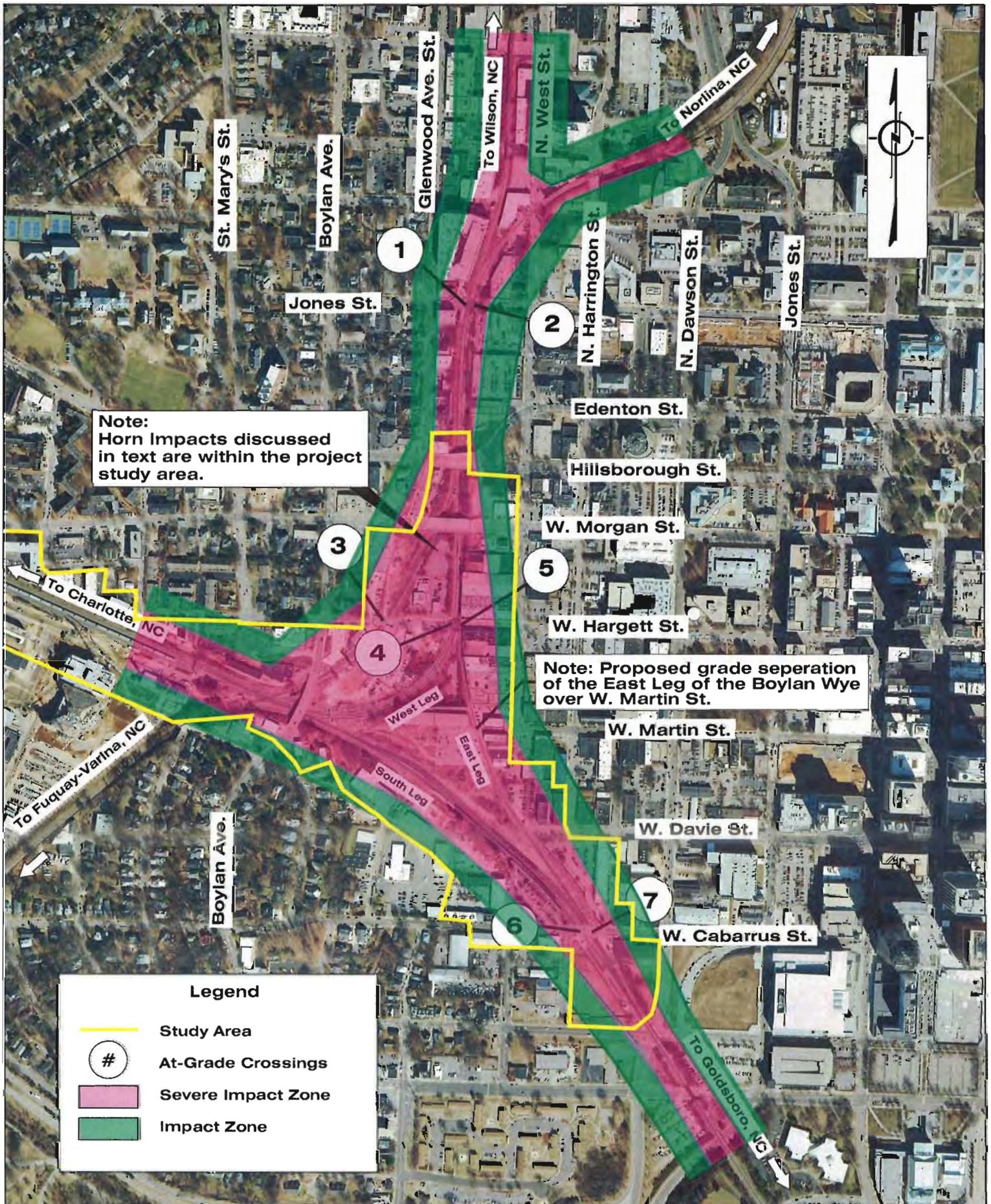
Noise Level
 Measurement Locations
 Downtown
 Exhibit 3.8.3



Raleigh Union Station - Phase I
 TIP No. P-5500
 Raleigh, North Carolina



Noise Level
 Measurement Locations
 Greenfield Siding
 Exhibit 3.8.4

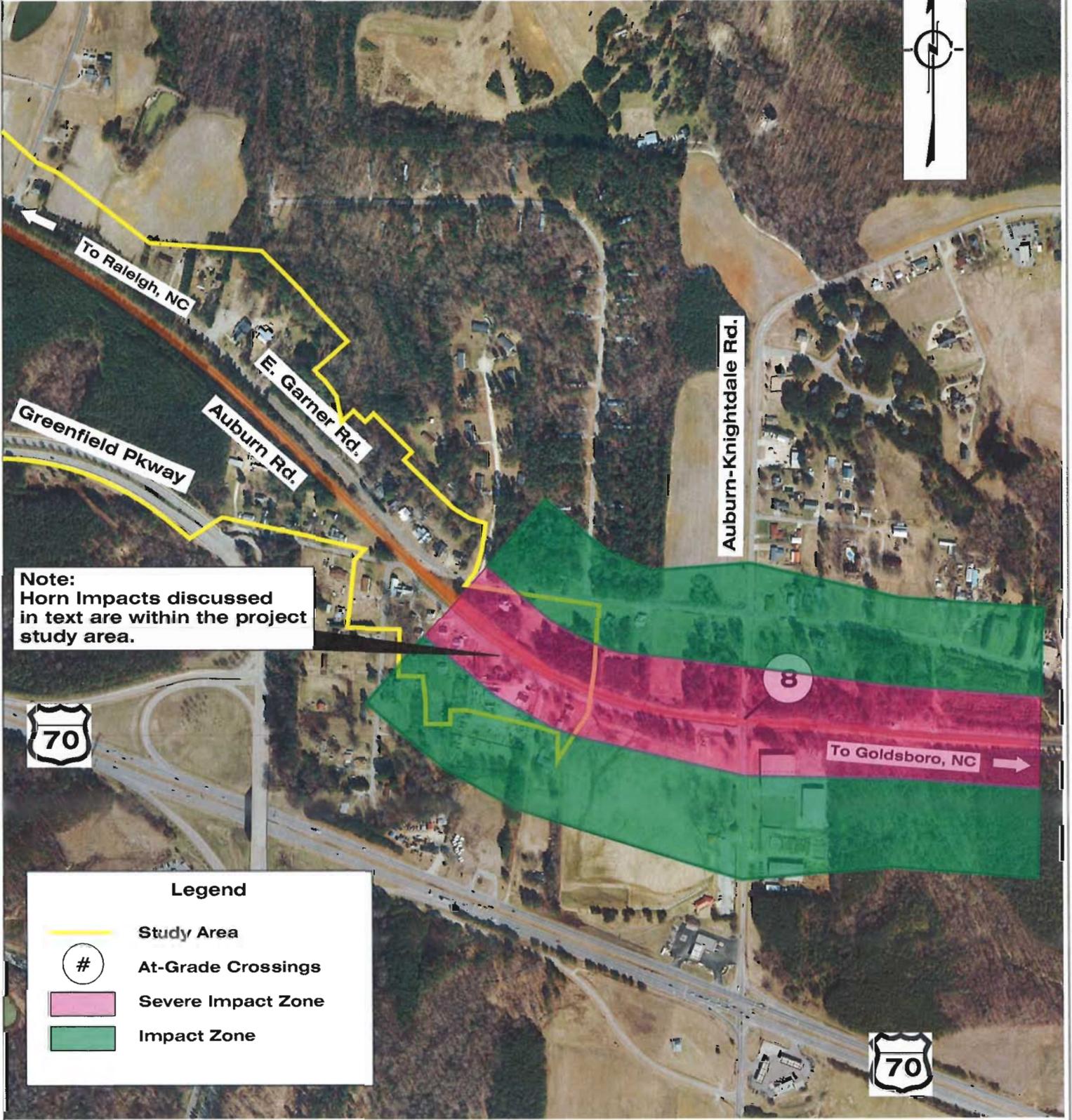


Note:
Horn Impacts discussed
in text are within the project
study area.

Note: Proposed grade separation
of the East Leg of the Boylan Wye
over W. Martin St.

Legend

-  Study Area
-  At-Grade Crossings
-  Severe Impact Zone
-  Impact Zone



Note:
Horn Impacts discussed
in text are within the project
study area.



Legend

-  Study Area
-  At-Grade Crossings
-  Severe Impact Zone
-  Impact Zone



**Raleigh Union Station
Phase I
TIP No. P-3803
Wake County, North Carolina**

**Locomotive Warning
Horn impact Areas
Greenfield Siding
Scale: 1" = 600'
Exhibit 3.8.6**

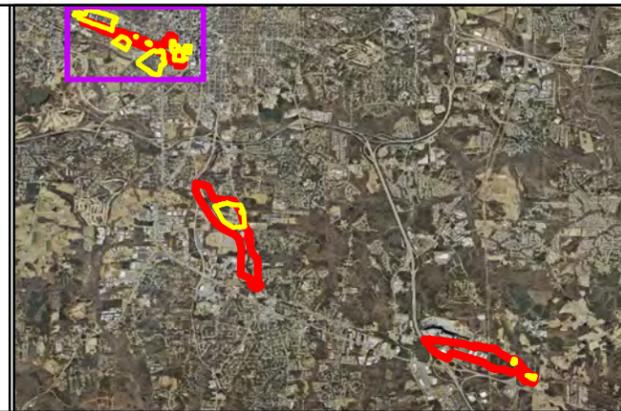
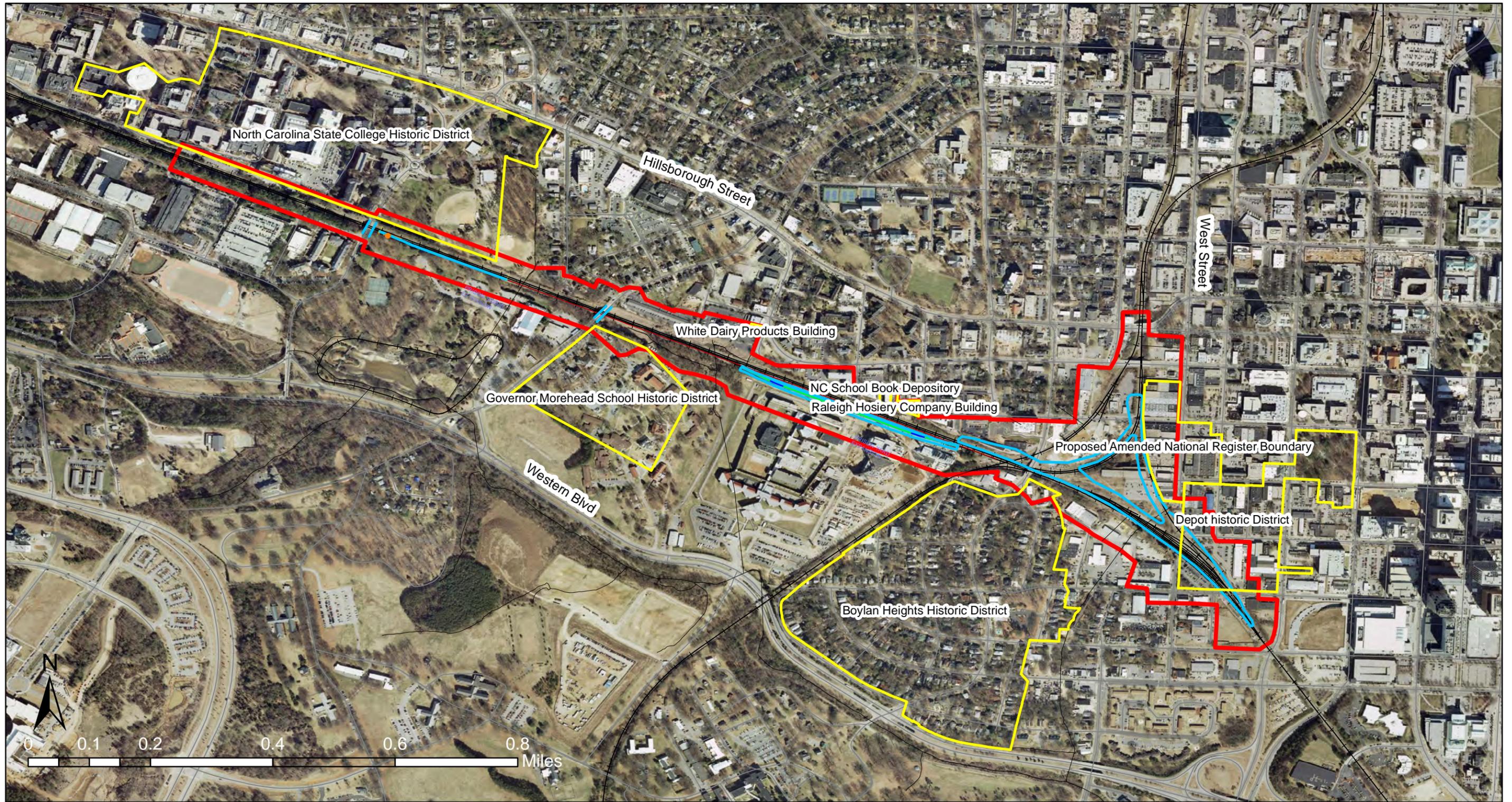


Legend

-  Study area boundary
-  100-yr floodplain
-  Roads
-  Streams
-  Waterbodies
-  Railroads

**Exhibit 3.11.1
Floodplain Map
East Raleigh Siding**

Proposed Raleigh Union Station - Phase I
TIP No. P-5500
Wake County, North Carolina



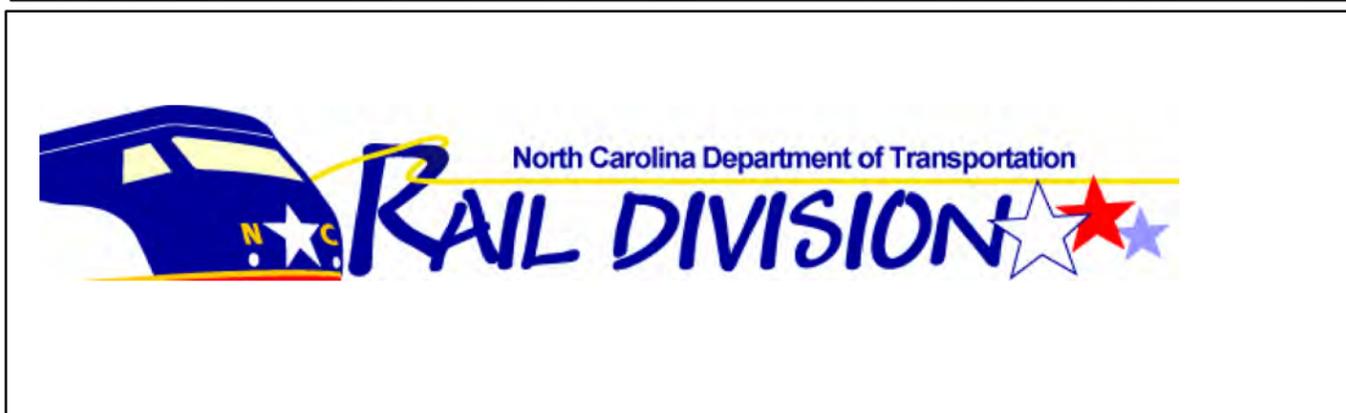
-  Historic Boundary
-  Slope Stakes
-  Study Area
-  Roads
-  Railroads

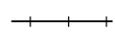
Exhibit 3.12.1a
Historic Properties
Raleigh Station Area

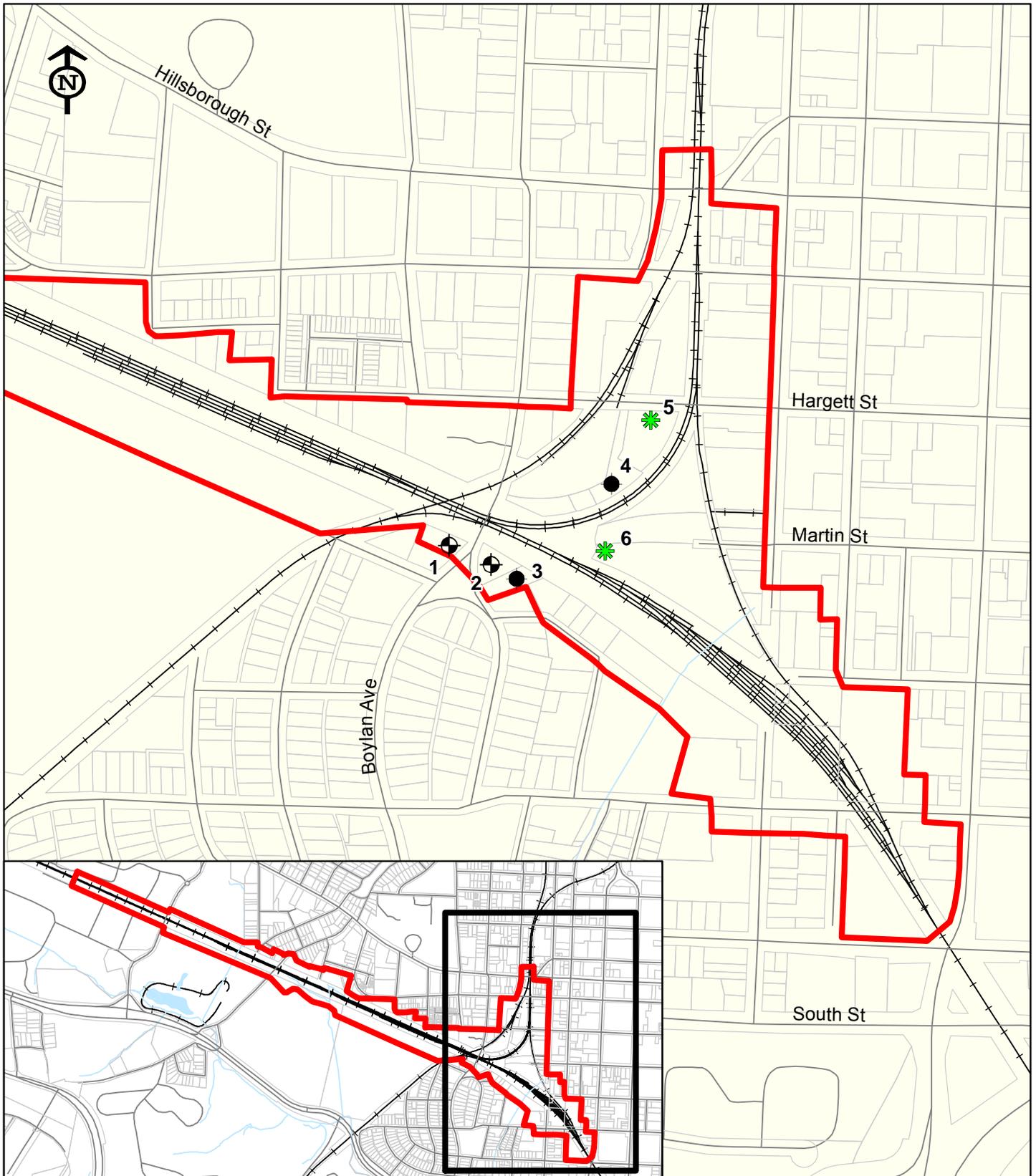


-  Historic Boundary
-  Slope Stakes
-  Study Area
-  Roads
-  Railroads

Exhibit 3.12.1b
Historic Properties
East Raleigh Siding Area



-  Historic Boundary
 -  Slope Stakes
 -  Study Area
 -  Roads
 -  Railroads
- Exhibit 3.12.1c
Historic Properties
Greenfield Siding Area



380 190 0 380 Feet



Legend

- Study area boundary
- Possible UST
- UST
- ✱ Other
- Roads
- Streams
- Waterbodies
- Railroads

**Exhibit 3.13.1a
Potential Hazardous Materials Sites Map
Raleigh Station**

Proposed Raleigh Union Station - Phase I
TIP No. P-5500
Wake County, North Carolina



600 300 0 600 Feet

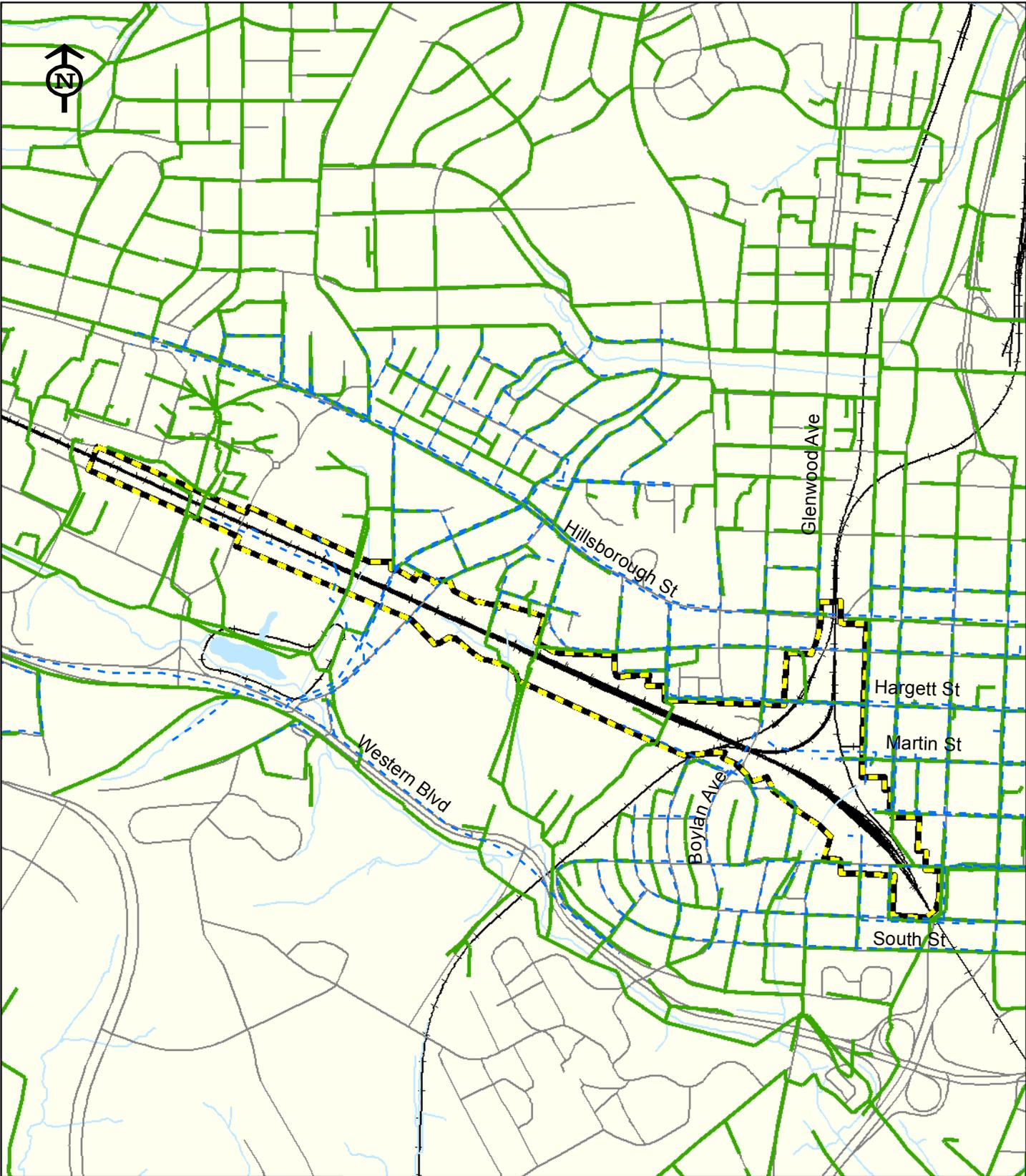


Legend

- Study area boundary
- Possible UST
- UST
- Other
- Roads
- Streams
- Waterbodies
- Railroads

Exhibit 3.13.1b
Potential Hazardous Materials Sites Map
 East Raleigh Siding

Proposed Raleigh Union Station - Phase I
 TIP No. P-5500
 Wake County, North Carolina

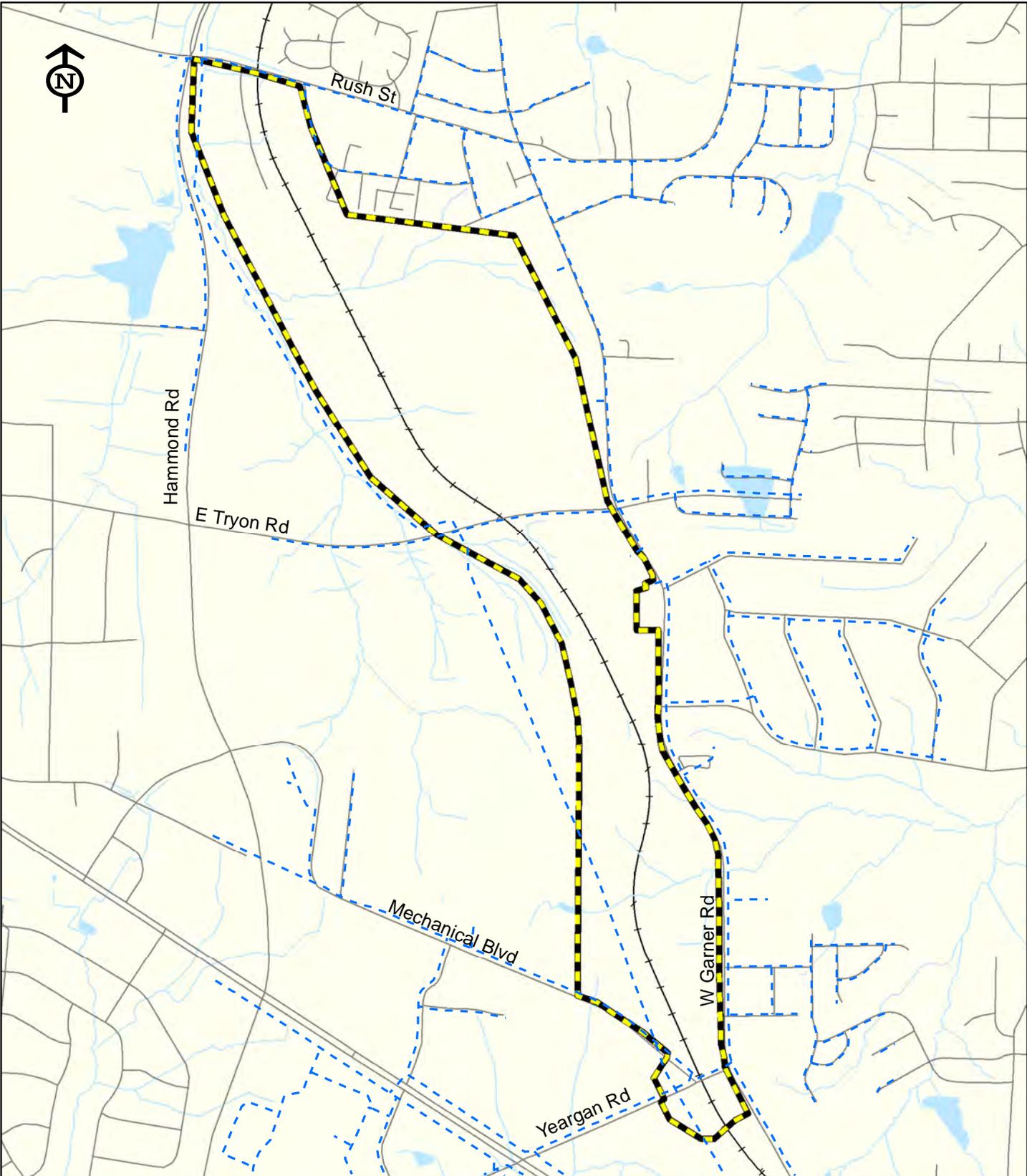


Legend

- Study area boundary
- Water Lines
- Force Main
- Gravity Sewer
- Roads
- Streams
- Waterbodies
- Railroads

Exhibit 3.17.1a
Public Utilities Map
Raleigh Station

Proposed Raleigh Union Station - Phase I
TIP No. P-5500
Wake County, North Carolina

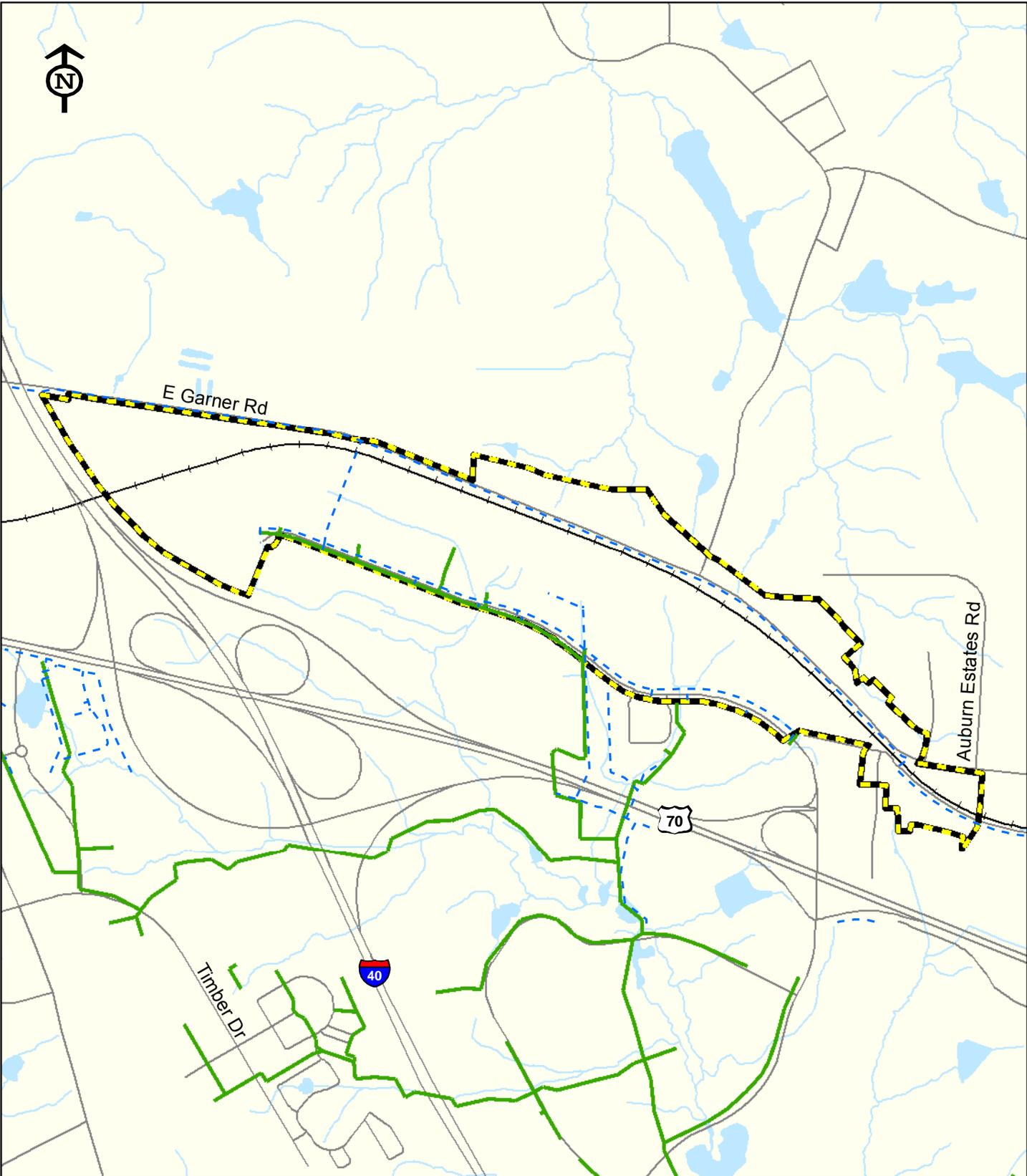


Legend

- Study area boundary
- Water Lines
- Force Main
- Gravity Sewer
- Roads
- Streams
- Waterbodies
- Railroads

**Exhibit 3.17.1b
Public Utilities Map
East Raleigh Siding**

Proposed Raleigh Union Station - Phase I
TIP No. P-5500
Wake County, North Carolina



Legend

- Study area boundary
- Water Lines
- Gravity Sewer
- Roads
- Streams
- Waterbodies
- Railroads

**Exhibit 3.17.1c
Public Utilities Map
Greenfield Siding**

Proposed Raleigh Union Station - Phase I
TIP No. P-5500
Wake County, North Carolina

4.0 COMMENTS AND COORDINATION

The major coordination milestones for this project are described in chronological order in the following sections.

4.1 START OF STUDY LETTER (April 3, 2012)

A start of study letter was mailed out on April 3, 2012 to local, state, and federal agencies, as well as the North Carolina State Clearinghouse, to solicit comments on the scope of this environmental document. The following agencies were solicited for comment:

- City of Raleigh
- Wake County
- Capital Area Metropolitan Planning Organization
- North Carolina Department of Transportation Rail Division
- North Carolina Department of Transportation Highway Division 5
- North Carolina Department of Transportation Transportation Planning Branch
- North Carolina State Clearinghouse
- North Carolina Department of Cultural Resources, Division of Archives and History
- North Carolina Division of Water Quality
- North Carolina Natural Heritage Program
- North Carolina Wildlife Resources Commission
- U.S. Army Corps of Engineers
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Services
- Triangle Transit Authority
- Norfolk Southern Railway Corporation
- CSX Transportation Company
- North Carolina Railroad Company
- Federal Highway Administration

The letter explained that an Environmental Assessment was being prepared to document the potential effects of the proposed Project. The letter also included an exhibit showing the proposed Project study area in the immediate vicinity of the station and in the vicinity of the two potential siding locations. The responses to this scoping letter are included in Appendix A.2.

4.2 CITIZENS INFORMATIONAL WORKSHOP (August 6, 2012)

The first Citizens Informational Workshop was preceded by advertisement via the local newspaper (Raleigh News and Observer), local public radio advertisements and the City of Raleigh website.

The first Citizen's Informational Workshop was held on August 6, 2012 at the Raleigh Convention Center (Ballroom B) from 5:00 to 7:00 pm. A local official's meeting was held from 3:00 to 4:00 pm preceding the CIW. The sign-in sheet included 149 citizens and 3 local officials. A total of 11 written comments were received during the workshop and one comment was mailed following the workshop. The purpose of this workshop was to initiate the project's public involvement program, to provide information concerning the environmental study process, to receive comments from the public concerning the project and to introduce the members of the study team. Stations were set up around the room staffed by representatives of the NCDOT Rail Division, Rail Union Station – Phase 1 study team, NC Amtrak, Triangle Transit (Wake Corridor Light Rail Plan), Triangle Transit (Wake-Durham Commuter Rail), City of Raleigh, Capital Area Transit (Long Range Transit Plan), NCDOT Southeast High Speed Rail (SEHSR), and Operation Life Saver. A short video was provided by the City of Raleigh as an introduction to the project and maps and boards were displayed with information at each station.

Citizens in attendance were generally very much in favor of the project and were there to learn more and offer suggestions. Of the written comments received, citizens were interested in pedestrian access to the station and whether it would be assessable to persons with disabilities, lighting of the tunnel, funding, future high speed rail connection, and providing an enclosed shelter for those waiting on the train platform.

4.3 PROJECT WEBSITE

The NCDOT created a project website at the beginning of the study that was updated as the study progressed. The website included Project site maps, handouts from the citizen's informational workshop, and station schematics. Information maintained on the website also included Project schedule, purpose and need and latest updates. The website (<http://www.ncdot.gov/projects/raleighunionstation/>) also included a link to submit comments. As of the date of this document, no comments had been received via the website.

4.4 DESIGN WORKSHOPS

As part of the public involvement and design process for the Raleigh Union Station project, NCDOT conducted three Design Workshops, which were held on the following dates:

- March 6, 2013 at the Progress Energy Center (176 attendees)
- May 1, 2013 at the Raleigh Contemporary Art Museum (130 attendees)
- June 26, 2013 at the Progress Energy Center (186 attendees)

The purpose of the workshops was to allow the public to participate in the architectural design aspect of the Project. The workshops provided the public with an opportunity to engage the design team at various stages in the development of the architectural design of the station. Each workshop was preceded by a Local Officials Meeting.

Similar to the Citizens Informational Workshop, the general sentiment among attendees was very positive towards the project, with most comments focusing on design details. Categories of comments included suggestions about parking capacity, pedestrian access, neighborhood connectivity, and aesthetics. As of the publication of this draft EA, the design team was continuing to consider and incorporate this input as appropriate.

4.5 PUBLIC HEARING (Date TBD)

A Public Hearing will be held following approval of this document. The hearing will occur during the development of detailed design of the station. Most of the comments and questions received at the initial workshop pertained to design questions. So the most responsive approach to engaging the citizens and stakeholders during subsequent phases of the Project will be when preliminary design plans are in development and more information can be shared and discussed.

5.0 DRAFT SECTION 4(f) EVALUATION

5.1 PURPOSE OF SECTION 4(F) EVALUATION

NCDOT prepared this Section 4(f) evaluation in conjunction with the planning and environmental analysis for the Raleigh Union Station – Phase I (Project) located in Raleigh, North Carolina. The City of Raleigh and NCDOT propose to construct a train station and make adjacent track improvements within the Boylan Wye (see Exhibits 1.1.1 and 1.1.6 for a visual depiction of the station area and nearby rail line configuration). The station would be located within an existing building known as the Viaduct Building, and the station component of the Project would include boarding platforms, surface parking lot, other site improvements and dedicated station tracks for passenger (Figures 5.1.1 and 5.1.2).

As part of the Project, NCDOT also evaluated several potential siding locations as a solution to the loss of Cabarrus Yard, an existing freight car storage facility (owned by NCRR and operated by NS) which will be displaced by the Project. The proposed sidings would also improve rail operations, specifically the interaction of passenger and freight rail within the station vicinity. Inclusion of a new siding would replace rail car storage capacity that would be lost in the Boylan Wye because of proposed station platforms. Potential siding sites that were evaluated include: the West Prison Siding, which is an approximately 800-foot extension of the existing prison Siding located west of Ashe Avenue; the East Prison Siding, which is an approximately 1,200-foot extension of the existing prison Siding located at the proposed station; the Prison Yard Expansion, which will add two approximately 1,000-foot siding tracks to the existing Prison Yard area just west of the Boylan Wye; the “East Raleigh siding,” which extends from just south of mile marker H-84, crosses Tryon Road and ends just north of mile marker H-85; and the “Greenfield Siding” from I-40 (H-88) to just east of mile marker H-90 near Auburn Road.



Figure 5.1.1: Viaduct Building



Figure 5.1.2: Capital Feed and Grocery Company Building (Viaduct Building in Background)

The Project will address the functional obsolescence of the existing Amtrak Station (Exhibit 5.5.1), improve operational efficiencies for both freight and passenger railroads through the Boylan Wye, increase allowable speeds, and address safety concerns for the railroads, pedestrians, and vehicles.

NCDOT is currently in the preliminary engineering phase and is preparing the EA and a draft Section 4(f) Evaluation for the Project. The draft EA and Section 4(f) evaluation are based upon preliminary engineering plans.

This section discusses the use by the Project of the historic resources identified in the *Historic Architectural Resources Survey* prepared by Mattson, Alexander and Associates, Inc. dated 11 February 2013⁷⁵ and available from the NCDOT Rail Division. Eleven properties or historic districts surveyed during the Phase II investigation have either been listed in the National Register of Historic Places (NRHP) or been determined eligible for listing. By letter dated March 5, 2013, the North Carolina State Historic Preservation Office (SHPO) concurred with the findings of the 2013 historic resources report. On April 30, NCDOT Rail Division, SHPO and FRA met to review the effects of the Build Alternative on the historic resources. NCDOT and FRA recommended findings for all eleven resources and SHPO concurred with those recommendations. All three parties signed the Determination of Effects form, a copy of which is included in Appendix A. More detail on the historic resources survey and agency coordination is described in Section 3.

NCDOT prepared the EA in accordance with NEPA and FRA's Procedures for Considering Environmental Impacts,⁷⁶ the North Carolina State Environmental Policy Act, and the National Historic Preservation Act (NHPA) of 1966, as amended. Because the Project falls under the jurisdiction of the US Department of Transportation (USDOT) Act of 1966, this section has also been prepared per legislation that governs USDOT projects and their impacts on public parks, wildlife refuges, recreation areas, or historic sites (commonly referred to as "Section 4(f)").

⁷⁵ Historic Architectural Resources Survey Report, Raleigh Train Station and Track Configurations. Mattson, Alexander & Associates, 11 February 2013

⁷⁶ See Note 10.

5.2 APPLICABILITY OF SECTION 106 AND OF SECTION 4(F) TO THE PROJECT

5.2.1 Section 106 Applicability

Section 106 of the NHPA requires that if a federally funded, licensed, or permitted project has an effect on a property listed in, or potentially eligible for listing in, the NRHP, the Advisory Council on Historic Preservation (ACHP), SHPO, and other consulting parties must be given reasonable opportunity to comment on such undertakings. To assist in this review, NCDOT has undertaken an evaluation of effects on the historic resources identified in the earlier investigative survey. The evaluations of effects presented in the EA are based on the regulations implementing Section 106 of the NHPA.⁷⁷ Federal undertakings are considered to have adverse effects if they will damage, destroy, or encroach upon land from a historic property or otherwise alter the qualities that make the resource eligible for the NRHP.

Specifically, adverse effects may be caused by the following conditions:

- Physical destruction/damage
- Alteration of a property
- Removal of a property from its historic location
- Change of the character of a property's use or of physical features within a property's setting that contribute to its historical significance
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of a property's significant historic features
- Neglect of a property that causes its deterioration

Adverse effects may result from the direct actions of the project, as in the case of property acquisitions, or they may be the consequence of indirect and cumulative impacts. Changes in zoning, increased needs for parking and market demands for new development are all examples of the types of indirect effects that may result from federal undertakings. Both direct and indirect impacts have been assessed.

For this Project, the following eleven properties were determined eligible for, or are listed in, the NRHP.

1. Boylan Heights Historic District (National Register)
2. Raleigh Hosiery Mill

⁷⁷ 36 CFR Section 800

3. North Carolina School Book Depository
4. White Dairy Products Building
5. Governor Morehead School Historic District
6. North Carolina State College Historic District
7. Governor Morehead School Historic District, Colored Department, Historic District
8. Auburn Christian Church
9. William Watts House
10. Depot Historic District (National Register)
11. Depot Historic District-Proposed National Register Boundary Amendment

Of these eleven historic resources, NCDOT and FRA determined, and SHPO concurred, that the Project would have an adverse effect on only the Depot Historic District and the Depot Historic District-Proposed National Register Boundary Amendment. On April 30, 2013 representatives of the FRA, NCDOT, and SHPO met to discuss the effects to all Section 106 resources. During the meeting NCDOT noted that some recent design changes had substantially reduced the Project's footprint in several locations. NCDOT suggested that the actual Area of Potential Effect (APE) would be reduced in these locations and, therefore, the Project would no longer have a potential effect on four of the evaluated resources. A second Effects Meeting was held on December 16, 2013 to discuss impacts to the Depot Historic District due to impacts to the existing Amtrak Station associated with updated platform and track designs. NCDOT identified additional effects to the Depot Historic District and the Depot Historic District-Proposed National Register Boundary Amendment due to the lowering of West Street to provide the second access point to Raleigh Union Station. A detailed description of the effects assessment for each of the eligible resources can be found in Section 3.

5.2.2 Section 4(f) Applicability

NCDOT prepared this evaluation to meet the requirements set forth in Section 4(f) of the USDOT Act of 1966.⁷⁸ A Section 4(f) evaluation is required when a federally funded transportation action uses or has the potential to use a historic resource, a publicly owned park, recreational area, or wildlife refuge. A historic resource is defined as a property that is listed in, or eligible for listing in, the National Register of Historic Places. Section 4(f) mandates that publicly owned parks, recreation lands, wildlife and waterfowl refuge areas, or historic resources of national, state, or local significance may not be used for USDOT-funded projects unless there is no feasible and prudent alternative to the use of such land and such projects include all possible planning to mitigate harm to these lands. A "use" occurs when: (1) land is permanently

⁷⁸ 49 U.S.C. § 303

incorporated into the transportation facility through property acquisition or a permanent easement; (2) there is a temporary occupancy, in whole or in part, of land that is adverse to the preservation purpose of Section 4(f); or (3) there is a constructive use, which involves no actual physical use of the Section 4(f) property but proximity impacts that result in substantial impairment to the Section 4(f) property's activities, features, or attributes that qualify the property for protection under Section 4(f).

This evaluation provides the necessary information for the FRA to render a Section 4(f) finding. The FRA must determine whether there are feasible and prudent alternatives to the use of Section 4(f) resources by the proposed federal action. If there are no feasible and prudent alternatives, then the project must include all possible planning and mitigation measures to minimize harm resulting from such use.

5.3 DESCRIPTION OF SECTION 4(F) RESOURCES

Based on a search of records, surveys, and GIS data, NCDOT has determined that there are no publicly owned parks, recreation lands, and wildlife and waterfowl refuge areas affected by the Project. Therefore, only the eleven properties identified during the historic resources surveys were evaluated under Section 4(f).

Below is a list of the Section 4(f) resources identified in the survey of the project study area. Descriptions of each resource can be found in Section 3.12.

1. Boylan Heights Historic District (National Register)
2. Raleigh Hosiery Mill
3. North Carolina School Book Depository
4. White Dairy Products Building
5. Governor Morehead School Historic District
6. North Carolina State College Historic District
7. Governor Morehead School Historic District, Colored Department, Historic District
8. Auburn Christian Church
9. William Watts House
10. Depot Historic District, including the existing Amtrak station (National Register)

11. Depot Historic District, Proposed National Register Boundary Amendment⁷⁹

(including Dillon Supply Company, Farm Machinery Warehouse, Peden Steel Works, Commercial Building, Dillon Supply Company Warehouse, Capital Feed and Grocery Company Building, Swift Meat Company Warehouse, Swift Meat Company Warehouse No. 2 and Caveness Produce Company Warehouse as the eight contributing resources)

Exhibit 5.1 shows the historic resources within the Depot Historic District-Proposed National Register Boundary Amendment. As described above, under Section 106 of the NHPA, NCDOT, FRA and SHPO evaluated whether the project would have no effect, no adverse effect, or an adverse effect on historic properties. No effect means that the project would result in no alteration to the characteristics of the historic property. An adverse effect occurs when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register. With adverse effects, the alterations brought by the federal action diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register, as defined in 36 CFR 800.5.⁸⁰ A finding of no adverse effect means that the project would impact or alter the historic property, but the alteration would not have an adverse effect as defined in 36 CFR 800.⁸⁰

The Project is comprised of the station building, which includes the pedestrian plaza, station platforms and tracks, modifications to the track layout in the Boylan Wye, parking, and associated road improvements and three optional siding locations. NCDOT evaluated whether each of these components would adversely affect the identified historic resources. The evaluation concluded that the Project would have either no effect or no adverse effect on nine of the eleven historic resources:

- Boylan Heights Historic District (No Effect): The limits for the Station (building, platform, parking, and trackwork) portion of the Project would not extend beyond the existing railroad tracks and would not affect the historic district boundary. The East Raleigh Siding component of the Project lies well outside the boundary of the Boylan Heights

⁷⁹ The historic architectural survey for this project recommended an expanded Depot Historic District boundary (Boundary Amendment) to encompass ten resources recommended as eligible.

⁸⁰ See Note 71.

Historic District. The Greenfield Siding portion of the Project is also located well outside of the historic district. The construction limits for the Prison Siding Extension and Yard Tracks component would be within the vicinity of the historic district but not close enough to affect the resource.

- Raleigh Hosiery Mill (No Effect): The Station Construction would occur in the vicinity of the hosiery mill, but would not affect the historic district boundary. The East Raleigh Siding is not within the vicinity of the Raleigh Hosiery Mill. The Greenfield Siding is also located beyond the vicinity of this historic resource. The Prison Siding Extension and Yard Tracks construction limits lie within the vicinity of the hosiery mill, but not close enough to affect the resource.
- North Carolina School Book Depository (No Effect): The Station Construction is not within the vicinity of the school book depository. The East Raleigh Siding lies well beyond the boundary of the resource. The Greenfield Siding is also located beyond the vicinity of this historic resource. The Prison Siding Extension and Yard Tracks component does lie within the vicinity of the school book depository, but not close enough to affect the resource.
- Governor Morehead School Historic District (Historic District No Longer in APE): The project limits have been changed since the completion of the Phase II Historic Architectural Resources Report. The APE has been revised to reflect the new Project limits, and the historic district now lies outside the APE for the Project.
- North Carolina State College Historic District (Historic District No Longer in APE): The project limits have been changed since the completion of the Phase II Historic Architectural Resources Report. The APE has been changed to reflect the new project limits, and the historic district now lies outside the APE for the Project.
- Governor Morehead School, Colored Department, Historic District (No Effect): The Station is located outside the limits of this historic district. The East Raleigh Siding is located near the historic district, but the 10,000-foot-long siding is planned for the west side of the existing railroad tracks, away from the historic district boundary. All construction associated with the siding would be confined within the existing railroad

right-of-way and would not affect the historic district. The Greenfield Siding is located outside of this historic resource. The Prison Siding Extension and Yard Tracks are also located well outside of the boundaries of this historic resource.

- Auburn Christian Church (No Effect): The Auburn Christian Church is not located near the Station Construction, the East Raleigh Siding, or the Prison Siding Extension and Yard Tracks components of the Project. The church is located near the Greenfield Siding portion of the Project. The siding construction is planned for the north side of the railroad tracks adjacent to Garner Road and across from the church, and the construction may require removing some of the vegetative buffer along the road. However, all construction will be contained within the existing railroad right-of-way and will not impact the church.
- William Watt House (Historic Resource No Longer in APE): The project limits have been changed since the completion of the Phase II Historic Architectural Resources Report. The APE has been revised to reflect the new project limits, and the William Watt House now lies outside the APE for the Project.
- White Dairy Products Building (Historic Resource No Longer in APE): The project limits have been changed since the completion of the Phase II Historic Architectural Resources Report. The APE has been revised to reflect the new project limits, and the historic district now lies outside the APE for the Project.

NCDOT and FRA also evaluated the above nine historic resources under Section 4(f) and determined that the Project will not use, nor have the potential to use, these resources. Therefore, NCDOT removed these nine resources from further evaluation under Section 4(f).

NCDOT and FRA determined and SHPO concurred that the Station Construction would have an adverse effect on two historic resources: the Depot Historic District, and the Depot Historic District-Proposed National Register Boundary Amendment.

- Depot Historic District Adverse Effect: The realignment of the NCRR H-Line, which will require a full roadbed section and the required 26-foot separation between the H-Line and the platform tracks, will require the removal of the platform canopy and the

demolition of the existing Amtrak Station. NCDOT prepared the H-line realignment design in coordination with FRA and Norfolk-Southern Railroad. The criteria that guided the track realignment included: minimum proposed platform length (approximately 1,000 feet) at the new station as determined by FRA; the full roadbed section and 26-foot separation between the H-Line and the platform tracks as required by Norfolk-Southern; and physical constraints associated with tying into the existing track (design speed, existing turnout locations, existing track alignment). The existing Amtrak Station (Exhibit 5.5.1) is a contributing element to the Depot Historic District. The Project will result in a 4(f) use to this historic district through the demolition of the Amtrak Station and conversion of portions of the property to railroad track roadbed. Impacts to this resource are considered to be unavoidable due to the physical constraints in the Boylan Wye, the required dimensions for the new platform, and the required track design criteria.

- Depot Historic District-Proposed National Register Boundary Amendment Adverse Effect: The Project will result in a 4(f) use to this historic district through the demolition of the Capitol Feed and Grain Building, which is a contributing element to the Depot Historic District. Demolition of this building is required in order to provide access to the proposed station via West Martin Street. The physical constraints in the immediate station area limit the options for access, resulting in a narrow corridor. NCDOT determined that there was no feasible alternative that would avoid impacts to the building. As required by Section 4(f), NCDOT undertook an additional evaluation of other potential project alternatives, all of which focused on providing station access via routes other than Martin Street. These alternatives are described in Section 5.4. A description of the project use of the 4(f) resource, as well as measures to minimize or mitigate harm, is included in Section 5.5.

5.4 DESCRIPTION OF ALTERNATIVES CONSIDERED

As noted in Section 2, NCDOT considered various alternatives during the planning and design of this Project and evaluated these alternatives further, pursuant to Section 4(f) requirements, as "avoidance alternatives." Section 2.2 describes the process of evaluating potential station site locations that the City of Raleigh and NCDOT have documented in feasibility studies since the 1990s. The evaluation of feasible sites focused on the immediate vicinity of the Boylan Wye because it meets the purpose and need by directly accessing rail corridors that serve current and future usage, and is the only such location in downtown Raleigh. Section 2.2 describes

locations designated as Sites 1 through 6. NCDOT and the City of Raleigh eliminated Sites 1 through 4 from consideration for a number of reasons, but primarily because they do not provide direct access to all rail lines considered for current and future passenger train usage and therefore do not fully meet the purpose and need. Sites 5 and 6 are located inside the Boylan Wye and therefore satisfy the purpose and need by providing direct access to the rail lines that accommodate current and future usage. NCDOT and the City of Raleigh also eliminated Site 6 when it was compared to Site 5 because it scored lower in several factors, including accessibility of site, accommodation of space and function, support development (redevelopment/ joint development), and contribution to passenger flow between primary modes. Because Sites 5 and 6 are both located within the Wye, they would be expected to have the same access to the surrounding street system using Martin Street, as described in the previous section. Therefore Site 6 would still result in a 4(f) use of the Depot Historic District-Proposed National Register Boundary Amendment and would not serve as an avoidance alternative. Site 5 is the location of the recommended Build Alternative.

Because there is not a feasible alternative site location that meets purpose and need, NCDOT investigated alternative site access to the Project in an attempt to avoid use of Section 4(f) resources.

Exhibit 5.2 shows the design alternatives that are described in the following text. In accordance with Section 4(f), NCDOT evaluated these potential avoidance alternatives to determine if they would be feasible and prudent. FHWA guidelines on implementing Section 4(f) note that an alternative is considered feasible and prudent if the alternative "avoids using Section 4(f) property and does not cause other severe problems of a magnitude that substantially outweigh the importance of protecting the Section 4(f) property."⁸¹ The FHWA guidelines also note that a potential avoidance alternative is not prudent if:

1. It compromises the project to a degree that it is unreasonable to proceed in light of the project's stated purpose and need;
2. It results in unacceptable safety or operational problems;
3. After reasonable mitigation, it still causes severe social, economic, or environmental impacts; severe disruption to established communities; severe or disproportionate

⁸¹ Federal Highway Administration, Section 4(f) Policy Paper, July 20, 2012, <http://www.environment.fhwa.dot.gov/4f/4fpolicy.asp>

impacts to minority or low-income populations; or severe impacts to environmental resources protected under other Federal statutes;

4. It results in additional construction, maintenance, or operational costs of extraordinary magnitude;
5. It causes other unique problems or unusual factors; or
6. It involves multiple factors as outlined above that, while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude.

5.4.1 No-Build Alternative

Description of Alternative: Under the No-Build Alternative, a new train station for Downtown Raleigh would not be built. The major actions associated with the construction of a new rail facility—station building, boarding platforms, surface parking lot, other site improvements, dedicated station tracks for passenger trains only, and associated track improvements—would also not be undertaken. Under the No-Build Alternative, the new siding options of East Raleigh (crossing under Tryon Road), Greenfield (extending from I-40 to near Auburn Road), or the Prison Siding Extension and Yard Tracks would also not be built.

Evaluation: The No-Build Alternative would not satisfy the purpose and need for the Project. It would not address the functional obsolescence of the existing Amtrak Station in Downtown Raleigh. With eight passenger trains daily, the existing station has inadequate waiting areas and unsafe and inadequate boarding platforms. Because the extant station is hemmed in by development, there is no room for the needed expansion to accommodate either current or rising ridership levels. Current levels already create safety concerns for the railroads, pedestrians, and vehicles.

In addition, the No-Build Alternative would not address the operational inefficiencies through the Boylan Wye and would not construct the track improvements needed for higher allowable speeds. Currently, a passenger train stopped at the station prevents all other trains from moving, and trains must hold outside the station either to the east or the west. Also, the No-Build Alternative would not accommodate the growth of passenger and high speed traffic and would not encourage economic development. The inadequacies of the current facilities will only increase as the project study area continues to grow in population, employment, and traffic. Consequently, the No-Build Alternative would not address the obsolescence of the existing station, would not create Raleigh's first multi-modal station, would not address the operational

inefficiencies of freight and passenger traffic through the Boylan Wye, and would not improve the safety of pedestrians, vehicles, and trains.

Finding: This alternative would not meet the project purpose and need, specifically to create a station that has the capacity and facilities for current and projected levels of use and the sidings to improve the operations of freight and passenger traffic near the station. With these limitations, NCDOT determined that the No-Build alternative was neither prudent nor feasible, and this option was eliminated from further consideration.

5.4.2 Recommended Alternative

Description of Alternative: The Recommended Alternative is the Raleigh Union Station – Phase I Build Alternative with the East Raleigh siding component, as described in Section 2. The Recommended Alternative includes the following components:

- Conversion of the Viaduct Building to the Raleigh Union Station - Phase I station Building.
- Pedestrian Plaza
- Surface Parking Lot
- Grade Separated Entrance Drives at West Martin and West Streets
- Two Station Tracks
- Intercity Passenger platform
- Pedestrian Concourse A
- Realignment of the west leg of the Boylan Wye (CSX S-Line)
- East Raleigh Siding

Depot Historic District Impacts: As previously described, the realignment of the NCRR H-Line will require the removal and reuse of the platform canopy and the demolition of the existing Amtrak Station. Impacts to this resource are considered to be unavoidable due to the physical constraints in the Boylan Wye, the required dimensions for the new platform, and the required track design criteria. Therefore the only avoidance alternative for the Section 4(f) use of the Depot Historic District is the No-Build Alternative.

Depot Historic District - Proposed Boundary Amendment Impacts: The station requires access to the surrounding downtown street system. The City of Raleigh Inspections Department, the

North Carolina Department of Insurance, and the City of Raleigh Fire Marshal's Office provided input to the station design team that two access points are needed. These agencies were concerned that having one entrance for all forms of traffic would prevent emergency vehicles and equipment from reaching the station even during times of normal traffic flow in and out of the site. Because of these public safety issues, NCDOT decided that the Project must include two vehicular access points.

Exhibit 2.3.1 shows the two proposed access points as part of the recommended station concept. The northernmost access, the connection to West Martin Street, requires extension and depression of the existing street. This construction necessitates the demolition of the Capital Feed and Grocery Company Building, which is a contributing resource in the expanded Depot Historic District. Section 5.5 describes this impact in detail.

In developing this proposed access, the station design team investigated several other options with the intent avoiding impacts to this resource. These options were each eliminated due to various feasibility factors. The following sections describe the options that were investigated for the Recommended Alternative's station access.

5.4.3 Option N-1 (Exhibit 5.2a)

Description of Alternative: This option would provide access to the new station from the north at West Hargett Street. This northern access alternative would cross privately owned land and would require a tunnel under one active freight line and the proposed concourse before ascending to the at-grade passenger drop-off area of the station.

Evaluation: Creating access from West Hargett Street would greatly increase the overall cost of the Project (additional functional construction cost estimate = \$16,700,000) because of the need to acquire additional private land and because of the construction costs of the tunnel. The tunnel would extend along the rear elevations of two other contributing resources in the expanded Depot Historic District, and the vibrations and ground disturbances associated with the construction of the tunnel may also result in additional Section 4(f) uses of these resources. Furthermore, the tunnel option from West Hargett Street creates a secondary entrance to the station site that is not easily identified or easily accessed from the main entrance on South West Street. Not having the secondary entrance from South West Street would make the circulation pattern in and out of the station awkward. The station is surrounded by active rail lines, and a

secondary entrance that leads away from the main entrance would increase traffic on nearby streets and make reentry into the station slow, circuitous, and confusing, thereby creating safety issues for pedestrians, cyclists, cars, and emergency vehicles.

Finding: Option N-1 would incur significantly higher construction costs, and the excavation and vibrations associated with the tunnel would likely result in additional Section 4(f) uses, and adverse effects under Section 106, of two other contributing resources in the expanded Depot Historic District. This option would also create traffic and safety problems on nearby streets. With these limitations, NCDOT determined that Option N-1 was neither feasible nor prudent and eliminated this alternative from further consideration.

5.4.4 Option N-2 (Exhibit 5.2b)

Description of Alternative: This option would also provide access from the north at West Hargett Street. Under this option, access from the north at West Hargett Street would require the acquisition of private land, as described above, and the construction of a viaduct instead of the tunnel required in Option N-1. The viaduct would be built across one active freight line and the proposed concourse before descending to grade at the passenger drop-off location.

Evaluation: Creating access from West Hargett Street would greatly increase the total cost of the Project (additional functional construction cost estimate = \$8,350,000). Private land would have to be purchased, and the construction costs of the viaduct would be higher than the proposed extension of West Martin Street. As with the tunnel option from West Hargett Street, the northern viaduct alternative has a secondary entrance to the station that is not easily identified or easily accessed from the main entrance on South West Street. The station is surrounded by active rail lines, and a secondary entrance that leads away from the main entrance would increase traffic on densely developed streets in the area and make reentry into the station awkward and circuitous, thereby creating safety issues for pedestrians, cyclists, cars, and emergency vehicles. Finally, the addition of a viaduct to the Boylan Wye would further constrain movement through the area and limit the options for reconfiguring tracks which is already needed to increase train speeds and operational efficiency.

Finding: Option N-2 would have significantly higher construction costs, and the addition of a viaduct to the Boylan Wye would constrain the track improvements needed for better operational efficiency and high-speed traffic, thereby not meeting the purpose and need for the

Project. By locating the secondary entrance away from the main access point, this option would also create traffic and thus safety problems on neighborhood streets. With these limitations, NCDOT determined that Option N-2 was not feasible or prudent and eliminated this alternative from further consideration.

5.4.5 Option W-1 (Exhibit 5.2c)

Description of Alternative: Option W-1 would create an entrance to the station from the west at Boylan Avenue which would require rebuilding a West Martin Street viaduct. The viaduct would cross over privately owned land, two active rail lines, and the proposed concourse before descending to the at-grade drop-off area for passengers.

Evaluation: Creating a secondary entrance on the west side of the Boylan Wye with access from Boylan Avenue would increase the cost of the Project significantly (additional functional construction cost estimate = \$7,200,000) because private land would have to be acquired and because of the cost of the viaduct to span two rail lines. As with the northern options, this alternative creates a secondary entrance to the station site that is not easily identified or reached from the main entrance on South West Street. The station is surrounded by active rail lines, and a secondary entrance that leads away from the main entrance would increase traffic on nearby streets and make reentry into the station slow, circuitous, and confusing, thereby creating safety issues for pedestrians, cyclists, cars, and emergency vehicles. Finally, as noted above with the northern viaduct option, the western viaduct alternative limits the redesign of tracks through the Boylan Wye to increase train speeds and operational efficiency.

Finding: Option W-1 would incur much higher construction costs than the West Martin Street extension design, and the addition of a viaduct to the Boylan Wye would restrict the track reconfigurations needed to improve train operations in the area, thereby not meeting the purpose and need for the Project. By locating the secondary entrance away from the main access location, this option would also create traffic and thus safety problems on nearby streets. With these limitations, NCDOT determined that Option W-1 was neither feasible nor prudent and eliminated this alternative from further consideration.

5.4.6 Option S-1 (Exhibit 5.2d)

Description of Alternative: The first of two access options from the south, this alternative would connect with Dupont Circle, crossing privately owned land and tunneling beneath four active rail

lines and the passenger concourse before ascending to the at-grade passenger drop-off area. The western end of Dupont Circle is located within the Boylan Heights Historic District.

Evaluation: Creating access from Dupont Circle would greatly increase the cost of the Project because of the price of additional land acquisition and the cost of tunneling underneath four rail lines (additional functional construction cost estimate = \$14,700,000). These two southern options that extend from Dupont Circle to the station would have negative traffic, noise, and visual effects under Section 4(f) on Boylan Heights Historic District which encompasses a section of Dupont Circle. The vibrations and ground disturbances associated with the construction of the tunnel may also result in additional Section 4(f) uses of the Boylan Heights Historic District.

As with the northern and western options, the tunnel option to Dupont Circle creates a secondary entrance to the station that is not easily identified or reached from the main entrance on South West Street. This awkward traffic pattern is problematic because the station is surrounded by active rail lines. A secondary entrance that leads away from the main entrance would increase traffic on neighboring streets and make reentry into the station slow and confusing, thereby creating safety issues for pedestrians, cyclists, cars, and emergency vehicles. The aerial photograph included in Exhibit 2.2.1 shows the area south of the Boylan Wye where the streets are immediately adjacent to residential neighborhoods and access would be visually separated from the Station versus providing access along West Street.

Finding: Option S-1 would incur significantly higher construction costs, and the traffic, visual, and noise effects as well as the excavation and vibrations associated with the tunnel could have additional negative Section 4(f) impacts on the Boylan Heights Historic District. This option would also create traffic and thus safety problems on nearby streets, including those within Boylan Heights Historic District. With these limitations, NCDOT determined that Option S-1 was neither feasible nor prudent and eliminated this alternative from further consideration.

5.4.7 Option S-2 (Exhibit 5.2e)

Description of Alternative: The second option from the south would require building a viaduct from Dupont Circle over five active rail lines and the passenger concourse before descending to the passenger drop-off point. The western end of Dupont Circle is located within the Boylan Heights Historic District.

Evaluation: Creating access from Dupont Circle would greatly increase the cost of the Project because private land would have to be acquired and because of the cost of building a viaduct to span five rail lines (additional functional construction cost estimate = \$7,350,000). Furthermore, the visual, traffic, and noise effects of the viaduct would likely result in additional Section 4(f) uses of the Boylan Heights Historic District which encompasses a section of Dupont Circle.

As with the northern and western options, the viaduct from Dupont Circle creates a secondary entrance that is not easily accessed from the main entrance on South West Street, making for an awkward and confusing circulation pattern in and out of the station. The station is surrounded by active rail lines, and a secondary entrance that leads away from the main entrance would increase traffic on busy nearby streets and make reentry into the station slow and confusing for pedestrians, cyclists, cars, and emergency vehicles. Finally, the addition of a viaduct would add physical constraints in the Boylan Wye and limit the redesign of tracks in the area to increase train speeds and operational efficiency.

Finding: Option S-2 would have much higher construction costs, and the visual, noise, and traffic impacts of the viaduct would create additional negative Section 4(f) impacts on the Boylan Heights Historic District. This option would also create traffic and thus safety problems on nearby streets, including those within Boylan Heights Historic District. Finally, the addition of a viaduct to the Boylan Wye would restrict the track reconfigurations needed to improve the movement of trains and high-speed traffic in the area. With these limitations, NCDOT determined that Option S-2 was neither feasible nor prudent and eliminated this alternative from further consideration.

5.4.8 Option E-1 (Exhibit 5.2f)

Description: As an alternative to depressing West Martin Street under the east leg of the Boylan Wye, NCDOT evaluated constructing an overpass with a single center column line in the right-of-way of West Martin Street. The bridge would clear one active freight line before descending to the passenger drop-off area.

Evaluation: Although this viaduct alternative would keep the secondary entrance to the station near the main access point on South West Street, this option is not feasible. The vehicular overpass would extend from South West Street to the on-grade passenger drop-off area within

the wye, and this distance is not long enough to accommodate the vertical clearance needed for the overpass with reasonable slopes.

Finding: The necessary vertical clearance for the overpass bridge and the distance between South West Street and the drop-off area would not allow for appropriate slopes on the overpass. With this limitation, NCDOT determined that Option E-1 was neither feasible nor prudent and eliminated this alternative from further consideration.

5.5 DESCRIPTION OF IMPACTS TO 4(f) RESOURCES

The following section contains brief descriptions of the proposed actions and their impacts on the two Section 4(f) resources. These impacts are based on the December 2013 project preliminary design for the Recommended Alternative. Exhibit 3.12 shows the project footprint in relation to the Depot Historic District and Depot Historic District-Proposed National Register Boundary Amendment.

5.5.1 Depot Historic District

The Depot Historic District occupies an area west of the center city that served as Raleigh's rail transportation and warehouse zone from the mid-nineteenth century to the 1950s. Section 3 of this EA describes that the Depot Historic District was listed in the National Register under Criterion C for architecture and under Criterion A for industry, transportation, and commerce. The district also encompasses Nash Square which was designed in 1940 by the Works Progress Administration (WPA), one of the federal New Deal programs. Because of the WPA design of Nash Square, the Depot Historic District also has local significance under Criterion C for community planning. The realignment of the NCRR H-Line, which will require the removal of the platform canopy and the demolition of the existing Amtrak Station, will result in a use of the Depot Historic District.

Use of Section 4(f) Property: Demolition of Existing Amtrak Station - The realignment of the NCRR H-Line will require the removal and reuse of the platform canopy and the demolition of the existing Amtrak Station. The existing Amtrak Station is a contributing element to the Depot Historic District.

NCDOT prepared the H-line realignment design in coordination with FRA and Norfolk-Southern Railroad. The criteria that guided the track realignment included: minimum

proposed platform length (approximately 1,000 feet) at the new station as determined by FRA; the full roadbed section and 26-foot separation between the H-Line and the platform tracks as required by Norfolk-Southern; and physical constraints associated with tying into the existing track (design speed, existing turnout locations, existing track alignment).



Figure 5.5.1. Existing Amtrak Station

5.5.2 Depot Historic District-Proposed National Register Boundary Amendment

The Depot Historic District-Proposed National Register Boundary Amendment encompasses the following eight contributing resources: Dillon Supply Company, Farm Machinery Warehouse; Peden Steel Works; Commercial Building; Dillon Supply Company Warehouse; Capital Feed and Grocery Company Building; Swift Meat Company Warehouse; Swift Meat Company Warehouse No. 2; and Caveness Produce Company Warehouse as the eight contributing resources. The Noland Company Building is the only noncontributing property. One project action—the extension and depression of West Martin Street as a secondary entry to the station—would require use of the Depot Historic District-Proposed National Register Boundary Amendment.

Use of Section 4(f) Property: Extension and Depression of West Martin Street - The creation of a secondary entrance to the station via an extension and depression of West Martin Street would necessitate the demolition of the Capital Feed and Grocery Company Building. This building is a contributing resource in the expanded Depot Historic District. The original concept plan for the Project identified only one vehicular entrance to the station site—from

South West Street under a proposed rail bridge at the south end of Boylan Wye. The City of Raleigh Inspections Department, the North Carolina Department of Insurance, and the City of Raleigh Fire Marshal's Office all expressed concern with having only one point of access to the station. In particular, these agencies were concerned that having one entrance for all forms of traffic would prevent emergency vehicles and equipment from reaching the station even during times of normal traffic flow in and out of the site. Because of these public safety issues, the design was changed to include a secondary entrance along West Martin Street, reflecting the need to have two vehicular points of access to the station.

West Martin Street provides the only existing access to the Viaduct Building and the Boylan Wye, and the street extends through the expanded Depot Historic District before crossing at grade the eastern leg of the wye. Capital Feed and Grocery Company Building occupies the northwest corner of West Martin and South West streets, and the Swift Meat Company Warehouse sits at the southwest corner, on the east side of the West Martin Street and railroad crossing.

Although West Martin Street already leads to the Viaduct Building, NCDOT determined that the at-grade crossing of the street and railroad has to be eliminated. West Martin Street will be one of only two vehicular and pedestrian access points to the Raleigh Union Station. It will also be most direct pedestrian connection to Downtown Raleigh. The East Leg of the Boylan Wye is currently used by freight trains moving between freight yards north of Downtown Raleigh and the NCRR H-Line south of Raleigh. It is also used by passenger trains returning to the NCDOT Capital Yard Locomotive and Railcar Maintenance Facility. The significant increase of pedestrian and vehicular traffic across the crossing due to the Raleigh Union Station and the projected increase in passenger and freight trains along the East Leg of the Boylan Wye would result in a dramatic increase in accident potential and significant delays at the crossing. Grade separating the crossing would ensure safe and unimpeded access to and from the Raleigh Union Station for vehicles and pedestrians.

The grade separation would require a sixteen-foot-deep excavation where West Martin Street crosses the railroad, and retaining walls would be needed to protect the structural integrity of the two historic resources with the new descending grade of West Martin Street. Both buildings have slab foundations, load-bearing masonry walls, and shallow footings, and the retaining walls would be needed to support the existing grade of the buildings. However, current right-of-

way requirements along West Martin Street will not accommodate the retaining walls. There is only thirty-two feet between the two historic buildings, and the City of Raleigh requires a thirty-five-foot right-of-way to allow for traffic lanes and sidewalks. Therefore, one of the buildings must be demolished to allow for this right-of-way. The proposed design shifts West Martin Street to the north slightly to accommodate the retaining wall next to the Swift building. Capital Feed and Grocery was chosen for demolition because its location directly in front of the Viaduct Building made it a logical site for the new public plaza, which would contain the entrance to a pedestrian and cyclist tunnel leading to the new station.



Figure 5.5.2. Capital Feed and Grocery Company Building. Looking West Along West Martin Street (Viaduct Building in Background).



Figure 5.5.3. Swift Meat Company Warehouse. Looking West Along West Martin Street.



Figure 5.5.4. Viaduct Building. Looking West Along West Martin Street Across East Leg of Boylan Wye (Capital Feed and Grocery Company Building in Right Foreground).

5.5.3 Summary and Mitigation

Summary of Actions Affecting Depot Historic District and Depot Historic District-Proposed National Register Boundary Amendment – The Project will require demolition of the existing Amtrak Station, a contributing resource within the Depot Historic District in order to accommodate the required track alignment and separation. The Project will also require demolition of the Capital Feed and Grocery Company Building, a contributing resource within the Depot Historic District-Proposed National Register Boundary Amendment, to extend and depress West Martin Street as the secondary vehicular entrance to the station. NCDOT and FRA have determined that all of the other alternatives are neither feasible nor prudent.

Mitigation Measures – NCDOT has already initiated discussions with SHPO to mitigate for the demolition of the Amtrak Station and the Capital Feed and Grocery Building. As mitigation, NCDOT will undertake a photo-recording and documentation project to document the buildings. This documentation will include a historical essay on the buildings, measured drawings, and photographs of both the exterior and interior of the buildings, architectural details, overall views of the sites, and representative views of the Depot Historic District, the expanded Depot Historic District and the relationship of the Amtrak Station and Capital Feed and Grocery to these respective districts. This recordation will be submitted to SHPO for review and acceptance. SHPO has also recommended that the mitigation for the demolition of the current Amtrak Station consist of the inclusion of artwork in the Raleigh Union Station that documents the history of passenger train service in Raleigh. A Memorandum of Agreement among

NCDOT, FRA, SHPO, and potentially the ACHP will be completed as part of the Section 106 Consultation Process. Additional mitigation measures may be developed through this process.

5.6 CONCLUSION

Based upon the Section 4(f) evaluation of the Project, NCDOT has identified uses of historic resources and measures to minimize harm, as outlined below.

Depot Historic District

Uses: The realignment of the NCRR H-Line which will require the demolition of the existing Amtrak Station. The existing Amtrak Station is a contributing element to the Depot Historic District.

Measures to minimize harm: With the demolition of the Amtrak Station for the H-line track realignment, NCDOT would undertake mitigation documentation of the station, including a historic essay, measured drawings, and photographic documentation of the building and the Depot Historic District. NCDOT will also evaluate incorporating the canopy of the existing Amtrak Station into the design of the Raleigh Union Station.

Depot Historic District–Proposed National Register Boundary Amendment

Uses: The extension and depression of West Martin Street (which includes building retaining walls) would require demolition of the Capital Feed and Grocery Company Building.

Measures to minimize harm: With the demolition of the Capital Feed and Grocery Company Building for the grade separation of West Martin Street, NCDOT would undertake mitigation documentation of the building, including a historic essay, measured drawings, and photographic documentation of the building and the expanded Depot Historic District.

5.7 PUBLIC AND AGENCY COORDINATION

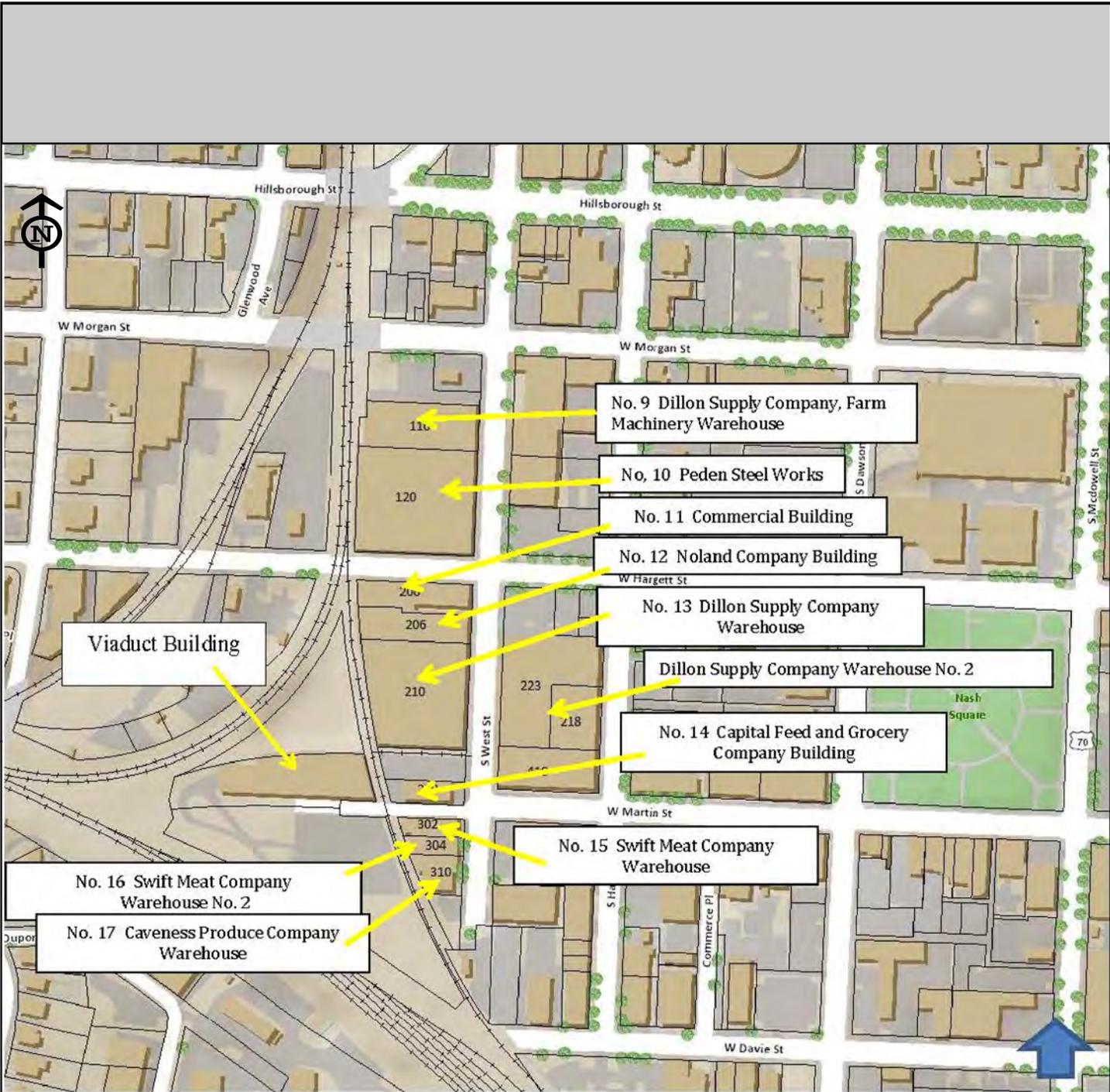
In April 2012, NCDOT initiated agency coordination for the Project with a letter and a map noting the project study area/APE. In a letter dated May 25, 2012, the North Carolina Historic Preservation Office suggested that NCDOT use Mattson, Alexander and Associates, Inc. to conduct a Phase II historic resources survey of the project study area.

Mattson, Alexander and Associates completed the *Historic Architectural Resources Survey of the Raleigh Train Station and Track Configurations* (report dated February 11, 2013).⁸² In a letter dated March 5, 2013, NCHPO concurred with the February 2013 report.

NCDOT, SHPO, and FRA held a formal meeting on April 30, 2013 to assess the effects of the Project on historic resources. The concurrence form for this assessment of effects was signed by the SHPO on May 8, 2013. A second meeting was held on December 16, 2013 to discuss impacts associated with the updated design, specifically the demolition of the existing Amtrak Station. The concurrence form was updated at the December meeting to document the adverse effect to the Depot District due to the Amtrak Station removal. FRA will also coordinate the assessment of effects with the U.S. Department of the Interior (DOI) and will submit the 4(f) determination to DOI. DOI maintains jurisdiction with respect to properties listed on or eligible for inclusion in the National Register.⁸³

⁸² See Note 75.

⁸³ <http://www.doi.gov/pmb/oepec/handbook.cfm>



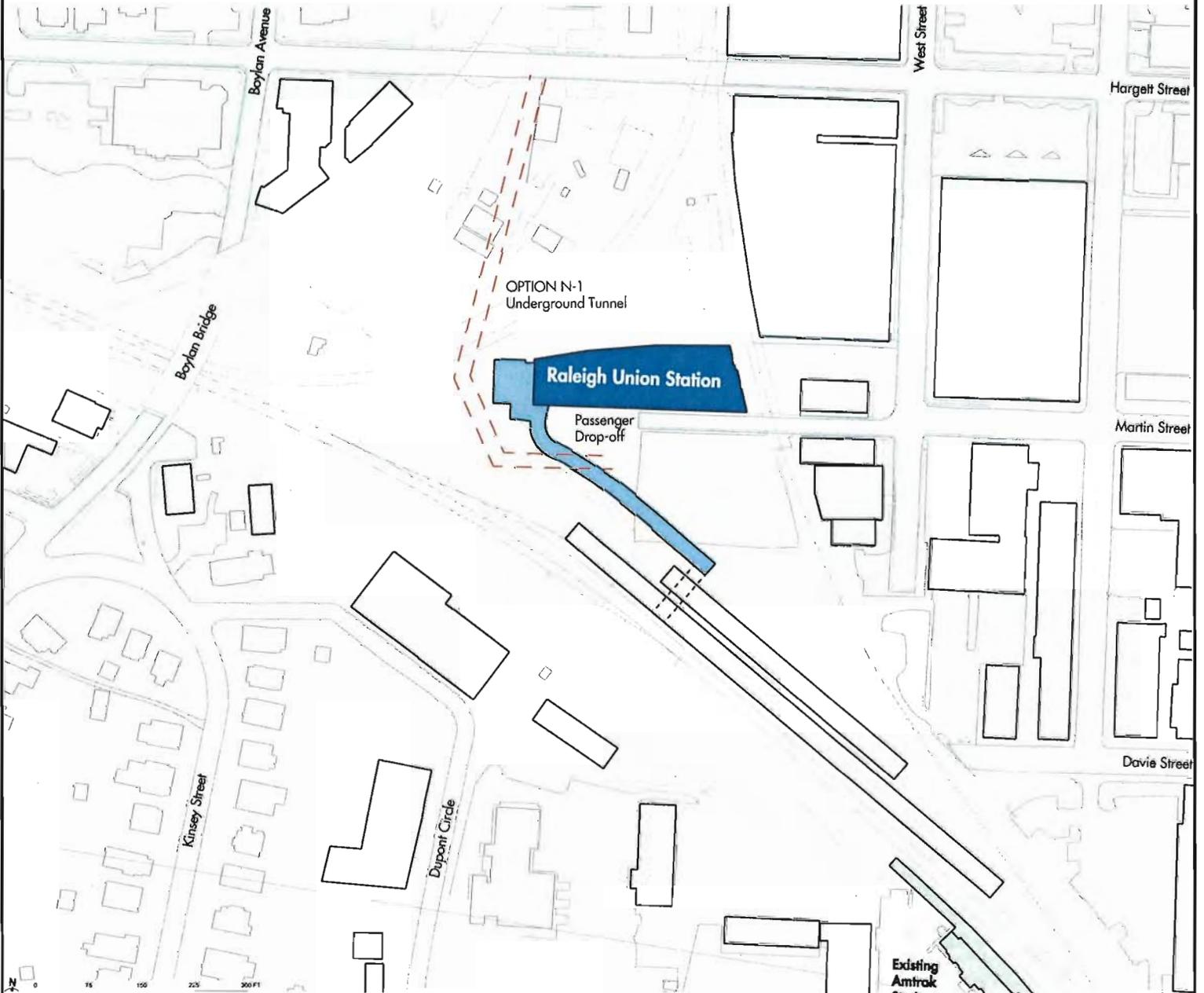
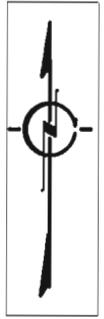
Source: Wake County Tax Map

Scale: 1" = 275'



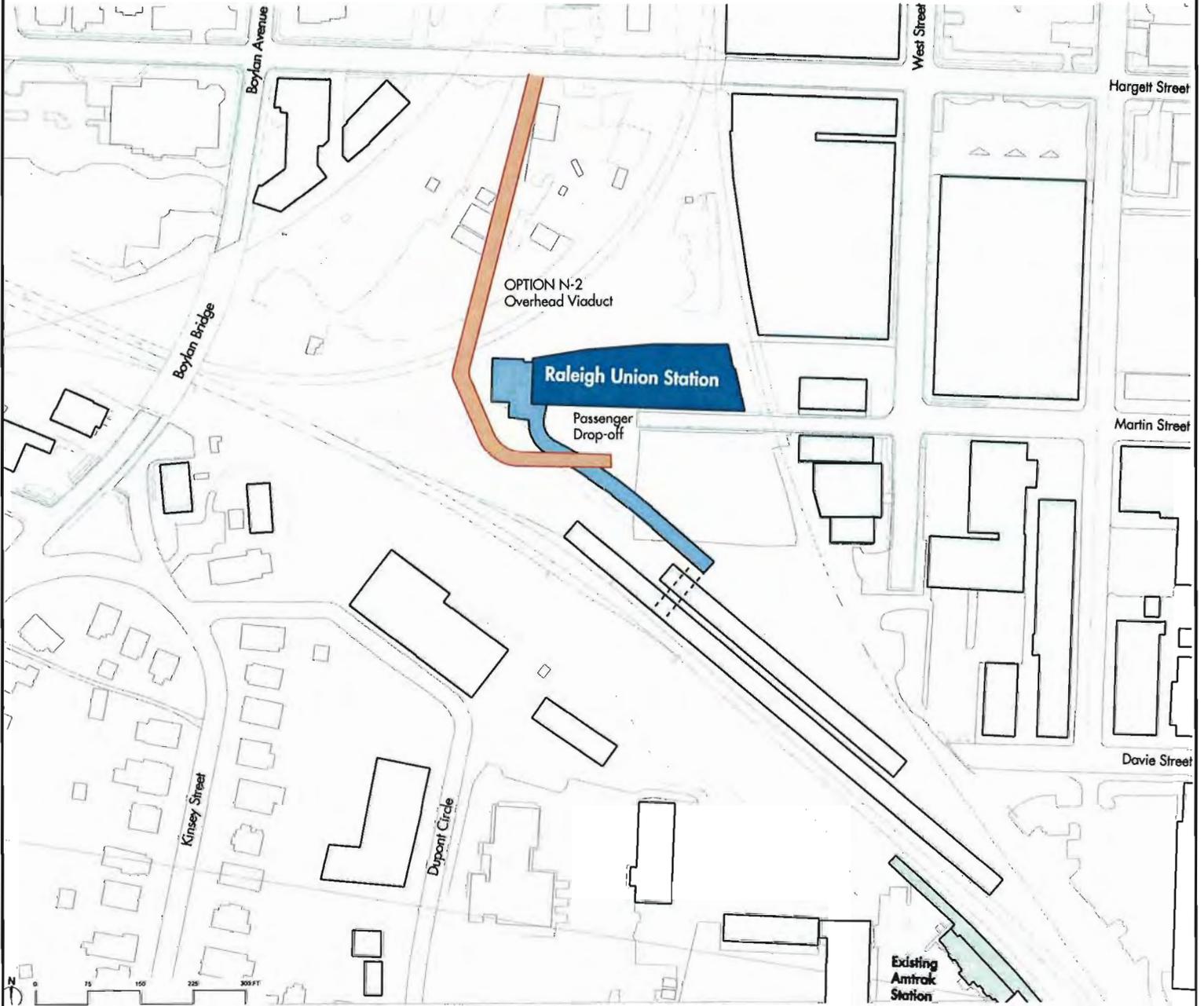
**Exhibit 5.1
Depot Historic District
Site Plan within Area of Proposed Expansion**

Proposed Raleigh Union Station - Phase I
TIP No. P-5500
Wake County, North Carolina



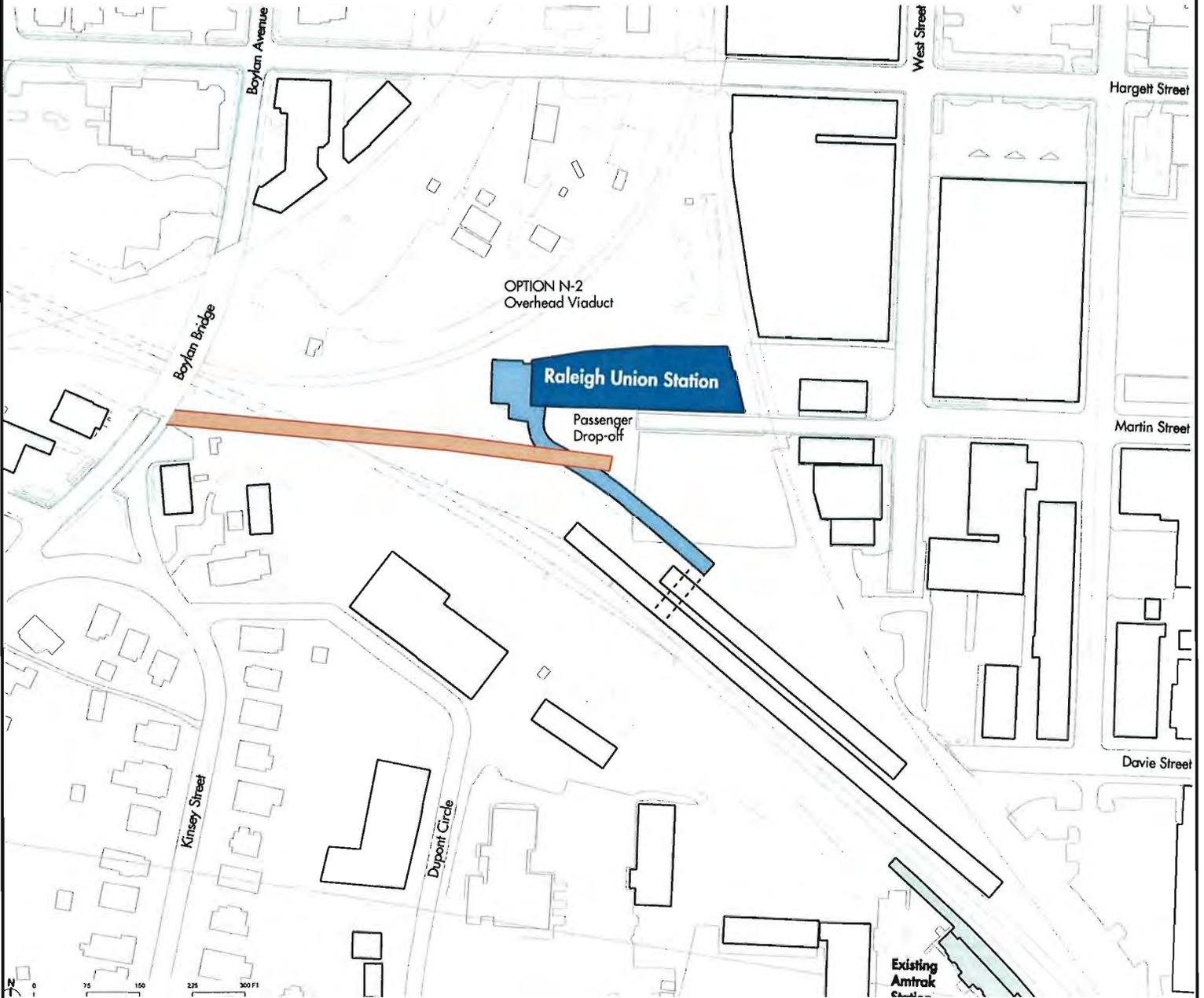
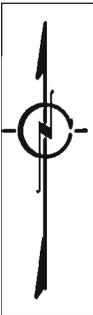
**Raleigh Union Station
Phase I
TIP No. P-5500
Wake County, North Carolina**

**Section 4(f)
Avoidance Options
Option N-1
NTS
Exhibit 5.2a**



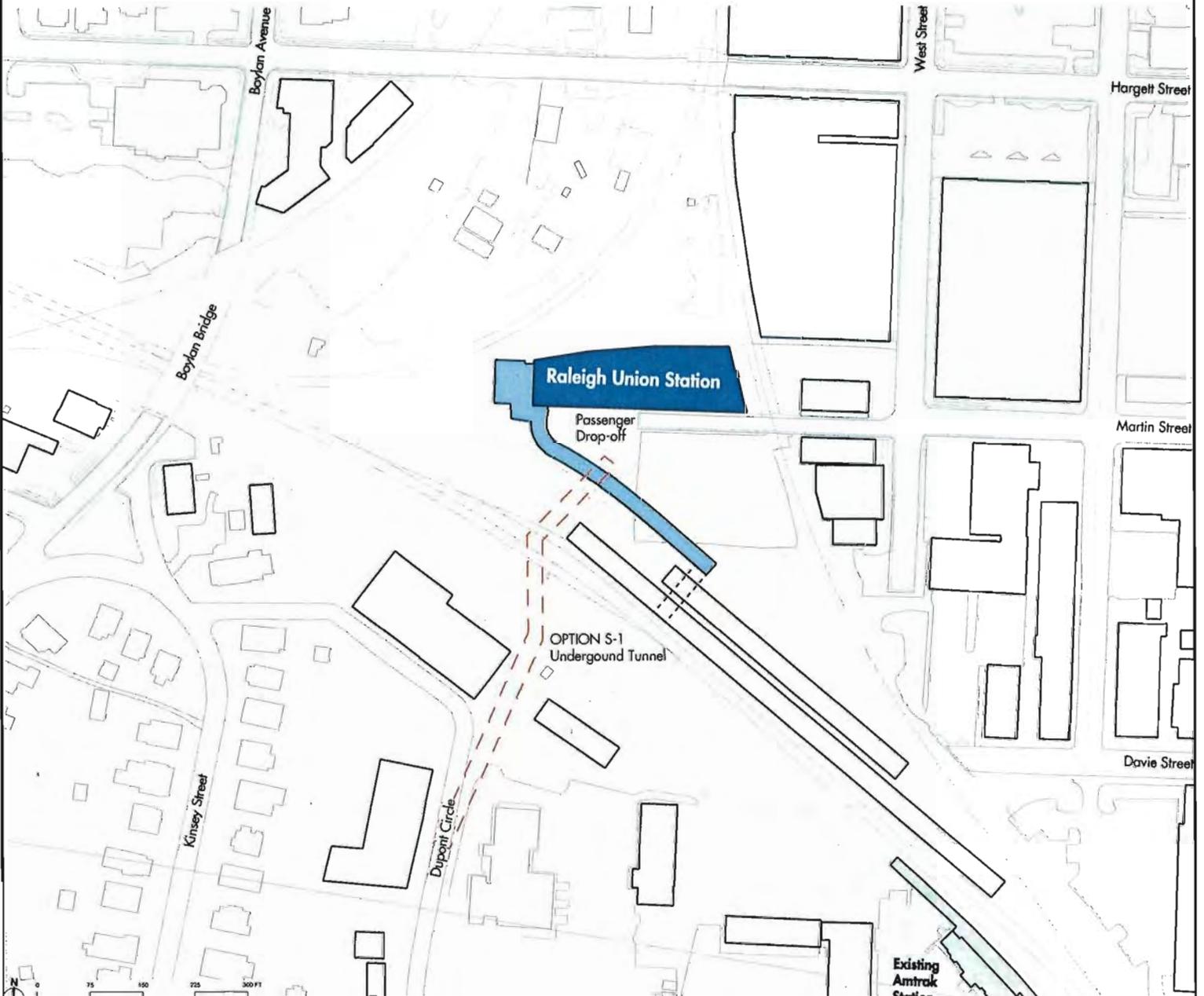
Raleigh Union Station
Phase I
TIP No. P-5500
Wake County, North Carolina

Section 4(f)
Avoidance Options
Option N-2
NTS
Exhibit 5.2b



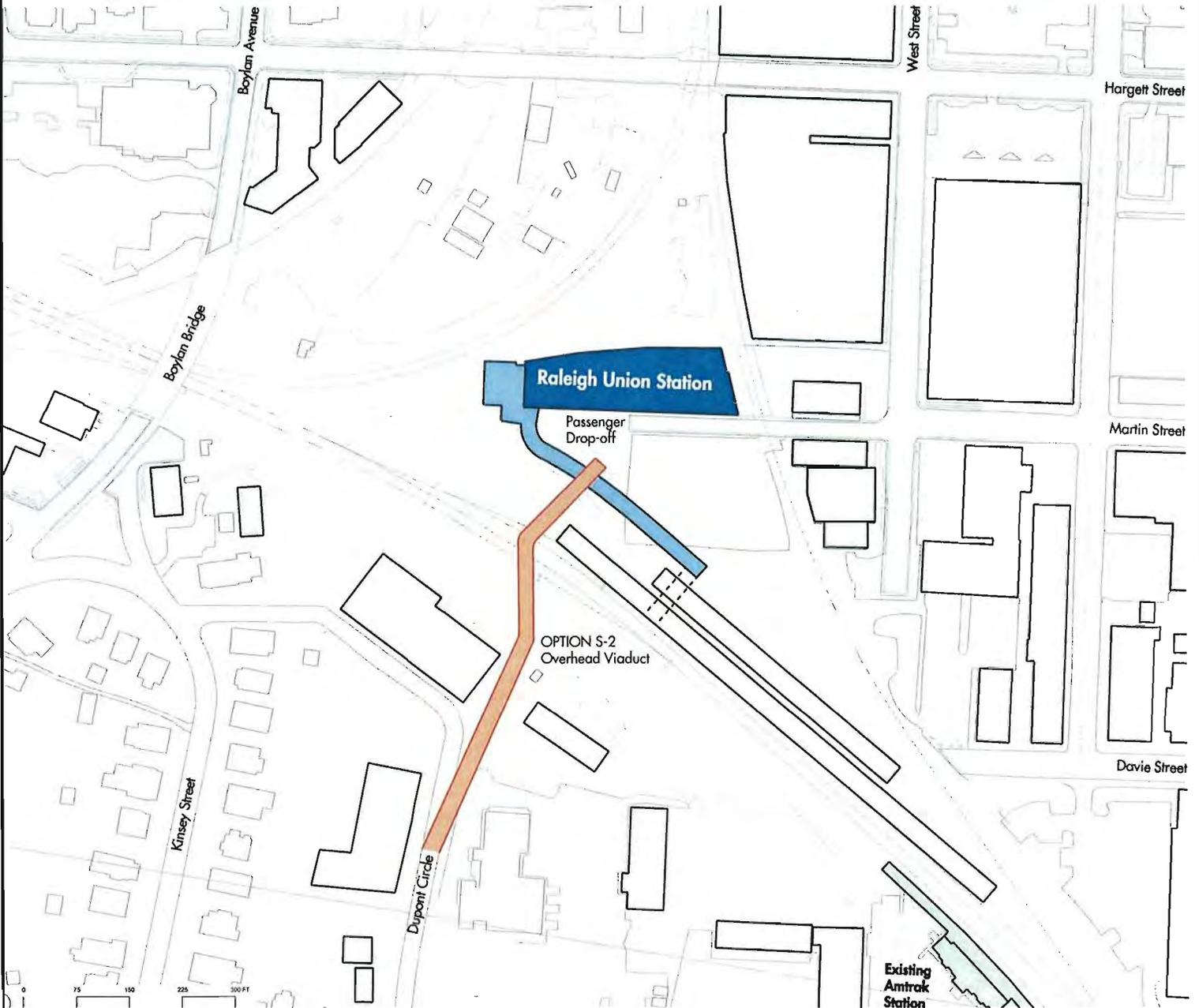
Raleigh Union Station
Phase I
TIP No. P-5500
Wake County, North Carolina

Section 4(f)
Avoidance Options
Option W-1
NTS
Exhibit 5.2c



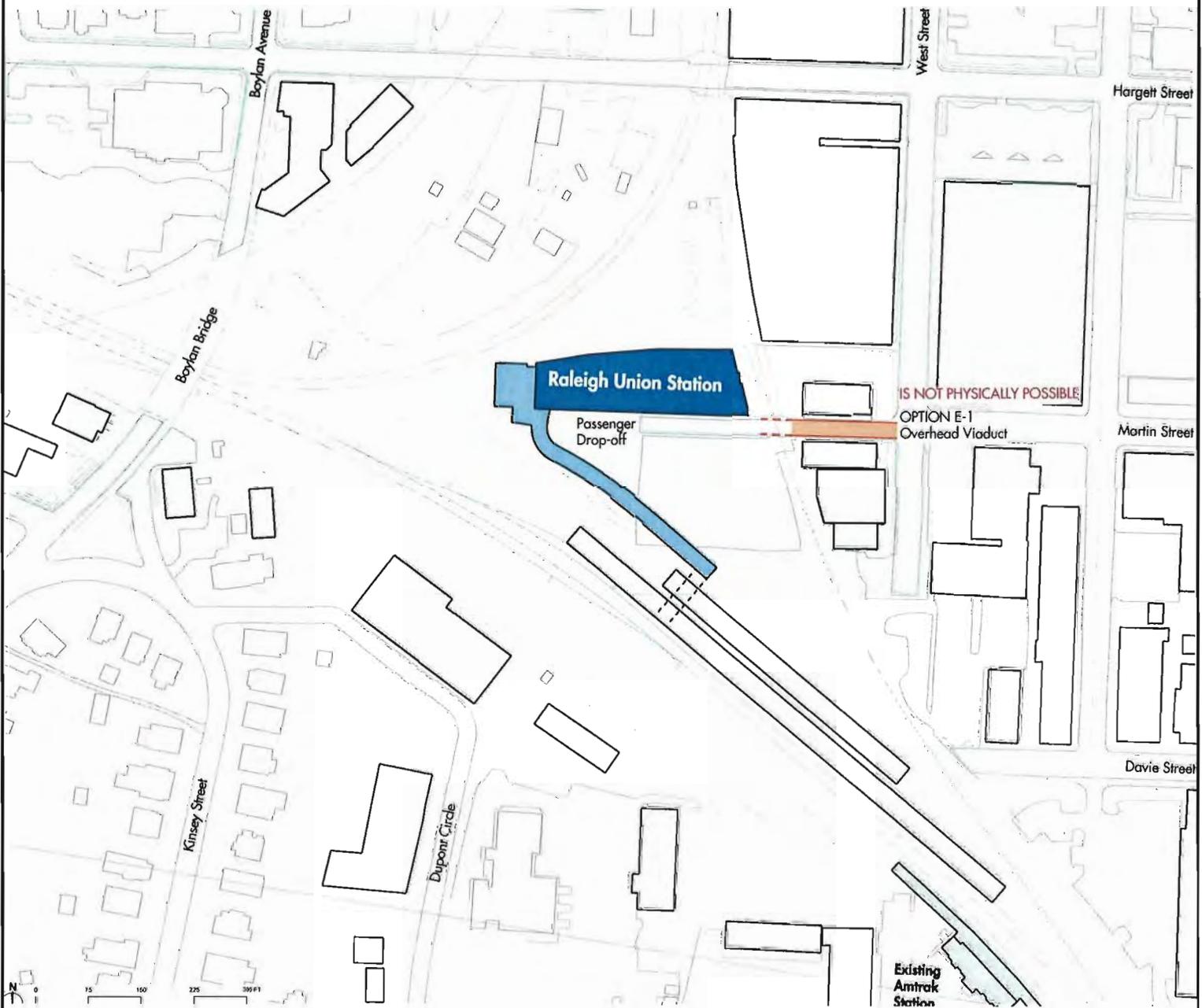
Raleigh Union Station
Phase I
TIP No. P-5500
Wake County, North Carolina

Section 4(f)
Avoidance Options
Option S-1
NTS
Exhibit 5.2d



**Raleigh Union Station
Phase I
TIP No. P-5500
Wake County, North Carolina**

**Section 4(f)
Avoidance Options
Option S-2
NTS
Exhibit 5.2e**



Raleigh Union Station
Phase I
TIP No. P-5500
Wake County, North Carolina

Section 4(f)
Avoidance Options
Option E-1
NTS
Exhibit 5.2f

APPENDIX A COORDINATION

APPENDIX A.1

SCOPING LETTER



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

March 12, 2012

MEMORANDUM TO:

Name
Agency

FROM:

Ryan White, PE
Rail Environmental Planning Engineer
NCDOT Rail Division, Environmental and Planning Branch

SUBJECT:

Start of Study for the Proposed Raleigh Station and Associated
Track Improvements in Wake County.
State WBS No. 41323.

The North Carolina Department of Transportation (NCDOT) Rail Division has retained the firm of Stantec Consulting Services Inc. to prepare an Environmental Assessment (EA) for a proposed Raleigh Train Station and associated track improvements in downtown Raleigh. The project also includes evaluation of potential siding locations in south Raleigh (crossing Tryon Road) and/or the Greenfields location (from I-40 to near Auburn Road) in Wake County. The siding locations are being evaluated to accommodate rail operations, specifically the interaction of passenger and freight rail in the station vicinity. The project is identified as State WBS No. 41323.

The purpose of this letter is to provide notification of the start of study and to solicit comments regarding potential concerns or data within the project study area. Please submit written comments to Mr. Ryan White at the address below by April 13, 2012. If you have any questions, please contact Mr. Ryan White at 733-7245, extension 266.

The following paragraphs provide a description of the project, the purpose and need for the project, plus the general characteristics and natural resources of the project study area.

Project Description

The proposed project would provide a new train station for downtown Raleigh and additional siding (Prison Siding) for the downtown location as well as track improvements to service the new station. A feasibility study was conducted to evaluate using the former Dillon Supply "Viaduct Building". Other potential siding sites to be evaluated are located just south of marker H-84 crossing Tryon Road to just north of marker H-85 (South Raleigh siding) and at I-40 to just

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
RAIL DIVISION
1553 MAIL SERVICE CENTER
RALEIGH NC 27699-1553

TELEPHONE: 919-733-4713
FAX: 919-715-6580
WEBSITE: WWW.BYTRAIN.ORG

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

east of marker H-90 near Auburn Road (Greenfields siding). The project locations are shown in the attached exhibit.

Purpose and Need

The Southern Railway Company built the current Amtrak station in 1950. Southern Railway discontinued service to this Raleigh station in 1964. Passenger train service resumed in 1984 after Amtrak moved from the old Raleigh Seaboard station. The station currently accommodates eight passenger trains daily, consisting of the north and south bound Carolinian, Piedmont and Silver Star. The current station is inadequate for current service and the 2,500 square foot waiting room is smaller than the waiting rooms in Selma, Cary, High Point and Charlotte. There is inadequate parking and the short platform requires double stops of the Silver Star.

The purpose of the project is to provide a station with capacity and facilities consistent with current and projected usage. The proposed sidings are necessary to allow operations of passenger and freight rail in the vicinity of the station.

General Characteristics of the Project Study Area

The project study area is located along segments of the existing NCCR right-of-way in Wake County as shown in the attached exhibit.

Land Use – Land use adjacent to the NCCR corridor is urban in nature, with a mixture of industrial, commercial and residential land uses.

Natural Resources – The project lies within the Neuse River Basin (USGS Hydrologic Unit 03020201) (DWQ Sub Basin 03-04-02). A preliminary review of the USGS topographic quadrangles (Garner, Lake Wheeler and Raleigh West) for the project study area did not reveal any water bodies; however, a formal natural resource investigation will be completed during the course of the study.

A review of the National Wetland Inventory (NWI) mapping inventory did not reveal any wetlands within the project study area. Formal wetland delineations will be conducted during the course of the study.

In accordance with provisions of the Endangered Species Act of 1973, the project study area will be evaluated for protected species habitat. The threatened and endangered species listed for Wake County include Dwarf Wedgemussel (*Alasmidonta heterodon*) classified as Endangered [E], Michaux's Sumac (*Rhus michauxii*) classified as Endangered [E] and the Red-cockaded Woodpecker (*picoides borealis*) also classified as Endangered [E]. Federal Species of Concern [FSC] for Wake County include the Yellow Lance (*Elliptio lanceolata*), Atlantic Pigtoe (*Fusconaia masoni*), Septima's Clubtail (*Gomphus septima*), Green Floater (*Lasmigona subviridis*), Carolina Birdfoot-trefoil (*Acmispon helleri*), Bog Spicebush (*Lindra subcoriacea*),

Sweet Pinesap (*Monotropsis odorata*), Grassleaf Arrowhead (*Sagittaria wetherbiana*), Virginia Least Trillium (*Trillium pusillum* var. *virginianum*), Southern Hognose Snake (*Heterodon simus*), Southeastern Myotis (*Myotis austroriparius*), Carolina Madtom (*Noturus furiosus*) and Bachman's Sparrow (*Peucaea aestivalis*).

Potential habitat for Michaux's sumac may exist along the railroad corridor and in clear-cut areas. Surveys will be conducted during the plants' flowering and/or fruiting seasons to identify whether the species is found in the project area.

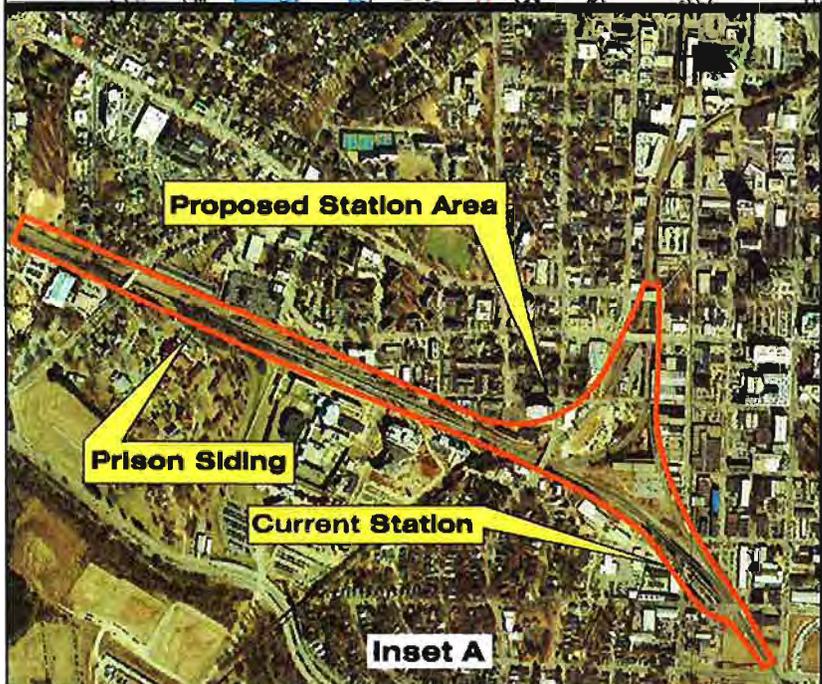
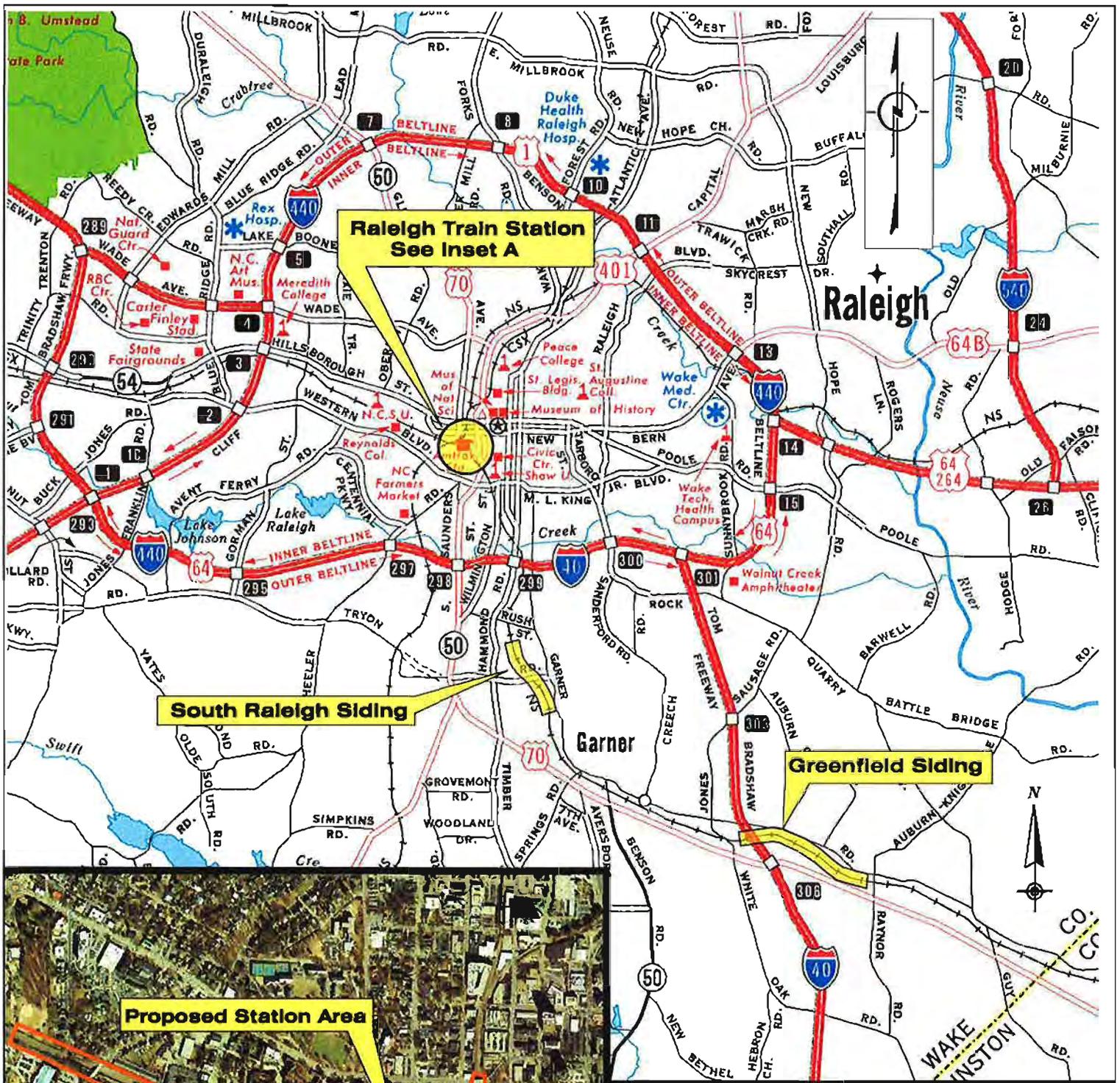
Archeological and Historic Architectural Properties – A historic architecture field survey will be conducted during the course of the study.

A formal archaeological investigation is not anticipated; however, NCDOT awaits comments from the State Office of Archaeology regarding the level of investigation required for this project.

RW/mmm

Attachments

cc: File



APPENDIX A.2

AGENCY COMMENTS



North Carolina Department of Administration

Beverly Eaves Perdue, Governor

Moses Carey, Jr., Secretary

May 10, 2012

Mr. Ryan White
North Carolina Department of Transportation
Rail Division
1553 Mail Service Center
Raleigh, North Carolina 27699-1553

Re: SCH File # 12-E-4220-0262; SCOPING; Start of Study for proposed Raleigh Station and associated Track improvements. TIP # P-3803.

Dear Mr. White:

The above referenced environmental impact information has been submitted to the State Clearinghouse under the provisions of the National Environmental Policy Act. According to G.S. 113A-10, when a state agency is required to prepare an environmental document under the provisions of federal law, the environmental document meets the provisions of the State Environmental Policy Act. Attached to this letter for your consideration are the comments made by agencies in the course of this review.

If any further environmental review documents are prepared for this project, they should be forwarded to this office for intergovernmental review.

Should you have any questions, please do not hesitate to call.

Sincerely,

A handwritten signature in black ink, appearing to read "W E H Creech".

William E. H. Creech

Attachments

cc: Region J

Mailing Address:
1301 Mail Service Center
Raleigh, NC 27699-1301

Telephone: (919)807-2425
Fax (919)733-9571
State Courier #51-01-00
e-mail state.clearinghouse@doa.nc.gov

Location Address:
116 West Jones Street
Raleigh, North Carolina



North Carolina Department of Environment and Natural Resources

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

MEMORANDUM

TO: Zeke Creech
State Clearinghouse

FROM: Melba McGee 
Environmental Review Coordinator

The Department of Environment and Natural Resources has completed its review. Our regional office within the geographic area of the proposed project has identified permits that may be required prior to project construction. For more information, the project applicant should notify the respective regional office marked on the back of the attached permit form.

Thank you for the opportunity to review.

Attachments

INTERGOVERNMENTAL REVIEW - PROJECT COMMENTS

Project Number 12-0267 Due Date _____

After review of this project it has been determined that the ENR permit(s) and/or approvals indicated may need to be obtained in order for this project to comply with North Carolina Law. Questions regarding these permits should be addressed to the Regional Office indicated on the reverse of the form. All applications, information and guidelines relative to these plans and permits are available from the same Regional Office.

PERMITS	SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Process Time (statutory time limit)
<input checked="" type="checkbox"/> Permit to construct & operate wastewater treatment facilities, sewer system extensions & sewer systems not discharging into state surface waters	Application 90 days before begin construction or award of construction contracts. On-site inspection. Post-application technical conference usual.	30 days (90 days)
<input checked="" type="checkbox"/> NPDES - permit to discharge into surface water and/or permit to operate and construct wastewater facilities discharging into state surface waters	Application 180 days before begin activity. On-site inspection. Pre-application conference usual. Additionally, obtain permit to construct wastewater treatment facility-granted after NPDES. Reply time, 30 days after receipt of plans or issue of NPDES permit-whichever is later.	90-120 days (N/A)
<input type="checkbox"/> Water Use Permit	Pre-application technical conference usually necessary.	30 days (N/A)
<input type="checkbox"/> Well Construction Permit	Complete application must be received and permit issued prior to the installation of a well.	7 days (15 days)
<input type="checkbox"/> Dredge and Fill Permit	Application copy must be served on each adjacent riparian property owner. On-site inspection. Pre-application conference usual. Filling may require Easement to Fill from N.C. Department of Administration and Federal Dredge and Fill Permit.	35 days (90 days)
<input type="checkbox"/> Permit to construct & operate Air Pollution Abatement facilities and/or Emission Sources as per 15 A NCAC (2Q 0100 thru 2Q 0300)	Application must be submitted and permit received prior to construction and operation of the source. If a permit is required in an area without local zoning, then there are additional requirements and timelines (2Q 0113).	90 days
<input type="checkbox"/> Permit to construct & operate Transportation Facility as per 15 A NCAC (2D 0800, 2Q 6601)	Application must be submitted at least 90 days prior to construction or modification of the source.	90 days
<input checked="" type="checkbox"/> Any open burning associated with subject proposal must be in compliance with 15 A NCAC 2D.1900		
<input checked="" type="checkbox"/> Demolition or renovations of structures containing asbestos material must be in compliance with 15 A NCAC 2D.1110 (a) (1) which requires notification and removal prior to demolition. Contact Asbestos Control Group 919-767-5950	N/A	60 days (90 days)
<input type="checkbox"/> Complex Source Permit required under 15 A NCAC 2D 0800		
<input checked="" type="checkbox"/> The Sedimentation Pollution Control Act of 1973 must be properly addressed for any land disturbing activity. An erosion & sedimentation control plan will be required if one or more acres to be disturbed. Plan filed with proper Regional Office (Land Quality Section) At least 30 days before beginning activity. A fee of \$65 for the first acre or any part of an acre. An express review option is available with additional fees. <i>OR, IF APPLICABLE AS A NCDOT ROADWAY (DOB)</i>		20 days (30 days)
<input checked="" type="checkbox"/> Sedimentation and erosion control must be addressed in accordance with NCDOT's approved program. Particular attention should be given to design and installation of appropriate perimeter sediment trapping devices as well as stable stormwater conveyances and outlets.		(30 days)
<input type="checkbox"/> Mining Permit	On-site inspection usual. Surety bond filed with ENR Bond amount varies with type mine and number of acres of affected land. Any acre mined greater than one acre must be permitted. The appropriate bond must be received before the permit can be issued.	30 days (60 days)
<input type="checkbox"/> North Carolina Burning permit	On-site inspection by N.C. Division Forest Resources if permit exceeds 4 days.	1 day (N/A)
<input type="checkbox"/> Special Ground Clearance Burning Permit - 22 counties in coastal N.C. with organic soils	On-site inspection by N.C. Division Forest Resources required "if more than five acres of ground clearing activities are involved. Inspections should be requested at least ten days before actual burn is planned."	1 day (N/A)
<input type="checkbox"/> Oil Refining Facilities	N/A	90-120 days (N/A)
<input type="checkbox"/> Just Notice to Quit	If permit requires application 90 days before begin construction. Applicant must hire N.C. qualified engineer to prepare plans, inspect construction. Permit construction is subject to ENR approval of plans. May also require permit under sediment control program. And a 404 permit from Corps of Engineers. An inspection on site is necessary to verify Hazard Classification. In addition fee of \$2000. Must accompany the application. An additional processing fee based on preventing the total project cost will be required upon completion.	30 days (45 days)

PERMITS		SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Process Time (statutory time limit)
<input type="checkbox"/>	Permit to drill exploratory oil or gas well	File surety bond of \$5,000 with ENR running to State of NC conditional that any well opened by drill operator shall, upon abandonment, be plugged according to ENR rules and regulations.	10 days N/A
<input type="checkbox"/>	Geophysical Exploration Permit	Application filed with ENR at least 10 days prior to issue of permit. Application by letter. No standard application form.	10 days N/A
<input type="checkbox"/>	State Lakes Construction Permit	Application fees based on structure size is charged. Must include descriptions & drawings of structure & proof of ownership of riparian property.	15-20 days N/A
<input type="checkbox"/>	401 Water Quality Certification	N/A	60 days (130 days)
<input type="checkbox"/>	CAMA Permit for MAJOR development	\$250.00 fee must accompany application	55 days (150 days)
<input type="checkbox"/>	CAMA Permit for MINOR development	\$50.00 fee must accompany application	22 days (25 days)
<input type="checkbox"/>	Several geodetic monuments are located in or near the project area. If any monument needs to be moved or destroyed, please notify: N.C. Geodetic Survey, Box 27687 Raleigh, NC 27611		
<input type="checkbox"/>	Abandonment of any wells, if required must be in accordance with Title 15A, Subchapter 2C 0100.		
<input type="checkbox"/>	Notification of the proper regional office is requested if "orphan" underground storage tanks (USTS) are discovered during any excavation operation.		
<input type="checkbox"/>	Compliance with 15A NCAC 2H 1000 (Coastal Stormwater Rules) is required.		45 days (N/A)
<input checked="" type="checkbox"/>	Tar Pamlico or Neuse Riparian Buffer Rules required.		
* Other comments (attach additional pages as necessary, being certain to cite comment authority)			

REGIONAL OFFICES

Questions regarding these permits should be addressed to the Regional Office marked below.

Asheville Regional Office
2090 US Highway 70
Savannah, NC 28778
(828) 296-4500

Mooresville Regional Office
610 East Center Avenue, Suite 301
Mooresville, NC 28115
(704) 663-1699

Wilmington Regional Office
127 Cardinal Drive Extension
Wilmington, NC 28405
(910) 796-7215

Fayetteville Regional Office
225 North Green Street, Suite 714
Fayetteville, NC 28301-5043
(910) 433-3300

Raleigh Regional Office
3800 Barrett Drive, Suite 101
Raleigh, NC 27609
(919) 791-4200

Winston-Salem Regional Office
585 Woughtown Street
Winston-Salem, NC 27107
(336) 771-5000

Washington Regional Office
943 Washington Square Mall
Washington, NC 27889
(252) 946-6481



North Carolina Department of Administration

Beverly Eaves Perdue, Governor

Moses Carey, Jr., Secretary

May 31, 2012

Mr. Ryan White
North Carolina Department of Transportation
Rail Division
1553 Mail Service Center
Raleigh, North Carolina 27699-1553

Re: SCH File # 12-E-4220-0262; SCOPING; Start of Study for proposed Raleigh Station and associated Track improvements. TIP # P-3803

Dear Mr. White:

The above referenced environmental impact information has been submitted to the State Clearinghouse under the provisions of the National Environmental Policy Act. According to G.S. 113A-10, when a state agency is required to prepare an environmental document under the provisions of federal law, the environmental document meets the provisions of the State Environmental Policy Act. Attached to this letter for your consideration are **additional comments** made by agencies in the course of this review.

If any further environmental review documents are prepared for this project, they should be forwarded to this office for intergovernmental review.

Should you have any questions, please do not hesitate to call.

Sincerely,

A handwritten signature in black ink, appearing to read "W. E. H. Creech".

William E. H. Creech

Attachments

cc: Region J

Mailing Address:
1301 Mail Service Center
Raleigh, NC 27699-1301

Telephone: (919)807-2425
Fax (919)733-9571
State Courier #51-01-00
e-mail state.clearinghouse@doa.nc.gov

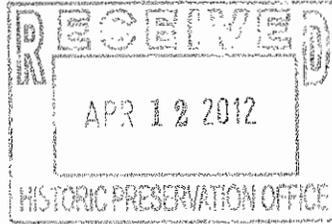
Location Address:
116 West Jones Street
Raleigh, North Carolina

NORTH CAROLINA STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
INTERGOVERNMENTAL REVIEW

COUNTY: WAKE

F05: RAILROADS

STATE NUMBER: 12-E-4220-0262
DATE RECEIVED: 04/09/2012
AGENCY RESPONSE: 05/04/2012
REVIEW CLOSED: 05/09/2012



MS RENEE GLEDHILL-EARLEY
CLEARINGHOUSE COORDINATOR
DEPT OF CULTURAL RESOURCES
STATE HISTORIC PRESERVATION OFFICE
MSC 4617 - ARCHIVES BUILDING
RALEIGH NC

ER 12-0560

REVIEW DISTRIBUTION

CC&PS - DIV OF EMERGENCY MANAGEMENT
DENR LEGISLATIVE AFFAIRS
DEPT OF AGRICULTURE
DEPT OF CULTURAL RESOURCES
DEPT OF TRANSPORTATION
TRIANGLE J COG

Due 4/18/12 A- DATE 5/14/12

PROJECT INFORMATION

APPLICANT: NCDOT
TYPE: National Environmental Policy Act
Scoping

Due 5/25/12 See letter JDE 5/22/12

DESC: Start of Study for proposed Raleigh Station and associated Track improvements.
TIP P-3803.

The attached project has been submitted to the N. C. State Clearinghouse for intergovernmental review. Please review and submit your response by the above indicated date to 1301 Mail Service Center, Raleigh NC 27699-1301.

If additional review time is needed, please contact this office at (919)807-2425.

AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED: NO COMMENT COMMENTS ATTACHED

SIGNED BY: Renee Gledhill-Earley

DATE: 5.25.12



APR 13 2012



North Carolina Department of Cultural Resources
State Historic Preservation Office

Ramona M. Bartos, Administrator

Beverly Eaves Perdue, Governor
Linda A. Carlisle, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

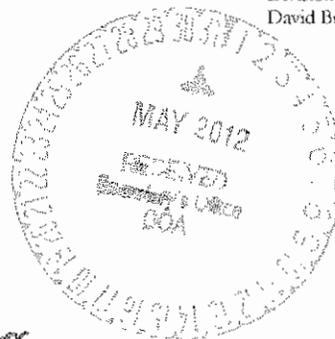
May 25, 2012

MEMORANDUM

TO: Ryan White
NCDOT Rail Division
Environmental and Planning Branch

FROM: Ramona M. Bartos *RMB for Ramona M. Bartos*

SUBJECT: Start of Study for the Proposed Raleigh Station and Associated Track Improvements, P-3803, Wake County, ER 12-0560



We have received your memorandum of April 3, 2012, and a notification from the State Clearinghouse concerning the above project. We have reviewed the information and offer the following comments. We apologize for the delay in our response.

Historic background, land use and map research was conducted by TRC Associates, Inc. on a portion of the proposed project area in 1998 and 1999 in connection with the proposed Triangle Transit Authority Regional Rail Project. At this time, archaeological site 31WA1446** was recorded. This site is the remains of a railroad turntable dating from the late nineteenth century, the third of this type of structure built within the Wye area. This turntable is likely eligible for inclusion in the National Register of Historic Places. In addition, historic maps indicate a number of other structures were once located within the project vicinity.

Detailed maps and plans of the proposed project area will be necessary to determine if site 31WA1446** will be affected by the proposed project. Additional document research and testing may be necessary to determine if other archaeological sites are located within the area of potential effect (APE). We recommend close coordination with the Office of State Archaeology by NCDOT staff in order that appropriate recommendations can be made for additional research.

The proposed project includes the Raleigh Train Station, Prison Siding, and related track improvements in Downtown Raleigh, and two additional potential siding locations in South Raleigh and Greenfield.

We have conducted a search of our maps and files and located the following structures of historical or architectural importance within the general area of the proposed South Raleigh and Greenfield improvements:

South Raleigh Siding:

- ◆ **Governor Morehead School for Colored Blind and Deaf** (WA 2461), placed on the State Study List (SL) in 1992;

Greenfield Siding:

- ◆ **Wayland E. Poole House** (WA 0315), listed in the National Register (NR) in 2003;
- ◆ **Watts Store and Residence** (WA 0314), determined eligible for listing in the National Register (DOE) in 1993 and placed on the State Study List in 1990;
- ◆ **Auburn** (WA 0304), surveyed in 2006 as part of Phase I of the Wake County Survey Update (WCSU), but no determination of its eligibility was made;
- ◆ **Leland Poole House** (WA 0305);
- ◆ **Holland Smith Store** (WA 0306), surveyed in 2006 (WCSU);
- ◆ **Watts Gulf Service and Garage** (WA 0307), surveyed in 2006 (WCSU);
- ◆ **William Watts House** (WA 0308), surveyed in 2006 (WCSU);
- ◆ **Vernie Poole House** (WA 0309), surveyed in 2006 (WCSU);
- ◆ **Auburn Store and Bank** (WA 0310), surveyed in 2006 (WCSU);
- ◆ **Auburn Depot** (WA 0312), surveyed in 2006 (WCSU);
- ◆ **Auburn Christian Church** (WA 0313), surveyed in 2006 (WCSU);
- ◆ **Julius Lane House** (WA 0316), surveyed in 2006 (WCSU); and,
- ◆ **House** (WA 0323), surveyed in 2006 (WCSU).

We recommend that a Department of Transportation architectural historian identify and evaluate any structures over fifty (50) years of age within the South Raleigh and Greenfield Siding project areas, and report the findings to us.

The area of the Raleigh Train Station, Prison Siding, and related track improvements have been surveyed extensively in the past ten years as part of the series of high speed rail corridor studies. Therefore, we recommend that no architectural survey be conducted for this area of proposed improvements. However, the following structures and districts of historical or architectural importance are located within the general area of these Downtown Raleigh improvements:

- ◆ **Joel Lane House** (WA 0026), NR in 1970;
- ◆ **Montford Hall** (WA 0033), NR in 1978;
- ◆ **Boylan Heights Historic District** (WA 0195), NR in 1985;
- ◆ **Deport Historic District** (WA 0724), NR in 2002;
- ◆ **Commercial Block** (WA 2883), DOE in 1994;
- ◆ **North Carolina School Book Depository** (WA 2860), DOE in 2005;
- ◆ **Raleigh Hosiery Company** (WA 2590), DOE in 2005 and SL in 1991;
- ◆ **North Carolina State University Historic District** (WA 4426), DOE in 2004;
- ◆ **South Boylan Avenue Historic District** (WA 4185), DOE in 1999; and,
- ◆ **West Jones Street Railroad Historic District** (WA 4083), DOE in 1994 and SL in 1991.

The locations of these properties are available on our GIS website: <http://gis.ncdcr.gov/hpoweb/>.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/807-6579. In all future communication concerning this project, please cite the above-referenced tracking number.

cc: State Clearinghouse
Matt Wilkerson, NCDOT
Mary Pope Furr, NCDOT



**North Carolina Department of Cultural Resources
State Historic Preservation Office**

Ramona M. Bartos, Administrator

Beverly Eaves Perdue, Governor
Linda A. Carlisle, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

May 25, 2012

MEMORANDUM

TO: Ryan White
NCDOT Rail Division
Environmental and Planning Branch

FROM: Ramona M. Bartos *RMB for Ramona M. Bartos*

SUBJECT: Start of Study for the Proposed Raleigh Station and Associated Track Improvements, P-3803, Wake County, ER 12-0560

We have received your memorandum of April 3, 2012, and a notification from the State Clearinghouse concerning the above project. We have reviewed the information and offer the following comments. We apologize for the delay in our response.

Historic background, land use and map research was conducted by TRC Associates, Inc. on a portion of the proposed project area in 1998 and 1999 in connection with the proposed Triangle Transit Authority Regional Rail Project. At this time, archaeological site 31WA1446** was recorded. This site is the remains of a railroad turntable dating from the late nineteenth century, the third of this type of structure built within the Wye area. This turntable is likely eligible for inclusion in the National Register of Historic Places. In addition, historic maps indicate a number of other structures were once located within the project vicinity.

Detailed maps and plans of the proposed project area will be necessary to determine if site 31WA1446** will be affected by the proposed project. Additional document research and testing may be necessary to determine if other archaeological sites are located within the area of potential effect (APE). We recommend close coordination with the Office of State Archaeology by NCDOT staff in order that appropriate recommendations can be made for additional research.

The proposed project includes the Raleigh Train Station, Prison Siding, and related track improvements in Downtown Raleigh, and two additional potential siding locations in South Raleigh and Greenfield.

We have conducted a search of our maps and files and located the following structures of historical or architectural importance within the general area of the proposed South Raleigh and Greenfield improvements:

South Raleigh Siding:

- ◆ **Governor Morehead School for Colored Blind and Deaf** (WA 2461), placed on the State Study List (SL) in 1992;

Greenfield Siding:

- ◆ **Wayland E. Poole House** (WA 0315), listed in the National Register (NR) in 2003;
- ◆ **Watts Store and Residence** (WA 0314), determined eligible for listing in the National Register (DOE) in 1993 and placed on the State Study List in 1990;
- ◆ **Auburn** (WA 0304), surveyed in 2006 as part of Phase I of the Wake County Survey Update (WCSU), but no determination of its eligibility was made;
- ◆ **Leland Poole House** (WA 0305);
- ◆ **Holland Smith Store** (WA 0306), surveyed in 2006 (WCSU);
- ◆ **Watts Gulf Service and Garage** (WA 0307), surveyed in 2006 (WCSU);
- ◆ **William Watts House** (WA 0308), surveyed in 2006 (WCSU);
- ◆ **Vernie Poole House** (WA 0309), surveyed in 2006 (WCSU);
- ◆ **Auburn Store and Bank** (WA 0310), surveyed in 2006 (WCSU);
- ◆ **Auburn Depot** (WA 0312), surveyed in 2006 (WCSU);
- ◆ **Auburn Christian Church** (WA 0313), surveyed in 2006 (WCSU);
- ◆ **Julius Lane House** (WA 0316), surveyed in 2006 (WCSU); and,
- ◆ **House** (WA 0323), surveyed in 2006 (WCSU).

We recommend that a Department of Transportation architectural historian identify and evaluate any structures over fifty (50) years of age within the South Raleigh and Greenfield Siding project areas, and report the findings to us.

The area of the Raleigh Train Station, Prison Siding, and related track improvements have been surveyed extensively in the past ten years as part of the series of high speed rail corridor studies. Therefore, we recommend that no architectural survey be conducted for this area of proposed improvements. However, the following structures and districts of historical or architectural importance are located within the general area of these Downtown Raleigh improvements:

- ◆ **Joel Lane House** (WA 0026), NR in 1970;
- ◆ **Montford Hall** (WA 0033), NR in 1978;
- ◆ **Boylan Heights Historic District** (WA 0195), NR in 1985;
- ◆ **Deport Historic District** (WA 0724), NR in 2002;
- ◆ **Commercial Block** (WA 2883), DOE in 1994;
- ◆ **North Carolina School Book Depository** (WA 2860), DOE in 2005;
- ◆ **Raleigh Hosiery Company** (WA 2590), DOE in 2005 and SL in 1991;
- ◆ **North Carolina State University Historic District** (WA 4426), DOE in 2004;
- ◆ **South Boylan Avenue Historic District** (WA 4185), DOE in 1999; and,
- ◆ **West Jones Street Railroad Historic District** (WA 4083), DOE in 1994 and SL in 1991.

The locations of these properties are available on our GIS website: <http://gis.ncdcr.gov/hpoweb/>.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/807-6579. In all future communication concerning this project, please cite the above-referenced tracking number.

cc: State Clearinghouse
Matt Wilkerson, NCDOT
Mary Pope Furr, NCDOT

Koch, Paul

From: Chris Militscher <Militscher.Chris@epamail.epa.gov>
Sent: Friday, May 25, 2012 10:19 AM
To: rlwhite@ncdot.gov
Subject: Start of Study: P-3803, Wake County

Ryan: EPA did not receive the 4/3/12 start of study letter for the Proposed Raleigh Station and Associated Track Improvements notice until last week. EPA is familiar with the Amtrak Station in Raleigh and concurs on the NCDOT's purpose and need for the proposed project.

EPA requests a copy of the Environmental Assessment when it becomes available. Thank you.

Christopher A. Militscher, REM, CHMM
USEPA Region 4 NEPA Program Office
404-562-9512 (Atlanta)

APPENDIX A.3

STATE HISTORIC PRESERVATION OFFICE CONCURRENCE

Federal Aid #

TIP # P-5500B/C

County: Wake

CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS

Project Description: Construct a new Raleigh passenger train station inside the Boylan Wye and associated railroad track infrastructure improvements

On December 16, 2013, representatives of the

- North Carolina Department of Transportation (NCDOT)
- Federal Railroad Administration (FRA)
- North Carolina State Historic Preservation Office (HPO)

Reviewed the subject project and agreed to the effects findings listed within the table attached to this signature page.

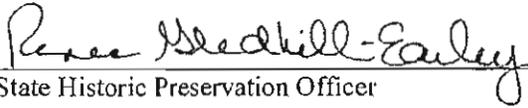
Signed:



Representative, NCDOT 12/17/2013
Date



Federal Railroad Administration 12/20/2013
Date



State Historic Preservation Officer 12-19-13
Date

TTP Project P-5500 B/C: Raleigh Union Station – Phase 1 and Track Improvements
 Section 106 Effects Determination Summary (12/16/2013)

Property and Status	Proposed Action/Alternative	Effect Determination	Comments
Boylan Heights Historic District (National Register, Criterion A, B, and C)	Station Construction (Building, Platform, Parking and Trackwork)	No Effect	Constructions limits do not extend beyond the existing railroad tracks and will not impact the historic district boundaries.
	East Raleigh Siding	No Effect	Project component is not within the vicinity of the resource.
	Greenfield Siding	No Effect	Project component is not within the vicinity of the resource
	Prison Siding Extension and Yard Tracks	No Effect	Project component is within the vicinity of the resource. However, the construction limits do not impact the historic district boundary.
Raleigh Hosiery Mill (National Register, Criterion A)	Station Construction (Building, Platform, Parking and Trackwork)	No Effect	Project component is within the vicinity of the resource. However, the construction limits do not impact the historic district boundary.
	East Raleigh Siding	No Effect	Project component is not within the vicinity of the resource.
	Greenfield Siding	No Effect	Project component is not within the vicinity of the resource
	Prison Siding Extension and Yard Tracks	No Effect	Project component is within the vicinity of the resource. However, the construction limits do not impact the historic property boundary.

TIP Project P-5500 B/C: Raleigh Union Station – Phase I and Track Improvements
 Section 106 Effects Determination Summary (12/16/2013)

Property and Status	Proposed Action/Alternative	Effect Determination	Comments
North Carolina School Book Depository (National Register, Criterion A)	Station Construction (Building, Platform, Parking and Trackwork)	No Effect	Project component is not within the vicinity of the resource.
	East Raleigh Siding	No Effect	Project component is not within the vicinity of the resource.
	Greenfield Siding	No Effect	Project component is not within the vicinity of the resource
	Prison Siding Extension and Yard Tracks	No Effect	Project component is within the vicinity of the resource. However, the construction limits do not impact the historic property boundary.
Governor Morehead School Historic District (National Register, Criterion A and C)	Station Construction (Building, Platform, Parking and Trackwork)	Resource No Longer in APE	The project limits have been changed since the completion of the Historic Architectural Resources Survey Report. The APE will be revised and the resource will be located outside of the APE.
	East Raleigh Siding	Resource No Longer in APE	
	Greenfield Siding	Resource No Longer in APE	
	Prison Siding Extension and Yard Tracks	Resource No Longer in APE	

TIP Project P-5500 B/C: Raleigh Union Station – Phase 1 and Track Improvements
 Section 106 Effects Determination Summary (12/16/2013)

Property and Status	Proposed Action/Alternative	Effect Determination	Comments
North Carolina State College Historic District (National Register, Criterion A and C)	Station Construction (Building, Platform, Parking and Trackwork)	Resource No Longer in APE	The project limits have been changed since the completion of the Historic Architectural Resources Survey Report. The APE will be revised and the resource will be located outside of the APE.
	East Raleigh Siding	Resource No Longer in APE	
	Greenfield Siding	Resource No Longer in APE	
	Prison Siding Extension and Yard Tracks	Resource No Longer in APE	
Governor Morehead School, Colored Department Historic District (National Register, Criterion A and C)	Station Construction (Building, Platform, Parking and Trackwork)	No Effect	Project component is not within the vicinity of the resource.
	East Raleigh Siding	No Effect	The construction of the 10,000' siding will be to the west of the existing railroad track. All construction will be contained within the existing railroad right of way and will not impact the historic property.
	Greenfield Siding	No Effect	Project component is not within the vicinity of the resource.
	Prison Siding Extension and Yard Tracks	No Effect	Project component is not within the vicinity of the resource.

TIP Project P-5500 B/C: Raleigh Union Station – Phase I and Track Improvements
 Section 106 Effects Determination Summary (12/16/2013)

Property and Status	Proposed Action/Alternative	Effect Determination	Comments
Auburn Christian Church (National Register, Criterion C)	Station Construction (Building, Platform, Parking and Trackwork)	No Effect	Project component is not within the vicinity of the resource.
	East Raleigh Siding	No Effect	Project component is not within the vicinity of the resource.
	Greenfield Siding	No Effect	The construction of the siding will be to the north side of the tracks adjacent to Garner Road. The construction of the siding may require the removal of some of the vegetative buffer along Garner Road. However, all construction will be contained within the existing railroad right of way.
	Prison Siding Extension and Yard Tracks	No Effect	Project component is not within the vicinity of the resource.
William Watt House (National Register, Criterion C)	Station Construction (Building, Platform, Parking and Trackwork)	No Longer in APE	The project limits have been changed since the completion of the Historic Architectural Resources Survey Report. The APE will be revised and the resource will be located outside of the APE.
	East Raleigh Siding	No Longer in APE	
	Greenfield Siding	No Longer in APE	
	Prison Siding Extension and Yard Tracks	No Longer in APE	

TIP Project P-5500 B/C: Raleigh Union Station – Phase I and Track Improvements
 Section 106 Effects Determination Summary (12/16/2013)

Property and Status	Proposed Action/Alternative	Effect Determination	Comments
	Station Construction (Building, Platform, Parking and Trackwork)	Adverse Effect	Engineering constraints within the confines of the Boylan Wye area are dictating the location of the new station platforms and platform tracks. Norfolk Southern Railway design standards require a 26' track center-to-center offset between the platform tracks and the mainline track. This will result in the realignment of the NS H-line, which is the mainline track. The realignment of the H-line and the requirement for a standard typical section will result in the removal of the existing Raleigh Amtrak Station.
Depot Historic District (National Register, Criterion A and C)	East Raleigh Siding	No Effect	Project component is not within the vicinity of the resource.
	Greenfield Siding	No Effect	Project component is not within the vicinity of the resource.
	Prison Siding Extension and Yard Tracks	No Effect	Project component is not within the vicinity of the resource.
	Station Construction (Building, Platform, Parking and Trackwork)	Adverse Effect	The Project will require the removal of the Capital Feed and Grocery Building, which is a contributing resource to the historic district. The contributing resource will be removed in order to provide access to the proposed station via West Martin Street. The property will be incorporated in to station complex.
Depot Historic District – Proposed National Register Boundary Amendment (National Register, Criteria A and C)	East Raleigh Siding	No Effect	Project component is not within the vicinity of the resource.
	Greenfield Siding	No Effect	Project component is not within the vicinity of the resource.

TIP Project P-5500 B/C: Raleigh Union Station – Phase 1 and Track Improvements
 Section 106 Effects Determination Summary (12/16/2013)

Property and Status	Proposed Action/Alternative	Effect Determination	Comments
	Prison Siding Extension and Yard Tracks	No Effect	Project component is not within the vicinity of the resource.
White Dairy Product Building (National Register, Criterion A and C)	Station Construction (Building, Platform, Parking and Trackwork)	Resource No Longer in APE	The project limits have been changed since the completion of the Historic Architectural Resources Survey Report. The APE will be revised and the resource will be located outside of the APE.
	East Raleigh Siding	Resource No Longer in APE	
	Greenfield Siding	Resource No Longer in APE	
	Prison Siding Extension and Yard Tracks	Resource No Longer in APE	

APPENDIX A.4

PUBLIC INVOLVEMENT MATERIALS



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROPOSED RALEIGH UNION STATION – PHASE 1

TIP PROJECT P-3803

City of Raleigh

Informal Citizens Informational Workshop

5:00 p.m. – 7:00 p.m.

**Raleigh Convention Center (Ballroom B)
500 South Salisbury Street**

August 6, 2012

PROJECT DESCRIPTION

The City of Raleigh and the North Carolina Department of Transportation (NCDOT) are proposing to construct a new passenger train station in downtown Raleigh at 510 West Martin Street.

The currently funded project is the first phase in a collaborative planning effort by the NCDOT, the City of Raleigh and the Triangle Transit Authority for a new downtown multi-modal facility that will accommodate inter-city passenger rail service in the near future, and commuter rail, buses, taxis, bicycles, and other modes of transportation in the long term.

The proposed project will also include the construction of an extension to the existing Prison Siding, a separate rail track west of the existing Amtrak station that is used for passing trains and/or railroad car storage. The extension of the Prison Siding will allow trains to pass the station when a passenger train is stopped at the platform on the main track.

A second siding, the Greenfield Siding which will be located east of Garner, will replace the existing Cabarrus Yard freight storage tracks inside the Boylan Wye. These track improvements will improve freight and passenger rail operations by allowing the storage of trains and rail cars outside of the congested Boylan Wye area. It will also allow trains to pass through the Boylan Wye area, even when passenger trains are stopped at the station. Exhibit 1 shows the project vicinity and siding locations. Exhibit 2 shows a schematic layout of the Phase 1 station elements.

PURPOSE AND NEED FOR THE PROJECT

The proposed station would replace the existing Amtrak Station on Cabarrus Street, which routinely experiences overcrowding and does not have a platform long enough to service all the trains that access the station. The two waiting rooms at the existing Amtrak Station are not large enough and many passengers have to wait outside the station. Also, there are currently only 54 parking spaces available at the station, forcing passengers to park on adjoining neighborhood streets.

The Raleigh Amtrak Station is currently served by four daily round trip passenger trains. It is the second busiest station in the Southeast, serving nearly 200,000 passengers in fiscal year 2011. The station is projected to serve 600,000 passengers by 2014. Two additional Raleigh to Charlotte round trips are planned in the near future to meet service demands near term. The location and size of the current train station cannot accommodate the current number of passengers, nor the expected growth in passengers due to the increased number of trains.

TODAY'S WORKSHOP

Today's workshop is an important step in the North Carolina Department of Transportation's (NCDOT) procedure for making you, the public, a part of the project

development process. The purpose of the workshop is to obtain public input on the proposed project. The format of today's meeting is informal, which will allow you to individually ask questions and discuss aspects of the proposed station with members of the project team. Several workshop stations are available to provide information not only on the first phase of the project, but also on other integrated planning efforts by the NCDOT, City and Triangle Transit Authority.

YOUR PARTICIPATION

Now that the opportunity is here, you are encouraged to participate by making your comments and/or questions a part of the public record. Several representatives of the North Carolina Department of Transportation are present. They will be happy to talk with you to explain the project and answer questions. You may write your comments or questions on the comment sheet and leave it with one of the representatives or mail them by September 7, 2012 to the following address:

Mr. Ryan L. White, P.E., Rail Project Development Engineer
Environmental and Planning Branch
NCDOT – Rail Division
1553 Mail Service Center
Raleigh, NC 27699-1583
Email: rlwhite@ncdot.gov

PLANNING PROCESS (NEPA)

Planning and environmental studies on this project will be documented in two environmental reports – an Environmental Assessment (EA) and a Finding of No Significant Impact (FONSI). These reports are being prepared in accordance with the National Environmental Policy Act (NEPA). As part of the NEPA process, a substantial amount of data is being gathered and several technical studies are being prepared. These studies and information, along with public input, will be used to guide and inform the project recommendations. A summary of the steps in this process is listed below:

Approximate Schedule

- | | |
|---|------------------|
| - Determine Purpose and Need | |
| - Define study area | |
| - Develop alternatives | |
| - Citizen Informational Workshop | August 2012 |
| - Conduct technical studies | |
| o Natural resources survey | |
| o Historic architectural survey | |
| o Noise and vibration analysis | |
| o Air quality evaluation | |
| o Assessment of existing and planned land use | |
| - Environmental Assessment (EA) | Fall 2012 |
| - Public Hearing | Fall 2012 |
| - Finding of No Significant Impact (FONSI) | Winter 2012/2013 |

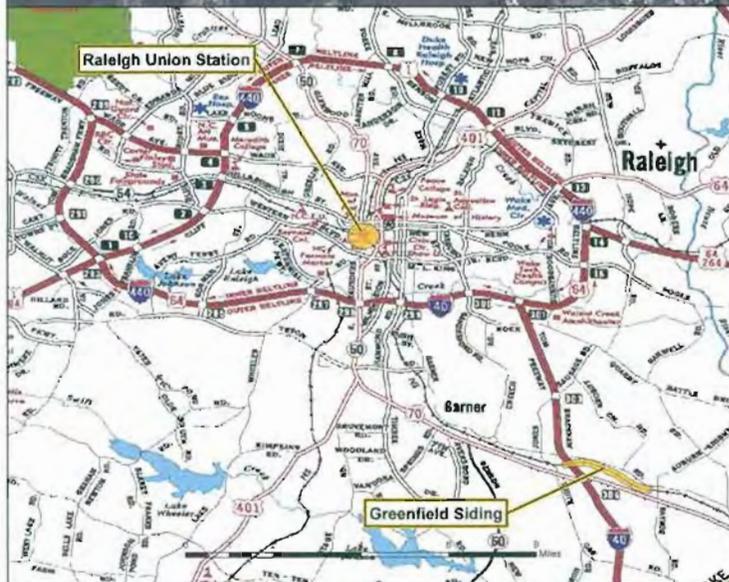
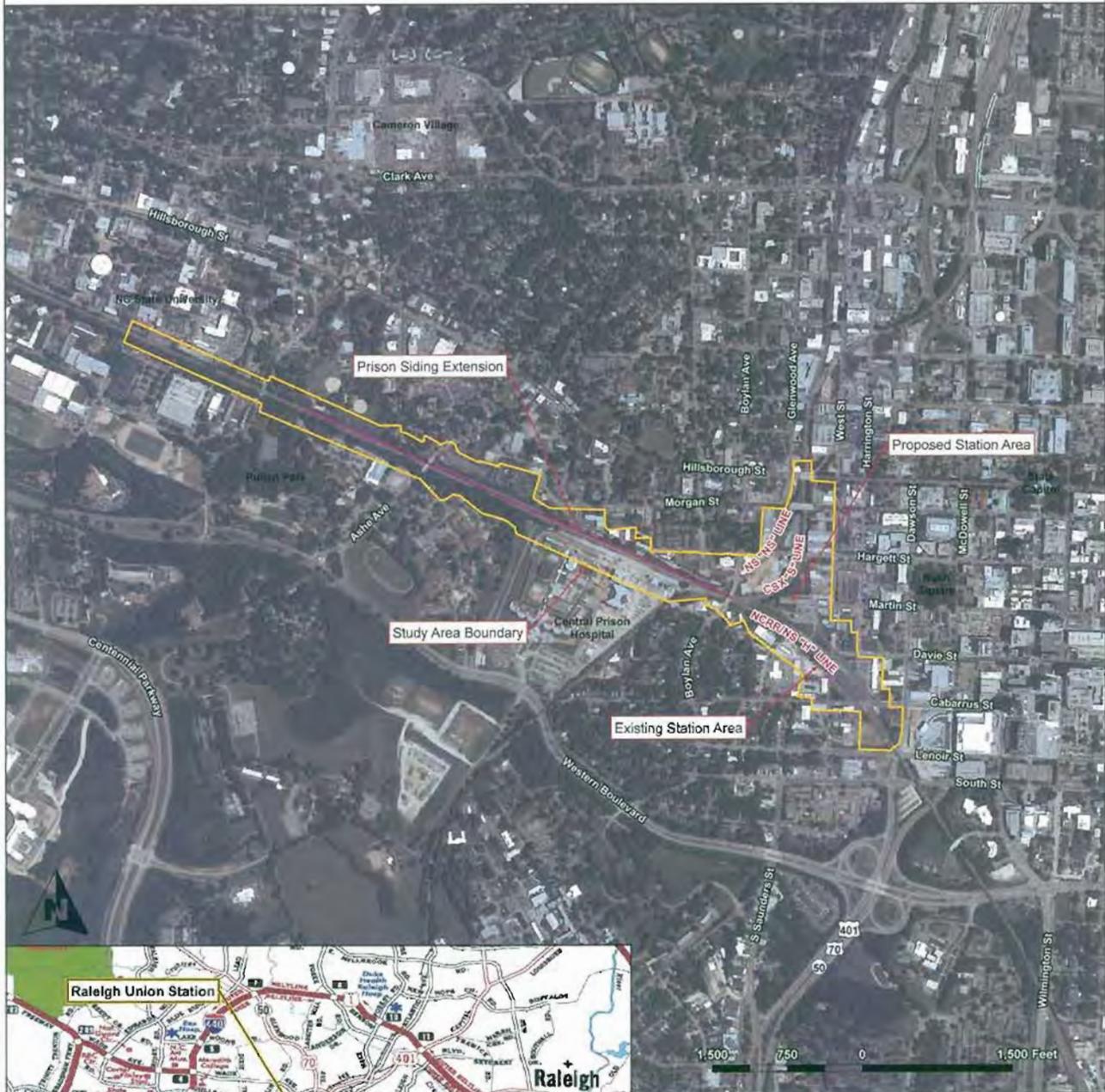
STATE-FEDERAL RELATIONSHIP

This proposed project involves the use of Federal funds and thus will be considered a Federal-Aid Project. Partial financing of this project is provided through the U.S. Department of Transportation's "Transportation Investment Generating Economic Recovery" (TIGER) discretionary grant program.

RALEIGH STATION HIGHLIGHTS

- The ultimate vision for Union Station (beyond Phase I) is the culmination of several integrated planning efforts for long term growth and improvement in Downtown Raleigh.
- Phase I of Union Station will involve the adaptive reuse of the 'Viaduct Building', providing a much-needed, new facility for the existing Amtrak services currently located at the station on West Cabarrus Street.
- The Raleigh Train Station and its Grand Waiting Hall will be the centerpiece of the Raleigh Union Station Project.
- Future phases of Union Station will include connections to regional and local rail; commercial, regional, and local buses; and will provide easy access for pedestrians, cyclists, and taxis.
- This project will provide economic development benefits to Raleigh and the surrounding region in the form of jobs, increases in tourism, and development opportunities.
- Centrally located in Downtown Raleigh, the site is surrounded by property offering tremendous development potential.
- The Union Station complex will be located just three blocks west of the City's center, near the State Capitol and the Raleigh Convention Center, and adjacent to the emerging arts communities of the Warehouse and Depot Districts.
- The project will benefit the local economy by creating jobs and the housing, goods and services that these workers will need.
- The return on investment is profound and is estimated to impact the area for years to come.
- Estimated construction cost for Phase 1 is \$60.5M
- Construction of Raleigh Union Station - Phase I is tentatively scheduled to begin in the Fall of 2013.

Location Map



Raleigh Union Station-Phase 1
(TIP # P-3803)



Conceptual Site Layout



1. Raleigh Train Station
2. Pedestrian Plaza
3. Surface Parking Lot
4. Entrance Drive
5. Station Track
6. Raleigh Train Station Passenger Platform
7. Pedestrian Concourse A
8. Pedestrian Concourse B
9. Future West Street Extension



**Raleigh Union Station-Phase 1
(TIP # P-3803)**



APPENDIX A.5

NS Station Requirements



SUBJECT: Norfolk Southern Passenger Station Requirements

In Norfolk Southern Railway Company's (NSR) policy statement dated June 15, 2005, Norfolk Southern set forth the conditions for permitting new or additional passenger rail service on our tracks. In that paper, NSR identified the principles intended to protect NSR-owned or dispatched rail lines and right of way. This policy stipulates that passenger operations must be "transparent" to our freight operations, and delay to freight trains by passenger trains, however minimal, is unacceptable. New services must pay fully allocated costs for access to the existing freight corridor, and there must be adequate liability protection as defined by NSR.

In the situation where a passenger/commuter service is proposed for sharing NSR tracks or Branch lines, a complete in-depth train capacity study must be undertaken at the expense of the passenger/commuter entity to assess passenger service impacts to the existing and future freight operations. Impacts to NSR freight business must be fully mitigated and that may involve constructing additional tracks, upgraded signal systems or other infrastructure improvements as specified by NSR.

In the situation where a passenger/commuter service is proposed for sharing only NSR ROW and not including NSR tracks, the adjacent passenger tracks must be separated by a minimum of 26 foot track centers to the NSR track and a barrier fence shall be installed between the two rail lines.

The NSR Standard platform clearance criteria for NSR territory for approved joint use tracks will be a low level platform located 5'-4" from centerline of track, and 0'-8" above top of rail.

Accordingly, any new passenger/commuter service using NSR tracks shall be limited to Gallery type passenger cars that are used by METRA (Chicago) and VRE (Washington, DC) that have on-board lift ramps to accommodate level board loading requirements established by the ADA.

NSR will only consider the use of High passenger platforms when the passenger/commuter service is prepared to construct dedicated station tracks.

In the event that proposed station parking lots and parking garages are located across the tracks from a station platform, overhead bridges or under grade tunnels will be required. Pedestrian crossing at grade will not be permitted. This

requirement is intended to ensure the maximum amount of safety for passengers and station patrons, especially along our busiest main line corridors.

In the event that the Federal government mandates station designs different than noted above, the passenger service will incur all costs to incorporate station infrastructure changes. NSR will expect that the freight operations, capacity, and maintenance obligations not be hindered due to such future mandates.

In the past, passenger facilities, including stations, were approved on a case-by-case basis, as we had no standard design criteria. In those instances, we provided guidelines, but made explicitly clear that NSR reserved the right to require more restrictive guidelines, as we deemed necessary. As requests for passenger service on our lines increase, we believe that it is practical to set forth our facility design requirements for constructing new passenger stations or to rehabilitate existing ones. In setting these standards, our paramount concern is safety, and we will not approve any design that increases risk to passengers and railroad employees, or subject NSR to additional liability exposure.

This memorandum is intended to outline our requirements for constructing new stations or rehabilitating existing ones on our lines.

Station Requirements

The following requirements should be followed in designing stations:

- Stations should have dual track access with ingress and egress under or over the right-of-way. At-grade pedestrian crossings are not permitted.
- Full-length high-level platforms may only be placed adjacent to tracks used exclusively by passenger trains. ***High platforms are not allowed adjacent to freight tracks.***
- Mini-high-level platforms may be constructed with the platform edge no closer than 8'-6" from the centerline of the adjacent track, if the track is shared with freight trains. Any considerations needed for gap reduction between the passenger car vestibule and platform edge shall be addressed with manually or mechanical means that does not reduce the minimum 8'-6" horizontal clearance requirement.

Single track -

Single-track platforms may be permitted in single-track territory subject to the requirements set forth herein with the stipulation that, in the event that the line is double-tracked the passenger/commuter authority or station owner will bear the full cost of construction for dual track access.

Multiple tracks - Side Platforms:

1. Platforms will be adjacent to each outside main line.
2. Pedestrian designated walkways to crossing tracks must be ADA compliant overpass or underpass (ramp or elevator equipped).
3. Track side platforms shall **NOT** be located near public at-grade crossings as this may encourage passenger/commuter station patrons to cross tracks other than at the designated overpass or underpass.

Center Track Fences -

In the situation where underpass and/or overpass facilities are provided for approved dual track platforms and a patron trespass potential across the tracks is foreseen or occurs on a repeated bases, NSR will require the passenger service operators or stations owners to fund the installation and maintenance costs of center track fencing or other type of station fencing.

In the situation where the installation of any needed fencing including center track fences are required (at locations determined by NSR), any costs associated with altering track centers to better facilitate efficient movement of wide and standard sized freight car movements, shall be borne by the passenger/commuter operators or station owners.

Multiple Tracks - Center Platform:

1. Center track platforms may be workable provided that alternate footpaths are sealed off so that patrons only use the designated overpass or underpass access.

Low Platforms - General Guidelines

1. Dimensions for center, low platforms –
 - a. 22'-0" minimum width (track centers for tangent track would be 32'-8")
 - b. 26'-0" desirable width (track centers for tangent track would be 36'-8")
 - c. 32'-0" extremely desirable width (track centers for tangent track would be 42'-8")
2. Dimensions for side, low platforms –
 - a. 12'-0" minimum width
 - b. 16'-0" desirable width
3. Clearances for low platforms –
 - a. 5'-4" center of track to face of platform (minimum)
 - b. 0'-8" height of platform above top of rail (maximum)

Canopies –

Gutterless canopies shall be used and shall slope away from track. Side clearance shall be 9'-0" (minimum) on tangent track.

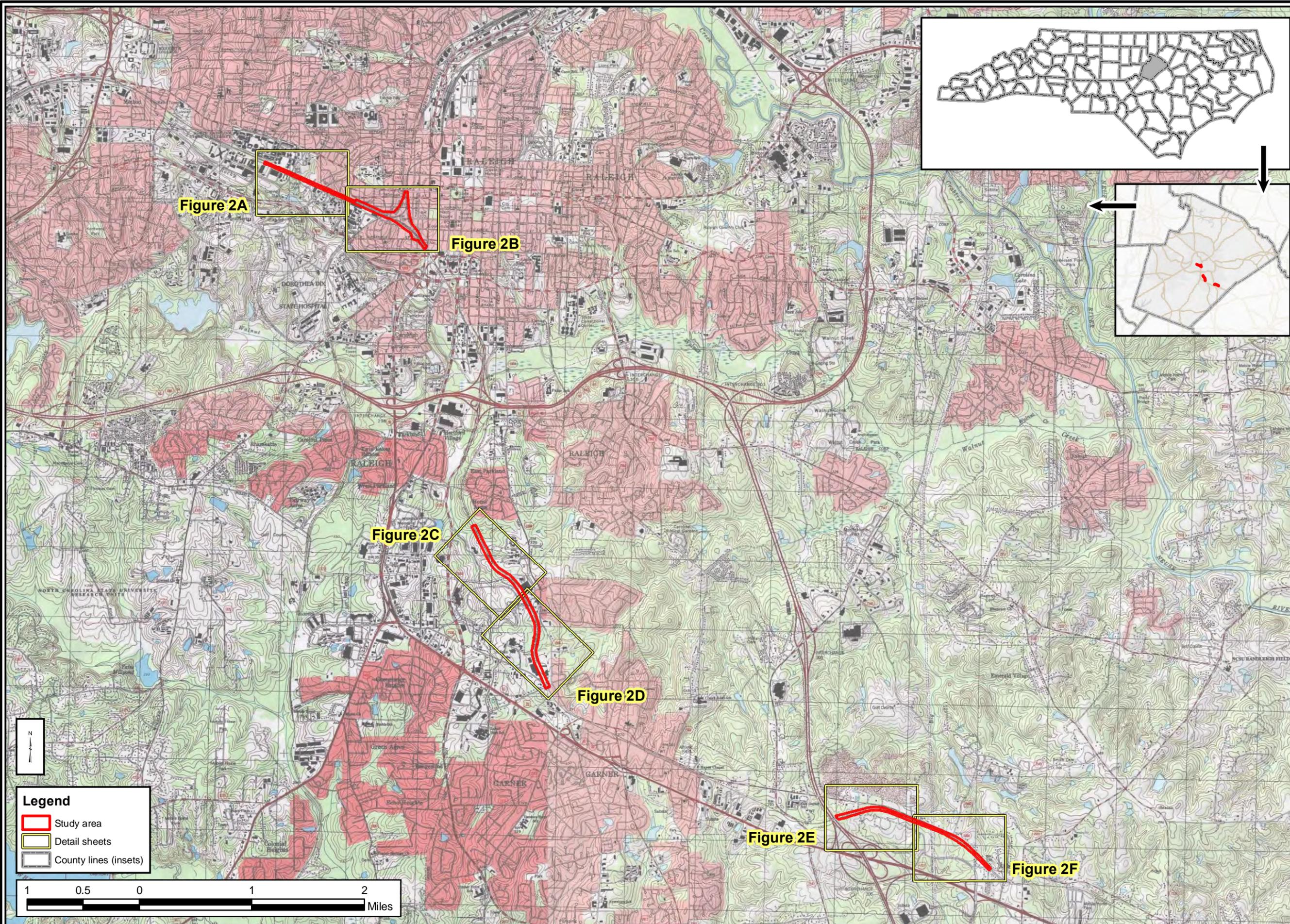
Horizontal Clearance Adjustments –

Adjustments to the minimum horizontal clearance will be made for any portion of the platform that is not located in tangent track. The adjustment for curvature shall be made as outlined below, and shall not be the larger measurement, but rather a cumulative adjustment;

1. Side clearance shall be increase 1-1/2" per degree of curvature in curved track.
2. At a height of 16'2" above top of rail, the side clearance shall be increased 3.5 inches per inch of super elevation where the cars lean into the canopy (canopy on inside of curve)

[End of Document]

APPENDIX B
NATURAL RESOURCES TECHNICAL REPORT
EXHIBITS



Prepared for:



Project:

**RALEIGH
STATION**

**P-3803
WBS 41323**

Wake County, NC

Title:

**PROJECT
LOCATION**

Notes:

1. Background imagery sources: Gamer, Lake Wheeler, Raleigh East, and Raleigh West 7.5-minute topographic quadrangles provided by the US Geological Survey.
2. 2-foot elevation contours are generated from N.C Floodplain Mapping Program data (2007) and provided by the NCDOT.

Drawn by: SGD

Date: APR 2012

Scale: 1:50,000

Project No.: 11-015.04

FIGURE

1



Prepared for:



Project:

RALEIGH STATION

**P-3803
WBS 41323**

Wake County, NC

Title:

STUDY AREA

Notes:

1. Background imagery source: 2010 aerial photography provided by the NC OneMap program (online, supported by the NC Geographic Information Coordination Council).
2. 2-foot elevation contours are generated from N.C Floodplain Mapping Program data (2007) and provided by the NCDOT.

Location:



Drawn by: SGD

Date: APR 2012

Scale: 1:3600

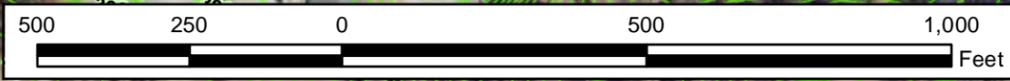
Project No.: 11-015.04

**FIGURE
2A**



Legend

- Study area
- Approximate rail line location
- NCDOT roads
- 2-foot elevation contours





Prepared for:

RALEIGH STATION

P-3803
WBS 41323

Wake County, NC

Title:

STUDY AREA

Notes:

1. Background imagery source: 2010 aerial photography provided by the NC OneMap program (online, supported by the NC Geographic Information Coordination Council).
2. 2-foot elevation contours are generated from N.C Floodplain Mapping Program data (2007) and provided by the NCDOT.



Drawn by: SGD

Date: APR 2012

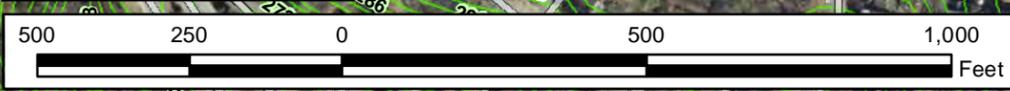
Scale: 1:3600

Project No.: 11-015.04

FIGURE 2 B

Legend

- Study area
- Approximate rail line location
- NCDOT roads
- 2-foot elevation contours





Prepared for:



Project:

**RALEIGH
STATION**

**P-3803
WBS 41323**

Wake County, NC

Title:

**STUDY
AREA**

Notes:

1. Background imagery source: 2010 aerial photography provided by the NC OneMap program (online, supported by the NC Geographic Information Coordination Council).
2. 2-foot elevation contours are generated from N.C Floodplain Mapping Program data (2007) and provided by the NCDOT.

Location:



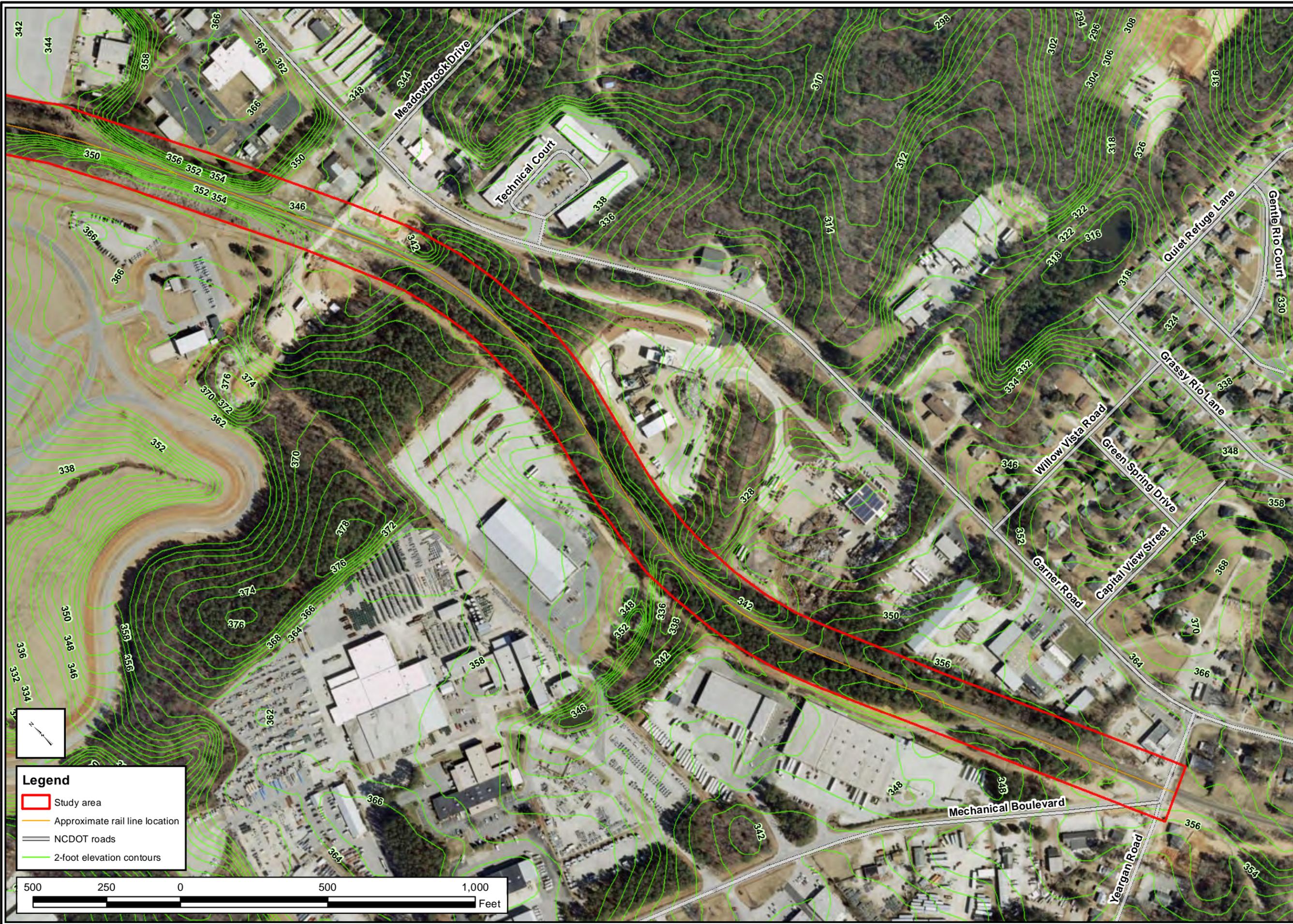
Drawn by: SGD

Date: APR 2012

Scale: 1:3600

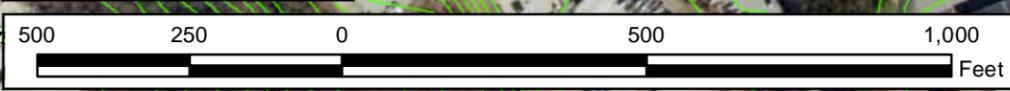
Project No.: 11-015.04

**FIGURE
2C**



Legend

- Study area
- Approximate rail line location
- NCDOT roads
- 2-foot elevation contours



Prepared for:



Project:

**RALEIGH
STATION**

**P-3803
WBS 41323**

Wake County, NC

Title:

**STUDY
AREA**

Notes:

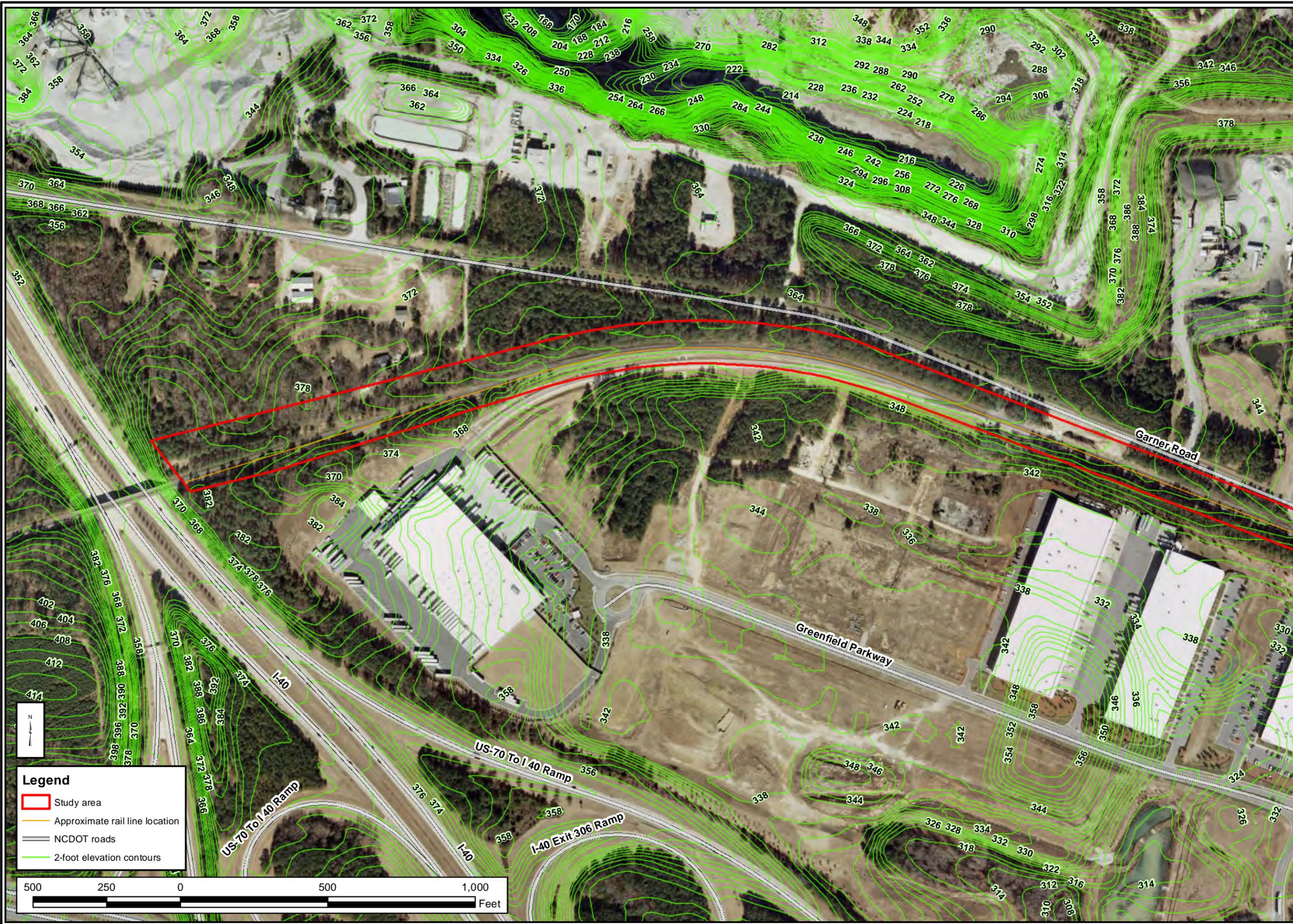
1. Background imagery source: 2010 aerial photography provided by the NC OneMap program (online, supported by the NC Geographic Information Coordination Council).
2. 2-foot elevation contours are generated from N.C Floodplain Mapping Program data (2007) and provided by the NCDOT.

Location:



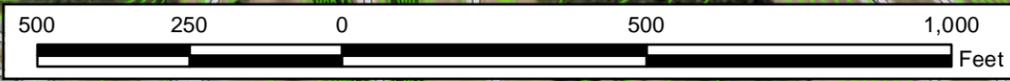
Drawn by:	SGD
Date:	APR 2012
Scale:	1:3600
Project No.:	11-015.04

**FIGURE
2 D**



Legend

- Study area
- Approximate rail line location
- NCDOT roads
- 2-foot elevation contours



Prepared for:



Project:

**RALEIGH
STATION**

**P-3803
WBS 41323**

Wake County, NC

Title:

**STUDY
AREA**

Notes:

1. Background imagery source: 2010 aerial photography provided by the NC OneMap program (online, supported by the NC Geographic Information Coordination Council).
2. 2-foot elevation contours are generated from N.C Floodplain Mapping Program data (2007) and provided by the NCDOT.

Location:



Drawn by:	SGD
Date:	APR 2012
Scale:	1:3600
Project No.:	11-015.04

**FIGURE
2 E**



Prepared for:



Project:

**RALEIGH
STATION**

**P-3803
WBS 41323**

Wake County, NC

Title:

**INDEX MAP
TO
JURISDICTIONAL
AREA LOCATIONS**

Notes:

1. Background imagery sources
Garner, Lake Wheeler, Raleigh
East, and Raleigh West 7.5-
minute topographic quadrangles
provided by the US Geological
Survey.

Drawn by: CLF

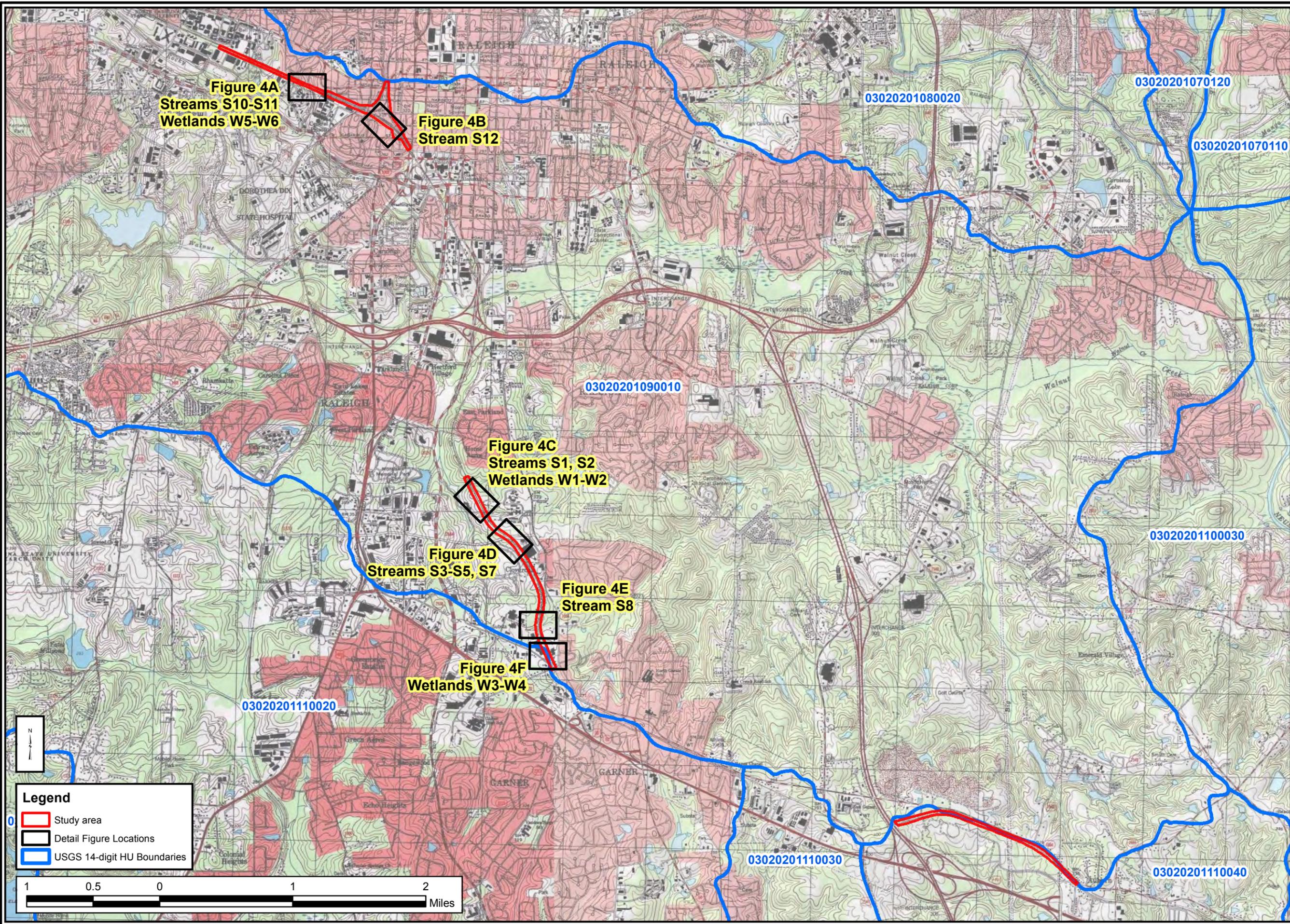
Date: JUNE 2012

Scale: 1:42,000

Project No.: 11-015.04

FIGURE

3



**Figure 4A
Streams S10-S11
Wetlands W5-W6**

**Figure 4B
Stream S12**

**Figure 4C
Streams S1, S2
Wetlands W1-W2**

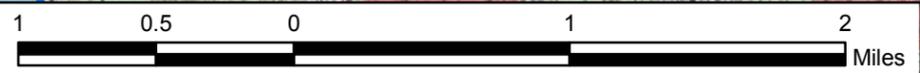
**Figure 4D
Streams S3-S5, S7**

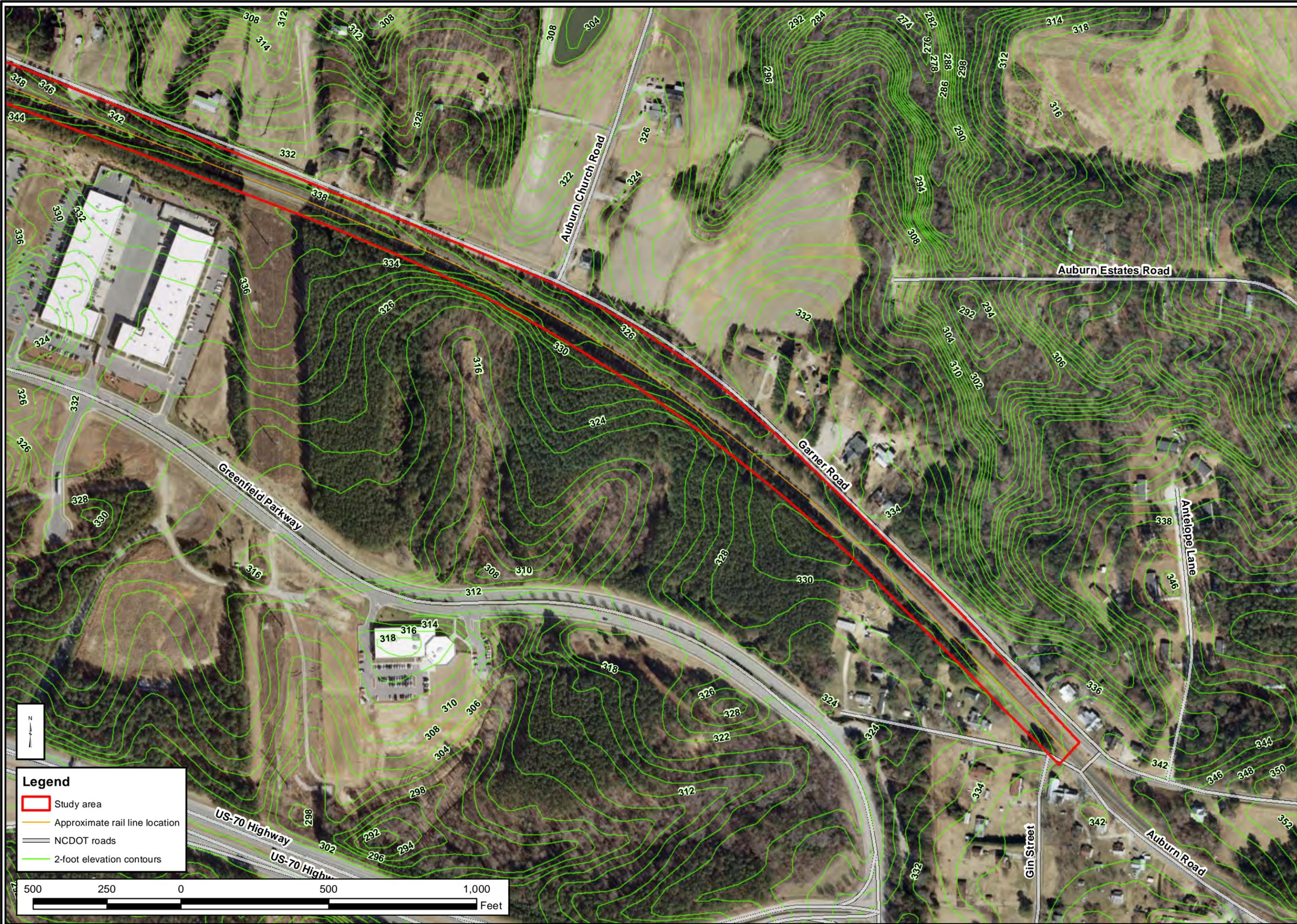
**Figure 4E
Stream S8**

**Figure 4F
Wetlands W3-W4**

Legend

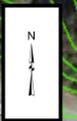
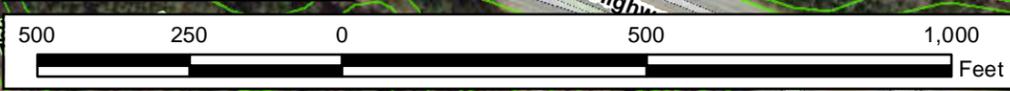
- Study area
- Detail Figure Locations
- USGS 14-digit HU Boundaries





Legend

- Study area
- Approximate rail line location
- NCDOT roads
- 2-foot elevation contours



Project:

**RALEIGH
STATION**

**P-3803
WBS 41323**

Wake County, NC

Title:

**STUDY
AREA**

Notes:

1. Background imagery source: 2010 aerial photography provided by the NC OneMap program (online, supported by the NC Geographic Information Coordination Council).
2. 2-foot elevation contours are generated from N.C Floodplain Mapping Program data (2007) and provided by the NCDOT.



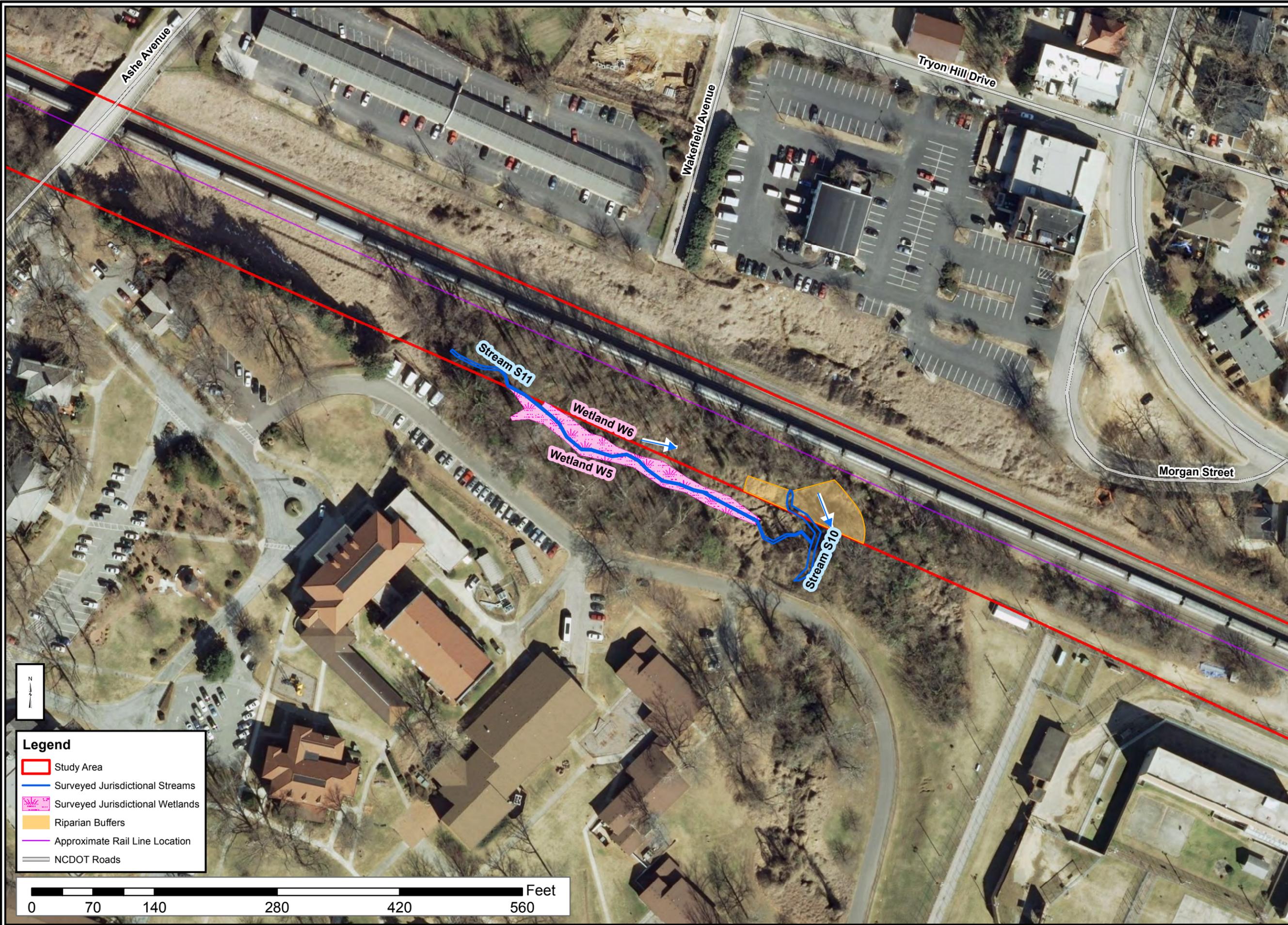
Drawn by: SGD

Date: APR 2012

Scale: 1:3600

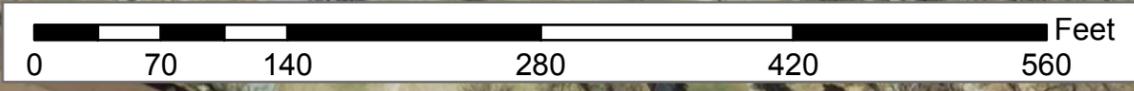
Project No.: 11-015.04

**FIGURE
2 F**



Legend

- Study Area
- Surveyed Jurisdictional Streams
- Surveyed Jurisdictional Wetlands
- Riparian Buffers
- Approximate Rail Line Location
- NCDOT Roads



Prepared for:

Project:
RALEIGH STATION
P-3803
WBS 41323
 Wake County, NC

Title:
JURISDICTIONAL AREAS

Notes:
 1. Background imagery source: 2010 aerial photography provided by the NC OneMap program (online, supported by the NC Geographic Information Coordination Council).
 2. 2-foot elevation contours are generated from N.C Floodplain Mapping Program data (2007) and provided by the NCDOT.



Drawn by: CLF
 Date: AUG 2012
 Scale: 1:1200
 Project No.: 11-015.04

FIGURE 4A



Legend

- Study Area
- Surveyed Jurisdictional Streams
- Surveyed Jurisdictional Wetlands
- Riparian Buffers
- Approximate Rail Line Location
- NCDOT Roads



Prepared for:



Project:

**RALEIGH
STATION**

**P-3803
WBS 41323**

Wake County, NC

Title:

**JURISDICTIONAL
AREAS**

Notes:

1. Background imagery source: 2010 aerial photography provided by the NC OneMap program (online, supported by the NC Geographic Information Coordination Council).
2. 2-foot elevation contours are generated from N.C Floodplain Mapping Program data (2007) and provided by the NCDOT.



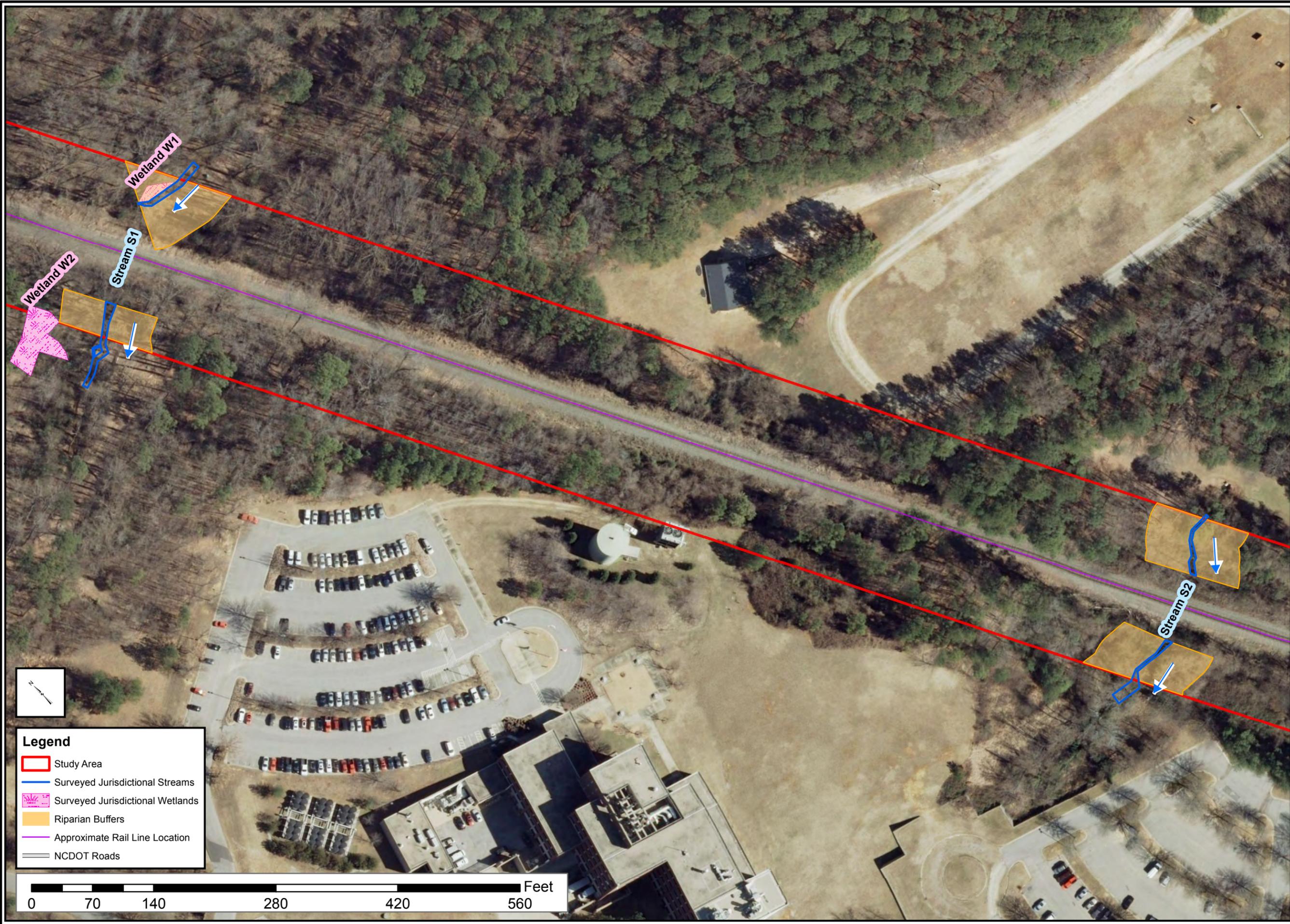
Drawn by: CLF

Date: AUG 2012

Scale: 1:1200

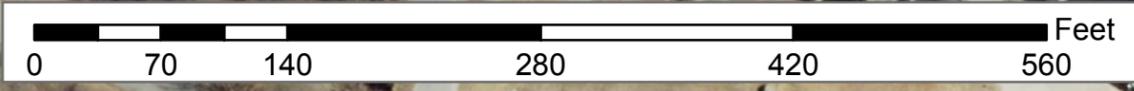
Project No.: 11-015.04

**FIGURE
4B**



Legend

- Study Area
- Surveyed Jurisdictional Streams
- Surveyed Jurisdictional Wetlands
- Riparian Buffers
- Approximate Rail Line Location
- NCDOT Roads



Prepared for:



Project:

**RALEIGH
STATION**

**P-3803
WBS 41323**

Wake County, NC

Title:

**JURISDICTIONAL
AREAS**

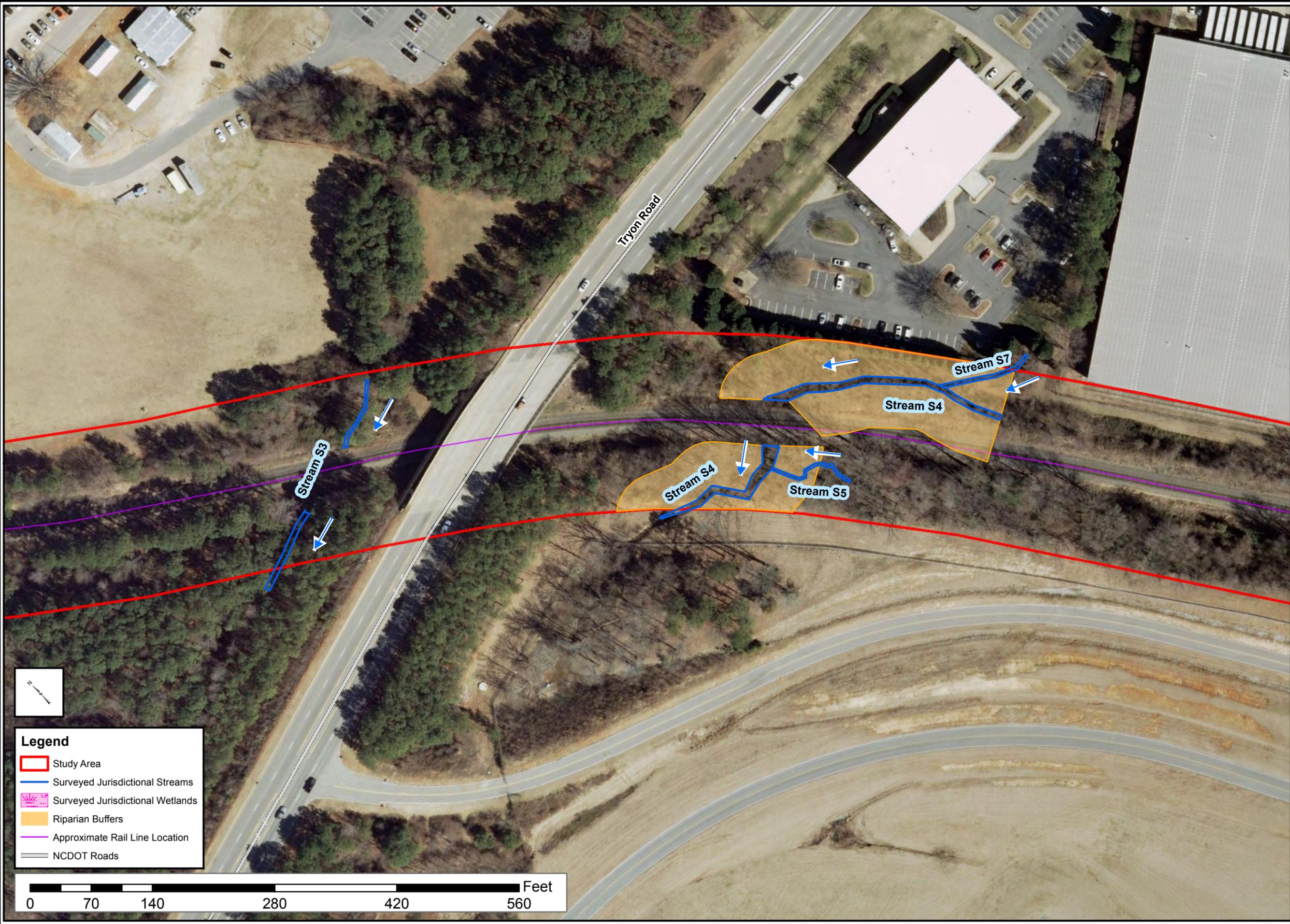
Notes:

1. Background imagery source: 2010 aerial photography provided by the NC OneMap program (online, supported by the NC Geographic Information Coordination Council).
2. 2-foot elevation contours are generated from N.C Floodplain Mapping Program data (2007) and provided by the NCDOT.



Drawn by:	CLF
Date:	AUG 2012
Scale:	1:1200
Project No.:	11-015.04

**FIGURE
4C**



Prepared for:



Project:

**RALEIGH
STATION**

**P-3803
WBS 41323**

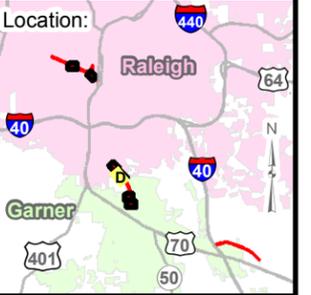
Wake County, NC

Title:

**JURISDICTIONAL
AREAS**

Notes:

1. Background imagery source: 2010 aerial photography provided by the NC OneMap program (online, supported by the NC Geographic Information Coordination Council).
2. 2-foot elevation contours are generated from N.C Floodplain Mapping Program data (2007) and provided by the NCDOT.

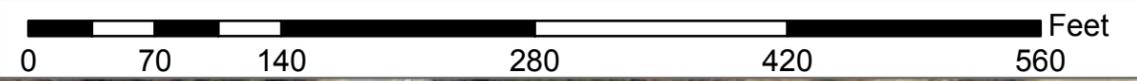


Drawn by: CLF
 Date: AUG 2012
 Scale: 1:1200
 Project No.: 11-015.04

**FIGURE
4D**

Legend

- Study Area
- Surveyed Jurisdictional Streams
- Surveyed Jurisdictional Wetlands
- Riparian Buffers
- Approximate Rail Line Location
- NCDOT Roads





Prepared for:



Project:

**RALEIGH
STATION**

**P-3803
WBS 41323**

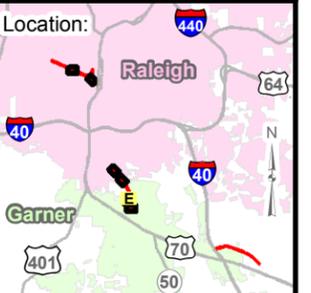
Wake County, NC

Title:

**JURISDICTIONAL
AREAS**

Notes:

1. Background imagery source: 2010 aerial photography provided by the NC OneMap program (online, supported by the NC Geographic Information Coordination Council).
2. 2-foot elevation contours are generated from N.C Floodplain Mapping Program data (2007) and provided by the NCDOT.

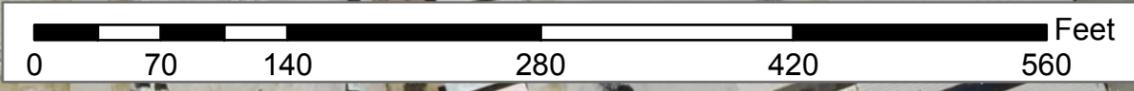


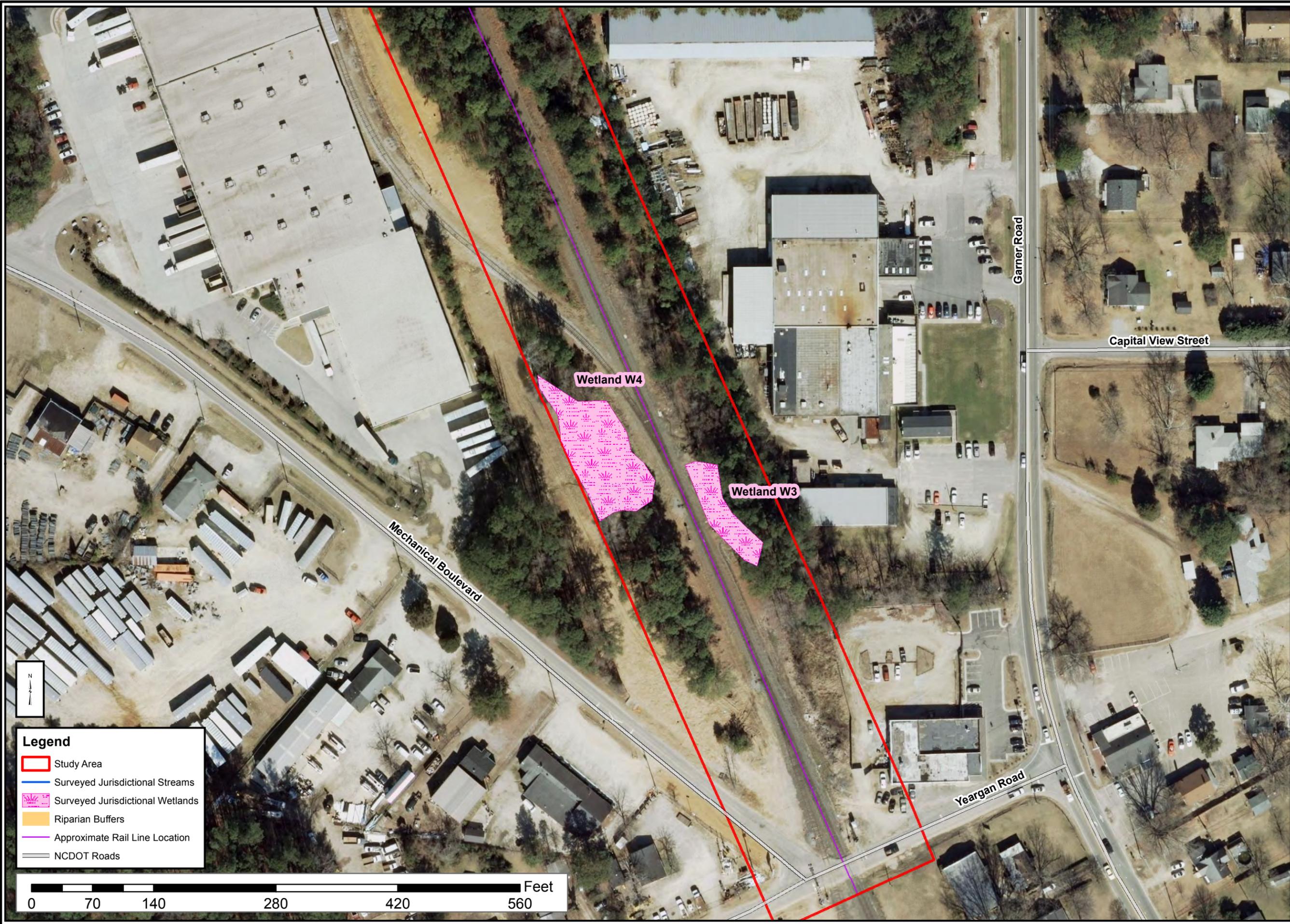
Drawn by: CLF
 Date: AUG 2012
 Scale: 1:1200
 Project No.: 11-015.04

**FIGURE
4E**

Legend

- Study Area
- Surveyed Jurisdictional Streams
- Surveyed Jurisdictional Wetlands
- Riparian Buffers
- Approximate Rail Line Location
- NCDOT Roads





Prepared for:



Project:

**RALEIGH
STATION**

**P-3803
WBS 41323**

Wake County, NC

Title:

**JURISDICTIONAL
AREAS**

Notes:

1. Background imagery source: 2010 aerial photography provided by the NC OneMap program (online, supported by the NC Geographic Information Coordination Council).
2. 2-foot elevation contours are generated from N.C Floodplain Mapping Program data (2007) and provided by the NCDOT.



Drawn by: CLF
 Date: AUG 2012
 Scale: 1:1200
 Project No.: 11-015.04

**FIGURE
4F**

APPENDIX C
RIGHT OF WAY ESTIMATE

REQUEST FOR R/W COST ESTIMATE

DATE RECEIVED: **06/03/13**

DISTRIBUTED: **06/06/13**

REVISION / NO
UPDATE : _____

I.D.NO./
BREAK

DESCRIPTION

SCHEDULE

P-5500

THE PROJECT PROPOSES TO CONSTRUCT A NEW PASSENGER TRAIN STATION IN THE VICINITY OF THE BOYLAN WYE (510 W. MARTIN ST) IN DOWNTOWN RALEIGH. THE PROPOSED PROJECT WILL ALSO REQUIRE THE REALIGNMENT OF THE TRACKS ALONG THE WEST LEG OF THE WYE.

R/W _____ FY _____
CONST _____ FY _____

UNFUND POST YRS

ACCESS: FULL C/A PARTIAL C/A NO CONTROL

WBS ELEMENT NUMBER: 44092SA.1.0 COUNTY: WAKE

ENGINEER: RYAN L. WHITE, P.E. RAIL EMAIL: _____

TYPE OF PLANS FURNISHED FOR ESTIMATE: PRELIMINARY

DATE DUE: 06/28/13

PRIOR ESTIMATES OF LAND AND DAMAGES (WITH DATES):

BASED ON PAST PROJECT HISTORICAL DATA, THE LAND AND DAMAGE FIGURES HAVE BEEN ADJUSTED BY A FACTOR OF **50%** TO INCLUDE CONDEMNATION AND ADMINISTRATIVE INCREASES THAT OCCUR DURING SETTLEMENT OF ALL PARCELS. THESE FIGURES PROJECT THE MOST ACCURATE ACQUISITION ESTIMATES **FOR 2 (TWO) YEARS** FROM THE DATE OF THIS ESTIMATE.

ESTIMATED BY: B. Lopp TIME SPENT: _____ COMPLETED DATE: 06/20/13 EXTENSION REQ.: NO

ALTERNATES

	A				
ESTIMATED NO. OF PARCELS:	8				
RESIDENTIAL RELOCATIONS:	0				
BUSINESS RELOCATIONS:	2 / \$50,000				
GRAVES	0				
LAND AND DAMAGE:	\$9,228,000				
ACQUISITION:	\$40,000				
TOTAL ESTIMATED R/W COST:	\$9,318,000				

VALUES:

Residential - \$20,000 per Land & Damage worth 1.5 (150%) **Business - \$25,000 Per Acquisition - \$5,000 Per Parcel** **Graves - \$10,000 Per**

THERE ARE NO FIGURES FOR UTILITY INVOLVEMENT ON THIS ESTIMATE AND NO PUE's.

NOTES: _____

APPENDIX D
SOUTHERN RAILWAY TURNTABLE EFFECTS
DETERMINATION



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PATRICK L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

July 10, 2013

Ms. Ramona Bartos
Deputy SHPO
Historic Preservation Office
Dept. of Cultural Resources
4617 Mail Service Center
Raleigh, North Carolina 27699-46517

Subject: TIP P-5500, Proposed Raleigh Station and Associated Track Improvements, Wake County, ER 12-0560, WBS No. WBS # 44092SA.1.0

Dear Ms. Bartos:

Thank you for your letter dated May 25, 2012, in which you raised concerns regarding archaeological site 31WA1446**, the Southern Railroad Round House. The archaeological site falls within the Area of Potential Effects for the subject project. Based upon the attached mapping and discussions between Dolores Hall of the office of State Archaeology and Matt Wilkerson of NCDOT's Human Environment Section, it has been determined that 31WA1446** will not be impacted by the project as currently proposed. Should the project limits change, then additional consultation regarding impacts to 31WA1446** will be initiated. We look forward to continued discussions with your office regarding archaeological investigations that may be required as this project develops. If you have any questions, please contact Ryan L. White, P.E., Project Development Engineer at 919-707-4717 or via email at rlwhite@ncdot.gov.

Sincerely,

A handwritten signature in cursive script that reads "Marc L. Hamel".

Marc L. Hamel
Rail Project Development Manger

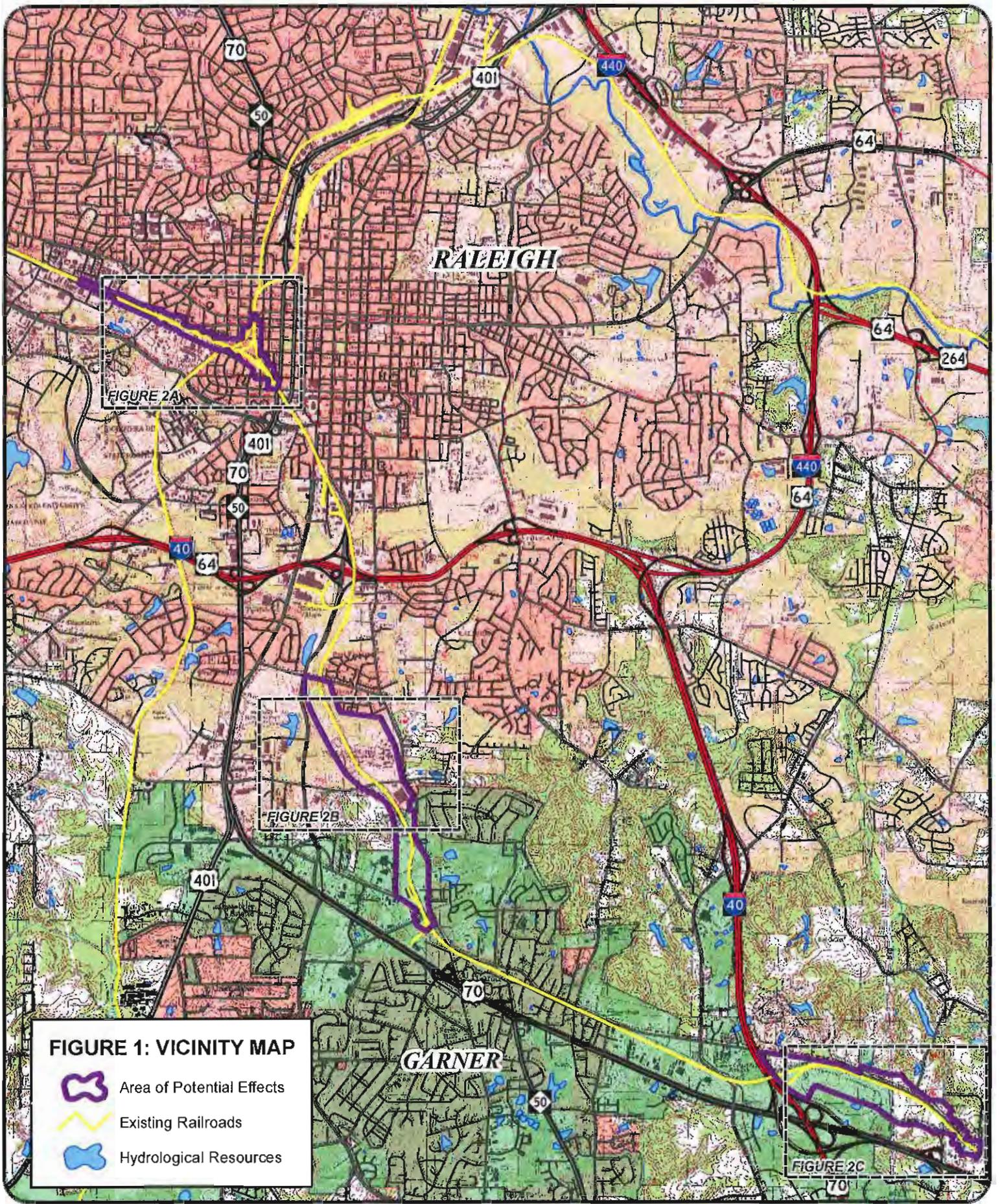


FIGURE 1: VICINITY MAP

-  Area of Potential Effects
-  Existing Railroads
-  Hydrological Resources



NCDOT PIEDMONT IMPROVEMENT PROGRAM
 Proposed Raleigh Union Station
 and Area Track Improvements
 TIP Project No. P-5500, Wake County

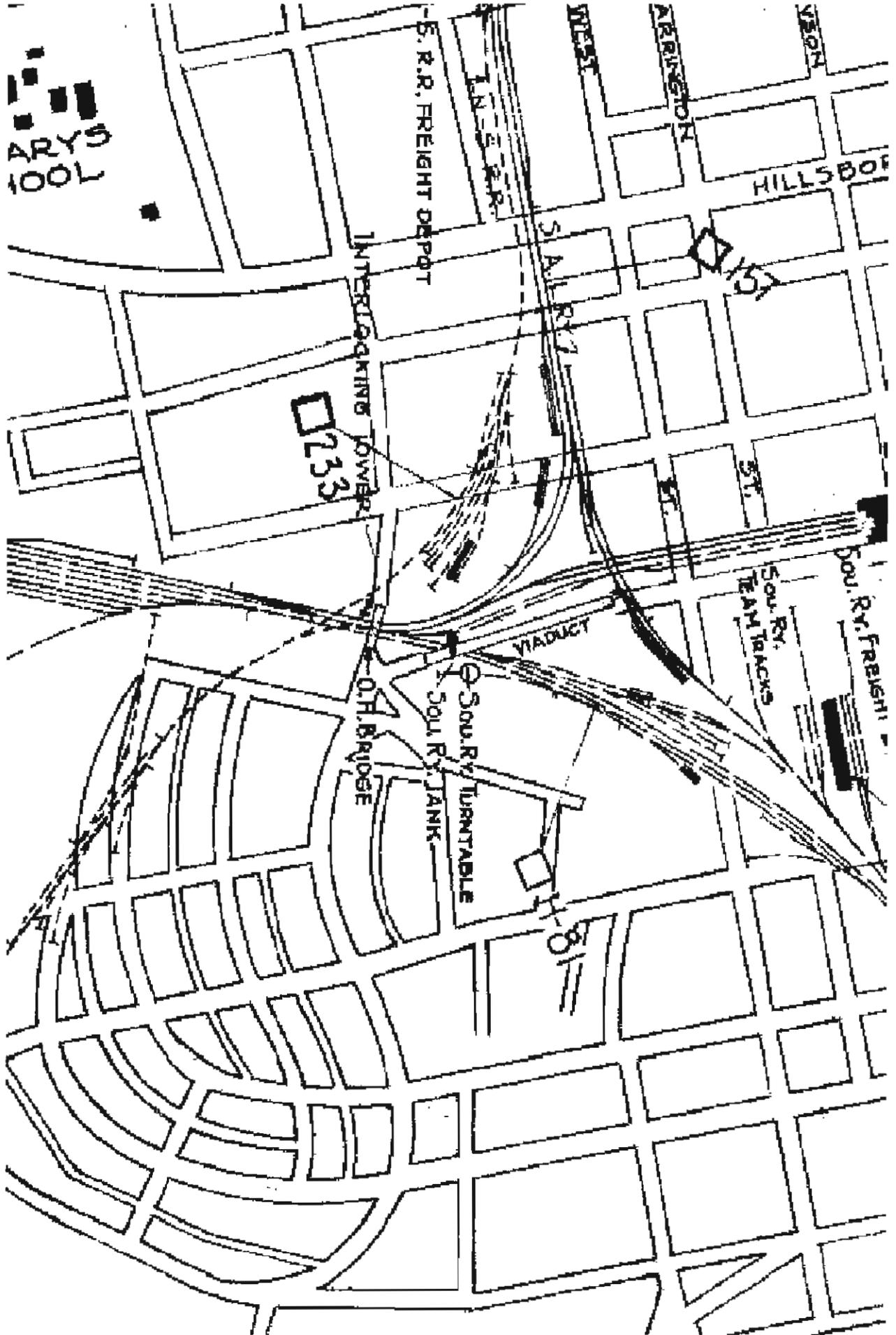
**NORTH CAROLINA DEPARTMENT
 OF TRANSPORTATION
 RAIL DIVISION
 ENVIRONMENTAL AND PLANNING UNIT**





Southern RR Turntable

ARYS
100L



E. R.R. FREIGHT DEPOT

S.A. R.R.

WEST

ARGUMENT

VISION

HILLSBORO

15

INTERLOCKING LOWER

233

ST.

VIADUCT

OH BRIDGE

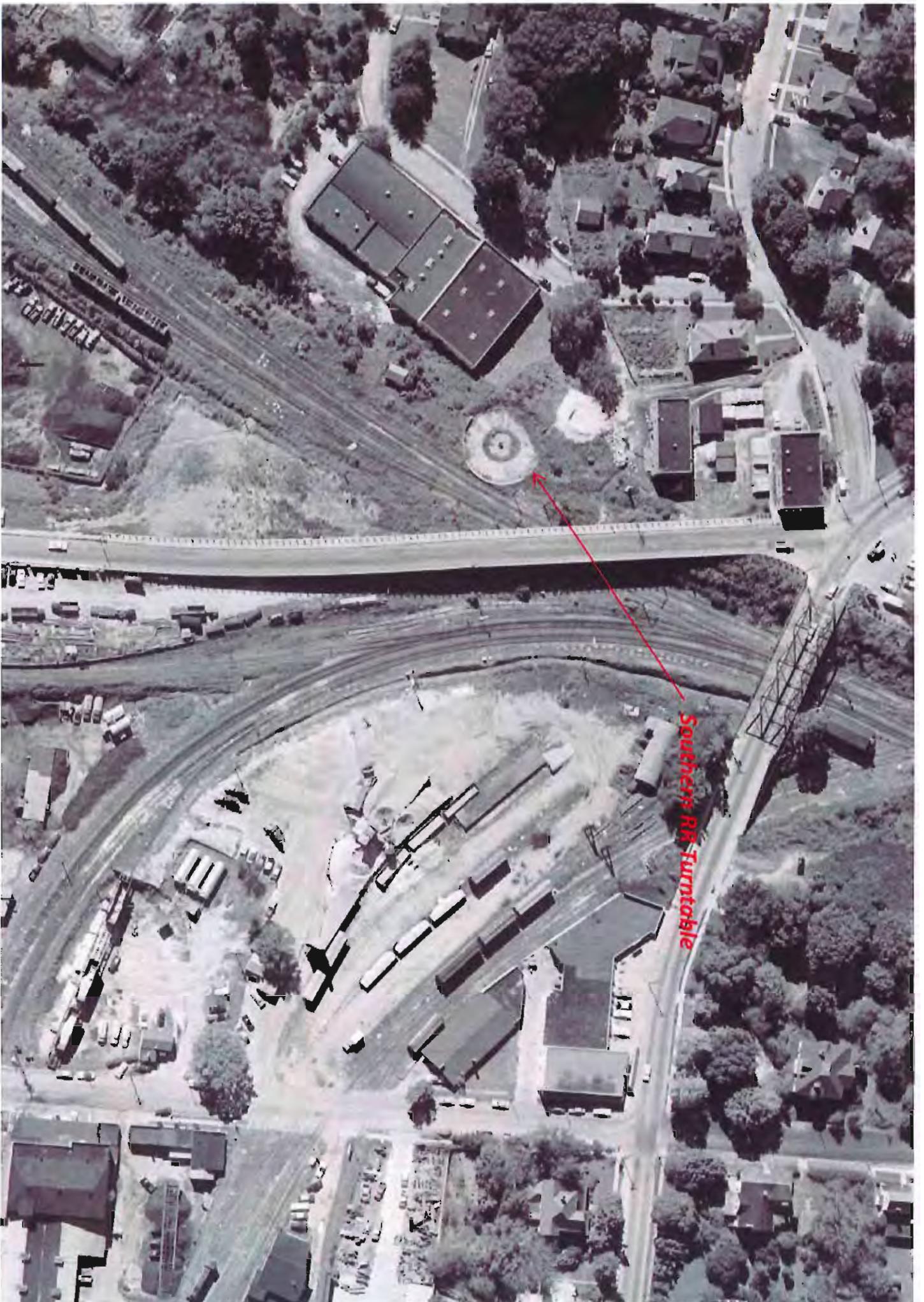
Sou. Ry. TURNTABLE

Sou. Ry. JANK

Sou. Ry. TEAM TRACKS

Sou. Ry. FREIGHT

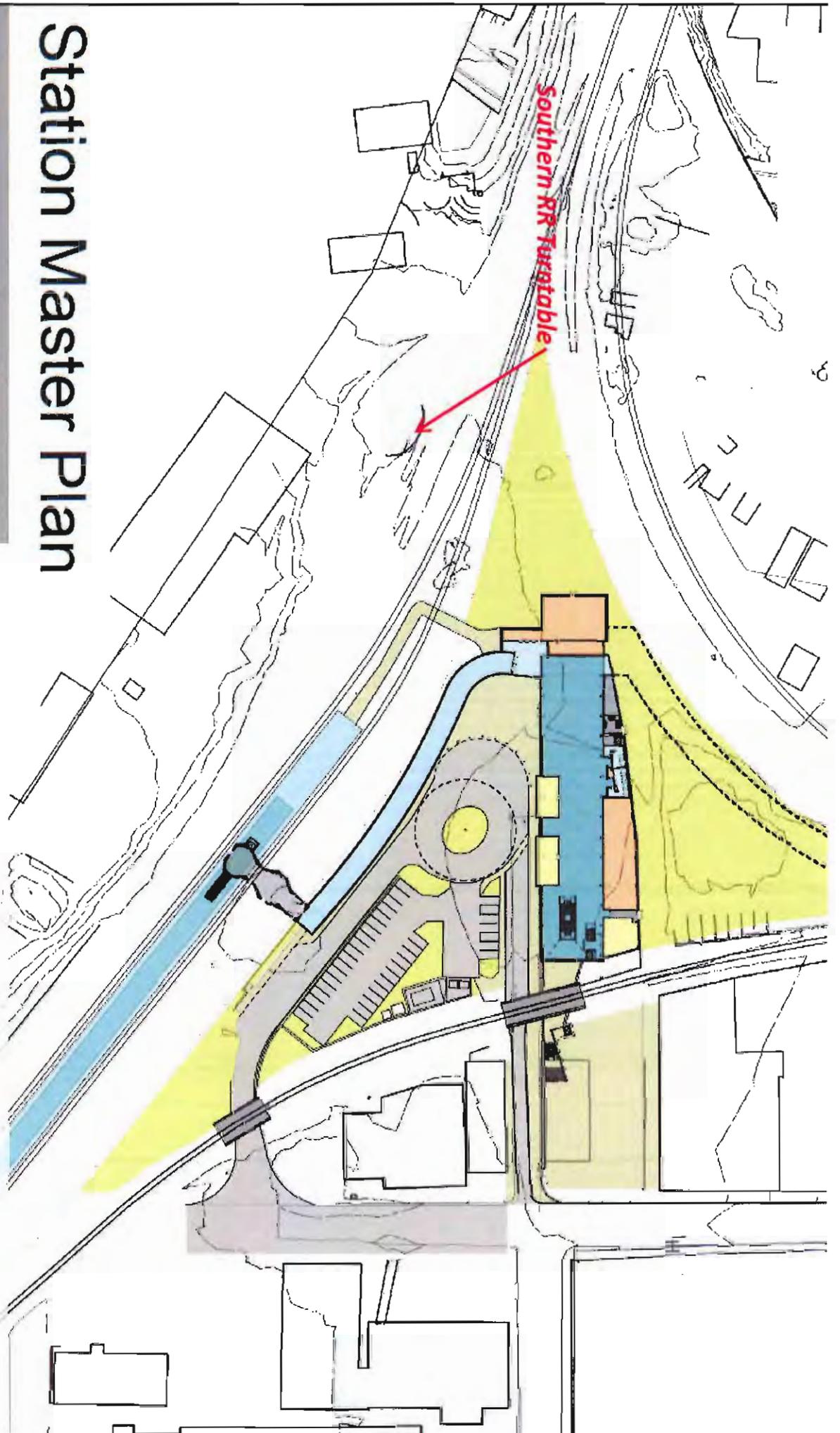
81



Southern RR Turntable



Southern RR Turntable



Station Master Plan

\$73 million

COMPLETED:

- 1) VIADUCT BUILDING
- 2) PLAZA
- 3) RAIN GARDEN
- 4) CONCOURSE
- 5) FULL PLATFORM LENGTH
- 6) MARTIN / WEST BRIDGES
- 7) TRACK IMPROVEMENTS
- 8) RIGHT OF WAY

EXISTING RR TRACKS
PROPOSED TRACK IMPROVEMENTS (PHASE I)
PROPOSED TTA PLATFORM TRACKS
FUTURE IMPROVEMENTS (SEHSR)

