19.0 SECONDARY AND CUMULATIVE EFFECTS

This chapter assesses the secondary (indirect) effects and cumulative (incremental) effects of the proposed LYNX Blue Line Extension Northeast Corridor Light Rail Project (LYNX BLE) when added to the past, present and reasonably foreseeable future actions of related projects in the study area. This chapter also includes a discussion of the recommended mitigation measures where necessary. The No-Build Alternative is not included in this assessment, as there would not be any actions likely to result in secondary or cumulative effects.

19.1 Changes to this Chapter since the Draft EIS

This chapter has been revised to reflect the identification of the proposed Light Rail Alternative as the Preferred Alternative for the LYNX BLE. Additionally, since the Draft Environmental Impact Statement (EIS), the design of the proposed LYNX BLE has been refined as described in Chapter 2.0: Alternatives Considered. These refinements, including the potential changes to Secondary and Cumulative Effects, are also included in this Chapter.

19.2 Definition of Terms

19.2.1 Secondary Effects

The CEQ Regulations (40 CFR Section 1508.8) define “effects” as direct and secondary (indirect) effects:

- Direct Effects: Effects which are caused by the [proposed] action and occur at the same time and place (40 CFR 1508.8 (a)).
- Indirect Effects: Effects which are caused by the [proposed] action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related to effects on air and water and other natural systems, including ecosystems (40 CFR 1508.8 (b)).

The terms “effects” and “impacts” are considered synonymous, as used in the CEQ regulations. For the purpose of this chapter, “indirect effects” are referred to herein as “secondary effects.” An example of a secondary effect is when a bypass is built around a town and commercial development ensues at the interchange that would not have otherwise occurred without the construction of the bypass. The commercial development is therefore considered a secondary effect of the construction of the bypass.

19.2.2 Cumulative Effects

The CEQ defines the term cumulative impact as: the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

Analyzing cumulative effects means considering and accounting for the impacts of a proposed action in the context of everything else that is going on, has gone on, or probably will go on in the vicinity of the proposed project. Once the effects have been determined, appropriate mitigation strategies can be defined to wholly or partially manage the effects of the proposed project.

An example of cumulative effects would be the construction of a new bridge, a gas station and a 60-lot residential subdivision; all of which would cause the removal of nine acres of wetlands and each project would need to mitigate its proportional impact on the nine acres of wetlands. When looked at individually, each individual project impacts on wetlands seem minor, but when looked at in total, the wetland loss is much more significant.

19.3 Affected Environment

This section describes baseline conditions for the affected environment, including general trends and

community goals. Areas discussed include location influences, demographic trends, planning/policy goals, future development trends, notable resources and air quality. The transportation and land use planning goals provide a platform for assessing the proposed project's potential for secondary and cumulative effects. Detailed information on the affected environment, trends and relevant plans are documented in the *Secondary and Cumulative Effects Technical Memorandum* (May 2010).

19.3.1 Regional Location Influences and Implications

Center City Charlotte is where the existing LYNX Blue Line terminates and where the proposed LYNX BLE would begin. It is the region's largest employment center, housing workers, residences, office space, retail space, and numerous entertainment, recreational, institutional/educational and cultural destinations. The proposed LYNX BLE Northeast Corridor contains the North Davidson "NoDa" Historic Arts District, as well as the University City employment center that includes large employment complexes, medical facilities, and the University of North Carolina at Charlotte (UNC Charlotte) main campus. These destinations, as well as the corridor's connection to other corridors and activity centers, will continue to influence growth attractiveness and development potential within the Northeast Corridor through 2035.

The City of Charlotte and Mecklenburg County have adopted policies to achieve growth management goals to help guide and manage land use in the proposed project corridor. These policies are discussed in greater detail in Chapter 4.0: Land Use, Public Policy and Zoning. Specifically, the *Centers, Corridors, and Wedges Growth Framework* (August 2010) recommends the concentration of growth in five linear growth areas. These corridors are centered on high capacity transportation facilities, existing highways and planned transit improvements, and their ability to link neighborhoods, commercial and institutional uses and other districts.

19.3.2 Demographic and Employment Trends

Chapter 1.0: Purpose and Need and Chapter 5.0: Socio-Economic Conditions describe existing and future demographic trends. Population densities within Mecklenburg County are expected to increase within the 2035 analysis timeframe. The Northeast Corridor is anticipated to gain a substantial share of the population growth in the county. Likewise, employment share in the Northeast Corridor is projected to increase significantly (148 percent) by 2035. The University City area is expected to remain the largest employment area in the Northeast Corridor outside of Center City Charlotte.

19.3.3 Planning and Policy Documents and Zoning Ordinances

To accomplish growth management goals, the City of Charlotte and Mecklenburg County have developed documents and strategies to help guide and manage land use in the proposed project corridor. These policies, guidelines and plans are described in detail in Chapter 4.0: Land Use, Public Policy and Zoning.

The Northeast Corridor includes properties that fall within a wide range of zoning districts, reflecting varying types and intensities of residential, commercial, and industrial uses. These vary from low-density districts of a more suburban character to high intensity, transit-supportive districts. As an implementation strategy for the development of property surrounding the proposed transit stations (within a ½-mile radius), properties may be rezoned with the appropriate transit-supportive zoning districts as part of the station area planning process. The three transit-supportive zoning districts in the currently adopted City of Charlotte Zoning Ordinance include the Uptown Mixed use District (UMUD), the Mixed Use Development District (MUDD) and the Transit Oriented Development District (TOD).

In October 2003, the Charlotte City Council approved a new set of TOD Zoning Districts applicable to areas within approved transit station area plans, including the Residentially Oriented (TOD-R) zoning district, the Employment Oriented (TOD-E) zoning district and the Mixed-Use Oriented (TOD-M) zoning district. The City has also implemented a number of overlay districts, including the Pedestrian Overlay District (PED) and the Transit Supportive Overlay (TS), to help encourage mixed-use, pedestrian-friendly and transit-supportive development.

19.3.4 Development Trends/Future Land Use

The Northeast Corridor has experienced significant change in the past few years, emerging with three distinct characteristics: the edgy, in-town district along North Davidson Street to NoDa; an aging suburban corridor along North Tryon Street/US-29 from Sugar Creek Road to Tom Hunter Road; and a suburban corridor experiencing mixed success from University City Blvd./NC-49 north to Interstate 485 (I-485). It is projected that the North Davidson Street area will continue to fuel strong opportunities for intensification of residential, retail and creative office opportunities, particularly around the Parkwood Station, 25th Street Station and 36th Street Station. Retail abandonment, limited interstate access and economic stagnation are expected to temper the pace of development in the Sugar Creek Road to Tom Hunter Road area. The University City area and its proposed stations could benefit from several large-scale potentially catalytic projects. These projects include: Belgate, a large retail development; UNC Charlotte expansion and associated development projects; and University Place, a large retail and business development.

The variations in development and land use patterns in the corridor will vary from existing patterns mostly around station areas. These variations from existing uses would likely be the transition to mixed-use designations in areas where there is the greatest potential for TOD. Existing land use policies and development regulations support the implementation of the Preferred Alternative. Existing and future development would be served by the improved transportation access and options that the Preferred Alternative would provide.

19.4 Potential Secondary Effects

Reasonable and foreseeable secondary effects of the Preferred Alternative are discussed in this section. The secondary effects described are those resulting from the potential for induced development and the potential effects on notable features and communities of concern. The potential for land use changes in the corridor overall is influenced by the characteristics of the seven land use districts provided in Chapter 4.0: Land Use, Public Policy, and Zoning, such as their development and land use patterns, neighborhood characteristics, and transportation infrastructure. While transit does not directly cause development to occur, it does help to direct development where infrastructure can better support it. Compact development patterns, achieved by the application of TOD zoning districts at station locations, reduce the cost of providing utilities, facilities, and services to new residential and commercial developments.

The potential for growth and land use changes in the overall corridor as a result of the proposed project is low-to-moderate under the Preferred Alternative. Most of the area within the corridor contains neighborhoods in an urban or suburban setting. Overall, the proposed project is not likely to cause a substantial change in type or intensity of land use. The only exception to this is the vacant/undeveloped areas in the northeast portions of the corridor from University City Blvd./NC-49/NC-49 to I-485. This area contains growth-inducing factors such as the presence of developable land and the likely expansion of water and sewer service. However, any induced growth within the corridor would not be of such significant magnitude that a quantitative watershed analysis is necessary. A qualitative analysis of the proposed project will be done as part of the Section 404/401 permitting process. See Chapter 11.0: Water Resources for additional details.

Based on land use policies and rezonings (discussed in Chapter 4.0: Land Use, Public Policy and Zoning), it is reasonably foreseeable that the corridor would experience infill development, revitalization, and redevelopment activities as a result of the proposed project. However, the study area will experience growth and development in the study time frame with or without the proposed project, as evidenced by population and employment projections for the Northeast Corridor (see Chapter 1.0: Purpose and Need). The proposed project is not likely to influence if growth will occur in the corridor, but rather where and how the growth would occur.

Growth associated with the proposed project would occur in a more compact development pattern due to the incentives to provide TOD opportunities at station areas that have a higher potential for land use changes and redevelopment. Project-induced activity would occur in the Project Impact Area (PIA)

around proposed stations consistent with land use plans and policies (described in Chapter 4.0: Land Use, Public Policy and Zoning) adopted to guide and manage the anticipated growth in the study area. The proposed project also could affect the timing of planned/future developments as it is reasonable and foreseeable that development in the stations areas could occur in anticipation of the proposed LYNX BLE.

These secondary effects are anticipated to be positive in terms of their effect on the corridor and the region overall. The Charlotte-Mecklenburg Planning Department recognizes the need for proactive regional growth management, as well as redevelopment and revitalization prospects, to keep growth within existing developed areas as much as possible.

Development pressure has already been seen in the northeast corridor, with this trend anticipated to continue through 2035**.** Future development/redevelopment and land use changes in the corridor is related to policies that focus and manage anticipated growth rather than as a direct result of the Preferred Alternative. Growth and investment is already apparent partially due to University City Partners (UCP) investments and UNC Charlotte's expansion plans.

Most of proposed project's direct effects would affect vacant, commercial, office, and industrial properties, which would encourage indirect transitions of industrial uses to mixed use. Some stations are more susceptible to major changes in the magnitude, duration, likelihood, and location of growth.

Potential positive and negative secondary effects from the project are listed in Table 19-1. Secondary effects of TOD resulting from the proposed project are anticipated and desirable, as there is a nexus between TOD and the transit system initiative. The relationship is that TOD is used to support rail transit, while at the same time to leverage the development opportunity that a rail station may provide (Boarnet and Compin, *Journal of the American Planning Association*, Winter 1999). TOD would not otherwise occur without the implementation of the light rail portion of the proposed project, and likewise, the TOD is needed to support transit initiatives by means of increased ridership and system enhancement and growth.

Factors that would help encourage TOD in the corridor include:

- The strong local and regional support for meeting the proposed project goals and objectives.
- The increasing growth and market demand anticipated for the region.
- Past and future public and private efforts to revitalize and/or redevelop areas of need.
- Existing and forthcoming supportive land use policies.
- The "success" of the existing LYNX Blue Line and therefore likely support in the northeast corridor.
- Consistency with the *Centers, Corridors, and Wedges Growth Framework* (August 2010) and the *2025 Integrated Transit/Land Use Plan*.

Land Use Changes/Redevelopment Potential at Stations

As part of the station area planning process, the Charlotte-Mecklenburg Planning Department has undertaken preliminary planning for the Preferred Alternative stations. These plans reflect a conceptual vision for any new development or redevelopment around each of the stations. Detailed Station Area Plans would be further developed as part of future activities to ensure that the type, location, intensity, and land use mix is appropriate for the goal of transit-supportive future development. This station area planning process will continue at the conclusion of the Final EIS, and input from the community, including affected persons within each station area, will be sought in the development of these plans.

Secondary effects to the properties adjacent to stations are reasonably foreseeable and somewhat easier to identify due to the preliminary planning for these areas. The *LYNX BLE Secondary and Cumulative Effects Assessment Technical Memorandum* summarizes the development potential associated with the proposed project, including residential and employment growth for the overall corridor and within ½-mile radius of each station.

Table 19-1
Potential Secondary Project Effects

Potential Positive Secondary Effects	Potential Negative Secondary Effects
• Improved mobility options through mode choices. • Improved regional transit accessibility and accessibility to adjacent land uses. • Reduction in overall commuter times. • Reduced motor vehicle costs. • Reduction in auto emissions and improved air quality. • Increase in property values associated with new development/redevelopment. • Increased sales-tax revenue. • Increased usage of community amenities (i.e. parks, recreation centers, cultural and entertainment venues, etc.). • Discourage urban sprawl. • Encourage conservation of natural resources and environmentally sensitive land through compact development. • Efficient use of available land for new development. • Redevelopment potential of existing vacancies/underutilized properties. • Support for more sustainable development. • TOD encouragement of diverse and affordable housing opportunities. • Transition to balanced and more pedestrian-friendly corridor.	• Impacts to streams/wetlands and water quality due to development/redevelopment activities. • Redevelopment within station areas could result in gentrification of neighborhoods and loss of affordable housing. • Potential destruction/redevelopment of historic properties or incompatibility with surrounding uses to historic districts/properties from development/redevelopment activities. • Increased traffic and demands on infrastructure from associated development around transit station areas. • Public opposition to increased density and new development patterns near neighborhoods. • Increased demand for public services (i.e. emergency and police).

Based on the development potential analyzed:

- The corridor would see slightly lower population growth than the metropolitan area; however employment growth would be significantly higher in the corridor than the metropolitan area.
- The population growth for the total of all station areas (98 percent) is substantially higher than for the projected corridor growth (47 percent) and for the metropolitan area (57 percent).
- The highest growth in population and employment would occur in the University City Core (McCullough Drive to UNC Charlotte) and the High Intensity Urban Core (at East 9th Street).
- The least growth in population and employment would occur in the Suburban Communities (Sugar Creek Road to Tom Hunter Road) area.
- The highest population growth is projected to occur around McCullough Station, and the highest employment growth is projected to occur in the areas surrounding the terminus of the Preferred Alternative.

Economic and market conditions and project timing could affect station area redevelopment and TOD potential. Additionally, the density of existing development; amount of property available for development/redevelopment; achieved rents or unit prices in the area; density of new development occurring in the station area; also could affect redevelopment and TOD potential. Based on information obtained for the analysis, the following project-specific outcomes are reasonably foreseeable:

- Redevelopment and infill development (i.e. high density residential development) is already apparent in the High Intensity Urban Core (East 9th Street).
- Trend for industrial redevelopment in the Industrial Communities areas such as Parkwood Avenue to East 25th Street.
- New development, mostly employment-generating, would be contained in the New Suburban Communities/Greenfields area.

Overall, 9th Street, McCullough, University City Blvd./NC-49, and the UNC Charlotte Stations have the strongest development/redevelopment opportunities, with the 9th Street Station ranked highest in terms of development potential. The 25th Street, Parkwood, and 36th Street Stations are also areas with moderate infill development/redevelopment opportunities. Old Concord Road and Tom Hunter Stations have the most limited development opportunities, particularly without significant public incentives.

19.5 Potential Cumulative Effects

A cumulative effect includes the total effect on a natural resource, ecosystem, or human community due to past, present and future activities or actions of federal, non-federal, public, and private entities. Projects can include other transportation projects, private or public development projects including residential, commercial or industrial development, public policy changes, and changes to environmental conditions including point and non-point discharges into surface waters. A cumulative impact assessment is resource specific, although not all resources directly impacted by a project will result in cumulative effects.

19.5.1 Past Activities

Traditional development patterns have generally followed a sprawling land use pattern. Low-density residential uses have developed in isolation from employment centers and shopping. Office parks, shopping centers, apartments and single-family subdivisions gradually creep further and further from Center City Charlotte into the outer areas of the corridor. This pattern of land use has resulted in the following cumulative effects:

- Loss of open space;
- Degradation of water and air quality;
- Decreased mobility due to declining levels of service of roadways (i.e. traffic congestion);
- Increased commute times due to traffic congestion;
- Increases in auto dependency and fuel consumption;
- Loss of sense of place and community due to isolation of land uses;
- Isolation (i.e. separation) of employees from activity centers, homes, daycare and schools;
- Decline in economic activity in Center City Charlotte and other employment centers;
- Reduced economic opportunity in existing buildings, facilities, and services; and
- Overall decline in quality of life.

19.5.2 Present Activities

The region has implemented land use policies and plans to change past trends and focus future development into growth corridors and activity centers. Present activities include both private and public projects within the corridor. The private projects include new mixed-use developments, single family and multi-family residential development and a variety of other commercial and office development.

Specifically, Center City Charlotte has experienced recent development activity, including residential development. Additionally, development has recently occurred within the NoDa area. This development has been primarily positive due to the proximity to the proposed transit corridor, the consistency with local land use policies and the mixed nature of the development. UNC Charlotte also has significant construction underway to accommodate enrollment growth.

There are also a variety of public projects underway, including roadway improvements, water and sewer line installations and streetscape improvements. The most significant current project in the corridor is the City of Charlotte's project at North Tryon Street/US-29 and University City Blvd./NC-49, to convert the "weave" configuration into two at-grade, signalized intersections. The project will improve safety for vehicles, pedestrians and bicyclists in the area.

19.5.3 Future Activities

There are numerous planned private projects and publicly-funded capital improvements, related to or separate from the proposed LYNX BLE. Chapter 3.0: Transportation, describes local and state planned or programmed roadway improvements. In addition to these improvements, several large transportation projects that would affect overall travel and freight mobility in the region are in the planning stages. These projects are currently being proposed by Mecklenburg-Union Metropolitan Planning Organization (MUMPO), Charlotte Area Transit System (CATS), North Carolina Department of Transportation (NCDOT) and the Norfolk Southern Corporation (NS).

CATS Corridor System Plan Projects

- *2030 Transit Corridor System Plan*: On November 15, 2006 the Metropolitan Transit Commission (MTC) adopted the *2030 Transit Corridor System Plan* which plans for 25 miles of commuter rail, 21 miles of light rail (including 9.6 miles of the existing Blue Line), 16 miles of streetcar, 14 miles of bus rapid transit and an expanded network of buses and other transit facilities. The proposed LYNX BLE is included in the plan.
- LYNX Blue Line Light Rail (South Corridor): The LYNX BLE creates projected 2035 ridership loads that require either 1) the operation of ten-minute headways with 3 car trains or 2) six-minute headways with 2 car trains. Both scenarios require retrofit improvements to the existing Blue Line light rail (*South Corridor Improvements*, 2009).

Other Transportation Projects

- Sugar Creek Grade Separation Project: This project is included in the 2009-2015 TIP. The project will grade separate the rail crossing by depressing or elevating Sugar Creek Road under or over the freight tracks. CATS is coordinating with NCDOT Rail Division and North Carolina Railroad (NCRR) so that the light rail crossing is accommodated by this project. This project allows the Sugar Creek Station to be at-grade with surrounding land use.
- Mallard Creek Replacement Bridge: This project is listed in the *NCDOT 2012-2018 Draft TIP*. This project calls for the replacement of the North Tryon Street/US-29 Bridges over Mallard Creek with new structures on the existing alignment. NCDOT has recently held citizens informational workshop for the project.
- Charlotte Rail Improvement and Safety Project (CRISP): Several rail companies and government agencies are working to improve the overall railway system in the Charlotte region. These entities include: NCDOT, CATS, the City of Charlotte, CSX Transportation (CSX), NS, and the NCRR. The goal of the CRISP is to create or maintain accommodations for potential higher rail speeds along the entire rail corridor (see Figure 19-1). The proposed Light Rail Alternative preserves the future CRISP project through a shift of the existing freight tracks to the west at 36th Street. This shift accommodates the proposed CRISP project and allows adequate separation between the freight and light rail tracks, while preserving the historic buildings along the east side of the corridor.
- High Speed Rail: North Carolina and Virginia have formed a bi-state commission to review and encourage the development of a high speed (110 mph) passenger rail service from Washington, D.C. to Charlotte. Plans call for an increase in passenger rail service over a 20-year period between Charlotte, Raleigh, Richmond, and Washington D.C., which would result in significant reductions to travel time through track upgrades and expansions. The timing of the high speed rail is unknown at this time.
- Completion of the I-485 Loop: I-485 is a partially-completed beltway around the Charlotte region. The incomplete portion is located in northeast Charlotte, Mecklenburg County, to the northwest of the terminus of the Northeast Corridor, and will consist of an eight-lane freeway from NC 115 (Old Statesville Road) to west of the existing portion of I-485. NCDOT plans to start right-of-way acquisition in 2010 and other funding sources are being considered to allow construction of the project by 2013.
- I-85 Widening: This TIP project will widen approximately 13 miles of I-85 from US-29/NC-49 in Mecklenburg County to NC 73 in Cabarrus County. This project could benefit travel along North Tryon Street/US-29 by diverting inter-county traffic from North Tryon Street/US-29 to I-85, thereby relieving some of the congestion at intersections.

Other Local Projects

Development activity in the Northeast Corridor is increasing as the corridor provides a vital link between two major activity centers in the area (Center City Charlotte and University City). Center City Charlotte has seen a significant amount of development in the last decade consisting primarily of office, retail and residential uses. University City has likewise seen a considerable amount of development activity in all sectors, including office, retail, commercial and residential (single-family and multi-family) uses.

- Northeast Corridor Infrastructure Program (NECI): The City of Charlotte has initiated this program of infrastructure improvements, which are intended to support and encourage future development in the Northeast Corridor. The program will include intersection enhancements, improved connectivity, streetscapes, sidewalks and bicycle routes. Implementation of these improvements will enhance access to neighborhoods and businesses and promote transit-oriented development in station areas. The program will be similar to the South Corridor Infrastructure Program (SCIP) implemented in parallel with the South Corridor Light Rail Project.
- Charlotte Research Institute (CRI): The Charlotte Research Institute campus covers 102 acres of land on UNC Charlotte's grounds and currently contains eight buildings. Construction is underway for a ninth building for Bioinformatics and construction will soon begin on three additional buildings for engineering research and education.
- UNC Charlotte Master Plan – To accommodate increased student enrollment and the expanded educational mission of UNC Charlotte, a campus master plan has been developed that outlines significant expansion needed to accommodate future growth. Expanded academic, administrative and student support space will result in the addition of nearly two million square feet of facilities in the campus core. An additional 275,000 square feet of development is expected for student fitness, health education and recreational support. A conference center and hotel and a 40,000 square foot visitor's center are also included.
- Rezoning Requests: The Planning Department has received numerous requests for rezonings in the corridor since 2006. These approved rezonings are illustrated in Figures 19-2a and 19-2b. There were 64 approved rezoning cases in the project corridor since 2006. Eleven of those cases consisted of requests to rezone industrial properties to high density residential or mixed-use zoning classifications. Ten cases consisted of requests to increase residential zoning to a higher density or mixed use. The number of requests for rezonings in the corridor demonstrates that the corridor has and continues to attract development/redevelopment potential and interest. Furthermore, these incremental projects demonstrate the continuing transition of the corridor, with a major regional activity center and a vital regional connection to other activity centers and corridors.

19.5.4 Cumulative Effects

A cumulative impact assessment may be thought of as a comparison of the past, present and reasonable foreseeable future condition of a specific resource and the effects that multiple actions have on the resources, ecosystems and human communities of concern. In determining potential cumulative effects, the past, present and future activities identified in Sections 19.5.1 – 19.5.3, were reviewed in conjunction with the potential project effects on notable features shown in Table ES-1.

Cumulative Effects on Notable Environmental Features

The direct and indirect effects of the proposed LYNX BLE are summarized in Table ES-1. It is reasonably foreseeable that the proposed project, combined with non-project activities, could cumulatively result in minor negative impacts to notable environmental features. However, these effects would likely occur with or without the proposed project.

- Development and infrastructure improvements with the potential to cumulatively affect water quality through erosion and stream sedimentation. Increasing non-point source pollution associated with increasing impervious surfaces and land disturbing activities.
- Cumulative water quality impacts are likely to be an issue in the northern portion of the corridor where existing development is sparse, but includes vacant land that would continue to be attractive for growth due to the I-485 completion.

- Habitat loss resulting from conversion of agricultural or undeveloped land to urban and suburban development. Development is expected to continue in the corridor, resulting in habitat loss and conversion of forest to urban/suburban uses.

Cumulative Effects of Multiple Actions

There are a number of projects planned that cumulatively would improve the mobility of people and goods along and through the Northeast Corridor. Combined, these actions are not likely to result in significant additional direct effects beyond those identified individually by each project. Should the construction schedules of the projects all occur within the same time period, the temporary effects from those activities could negatively affect the surrounding communities. The proposed LYNX BLE is likely to be constructed close in time and place with the NCDOT Sugar Creek Grade Separation Project and the NCDOT Mallard Creek Replacement Bridge Project. The projects would either be constructed before or in conjunction with the construction of the proposed LYNX BLE.

Cumulative CATS Actions

As previously discussed, CATS has programmed major transit projects throughout the region beyond the current action described in this Final EIS. The adopted *2030 Transit Corridor System Plan* consists of multiple transit improvements in five corridors, a series of improvements in Center City Charlotte, and bus service and facility improvements throughout the rest of the region.

The implementation of transit projects in multiple corridors as part of the development of an overall transit system plan would improve mobility and accessibility throughout the region. The development of the *2030 Transit Corridor System Plan* provides benefits to the traveling public through new services; expansion of existing services; and improved connectivity and accessibility. It also is expected to reduce dependency on auto use and reduce the associated auto-generated roadway congestion, air pollution emissions and energy consumption.

It is anticipated that the implementation of the *2030 Transit Corridor System Plan* would provide benefits on several fronts:

- Transit-dependent populations would be better served.
- More transportation choices in terms of mode, frequency, and destination.
- Linkage of low income urban communities with suburban employment centers.
- Enhancement of property valuations along the transit corridor, particularly adjacent to station areas.
- Reduction in overall emissions traditionally tied to vehicle miles of travel growth.

As noted in Section 19.5.3, the LYNX BLE creates projected ridership loads that require either the operation of ten-minute headways with 3-car trains or six-minute headways with 2-car trains. The proposed operating plan for the LYNX BLE is to operate 2-car trains every 7.5 minutes initially and 3-car trains every 10 minutes in the future. Operating 3-car train sets at ten minute headways would necessitate extending the length of the existing 2-car platforms at each of the 15 LYNX Blue Line stations in the South Corridor and adding four additional substations to meet the traction power requirements. The environmental effects for longer station platforms and additional substations were assessed in the South Corridor Light Rail Project's Draft and Final Environmental Impact Statements. Potential impacts include noise and vibration impacts related to light rail operations, as well as impacts to natural resources related to platform and substation improvements.

Cumulative effects to notable resources and the affected environment are reasonably foreseeable, as both projects would have their own direct and indirect effects on natural resources, traffic patterns, and the surrounding human environment (i.e. noise, visual and social effects). However, direct and indirect negative impacts to notable resources and the affected environment are not in the same study areas/corridors. Furthermore, it is anticipated that overall cumulative impacts would be beneficial from a corridor system perspective. The projects, when combined, would provide a benefit to the traveling public with new and expanded services; improved connectivity and accessibility; reduced dependency on auto use; and reduced roadway congestion and associated air pollution emissions and energy consumption.

A re-evaluation of the South Corridor Light Rail Project Final EIS will be completed to assess the changes to the affected environment and the potential impacts associated with the future station retrofit. Appropriate technical studies will be performed during the re-evaluation.

19.6 Commitment of Resources

19.6.1 Relationship of Local Short-Term Uses Versus Long-Term Productivity

The most disruptive short-term impact associated with the proposed project would occur during land acquisition and project construction (see Chapter 18.0: Construction Impacts). Any short-term uses of human, physical, socio-economic, cultural and natural resources would contribute to the long-term benefits of improved access to employment centers, a transportation alternative that can easily respond to increased demand, improvements in both transit accessibility and availability in the Northeast Corridor, and improved air quality in the region. The long-term benefits of implementing transit supportive land use policies would also be realized.

The proposed project would provide a substantial improvement to an established, overburdened transportation corridor. In addition, the proposed project would meet the City of Charlotte's and Mecklenburg County's desires to implement long-range plans that integrate land use and transportation policies.

19.6.2 Irreversible and Irretrievable Commitment of Resources

Construction of the proposed project would result in commitments of natural, physical, man-made and financial resources. While some of these resources would be recovered within a relatively short period of time, other resources would be irreversibly and irretrievably committed to the project. Fossil fuels, labor, and construction materials such as steel, cement, aggregate, and bituminous material would be expended during construction. These materials are generally not retrievable; however, the use of these materials would not have an adverse effect upon the continued availability of these resources. Construction would also require an expenditure of federal, state and local funds, which are not retrievable.

Employment during the construction period for the proposed LYNX BLE would include 7,628 jobs, including: direct employment such as construction workers; indirect employment by businesses that provide goods and services to construction firms; and induced jobs created as a result of additional purchases made by individuals/households due to increased income from direct or indirect employment. Operation and maintenance of the proposed LYNX BLE would add approximately 109 new jobs for rail by 2035.

The commitment of these resources is based on the recognition that residents in the area, region and state will benefit from the improved quality of the transportation system. These benefits will consist of improved accessibility and mobility, savings in time and greater availability of quality services that are anticipated to outweigh the commitment of these resources.

19.7 Mitigation

Sections 19.4 and 19.5 identified the secondary and cumulative effects of the proposed LYNX BLE. Where effects have been identified, mitigation must be provided. For cumulative effects, the mitigation must be appropriate to the level of contribution to the impact.

19.7.1 Secondary Effects

Secondary negative development effects resulting from the proposed LYNX BLE would be minimized through the station area planning process, which would include public outreach to property-owners within a ½-mile of station locations, detailed in Chapter 4.0: Land Use, Public Policy and Zoning. Specific mitigation would be identified during that process through specific zoning recommendations to minimize effects on notable features and area neighborhoods and discourage development and redevelopment within adjacent neighborhoods located outside of the station area.

Table 19-2 includes mitigation measures recommended for each of the potential negative secondary effects identified for the proposed LYNX BLE.

Table 19-2
Mitigation Measures for Secondary Effects

Negative Secondary Effects	Project Mitigation	Available Mitigation
Redevelopment within station areas could result in gentrification of neighborhoods and loss of affordable housing	Affordable housing strategies and preservation of existing neighborhoods to be developed with station area plans	City of Charlotte Housing Policy requires/encourages affordable units in multi-family residential development, and the Charlotte-Mecklenburg General Development Policies call for preserving and protecting existing stable neighborhoods as part of the station areas principles
Destruction or redevelopment of historic properties from development / redevelopment activities	Notification to the Landmarks Commission of National Register Eligible properties that could be designated as Local Landmarks to afford them protection	Once local landmark status is provided the following techniques can be used by the Landmarks Commission: demolition delays; certificate of appropriateness; rehabilitation code
Increased traffic and demands on infrastructure from associated development in station areas	Convenient access to light rail and bus services	A separate project program known as the Northeast Corridor Infrastructure (NECI) Program is currently underway to identify needed infrastructure improvements to support existing and future development
Public opposition to dense development patterns near neighborhoods	Public outreach/education regarding the benefits of transit supportive development; public involvement in station area plan development	Station Area Plans that incorporate neighborhood preservation principles
Water resources and water quality	Coordination with City of Charlotte's Stormwater Services to minimize impacts to water resources and water quality during the station area planning process. Completion of a detailed qualitative Indirect and Cumulative Impacts Analysis for water resources and water quality during the Section 404/401 permitting phase of the proposed project.	NPDES permitting, enforcement of SWIM Buffers, continued implementation of policies to discourage urban sprawl and focus development into the centers and corridors

19.7.2 Cumulative Effects

Mitigation measures specific to notable environmental resources are identified in their respective chapters within this Final EIS. In order to minimize the potential cumulative construction effects of the NCDOT Rail

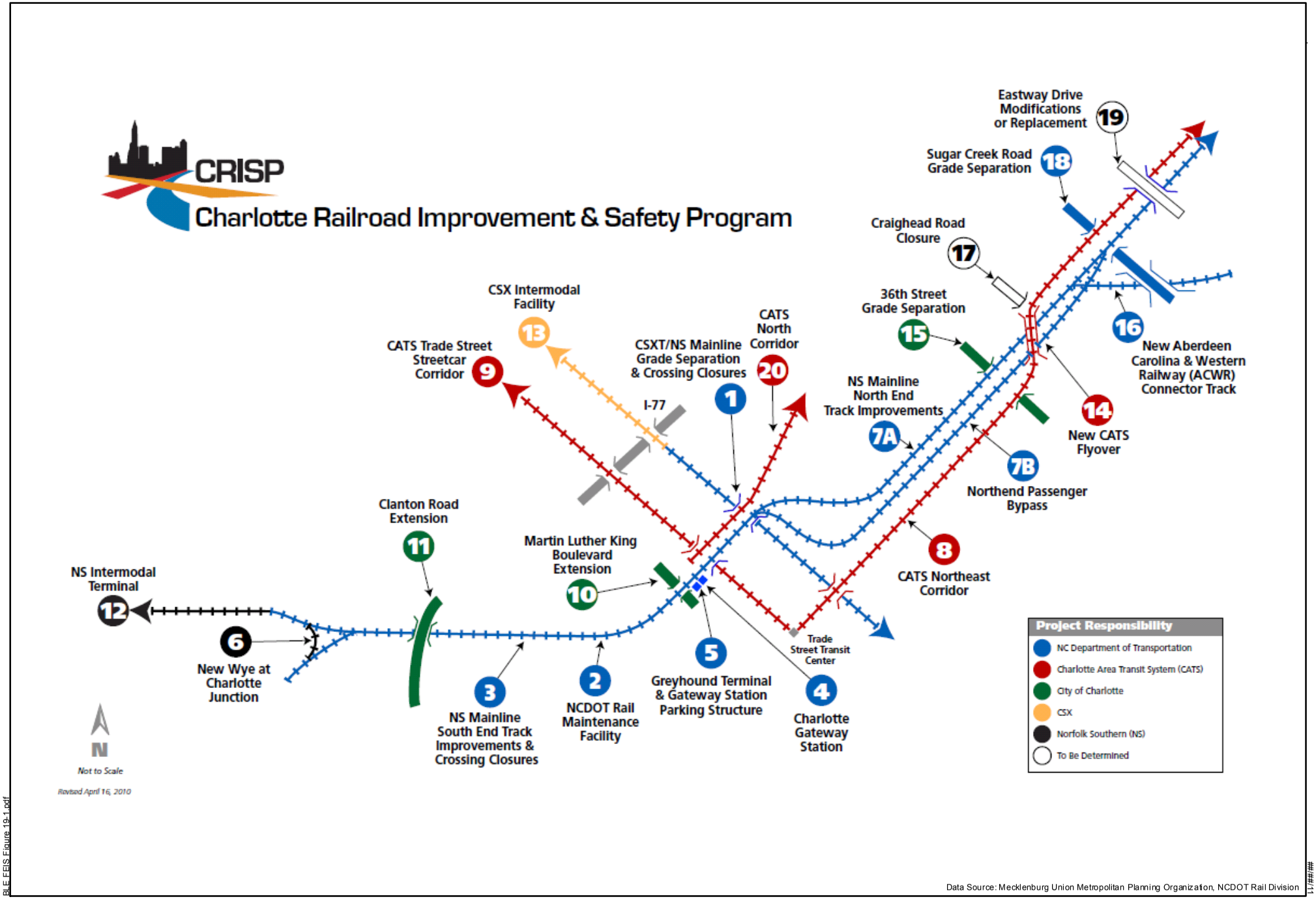
Division's Sugar Creek Grade Separation Project, CATS will continue to coordinate with NCDOT Rail Division regarding the project schedules and minimize neighborhood effects to the extent practicable. CATS will also continue to work closely with NCDOT to coordinate the timing and schedule of the Mallard Creek Replacement Bridge project. Should the construction schedules of the projects all occur within the same time period, CATS will coordinate any necessary closures with NCDOT to reduce the temporary effects to the surrounding communities.

CATS will also coordinate the design of the LYNX BLE project with NCDOT Rail and NCRR related to accommodations for the CRISP program and High-Speed Rail plans. Construction activities occurring in the same area for these projects may be consolidated and/or closely coordinated to minimize impacts on neighborhoods and businesses in the area.

Regarding the LYNX Blue Line Light Rail (South Corridor), a re-evaluation of the South Corridor Final EIS will be undertaken prior to implementation to identify specific measures to mitigate the potential impacts associated with the future improvements to the existing South Corridor LYNX Blue Line. Appropriate technical studies will be performed during the re-evaluation.

LYNX Blue Line Extension
RAPID TRANSIT SERVICES

Figure 19-1
Proposed Charlotte Region Railroad Infrastructure Improvements



Data Source: Mecklenburg Union Metropolitan Planning Organization, NCDOT Rail Division

BLE FEIS Figure 19-1.pdf

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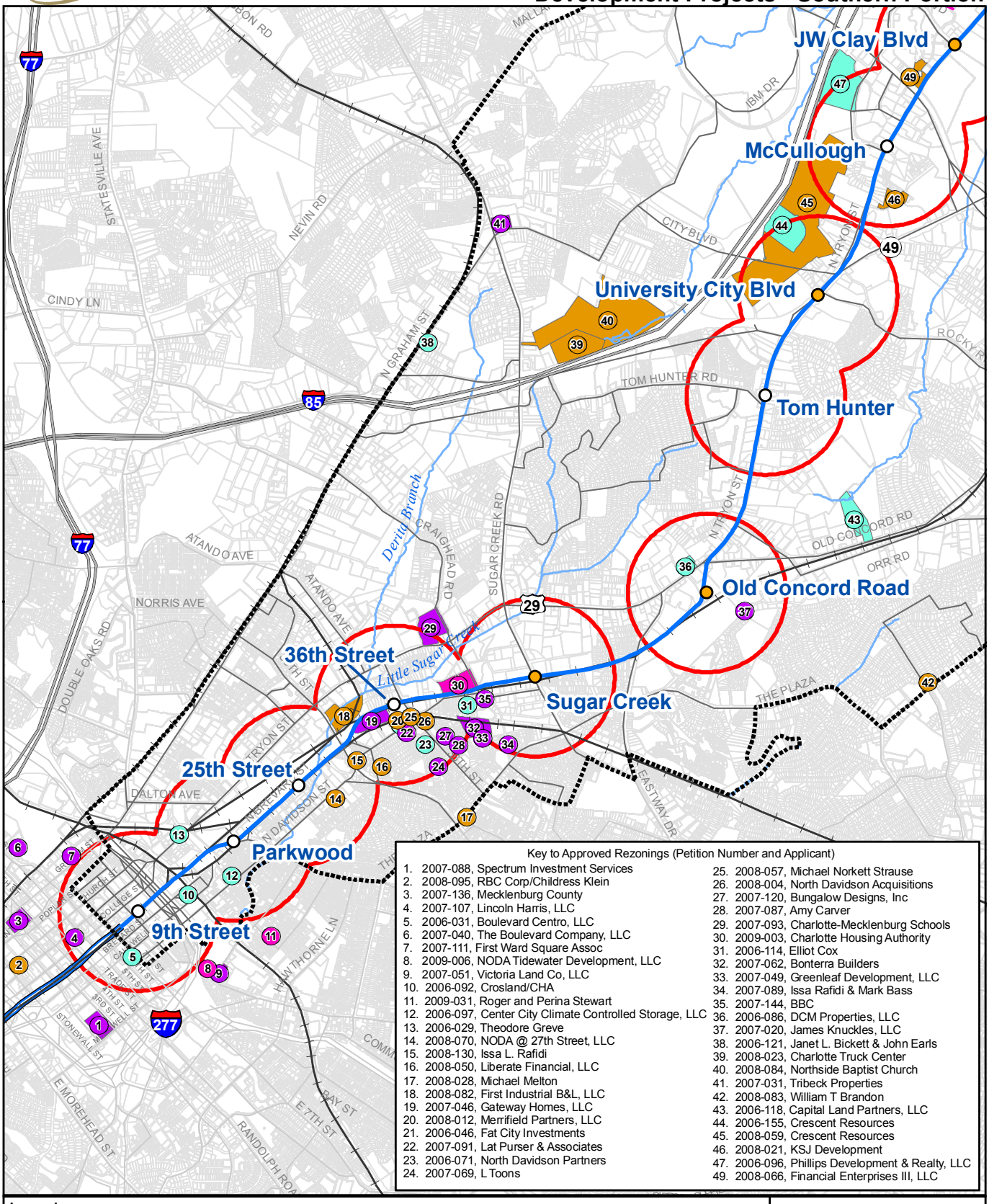
LYNX Blue Line Extension

Figure 19-2a

Development Projects - Southern Portion



Key to Approved Rezonings (Petition Number and Applicant)

1. 2007-088, Spectrum Investment Services
2. 2008-095, RBC Corp/Childress Klein
3. 2007-136, Mecklenburg County
4. 2007-107, Lincoln Harris, LLC
5. 2006-031, Boulevard Centro, LLC
6. 2007-040, The Boulevard Company, LLC
7. 2007-111, First Ward Square Assoc
8. 2009-006, NODA Tidewater Development, LLC
9. 2007-051, Victoria Land Co, LLC
10. 2006-092, Crosland/CHA
11. 2009-031, Roger and Perina Stewart
12. 2006-097, Center City Climate Controlled Storage, LLC
13. 2006-029, Theodore Greve
14. 2008-070, NODA @ 27th Street, LLC
15. 2008-130, Issa L. Rafidi
16. 2008-050, Liberate Financial, LLC
17. 2008-028, Michael Melton
18. 2008-082, First Industrial B&L, LLC
19. 2007-046, Gateway Homes, LLC
20. 2008-012, Merrifield Partners, LLC
21. 2006-046, Fat City Investments
22. 2007-091, Lat Purser & Associates
23. 2006-071, North Davidson Partners
24. 2007-069, L Toons
25. 2008-057, Michael Norkett Strause
26. 2008-004, North Davidson Acquisitions
27. 2007-120, Bungalow Designs, Inc
28. 2007-087, Amy Carver
29. 2007-093, Charlotte-Mecklenburg Schools
30. 2009-003, Charlotte Housing Authority
31. 2006-114, Elliot Cox
32. 2007-062, Bonterra Builders
33. 2007-049, Greenleaf Development, LLC
34. 2007-089, Issa Rafidi & Mark Bass
35. 2007-144, BBC
36. 2006-086, DCM Properties, LLC
37. 2007-020, James Knuckles, LLC
38. 2006-121, Janet L. Bickett & John Earls
39. 2008-023, Charlotte Truck Center
40. 2008-084, Northside Baptist Church
41. 2007-031, Tribeck Properties
42. 2008-083, William T Brandon
43. 2006-118, Capital Land Partners, LLC
44. 2006-155, Crescent Resources
45. 2008-059, Crescent Resources
46. 2008-021, KSJ Development
47. 2006-096, Phillips Development & Realty, LLC
49. 2008-066, Financial Enterprises III, LLC

Legend

- Northeast Corridor Limits
- Proposed Light Rail Alignment
- LYNX Blue Line
- Proposed Stations
- Proposed Stations with Park-and-Ride
- Streams
- Railroads
- Highway
- Highway (Future Planned)
- Major Roads
- Project Impact Study Areas

Approved Rezonings

- # 2006 Approved Rezonings
- # 2007 Approved Rezonings
- # 2008 Approved Rezonings
- # 2009 Approved Rezonings

N

0.5 0.25 0 0.5

Miles

Data Source:
CATS, City of Charlotte GIS, and Mecklenburg County GIS

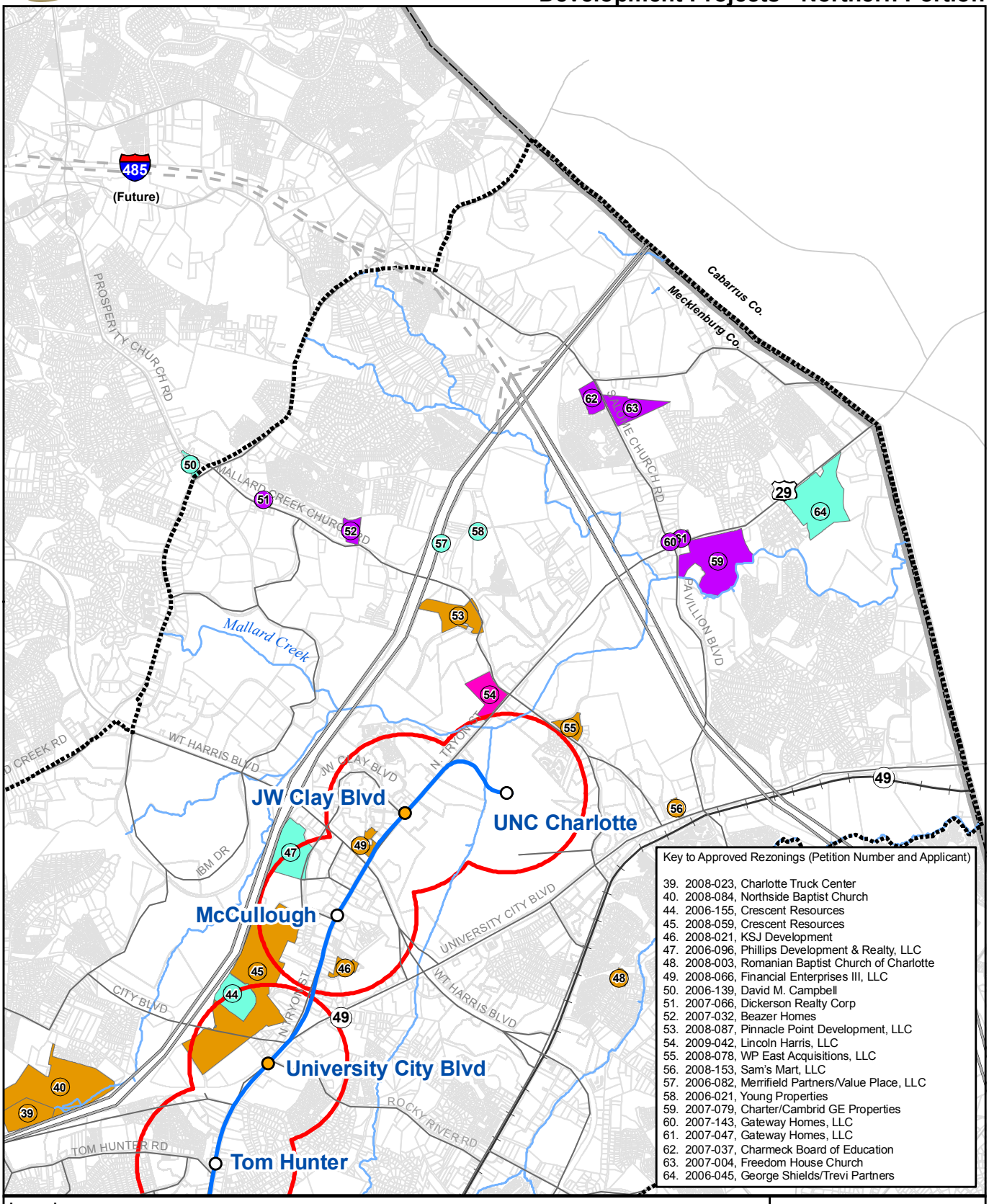
07/11/11

BLE FEIS Figure 19-2a.pdf

LYNX Blue Line Extension

Figure 19-2b

Development Projects - Northern Portion



Key to Approved Rezonings (Petition Number and Applicant)

39. 2008-023, Charlotte Truck Center
40. 2008-084, Northside Baptist Church
44. 2006-155, Crescent Resources
45. 2008-059, Crescent Resources
46. 2008-021, KSJ Development
47. 2006-096, Phillips Development & Realty, LLC
48. 2008-003, Romanian Baptist Church of Charlotte
49. 2008-066, Financial Enterprises III, LLC
50. 2006-139, David M. Campbell
51. 2007-066, Dickerson Realty Corp
52. 2007-032, Beazer Homes
53. 2008-087, Pinnacle Point Development, LLC
54. 2009-042, Lincoln Harris, LLC
55. 2008-078, WP East Acquisitions, LLC
56. 2008-153, Sam's Mart, LLC
57. 2006-082, Merrifield Partners/Value Place, LLC
58. 2006-021, Young Properties
59. 2007-079, Charter/Cambrid GE Properties
60. 2007-143, Gateway Homes, LLC
61. 2007-047, Gateway Homes, LLC
62. 2007-037, Charmeck Board of Education
63. 2007-004, Freedom House Church
64. 2006-045, George Shields/Trevi Partners

Legend

- Northeast Corridor Limits
- Proposed Light Rail Alignment
- LYNX Blue Line
- Proposed Stations
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Approved Rezonings

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- # 2009 Approved Rezonings

N

0.5 0.25 0 0.5

Miles

Data Source:
CATS, City of Charlotte GIS, and Mecklenburg County GIS

07/11/11

BLE FEIS Figure 19-2b.pdf