

# **Attachment 1**

**Project Study Area Figure**






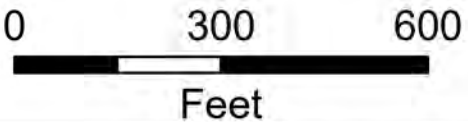
**Project Study Area**

**Charlotte Passenger  
Rail Facility**

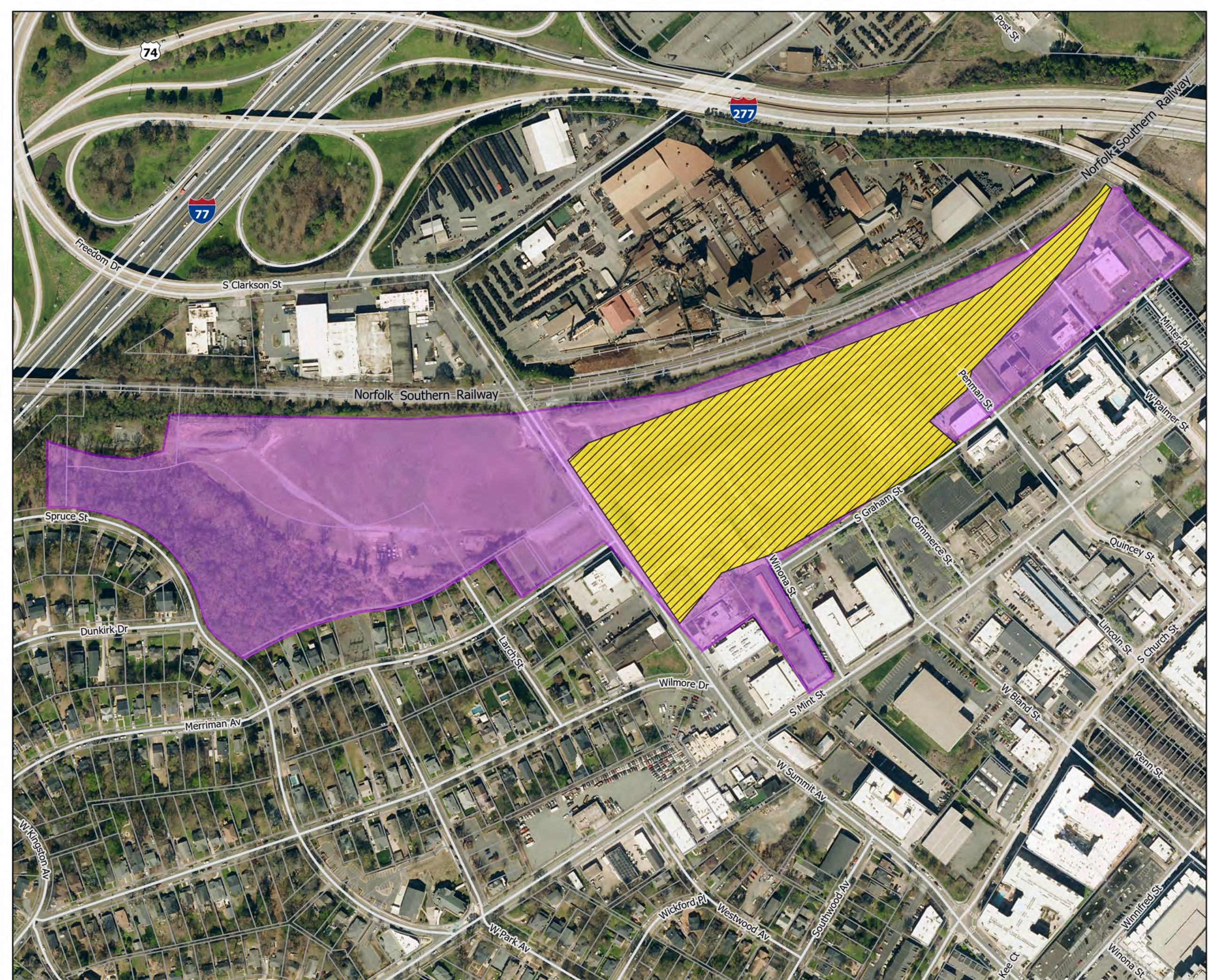
**NCDOT Rail Division**

**Legend**

-  2024 Study Area
-  Limits of Disturbance
-  Parcels



**AECOM**

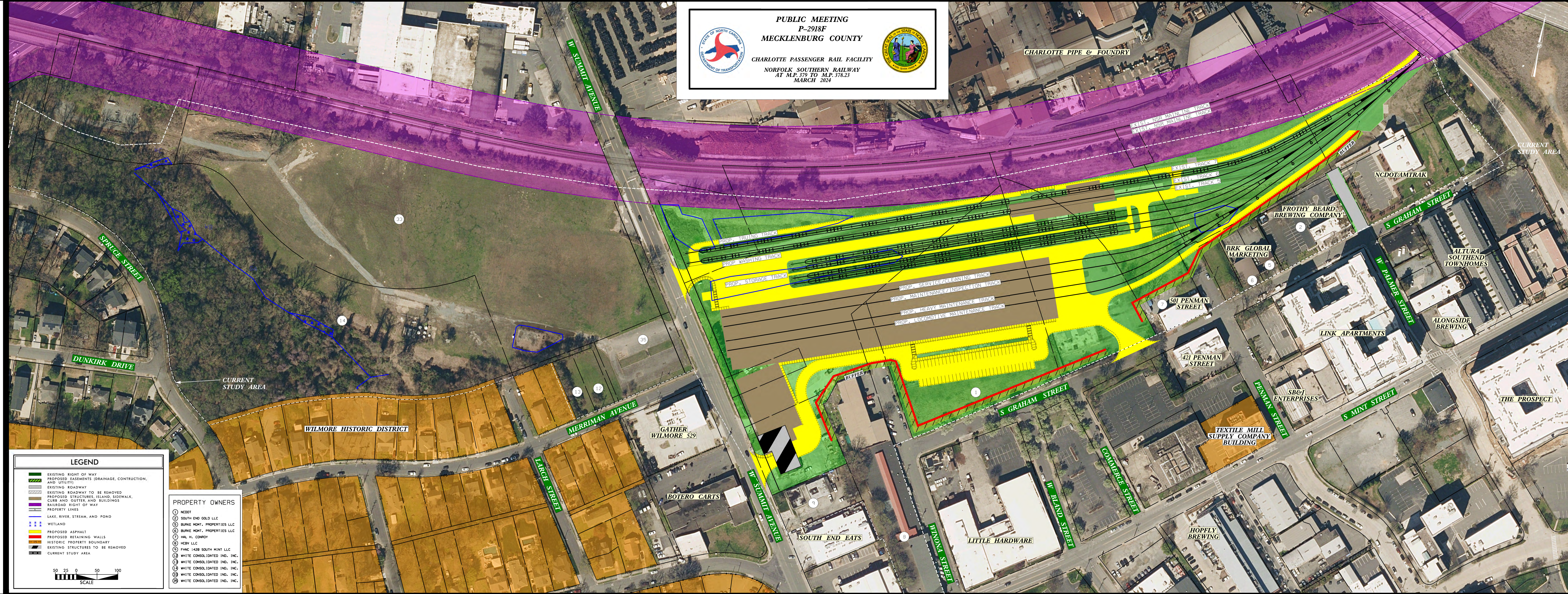




## **Attachment 2**

### **Public Meeting Maps**





PUBLIC MEETING  
P-2918F  
MECKLENBURG COUNTY  
CHARLOTTE PASSENGER RAIL FACILITY  
NORFOLK SOUTHERN RAILWAY  
AT M.P. 379 TO M.P. 378.23  
MARCH 2024

**LEGEND**

- EXISTING RIGHT OF WAY
- PROPOSED EASEMENTS (DRAINAGE, CONSTRUCTION, AND UTILITY)
- EXISTING ROADWAY
- EXISTING ROADWAY TO BE REMOVED
- PROPOSED STRUCTURES, ISLAND, SIDEWALK, CURB AND GUTTER, AND BUILDINGS
- RAILROAD RIGHT OF WAY
- PROPERTY LINES
- LAKE, RIVER, STREAM, AND POND
- WETLAND
- PROPOSED ASPHALT
- PROPOSED RETAINING WALLS
- HISTORIC PROPERTY BOUNDARY
- EXISTING STRUCTURES TO BE REMOVED
- CURRENT STUDY AREA

50 25 0 50 100  
SCALE

- PROPERTY OWNERS**
- 1 NCDOT
  - 2 SOUTH END GOLD LLC
  - 3 BURKE MGMT. PROPERTIES LLC
  - 4 BURKE MGMT. PROPERTIES LLC
  - 5 HAL H. CONROY
  - 6 HEBY LLC
  - 7 PNC
  - 8 PNC
  - 9 PNC
  - 10 PNC
  - 11 PNC
  - 12 PNC
  - 13 PNC
  - 14 PNC
  - 15 PNC
  - 16 PNC
  - 17 PNC
  - 18 PNC
  - 19 PNC
  - 20 PNC

INCOMPLETE PLANS  
DO NOT USE FOR R.F.T. ACQUISITION  
PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION



## **Attachment 3**

**Noise and Vibration Technical Report, AECOM, June 2024**





# Noise and Vibration Technical Report

## Charlotte Passenger Rail Facility



**August 2024**





# Noise and Vibration Technical Report

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## Noise and Vibration Technical Report

### Acronyms and Abbreviations

dba	A-Weighted Decibel
dB	Decibel
CPRF	Charlotte Passenger Rail Facility
DEIS	Draft Environmental Impact Statement
FTA	Federal Transit Administration
Hz	Hertz
L <sub>dn</sub>	24-Hour Average Noise Level
L <sub>eq</sub>	Hourly Equivalent Noise Level
LPA	Locally Preferred Alternative
mph	miles per hour
NC	North Carolina
NS	Norfolk Southern
SEL	Source Exposure Level
STC	Sound Transmission Class
TPSS	Traction Power Substation
US	United States
VdB	Vibration Decibel
VMF	Vehicle Maintenance Facility





## Noise and Vibration Technical Report

### 1 Introduction

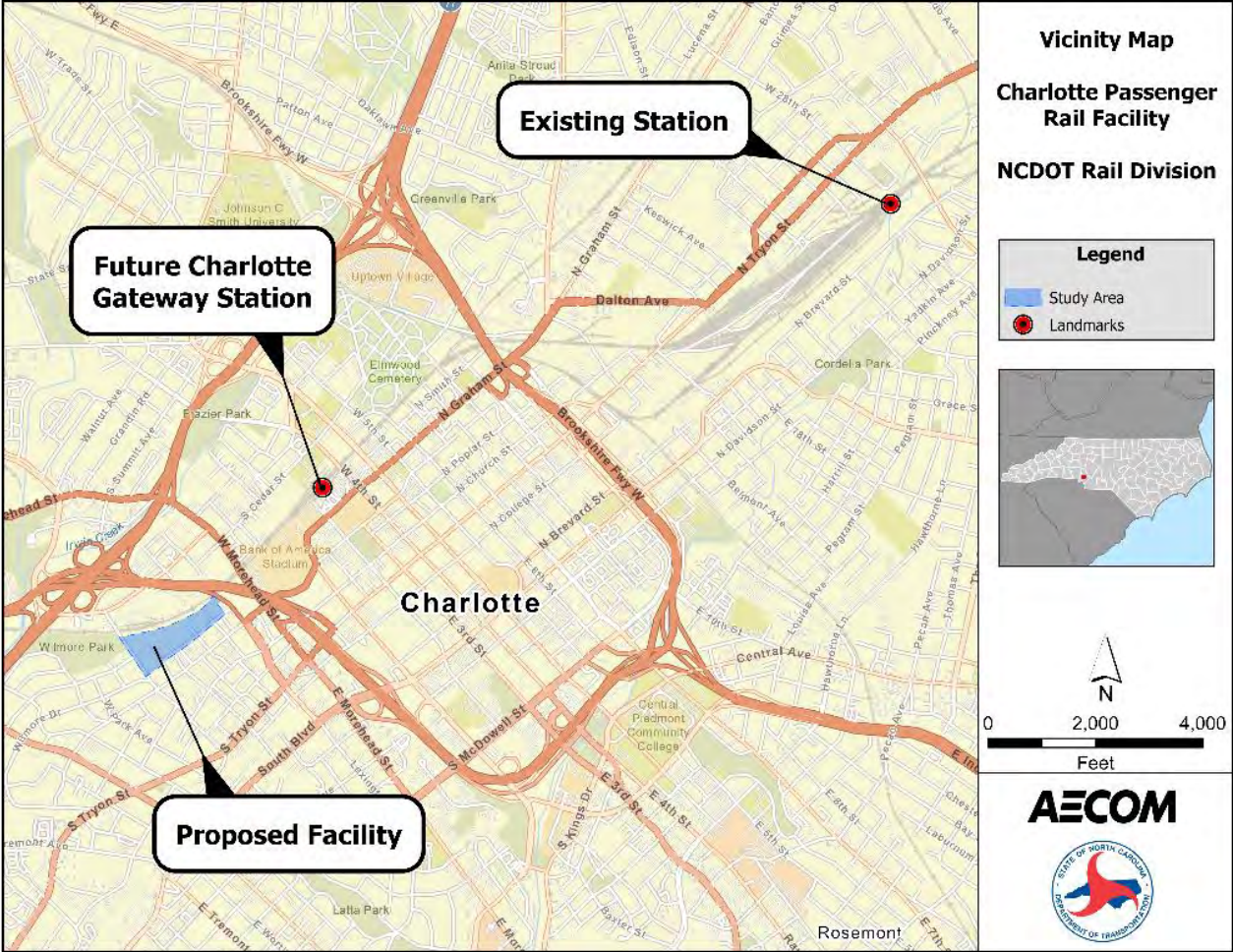
The North Carolina Department of Transportation (NCDOT) State Transportation Improvement Project (STIP) P-2918F Charlotte Passenger Rail Facility (CPRF) will construct a new locomotive and passenger railcar maintenance facility southwest of Uptown Charlotte to replace the current Charlotte maintenance facility located adjacent to the Norfolk Southern (NS) Charlotte Yard northeast of Uptown (Figure 1). Through the Alternatives Analysis process, which included extensive public outreach, a Locally Preferred Alternative (LPA) was selected to address the purpose and need of the Piedmont Improvement Program (Southern High Speed Rail Corridor). The proposed facility will serve future repairs and maintenance for passenger trains along the Southern High Speed Rail Corridor and support the growth of intercity passenger rail and the new Charlotte Gateway Station, in Uptown Charlotte.





Noise and Vibration Technical Report

Figure 1: Project Location







## Noise and Vibration Technical Report

### 1.1 Project Location and Description

The new facility will include storage tracks, an enclosed maintenance facility, an onsite fuel tank and fuel pad, an enclosed train wash facility, and a train crew base.

The CPRF will connect directly to the Charlotte Gateway Station passenger platforms allowing for efficient operations between the two facilities. Trains will then connect to the existing Norfolk Southern Mainline tracks via existing connections at Charlotte Gateway Station.

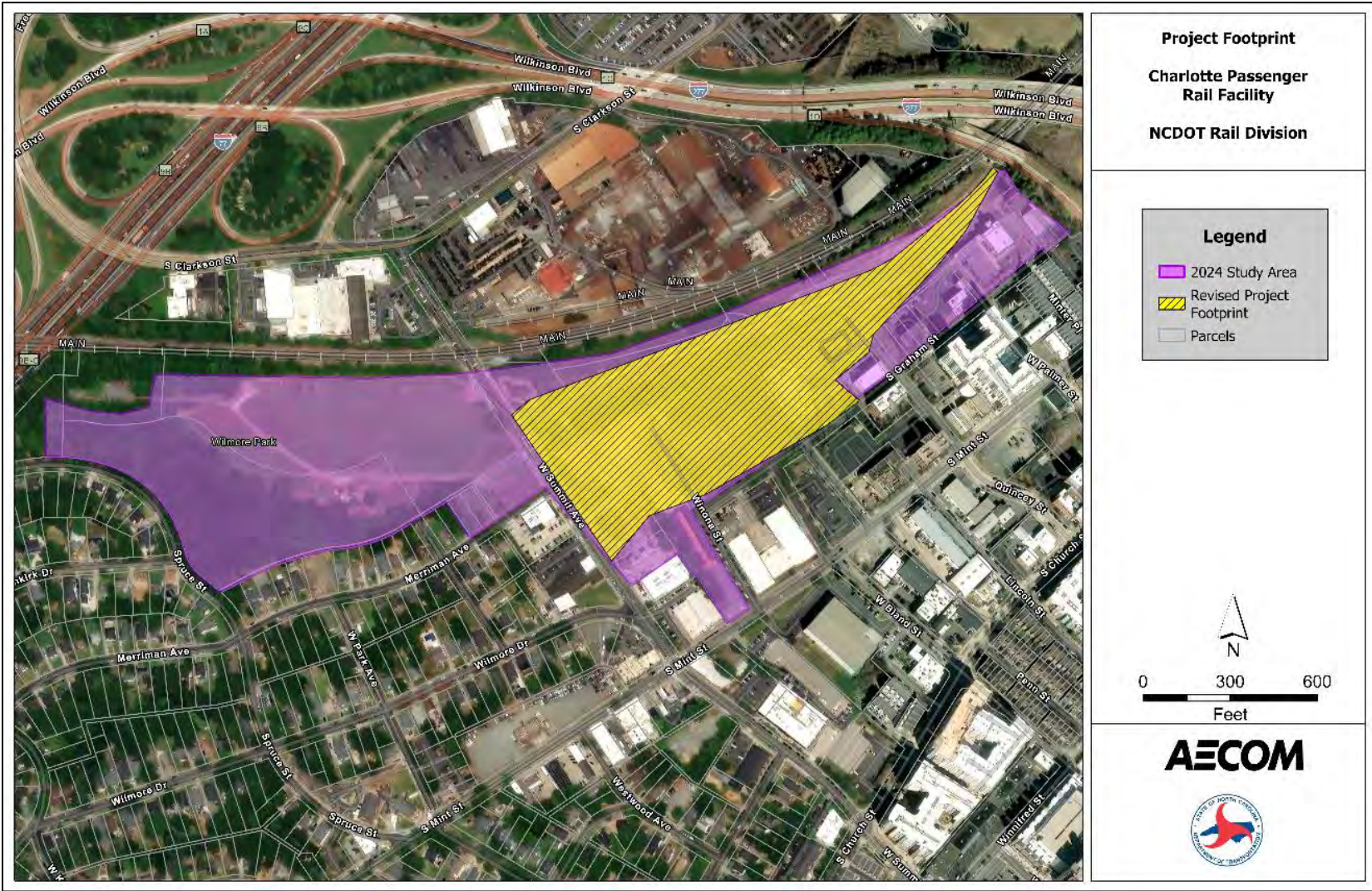
The project study area is bound by the Norfolk Southern railway, West Carson Blvd, South Graham St, and the lot bound by I-77 and West Summit Ave. The Project study area is southwest of Uptown Charlotte near the intersection of Interstate 77 (I-77) and Interstate 277 (I-277). The area can generally be characterized as an industrial area adjacent to an urbanized railroad corridor. Land use in the Project study area consists of industrial, commercial, and vacant lots. The site is currently zoned for industrial uses (City of Charlotte zoning I-1 and I-2). Charlotte Pipe and Foundry occupies a portion of the site for industrial storage purposes. The foundry's main facility is on the north side of the NS right-of-way from the Project location. Ferguson Enterprises (plumbing supply business) also occupies a portion of the site. The project footprint and study area are shown below on Figure 2.





Noise and Vibration Technical Report

Figure 2: Project Footprint







## Noise and Vibration Technical Report

### 1.2 Noise and Vibration Impact Assessment

This Technical report provides a general and detailed assessment of noise and vibration impacts associated with the STIP P-2918F Project. The noise and vibration impact assessments have been developed in accordance with the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment*, FTA Report No. 0123, September 2018 (FTA Guidance Manual). Where the assessment identifies moderate or severe noise and vibration impacts, a discussion of mitigation measures is provided.

## 2 Legal and Regulatory Framework

### 2.1 Federal Transit Administration Guidelines

The Federal Transit Administration's (FTA) Transit Noise and Vibration Impact Assessment, September 2018, (FTA Guidance Manual) guidelines were followed to conduct the noise screening and detailed assessments discussed in this section. The following sections describe noise and the effects of noise on surrounding land uses, as defined in the FTA guidance.

"Noise" is defined as "unwanted sound." Sounds are described as noise if they interfere with an activity or disturb the person hearing them. Sound is measured in a logarithmic unit called a decibel (dB). Since the human ear is more sensitive to middle and high-frequency sounds than it is to low frequency sounds, sound levels are weighted to reflect human perceptions more closely. These "A-weighted" sounds are measured using the decibel unit dBA. Typical sound levels from common noise sources are shown in Figure 3. Noise that is transmitted through the air is referred to as "airborne noise." Likewise, noise that is transmitted through the ground is referred to as "ground-borne noise". Ground-borne noise is discussed in Section 2.0.

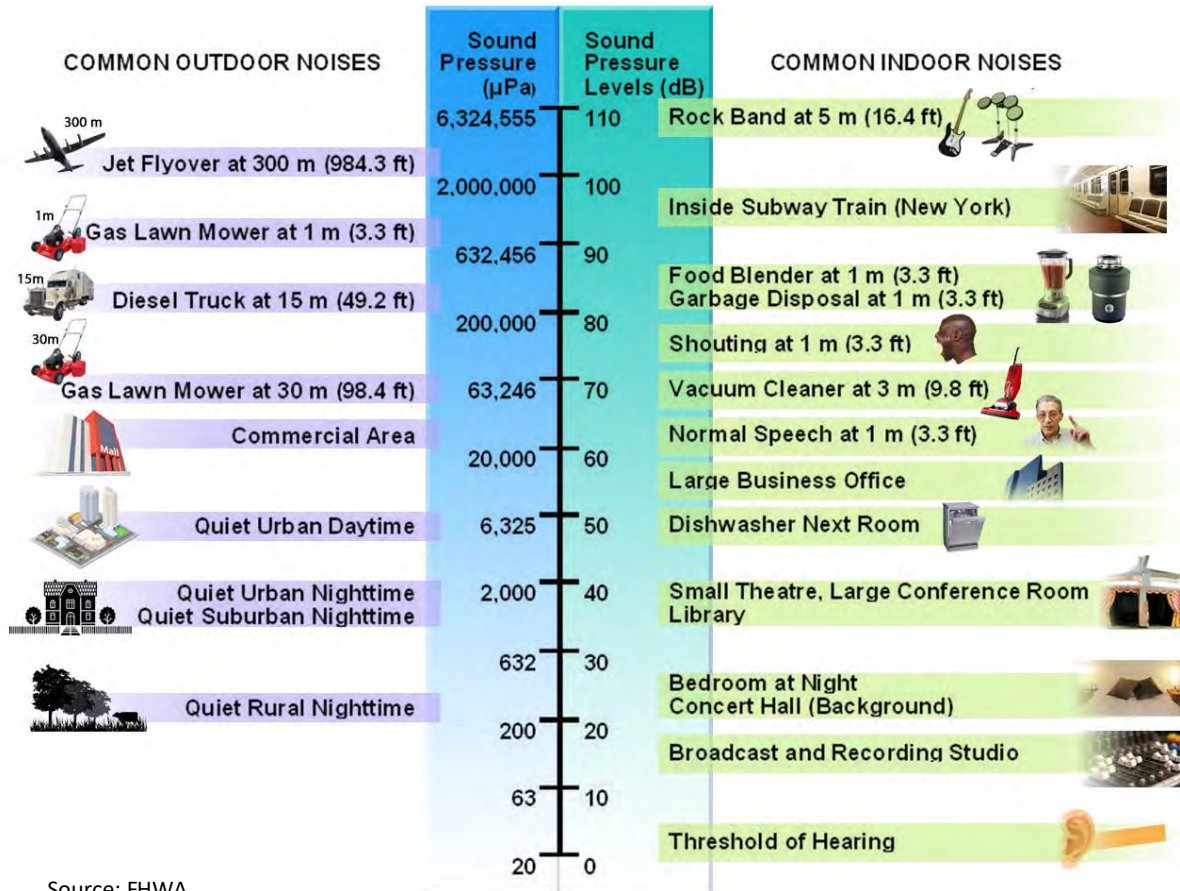
Sound levels fluctuate with time depending on the sources of the sound audible at a specific location. In addition, the degree of annoyance associated with certain sounds can vary by time of day, depending on other ambient sounds affecting the listener and the activities of the listener. Because the time-varying fluctuations in sound levels at a fixed location can be quite complex, they typically are reported using statistical or mathematical descriptors that are a function of sound intensity and time. A commonly used descriptor of noise is the Leq, which represents the equivalent of a steady, unvarying level over a defined period of time containing the same level of sound energy as the time varying noise environment. In areas where sleep activity takes place, the Ldn which measures an average "day-night" sound is the most commonly used measure. The Ldn is a 24-hour Leq average calculated from hourly Leq measurements, with a 10 dBA added to nighttime levels to account for heightened noise-sensitivity at night.





## Noise and Vibration Technical Report

Figure 3: Typical Sound Levels from Common Noise Sources



Source: FHWA

### 2.2 Transit Noise

Transit noise not only includes noise from moving transit vehicles, but also supporting services such as maintenance facilities. The perceptible transit noise generated from the proposed maintenance facility project includes: 1) locomotive and freight rail operations and 2) a yard and shop location. Table 1 identifies some of the most common noises generated from rail operations. The intensity of the noise event varies due to a number of factors. Examples include the distance of the receiver from the tracks or maintenance facility building, presence of intervening terrain or buildings, and specific train related parameters such as vehicle speed, vehicle length, vehicle equipment (i.e. air conditioning systems) and the type and condition of the running surfaces (i.e. rails and wheels). Stationary vehicles generate noise as well. Auxiliary equipment, such as cooling fans, radiator fans, and air-conditioning pumps often continue to run after vehicles have stopped.





## Noise and Vibration Technical Report

**Table 1: Sources of Transit Noise for Passenger Rail**

Transit Component	Source of Noise	Comments
Heavy Rail Vehicle in motion	Wheel rolling on rail	Increases with speed. Depends upon condition of wheels and rails. Can be controlled by regular system maintenance.
	Vehicle propulsion system	Increases somewhat while accelerating and at higher speeds.
	Auxiliary equipment for vehicle and ventilation	Usually not significant source of noise. Can be controlled by vehicle procurement specification.
	Wheel squeal	Can occur on tight curves of less than 1,000 feet radii. Can be controlled by wheel and rail treatments
	Special trackwork	Impact noises occur when wheels encounter discontinuity in tracks such as rail joints, turnouts, or switches used at crossovers.
	Brakes	Used infrequently as warning device for pedestrians and at roadway grade crossings intersections.
	Bells	Used sometimes as warning device at grade crossings
Heavy Rail Vehicle stopped	Auxiliary equipment for vehicle and ventilation	Dominant source for stationary vehicle.
Vehicle Storage & Maintenance Facilities	Auxiliary equipment for vehicle and ventilation	Dominant source for stationary vehicle
Traction power substation	Transformers	Usually not significant source of noise for light rail.

Source: Wilson, Ihrig & Associates, Inc. 1995.

### 2.3 Noise Impact Criteria

FTA's noise impact criteria, shown on Figure 4 and in Table 2, are based on a comparison of the existing noise levels to future project-related noise levels. The criteria are defined by two curves, designating different levels of project noise which result in "no impact", "impact", and "severe impact" conditions. According to the FTA Guidance Manual, mitigation should be considered if the project falls within an "impact" range and should be implemented if the project would result in a severe impact. The basis of noise impact criteria is the percentage of people that would be highly annoyed by measured noise levels in their living environment. As a result, criteria reflect a range of annoyance associated with different human activities that occur in such areas as homes, businesses, and parks.

Criteria are applied to three categories of land use with varying degrees of sensitivity to noise. Generally, in evaluating the potential for a noise impact from a proposed project, the  $L_{eq}$  is established for the peak traffic hour when noise levels are expected to be the highest. Where there is nighttime occupancy of noise sensitive buildings such as residences, hotels and hospitals, the "Day-Night" sound level ( $L_{dn}$ ) is more appropriate for assessing noise impacts than the peak hour  $L_{eq}$ .

The noise criteria and descriptors used in impact analysis depend on whether the land use is designated within Category 1, 2 or 3. The following is a description of the categories of noise-sensitive land uses for which those noise criteria apply:





## Noise and Vibration Technical Report

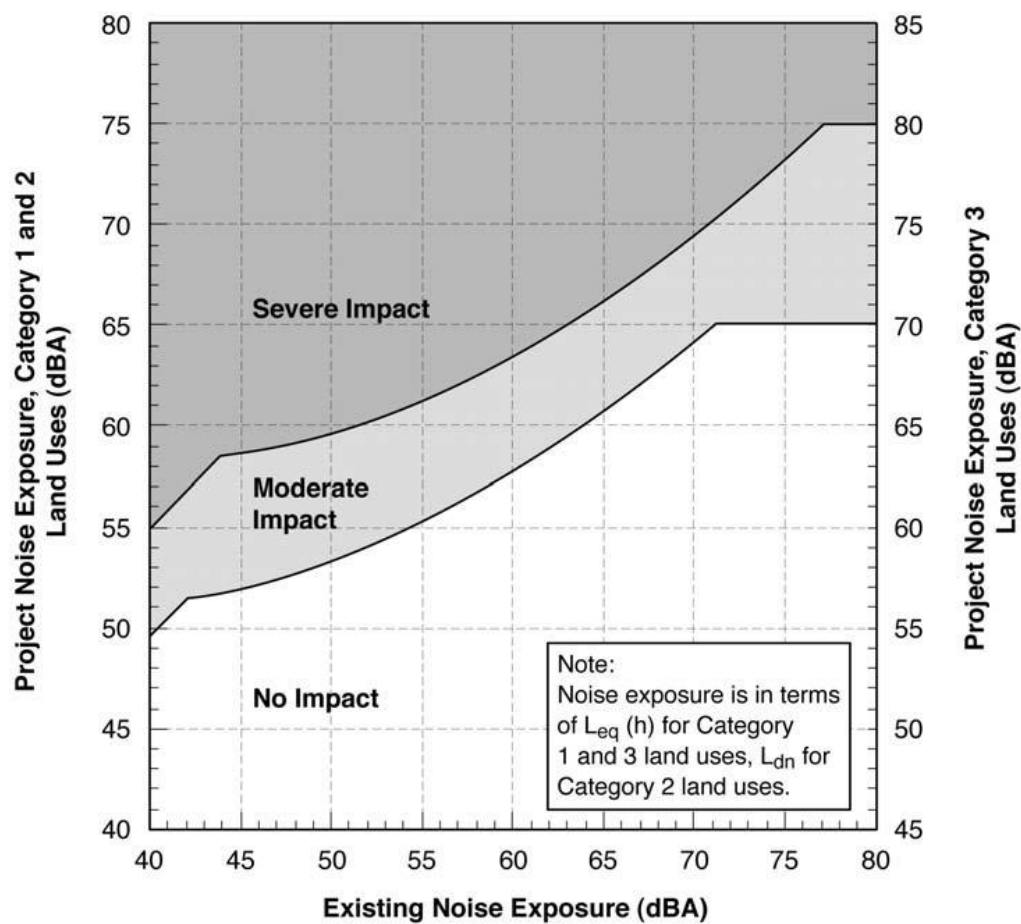
**Category 1:** This category includes buildings and parks where quiet is an essential element in their intended purpose. Land uses include open space set aside for serenity and quiet (i.e., wilderness areas) and areas for outdoor concert pavilions.

**Category 2:** This category includes residences and buildings where people normally sleep. Land uses include homes, hospitals, nursing homes and hotels where nighttime sensitivity to noise is assumed to be of utmost importance.

**Category 3:** This category includes institutional land uses with primary daytime and evening use. Land uses include schools, libraries, places of worship, museums, historically significant sites, and active parks where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. For Category 3 uses, however, the entire use may not be designated as a sensitive receiver; rather, only those areas typically used for quiet activities are designated as sensitive receiver areas. Buildings with interior spaces where quiet is important, such as medical offices and conference rooms, recording studios and concert halls are also included in this category.

The criteria do not apply to most commercial and industrial uses because these activities generally are compatible with higher noise levels.

Figure 4: FTA Noise Impact Criteria



Source: FTA Transit Noise & Vibration Impact Assessment, September 2018





## Noise and Vibration Technical Report

**Table 2: Noise Levels Defining Impact for Transit Projects**

Existing Ambient Noise Level $L_{eq}$ or $L_{dn}$ (dBA)	Project Noise Impact Levels $L_{eq}$ or $L_{dn}$ (dBA)					
	Category 1 or 2 Sites			Category 3 Sites		
	No Impact	Impact	Severe Impact	No Impact	Impact	Severe Impact
<43	<(Amb.+10)	Ambient + 10 to 15	>(Amb.+15)	<(Amb.+15)	Ambient + 15 to 20	>(Amb.+20)
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
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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
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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
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74	<66	66-72	>72	<71	71-77	>77
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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

Note:  $L_{dn}$  is used for land uses where nighttime sensitivity is a factor, and  $L_{eq}$  during the noisiest transit-related hour is used for land use involving only daytime activities.

Source: FTA Transit Noise & Vibration Impact Assessment, September 2018





## Noise and Vibration Technical Report

### 2.4 Municipal Noise Ordinances

The information below represents a summary of the noise ordinances for the City of Charlotte. As such, sections of the ordinances that are not applicable are not included.

Effective October 1, 2019, the City of Charlotte adopted its current Noise Code, stating that it shall be unlawful for any person to intentionally produce, intentionally cause to be produced, or intentionally participate in producing any unreasonably loud and disturbing noise in the city. The law applies to residential neighborhoods, health care facilities, schools, and houses of worship.

The law defines unreasonably loud and disturbing noise as any mechanical noise which registers more than 70 db(A) at the nearest complainant's property line.

The law exempts all horns or other warning signals that are used in a bona fide attempt to avoid an imminent automobile accident.

## 3 Existing Conditions

### 3.1 Affected Environment

The project study area currently experiences high levels of existing noise given the proximity to surrounding highways, freight rail tracks and the urban environment. In accordance with the FTA Guidance Manual, a noise screening procedure should be conducted to determine the noise study area based on established distances from transit facilities. Once the area of analysis is determined, individual land uses that are sensitive to noise are targeted for impact analysis.

### 3.2 Noise Screening Procedure

A noise screening procedure was conducted to identify noise sensitive areas within 1,000 feet of the outer boundary of the proposed project site. If intervening buildings existed between the source and the receiver, then a screening distance of 650 feet was used. Maps and Google Earth imagery were used to identify noise sensitive land uses within the appropriate screening distances. Sensitive receivers include residential houses and apartment buildings. Figure 5 shows the Project study area, the respective screening distances, and the location of noise sensitive receivers. Table 3 identifies each noise sensitive receiver, the corresponding land use category, and the distance of the receiver to the noise source. Multiple similar land uses that are approximately the same distance from the Project have been grouped together.





## Noise and Vibration Technical Report

Figure 5: Detailed Noise Study Map







## Noise and Vibration Technical Report

### 3.3 Ambient Noise Conditions

Noise monitoring was conducted using a Larson Davis SoundExpert Series 821ENV Type I sound level meter. Ambient noise measurements, shown on Figure 5, were performed at 2 representative locations (M1 and M2) near sensitive receiver areas in April 2024. In order to identify the best measurement locations, the project area was reviewed relative to the location of each of the sensitive receiver areas identified in Table 3. Existing noise levels are grouped into AM peak period, PM peak Period and Nighttime periods, and then combined to produce the day-night 24-hour equivalent noise levels. The monitored existing noise levels are shown in Table 4. Appendix A provides the noise monitoring field data sheets. Appendix B provides photos of each respective monitoring site.

**Table 3: Noise Sensitive Receivers**

Site No.	Name/Location of Receiver Sites	Land Use	Land Use Category	Distance from Edge of Project Footprint (feet)
R1	South Graham Street Apartments	Residential	2	245
R2	1519 Merriman Ave	Residential	2	285
R3	1544 Merriman Ave	Residential	2	624
R4	1537 Wilmore Drive	Residential	2	530

Source: AECOM June 2024

**Table 4: Monitored Existing Noise Levels (dBA)**

Monitoring Sites	Site #	Loudest Hour	L <sub>eq</sub>			L <sub>dn</sub>
			AM	PM	Night	
M1 – 422 Penman Street	R1	6:36-7:36 am	57	57	57	63
M2 – 1524 Merriman AveN. Mason Farm Road	R2, R3, R4	10:16-11:16 am	60	53	53	61

Source: AECOM May 2024

## 4 Ground-Borne Noise and Vibration

### 4.1 Legal and Regulatory Framework

The Federal Transit Administration's (FTA) *Transit Noise and Vibration Impact Assessment, September 2018*, guidelines were followed to conduct the vibration screening and general assessments. The following sections describe ground-borne noise and vibration and their effects on surrounding land uses, as defined in the FTA guidance.





## Noise and Vibration Technical Report

### 4.2 Affected Environment

#### 4.2.1 Ground-Borne Noise and Vibration

Freight and transit systems can sometimes create ground-borne noise and vibration impacts. In contrast to airborne noise, ground-borne vibration is not a common environmental issue. "Ground-borne vibration" is the transmission of energy through the earth. It is also quantified using a decibel unit of measure. However, noise and vibration decibels are unrelated. Ground-borne vibration, if strong enough to be perceptible, is sensed as motion of the floors or walls inside a building. The low-pitched, rumbling noise that can result from ground-borne vibration is called "ground-borne noise" and can only occur inside a building. Ground-borne noise impacts usually occur for underground rail operations or in situations where the affected building is specially designed and constructed to be isolated from the exterior ambient noise environment such as a concert hall or recording studio.

Ground-borne vibration and noise from heavy rail is common when there is less than 50 ft between the track and building foundations. Local geology and structural details of the building determine if the source of complaints is due to perceptible vibration or audible ground-borne noise. Complaints about ground-borne vibration from surface track are more common than ground-borne noise complaints. A substantial percentage of complaints about both ground-borne vibration and noise correlate with proximity of special track work, rough or corrugated track, or wheel flats.

#### 4.2.2 Ground-borne Noise and Vibration Criteria

In its guidance manual, the FTA developed criteria for assessing vibration impacts related to transit projects. The FTA manual assesses vibration and ground-borne noise levels for at-grade heavy rail projects by applying rapid transit or light rail vehicle characteristics. The Manual notes that heavy rail and Light Rail vehicles have similar suspension systems and axle loads and create similar levels of ground-borne vibration.

The criteria are based on community reaction to transit-related vibration and the potential for adverse effects on vibration-sensitive activities and processes. The criteria identify intensities of ground-borne vibration and noise that may be considered significant and, thus, require consideration of mitigation and abatement measures.

The FTA Manual uses a Vibration Screening Procedure to identify the potential for vibration impact from transit projects prior to undergoing a full impact assessment. The procedure uses simplified assumptions and considers the type of the project, and the presence or absence of vibration-sensitive land uses within a screening distance that has been developed to identify most potential vibration impacts. If no vibration-sensitive land uses are present within the defined screening distance, then no further vibration assessment is necessary.

Table 5 provides the FTA Screening Criteria for Commuter Rail tracks relative to the nearest vibration sensitive receivers and their vibration category land uses. The FTA assigns sensitive land uses to the following three categories:

- Vibration Category 1: High Sensitivity - Buildings where low ambient vibration is essential for the interior operations in the building. Vibration levels may be below the level of human perception.





## Noise and Vibration Technical Report

- Vibration Category 2: Residential - Residences and buildings where people normally sleep. This includes private dwellings, hospitals and hotels where nighttime sensitivity is assumed to be of utmost importance. It also includes some special uses such as auditoriums or theaters.
- Vibration Category 3: Institutional - Land uses with primarily daytime use including schools, churches, other institutions and quiet offices that do not have vibration-sensitive equipment.

**Table 5: Distance Criteria for Vibration Screening Procedure**

Type of Project	Critical Distance from Track to Structure for Land Use		
	Category 1	Category 2	Category 3
<b>Conventional Commuter Rail</b>	600 ft	<b>200 ft</b>	120 ft

Source: FTA Transit Noise and Vibration Impact Assessment, 2018.

### 4.2.3 Impact Evaluation Procedure

Based on the Noise Sensitive Receivers listed in Table 3 and understanding that all of the receivers are Category 2 land uses, the screening criteria for vibration and ground-borne noise impacts are receivers located within 200 feet of the tracks. As none of the receivers are located within that distance, the proposed project would not result in vibration or ground-borne noise impacts and therefore, no further vibration assessment is necessary.

## 5 Impacts Assessment

### 5.1 Noise Impacts

A noise impact is assessed based on the comparison of the existing (ambient) noise levels and the predicted noise level at a given noise sensitive area in terms of either the 24-hour noise level ( $L_{dn}$ ) or the hourly noise level ( $L_{eq}$ ) descriptors assigned for the appropriate land use category.

This analysis utilizes the best available project details including engineering design and operational details, such as hourly operational schedules during day and night, speed profiles, plan and profiles of guideway, and location of grade crossings.

#### 5.1.1 Project-Related Noise Levels

Future project-related noise levels were computed by using conservative estimates of noise levels generated from the VMF and noise of the commuter rail trains entering and moving around the maintenance facility. While train horns are not expected to be used on any regular basis, emergency use of horns is anticipated throughout the life of the project. Train bells are typically sounded prior to moving the train from a stopped position. For the purpose of analyzing noise from bells, each train is assumed to move three times per daytime or nighttime shift, sounding the bell each time. Noise from rail wheel squeal on tight curve radii is not included in this analysis as it is not applicable. Table 6 lists the project level assumptions.





## Noise and Vibration Technical Report

The facility would include a cleaning platform with vehicle car wash, a wheel truing area and maintenance shop, maintenance of way building, and storage tracks. Noise from all sources were evaluated together at the edge of nearest activity. Project operating assumptions are included in Tables 6 and 7.

**Emergency Use of Train Horns** - Train and locomotive maintenance at CPRF will include equipment inspection and testing, which may require periodic testing of locomotive train horns. Federal Roadway Worker Protection regulations also require the sounding of train horns anywhere that trains operate, including yards, when maintenance or other workers are present. Additionally, engineers may sound train horns to alert of a safety hazard at any time. The use of train horns for equipment inspection and testing, roadway worker protection and for safety can occur at any time at CPRF. Nevertheless, as such emergency use cannot be quantified on a per day basis, inclusion of their noise in the analysis is not warranted.

**Table 6: Project Related Operational Assumptions**

Item	Specification
Rail Train in yard characteristics	5 trains per day – average length 680 feet; 8 cars per train
	Assumed 5 trains in daytime and 5 trains in nighttime to reflect most conservative scenario
	Train Speed 10 mph (max.)
Train Bells (Transit Whistle)	5 trains per day/night shift with 3 ringings per train
Train Horns	As needed on emergency basis
Train Wash	1 train per peak hour (3-4 per day)
Maintenance Tracks	1 train per peak hour
Hours of Operation	24/7 evenly distributed

Source: AECOM June 2024

**Table 7: Source Reference Levels for Sources of Project Noise at 50 feet**

Noise Source	Source Reference Level (dBA)	Assumptions
Commuter Rail Trains	92	50 mph
Train Bell/whistle	81	
Vehicle Maintenance Facility	118	20 train movements in peak activity hour
Car Washes	111	

Source: Compiled from FTA Assessment Manual, Tables 4-13, 4-20, AECOM June 2024

### 5.1.2 Detailed Noise Assessment Methodology

Total Project noise levels are identified by (1) predicting project noise levels from all sources individually at 50 feet; (2) applying propagation and attenuation characteristics that take into consideration actual distances between noise source and receivers, ground factors and intervening rows of buildings; and (3) combining all source levels into one total Ldn and comparing to the ambient noise levels, identified in Table 4 to determine the level of noise impact (no impact, moderate impact, or severe impact) for each classification of land use.





## Noise and Vibration Technical Report

The following methodologies were used for each step and are shown in Tables 8 through 11.

For each source of Project noise, the following methodology was used to predict project noise levels ( $L_{eq}$  during the day and  $L_{eq}$  during the night, and  $L_{dn}$ ) at sensitive land uses. Daytime  $L_{eq}$  is based on five trains over the 15 hours (7am – 10pm). Nighttime  $L_{eq}$  is based on the five trains over nine hours (10pm – 7am).

**(a) Hourly  $L_{eq}$  at 50 feet for commuter rail vehicles (Table 4-21, Equation 4-27 FTA Assessment Manual):**

$$L_{eq}(h) = SEL_{ref} + 10 \log(N_{cars}) + 20 \log(S/50) + 10 \log(V) - 35.6 + Adj_{Track}$$

Where:

$SEL_{ref}$  Commuter Rail = 92 dBA

$N_{cars}$  = number cars per train = 8

$V_d$  = average hourly volume of traffic, in trains per hour = 5 trains per day/15 daytime hours = 0.33

$V_n$  = average hourly volume of traffic, in trains per hour = 5 trains per day/9 nighttime hours = 0.55

$S$  = Vehicle speed = 10 mph

$Adj_{Track}$  = 0 (+5 db for jointed track; +4 for aerial structure; +3 for embedded)

**Table 8: Summary of Project Related Noise - Commuter Rail**

Site No.	Location	Leq (Daytime Hourly) <sup>1</sup>	Leq (Nighttime Hourly) <sup>1</sup>	Ldn <sup>1</sup>
R1	South Graham Street Apts.	47	49	55
R2	1519 Merriman Avenue	47	49	55
R3	1544 Merriman Avenue	47	49	55
R4	1537 Wilmore Drive	47	49	55

Source: AECOM May 2024.

Notes: 1 - Measured at 50ft.

**(b) Hourly  $L_{eq}$  at 50 feet for rail warning bells (Table 4-21, Equation 4-29 FTA Assessment Manual):**

$$L_{eq}(h) = SEL_{ref} - 10 \log(S/50) + 10 \log(V) - 35.6$$

where:

$SEL_{ref}$  = 81 dBA for bells

$S$  Speed = 10 mph





## Noise and Vibration Technical Report

V Volume = 5 trains per day or night

**Table 9: Summary of Project Related Noise – Rail Bells**

Site No.	Location	Leq (Daytime Hourly) <sup>1</sup>	Leq (Nighttime Hourly) <sup>1</sup>	Ldn <sup>1</sup>
R1	South Graham Street Apts.	52	55	61
R2	1519 Merriman Avenue	52	55	61
R3	1544 Merriman Avenue	52	55	61
R4	1537 Wilmore Drive	52	55	61

Source: AECOM June 2024.

Notes: 1 - Measured at 50ft.

**(c) Hourly  $L_{eq}$  at 50 feet for VMF (Table 4-14, Equation 4-14 (Yard and Shop) FTA Assessment Manual):**

$$L_{eq}(h) = SEL_{ref} + 10 \log (N_T/20) - 35.6$$

where:

SEL ref = 118 dBA for VMF

$N_T$  = number of trains/hour entering the facility (5 trains day or night)

**Table 10: Summary of Project Related Noise - VMF**

Site No.	Location	Leq (Daytime Hourly) <sup>1</sup>	Leq (Nighttime Hourly) <sup>1</sup>	Ldn <sup>1</sup>
R1	South Graham Street Apts.	65	67	73
R2	1519 Merriman Avenue	65	67	73
R3	1544 Merriman Avenue	65	67	73
R4	1537 Wilmore Drive	65	67	73

Source: AECOM June 2024.

Notes: 1 - Measured at 50ft.

### 5.1.2.1 Adjustment for Propagation and Attenuation Characteristics

Once estimates of noise exposure at 50 feet from each source have been determined, then propagation, ground factor, and attenuation characteristics must be taken into account to compute the noise exposure at the actual distance between the receiver and noise source, and taking into account intervening rows of buildings, which reduce noise levels by 4.5 dBA for the first row and 1.5 dBA for each additional rows, up to a maximum of 10 dBA. An attenuation factor of 4.5 was used for receivers R1 and R2, an attenuation factor of 0 was used for receiver R3, and an attenuation factor of 9 was used for receiver R4. A ground factor of 0.66 was assumed for all receivers. Receivers of interest used the following equations:

For fixed guideway sources (commuter rail):





## Noise and Vibration Technical Report

$$L_{dn} = (L_{dn} @ 50 \text{ feet}) - 10 * (\text{LOG} (D/50)) - ((10 * G) * (\text{LOG} (D/42))) - A_{\text{shielding}}$$

For stationary sources (VMF):

$$L_{dn} = (L_{dn} @ 50 \text{ feet}) - 20 * (\text{LOG} (D/50)) - ((10 * G) * (\text{LOG} (D/50))) - A_{\text{shielding}}$$

where:

D = Distance from source to receiver

G = Ground Factor (hard ground = 0; soft ground = 0.66)

### 5.1.2.2 Combination of all sources of $L_{dn}$

Once the noise level of each noise source has been determined at 50 feet, and has been adjusted for distance to the receivers, ground attenuation, and shielding, the noise sources are combined using the following equations (**Table 4-32, Equation 4-57 FTA Assessment Manual**):

Total  $L_{dn}$  from all sources combined:

$$L_{dn} (\text{total}) = 10 \log [\sum 10^{L_{dn}/10}] \text{ for all sources}$$

Table 11 provides the details for this calculation and compares the combined project noise levels to the existing conditions to assess the level of impact.

### 5.1.3 Detailed Noise Assessment Results

#### 5.1.3.1 No-Build Alternative

The No-Build Alternative would have no effect on noise levels in the area. Changes in traffic volumes and bus operations would not significantly change existing noise levels.

#### 5.1.3.2 Build Alternative

As listed in Table 11, none of the four residential receivers would be impacted by the noise from the proposed project.





## Noise and Vibration Technical Report

Table 11: Combined Noise Sources and Impacts

Site No.	Project Noise Source	Ldn @50 ft	Distance	Attenuation	Ldn @ Actual Distance	Impact Range <sup>1</sup>	Impact
R1	Commuter Rail	55	250	4.5	39	60-65	No
	Bell	61	250	4.5	45	59-64	No
	VMF	73	554	4.5	51	59-64	No
	<b>Combined</b>				<b>46</b>	<b>59-64</b>	<b>No</b>
R2	Commuter Rail	55	324	4.5	37	60-65	No
	Bell	61	324	4.5	43	59-64	No
	VMF	73	324	4.5	55	59-64	No
	<b>Combined</b>				<b>55</b>	<b>59-64</b>	<b>No</b>
R3	Commuter Rail	55	425	0	40	60-65	No
	Bell	61	425	0	46	59-64	No
	VMF	73	667	0	54	59-64	No
	<b>Combined</b>				<b>55</b>	<b>59-64</b>	<b>No</b>
R4	Commuter Rail	55	250	9	27	60-65	No
	Bell	61	250	9	33	59-64	No
	VMF	73	554	9	45	59-64	No
	<b>Combined</b>				<b>45</b>	<b>59-64</b>	<b>No</b>

Source: AECOM May 2024.

Notes: 1 - FTA Guidance Manual, Table 4-5, Noise Levels Defining Impact for Transit Projects.





## Noise and Vibration Technical Report

### 6 Construction Related Noise and Vibration

Construction noise and vibration often generate complaints from the community, even when construction is for a limited timeframe. Public concerns about construction noise and vibration increase considerably with lengthy periods of heavy construction on major projects as well as prevalence of nighttime construction. The following includes a general construction noise and vibration assessment based on the FTA Guidance Manual.

#### 6.1 Construction Related Noise Impacts

The major construction elements of this project are expected to be pavement removal, hauling, grading, paving, installation of rail tracks and maintenance buildings. In accordance with the FTA Manual, a general noise assessment is performed by combining the two loudest pieces of construction equipment that could reasonably be expected to be operating at the same time.

This analysis utilized hourly noise levels of both a jack hammer and a concrete saw, at 100 percent utilization rate during the day time period. Combined, the construction noise would generate the noise levels shown in Table 12 at various distances from the four residential receptors, which was used as the distance to the work site. A noise level of 90 dB(A) is considered a noise impact, per Table 7-2 of the FTA Manual.

**Table 12: Construction Related Noise**

Site No.	Equipment	Distance	Leq
R1	Concrete Saw	250	76
	Jackhammer	250	74
	<b>Combined</b>		<b>78</b>
R2	Concrete Saw	325	74
	Jackhammer	325	72
	<b>Combined</b>		<b>76</b>
R3	Concrete Saw	425	71
	Jackhammer	425	69
	<b>Combined</b>		<b>74</b>
R4	Concrete Saw	685	67
	Jackhammer	685	65
	<b>Combined</b>		<b>69</b>

Source: AECOM June 2024.

As shown on Table 12, the combined use of the two loudest pieces of equipment at the closest receptor (R1) of 250 feet emits a combined noise level of 78 decibels. While this is below the impact criteria of 90 dBA, there are a number of measures that could be used to further minimize the extent of impacts. To reduce the potential for noise disturbance, loud work should be scheduled to avoid work during the





## Noise and Vibration Technical Report

hours when people are sleeping and minimize weekend work. Sequencing work so as not to combine the loudest equipment would reduce noise levels. Scheduling loud work during the middle of the day or during school hours would also minimize disturbance. Any construction activities that are necessary during evening and overnight hours should be closely coordinated so that appropriate mitigation strategies can be put into place before the construction activities are started.

### 6.2 Construction Related Vibration Impacts

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods employed. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Buildings founded on the soil near the construction site respond to these vibrations with varying results, ranging from no perceptible effects at the lowest levels, low rumbling sounds and perceptible vibrations at moderate levels, and slight damage at the highest levels. While ground vibrations from construction activities do not often reach the levels that can damage structures, fragile buildings must receive special consideration.

Per the FTA Manual, a qualitative construction vibration assessment is appropriate for projects where prolonged annoyance or damage from construction vibration is not expected. Given the extended distance (greater than 250 feet) between the project site and the closest residential buildings, vibration levels from construction activities are not expected to be significant.





## Noise and Vibration Technical Report

### Appendix A: Field Noise Measurement Data Form



## AECOM Acoustics and Noise Control Practice

### FIELD NOISE MEASUREMENT DATA FORM

Project Name: Charlotte Passenger Rail Facility Project #: \_\_\_\_\_ Date: 3/15/24 Page 1 of 2  
Monitoring Location: MI Analyst: Moore

[illegible]



## AECOM Acoustics and Noise Control Practice FIELD NOISE MEASUREMENT DATA FORM

[illegible]





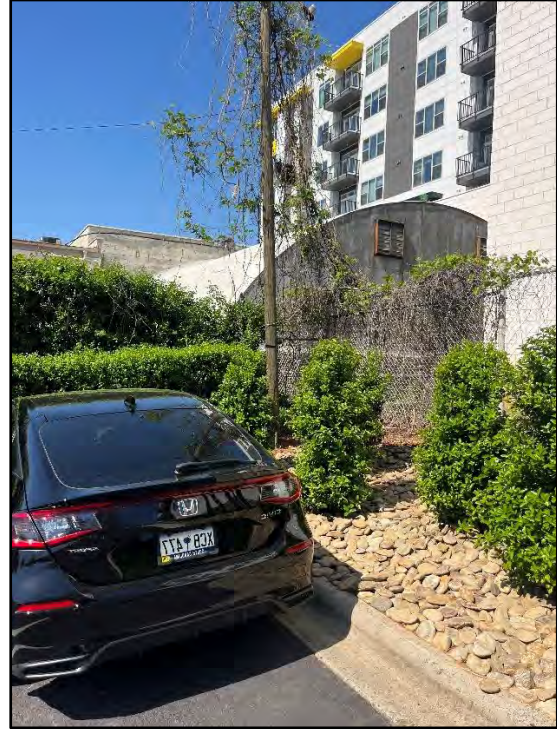
## Noise and Vibration Technical Report

### Appendix B: Monitoring Site Photos





Measurement Location - M1



Measurement Location - M1



Measurement Location - M2



Measurement Location - M2



## **Attachment 4**

**Natural Resources Technical Memorandum, Three Oaks Engineering, July 2023**



# **NATURAL RESOURCES TECHNICAL MEMORANDUM**

## **Proposed Construction of a New Locomotive and Passenger Railcar Maintenance Facility Southwest of Uptown Charlotte (City Center)**

**Mecklenburg County, North Carolina**

**STIP No. P-2918F  
WBS No. 49999.1.STR8**



**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
Rail Division**

**July 2023**



## 1.0 INTRODUCTION

The North Carolina Department of Transportation (NCDOT) – Rail Division proposes the construction of a new locomotive and passenger railcar maintenance facility southwest of Uptown Charlotte (City Center) in Mecklenburg County, North Carolina (Figures 1 and 2). The proposed project would replace the current Charlotte maintenance facility located adjacent to the Norfolk Southern (NS) Charlotte Yard, northeast of Uptown Charlotte. The following Natural Resources Technical Memorandum (NRTM) has been prepared to assist in the preparation of the appropriate environmental documentation.

## 2.0 METHODOLOGY

All work was conducted in accordance with the NCDOT Environmental Coordination and Permitting (ECAP) Group’s Preparing Natural Resources Technical Reports Procedure and the latest NRTR Template (September 2021). Field work was conducted on October 26, 2022. Water resources identified in the Project Study Area (PSA) have not yet been verified by the North Carolina Division of Water Resources (NCDWR). However, features were field-verified by the United States Army Corps of Engineers (USACE) on June 28, 2023. A list of the principal personnel that contributed to this document is provided in the Appendix.

## 3.0 PROTECTED SPECIES

### 3.1 Endangered Species Act Protected Species

The United States Fish and Wildlife Service (USFWS) lists the following federally protected species within the PSA, under the Endangered Species Act (ESA) (Table 1). For each species, a discussion of the presence or absence of habitat is included below along with the Biological Conclusion rendered based on survey results in the PSA.

**Table 1. ESA federally protected species listed within the PSA<sup>1</sup>**

Scientific Name	Common Name	Federal Status <sup>2</sup>	Habitat Present	Biological Conclusion
<i>Perimyotis subflavus</i>	Tricolored bat	PE	Yes	Unresolved
<i>Rhus michauxii</i>	Michaux’s sumac	E	Yes	No Effect
<i>Helianthus schweinitzii</i>	Schweinitz’s sunflower	E	Yes	No Effect
<i>Echinacea laevigata</i>	Smooth coneflower	T	Yes	No Effect

<sup>1</sup> USFWS Information for Planning and Consultation (IPaC) data checked on July 24, 2023

<sup>2</sup> E – Endangered; PE – Proposed Endangered; T – Threatened



**Tricolored bat**

USFWS Optimal Survey Window: May 15 – August 15 (Structure Checks)

**Biological Conclusion: Unresolved**

On September 14, 2022, the USFWS announced a proposal to list the tricolored bat (*Perimyotis subflavus* - PESU) as Endangered under the ESA. USFWS has not provided an official effective listing date, but it is anticipated to occur in the second half of 2023. Upon listing, USFWS is expected to provide habitat descriptions and an area of influence/distribution range for PESU. When this information is provided, it will help to inform NCDOT's determinations on habitat that could be impacted by NCDOT actions.

**Michaux's sumac**

USFWS Optimal Survey Window: May – October

**Biological Conclusion: No Effect**

Suitable habitat for Michaux's sumac is present within the PSA. Three Oaks biologists completed a survey for Michaux's sumac on October 26, 2022. This species was not identified within the PSA during this survey effort. A review of the North Carolina Natural Heritage Program (NCNHP) Spring (April) 2023 dataset indicates no known Michaux's sumac EO's within 1.0 mile of the PSA. Due to negative survey results and a lack of known occurrences within 1.0 mile of the PSA, effects to this species are not likely. Therefore, the Biological Conclusion for this species is No Effect.

**Schweinitz's sunflower**

USFWS Optimal Survey Window: late August – October

**Biological Conclusion: No Effect**

Suitable habitat for Schweinitz's sunflower is present within the PSA. Three Oaks biologists completed a survey for Schweinitz's sunflower on October 26, 2022. This species was not identified within the PSA during this survey effort. A review of the NCNHP Spring (April) 2023 dataset indicates no known Schweinitz's sunflower EO's within 1.0 mile of the PSA. Due to negative survey results and a lack of known occurrences within 1.0 mile of the PSA, effects to this species are not likely. Therefore, the Biological Conclusion for this species is No Effect.

**Smooth coneflower**

USFWS Optimal Survey Window: late May – October

**Biological Conclusion: No Effect**

Suitable habitat for smooth coneflower is present within the PSA. Three Oaks biologists completed a survey for smooth coneflower on October 26, 2022. This species was not identified within the PSA during this survey effort. A review of the NCNHP Spring (April) 2023 dataset identified one historical occurrence of



smooth coneflower (EO ID No. 13382) within 1.0 mile of the PSA. This species was last observed prior to 1900. Due to negative survey results and a lack of recent known occurrences within 1.0 mile of the PSA, effects to this species are not likely. Therefore, the Biological Conclusion for this species is No Effect.

### 3.2 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act is enforced by the USFWS. Golden eagles do not nest in North Carolina. Habitat for the bald eagle primarily consists of mature forests 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.

A desktop-GIS assessment of the PSA, as well as the area within a 1.0-mile radius of the project limits, was performed on October 21, 2022, using the most recent color aerials. Water bodies large enough or sufficiently open to be considered potential feeding sources were not identified. Since foraging habitat is absent within the PSA, a survey of the PSA and the area within 660 feet of the project limits was not conducted. A review of the NCNHP Spring (April) 2023 dataset revealed no known occurrences of this species within 1.0 mile of the PSA. Due to the lack of observations during the survey effort, absence of nearby known bald eagle occurrences, and the minimal impact anticipated for this project, it has been determined that this project will not affect this species.

### 4.0 WATER RESOURCES

Water resources in the PSA are part of the Catawba River Basin (United States Geological Survey [USGS] Hydrologic Unit Code [HUC] 03050103). Three streams were identified in the PSA (Table 2). The locations of these streams are shown on Figure 3.

**Table 2. Streams in the PSA**

Stream Name	Map ID	NCDWR Index Number	Best Usage Classification	Bank Height (ft.)	Bankfull width (ft.)	Depth (in.)
Unnamed Tributary (UT) to Irwin Creek	SA	11-137-1	C	3-5	3-5	0
UT to Irwin Creek	SB	11-137-1	C	0.5-1	3	0
UT to Irwin Creek	SC	11-137-1	C	0.5-1	3	0

There are no designated Outstanding Resource Waters (ORW), High Quality Waters (HQW), or Water Supply I or II Watersheds (WS-I or WS-II) within the PSA or within 1.0 mile downstream of the PSA. The North Carolina 2022 Final 303(d) list of impaired waters lists Irwin Creek, from its source to Sugar Creek, as an Impaired water due to fair, poor, or severe bioclassification of benthos (Nar, AL, FW) and fish communities (Nar, AL, FW).

Five open waters, all stormwater basins, were identified within the PSA.



**Table 3. Potential surface waters in the PSA**

Map ID	Jurisdictional?	Connection	Area (ac.)
BA	No	None	0.18
BB	No	None	0.34
BC	No	None	0.39
BD	No	None	0.10
BE	No	None	0.12
<b>Total</b>			<b>1.13</b>

## 5.0 REGULATORY CONSIDERATIONS

### 5.1 Clean Water Act Waters of the U.S.

Three streams were identified in the PSA (Table 4). The locations of these streams are shown on Figure 3. NCDWR Stream Identification forms and North Carolina Stream Assessment Method (NCSAM) forms are included in a separate Preliminary Jurisdictional Determination (PJD) Package. All streams in the PSA have been designated as warm water streams for the purposes of stream mitigation.

**Table 4. Status of streams in the PSA**

Map ID	Length (ft.)	Classification	Compensatory Mitigation Required	River Basin Buffer
SA	632	Intermittent	Undetermined	Not Subject
SB	44	Intermittent	Undetermined	Not Subject
SC	5	Intermittent	Undetermined	Not Subject
<b>Total</b>	<b>681</b>			

Three wetlands were identified within the PSA (Table 5). The locations of these wetlands are shown on Figure 3. All wetlands in the PSA are located within the Catawba River Basin (USGS HUC 03050103). USACE wetland determination forms and North Carolina Wetland Assessment Method (NCWAM) forms are included in a separate PJD Package.

**Table 5. Characteristics of wetlands in the PSA**

Map ID	NCWAM Classification	Forested	NCWAM Rating	Hydrologic Classification	404/401 or 401	Area (ac.) in Study Area
WA	Headwater Forest	Yes	Low	Riparian	404/401	0.03
WB	Headwater Forest	Yes	Low	Riparian	404/401	0.05
WC	Headwater Forest	Yes	Low	Riparian	404/401	0.02
<b>Total</b>						<b>0.10</b>

### 5.2 Construction Moratoria

No moratoria are anticipated for this project at this time.



### **5.3 N.C. River Basin Buffer Rules**

The mainstem of the Catawba River below Lake James to the North Carolina/South Carolina border is protected under provisions of riparian buffer rules administered by NCDWR. However, the River is not present within the PSA; therefore, streamside riparian zones within the PSA do not have any applicable state-enforced riparian buffer rules.

### **5.4 Rivers and Harbors Act Section 10 Navigable Waters**

No streams have been designated by the USACE as a Navigable Water under Section 10 of the Rivers and Harbors Act.



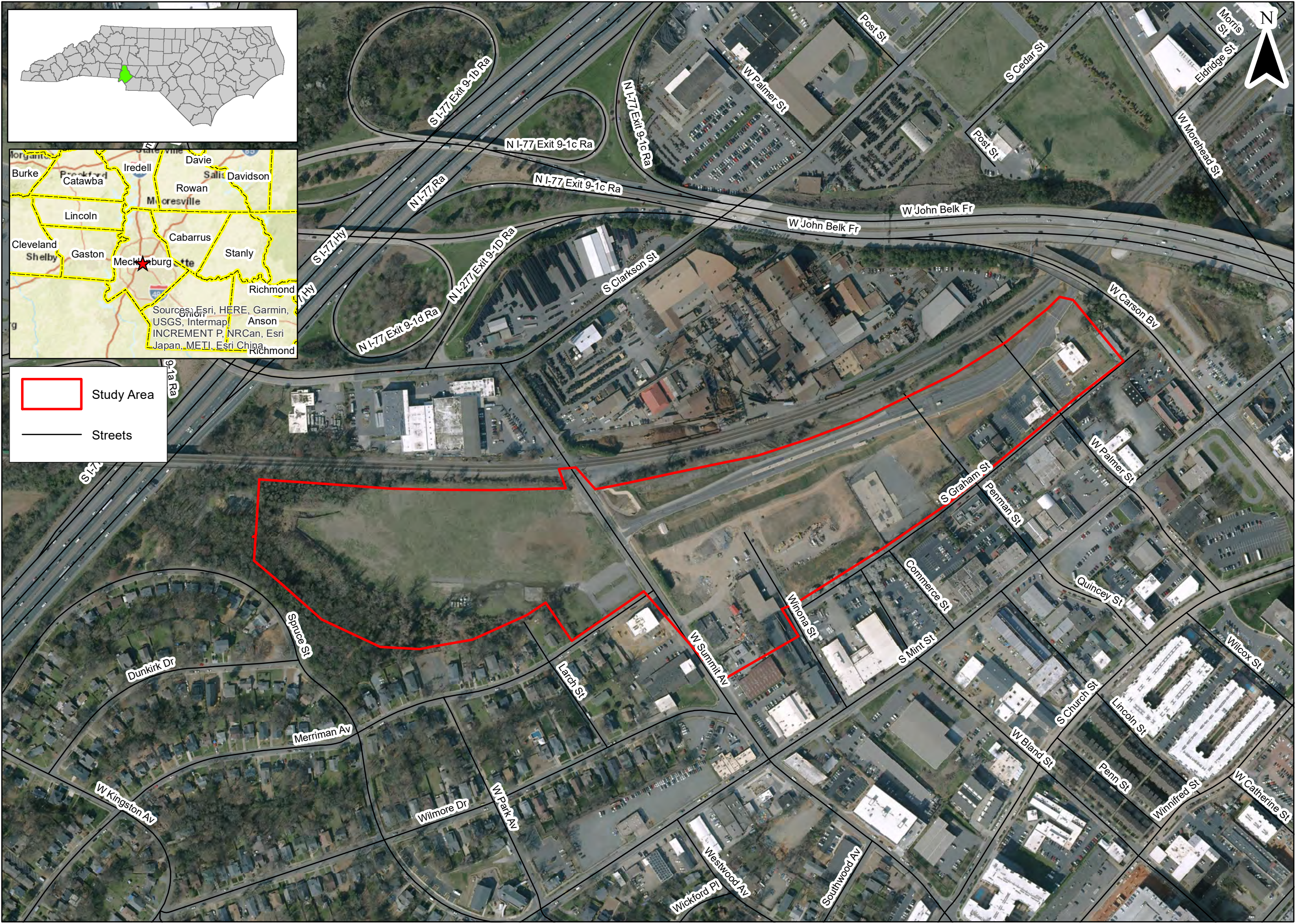
## 6.0 REFERENCES

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## Appendix





Prepared For:



NCDOT STIP P-2918F  
Proposed Construction  
of a New  
Locomotive  
and  
Passenger Railcar  
Maintenance Facility  
Southwest  
of  
Uptown Charlotte  
(City Center)

Project  
Vicinity  
Map

Mecklenburg County  
North Carolina

Date:	March 2023
Scale:	0 125 250 Ft
Job No.:	22-659
Drawn By:	NDH
Checked By:	JSM

Figure  
**1**





Prepared For:



NCDOT STIP P-2918F  
Proposed Construction  
of a New  
Locomotive  
and  
Passenger Railcar  
Maintenance Facility  
Southwest  
of  
Uptown Charlotte  
(City Center)

## Topographic Map

Mecklenburg County  
North Carolina

Date: March 2023

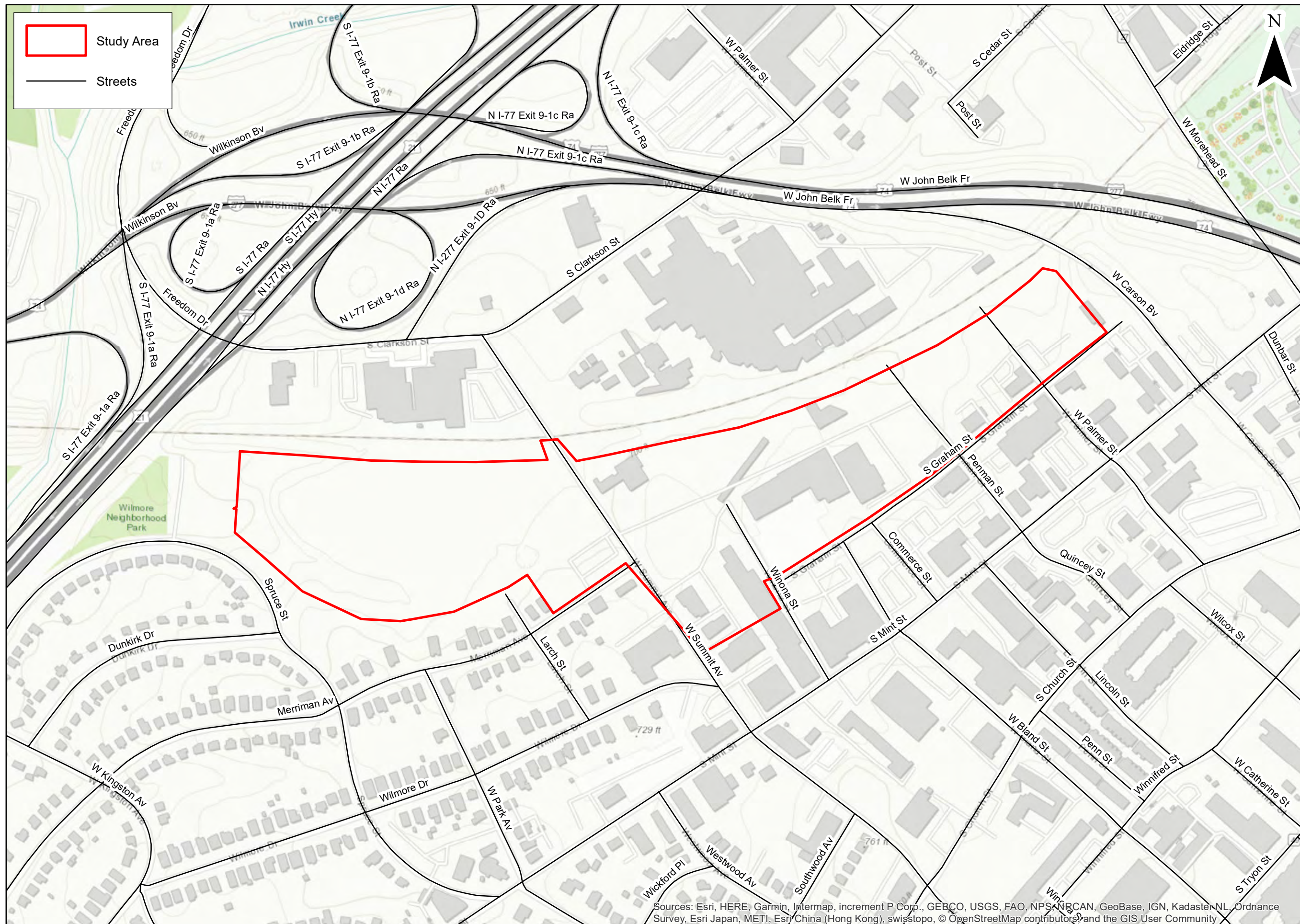
Scale: 0 125 250 Ft

Job No.:	22-659
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Drawn By: NDH	Checked By: JSM
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## Figure

# 2



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community





- Study Area
- Streets
- 2ft Contours

Potential Non-wetland WOTUS (Streams)

- Intermittent

Potential Wetland WOTUS

- Disturbed

Potential Non-Wetland WOTUS (Surface Waters)

- Stormwater Basin



Prepared For:



NCDOT STIP P-2918F  
Proposed Construction  
of a New  
Locomotive  
and  
Passenger Railcar  
Maintenance Facility  
Southwest  
of  
Uptown Charlotte  
(City Center)

Jurisdictional  
Features  
Map

Mecklenburg County  
North Carolina

Date:	July 2023
Scale:	0 125 250 Ft
Job No.:	22-659
Drawn By:	NDH
Checked By:	JSM

Figure  
3



## Qualifications of Contributors

Principal Investigator:	Byron Levan
Education:	B.S. Fisheries, Wildlife, and Conservation Biology; North Carolina State University, 2011 M.F.W. Fisheries, Wildlife, and Conservation Biology, North Carolina State University, 2019
Experience:	Environmental Scientist, Three Oaks Engineering, 2021-Present Junior Environmental Scientist, NV5 Global Inc. 2019-2021
Responsibilities:	Jurisdictional Waters Delineations, T&E Surveys, Document Preparation and Review
Investigator:	Mark Guerard
Education:	Coursework, Jurisdictional Waters Delineations
Experience:	Environmental Technician, Three Oaks Engineering, May 2022-Present
Responsibilities:	Jurisdictional Waters Delineations, T&E Surveys, Document Preparation and Review
Investigator:	Nathan Howell, PWS
Education:	B.S. Fisheries, Wildlife, and Conservation Biology, North Carolina State University, 2013 M.S. Plant and Microbial Biology, North Carolina State University, 2015
Experience:	Environmental Scientist, Three Oaks Engineering, October 2015 – Present
Responsibilities:	Document Review
Investigator:	James Mason, PWS
Education:	B.A. Biology, Colby College, 2000 M.S. Biology/Ecology, UNC-Charlotte, 2004
Experience:	Environmental Senior Scientist, Three Oaks Engineering, April 2018-Present
Responsibilities:	Document Review



Investigator:	Cary Rowells
Education:	Coursework, Civil Engineering, Wake technical Community College Coursework, Geology, University of North Carolina at Wilmington
Experience:	GIS Analyst, Three Oaks Engineering, 2015-Present GIS analyst, Michael Baker Engineering, 2002-2015 Analytical Surveys, Inc., CADD Technician/GIS Technician/GIS Project Coordinator, 1989-2002
Responsibilities:	GIS Mapping/CAD
Investigator:	Cherri Smith
Experience:	Document QA/QC, Three Oaks Engineering, August 2022 - Present
Responsibilities:	Document Review



## **Attachment 5**

**Protected Species Survey – P-2918F Mecklenburg County, Three Oaks Engineering,  
August 2023**





## Three Oaks Engineering, Inc.

DATE: August 15, 2023

TO: Greg Blakeney  
NCDOT Rail Division  
Planning and Development Branch

FROM: Adam Efird  
Three Oaks Engineering

SUBJECT: Protected Species Surveys – P-2918F Mecklenburg County

Three Oaks Engineering Biologists conducted a field investigation for Michaux's sumac, Schweinitz's sunflower, smooth coneflower, and tricolored bat for the P-2918F project in Mecklenburg County, NC. The fieldwork was completed on June 28 and July 27, 2023. The following memorandum details the investigation of these species listed as potentially occurring within the P-2918F study area.

### **Protected Plant Species**

#### **Michaux's sumac**

USFWS Optimal Survey Window: May - October

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 rim of Carolina bays; maintained railroad, roadside, power line, and utility rights-of way; areas where forest canopies have been opened up by blowdowns 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 and, therefore, grows best where disturbance (e.g., mowing, clearing, grazing, periodic fire) maintains its open habitat.

#### **Schweinitz's sunflower**

USFWS Optimal Survey Window: late August - October

Schweinitz's sunflower is primarily found in Xeric Hardpan Forests. The species is also found along roadside rights-of-way, maintained power lines and other utility rights-of-way, edges of thickets and old pastures, clearings and edges of upland oak-pine-hickory woods and Piedmont longleaf pine forests, and other sunny or semi-sunny habitats where disturbances (e.g., mowing, clearing, grazing, blow downs, storms, frequent fire) help create open or partially open areas for sunlight. It is intolerant of full shade and excessive competition from other vegetation. It is generally found growing on shallow sandy soils with high gravel content; shallow, poor, clayey hardpans; or shallow rocky soils, especially those derived from mafic rocks.

Three Oaks Engineering  
324 Blackwell Street, Suite 1200  
Durham, NC 27701

Telephone: (919) 732-1300  
Website: <http://www.threeoaksengineering.com/>





### Smooth coneflower

USFWS Optimal Survey Window: late May - October

Smooth coneflower, a perennial herb, is typically found in meadows, open woodlands, the ecotonal regions between meadows and woodlands, cedar barrens, dry limestone bluffs, clear cuts, and roadside and utility rights-of-way. In North Carolina, the species normally grows in magnesium- and calcium- rich soils associated with gabbro and diabase parent material, and typically occurs in Iredell, Misenheimer, and Picture soil series. It grows best where there is abundant sunlight, little competition in the herbaceous layer, and periodic disturbances (e.g., regular fire regime, well-timed mowing, careful clearing) that prevents encroachment of shade-producing woody shrubs and trees. On sites where woody succession is held in check, it is characterized by a number of species with prairie affinities.

### Survey Results

Due to the P-2918F study area being located in a primarily developed area (residential, commercial and maintained/disturbed habitat), there was minimal habitat observed for Michaux's sumac, Schweinitz's sunflower, or smooth coneflower. Any grassy or slightly shrubby areas that looked like potential habitat for Michaux's sumac, Schweinitz's sunflower, or smooth coneflower were mowed regularly and usually buffered on all sides by pavement, gravel parking lot, or sidewalk; minimal habitat was present near wood edges. No individuals of these species were observed. A review of the North Carolina Natural Heritage Program (NCNHP) April 2023 dataset identified no Element Occurrences (EOs) for any protected plant species within 1.0 mile of P-2918F. Table 1 below provides the results of the protected plant species investigation for P-2918F in Mecklenburg County.

**Table 1. P-2918F Federally Protected Survey Plant Species<sup>1</sup>**

Scientific Name	Common Name	Federal Status <sup>2</sup>	Habitat Present	Biological Conclusion
<i>Rhus michauxii</i>	Michaux's sumac	E	Yes	No Effect
<i>Helianthus schweinitzii</i>	Schweinitz's sunflower	E	Yes	No Effect
<i>Echinacea laevigata</i>	Smooth coneflower	T	Yes	No Effect

<sup>1</sup> USFWS Information for Planning and Consultation (IPaC) data checked on May 15 and August 1, 2023

<sup>2</sup> E – Endangered; T– Threatened

### Protected Bat Species

#### Tricolored bat

USFWS Optimal Survey Window: May 15 – August 15 (Structure Checks)

The USFWS recently published its proposal to list the Tricolored Bat (*Perimyotis subflavus*) as Endangered on September 14, 2022 (87 Federal Register [FR] 56381–56393). IPaC (2023) indicates the species has the potential to occur in the project study area. Tricolored bats primarily roost during the non-hibernating seasons (spring, summer, fall) in live and dead leaf clusters of live or recently dead deciduous hardwood trees. Tricolored bats have also been observed roosting during summer among pine needles, eastern red cedar (*Juniperus virginiana*), within artificial roosts like barns, beneath porch roofs, bridges, concrete bunkers, and rarely within caves. During the winter, tricolored bats utilize caves and mines; although, in the southern United States, where caves are sparse, tricolored bats often hibernate in road-associated





culverts, as well as sometimes in tree cavities and abandoned water wells. The nearest EO is located 33 miles from the project in Catawba County (EO ID 41433) (NCNHP 2023).

### Survey Results

There was one culvert that was investigated as a potential tricolored bat structure (abandoned buildings or large culverts/bridges were not present that were suitable for tricolored bat use). The structure was a culvert underneath a paved road running parallel to railroad tracks behind a fenced-in area within the study boundary. There was no evidence of bat use observed during the field investigation. In addition, due to the presence of trees within the study area, suitable summer roosting, foraging, and commuting habitat was present (Table 2). No caves or mines were observed within the project study area. According to the USGS mines database ([Point Mine \(usgs.gov\)](https://www.usgs.gov), accessed 7/28/2023), an old mine (MRDS #W028050) is approximately 0.4 miles from the project study area. Point Mine is a subterranean mine that is no longer active. No evidence of the mine was visible in an aerial photo. A biological conclusion for this species can be determined once more project information is known.

**Table 2. Presence (✓) or Probable Absence (X) of various Habitat Types for Tricolored Bat in P-5705A Project Area**

Summer Roosting	Winter Roosting	Foraging Habitat	Commuting Habitat
✓	X	✓	✓

Thank you for the opportunity to assist you with this field investigation. Please let us know if you have any questions or need any additional assistance.



Updated 5/2/23



# Bat Habitat Assessment Form

## NCDOT Culverts

Observers: A. Welch / A. EfridTIP or DOT project number: P-2918PDate: 7/27/23Road Name above culvert: railroadCounty: MecklenburgStructure #: N/AName of the feature culvert is carrying (stream): N/A

% Surrounding habitat w/in 1 mi.  
of project footprint (approx)

Urban/commercial 100

Suburban/residential \_\_\_\_\_

Herb/Shrub/Grassland \_\_\_\_\_

Agricultural \_\_\_\_\_

Deciduous/Evergreen/Mixed Forest \_\_\_\_\_

Woody Wetland/Herb Wetland/Open Water \_\_\_\_\_

Any trees ≥3" DBH within project footprint?

N/A

yes

no

**Complete this section for Indiana bat counties (Cherokee, Clay, Graham, Haywood, Jackson, Macon, Swain, Rutherford: Bat Cave/Lake Lure area only)**

Any trees or snags ≥5" DBH with exfoliating (shag) bark or crevices?

N/A

yes

no

If yes to shag/snag, how much sunlight do they receive during the day? N/A

1-3 hours

4-6 hours

7+ hours

If yes to shag/snag, list spp of habitat trees ≥5" dbh \_\_\_\_\_

**If large hollow trees or snags ≥5" DBH are present in sunlit areas, provide photos and location.**

Presence of:

In project footprint

In vicinity (0.5 mi)

caves

yes

no

yes

no

abandoned mines

yes

noyes

no

**If 'yes' to any of the above, provide description and location.**

Major water source in project footprint:

N/A

river

stream/creek

pond

lake

swamp

Suitable drinking habitat in the form of non stagnant, smooth or slack water areas?

yes

no

N/A

Structure specific questions:

Guard rails

none

concrete

timber

metal

Culvert material

concrete

timber

metal

plastic

Number of barrels: 2

(double, triple, etc.)

Culvert height: 6'Culvert width: 6'Culvert length: 60'

If culvert is buried/crushed/sedimentation, observed narrowest opening height: \_\_\_\_\_

Culvert type

pipe

box

arch

other \_\_\_\_\_

Openings protected from high winds

yes

no

Crevices present:

yes

no

Rough surfaces, imperfections, bird nests

yes

no

Human disturbance in culvert

high

med

low

none

Depth of water in culvert (if applicable) 1"

**Below section completed only if bats/evidence of bats observed:**

Emergence count performed? (If yes, complete form)

yes

no

yes

no

Evidence of bats using bird nests, if present?

yes

no

Type of evidence

guano

staining

bats

Roost material

concrete

metal

other: \_\_\_\_\_

Bat species present:

Notes (include description of bat location within culvert, sedimentation buildup, drainage inlets inside culvert, etc.)





Roy Cooper, Governor

D. Reid Wilson, Secretary

Misty Buchanan  
Deputy Director, Natural Heritage Program

NCNHDE-22149

May 31, 2023

Three Oaks  
Three Oaks Engineering  
324 Blackwell Street  
Durham, NC 27701  
RE: P-2918F LRMF

Dear Three Oaks:

The North Carolina Natural Heritage Program (NCNHP) appreciates the opportunity to provide information about natural heritage resources for the project referenced above.

Based on the project area mapped with your request, a query of the NCNHP database indicates that there are no records for rare species, important natural communities, natural areas, and/or conservation/managed areas within the proposed project boundary. Please note that although there may be no documentation of natural heritage elements within the project boundary, it does not imply or confirm their absence; the area may not have been surveyed. The results of this query should not be substituted for field surveys where suitable habitat exists. In the event that rare species are found within the project area, please contact the NCNHP so that we may update our records.

The attached 'Potential Occurrences' table summarizes rare species and natural communities that have been documented within a one-mile radius of the property boundary. The proximity of these records suggests that these natural heritage elements may potentially be present in the project area if suitable habitat exists. Tables of natural areas and conservation/managed areas within a one-mile radius of the project area, if any, are also included in this report.

If a Federally-listed species is found within the project area or is indicated within a one-mile radius of the project area, the NCNHP recommends contacting the US Fish and Wildlife Service (USFWS) for guidance. Contact information for USFWS offices in North Carolina is found here:

<https://www.fws.gov/offices/Directory/ListOffices.cfm?statecode=37>.

Please note that natural heritage element data are maintained for the purposes of conservation planning, project review, and scientific research, and are not intended for use as the primary criteria for regulatory decisions. Information provided by the NCNHP database may not be published without prior written notification to the NCNHP, and the NCNHP must be credited as an information source in these publications. Maps of NCNHP data may not be redistributed without permission.

The NC Natural Heritage Program may follow this letter with additional correspondence if a Dedicated Nature Preserve, Registered Heritage Area, Land and Water Fund easement, or Federally-listed species are documented near the project area.

If you have questions regarding the information provided in this letter or need additional assistance, please contact Rodney A. Butler at [rodney.butler@ncdcr.gov](mailto:rodney.butler@ncdcr.gov) or 919-707-8603.

Sincerely,  
NC Natural Heritage Program



Natural Heritage Element Occurrences, Natural Areas, and Managed Areas Within a One-mile Radius of the Project Area  
P-2918F LRMF  
May 31, 2023  
NCNHDE-22149

Element Occurrences Documented Within a One-mile Radius of the Project Area

Taxonomic Group	EO ID	Scientific Name	Common Name	Last Observation Date	Element Occurrence Rank	Accuracy	Federal Status	State Status	Global Rank	State Rank
Bird	32170	Falco peregrinus anatum	American Peregrine Falcon	2015-06	E	2-High	---	Endangered	G4T4	S1B,S2N
Freshwater Bivalve	7236	Lasmigona decorata	Carolina Heelsplitter	1880-Pre	X	3-Medium	Endangered	Endangered	G1	S1
Mammal	20386	Lasiurus intermedius floridanus	Florida Yellow Bat	2000	H?	1-Very High	---	Special Concern	G5T4	S1
Vascular Plant	13743	Delphinium exaltatum	Tall Larkspur	1800s	Hi?	5-Very Low	---	Threatened	G3	S2
Vascular Plant	13382	Echinacea laevigata	Smooth Coneflower	1900-Pre	X	4-Low	Threatened	Threatened	G2G3	S1S2
Vascular Plant	28127	Echinacea pallida	Pale Coneflower	1969-06	H	3-Medium	---	W4	G4	SU

No Natural Areas are Documented Within a One-mile Radius of the Project Area

Managed Areas Documented Within a One-mile Radius of the Project Area

Managed Area Name	Owner	Owner Type
Mecklenburg County Open Space - 4th and Graham Property	Mecklenburg County	Local Government
Mecklenburg County Open Space - Abbott Park	Mecklenburg County	Local Government
Mecklenburg County Open Space - Bryant Park	Mecklenburg County	Local Government
Mecklenburg County Open Space - First Ward Park	Mecklenburg County	Local Government
Mecklenburg County Open Space - Fourth Ward Park	Mecklenburg County	Local Government
Mecklenburg County Open Space - Frazier Park	Mecklenburg County	Local Government
Mecklenburg County Open Space - Irwin Creek Greenway	Mecklenburg County	Local Government
Mecklenburg County Open Space - James Dennis Rash Park	Mecklenburg County	Local Government
Mecklenburg County Open Space - Latta Park	Mecklenburg County	Local Government
Mecklenburg County Open Space - Marshall Park	Mecklenburg County	Local Government



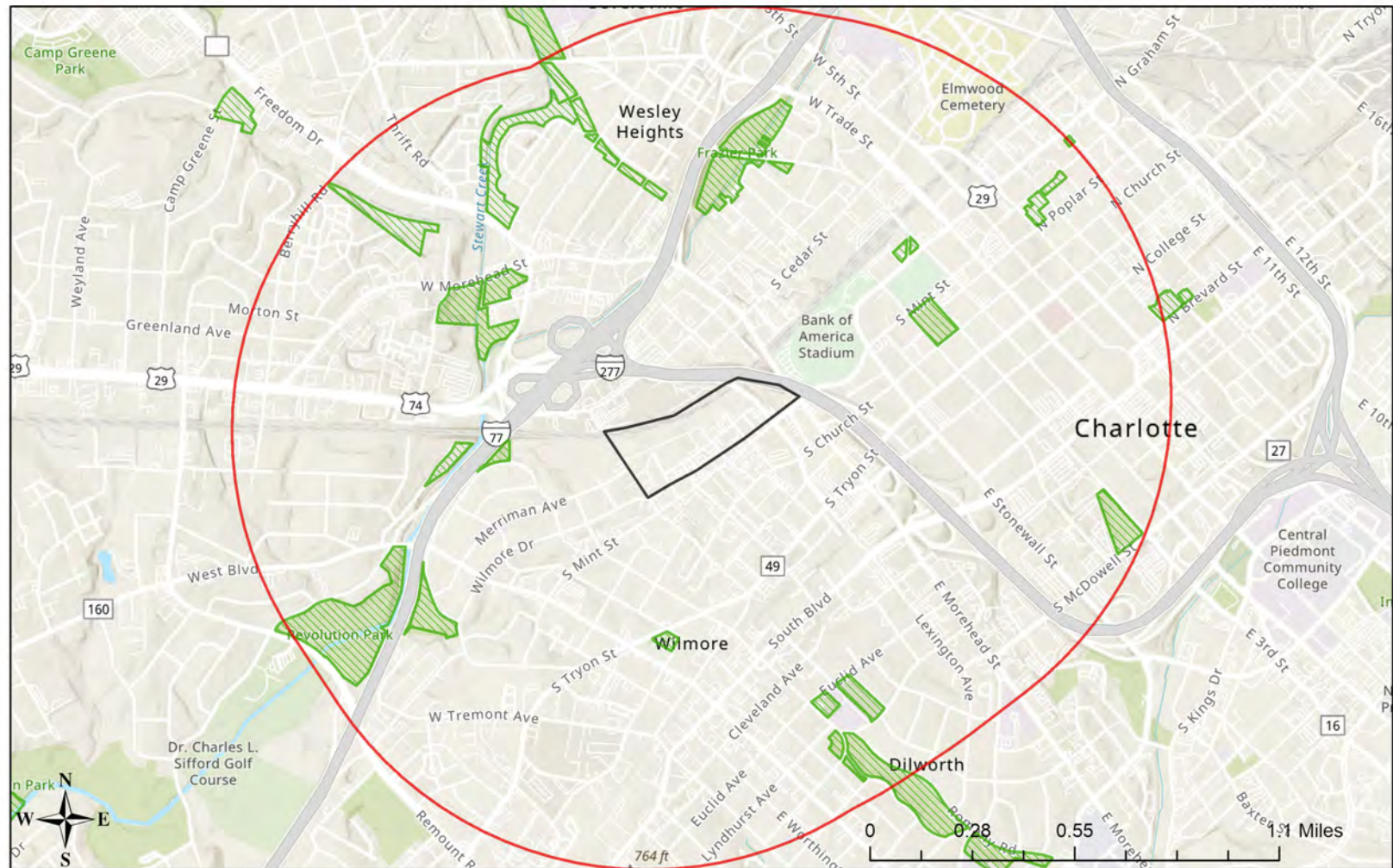
## Managed Areas Documented Within a One-mile Radius of the Project Area

Managed Area Name	Owner	Owner Type
Mecklenburg County Open Space - Ninth Street Park	Mecklenburg County	Local Government
Mecklenburg County Open Space - Revolution Park	Mecklenburg County	Local Government
Mecklenburg County Open Space - Romare Bearden Park	Mecklenburg County	Local Government
Mecklenburg County Open Space - Seversville Park	Mecklenburg County	Local Government
Mecklenburg County Open Space - Stewart Creek Greenway	Mecklenburg County	Local Government
Mecklenburg County Open Space - Wesley Heights Greenway	Mecklenburg County	Local Government
Mecklenburg County Open Space - Wilmore Centennial Park at Southend	Mecklenburg County	Local Government
Mecklenburg County Open Space - Wilmore Park	Mecklenburg County	Local Government




Definitions and an explanation of status designations and codes can be found at <https://ncnhde.natureserve.org/help>. Data query generated on May 31, 2023; source: NCNHP, Spring (April) 2023. Please resubmit your information request if more than one year elapses before project initiation as new information is continually added to the NCNHP database.



## NCNHDE-22149: P-2918F LRMF



May 31, 2023

-  Managed Area (MAREA)
-  Buffered Project Boundary
-  Project Boundary

Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community.  
 Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community



# IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

## Location

Mecklenburg County, North Carolina



## Local office

Asheville Ecological Services Field Office

☎ (828) 258-3939

📠 (828) 258-5330

160 Zillicoa Street



100 Linwood Street  
Asheville, NC 28801-1082

NOT FOR CONSULTATION



# Endangered species

**This resource list is for informational purposes only and does not constitute an analysis of project level impacts.**

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species<sup>1</sup> and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries<sup>2</sup>).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

- 
1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).



2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

## Mammals

NAME	STATUS
<b>Tricolored Bat</b> <i>Perimyotis subflavus</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/10515">https://ecos.fws.gov/ecp/species/10515</a>	Proposed Endangered

## Insects

NAME	STATUS
<b>Monarch Butterfly</b> <i>Danaus plexippus</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate

## Flowering Plants

NAME	STATUS
<b>Michaux's Sumac</b> <i>Rhus michauxii</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/5217">https://ecos.fws.gov/ecp/species/5217</a>	Endangered
<b>Schweinitz's Sunflower</b> <i>Helianthus schweinitzii</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/3849">https://ecos.fws.gov/ecp/species/3849</a>	Endangered
<b>Smooth Coneflower</b> <i>Echinacea laevigata</i> Wherever found No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/3473">https://ecos.fws.gov/ecp/species/3473</a>	Threatened



## Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

## Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <https://www.fws.gov/program/migratory-birds/species>
- Measures for avoiding and minimizing impacts to birds  
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds>
- Nationwide conservation measures for birds  
<https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your



list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
<b>Bald Eagle</b> <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Jul 31
<b>Black-billed Cuckoo</b> <i>Coccyzus erythrophthalmus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/9399">https://ecos.fws.gov/ecp/species/9399</a>	Breeds May 15 to Oct 10
<b>Cerulean Warbler</b> <i>Dendroica cerulea</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. <a href="https://ecos.fws.gov/ecp/species/2974">https://ecos.fws.gov/ecp/species/2974</a>	Breeds Apr 28 to Jul 20
<b>Chimney Swift</b> <i>Chaetura pelagica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
<b>Kentucky Warbler</b> <i>Oporornis formosus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 20
<b>Prairie Warbler</b> <i>Dendroica discolor</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
<b>Prothonotary Warbler</b> <i>Protonotaria citrea</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31



**Red-headed Woodpecker** *Melanerpes erythrocephalus*

Breeds May 10 to Sep 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

**Rusty Blackbird** *Euphagus carolinus*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

**Wood Thrush** *Hylocichla mustelina*

Breeds May 10 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

## Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.



To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

### Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

### Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

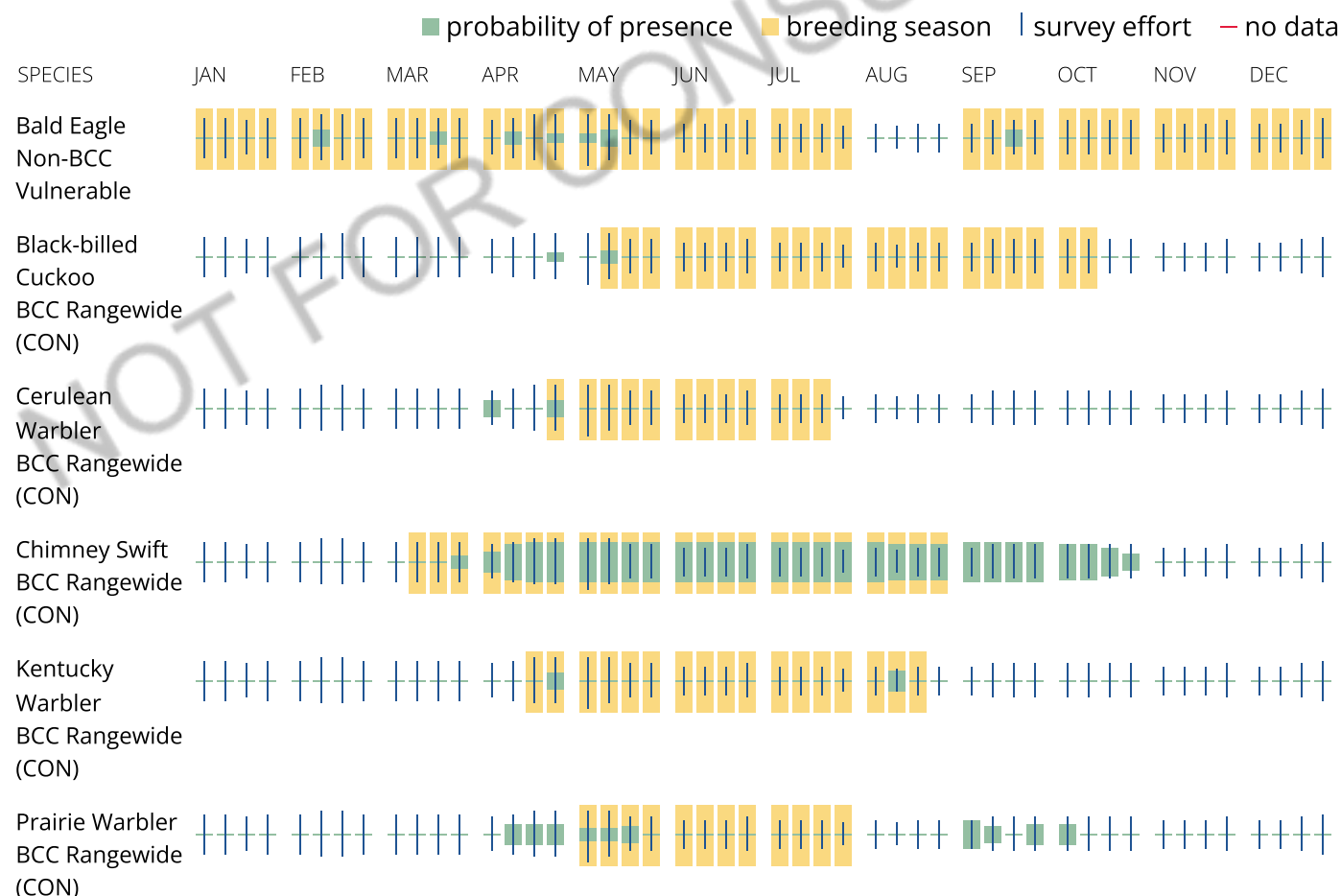
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

### No Data (—)

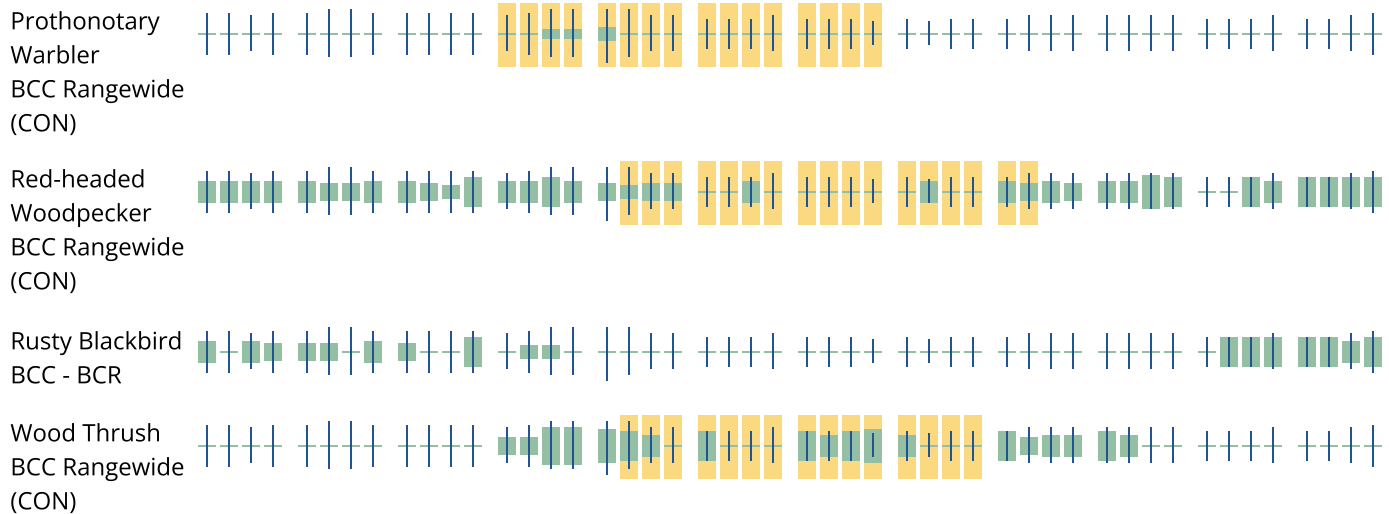
A week is marked as having no data if there were no survey events for that week.

### Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.







**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?**

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

**What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).



Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

### How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

### What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

### Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

### What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.



## Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

## Facilities

### National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

### Fish hatcheries

There are no fish hatcheries at this location.

## Wetlands in the National Wetlands Inventory



## (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

This location did not intersect any wetlands mapped by NWI.

**NOTE:** This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

### Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

### Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

### Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should



seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION



## **Attachment 6**

**Phase I Reconnaissance Level Historic Architecture Survey, AECOM, October 2024**





# Reconnaissance-Level Historic Architectural Survey

Charlotte Passenger Rail Facility



September 2024





## Reconnaissance-Level Historic Architecture Survey

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## Reconnaissance-Level Historic Architecture Survey

### 1 Introduction

The North Carolina Department of Transportation (NCDOT) State Transportation Improvement Project (STIP) P-2918F Charlotte Passenger Rail Facility (CPRF) proposes to construct a new locomotive and passenger railcar maintenance facility southwest of Uptown Charlotte to accommodate the future move of the existing Charlotte Station from its current location (adjacent to the Norfolk Southern (NS) Charlotte Yard northeast of Uptown) to its new site at Charlotte Gateway Station (Figure 1). Through the Alternatives Analysis process, which included extensive public outreach, a Locally Preferred Alternative (LPA) was selected to address the purpose and need of the Piedmont Improvement Program (Southern High Speed Rail Corridor). The proposed facility will serve future repairs and maintenance for Amtrak's new Airo fleet passenger trains along the Southern High Speed Rail Corridor and support the growth of intercity passenger rail and the new Charlotte Gateway Station, in Uptown Charlotte.

This report is prepared in compliance with Section 106 of the National Historic Preservation Act (NHPA), which requires that federal agencies consider the effects of their funded, permitted, licensed, or approved projects on historic properties. A historic property – as defined by Section 106 – is any precontact or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP).

The Section 106 implementing regulations in 36 CFR Part 800 define a four-step process for compliance with Section 106. The four steps are:

1. Initiate consultation;
2. Identify historic properties that may be affected by the project and determine if the property or properties are eligible for or listed in the NRHP;
3. Determine if the undertaking will have an effect on those historic properties; and
4. Resolve any identified adverse effects on historic properties by developing and evaluating alternatives that could avoid, minimize, or mitigate those effects.

The FRA has initiated consultation, as required by the first step of the Section 106 process. This report is part of the identification efforts required by the second step of the process.

The purpose of this report is to identify all historic architectural resources within the Project's Area of Potential Effects (APE) that:

1. Are listed in the NRHP;
2. Have been determined eligible for NRHP listing; or
3. Appear to merit further investigation to identify whether they are eligible for NRHP listing.





## Reconnaissance-Level Historic Architecture Survey

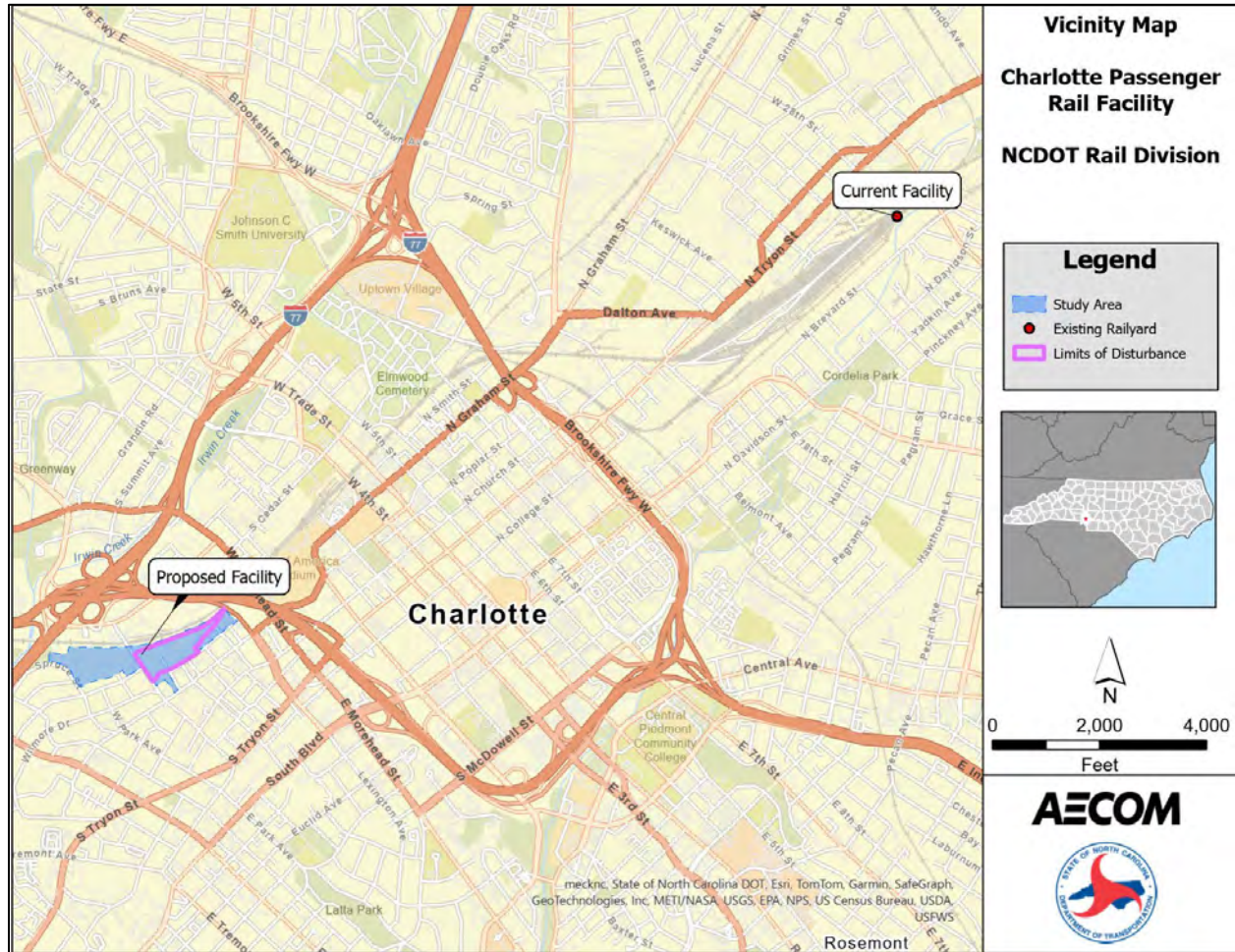


Figure 1: Vicinity Map for Proposed Facility





## Reconnaissance-Level Historic Architecture Survey

### 2 Methodology

Prior to the commencement of field survey, the FRA established an APE based upon the nature of the project, its visibility in relation to the local terrain, and the areas within which construction and operational activities may be heard or felt. Due to the area's level terrain, the presence of mature trees and other vegetation, and high building density, the following APE was delineated (Figure 2). It is bounded by South Clarkson to the north and I-277 to the northeast and east. The northern side of South Mint Street serves as its southern boundary. At the intersection of South Mint Street and West Summit Avenue, the APE turns north and follows West Summit Avenue before turning west and continuing behind the buildings fronting the west side of West Summit Avenue. The APE then turns east and follows Merriman Avenue until it reconnects with West Summit Avenue, which comprises the remainder of the APE's western border.

Following the delineation of the APE, AECOM architectural historians determined which NRHP-listed and NRHP-eligible historic architectural resources are located within its bounds. Both HPOWeb, the online GIS map and database maintained by North Carolina State Historic Preservation Office (NCHPO), and Mecklenburg County tax records were consulted. This preliminary desktop evaluation allowed for the identification of all previously surveyed resources in addition to all resources 45 years of age or older within the bounds of the APE that had not been subject to previous survey. Seventeen previously surveyed resources in addition to four previously unsurveyed resources were identified. These 21 resources were then field surveyed and are the subject of this report. Neither preliminary desktop survey nor the architectural field survey identified any resources less than 45-years old that displayed potential for exceptional significance. Pre-survey evaluation methods for this resource type included the review of digital street views of the project area and investigation of the Mecklenburg County tax records.

The architectural field survey was completed on July 8, 2024 by an AECOM architectural historian. Field survey methods included photographing the identified resources from the NCDOT right-of-way and the taking of field notes to aid in the understanding of the resource's material composition and potential changes over time. Following the completion of the field survey, this report was written, which makes preliminary recommendations regarding NRHP-eligibility and for intensive-level survey. Effects to any historic properties will be assessed later.



**Charlotte Passenger Rail Facility  
Area of Potential Effects**

August 2024

**Legend**

- Area of Potential Effects
- Limits of Disturbance

**AECOM**

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

STIP P-2918F: Charlotte Passenger Rail Facility | September 2024 | 4



## Reconnaissance-Level Historic Architecture Survey

### 3 Architectural Survey Results

The historic architectural survey was completed in July 2024. The purpose of the survey was to identify all resources 45 years or age or older, or those that meet NRHP Criteria Consideration G: Properties that Have Achieved Significance Within the Past Fifty Years, within the project's designated APE that may warrant further investigation for potential NRHP eligibility. Of the 21 resources surveyed, 17 were previously surveyed by Mattson and Alexander in 2011 at which time all were determined ineligible for NRHP-listing, with the exception of the Textile Mill Supply Company Building (MK1835), which was NRHP-listed in 1999 under Criteria A and C. Resurveyed in support of the current project, this building is recommended to continue to merit NRHP listing. The other 16 previously surveyed resources were also resurveyed. Four of the properties have been demolished, and the remaining 12 are recommended to remain ineligible as justified below (Table 1). The remaining four resources were newly identified commercial, office, and warehouse buildings. Based upon field observations and preliminary background research, none of these are recommended as potentially eligible for NRHP listing and therefore do not warrant evaluation or further consideration.

**Table 1. Previously Surveyed Resources Demolished Since 2011**

SSN	Name	Address	Date of Construction (Source)	Previous Eligibility Determination	Demolition Date
MK2255	Ashworth Brothers Inc.	1201 South Graham Street	Ca. 1931 (HPOWeb)	Determined Ineligible 2011	Demolished between April 2020 and January 2021
MK4524	Warehouse	1212 South Mint Street	1950s (HPOWeb)	Determined Ineligible 2011	Demolished between April 2020 and January 2021
MK4525	Store	529 West Summit Avenue	Ca. 1950 (HPOWeb)	Determined Ineligible 2011	Demolished between April 2010 and August 2012
MK2231	North Carolina Highway Commission Garage and Warehouse	632 West Summit Avenue	Early 20th Century (HPOWeb)	Determined Ineligible 2011	Demolished between October 2016 and September 2017

Note: Demolition dates are approximate based upon available historic aerial imagery at Google Earth.

Section 3.1 discusses the previously recorded resources which fall within the APE and Section 3.2 addresses the newly surveyed resources. Each section begins with a summary table which provides the resource's Survey Site Number, Name/Address, Date of Construction, Previous Eligibility Recommendation (if applicable), and Recommendation for Further Study. A more detailed summary of



each resource follows the table and includes a brief description, eligibility discussion, and current photographs. Figure 3 denotes the location of all surveyed resources by AECOM survey number.





## Reconnaissance-Level Historic Architecture Survey

### 3.1 Previously Surveyed Resources

Table 2. Previously Surveyed Resources

AECOM Survey No.	SSN	Name	Date of Construction (Source)	Previous Eligibility Determination	Recommended for Further Study
1	MK3075	Charlotte Pipe and Foundry Company Complex, 1335 South Clarkson Street	Mid-20th Century (HPOWeb)	Determined Ineligible (2011)	No
2	MK4498	Warehouse (Frothy Beard Brewing), 1200 South Graham Street	1950s (HPOWeb)	Determined Ineligible (2011)	No
3	MK4499	Warehouse, 1124 South Mint Street	Mid-1940s (HPOWeb)	Determined Ineligible (2011)	No
4	MK4500	Warehouse (The Mint), 1216 South Mint Street	1950s (HPOWeb)	Determined Ineligible (2011)	No
5	MK1835	Textile Mill Supply Company Building, 1300 South Mint Street	Ca. 1922 (NRHP Nomination)	NRHP-Listed (1998)	Yes
6	MK4502	Little Hardware Building, 1400-1416 South Mint Street	1920s (HPOWeb)	Determined Ineligible (2011)	No
7	MK2210	Charlotte Linen Supply Company, 1420 South Mint Street	Ca. 1939 (HPOWeb)	Determined Ineligible (2011)	No
8	MK4505	Charlotte Saw and Knife Company Building, 420 West Palmer Street	1950s (HPOWeb)	Determined Ineligible (2011)	No
9	MK1877	Electric Supply and Equipment Company, 419-423 Penman Street	Ca. 1925 (HPOWeb)	Determined Ineligible (2011)	No





## Reconnaissance-Level Historic Architecture Survey

AECOM Survey No.	SSN	Name	Date of Construction (Source)	Previous Eligibility Determination	Recommended for Further Study
10	MK2252	Cathey Lumber Company Warehouse, 501 Penman Street	1920s (HPOWeb)	Determined Ineligible (2011)	No
11	MK4507	H&S Roofing Company Office Building, 506 West Summit Avenue	Ca. 1955 (HPOWeb)	Determined Ineligible (2011)	No
12	MK4509	Office Building, 520 West Summit Avenue	Ca. 1960 (HPOWeb)	Determined Ineligible (2011)	No
13	MK4503	Office Building/Warehouse, 1430 South Mint Street	Early to Mid-20th Century (Historic Aerials)	Determined Ineligible (2011)	No

### 3.1.1 Charlotte Pipe and Foundry Company Complex (MK3075) – 1335 South Clarkson Street

The Charlotte Pipe and Foundry Company Complex (MK3075) is a sprawling industrial complex which is bounded to the north by South Clarkson Street, to the east by I-277, to the west by West Summit Avenue, and to the south by the railroad (Figure 4). Enveloping the northern half of the APE, the 17-acre industrial site remains operational and contains “sizeable steel warehouses and manufacturing buildings” that date to the 1940s, 1950s, and 1990s (Mattson and Alexander 2011:95-96). While the complex has retained its historic function over time, a 2011 survey recommended the resource ineligible for NRHP listing due to the significant loss of material integrity caused by “numerous” modern additions and alterations (Mattson and Alexander 2011:96). This recommendation received SHPO concurrence. Following the resurvey of the industrial resource as part of the proposed project, the resource is recommended to remain ineligible as it continues to lack the integrity and significance required to merit NRHP listing.



## Reconnaissance-Level Historic Architecture Survey



Figure 4. Aerial View of Charlotte Pipe and Foundry Company Complex (MK3075).



Figure 5. Left, view of Charlotte Pipe and Foundry Complex (MK3075) through fence along South Clarkson Street, looking southeast; right, view of foundry looking northwest from vacant lot along South Graham Street.





## Reconnaissance-Level Historic Architecture Survey

### 3.1.2 Warehouse (Frothy Beard Brewing) (MK4498) – 1200 South Graham Street

Standing at the corner of West Palmer Street and South Graham Street, the single-story, flat-roof Warehouse (MK4498) currently serves as home to Frothy Beard Brewing (Figure 6). At the time of the building's first survey in 2011, it housed a church (Mattson and Alexander 2011:192). Constructed during the 1950s, the building's facade is clad in Roman brick and features a band of large, plate-glass metal windows, harkening to the Modernist style. Smaller, single-light windows punctuate the building's secondary elevations and appear largely replacement. The 2011 Mattson and Alexander survey describes the building's entrance as recessed; however, this is no longer the case, and the facade entrance falls along the same plane as its front window band. The resource was determined ineligible for NRHP listing in 2011 due to its lack of "historical or architectural significance." Since 2011 the building has continued to accrue material changes at both its interior and exterior which results in a low degree of material integrity. Therefore, it is recommended that the resource continues to remain ineligible for NRHP listing.



Figure 6. Left, oblique of southeast-facing facade and northeast (side) elevation of Warehouse (MK4498) looking west; right, view of northwest (rear) elevation.

### 3.1.3 Warehouse (MK4499) – 1124 South Mint Street

The single-story brick Warehouse (MK4499) boasts a mid-1940s construction date and today functions as an office building (Figure 7). Oriented southeast toward South Mint Street, the building's facade is heavily altered. Topped with a brick parapet, the facade is divisible into three bays by brick pilasters, all of which have been largely bricked-in, and features asymmetrically arranged modern openings. These openings include a vinyl garage door within the central bay and fixed window bands at the tops of the two outer bays. The building's secondary elevations in turn display asymmetrical fenestration patterns and hold replacement window and door units. Based upon images included in the 2011 Mattson and Alexander survey, the resource's appearance has not changed significantly since it was last surveyed in 2011 and subsequently determined ineligible for NRHP listing (Mattson and Alexander 2011:215). Due to a continued loss of material integrity, the Warehouse is recommended to remain ineligible for NRHP listing.



## Reconnaissance-Level Historic Architecture Survey



Figure 7. Left, southeast facing facade of Warehouse (MK4499), looking northwest; right, oblique of southeast-facing facade and southwest (side) elevation of Warehouse, looking north.

### 3.1.4 Warehouse (The Mint) (MK4500) – 1216 South Mint Street

The 1950s Warehouse (MK4500) stands in the eastern half of the APE and is currently occupied by a commercial enterprise (Figure 8). The building stands one-story-tall and is topped by a flat roof. Its southeast-facing facade is seven-bays-wide and all of its windows and doors hold modern replacement units. The building has changed little since it was determined ineligible for NRHP listing in 2011. It is therefore recommended that it remains ineligible for NRHP listing as it lacks the material integrity or historical significance to warrant eligibility.



Figure 8. Left, view of southeast-facing facade of Warehouse (MK4500) looking northwest; right, oblique of southeast-facing facade and southwest (side) elevation, looking north.





## Reconnaissance-Level Historic Architecture Survey

### 3.1.5 Textile Mill Supply Company Building (MK1835) – 1300 South Mint Street

The Textile Mill Supply Company Building (MK1835) at 1300 South Mint Street was designated a local historic landmark by the Charlotte-Mecklenburg Historic Landmarks Commission in 1998 and individually NRHP listed in 1999 under Criterion A for its historical significance in the areas of commerce and industry and Criterion C for its architectural design (Mattson and Alexander 2011:103). After undergoing a certified rehabilitation in 2000, the ca. 1922 brick building was found to remain eligible for the NRHP under both criteria (Figure 9). The brick-clad building stands three-stories-tall and is topped with a flat roof. Its facade and secondary elevations are characterized by bands of fixed, multi-light windows in metal frames. Physical alterations to the building's rear include the infill of some windows and the addition of a rear block which appears to hold an elevator shaft. These additions were present at the building's last evaluation in 2011, at which point the resource was determined to retain its NRHP eligibility (Mattson and Alexander 2011:106). Due to a lack of notable change, the building continues to merit its listed status and should therefore be included in any future effects assessment as a result of this project.



Figure 9. Left, oblique of southeast-facing facade and northeast (side) elevation of Textile Mill Supply Company Building (MK1835), looking west; right, oblique of northwest (rear) and southwest (side) elevations, looking east.

### 3.1.6 Little Hardware Building (MK4502) – 1400-1416 South Mint Street

The Little Hardware Building (MK4502) fronts South Mint Street and occupies almost the entire block between Winona and West Bland Streets (Figure 10). The original warehouse dates to the 1920s but received multiple additions throughout the mid-to-late-twentieth century. Most notable of these is the large brick-clad Contemporary-style addition, constructed between 1983 and 1998, that faces West Bland Street and holds the building's primary entrance. This northeast-facing facade features a central entry sheltered by an engaged portico and a thin, horizontal band of windows running just above it. The band of windows continues around to the southeast (side) elevation and another band begins to follow below it. Visible from the southwest (rear) elevation is the original 1920s block. The original block blends into the modern addition but is differentiated by its large metal windows on all visible elevations and a parapet on the northwest (side) elevation. The building has not changed significantly since it was determined



## Reconnaissance-Level Historic Architecture Survey

ineligible for NRHP listing in 2011, based on Google Street Views (Google Maps). The resource is therefore recommended to remain ineligible for NRHP listing due to its significant loss of integrity and lack of historical significance.



**Figure 10.** Left, oblique of northeast-facing facade of Little Hardware Building (MK4502) looking west; right, oblique of northwest (rear) and southwest (side) elevations of original 1920s block, looking east.

### 3.1.7 Charlotte Linen Supply Company (MK2210) – 1420 South Mint Street

The Charlotte Linen Supply Company (MK2210) was determined ineligible for NRHP listing in 2011 due to its lack of “sufficient integrity” (Mattson and Alexander 2011:190). The ca. 1939 Tudoresque building and its 1990s addition are located in the southern corner of the APE at the corner of South Mint and Winona Streets (Figure 11). The building’s original block is one-story-tall and is overall rectangular in form. It is topped with a side-gable roof and finished with stucco. The southeast-facing facade is five-bays-wide with a modern replacement door occupying the fourth bay and modern windows occupying all other bays. A brick chimney pierces the southeastern slope of the roof. The northeast (side) elevation of the original block has a single door and a large, fixed window. The 1990s addition projects from the northwest (rear) elevation and is topped with a gable roof. Based upon available Google Street View imagery from 2011, the resource has not changed significantly since its previous evaluation (Google Maps) and is recommended to remain ineligible for NRHP listing due to significant alterations to its overall plan, its loss of material integrity, and lack of historical significance.





## Reconnaissance-Level Historic Architecture Survey



Figure 11. Left, oblique of southeast-facing facade and northeast (side) elevation of Charlotte Linen Supply Company (MK2210), looking west; right, view of northeast (side) elevation and 1990s addition (in distance), looking northwest.

### 3.1.8 Charlotte Saw and Knife Company Building (MK4505)– 420 West Palmer Street

The Charlotte Saw and Knife Company Building (MK4505) is a one-story, 1950s brick warehouse located in the eastern half of the APE (Figure 12). While the building retains its rectangular plan, flat roof and front-facing parapet it suffers from a significant loss of material integrity. As evidenced by ghost marks on its facade and secondary elevations, the building's fenestration plan has been severely altered and includes the infill of windows and doors. Additionally, its front entrance has been heavily altered with the replacement of original store windows with roller-track garage doors. Since 2011, when it was initially determined ineligible for NRHP listing, the resource's material integrity has continued to diminish (Mattson and Alexander 2011:192). For these reasons, in addition to its lack of historical significance within the context of Charlotte's commercial history, the Charlotte Saw and Knife Company building is recommended to remain ineligible for NRHP listing and does not merit further investigation.



Figure 12. Left, oblique of southwest-facing facade and southeast (side) elevation, looking north; right, oblique of facade and northwest (side) elevation, looking east.



## Reconnaissance-Level Historic Architecture Survey

### 3.1.9 Electric Supply and Equipment Company (MK1877) – 419-423 Penman Street

Located in the eastern half of the APE, the ca. 1925 two-story, brick Electric Supply and Equipment Company (MK1877) currently functions as an office building (Figure 13). Despite being designated as a local historic landmark by the Charlotte-Mecklenburg Historic Landmarks Commission in 2001, Mattson and Alexander's 2011 recommendation of NRHP ineligibility received NCHPO concurrence. In their 2011 survey they reported that (Mattson and Alexander 2011:107):

In 2000-2001, significant changes were made to the building during its conversion to office use. The original entrance at the center of the north elevation was replaced by a window, and the entrance was relocated to the side (east) elevation. A modern, covered walkway with brick piers and a one-bay facade now runs along the east elevation and leads to the entry which is designated by a projecting, two-story addition that is capped by a vaulted roof... Replacement metal sash windows with larger panes than the original windows now fill the rear elevations.

The resource has not changed significantly since 2011, based on images from the previous survey and Google Street Views (Google Maps). It is therefore recommended to remain ineligible for the NRHP under all criteria due to its continued lack of integrity.



**Figure 13.** Left, oblique of the northeast (side) and northwest (rear) elevations of Electric Supply and Equipment Company (MK1877), looking south; right, view of southeast-facing facade, looking northwest.

### 3.1.10 Cathey Lumber Company Warehouse (MK2252) – 501 Penman Street

The brick-clad 1920s Cathey Lumber Company Warehouse (MK2252) stands one-story tall in the eastern half of the APE facing Penman Street (Figure 14). Currently utilized as an office building, the former warehouse is topped with a flat roof and its northeast-facing facade features a full-height, front-facing gabled pediment with two pilasters that mimic the corner pilasters. The door is centered under the pediment and framed on both sides by two narrow, vertical windows, which sit within brick infill of original window openings. Additional infilled openings are visible on the building's secondary elevations and all remaining openings appear to hold replacement window units. The resource was determined ineligible for NRHP listing in 2011 due to its lack of "historical or architectural significance" (Mattson and Alexander





## Reconnaissance-Level Historic Architecture Survey

2011:191). It has not changed significantly since 2011, based on Google Street Views (Google Maps), and is recommended to remain ineligible for NRHP listing.



Figure 14. Left, view of northeast-facing facade of Cathey Lumber Company (MK2252), looking southwest; right, oblique of northeast-facing facade and northwest (side) elevation facing south.

### 3.1.11 H&S Roofing Company Office Building (MK4507) – 506 West Summit Avenue

The H&S Roofing Company Office Building (MK4507) at 506 West Summit Avenue was determined ineligible for NRHP listing in 2011 due to its lack of “special historical or architectural significance” (Mattson and Alexander 2011:189). Located in the southern half of the APE, the ca. 1955 one-story Modernist building is rectangular in form and topped with a low-sloped shed roof that has deep eaves and large, exposed rafter tails (Figure 15). The southwest-facing facade features a central door and is framed by two single-light windows, all of which are replacement. Metal security grilles front the doors and windows. The northwestern corner is adorned by a decorative concrete panel while the remainder of the building’s exterior is clad with wood siding. The building has not changed significantly since 2011, based on Google Street Views (Google Maps). Due to its continued lack of material integrity, and its lack of notability within the larger context of Charlotte’s expansive Modernist building collection, it is recommended to remain ineligible for the NRHP.



## Reconnaissance-Level Historic Architecture Survey



Figure 15. Left, southwest-facing facade of H&S Roofing Company Office Building (MK4507), looking northeast; right, oblique of southwest-facing facade and southeast (side) elevation, looking north.

### 3.1.12 Office Building (MK4509) – 520 West Summit Avenue

The ca. 1960, Modernist-style, brick-veneered Office Building (MK4509) stands within the southern half of the APE (Figure 16). The building is one-story-tall and rectangular. Its seven-bay-wide, southwest-facing facade features a large twelve-pane, metal-frame window in the northernmost bay, with six smaller metal-frame windows detailed with four square panes on each side. Although the building retains early or original materials such as its windows and brick veneer, it was recommended ineligible for NRHP listing due to its lack of “special historical or architectural significance” as a Modernist-style office building within Charlotte’s architectural canon (Mattson and Alexander 2011:189). As the building has not changed noticeably since this 2011 determination, it is recommended that it remain ineligible for NRHP listing.



Figure 16. Left, oblique of southwest-facing facade and northwest (side) elevation of Office Building (MK4509), looking east; right, oblique of southwest facing facade and southwest-facing side elevation, looking north.





## Reconnaissance-Level Historic Architecture Survey

### 3.1.13 Office Building/Warehouse (MK4503)– 1430 South Mint Street

The one-story early- to mid-twentieth-century brick building stands at the southern corner of the APE. Formerly a warehouse, it is an office building (Figure 17). The rectangular building features a southwest-facing facade which is seven-bays-wide and displays three modern replacement doors evenly spaced apart and replacement windows filling the bays in between. The facade is sheltered under a modern metal overhang. The southeast (side) elevation is nine-bays-wide and also displays replacement doors and windows. The building was determined ineligible for NRHP listing in 2011 (Mattson and Alexander 2011:190) and has not changed significantly since then based on Google Street Views (Google Maps). The resource is therefore recommended to remain ineligible for the NRHP under all criteria due to its continued loss of material integrity and historical significance.



Figure 17. Left, view of southwest-facing facade of Office Building/Warehouse (MK4503) at 1430 South Mint Street, looking north; right, view of southeast (side), looking north.



## Reconnaissance-Level Historic Architecture Survey

### 3.2 Newly Surveyed Resources

Table 3. Newly Surveyed Resources

AECOM Survey No.	SSN	Name	Date of Construction (Source)	Recommended For Further Survey
14	MK4501	Office Building, 1310 South Mint Street	1965-1968 (Historic aerial imagery)	No
15	MK4504	Warehouse (Alongside Brewing), 412 West Palmer Street	Ca. 1945 (Mecklenburg tax data)	No
16	MK4506	Warehouse (South End Eats), 500 West Summit Avenue	Ca. 1969 (Mecklenburg tax data)	No
17	MK4508	Commercial Building, 511 West Summit Avenue	Ca. 1936 (Mecklenburg tax data)	No

#### 3.2.1 Office Building (MK4501)– 1310 South Mint Street

Located on a 0.792-acre parcel, the Office Building at 1310 South Mint Street (MK4501) stands two-stories-tall and features an overall rectangular form. According to tax records, it was constructed in 1920 (Mecklenburg County Tax Records 2024); however, historic aerials indicate that the ca. 1920 building was torn down between 1960 and 1965 and the current one constructed between 1965 and 1968.<sup>1</sup> The current Modernist-style resource is topped with a flat roof and clad in light-colored brick veneer (Figure 18). It stands one-story tall at its facade fronting South Mint Street, but follows the slope of its lot and presents an exposed basement level at its rear. Minimal openings punctuate its elevations and are notably limited to a main entrance on the southeast-facing facade, a secondary entrance on the southwest (side) and northeast (side) elevations, and a garage door on the northwest (rear) elevation. A simple, recessed entry adorned with a glass-block decorative wall shelters the main entrance. Although the Office Building retains much of its ca. 1968 material such as doors, windows, and brick veneer exterior, it is an unremarkable example of a Modernist-style commercial building; many better examples are found throughout Charlotte. Due to its lack of historical and architectural significance, the resource is recommended as not eligible for the National Register and does not warrant further investigation.

<sup>1</sup> See Historic Aerials by Netoline, address search “1310 South Mint Street, Charlotte, NC” at <https://www.historicaerials.com/viewer>.





## Reconnaissance-Level Historic Architecture Survey



**Figure 18. View of southeast-facing facade of Office Building at 1310 South Mint Street (MK4501), looking north; right, southwest (side) elevation, facing northeast.**

### 3.2.2 Warehouse (Alongside Brewing) (MK4504) – 412 West Palmer Street

According to tax records, the Warehouse (MK4504) located at 412 West Palmer Street was constructed in 1945, which is generally supported by the earliest available historic aerial from 1951 (Mecklenburg County 2024; Mecklenburg County Time Machine 2024). Currently home to a brewery, the resource is one-story-tall and rectangular (Figure 19). The three-bay-wide, southwest-facing facade is punctuated by an off-center modern metal door which is topped by a modern metal transom window. A large, roller-track garage door is found to the right of the entrance. Both the door and its placement are likely not original to the building. A large, multi-pane replacement window set in metal surrounds comprises the facade's left bay and is fronted by metal security grilles. The southeast (side) elevation stands five-bays-wide and features two one-over-one, vinyl-sash windows and three fixed, six-pane, metal-frame windows. Although the same length as the southeast, the northwest (side) elevation is nine-bays-wide with four one-over-one replacement windows and five fixed windows like those on the other side elevation. This latter grouping of windows appears to be historic. Two replacement doors also mark the building's northwest elevation. Although the Warehouse retains some of its ca. 1945 materials such as fixed windows and brick exterior, it has lost a significant amount of original material and is an unremarkable example of a mid-century commercial warehouse in Charlotte. Due to this loss of material integrity and lack of historical and architectural significance, it is not recommended eligible for NRHP listing and does not warrant further investigation.



## Reconnaissance-Level Historic Architecture Survey



**Figure 19.** Oblique of southwest-facing facade and southeast (side) elevation of Warehouse (MK4504), looking north; right, oblique of facade and northwest (side) elevation, looking east.

### 3.2.3 Warehouse (South End Eats) (MK4506)– 500 West Summit Avenue

Located on a 0.453-acre parcel, this warehouse (MK4506) at 500 West Summit Avenue is a one-story-tall rectangle. According to tax records, it was built in 1969, which is generally supported by its appearance between 1968 and 1978 on historic aerials (Mecklenburg County 2024). The building is topped with a low-sloped, front-facing gable roof and clad in vertical metal siding (Figure 20). The southwest-facing facade is three-bays-wide with an off-center entrance flanked by a secondary door and a small plate-glass window. Both sets of paired doors and the window are modern replacement units. A concrete block wall rises along the building's southeast (side) elevation and blocks all of the building's openings at this elevation. The northwest (side) elevation was not fully visible at the time of survey, but appears to be punctuated by another entrance and windows like those on the facade. Due to a significant loss of original material and a reconfiguration of its original fenestration, as indicated by 2019 Google Street View images (Google Maps), the building does not stand as a notable example of a mid-twentieth-century commercial warehouse. Due to this loss of integrity and lack of historical significance, it is recommended ineligible for NRHP listing and does not warrant further investigation.





## Reconnaissance-Level Historic Architecture Survey



Figure 20. Left, view of southwest-facing facade of Warehouse at 500 West Summit Avenue (MK4506), looking northeast; right, oblique of facade and southeast (side) elevation, looking north.

### 3.2.4 Commercial Building (MK4508) – 511 West Summit Avenue

The commercial building (MK4508) located at 511 West Summit Avenue is rectangular and a single story-tall. Standing on a 1.1-acre parcel, it has two sections – a ca. 1936 gable-roof block and a 1978-1983 flat-roof block<sup>2</sup>. According to historic aerials, the Contemporary-style block that fronts on West Summit Avenue and wraps around to Wilmore Drive was constructed between 1978 and 1983 to replace a collection of smaller buildings.<sup>3</sup> The later modern addition is topped with a flat roof and clad in brick veneer (Figure 21). It dominates the northeast-facing facade where a plate-glass door framed by a window on either side is sheltered under an engaged triangular portico. The portico is supported by a wide, curved brick column and is approached by a brick staircase. A half-story, box-shaped detail resting above the center of the facade is punctuated by a single, plate-glass window. The northwest (side) elevation shows the modern block with two garage door openings and the ca. 1936 block to the west (Figure 21). It is topped with a composition-shingled gable roof and constructed of concrete block. The northwest (side) elevation features a garage opening covered by a sliding wood door and a metal door. Although the ca. 1936 block appears intact, the attached 1978-1983 block has diminished the integrity of the original one. In addition to its low material integrity, the resource is not a notable example of an early-twentieth-century commercial building in Charlotte and is therefore recommended ineligible for NRHP listing and does not warrant further investigation.

<sup>2</sup> See Historic Aerials by Netoline, address search “511 West Summit Avenue, Charlotte, NC” at <https://www.historicaerials.com/viewer>.

<sup>3</sup> Ibid.



## Reconnaissance-Level Historic Architecture Survey



**Figure 21.** Left, view of northeast-facing facade of Commercial Building at 511 West Summit Avenue, looking southwest; right, oblique view of northeast-facing facade and north (side) elevation, facing south.

### 4 Conclusions

It is not recommended that any newly surveyed historic resources be further assessed at the intensive level to determine whether they are eligible for NRHP listing. The previously listed Textile Mill Supply Company Building (MK1835) continues to merit NRHP eligibility and should be included in any future effects assessment for the project.





## Reconnaissance-Level Historic Architecture Survey

### 5 References

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Netroline.

2024 Historic aerals, various. Available at <https://www.historicaerials.com/viewer>.

Mattson, Alexander & Associates

2011 Historic Architectural Resources Survey Report: Charlotte Railroad Improvement and Safety Program (CRISP), Norfolk Southern (NS) Mainline Track Improvements, Mecklenburg County. ER 01-9056. Available at [https://files.nc.gov/ncdcr/historic-preservation-office/PDFs/ER\\_01-9056.pdf](https://files.nc.gov/ncdcr/historic-preservation-office/PDFs/ER_01-9056.pdf).

Morrill, Dr. Dan L.

1998 National Register of Historic Places Registration Form: Textile Mill Supply Company Building. Available at <https://files.nc.gov/ncdcr/nr/MK1835.pdf>.

North Carolina State Historic Preservation Office, HPOWeb.

# **Attachment 7**

**Archaeological Assessment, AECOM, October 2024**





# Archaeological Assessment Technical Memorandum

## Charlotte Passenger Rail Facility



**September 2024**



# Archaeological Assessment Technical Memorandum

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## Archaeological Assessment Technical Memorandum

### 1 Introduction

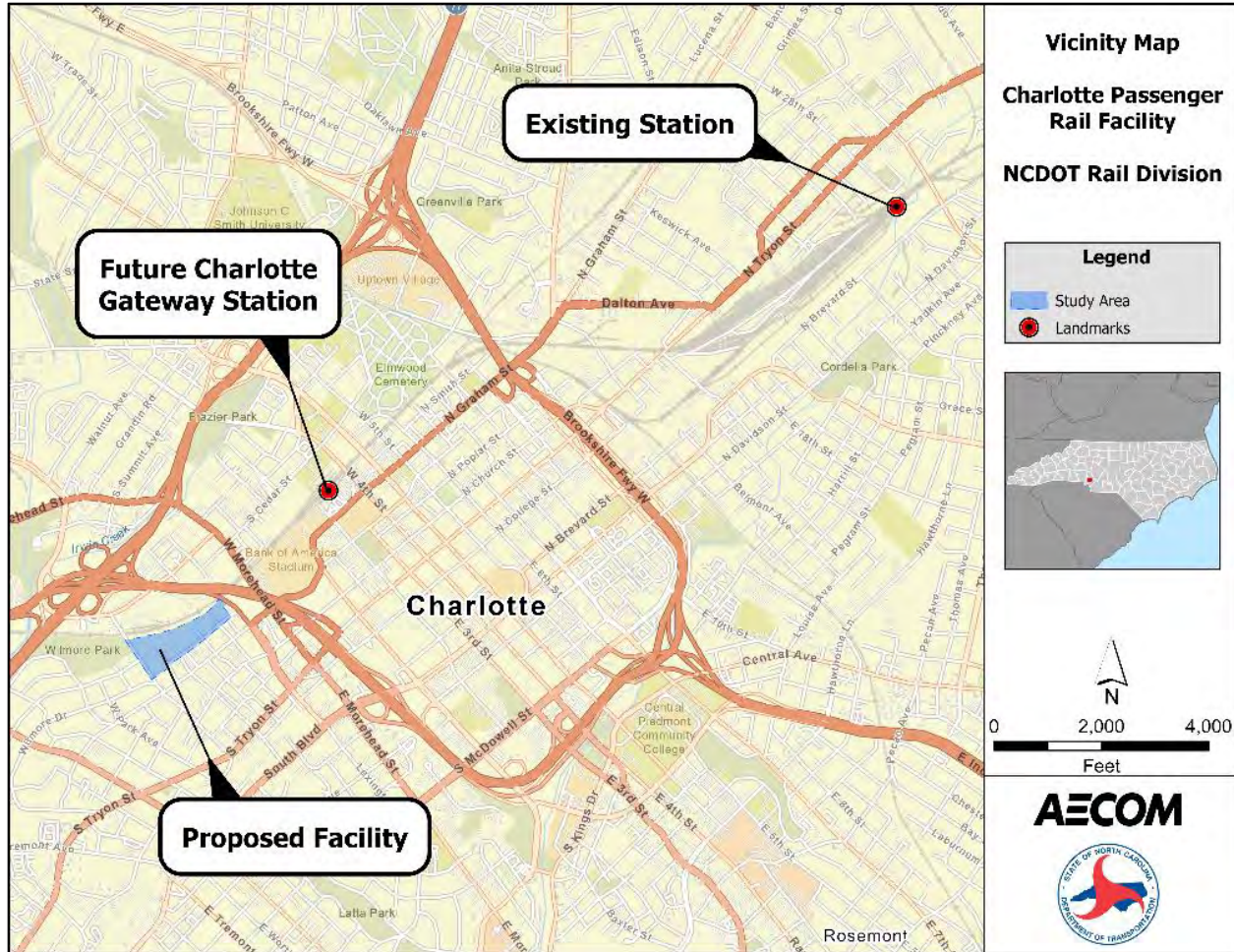
The North Carolina Department of Transportation (NCDOT) State Transportation Improvement Project (STIP) P-2918F Charlotte Passenger Rail Facility (CPRF) will construct a new locomotive and passenger railcar maintenance facility southwest of Uptown Charlotte to accommodate the future move of the existing Charlotte Station from its current location (adjacent to the Norfolk Southern (NS) Charlotte Yard northeast of Uptown) to its new site at Charlotte Gateway Station (see Figure 1). Through the Alternatives Analysis process, which included extensive public outreach, a Locally Preferred Alternative (LPA) was selected to address the purpose and need of the Piedmont Improvement Program (Southern High Speed Rail Corridor). The proposed facility will serve future repairs and maintenance for Amtrak's new Airo fleet passenger trains along the Southern High Speed Rail Corridor and support the growth of intercity passenger rail and the new Charlotte Gateway Station, in Uptown Charlotte. The archaeological area of potential effects (APE) is defined as the proposed extent of the ground disturbing activities within the project footprint.

AECOM Archaeologist Mary Glenn Krause, on behalf of Shane Petersen, MA, consulted files at the NC Office of State Archaeology (OSA) on May 18, 2024, and reviewed files maintained online by the NC Historic Preservation Office (HPO) (HPOWEB 2.0 2024) on May 15, 2024. Additional historic research on nineteenth-century gold mining in the project vicinity was conducted by Jay Mayfield-Loomis on August 20, 2024. These tasks identified known archaeological and historic resources, respectively, in or near the project footprint under consideration for the Charlotte Passenger Rail Facility (or the PRFT) project in Mecklenburg County, North Carolina. Additional online resources (e.g., soil data, topographic maps) were consulted on May 15, 2024, to help evaluate cultural resource sensitivity for the project.



## Archaeological Assessment Technical Memorandum

Figure 1: Project Location







## Archaeological Assessment Technical Memorandum

### 2 Previous Investigations

No previously recorded archaeological sites are located within the Charlotte Passenger Rail Facility (PRFT) project footprint. Seven previously identified archaeological sites are located within a 2.0-mile buffer of the project footprint (Table 1 and Figure 2).

Site 31MK1089 is a historic archaeological site comprised of structural remnants of outbuildings possibly associated with the Judge William P. Bynum (1820-1909) House and the Dr. Orr Home (Joseph et al. 2008). These structural remains are thought to have been constructed between 1862 and 2000 according to historic maps from 1877 and 1911 (Joseph et al. 2008). The site was recommended as not eligible for listing on the National Register of Historic Places (NRHP) as part of a proposed study area for the construction of the new Charlotte, North Carolina Federal Courthouse.

Site 31MK1178 is a historic archaeological site that was identified as part of an ongoing project. The site form and its associated report were not submitted to the NC OSA as of September 6, 2024.

The remaining five archaeological sites are historic cemeteries within the city limits of Charlotte.

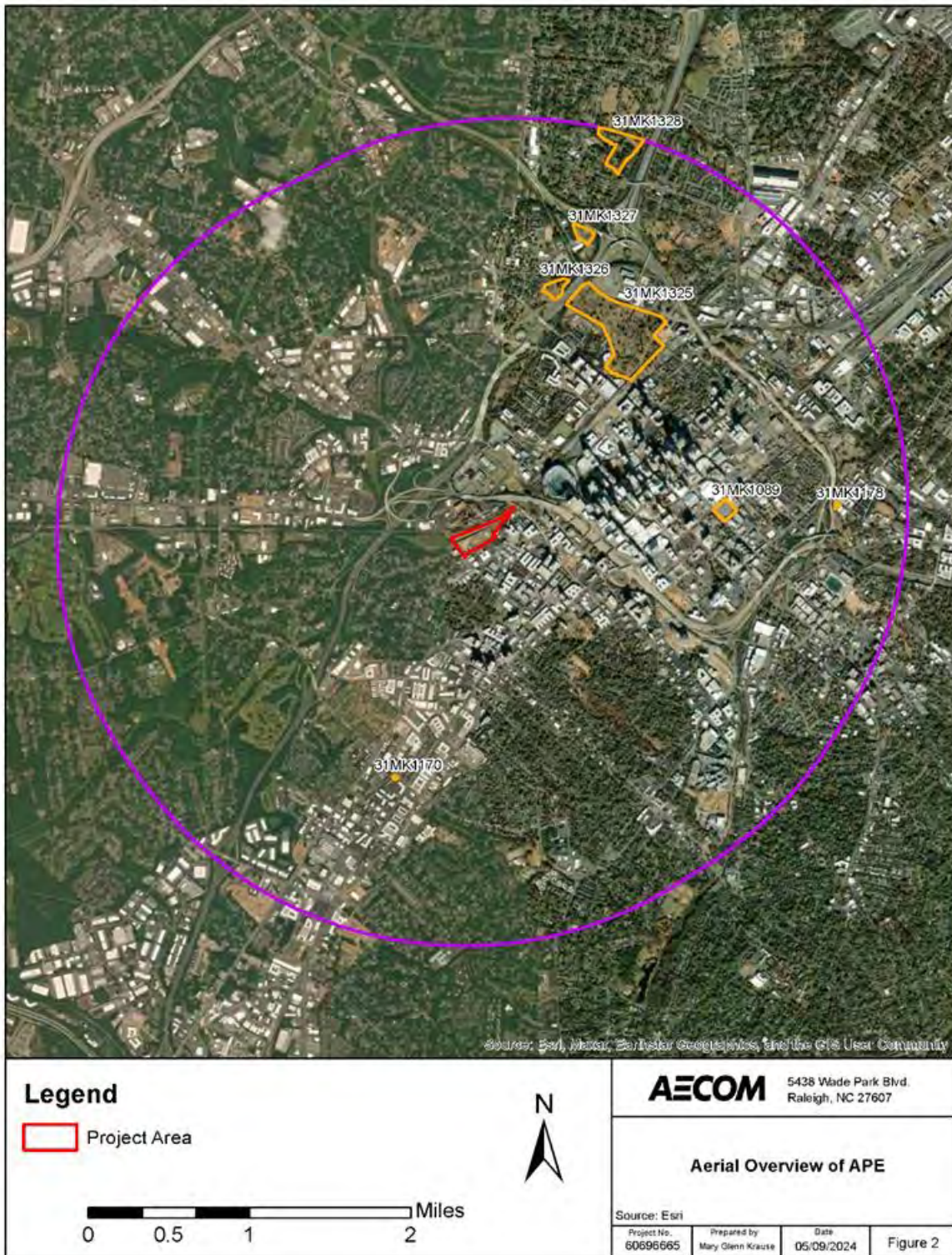
**Table 1. Archaeological Sites within 2.0-Miles of the APE**

Site ID	Cultural Affiliation	Description	NRHP Eligibility
31MK1089	Historic	19th-20th c. structural remnants of outbuilding associated with the Judge Bynum House and Dr. Orr Home	Not eligible
31MK1170	Historic	Shuman Cemetery	Undetermined
31MK1178	Historic	Nondescript Historic Site Under Review	Undetermined
31MG1325	Historic	Elmwood/Pinewood Cemetery	Undetermined
31MG1326	Historic	West Pinewood Cemetery	Undetermined
31MG1327	Historic	North Pinewood Cemetery	Undetermined
31MG1328	Historic	Oaklawn Cemetery	Undetermined



## Archaeological Assessment Technical Memorandum

Figure 2: Aerial Overview of APE and Archaeological Sites within 2.0 Miles







Archaeological Assessment Technical Memorandum

As of May 2024, a total of two previously recorded above-ground resources are located within the project footprint (Table 4). The warehouse, which was built between the 1940s and 1956, was demolished between 2016 and 2018. The office building, which was also built between the 1940s and 1956, is still intact as of May 2024. Both sites are Surveyed Only (SO) and were determined to be ineligible for the National Registrar of Historic Places (NRHP) in 2011 (HPO Web 2024). It should be noted that over a thousand inventoried above-ground individual resources or resource districts are recorded within a 2.0-mile buffer of the project footprint (HPO Web 2024), including numerous NRHP-listed and -eligible projects. Due to some of these resources’ proximity to the project, the viewshed for some of these resources will be impacted by development within the project footprint. For more information regarding aboveground cultural resources, please refer to the Architectural History review for the PRFT project.

Table 2. Historic Resources within Project Footprint

Site ID	Site Name	Description	Status	NRHP Eligibility
MK2231	North Carolina Highway Commission Garage and Warehouse	Early 20th c. 2-story stepped gabled facade brick warehouse	Surveyed Only	Ineligible
MK----	Office Building	c. 1960 2-story flat roof brick-faced office building	Surveyed Only	Ineligible

No previously recorded cultural surveys or environmental reviews have been conducted within the project area. A total of six cultural surveys or environmental reviews have been conducted within 2.0 miles of the project footprint (Table 2). An additional environmental review for the removal of a Duke Energy Carolinas Transmission Line in Mecklenburg, North Carolina is ongoing, and the final report has not yet been submitted to the OSA.



## Archaeological Assessment Technical Memorandum

**Table 3. Environmental Surveys within a 2.0-Mile Buffer**

Survey Title	Author	Company	Year
Remove Duke Energy Carolinas Transmission Line, Ch	N/A	N/A	N/A
Phase I cultural resources survey of proposed Davidson Street Maintenance Facility, City of Charlotte, Mecklenburg County, North Carolina	Bradley et al.	Coastal Carolina Research, Inc.	2009
West Corridor Rapid Transit Project Archaeological Survey	Lautzenheiser et al.	Coastal Carolina Research, Inc.	2005
Archaeological Survey of the Proposed Charlotte Multi-Modal Station (CMMS), Charlotte Area Transit System, North Carolina	Lautzenheiser et al.	Coastal Carolina Research, Inc.	2005
Archival Research, Mapping, and Ground Penetrating Radar Survey at Elmwood/Pinewood Cemetery	Espenshade et al.	New South Associates	2012
Archaeological Identification Survey of the Proposed Lynx Blue Line Extension, Light Rail Project, Charlotte Area Transit System, Mecklenburg County, North Carolina	Gosser et al.	Coastal Carolina Research, Inc.	2009
A preliminary examination of historic artifacts: Charlotte Convention Center site, Charlotte, Mecklenburg County, North Carolina	Alan J. May	Schiele Museum of Natural History	1992

While no previously recorded archaeological sites or above-ground historic properties have been identified within the current APE, gold mining operations in Mecklenburg County during the mid-nineteenth century are well-documented.

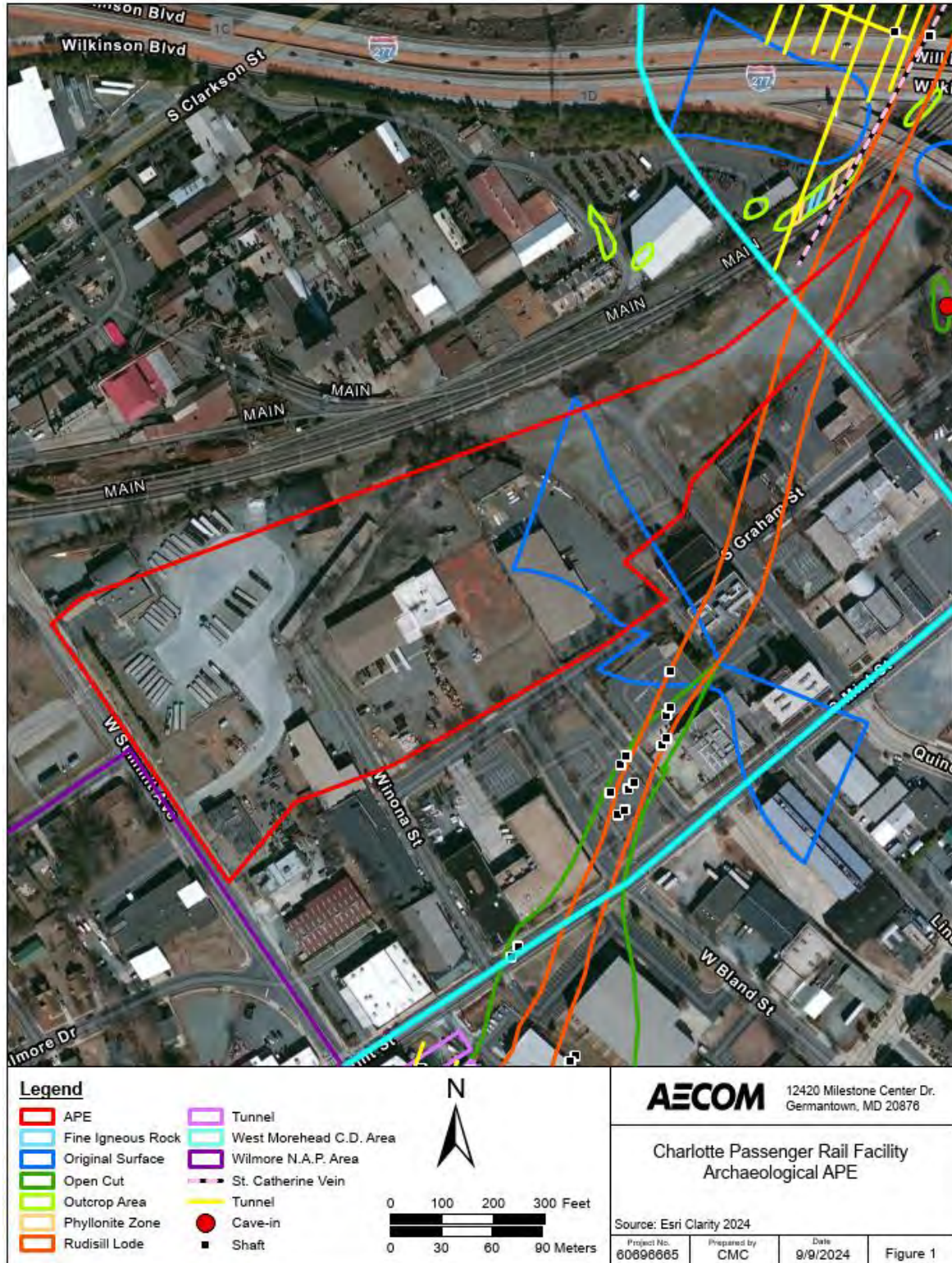
There are two historic gold mines that have been reported in the vicinity of the current APE: Rudisill and St. Catherine. The two mines opened in 1834, sharing one lode, and were the largest and most lucrative of the gold mines within Mecklenburg County in the nineteenth century. An 1896 geological survey (Nitze and Hanna), topographic maps, historic construction blueprints, and twentieth century geologic investigations (Reid et al. 2005) have placed the mines along the Rudisill Lode in the vicinity of what is now Bank of America Stadium and extending southwest to the south of Graham and Mint Streets. Rudisill was mined to a depth of 350 feet below ground surface, and St. Catherine was mined to a depth of 460 feet below ground surface (NC DNCR 2024). The mines contained features such as mining shafts, ventilation shafts, tunnels, lode zones, and open-cut operations along the ground surface (Reid et al. 2005). St. Catherine mining operations ended in 1887, and the Rudisill mining operations ended in 1938 (NC DNCR 2024). The North Carolina Geological Survey investigated geological hazards in portions of Charlotte in 2005, which resulted in the mapping of mining features associated with both the Rudisill and St. Catherine mines (Figure 3) (Reid et al. 2005).





## Archaeological Assessment Technical Memorandum

Figure 3. Archaeological APE in Relation to Mining Features





### 3 Archaeological Assessment

### Table 4. Soils within Project Footprint

### Figure 4. Soils within the Project Footprint







## Archaeological Assessment Technical Memorandum

From a review of historic United States Geological Survey (USGS) topographic maps from 1907 to 1985 and aerial photography from 1956 to 2023, it appears that the project footprint remained largely undeveloped until the 1904s, when the surrounding roads were developed (topoView 2024; Historic Aerials 2024). The first historic structures are present within the APE in 1956 aerial imagery, but most are demolished or removed by the early 2000s. For the purposes of this archaeological background review, the soils data, previous above-ground historic resources, and visual street view observances suggest that this project has a low likelihood of recovering artifacts from significant intact soil-horizons due to a high level of previous ground disturbance. The proposed grade for the facility within the project footprint ranges in depth from the ground surface to roughly 25 feet below existing surfaces. As noted above, cores within this area revealed severely disturbed modern soils. Additionally, recorded nineteenth-century mining activities in the vicinity do not appear to extend into the project footprint as currently designed.

While there is a possibility of some mid- to late 20th century historic archaeological remains, it is recommended that the potential for any such sites to convey archaeological significance is negligible based on examination of surrounding archaeological studies within a 2.0-mile buffer of the project footprint, historic aerials, soil maps, and above-ground resources. No NRHP-eligible archaeological resources are anticipated within the project footprint as currently designed. A formal Phase I archaeological survey is not recommended within the project footprint as currently designed.



## Archaeological Assessment Technical Memorandum

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# **Attachment 8**

## **Section 106 Correspondence**



U.S. Department  
of Transportation

**Federal Railroad  
Administration**

1200 New Jersey Avenue, SE  
Washington, DC 20590

September 12, 2024

Elizabeth Toombs  
Tribal Historic Preservation Officer  
Cherokee Nation  
PO Box 948  
Tahlequah, OK 74465

RE: Charlotte Passenger Rail Facility  
Charlotte, Mecklenburg County, North Carolina  
Initiation of Section 106 Consultation, Request for Information and Comment, and Invitation to be a  
Consulting Party

Dear Ms. Toombs:

The Federal Railroad Administration (FRA) is providing approval to the North Carolina Department of Transportation (NCDOT) for the re-evaluation of the proposed Charlotte Passenger Rail Facility. The Project is located in Charlotte, North Carolina and roughly bounded by Summit Avenue, Graham Street, and the Norfolk Suffolk Railroad (see Figure 1). The Project is an undertaking subject to Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations (36 CFR Part 800) (Section 106). The purpose of this letter is to initiate Section 106 consultation for the Project, to determine if there are historic properties of cultural or religious significance to your Tribe that may be affected by the Project, and to determine if you want to be a consulting party. FRA is also available for Government-to-Government consultation on this Project.

**Project Background**

The Project proposes to construct a new locomotive and passenger railcar maintenance facility southwest of Uptown Charlotte to support the growth of intercity passenger rail and the new Charlotte Gateway Station. The new facility will include storage tracks, an enclosed maintenance facility, an onsite fuel tank and fuel pad, an enclosed train wash facility, and a train crew base.

**Area of Potential Effects**

The area of potential effects (APE), as defined in 36 CFR § 800.16(d), is “the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist.” Direct effects occur at the time of the undertaking, whether physical, auditory, visual, or atmospheric, and result from construction and/or operation of the undertaking. Indirect effects occur later in time or further in distance but are reasonably foreseeable as being caused by the undertaking or are cumulative. FRA delineated the APE to reflect the nature, scale, and location of the entire Project (see Figure 2).



FRA established an APE based upon the nature of the project, its visibility in relation to the local terrain, and the areas within which construction and operational activities may be heard or felt. Due to the area's level terrain, the presence of mature trees and other vegetation, and high building density, the following APE was delineated. It is bounded by South Clarkson to the north and I-277 to the northeast and east. The northern side of South Mint Street serves as its southern boundary. At the intersection of South Mint Street and West Summit Avenue, the APE turns north and follows West Summit Avenue before turning west and continuing behind the buildings fronting the west side of West Summit Avenue. The APE then turns east and follows Merriman Avenue until it reconnects with West Summit Avenue, which comprises the remainder of the APE's western border.

Physical effects from the Project construction will be limited to the proposed construction limits, or Limits of Disturbance (LOD), which includes all areas where construction activities are proposed to occur as well as areas used to support construction such as temporary access routes and equipment staging areas. The estimated depth of disturbance varies throughout the LOD but is anticipated to reach a maximum of 20 feet below the surface in some areas.

No indirect effects have been identified to date; however, they may be defined through consultation and as Project design advances. The noise and vibration analysis revealed no anticipated noise/auditory or vibration effects from increased rail traffic as result of the Project. Further, no construction-related noise or vibration effects are anticipated beyond the LOD based on the proposed activities. Due to the flat nature of the terrain surrounding the Project, the presence of mature trees and other vegetation, and intervening buildings along West Summit Avenue there are no visual effects anticipated to Wilmore Historic District (MK3252), which stands adjacent to the APE's southwestern boundary.

### **Request for Information and Comments**

FRA requests that you: 1) review the enclosed materials and provide any information you have regarding historic properties of religious or cultural significance to your Tribe that may be present in the APE and/or may be affected by the Project, and 2) notify FRA within 30 calendar days from the date of your receipt of this letter whether you accept or decline this invitation to be a Consulting Party. Please e-mail your response to me at [kristen.zschomler@dot.gov](mailto:kristen.zschomler@dot.gov). Thank you for your cooperation on the Project.

Sincerely,

Kristen  
Zschomler

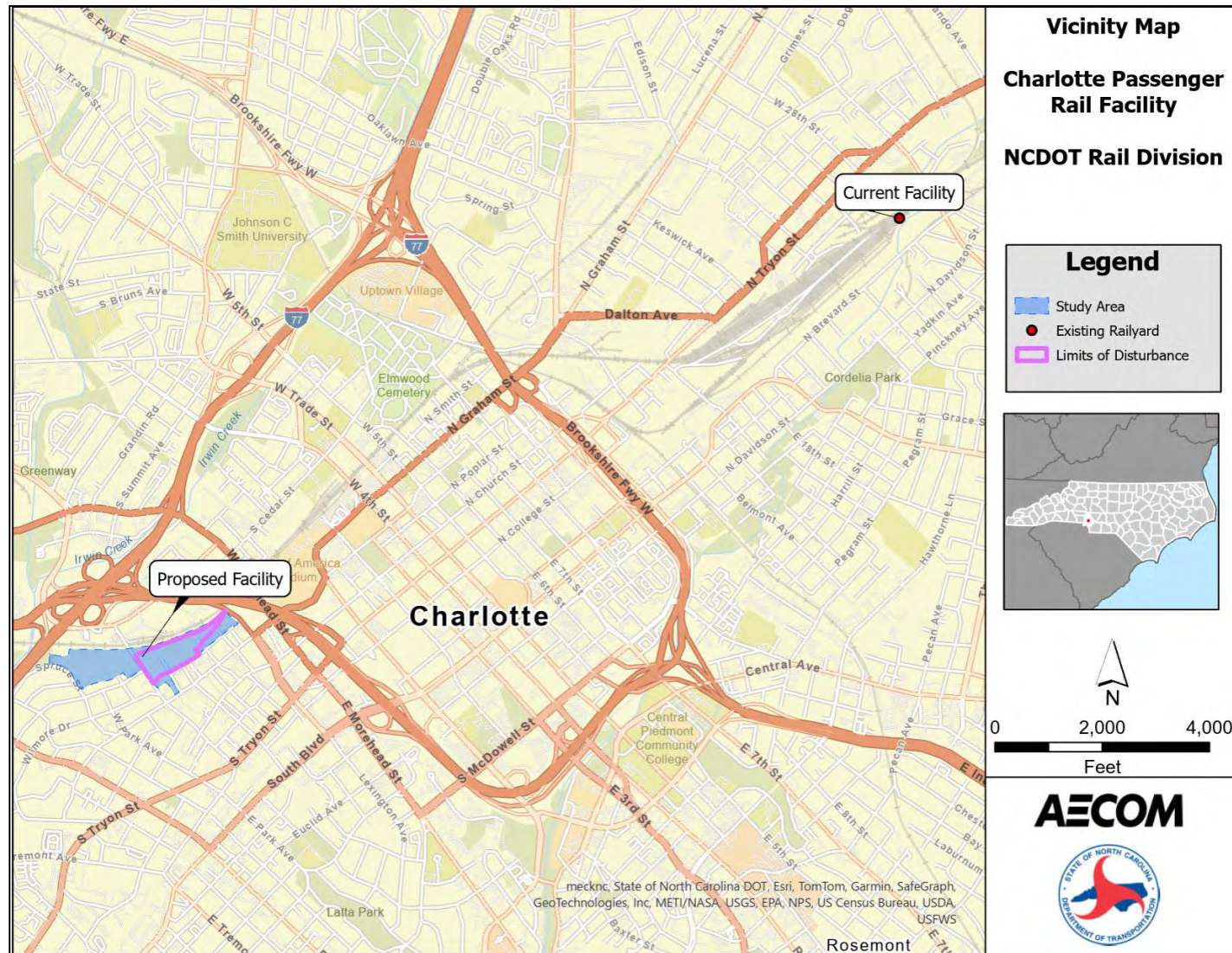
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Kristen Zschomler, RPA

Historian, Architectural Historian, and RPA-Registered Archaeologist  
Supervisor, Major Projects Team, Cultural Resources Division  
Office of Environmental Program Management

Enc: Figure 1: Project Vicinity Map  
Figure 2: Area of Potential Effects

cc: Matthew Potter, PE; [ext-mwpotter@ncdot.gov](mailto:ext-mwpotter@ncdot.gov) Celia Miars, AICP; [celia.miars@aecom.com](mailto:celia.miars@aecom.com)



**Figure 1: Vicinity Map**



**Figure 2: Area of Potential Effects**



U.S. Department  
of Transportation

**Federal Railroad  
Administration**

1200 New Jersey Avenue, SE  
Washington, DC 20590

September 10, 2024

Dr. Wenonah Haire  
Catawba Indian Nation  
Tribal Historic Preservation Office  
1536 Tom Steven Road  
Rock Hill, SC 29730

RE: Charlotte Passenger Rail Facility  
Charlotte, Mecklenburg County, North Carolina  
Initiation of Section 106 Consultation, Request for Information and Comment, and Invitation to be a  
Consulting Party

Dear Dr. Haire:

The Federal Railroad Administration (FRA) is providing approval to the North Carolina Department of Transportation (NCDOT) for the re-evaluation of the proposed Charlotte Passenger Rail Facility. The Project is located in Charlotte, North Carolina and roughly bounded by Summit Avenue, Graham Street, and the Norfolk Suffolk Railroad (see Figure 1). The Project is an undertaking subject to Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations (36 CFR Part 800) (Section 106). The purpose of this letter is to initiate Section 106 consultation for the Project, to determine if there are historic properties of cultural or religious significance to your Tribe that may be affected by the Project, and to determine if you want to be a consulting party. FRA is also available for Government-to-Government consultation on this Project.

**Project Background**

The Project proposes to construct a new locomotive and passenger railcar maintenance facility southwest of Uptown Charlotte to support the growth of intercity passenger rail and the new Charlotte Gateway Station. The new facility will include storage tracks, an enclosed maintenance facility, an onsite fuel tank and fuel pad, an enclosed train wash facility, and a train crew base.

**Area of Potential Effects**

The area of potential effects (APE), as defined in 36 CFR § 800.16(d), is “the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist.” Direct effects occur at the time of the undertaking, whether physical, auditory, visual, or atmospheric, and result from construction and/or operation of the undertaking. Indirect effects occur later in time or further in distance but are reasonably foreseeable as being caused by the undertaking or are cumulative. FRA delineated the APE to reflect the nature, scale, and location of the entire Project (see Figure 2).



FRA established an APE based upon the nature of the project, its visibility in relation to the local terrain, and the areas within which construction and operational activities may be heard or felt. Due to the area's level terrain, the presence of mature trees and other vegetation, and high building density, the following APE was delineated. It is bounded by South Clarkson to the north and I-277 to the northeast and east. The northern side of South Mint Street serves as its southern boundary. At the intersection of South Mint Street and West Summit Avenue, the APE turns north and follows West Summit Avenue before turning west and continuing behind the buildings fronting the west side of West Summit Avenue. The APE then turns east and follows Merriman Avenue until it reconnects with West Summit Avenue, which comprises the remainder of the APE's western border.

Physical effects from the Project construction will be limited to the proposed construction limits, or Limits of Disturbance (LOD), which includes all areas where construction activities are proposed to occur as well as areas used to support construction such as temporary access routes and equipment staging areas. The estimated depth of disturbance varies throughout the LOD but is anticipated to reach a maximum of 20 feet below the surface in some areas.

No indirect effects have been identified to date; however, they may be defined through consultation and as Project design advances. The noise and vibration analysis revealed no anticipated noise/auditory or vibration effects from increased rail traffic as result of the Project. Further, no construction-related noise or vibration effects are anticipated beyond the LOD based on the proposed activities. Due to the flat nature of the terrain surrounding the Project, the presence of mature trees and other vegetation, and intervening buildings along West Summit Avenue there are no visual effects anticipated to Wilmore Historic District (MK3252), which stands adjacent to the APE's southwestern boundary.

### **Request for Information and Comments**

FRA requests that you: 1) review the enclosed materials and provide any information you have regarding historic properties of religious or cultural significance to your Tribe that may be present in the APE and/or may be affected by the Project, and 2) notify FRA within 30 calendar days from the date of your receipt of this letter whether you accept or decline this invitation to be a Consulting Party. Please e-mail your response to me at [kristen.zschomler@dot.gov](mailto:kristen.zschomler@dot.gov). Thank you for your cooperation on the Project.

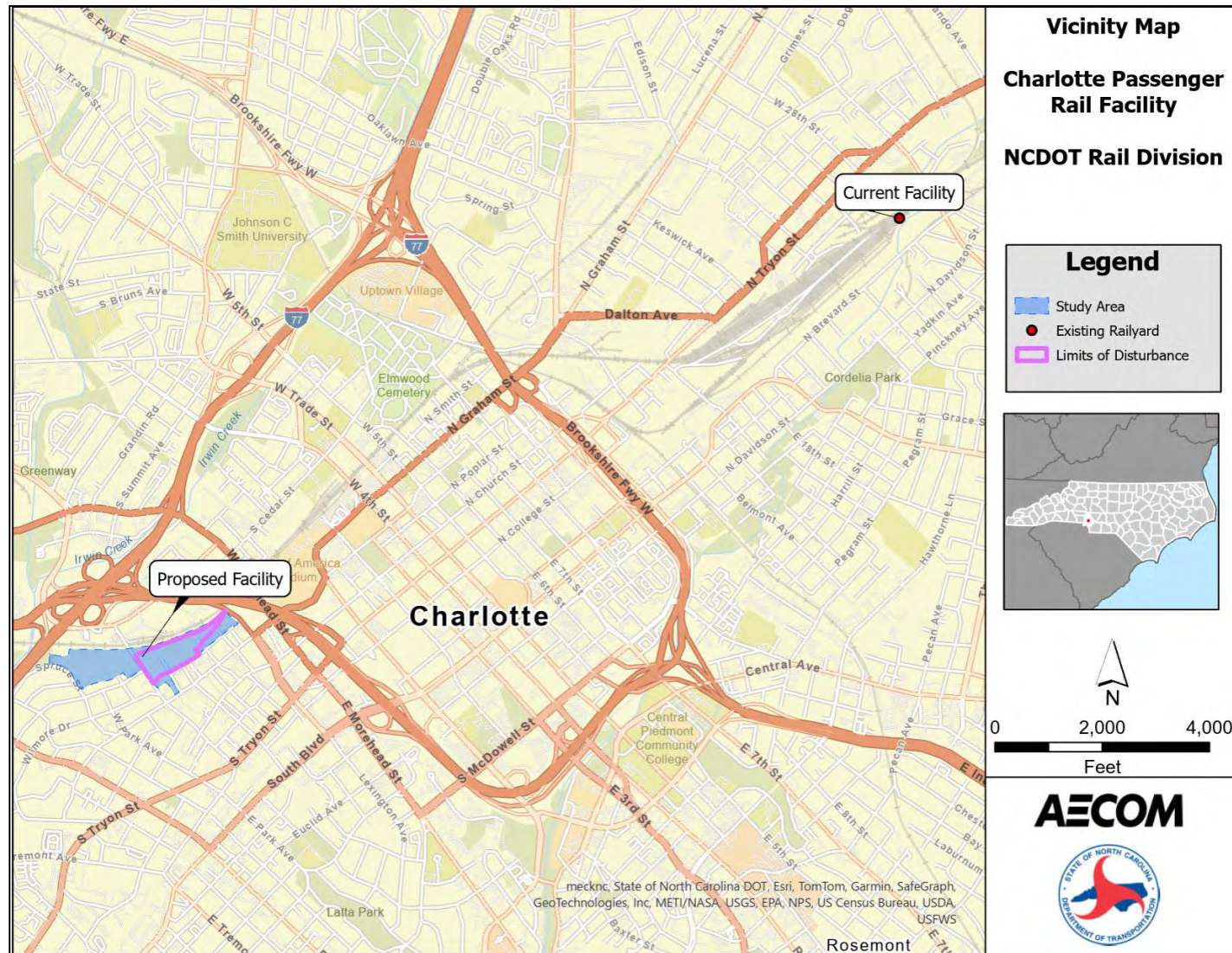
Sincerely,

**Kristen Zschomler**  Digitally signed by Kristen Zschomler  
Date: 2024.09.12 15:15:32 -05'00'

Kristen Zschomler, RPA  
Historian, Architectural Historian, and RPA-Registered Archaeologist  
Supervisor, Major Projects Team, Cultural Resources Division  
Office of Environmental Program Management

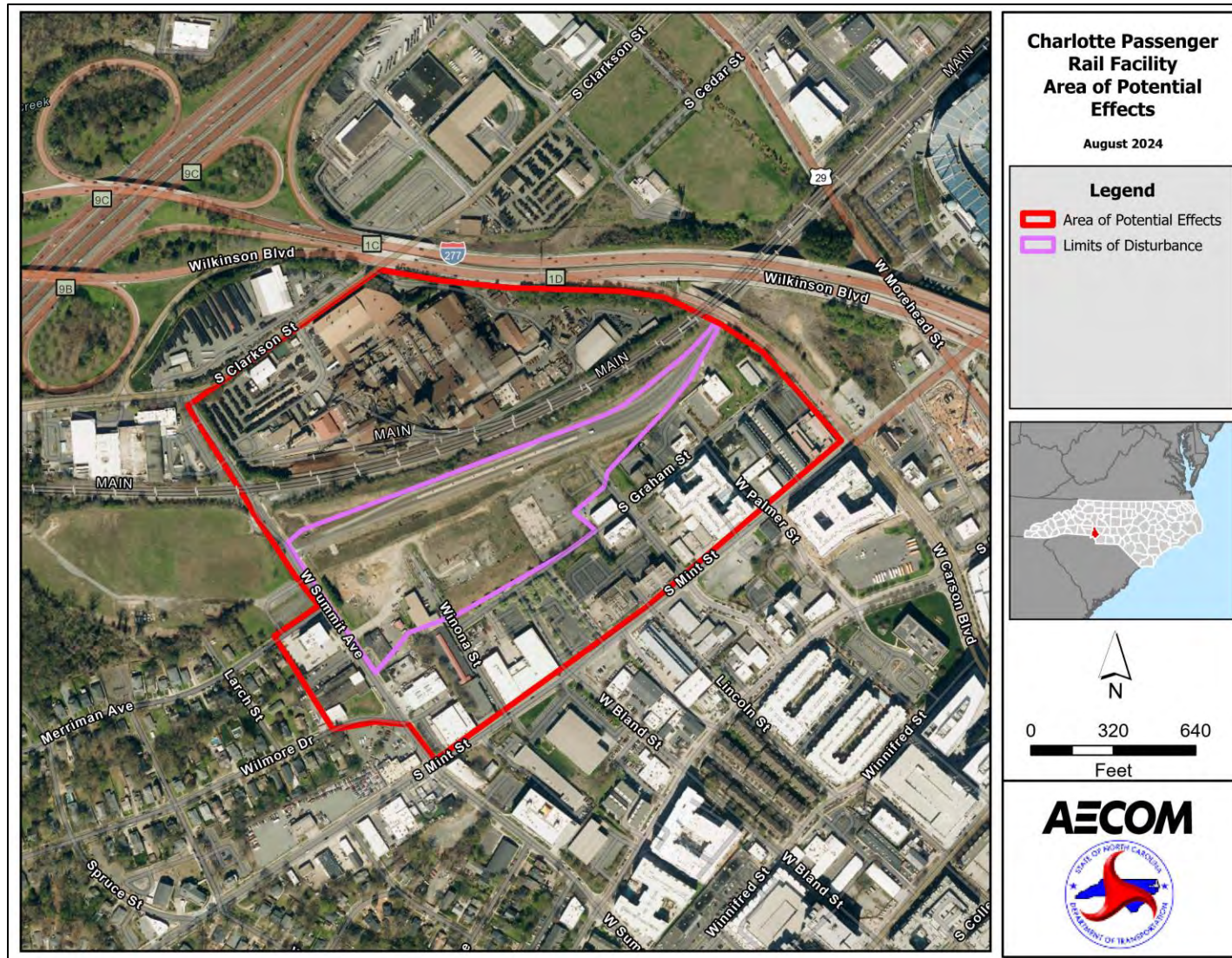
Enc: Figure 1: Project Vicinity Map  
Figure 2: Area of Potential Effects

cc: Matthew Potter, PE; [ext-mwpotter@ncdot.gov](mailto:ext-mwpotter@ncdot.gov) Celia Miars, AICP; [celia.miars@aecom.com](mailto:celia.miars@aecom.com)



**Figure 1: Vicinity Map**



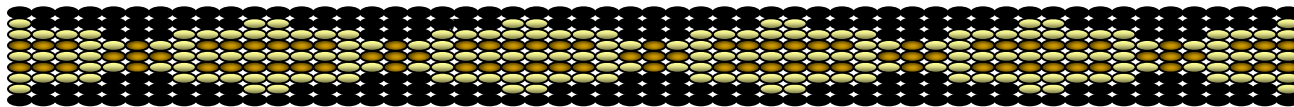


*Figure 2: Area of Potential Effects*

Catawba Indian Nation  
Tribal Historic Preservation Office  
1536 Tom Steven Road  
Rock Hill, South Carolina 29730

0021T\_P2918F

Office 803-328-2427  
Fax 803-328-5791



October 21, 2024

Attention: Kristen Zschomler  
Federal Railroad Administration  
1200 New Jersey Avenue, SE  
Washington, DC 20590

Re. THPO #	TCNS #	Project Description
2024-864-8		Charlotte Passenger Rail Facility – Charlotte, Mecklenburg Co., NC

Dear Ms. Zschomler,

The Catawba have no immediate concerns with regard to traditional cultural properties, sacred sites or Native American archaeological sites within the boundaries of the proposed project areas. **However, the Catawba are to be notified if Native American artifacts and / or human remains are located during the ground disturbance phase of this project.**

If you have questions please contact Caitlin Rogers at 803-328-2427 ext. 226, or e-mail [Caitlin.Rogers@catawba.com](mailto:Caitlin.Rogers@catawba.com).

Sincerely,

Wenonah G. Haire  
Tribal Historic Preservation Officer





U.S. Department  
of Transportation

Federal Railroad  
Administration

1200 New Jersey Avenue, SE  
Washington, DC 20590

November 13, 2024

Renee Gledhill-Earley  
North Carolina State Historic Preservation Office  
4617 Mail Service Center  
Raleigh, NC 27699-4617

RE: Charlotte Passenger Rail Facility  
Charlotte, Mecklenburg County, North Carolina  
Initiation of Section 106, Determination of Eligibility, and Assessment of Effects

Dear Ms. Gledhill-Earley:

The Federal Railroad Administration (FRA) is providing funding to the North Carolina Department of Transportation (NCDOT) for the proposed Charlotte Passenger Rail Facility. The project consists of building a new locomotive and passenger railcar maintenance facility southwest of Uptown Charlotte (see Figure 1).

The Project is an undertaking subject to Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations (36 CFR Part 800) (Section 106). The purpose of this letter is to initiate Section 106 consultation, document FRA's determination of eligibility and assessment of effects, and to seek your office's comments and concurrence on our determinations and assessments to date.

### **Project Purpose and Need**

The NCDOT's Rail Division is proposing a passenger railcar facility southwest of Uptown Charlotte to support the growth of intercity passenger rail and the new Charlotte Gateway Station in Uptown Charlotte. Since the completion of the initial environmental documentation in 2014, the project footprint has been reduced to minimize the project's impact on surrounding communities. The purpose of the proposed project is to accommodate customer growth, support Charlotte as an important destination for travelers in the region, and service modern, efficient passenger train sets.

### **Project Description**

The Charlotte Passenger Rail Facility, a key component of the Piedmont Improvement Program (PIP), encompasses a range of construction and rehabilitation projects aimed at enhancing railroad operations along the Piedmont Corridor from Raleigh to Charlotte. The scope of work includes both above- and below-ground elements. Above-ground work consists of construction of new rail tracks, station facilities, and maintenance buildings; installation of lighting and signage; and rehabilitation of existing structures to accommodate increased passenger train operations. Below-

ground elements consist of foundation work for new structures, grading for rail lines and platforms, and installation of stormwater management systems.

### **Area of Potential Effects**

An Area of Potential Effects (APE), as defined in 36 CFR Part 800.16(d), is “the geographic area or areas within which an undertaking may directly or indirectly cause alternations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.”

FRA defined the APE based upon the nature of the project, its visibility in relation to the local terrain, and the areas within which construction and operational activities may be heard or felt (Figure 2). The APE is bounded by South Clarkson to the north and I-277 to the northeast and east. The northern side of South Mint Street serves as its southern boundary. At the intersection of South Mint Street and West Summit Avenue, the APE turns north and follows West Summit Avenue before turning west and continuing behind the buildings fronting the west side of West Summit Avenue. The APE then turns east and follows Merriman Avenue until it reconnects with West Summit Avenue, which comprises the remainder of the APE’s western border.

Physical effects from the Project construction will be limited to the proposed construction limits, or Limits of Disturbance (LOD), which includes all areas where construction activities are proposed to occur as well as areas used to support construction such as temporary access routes and equipment staging areas. The estimated depth of disturbance varies throughout the LOD but is anticipated to reach a maximum of 20 feet below the surface in some areas.

The noise and vibration analysis revealed that no noise/auditory or vibration effects are anticipated from increased rail traffic as result of the Project. Further, no construction-related noise or vibration effects are anticipated beyond the LOD based on the proposed activities. The APE accounts for any potential visual effects, which are limited due to the flat nature of the terrain surrounding the Project, the low profile of the proposed construction, the presence of mature trees and other vegetation, and intervening buildings along West Summit Avenue.

No indirect effects have been identified to date; however, they may be defined through consultation and as Project design advances.

### **Identification of Historic Properties**

In 2011, a Phase II architectural resources survey was completed for the previous study area. On December 8, 2011, FRA found, and your office concurred that the Project would have “No Effect” on the Wilmore Historic District (MK3252) and Textile Mill Supply Company Building (MK1835). The Build Alternative affected a vacant lot within the Wilmore Historic District, which required a Certificate of Appropriateness from the Charlotte Mecklenburg Historic Landmarks Commission prior to construction. The vacant parcel is no longer part of the Project as all work will occur east of Summit Avenue.

Following the delineation of the APE, AECOM architectural historians and archaeologists completed a Phase I Reconnaissance Level Historic Architecture Survey (Attachment 1) and an



Archaeological Assessment (Attachment 2). HPOWeb, the online GIS map and database maintained by your office, Mecklenburg County tax records, and files at the NC Office of State Archaeology (OSA) were consulted. The architecture survey was completed by an AECOM architectural historian. Field survey methods included photographing the identified resources from the NCDOT right-of-way and the taking of field notes to aid in the understanding of the resource's material composition and potential changes over time. FRA determined that no newly surveyed historic resources be further assessed at the intensive level to determine whether they are eligible for National Register of Historic Places (NRHP) listing. The previously listed Textile Mill Supply Company Building (MK1835) continues to merit NRHP eligibility.

The soils data, previous above-ground historic resources, and visual street view observances support that this project has a low likelihood of recovering artifacts from significant, intact soil-horizons due to high level of disturbance. Two historic gold mines have been reported within approximately 50 feet of the APE: Rudisill and St. Catherine. The North Carolina Geological Survey investigated geological hazards in portions of Charlotte in 2005, which resulted in the mapping of mining features associated with both mines. Mining activities within the vicinity do not appear to extend into the project footprint as currently designed. No NRHP-eligible archaeological resources are anticipated within the project footprint as currently designed. **FRA determined that a Phase I archaeological survey is not warranted within the project footprint as currently defined; however, FRA has notified NCDOT that the Project construction plans mark this area as Environmentally Sensitive.**

#### **Assessment of Effects**

Utilizing the examples of adverse effects from 36 CRF 800.5(a)(2), **FRA finds that the Textile Mill Supply Company Building (MK1835) will not be destroyed, moved, neglected, repaired, or rehabilitated, or have a change of use due to the Project.**

Based on the noise and vibration study discussed above and included as Attachment 3, and due to the flat nature of the terrain surrounding the Project, the presence of mature trees and other vegetation, and intervening buildings along South Graham Street, **FRA finds that the Project will not result in a change of the character of the property's physical features within the property's setting that contribute to its historic significance and it will not introduce visual, atmospheric, or audible elements that would diminish the integrity of the Textile Mill Supply Company Building's historic features.**

#### **Consulting Party Outreach**

A public involvement meeting was held on March 25, 2024, from 5:00 pm to 7:00 pm at the Pritchard at South End Church in Charlotte, North Carolina. Postcards were distributed to residential and business properties surrounding the Project Study Area to advertise the meeting. The purpose of the meeting was to notify the public of the project and provide updated information on changes to the Project limits since the completion of the 2014 FONSI. Comments received will be documented in the Environmental Assessment Re-Evaluation being prepared under the requirements of the National Environmental Policy Act. Comments received did not reference impacts specific to historic resources or request to be a member of the consulting party.

FRA invited federally recognized Indian tribes to participate in consultation by separate letter. Letters were emailed to the Cherokee Nation on September 16, 2024 and mailed to the Catawba Indian Nation on September 17, 2024. There have been no responses received. Copies of the letters are included in Attachment 4.

### Finding of Effects

**FRA finds that the Project as currently proposed will have No Adverse Effects to historic properties based on the condition that NCDOT mark the areas referenced about as environmentally sensitive on the Project plans and notifies the contractor to no do any work in that area.** FRA invites your comments on the delineation of the APE and the appropriateness of the identification and evaluation of efforts to date. We also request your comments and concurrence on our finding of effects. Please e-mail your response by within 30 days of receipt of this letter to me at [kristen.zschomler@dot.gov](mailto:kristen.zschomler@dot.gov). If you have questions or wish to discuss the Project, I can be reached at 651.391.0243. Thank you for your cooperation on the Project.

Sincerely,



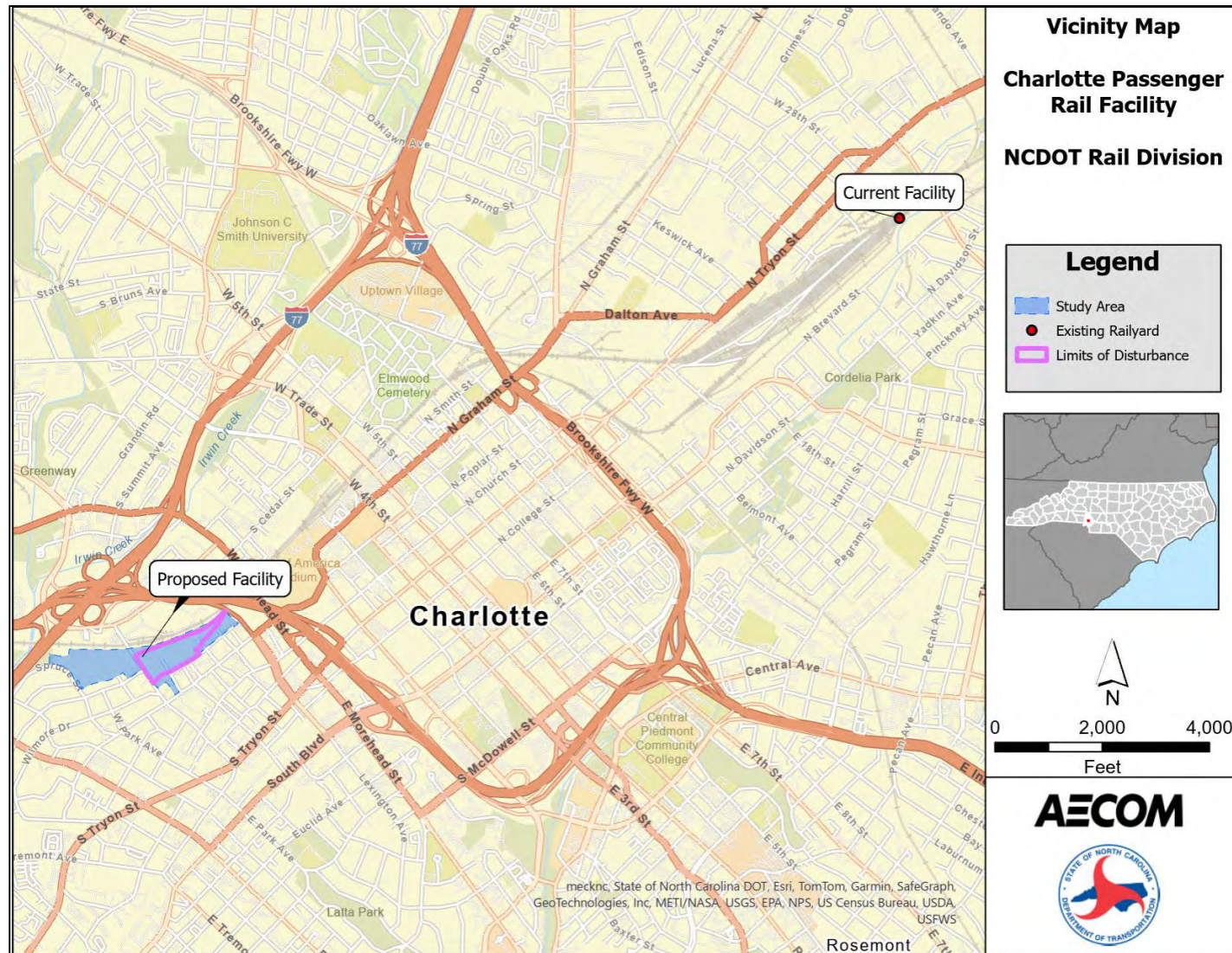
Kristen Zschomler, RPA

Historian, Architectural Historian, and Registered Professional Archaeologist 10341  
Supervisor, Major Projects Team, Cultural Resources Division  
Office of Environmental Program Management  
Federal Railroad Administration

Attachments    1: Phase I Reconnaissance Level Historic Architecture Survey  
                     2: Archaeological Assessment Technical Report  
                     3: Noise and Vibration Technical Memorandum  
                     4: Tribal Coordination Letters

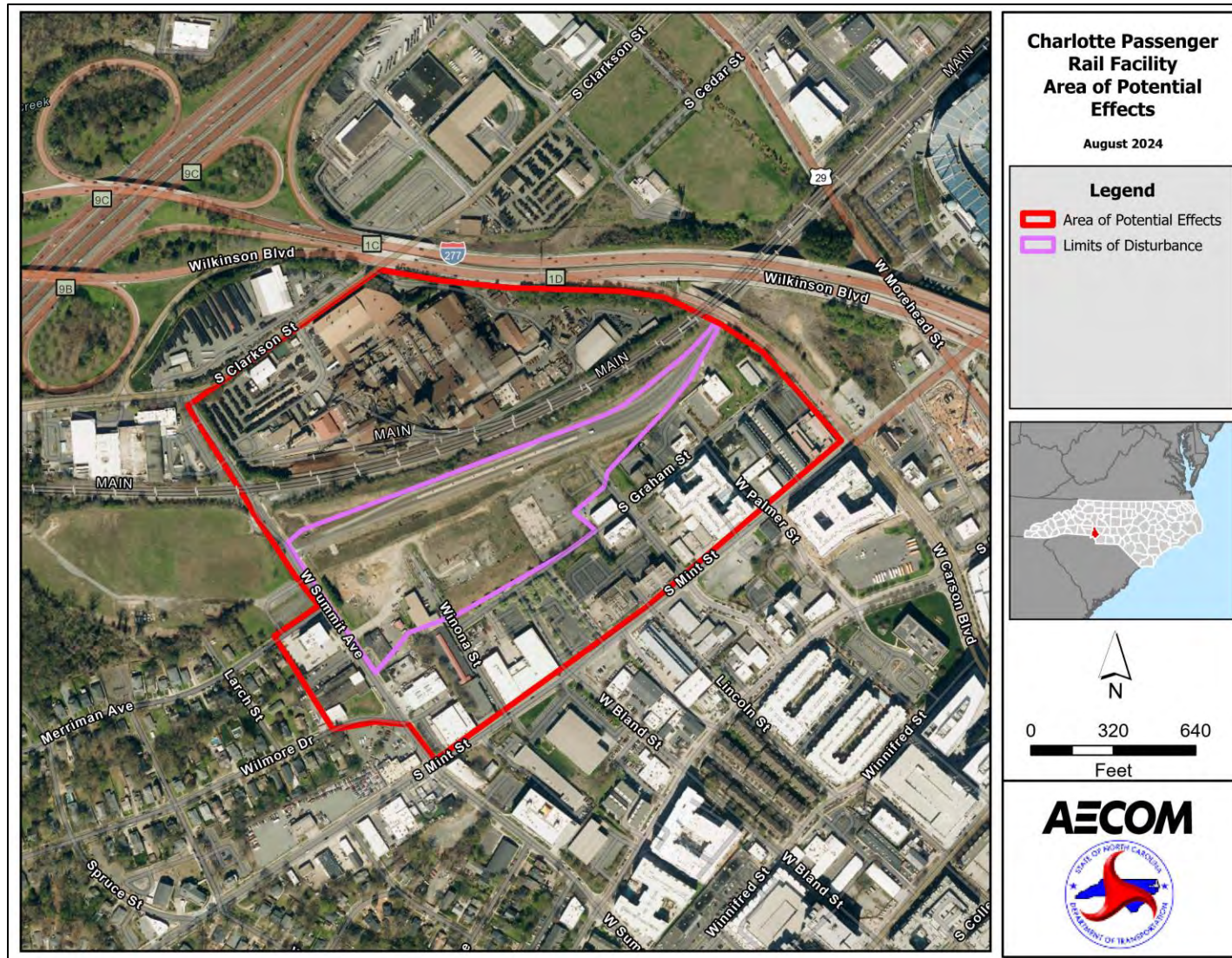
cc:            Amanda Nadjkovic, FRA  
                 Matthew Potter, NCDOT Rail Division  
                 Anamika Laad, NCDOT Rail Division  
                 Ron Lucas, NCDOT Rail Division  
                 Celia Miars, AECOM





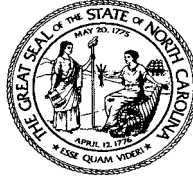
**Figure 1: Vicinity Map**





*Figure 2: Area of Potential Effects*





**North Carolina Department of Natural and Cultural Resources  
State Historic Preservation Office**

Ramona M. Bartos, Administrator

Governor Roy Cooper  
Secretary D. Reid Wilson

Office of Archives and History  
Deputy Secretary, Darin J. Waters, Ph.D.

December 10, 2024

Kristen Zschomler  
Federal Rail Administration  
1200 New Jersey Avenue, SE  
Washington, DC 20590

[kristen.zschomler@dot.gov](mailto:kristen.zschomler@dot.gov)

Re: Charlotte Passenger Rail Facility, Charlotte, P-2918F, Mecklenburg County, ER 24-2598

Dear Ms. Zschomler:

Thank you for your email of November 13, 2024 regarding the above-referenced undertaking. We have reviewed the submission and offer the following comments.


We have reviewed the Reconnaissance-Level Historic Architectural Survey and accepted it as final. We concur that the MK1835 continues to merit its National Register-listing, and we also concur that the following newly surveyed resources are not eligible for listing on the National Register of Historic Places (NRHP) under any Criteria:

- Office Building, 1310 Mint Street (MK4501)
- Warehouse, 412 West Palmer Street (MK4504)
- Warehouse, 500 West Summit Avenue (MK4506)
- Commercial Building, 511 West Summit Avenue (MK4508)

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, contact Renee Gledhill-Earley, environmental review coordinator, at 919-814-6579 or [environmental.review@dncr.nc.gov](mailto:environmental.review@dncr.nc.gov). In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

  
for Ramona Bartos, Deputy  
State Historic Preservation Officer

cc: Celia Mirars, AECOM Technical Services of North Carolina, Inc.

[celia.mirars@aecom.com](mailto:celia.mirars@aecom.com)